CHAPTER 10

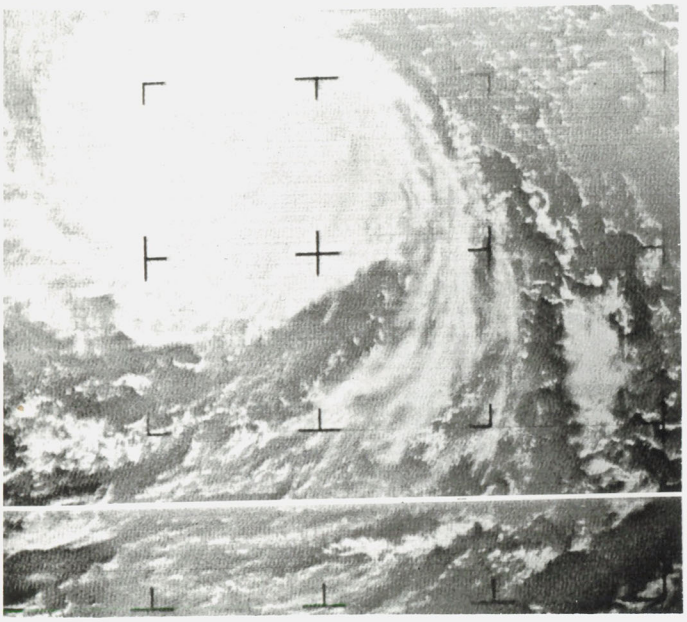
Topography

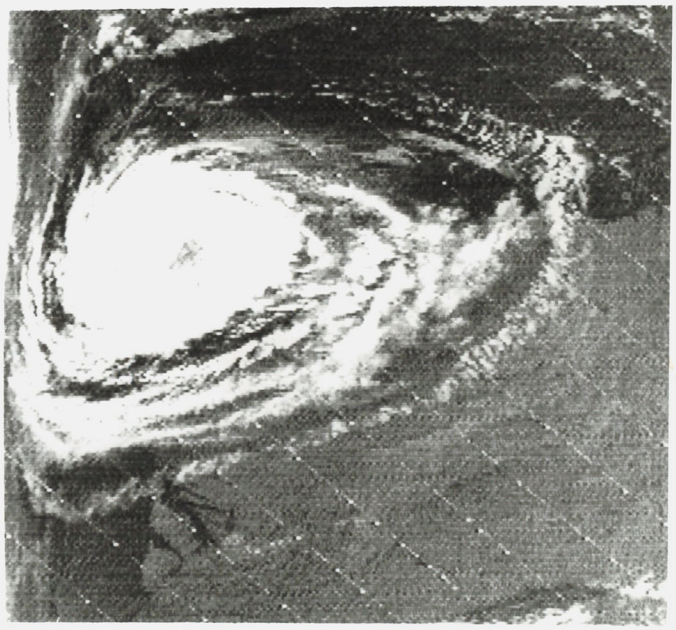
Training

Misc. transparencies

Viking

Voyager





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FOR RELEASE: Immediate
PHOTO NO.: 64-H-2249

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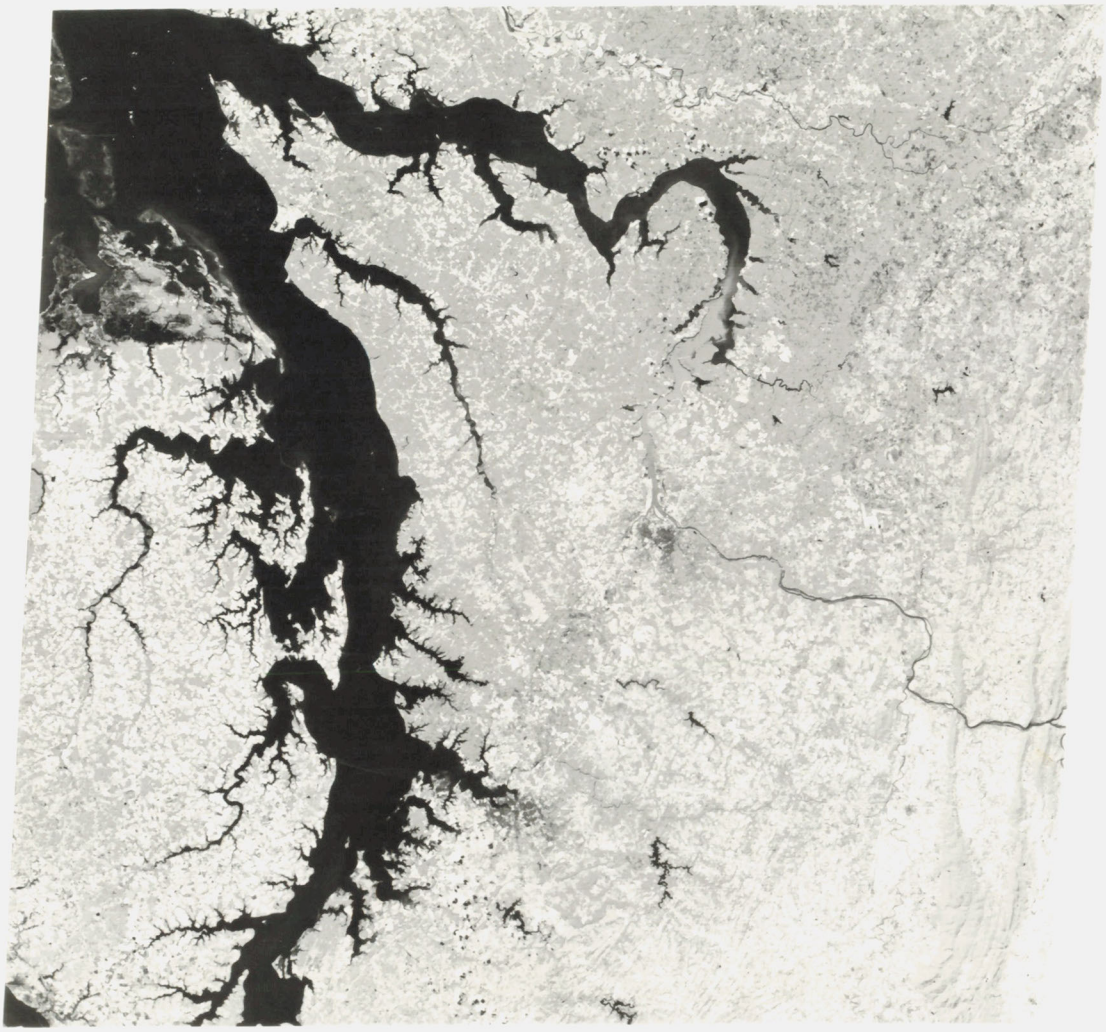
The picture, left, from Nimbus' High Resolution Infra-Red (HRIR) system, was taken at 1:27 AM(EDT), September 9, during orbit 174. Dora's eye is clearly visible (dark circle in white cloud mass). Obscured by the storm's clouds are Florida, Georgia, North and South Carolina coasts, and practically the entire Gulf of Mexico. Just above the storm (at the top right) are Chesapeake and Delaware Bays. At bottom right is Dora viewed by the Nimbus Automatic Picture Transmission (APT) direct read-out camera. This picture was taken Sept. 5 as the storm moved toward the Florida coast. Although not as prominent as in the infra-red picture, Dora's eye can be seen at the storm center. Nimbus weather pictures of Hurricane Dora have been of great value to meteorologists in studying the storm and determining its movement.

DEC 2 5 1964

41



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE: October 20, 1972

PHOTO NO. 72-H-1458
72-HC-850
MULTI-SPECTRAL SCANNER PHOTOGRAPH

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120

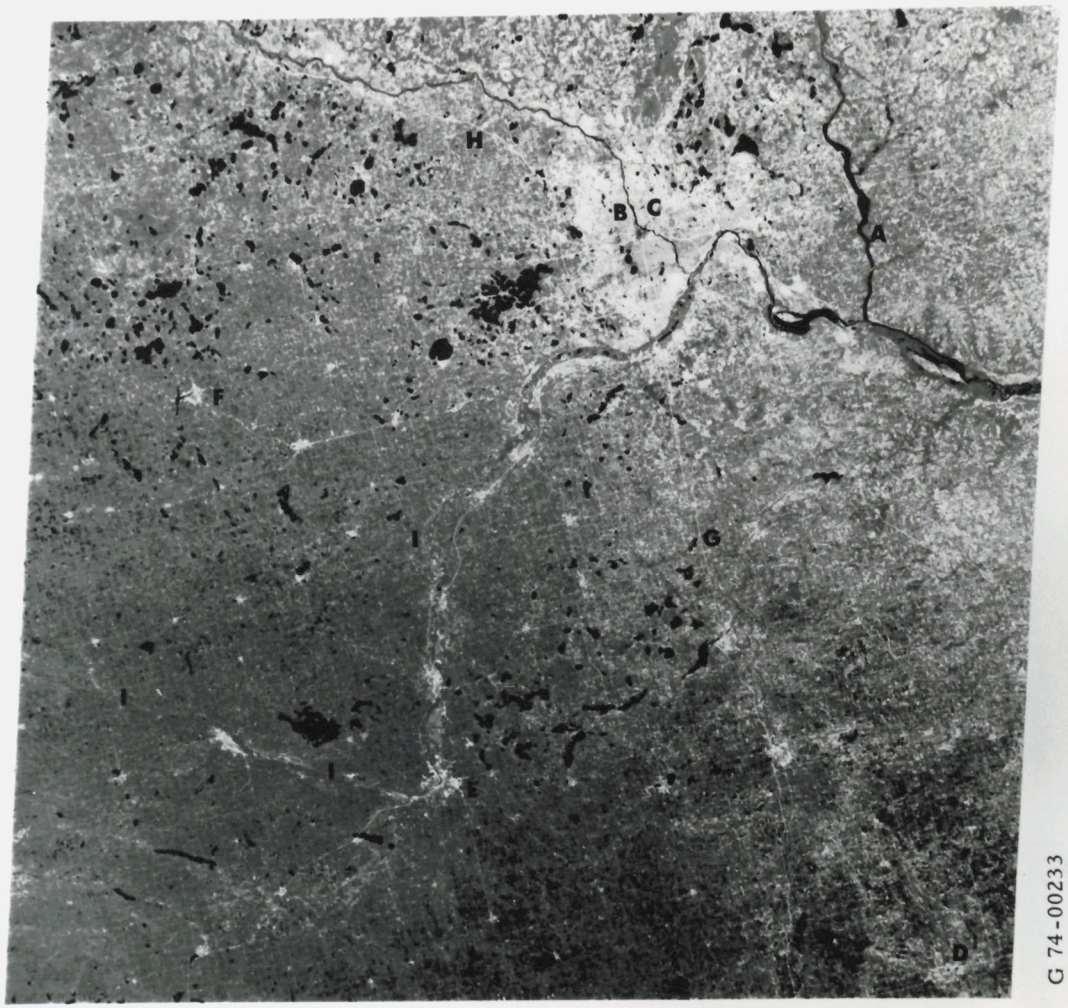
NATION'S CAPITOL PHOTOGRAPHED FROM ERTS-1

This is a color composite photo, taken about 11:00 A.M., EDT, October 11, 1972, from an altitude of 915 kilometers (569 statute miles) of the Washington, D.C./Baltimore, Md., area. Three colors, green, red and infrared seen and recorded separately by the satellite were combined at NASA's Goddard Space Flight Center, Greenbelt, Md. Healthy crops, trees and other green plants which are very bright in the infrared but invisible to the naked eye are shown as bright red. Suburban areas with sparse vegetation appear as light pink and barren land as light gray. Cities and industrial areas show as green or dark gray and clear water is black/dark blue. Some of the notable geographical landmarks are:

Washington, D.C., White House, Capitol, RFK Stadium, Mall, Andrews AFB, (slightly left of center);
Baltimore, Friendship Airport, Liberty and Loch Raven Reservoirs (upper center);
Chesapeake Bay (top to bottom, right of center);
Potomac and Rappahannock Rivers (bottom);
Light Blue shows silt in Potomac and Rappahannock Rivers
Patuxent Naval Station (lower right);
Fredericksburg, Va. (lower left);
Annapolis and Bay Bridge (slightly above and right of center);
Highway 70N, Monocacy River, Frederick and Brunswick, Md. (upper left);
Dulles Airport (left center);
Baltimore Washington Parkway/I-95 (upper center);
Cambridge, Md. (far right); and
Chester River (upper right).

PHOTO CREDIT--NASA or National Aeronautics and Space Administration

This photo was taken from the National Aeronautics and Space Administration's ERTS-1. Federal agencies participating with NASA in this project are the Department of Agriculture, Commerce, Interior, Defense and the Environmental Protection Agency.



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G 74-00233

AUG 14

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, Maryland, to produce this "false color" composite image. Healthy, dense vegetation appears as dark red (strong response from the infrared band). Areas of cultivation appear pink. Cities and towns appear light gray, and water and wetland appear light blue.

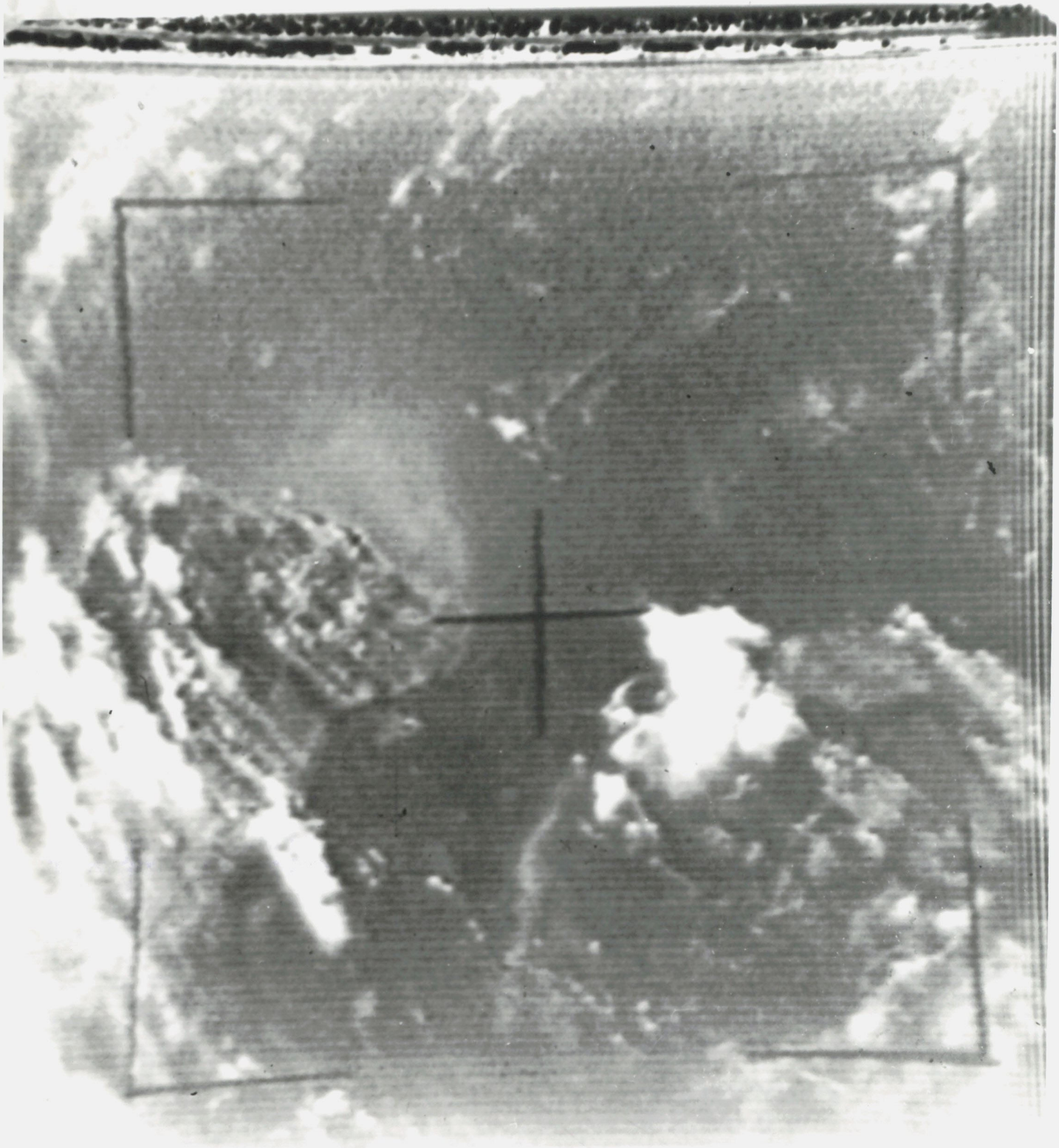
While a portion of Wisconsin appears east of the St. Croix River (A), southeastern Minnesota covers the remainder of the image. The regionally important, industrial and commercial cities of Minneapolis (B) and St. Paul (C), separated by the Mississippi River, dominate the top half of the image. The many other towns and cities, such as Austin (D), Mankato (E), and Hutchinson (F), appear as much smaller pink-to-white spots. The grid-like network of state and local roads, as well as Interstate 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.

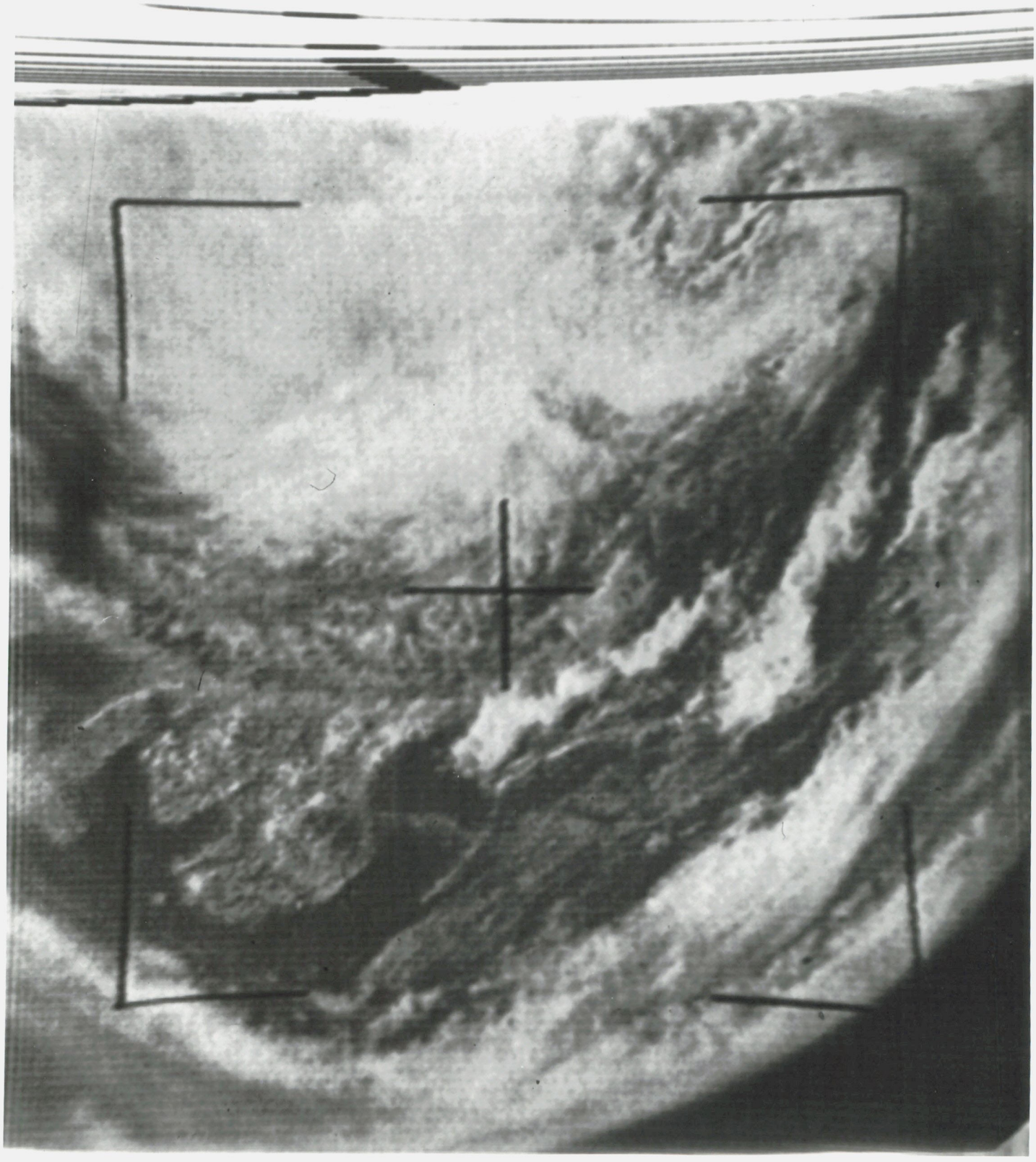
Space Photographs



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON 25, D.C.

NASA PHOTO NO.
61-TIROS III-14

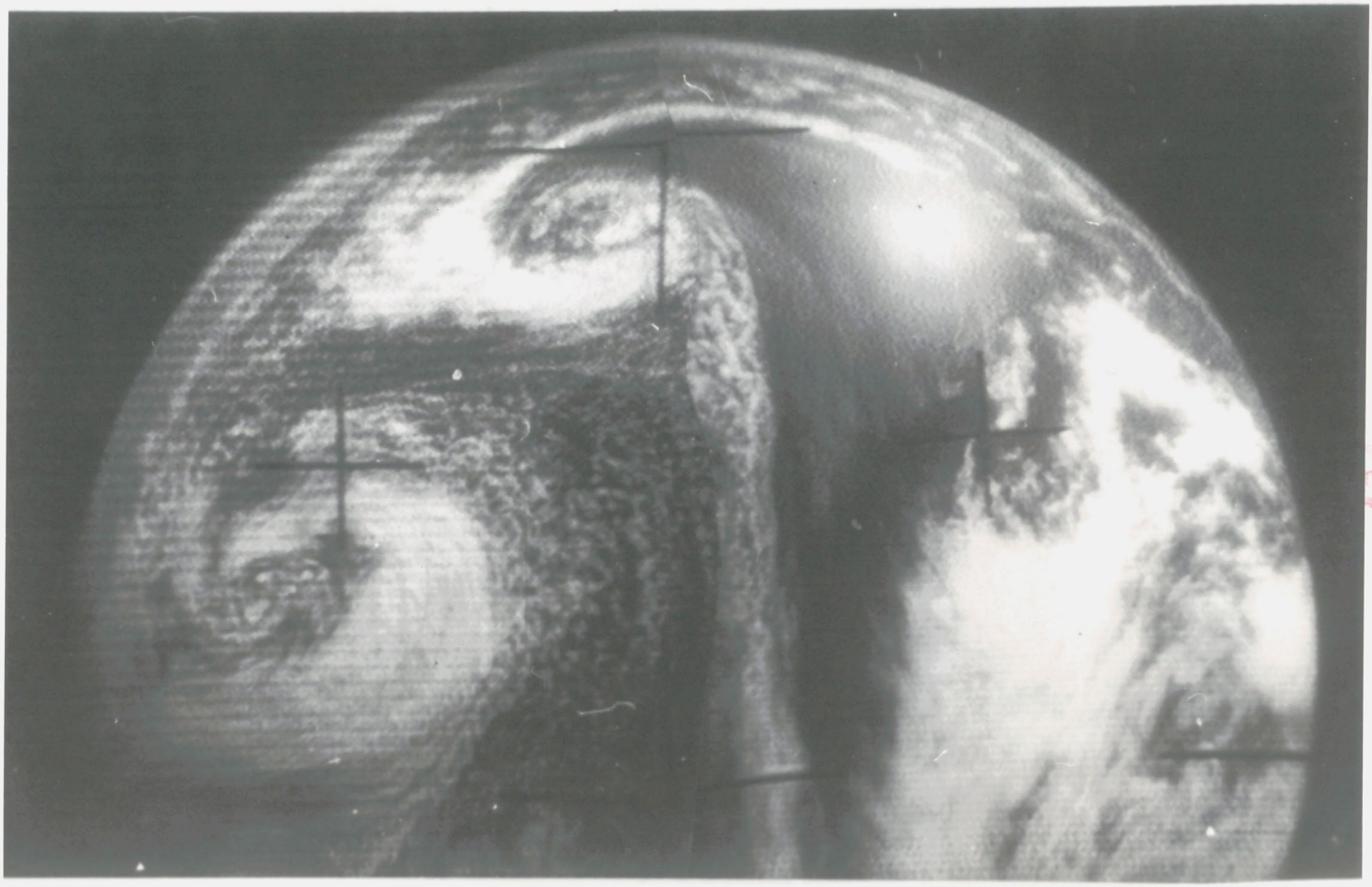
The Tiros III cameras was pointed straight down when this photograph was taken on the satellite's fifteenth orbit, July 12, 1961. A portion of west Cuba can be seen in the upper left of the picture. At the right is the Yucatan Peninsula. Tiros III is the third in a series of weather observation satellites launched by the National Aeronautics and Space Administration. (Note: Picture should be viewed vertically with land masses at top.)



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON 25, D.C.

NASA PHOTO NO.
61-TIROS III-13

Viewing toward the north west over the United States, Tiros III photographed the Great Lakes area. Lake Michigan and Lake Huron are clearly shown in the upper middle area of the photograph, just under the upper right fiducial mark. The dense clouds in the foreground are part of a warm frontal rain area in the central Appalachians. The picture was taken on the fourth orbit of the National Aeronautics and Space Administration's weather observation satellite. (Note: Picture should be viewed vertically so that horizon shows in upper left.)



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE: March 29, 1965
PHOTO NO.: 65-H-136

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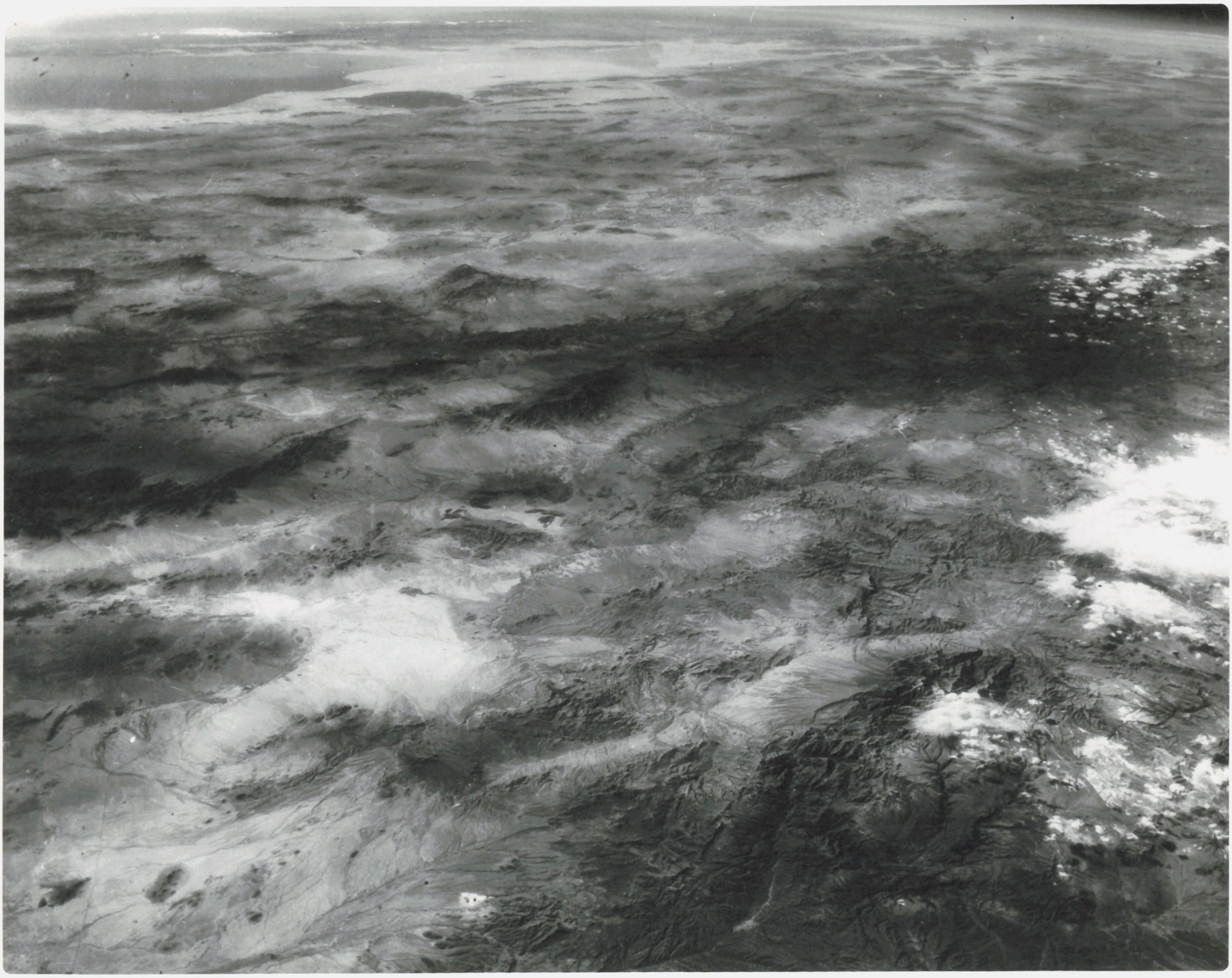
THIS VAST AREA OF THE EARTH is taken at one snap of the camera system aboard the TIROS IX weather satellite. The National Aeronautics and Space Administration's storm tracking eye in space is looking at a double storm vortex over the North Atlantic Ocean. The ninth TIROS of the world-traveling family was launched last January 22. The first TIROS was launched on April 1, 1960.

FILED APR 2 1965

(Space - U.S. - Missiles
Earth - Photos)

Return to Library



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WASHINGTON 25, D.C.

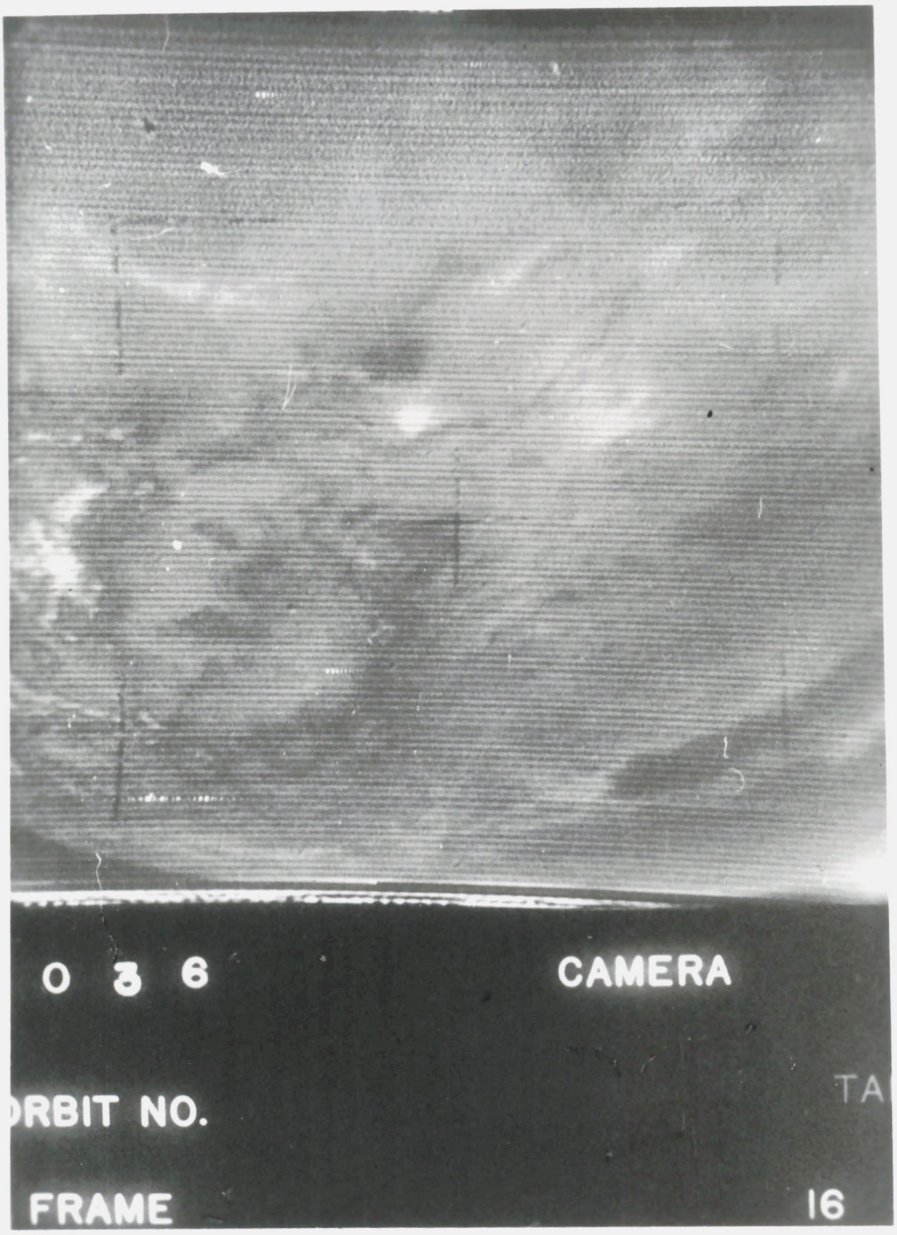
USN 689337 4 FEB. 1955

IF A MAN-MADE SATELLITE ONE DAY CARRIES A TELEVISION CAMERA, IT MAY TRANSMIT PICTURES LIKE THESE BACK TO EARTH. THESE PHOTOGRAPHS OF THE CALIFORNIA-ARIZONA AREA WERE TAKEN FEBRUARY 4, 1955 ON INFRA-RED FILM BY A K-25 CAMERA MOUNTED ON THE NAVY'S VIKING 12B ROCKET. THE NAVAL RESEARCH LABORATORY, WASHINGTON, D.C. HAS BEEN CONDUCTING AN UPPER ATMOSPHERE RESEARCH PROGRAM WITH ROCKETS FOR THE GOVERNMENT SINCE 1946.

NOW BOWN TO 96.8 MILES THE DISTANCE FROM THE CAMERA TO THE HORIZON IS 870 MILES. AT THE LOWER LEFT IS A RAILROAD MOVING UP TOWARD A DRY LAKE BED AND WINDING ON TOWARD TUCSON. THE TUCSON AREA CAN BE SEEN ABOUT ONE THIRD OF THE PHOTO OVER FROM THE LEFT HAND BORDER AND ONE THIRD OF THE PHOTO DOWN FROM THE TOP BORDER. THE PHOENIX AREA IS TO THE RIGHT AND SLIGHTLY ABOVE TUCSON. DOWN AT THE VERY BOTTOM AND AT THE APPROXIMATE CENTER OF THE PHOTOGRAPH IS THE GILA RIVER WHICH WINDS THROUGH THE BLACK MOUNTAIN RANGE. THE SMALL TRIANGULAR WHITE AREA AT THE BOTTOM OF THE PICTURE IS A SURFACE COPPER MINE. WHITE PATCHES NEAR THE RIGHT BORDER ARE CLOUDS.

OFFICIAL U.S. NAVY PHOTOGRAPH.
RELEASED BY THE DEPT. OF DEFENSE 10 AUGUST 1955.

A1731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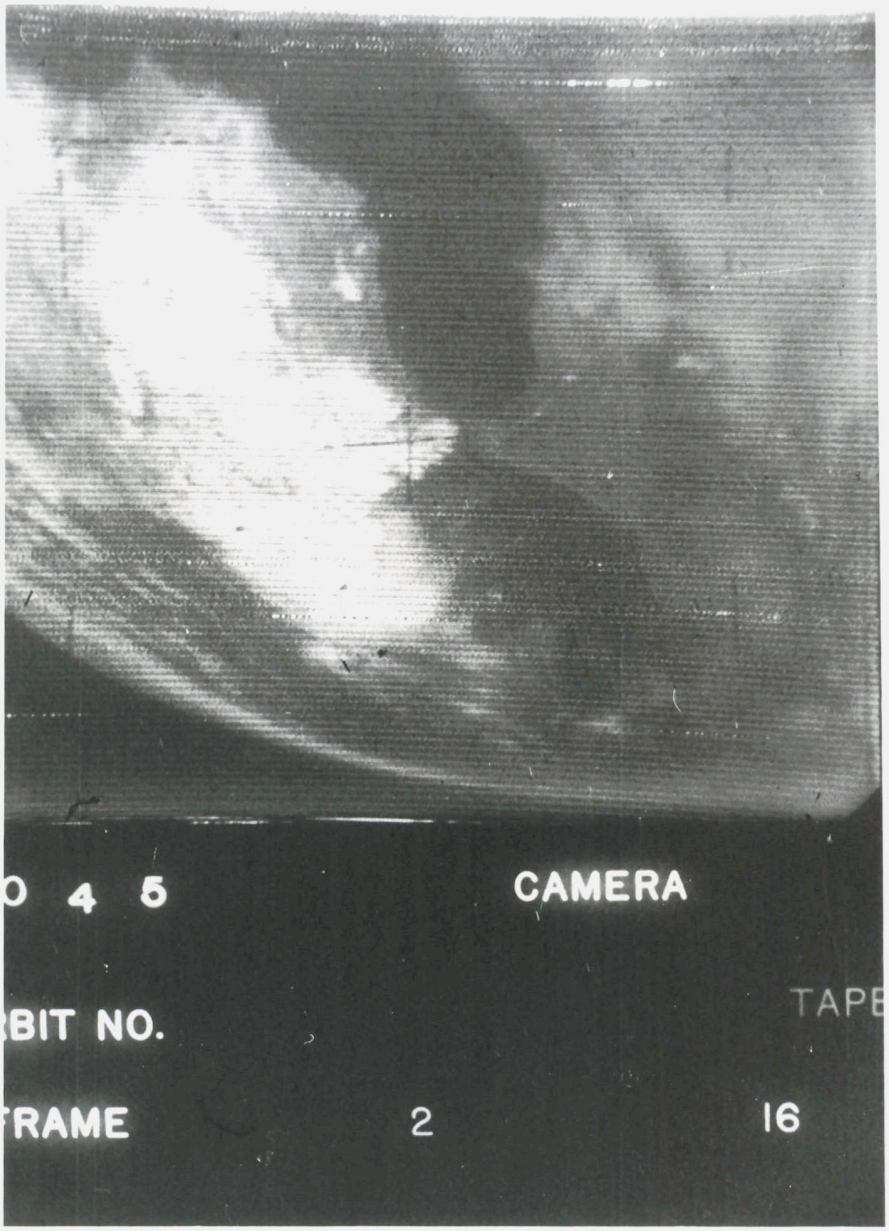
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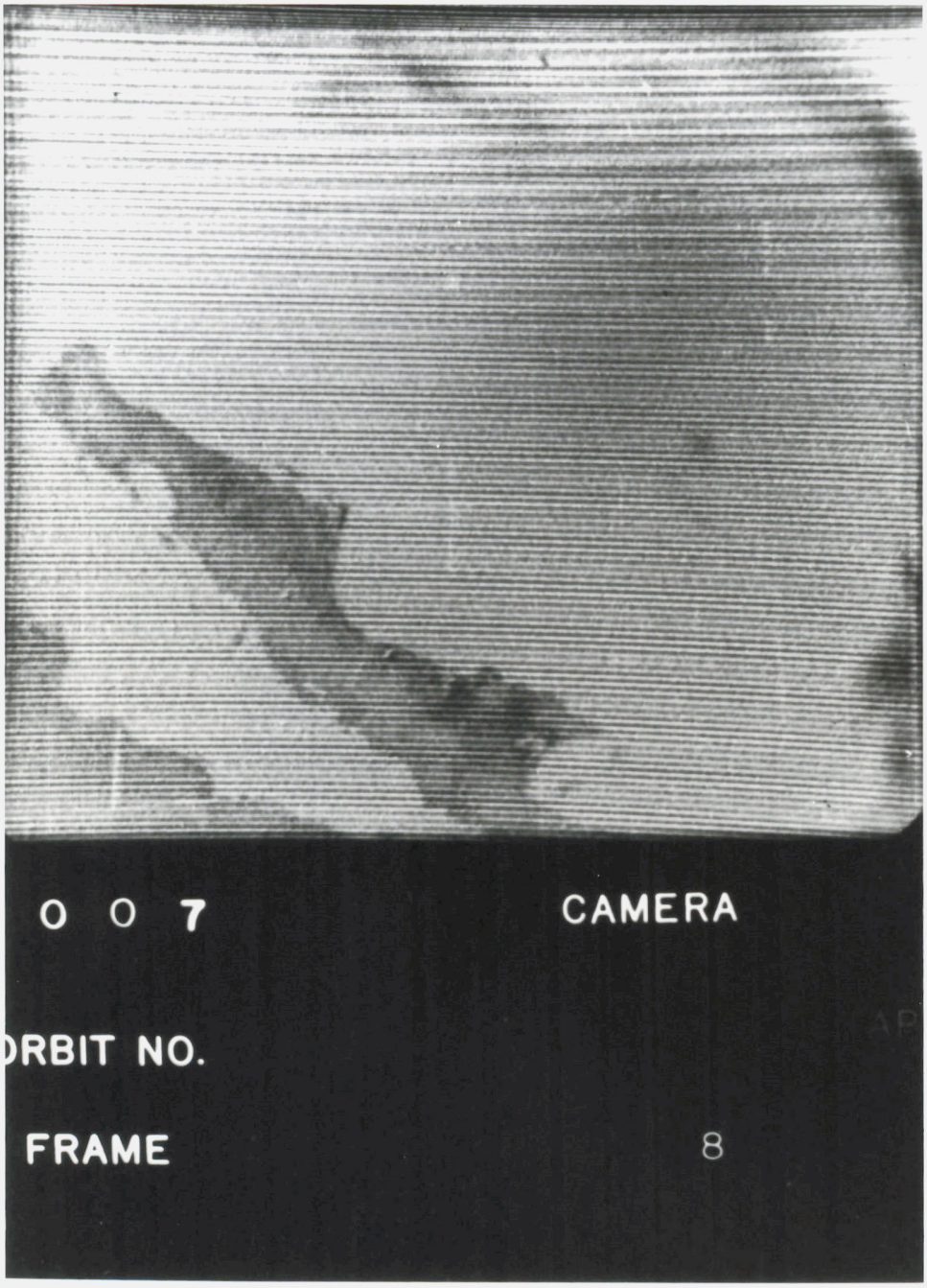
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Satellite Photos

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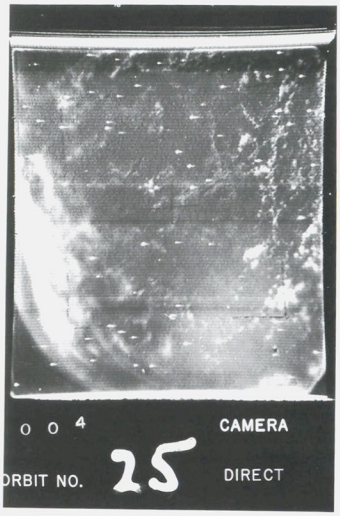
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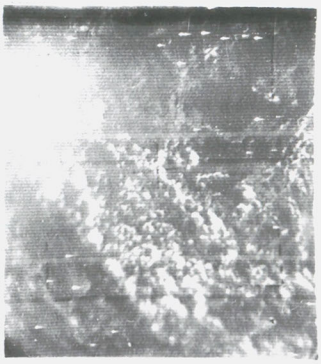

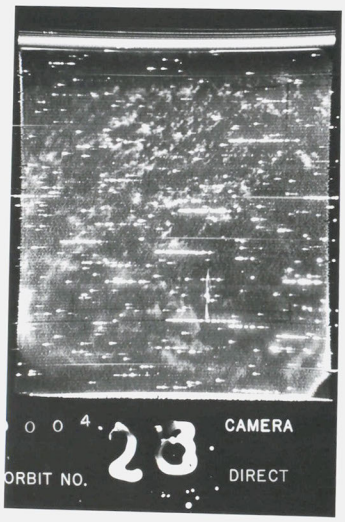
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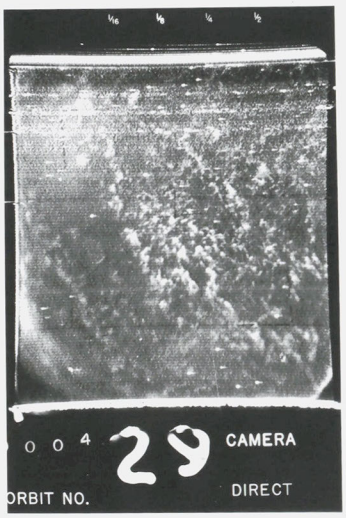
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Satellite Photos taken by Tiros 1 Satellite

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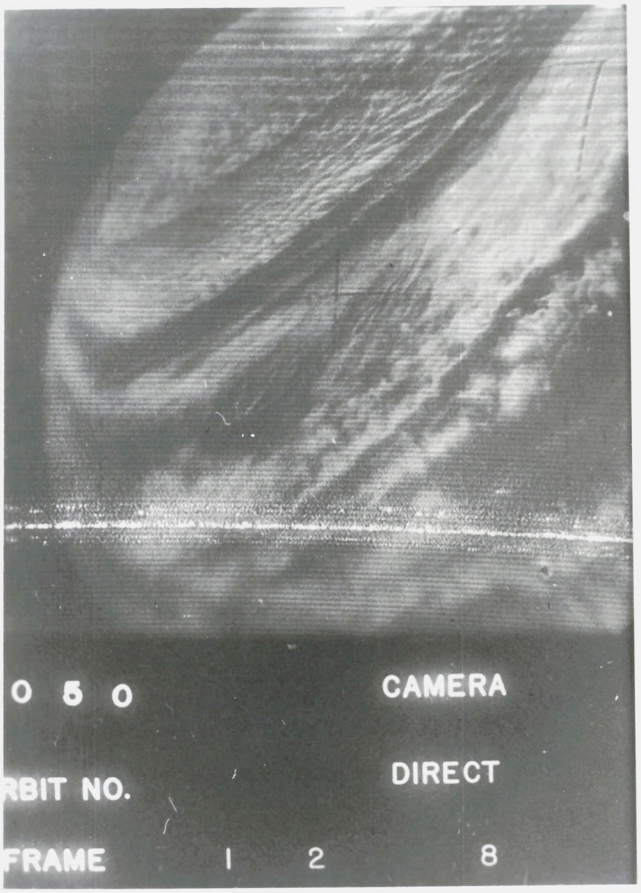
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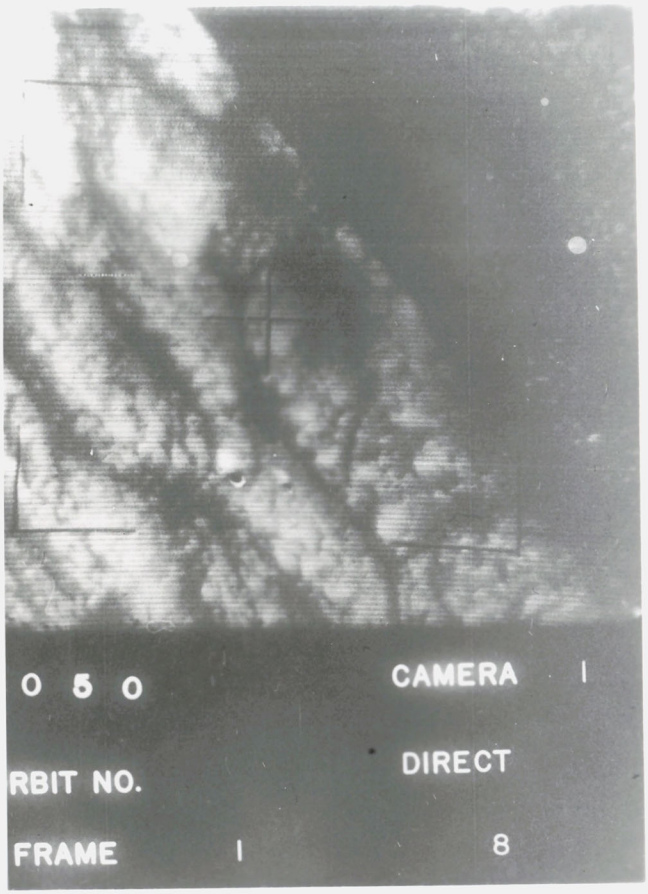
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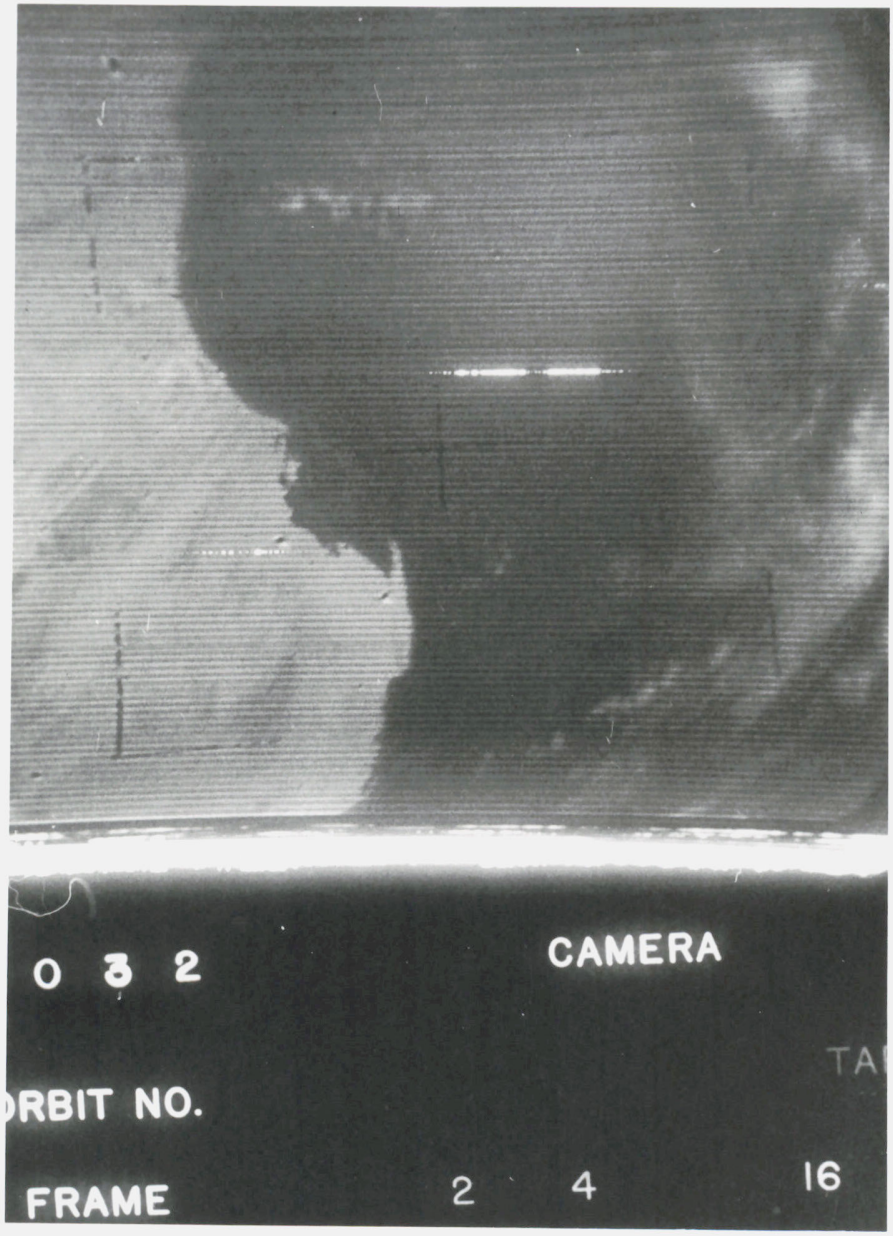
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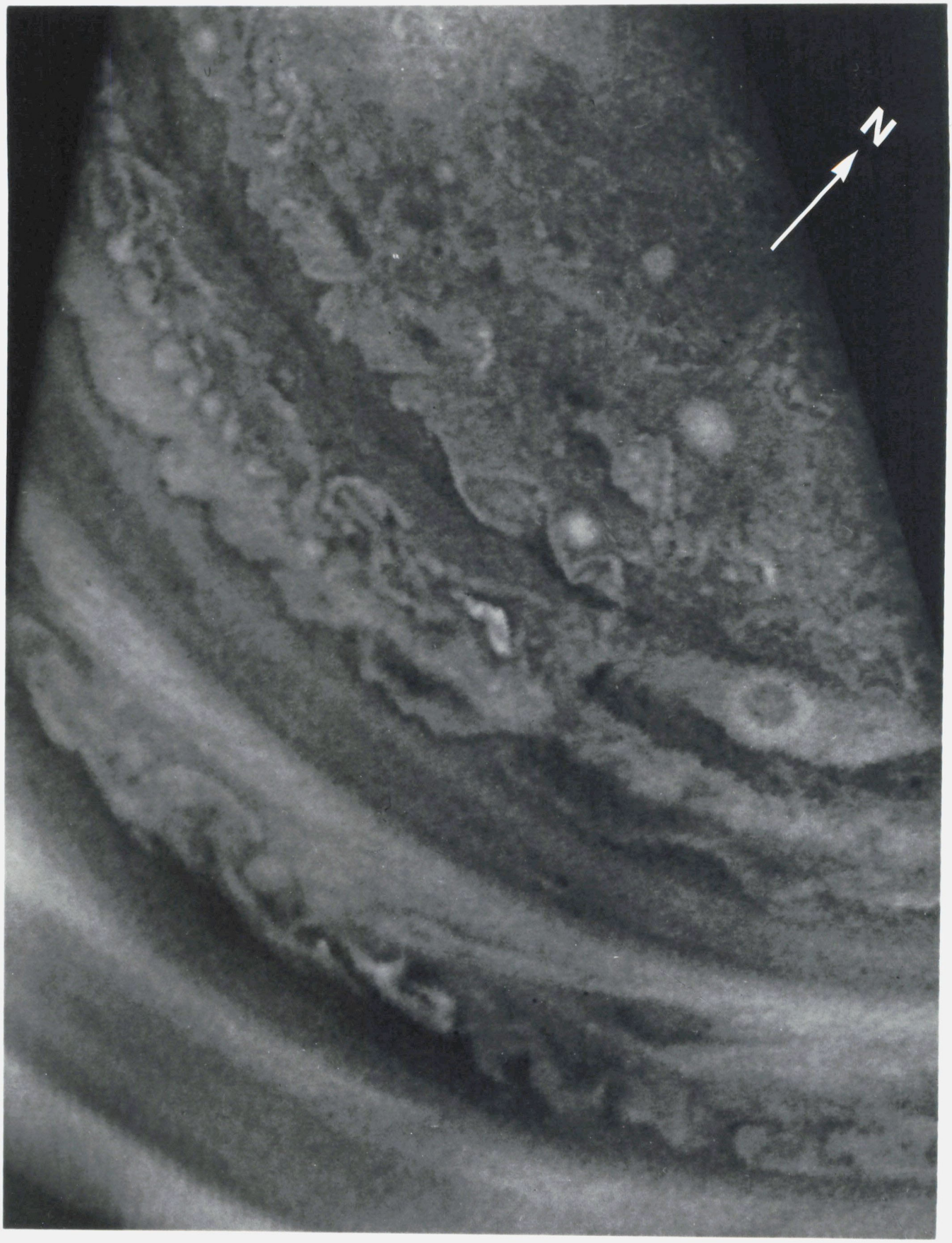
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Scientists believe that understanding of Jupiter's Meteorology will lead to better understanding of weather on Earth. Jupiter is a liquid planet and hence has no solid surface, nor any "ocean" only a gradual transition going down from atmosphere gas to liquid.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AMES RESEARCH CENTER
MOFFETT FIELD, CA 94036

FOR RELEASE: APRIL 24, 1975

PHOTO NO. A74-9240B

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AMES RESEARCH CENTER, Mountain View, California - This enlargement of a Pioneer 11 picture covers part of Jupiter's north temperate zone, and its north polar region. It shows the breakup of the regular banded structure of Jupiter's clouds as one goes north toward the pole.

The alternating, planet-girdling orange belts and grey-white zones, the most prominent features on the planet, first appear to break down into swirling scalloped and oval structures, and farther north to disappear completely.

The northernmost part of the picture shows areas within 17° of the North Pole. According to Dr. Andrew Ingersoll, California Institute of Technology, these polar regions contain what appears to be an array of unorganized hurricaine like convective storms. Many of these storms are circular, and some are several hundred miles across.

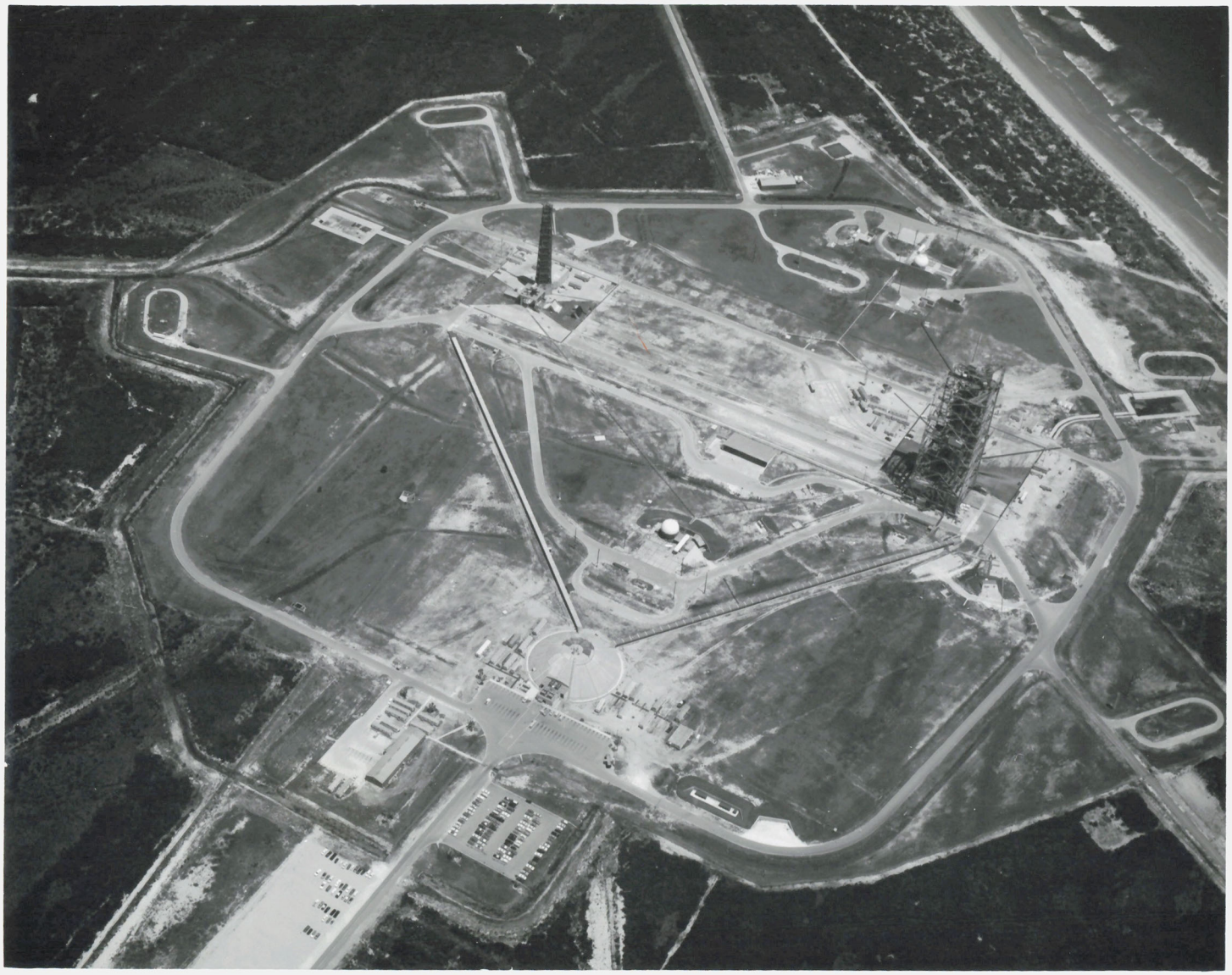
Since Jupiter's polar regions cannot be seen from Earth, this picture shows many features never seen before, and by far the greatest array of details ever seen on the giant planet. Pioneer 11 flew within 42,000 km (26,000 mi) of Jupiter last December. This view was taken in blue light from 600,000 km (373,000 mi). The Pioneer Project is managed by NASA's Ames Research Center, Mountain View, CA, and the Pioneer spacecraft were built by TRW Systems, Redondo Beach, CA.

The Jovian polar storms may be similar to the Earth's fast-spinning tropical hurricaines in that they are of similar size, and like hurricaines may well be "heat pumps", powered by the latent heat of condensation of water vapor and ammonia vapor.

Sharply defined spiral features and scallops, most of them at the boundaries of high-latitude belt and zone regions are believed to result from the wind shears between adjacent, counterflowing jet streams produced in the belts and zones.

Many of the jet streams producing these spiral features have speeds relative to the planet of 150 mph each, in opposite directions. This means 300 mph winds at these shear points.

A74-9240.1-B



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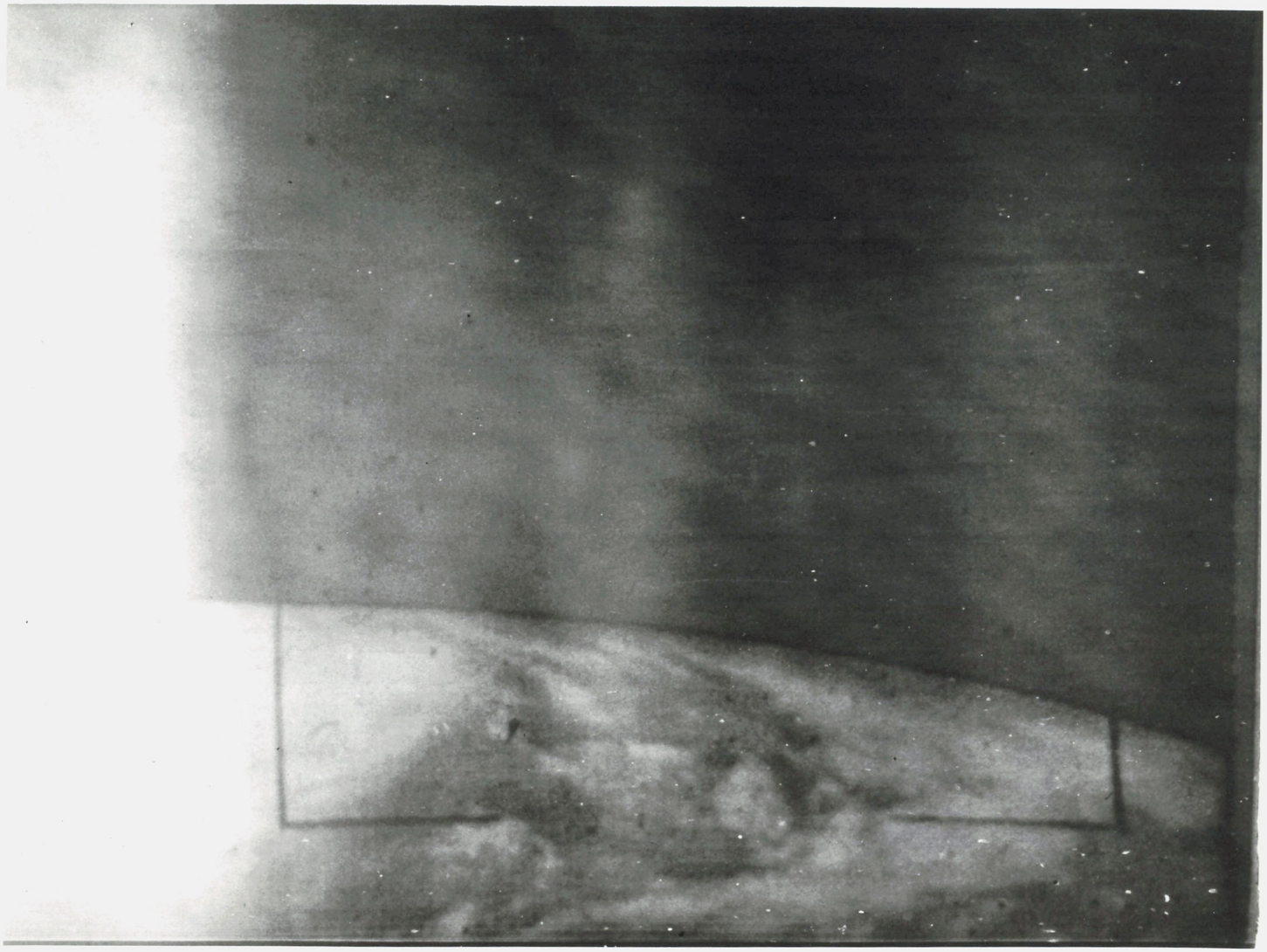

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON 25, D.C.

FOR IMMEDIATE RELEASE
July 12, 1961

NASA PHOTO NO.
61-TIROS III-8

The third in a series of weather observation satellites was launched by the National Aeronautics and Space Administration July 12, 1961 at 5:25 EST from Cape Canaveral, Florida. This photograph was taken on the first orbit and shows a view of the St. Lawrence valley area.

N. E. A.
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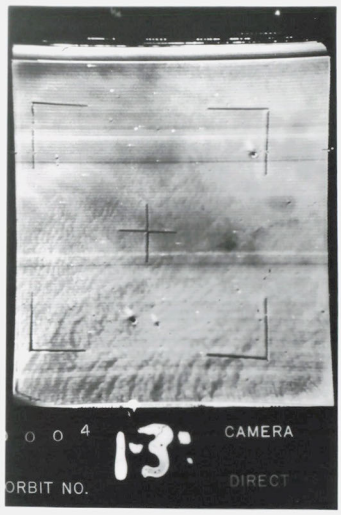
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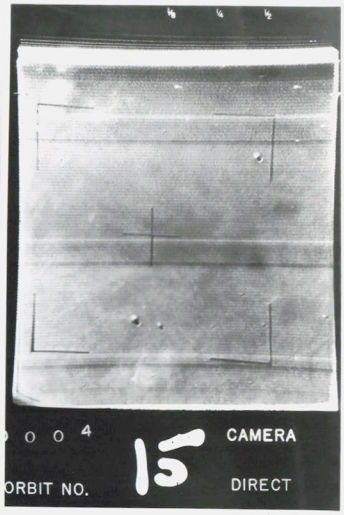
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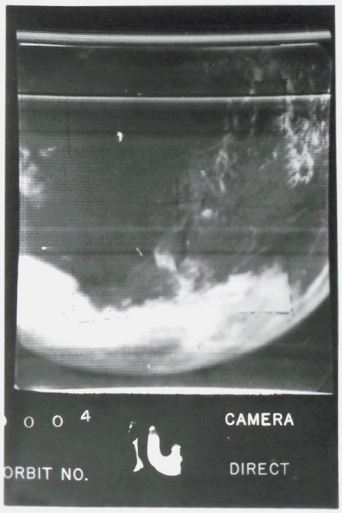
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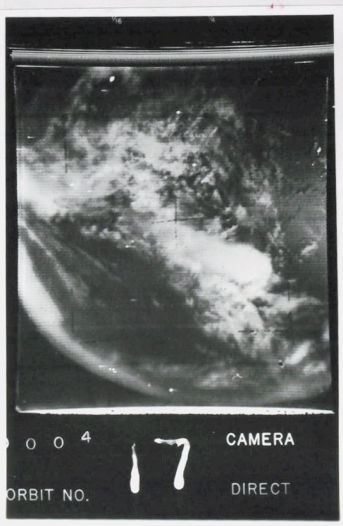
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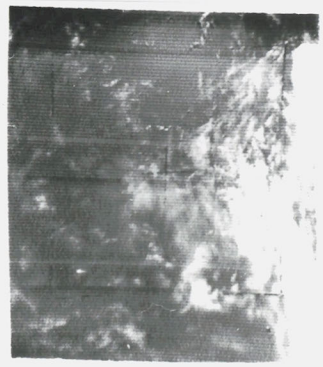

Satellite Photos taken by Tiros 1 Satellite

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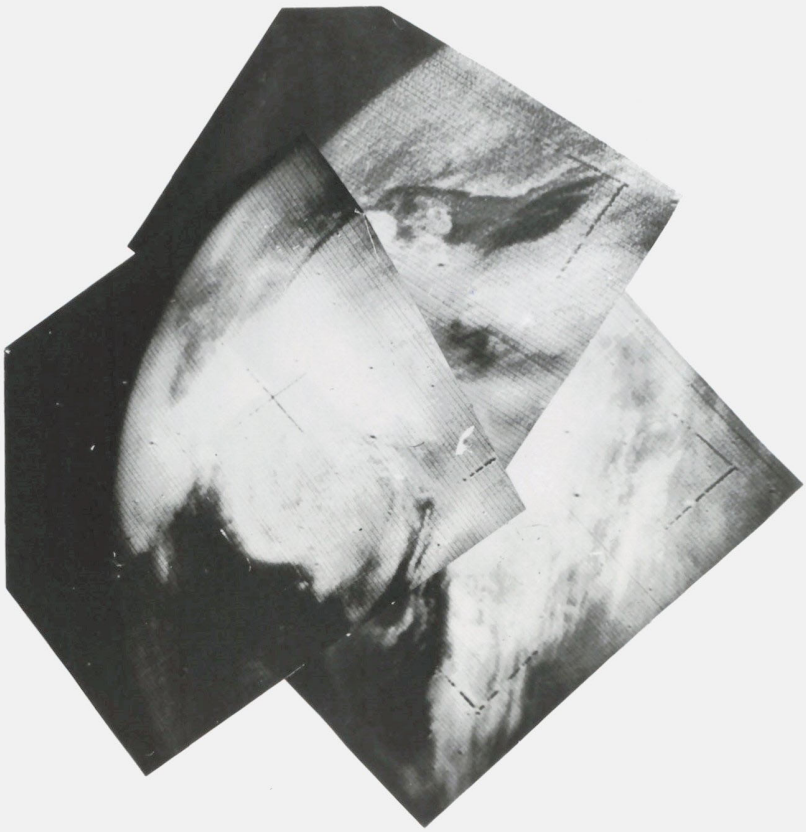

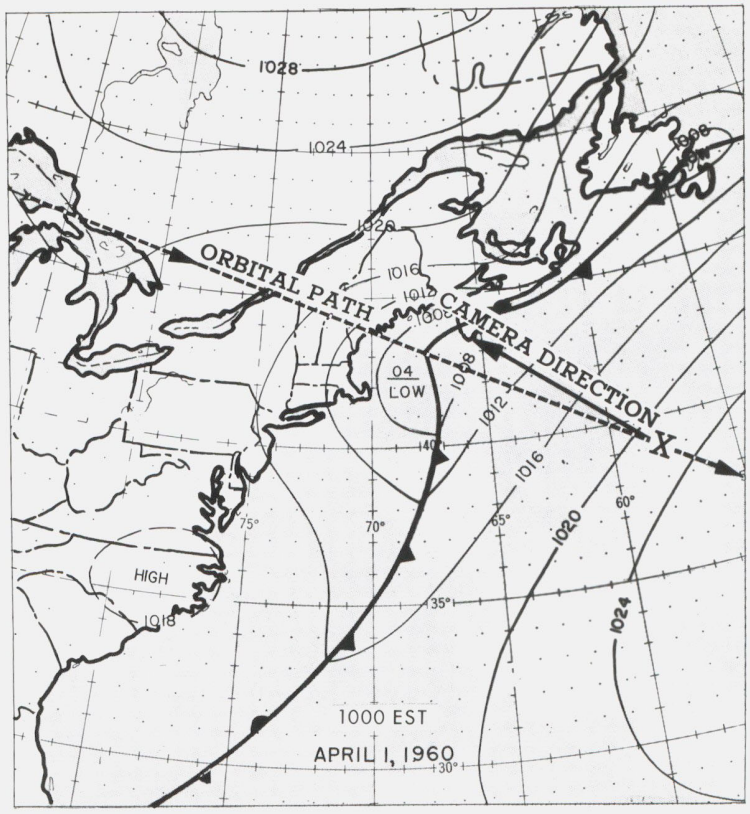
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1000 EST
APRIL 1, 1960

N.E.A.
APR 26 '60
SCIENCE

National Aeronautics & Space Administration

Photograph Number _____

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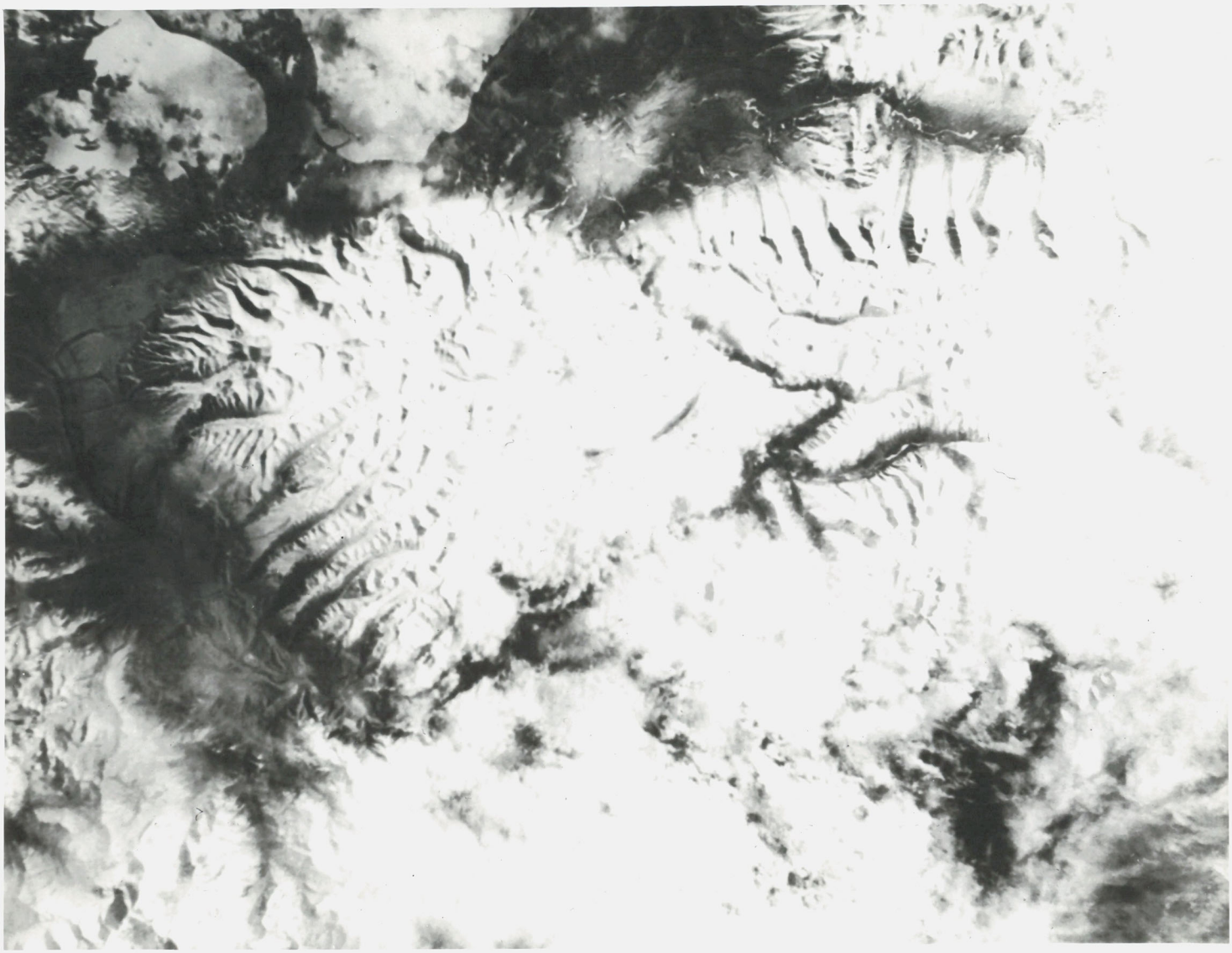

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FOR RELEASE: IMMEDIATE
PHOTO NO.: 63-MA 9-187

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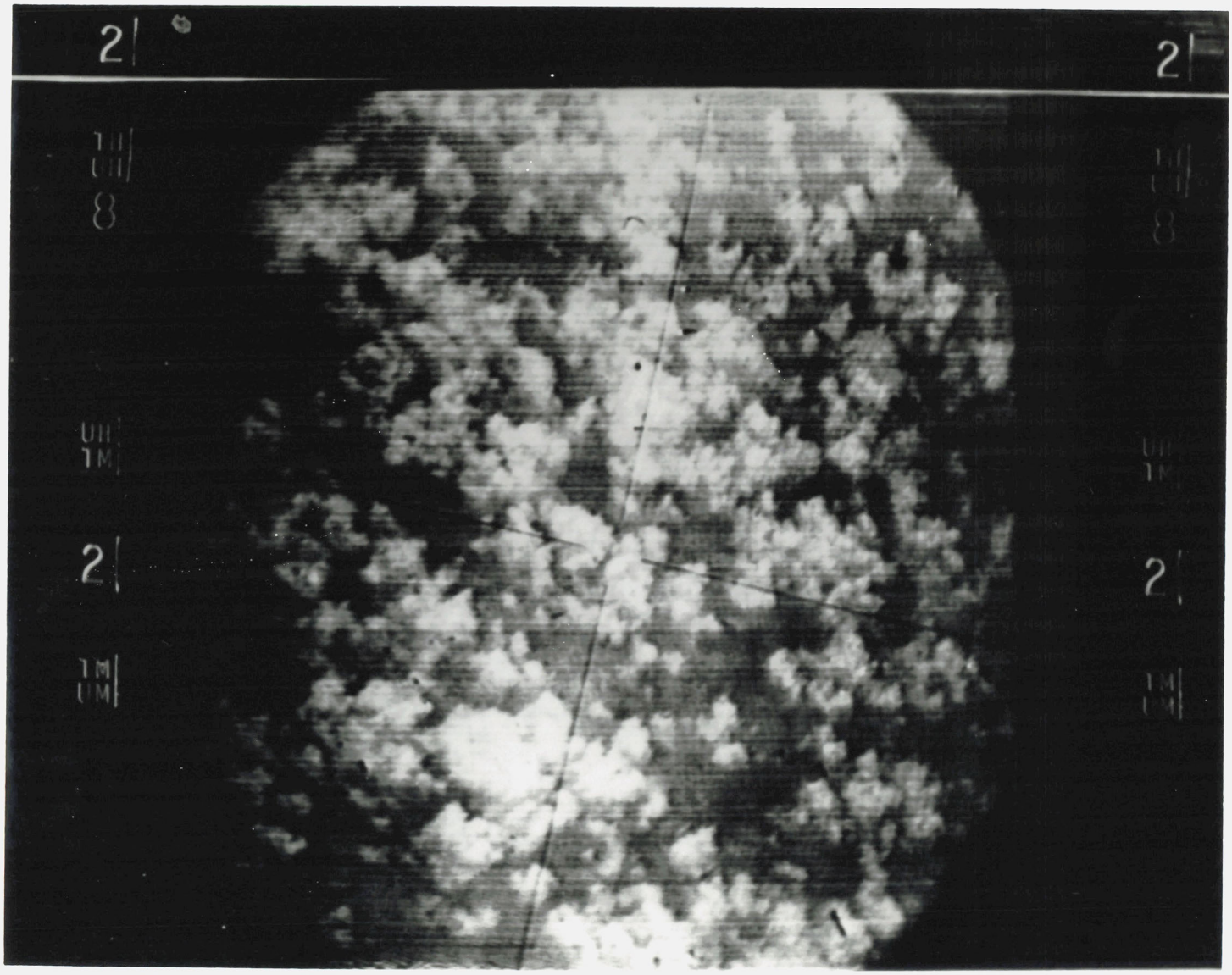
Himalays in the India-Nepal-Tibet border area.

Pictures taken from onboard the Faith 7 spacecraft by Astronaut L. Gordon Cooper with a 70mm Hasselblad camera, model 500C. Ansco color ultra speed ASA-160 film using an 80mm F:2.8 lens.

Orbit: 9 Location: Lat. 30N Altitude: 100 miles
Long. 79E

PHOTO CREDIT -- NASA or National Aeronautics and Space Administration



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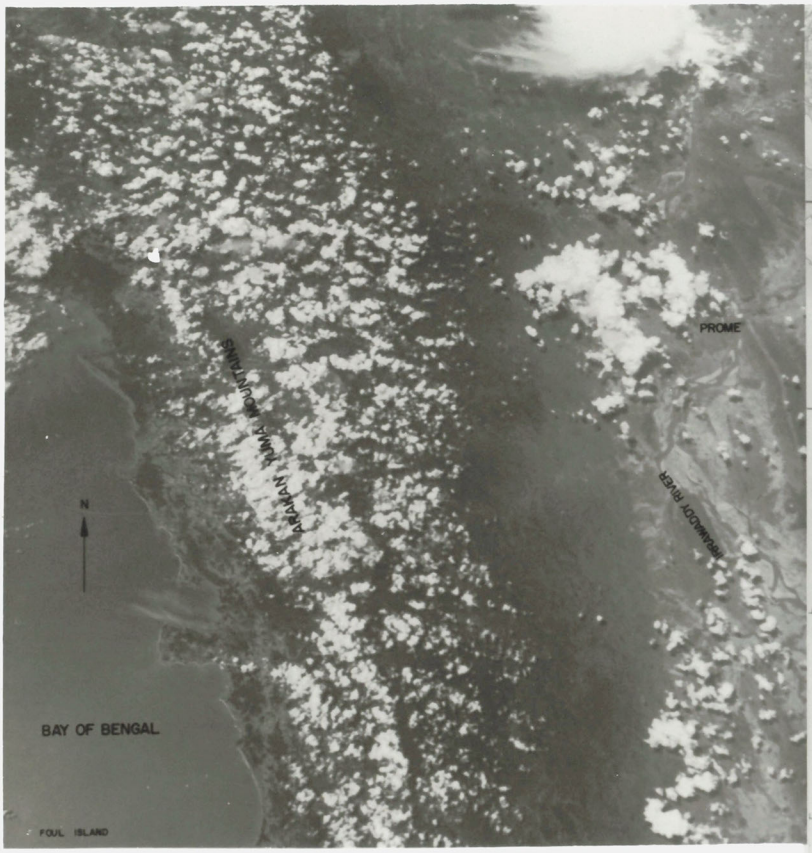
CAPE CANAVERAL, FLA. - Cloud cover over Florida as recorded by the TV camera aboard "Faith 7" on its 18th orbit.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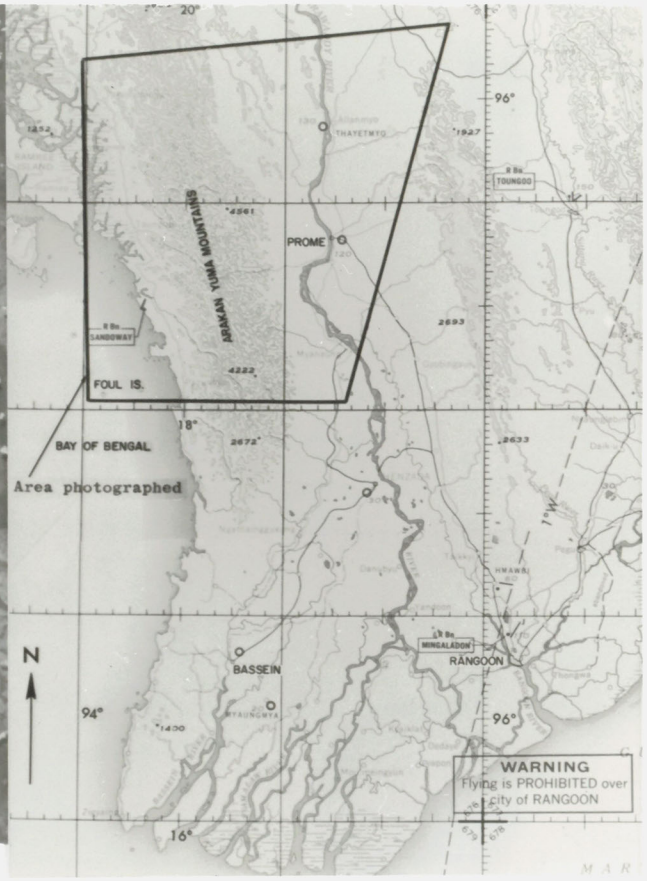
IRRAWADDY RIVER
N
BAY OF BENGAL
FOUL ISLAND


20°
96°
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FOUL IS.
BAY OF BENGAL
Area photographed
18°
BASSEIN
RANGOON
N
94°
96°
16°
WARNING
Flying is PROHIBITED over city of RANGOON

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FOR RELEASE: Immediate
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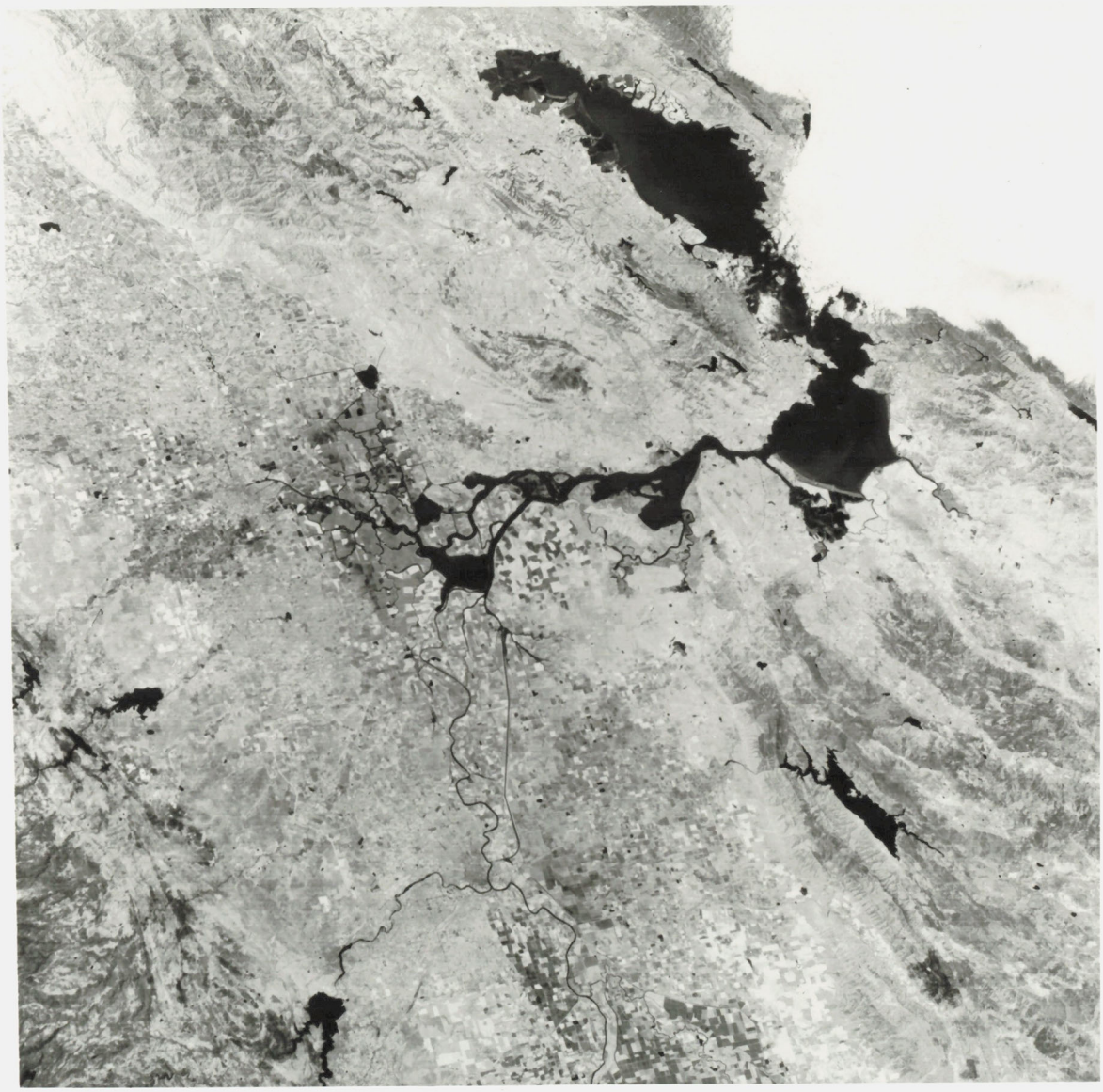
Astronaut Gordon Cooper took this picture of the Bay of Bengal and the Arakan Yuma Mountains. The map on the right outlines the area of the photograph. Pictures were taken with a Hasselblad 70mm camera using Anscrochrome 200 and no filter.

PHOTO CREDIT--NASA or National Aeronautics and Space Administration



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JAN 15 1973

This picture of the San Francisco Bay area was taken by Earth Resources Technology Satellite-1 (ERTS-1) from an altitude of 915 kilometers (569 miles). San Francisco Bay is lower center and the foothills of the Sierra Nevada upper right. Fog rolling into the Bay can be seen in the lower left corner. Federal agencies cooperating with NASA in this project are the Department of Agriculture, Commerce, Interior, Defense, and the Environmental Protection Agency.

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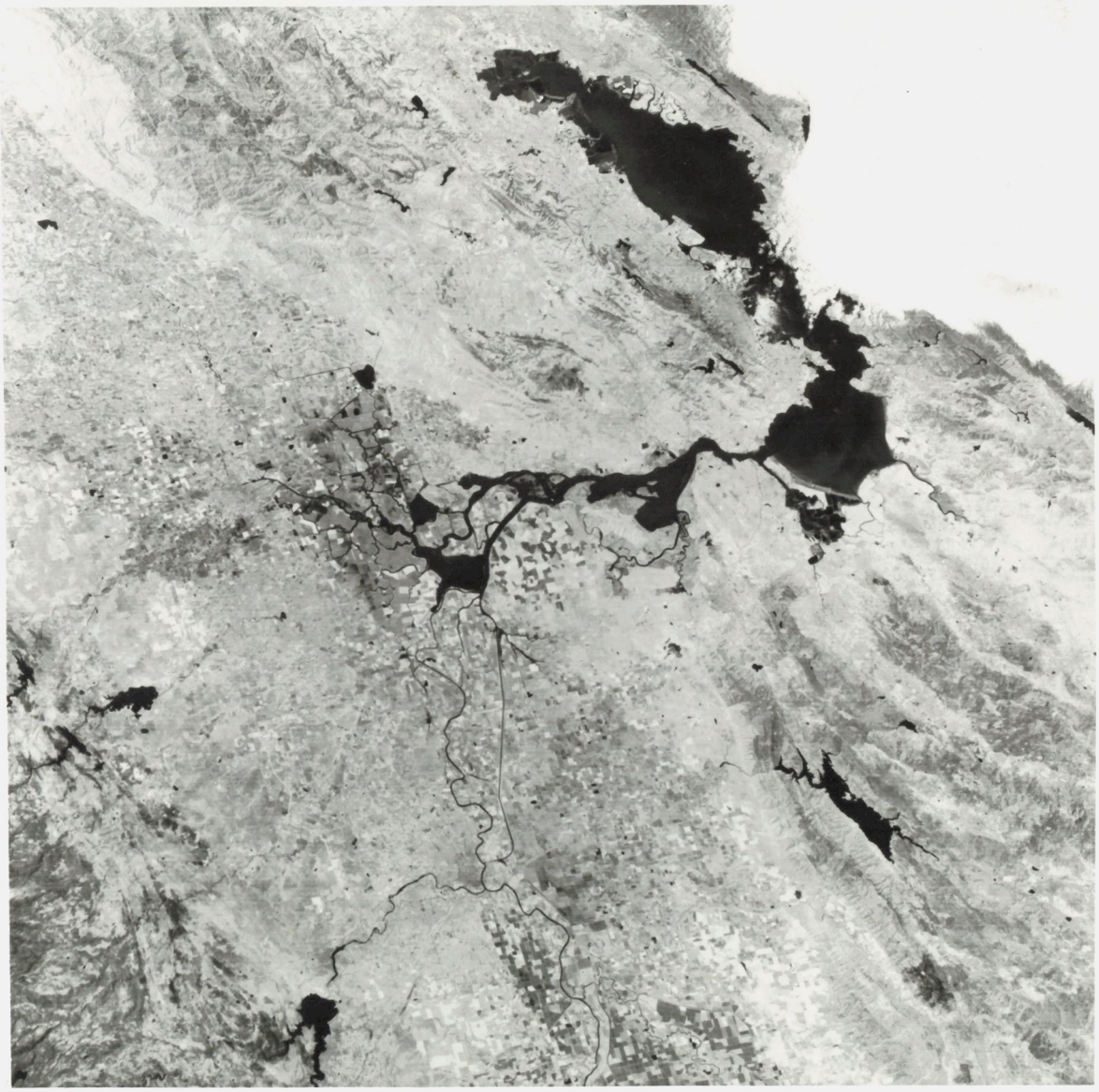

46

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FOR RELEASE: Immediate
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JAN 16 1973

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CALIF. - SAN FRANCISCO.

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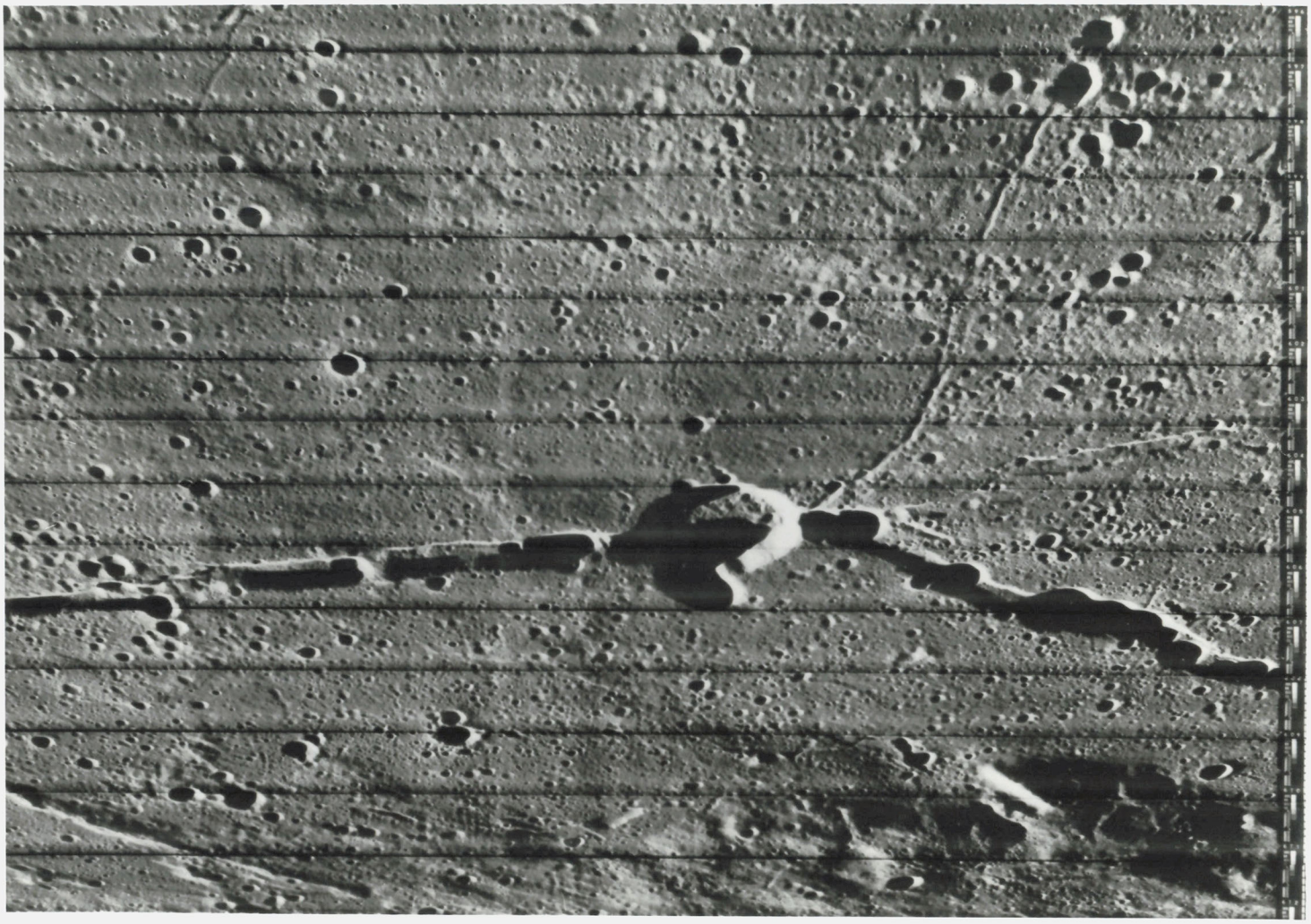

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HAMPTON, Va.,--This photograph is an enlargement of a portion of a wide-angle photograph taken by the Lunar Orbiter III. When viewed with the edge data to the left, North is 21 degrees to the left of the top of the picture and the Sun is from the right. The crater Hyginus appears in the center of the picture and the two branches of the Hyginus Rille (valley) extend to the Northwest and the East. Hyginus is approximately 6½ miles in diameter and 2,600 feet deep. It is located between Simus Medii and Mare Vaporum near 8 degrees North Latitude and 6 degrees East Longitude. An area known as the Schneckenberg Uplands appears in the upper corner of the picture. The photograph was made at 10:40 p.m. EST February 16, when the spacecraft was in its 56th orbit of the moon. At the time of the exposure, Lunar Orbiter III was 49 miles southwest of the crater at an altitude of 39 miles. The photograph was transmitted to NASA's Goldstone Tracking station at 4:30 p.m. EST, February 18, 1967. The area shown is not considered a potential astronaut landing site. Close inspection of the two rilles and of the smaller rille extending from Hyginus to the Southwest, suggest a direct relationship between rille width and diameter of associated craters. Lunar Orbiter is a project NASA's Langley Research Center, Hampton, Va. and was built by the Boeing Company, Seattle, Washington.

PHOTO CREDIT--NASA or National Aeronautics and Space Administration

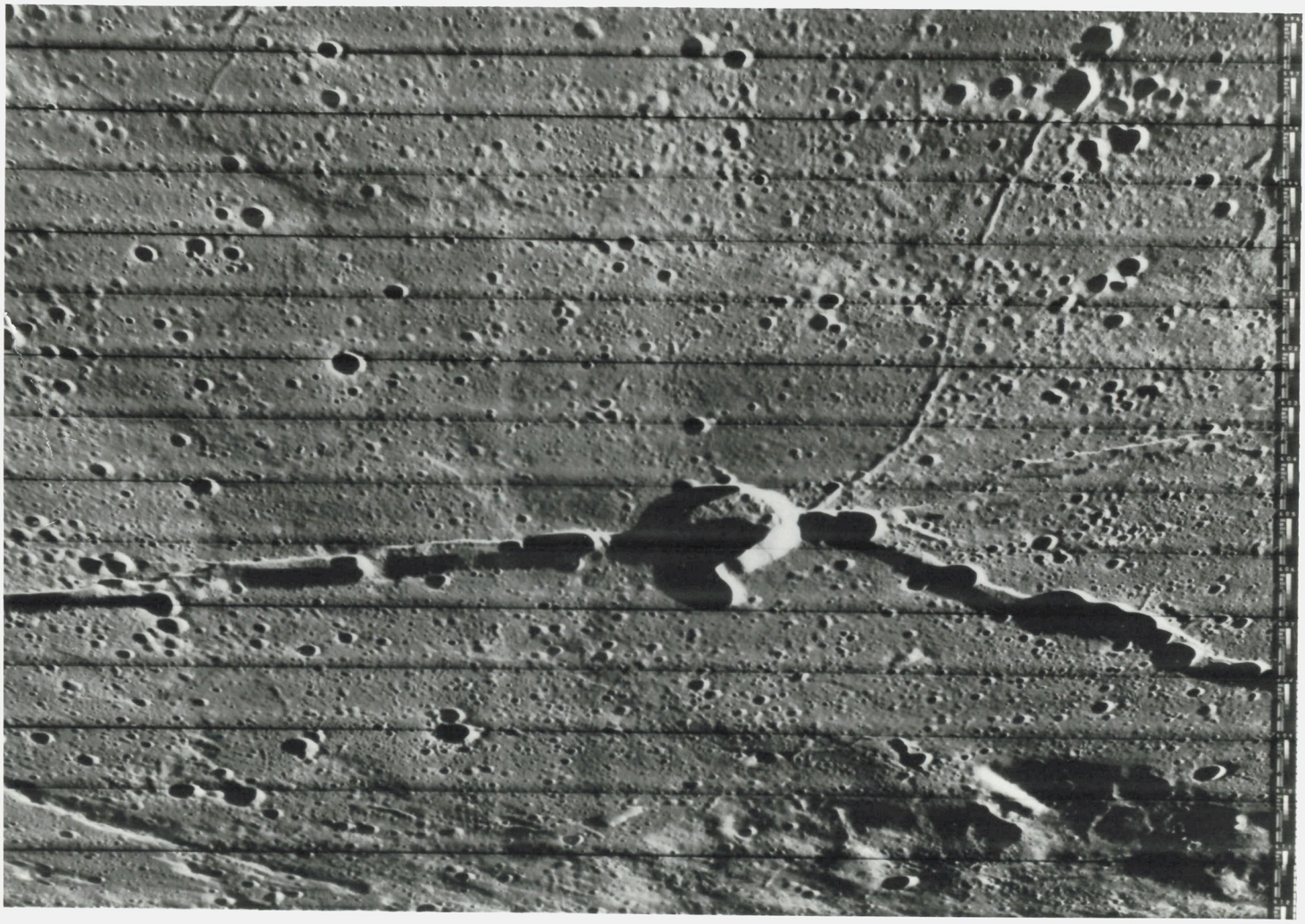

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PHOTO NO. 67-H-197

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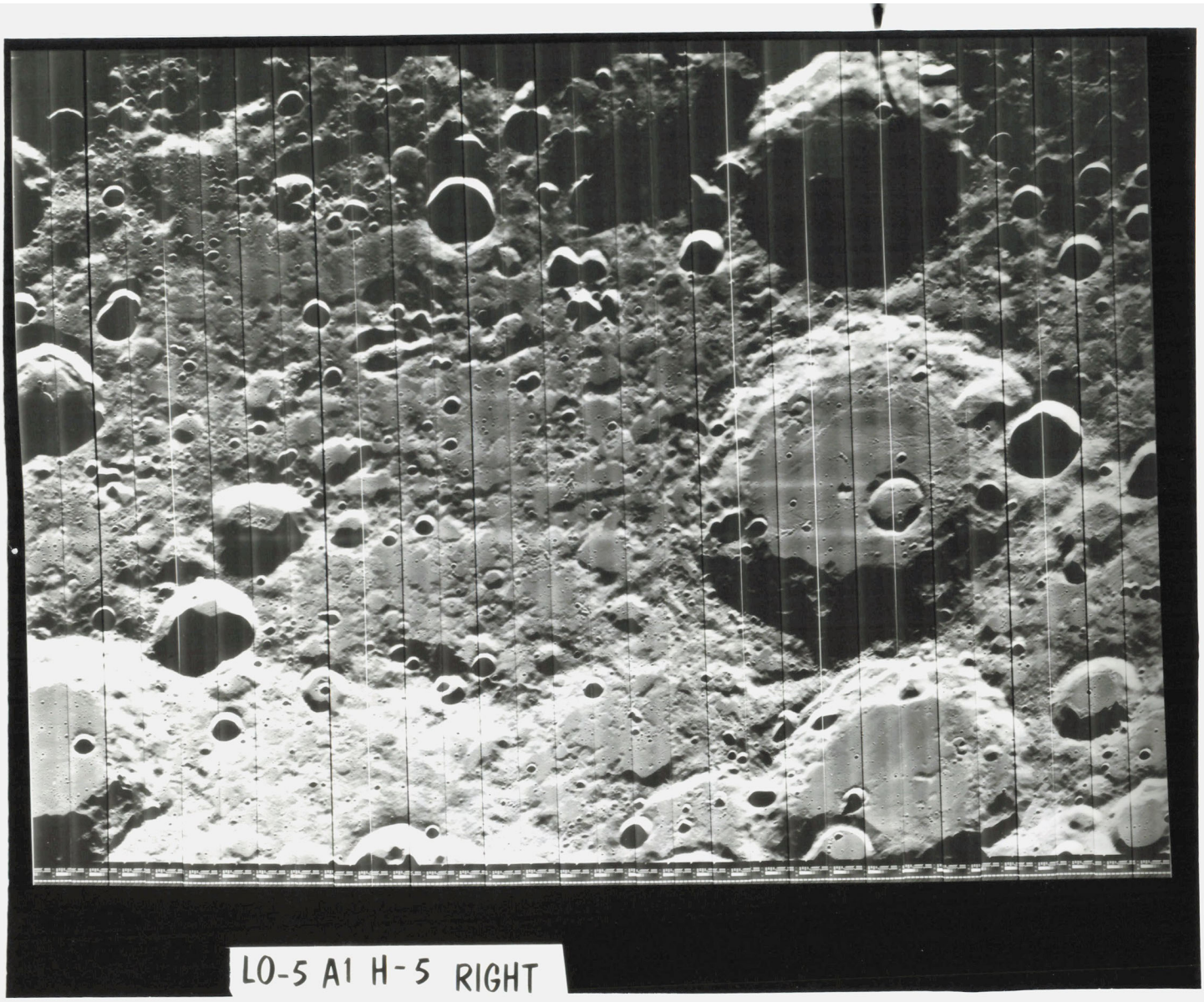
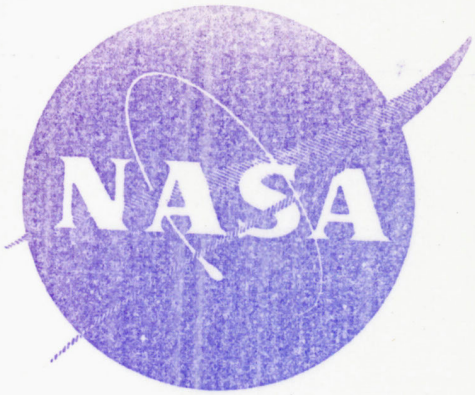

LO-5 A1 H-5 RIGHT



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LUNAR ORBITER V-4

PASADENA, Calif., -- This is one of three photographs which together make up a complete frame of Lunar Orbiter V telephoto photography of the Moon. The picture was taken Aug. 6 from an altitude of 1660 miles and the complete frame covers an area 180 by 590 miles. Viewed with the edge date at the left, North is at the top and the Sun is at the left. The area shown is on the side of the Moon always hidden from Earth behind the left edge. The center of the complete frame is at a longitude of 110° West and a latitude of 60° North. Lunar Orbiter is a program of the National Aeronautics and Space Administration and its Langley Research Center.

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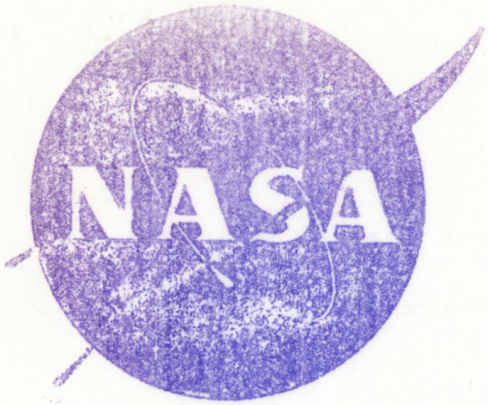

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FOR RELEASE: July 20, 1971 PM's

PHOTO NO. 71-H-1089
71-HC-879

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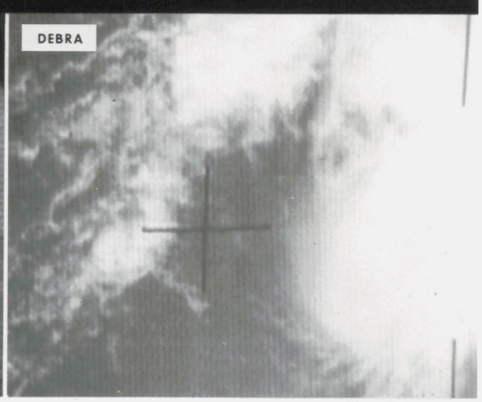
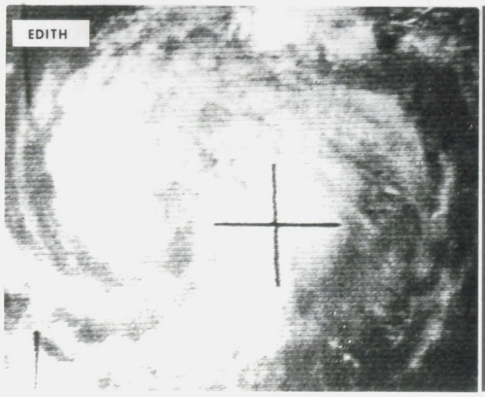
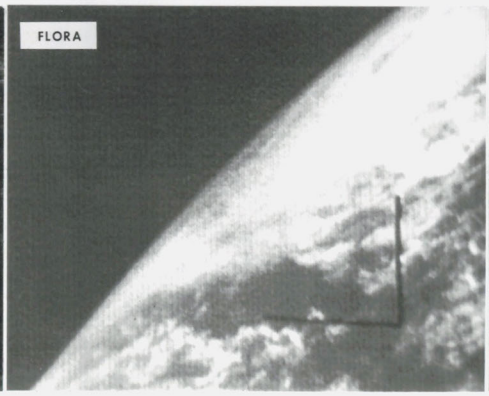
PURDUE UNIVERSITY, LAFAYETTE, IND. -- Mrs. Susan Schwingendorf, LARS Computer Analyst marking fields on a photo work copy to assist in locating data in the multispectral analysis. The computer listing indicates the crops which are grown in each field. Biweekly data from 10 corn fields checked by Extension Agents is also made available to her and the other data analysts. The Corn Blight Watch Experiment is being conducted by the U.S. Department of Agriculture, the National Aeronautics and Space Administration, and Agricultural Experiment Stations and Extension Services of the seven states, in cooperation with Purdue University's Laboratory for Applications of Remote Sensing (LARS), LaFayette, Ind., and the University of Michigan's Institute for Science and Technology (IST), Ann Arbor.

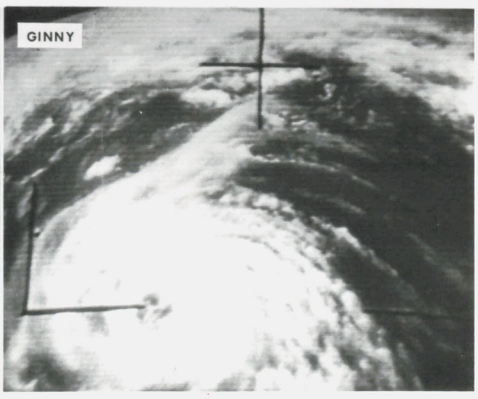
PHOTO CREDIT--NASA or National Aeronautics and Space Administration

TIROS ON PATROL
HURRICANE SEASON
1964









WEATHER (PX BY TIROS WEATHER SATELLITE)

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

FOR RELEASE: July 10, 1964
PHOTO NO.: 64-TIROS-2

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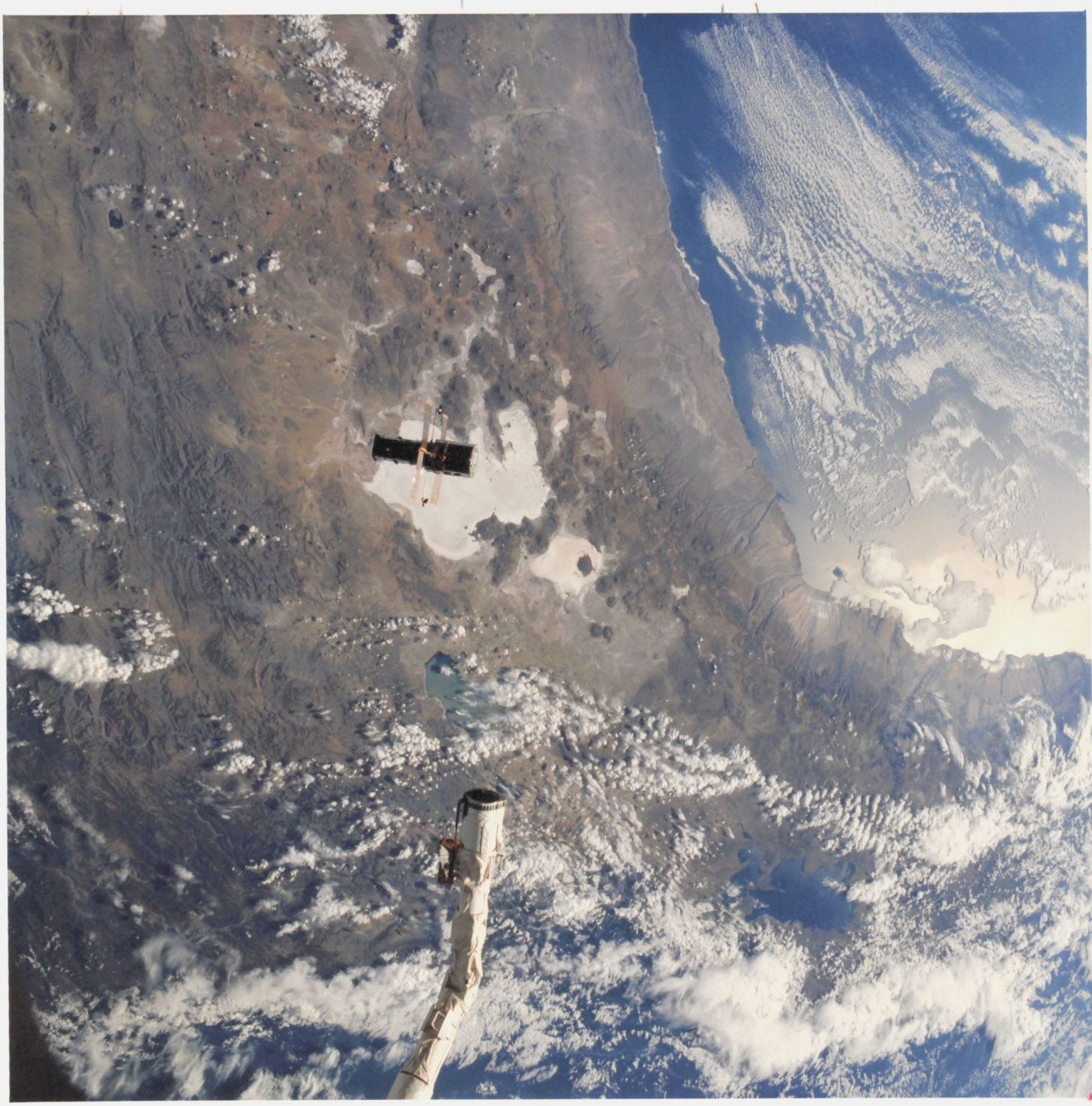
TIROS WEATHER SATELLITES flown by the National Aeronautics and Space Administration photographed these hurricanes from space in 1963, helping weather men alert areas in the storms' paths. TIROS remains in orbit, patrolling the globe as a storm sentinel for 1964.

SEP2 1964

NASA National Aeronautics and Space Administration

S31 76 040

Lyndon B. Johnson Space Center
Houston, Texas 77058



Space Telescope

THU MAY 10 1990

National Aeronautics and Space Administration

The Hubble Space Telescope and the space shuttle Discovery separate high above the Andes Mountains in South America on April 25.

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S08460974

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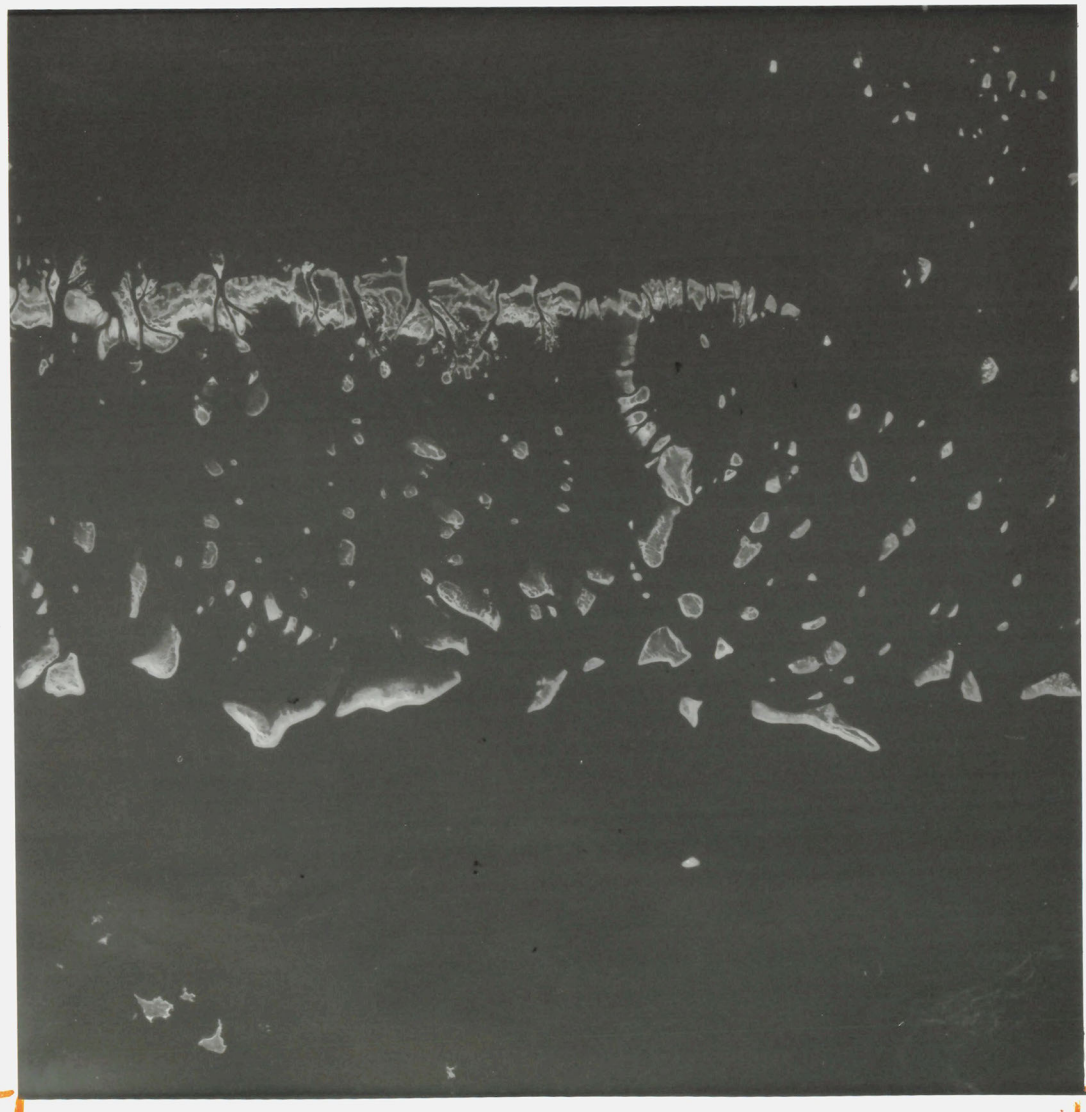

Space Shuttle

TOP ↑

(2)

CHRONICLE MAGAZINE
ISSUE 5-10-87
PAGE 4

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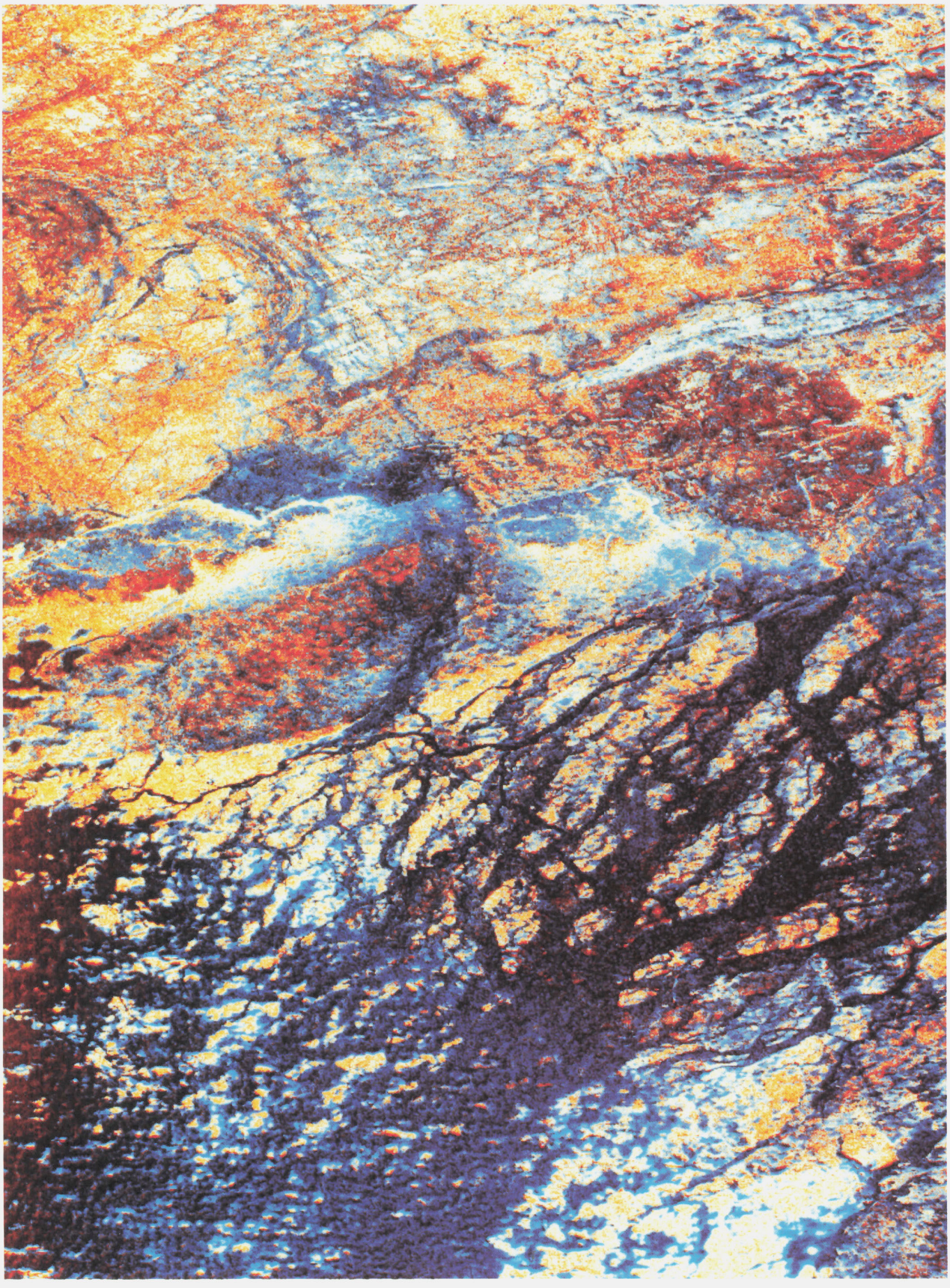
SUN MAY 10 1987

This is the center portion of the Great Barrier Reef off Queensland, Australia, photographed from the space shuttle Challenger. Most of the reef lies just below the water and has been the site of many shipwrecks.

SUN MAY 10 1987

File: Space Shuttle

SAFSAF OASIS, EGYPT



Safsaf Oasis, Egypt

(P-43920)

This false-color composite image of the uninhabited Safsaf Oasis near the Egypt–Sudan border was acquired by SIR-C/X-SAR on April 10, 1994, during the 12th orbit of the space shuttle Endeavour (STS-59). The image is centered at about 22 degrees north latitude and 29 degrees east longitude; north is at the lower right-hand corner.

SIR-C/X-SAR has revealed detailed bedrock structures in the oasis area. In this image, the dark blue sinuous lines represent braided channels that occupy part of an old, wide river valley — probably carved out by one of several ancient, westward-flowing rivers that crossed this part of Africa tens of millions of years before the Nile River existed. On the ground, and in optical photographs, this large valley and the channels in it are invisible — they are entirely covered by windblown sand. The Nile flows northward, about 300 kilometers (200 miles) to the east of the Safsaf area. The smaller channels in the image are younger and probably formed during the relatively wet climatic periods of the past few hundred thousand years.

The Safsaf channels occupy an area in which geologists and archeologists from the U.S. Geological Survey have discovered an unusual concentration of hand axes — stone tools — used by early humans (Homo erectus) hundreds of thousands of years ago. The image clearly shows that in wetter times the valley would have supported animals and vegetation.

In this image, C-band is red and L-band is green; the ratio of the two appears in blue. Areas that appear bright at both L- and C-bands are yellow. Virtually everything revealed in the image is invisible from the ground — and also does not appear in optical images obtained by satellites such as the U.S. Landsat or the French SPOT.

The SIR-C/X-SAR Mission

The Spaceborne Imaging Radar–C/X-band Synthetic Aperture Radar (SIR-C/X-SAR) mission is part of the National Aeronautics and Space Administration (NASA) Mission to Planet Earth, which began in 1991 to enhance our knowledge of the global environment. SIR-C/X-SAR data are improving our understanding of Earth's environment, including the global carbon cycle, the water cycle, climatic and geological processes, ocean circulation, and air–sea interactions. The multifrequency SIR-C/X-SAR data, complemented by information from aircraft and ground studies, will give scientists clearer insights into environmental changes — those caused by nature as well as those induced by human activity.

SIR-C/X-SAR's radar waves penetrate clouds, and, under certain conditions, can also penetrate vegetation, ice, and dry sand. Acquiring data at night as well as during the day, the system allows scientists to make detailed studies of Earth's surface on a global scale, including new measurements such as biomass (surface plant material) and soil moisture.

A precursor to free-flyer satellite missions planned for later in the decade, SIR-C/X-SAR is the first spaceborne radar to simultaneously acquire data at multiple wavelengths and polarizations. The system is an evolution in technology for large-scale radar observations that began with Seasat in 1978 and continued with SIR-A in 1981 and SIR-B in 1984.

SIR-C was developed by the Jet Propulsion Laboratory (JPL), which manages the SIR-C project for NASA. X-SAR was developed by the Dornier and Alenia Spazio companies for the German space agency, Deutsche Agentür für Raumfahrtangelegenheiten (DARA), and the Italian space agency, Agenzia Spaziale Italiana (ASI).

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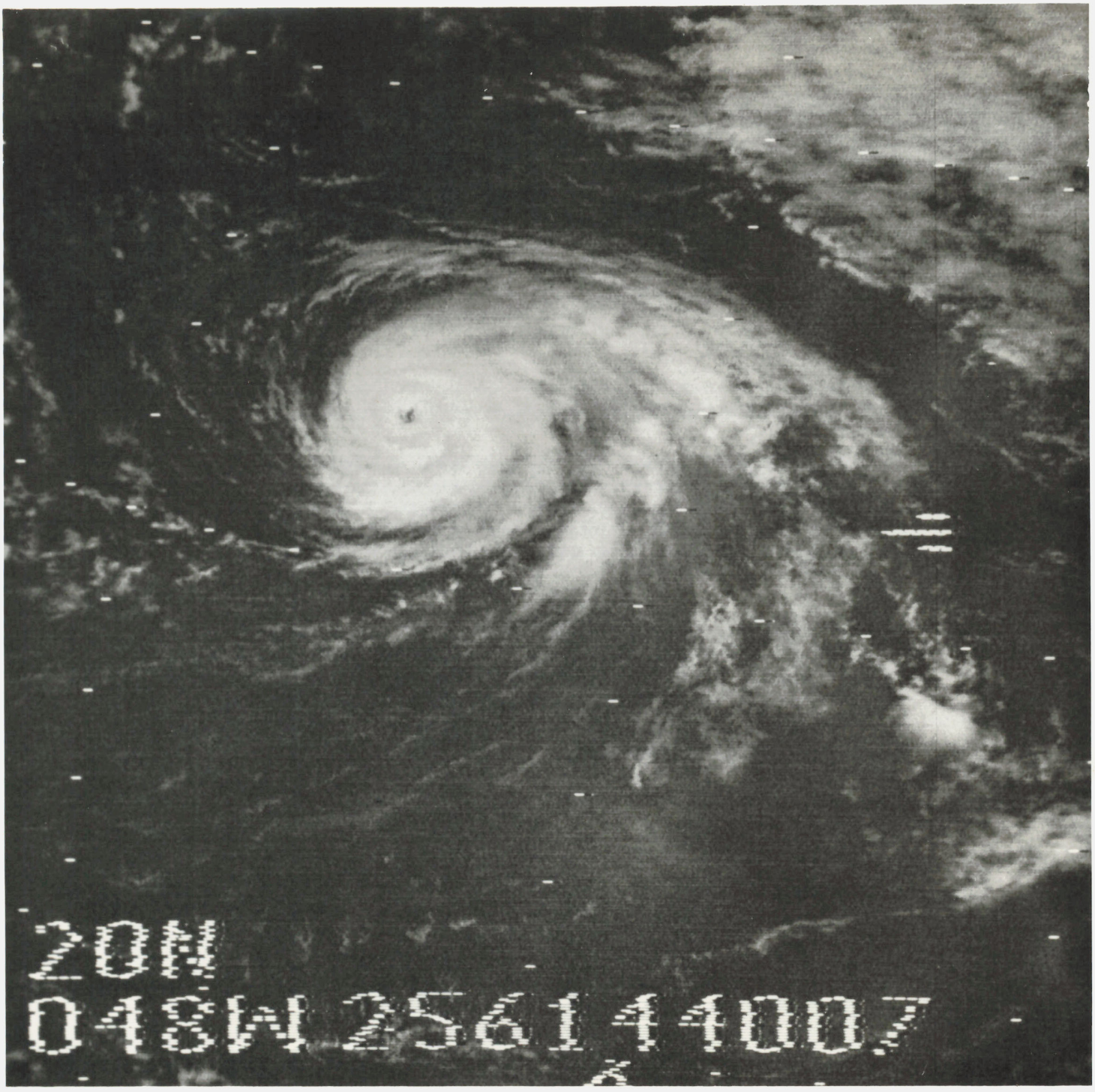
Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

JPL 400-528G 6/94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GINGER'S PORTRAIT---Wirling clouds of Hurricane Ginger were caught by a camera aboard a robot weather-man-in-space, the Nimbus-4 weather satellite, from an altitude of about 690 miles (statute). The eye, or center of the storm, is clearly visible. This picture, taken Monday (Sept. 13) when Ginger was some 600 miles east of Bermuda, was received at NASA's Goddard Space Flight Center, Greenbelt, Maryland.

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57

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NASA National Aeronautics and Space Administration

51-G-51-023

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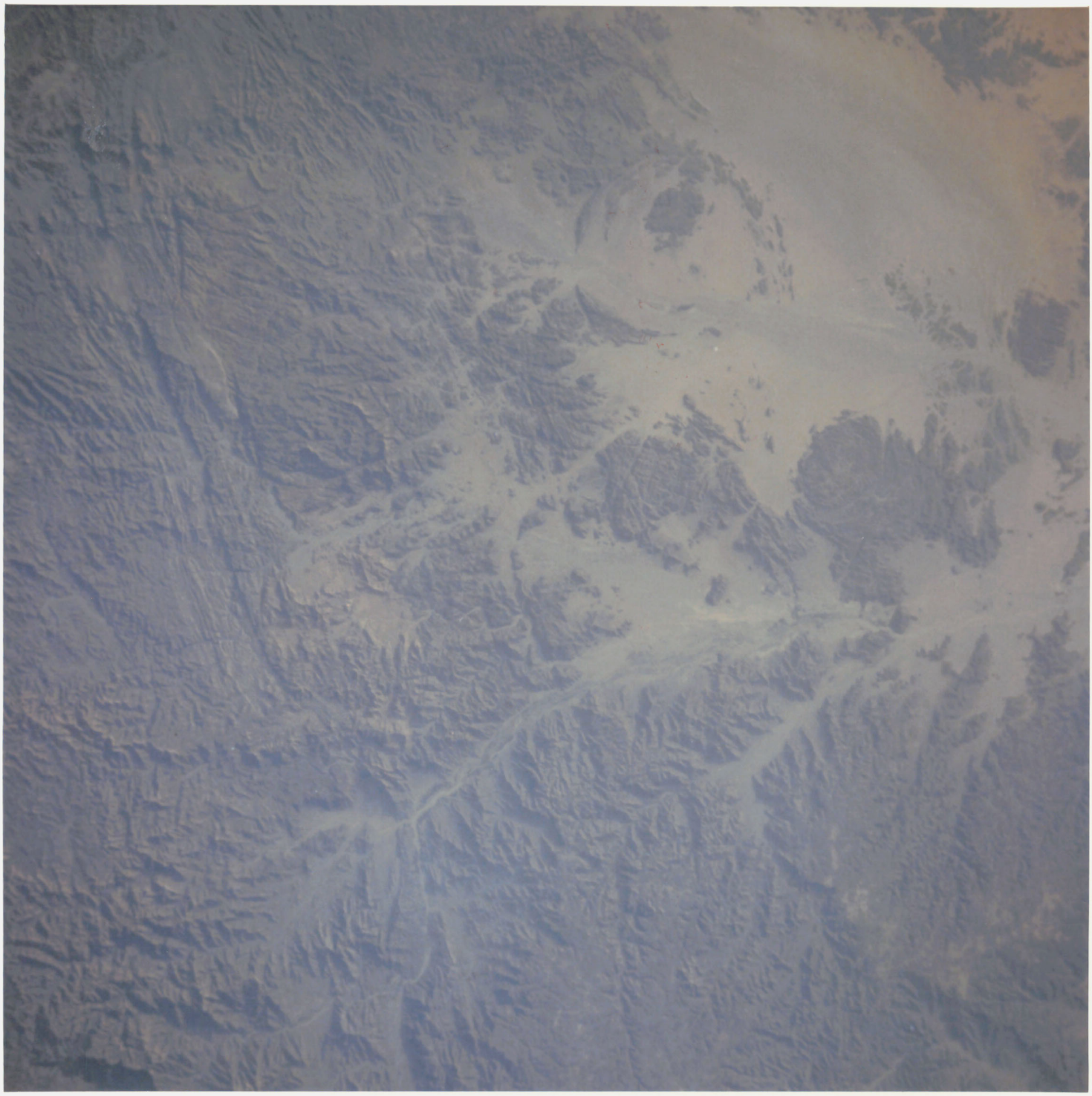
Houston, Texas 77058



Space Shuttle

XVIII

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Space shuttle XVIII

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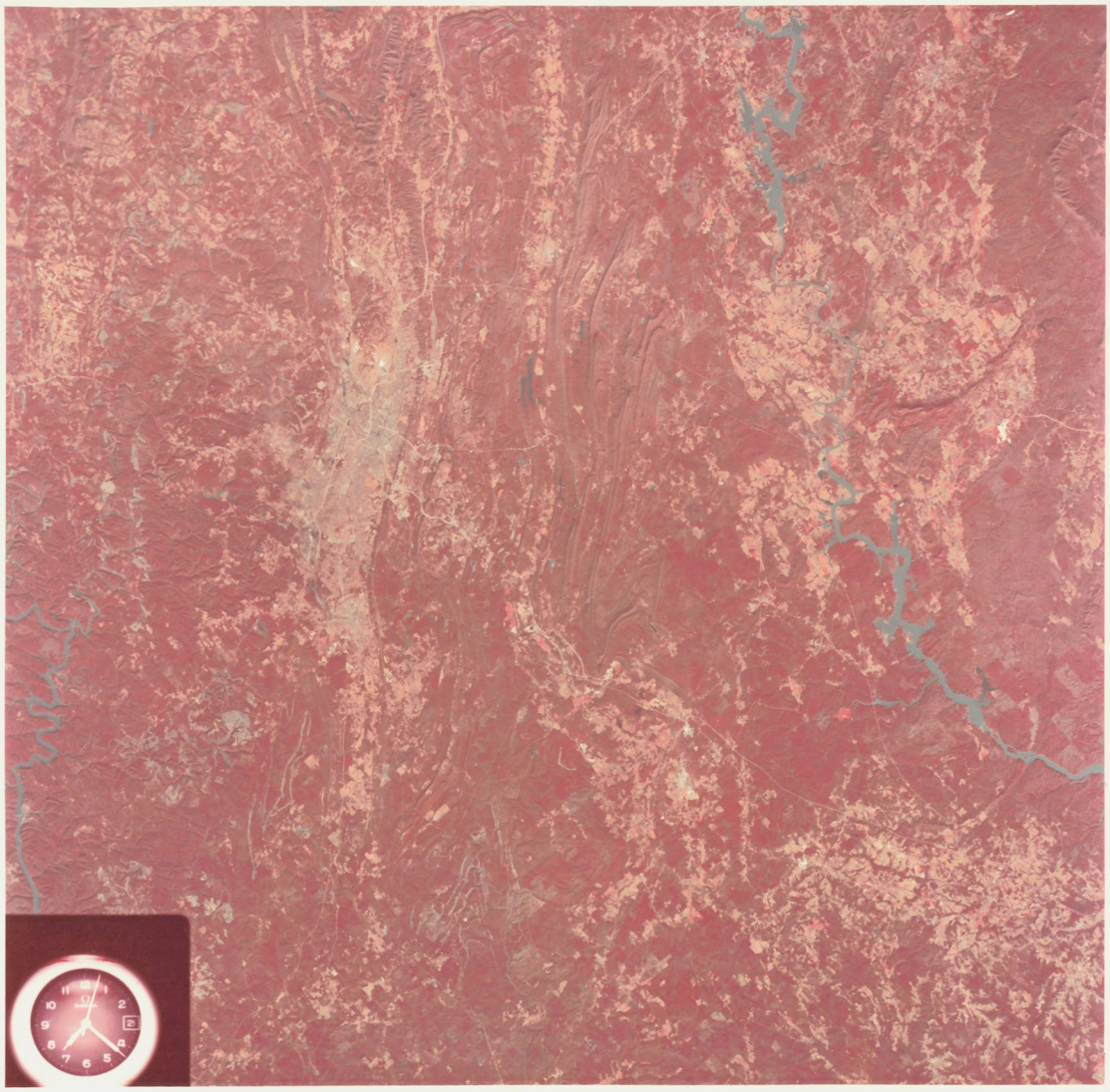
FRIDAY AUG 16 1985

51G-51-023 A 70mm frame captures unique volcanic intrusions in Saudi Arabia near the Yemen border. The area pictured is north and west of Nejran. The dry creek bed is the Habawnah. Photographed by Payload Specialist Sultan Salman Abdelazize, the area covers approximately 2,000 square miles.

NASA
SL4-93-153

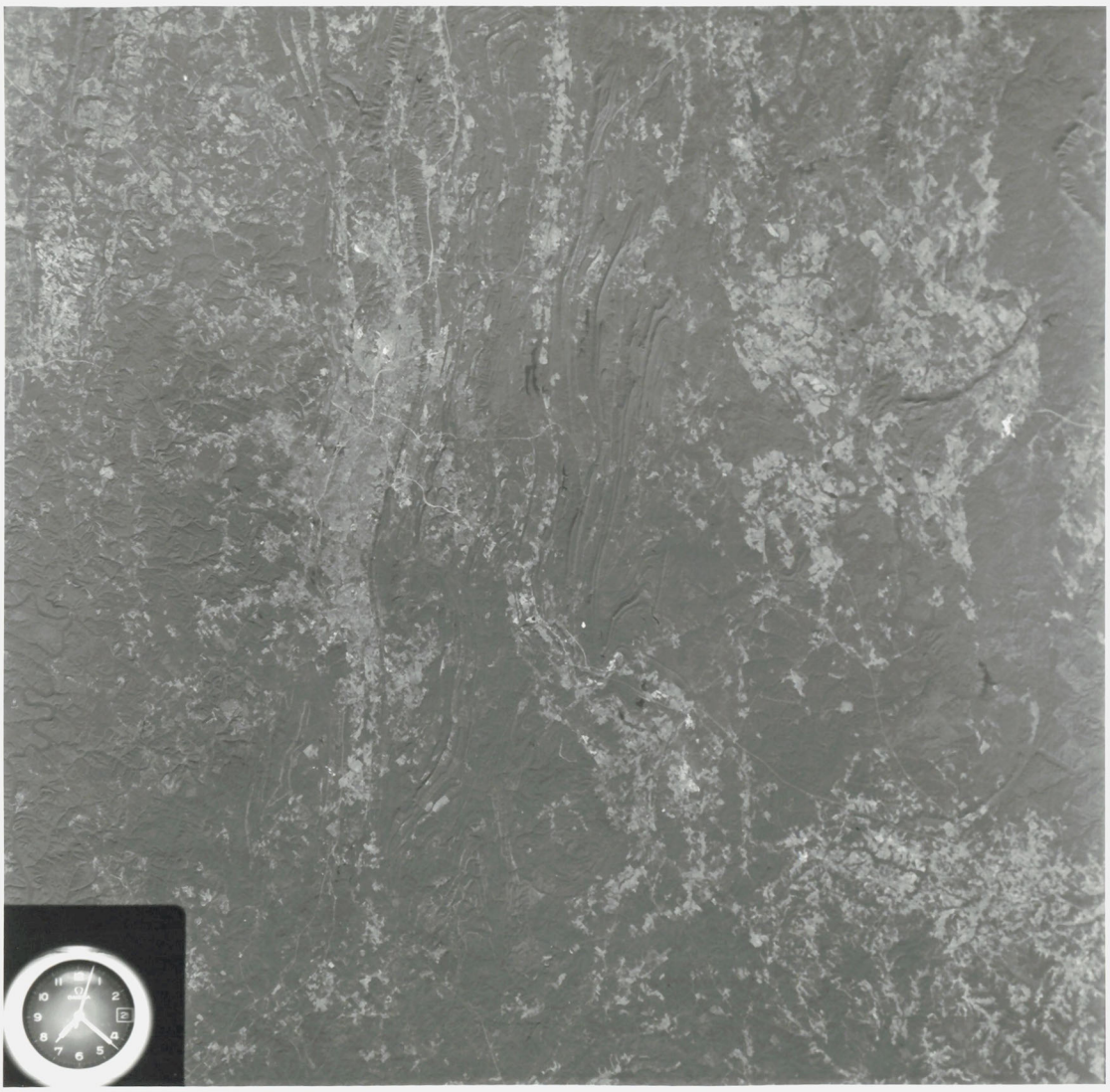


MAPS

B'HAM: (TAKEN FROM SKYLAB III)

FEB 28 1974

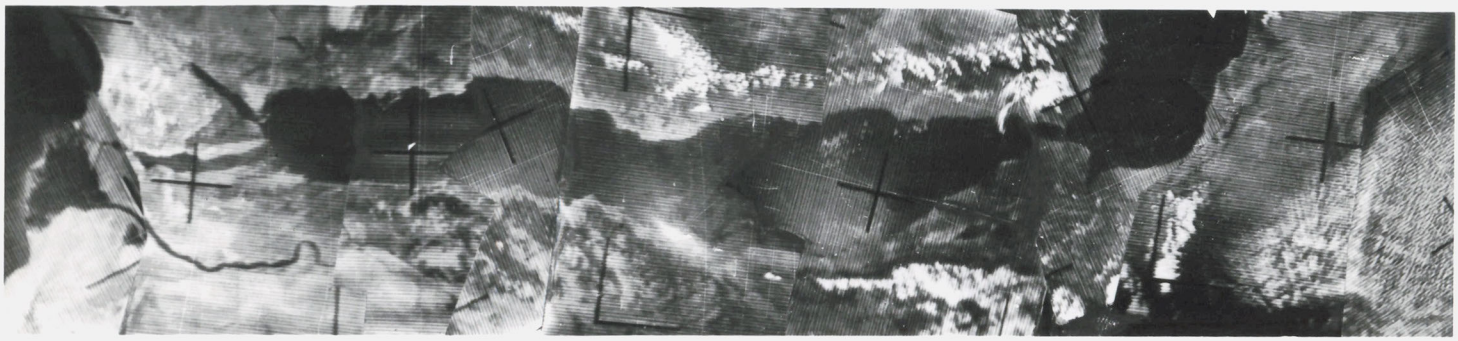
NASA
SL4-93-153



MAPS

B'HAM (TAKEN FROM SKYLAB III)

FEB 22 1974



Satellites - Tiros - Weather Photos

TIROS V Photo

STA-SAT 620727-5

This mosaic was made from a group of photographs taken by TIROS V the weather satellite on its 115th orbit, June 27, 1962.

The photographs show the Nile River, Red Sea, and the Gulf of Aden. Somalia on the east coast of Africa is at the bottom of the picture.

Cumulus clouds are present over the Asir mountains, western Saudia Arabia, and parts of Ethiopia. The bright spot off the coast of Ethiopia is sun glint not clouds. Thunderstorms appear to have been present over Yemen.

These TIROS pictures were received at the Pacific Missile Range readout station and assembled there by the U.S. Weather Bureau meteorological team.

TIROS V was launched June 19, 1962 by the National Aeronautics and Space Administration.

Please use credit line: TIROS V Photo.

Photo courtesy of the U.S. Department of Commerce Weather Bureau.

(Note to editors: Photo should be viewed as vertical.)

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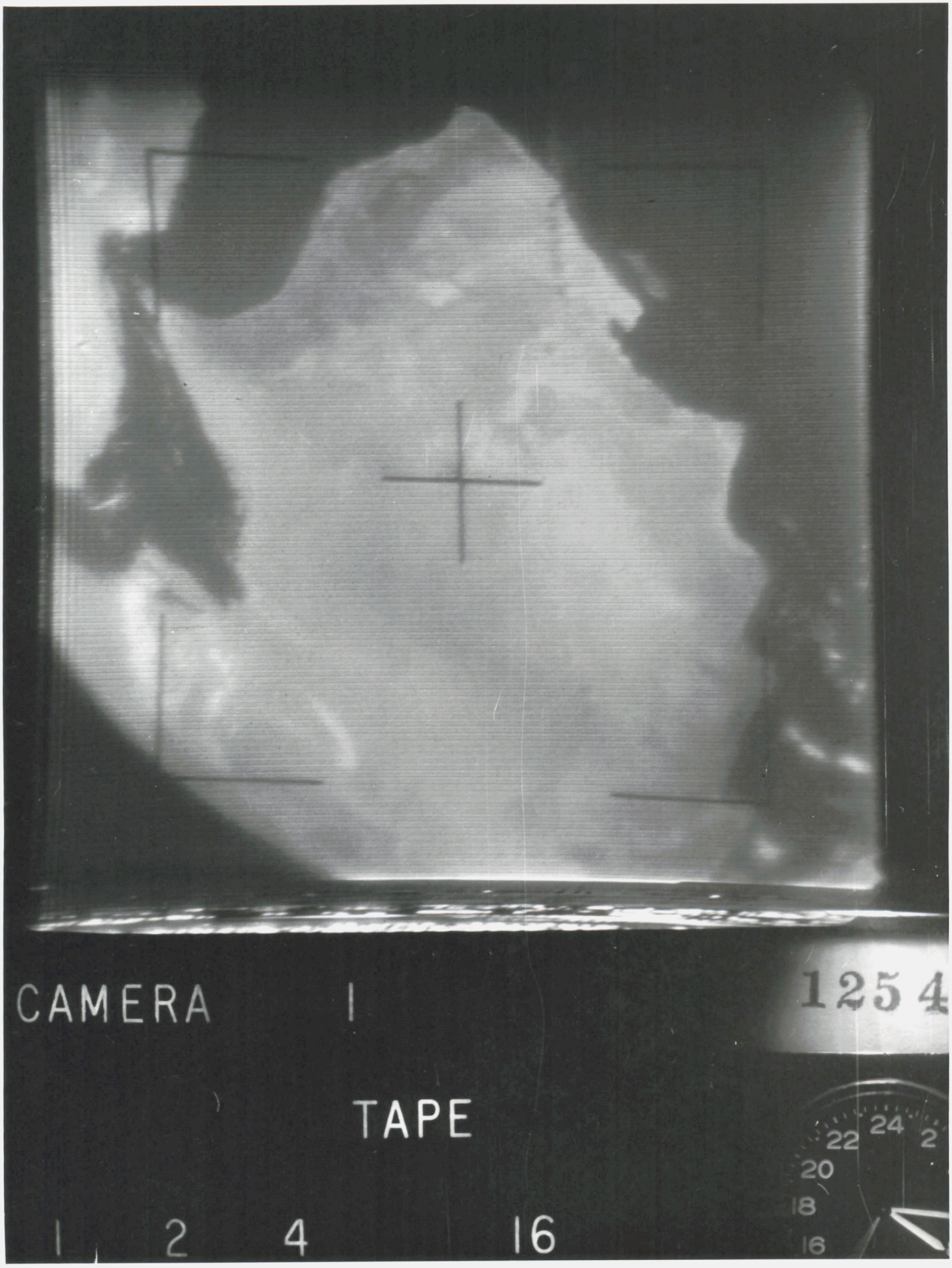
CAMERA 1
1254
TAPE
22
24
2
20
18
16
1 2 4 16

Satellites – Tiros – Weather – Photos

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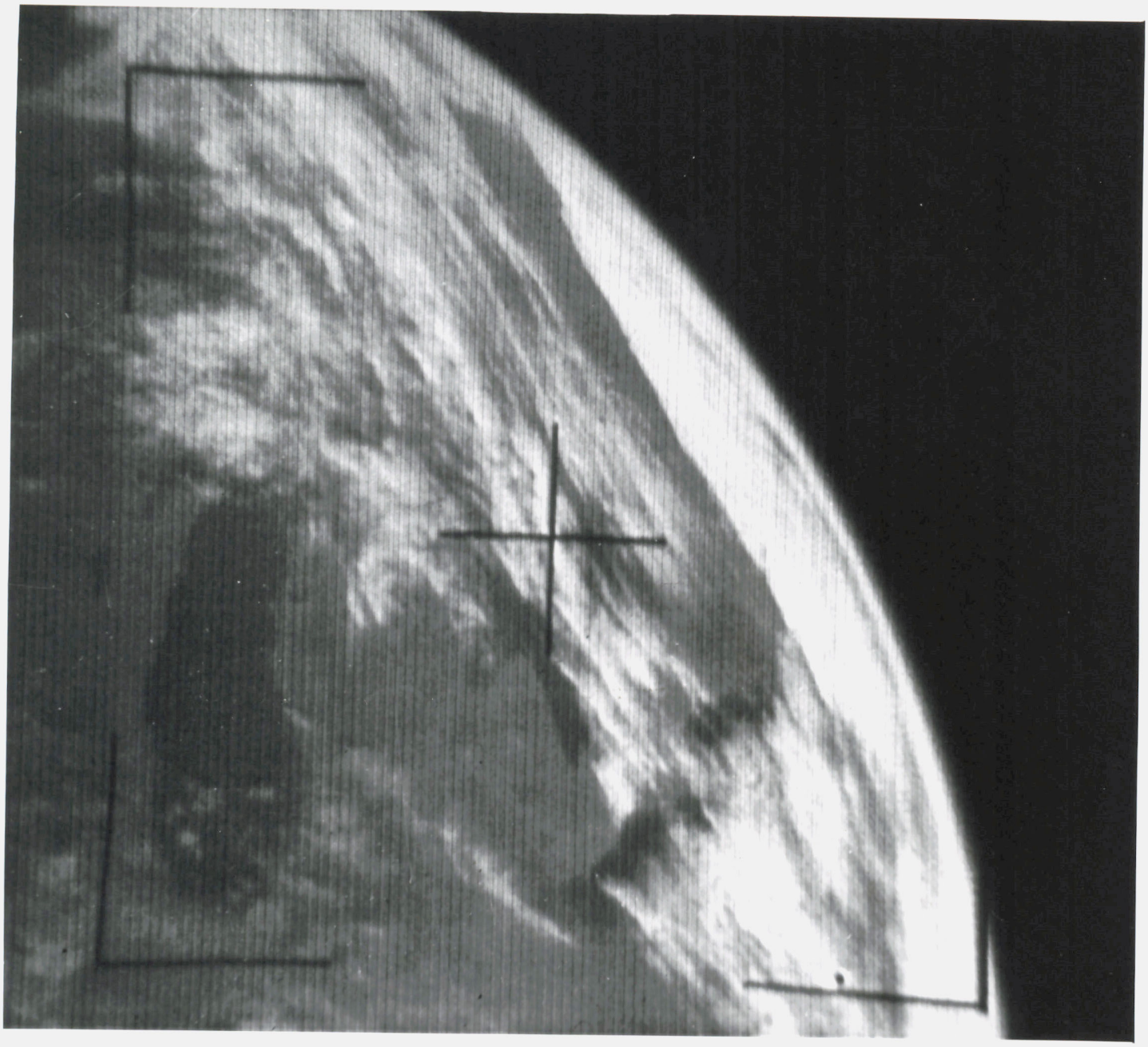
CHRONICLE FILES
1 – 1965

NASA-Goddard Space Flight Center
TIROS Photograph

Arabia, Persian Gulf, Gulf of Oman,
Arabian Sea, Gulf of Aden
TIROS VI, Orbit 1254 R/O 1253, 12/13/62
Camera 1, Tape, Frame 23 at 070300Z



GREAT LAKES
TIROS VII ORBIT 2029
DATE 11 - 3 - 63 CAMERA 2
MODE DIRECT FRAME 1 AT 1604 Z

TIROS PHOTOGRAPH

GODDARD SPACE FLIGHT CENTER
TIROS STATION, WALLOPS ISLAND, VIRGINIA

Satellites - Tiros - Weather Photos

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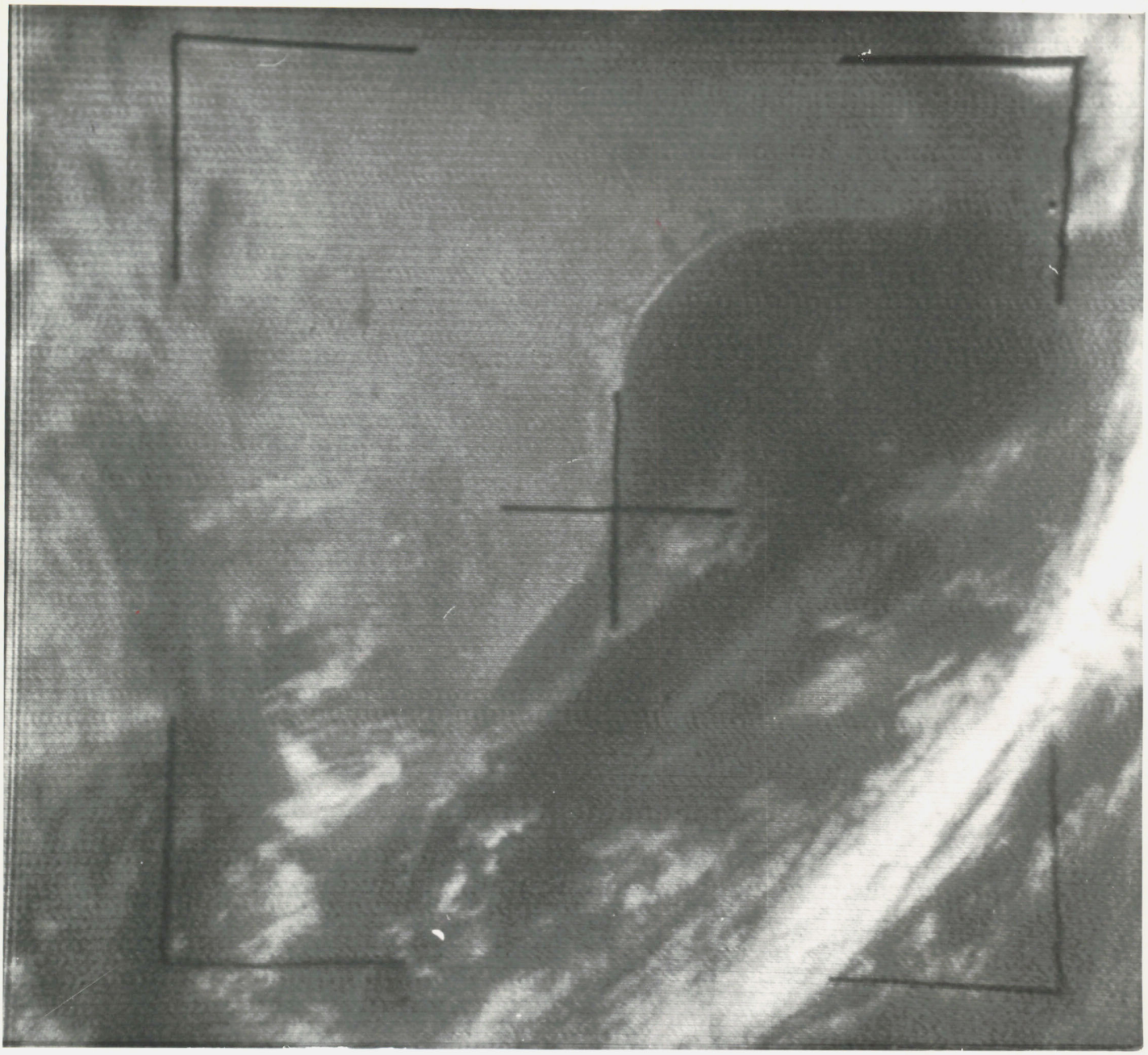

TEXAS GULF COAST
TIROS VII, ORBIT 4057
DATE 3-19-64, CAMERA 2
MODE TAPE, FRAME 3, AT 203730Z

TIROS PHOTOGRAPH

GODDARD SPACE FLIGHT CENTER
TIROS STATION, WALLOPS ISLAND, VIRGINIA

Satellites – Tiros – Weather Photos

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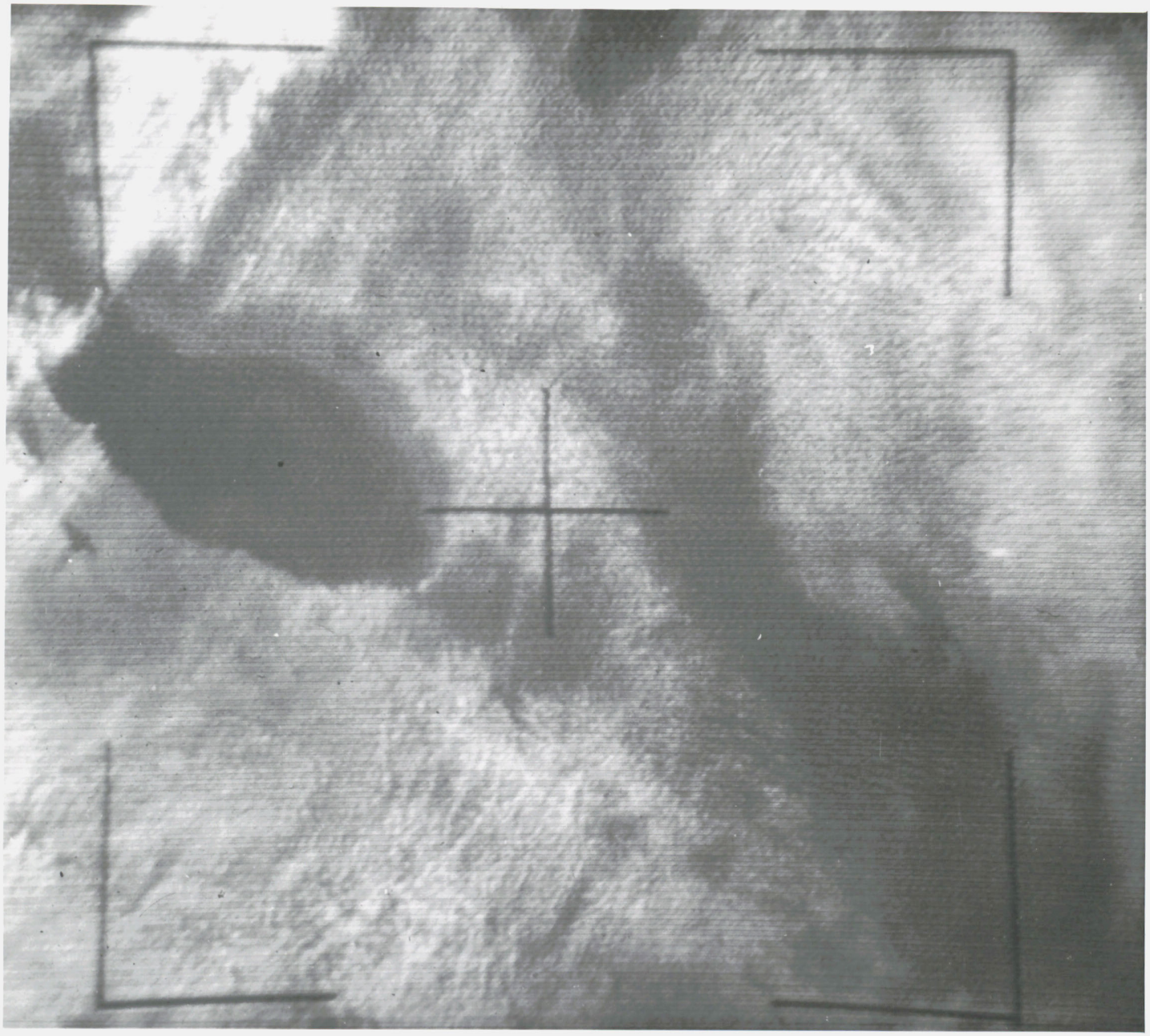

LAKE MICHIGAN
TIROS VII ORBIT 847
CAMERA 1 MODE DIRECT
FRAME 6 AT 170550 Z
DATE 8-15-63

TIROS PHOTOGRAPH

GODDARD SPACE FLIGHT CENTER
TIROS STATION, WALLOPS ISLAND, VIRGINIA

Satellites – Tiros – Weather Photos

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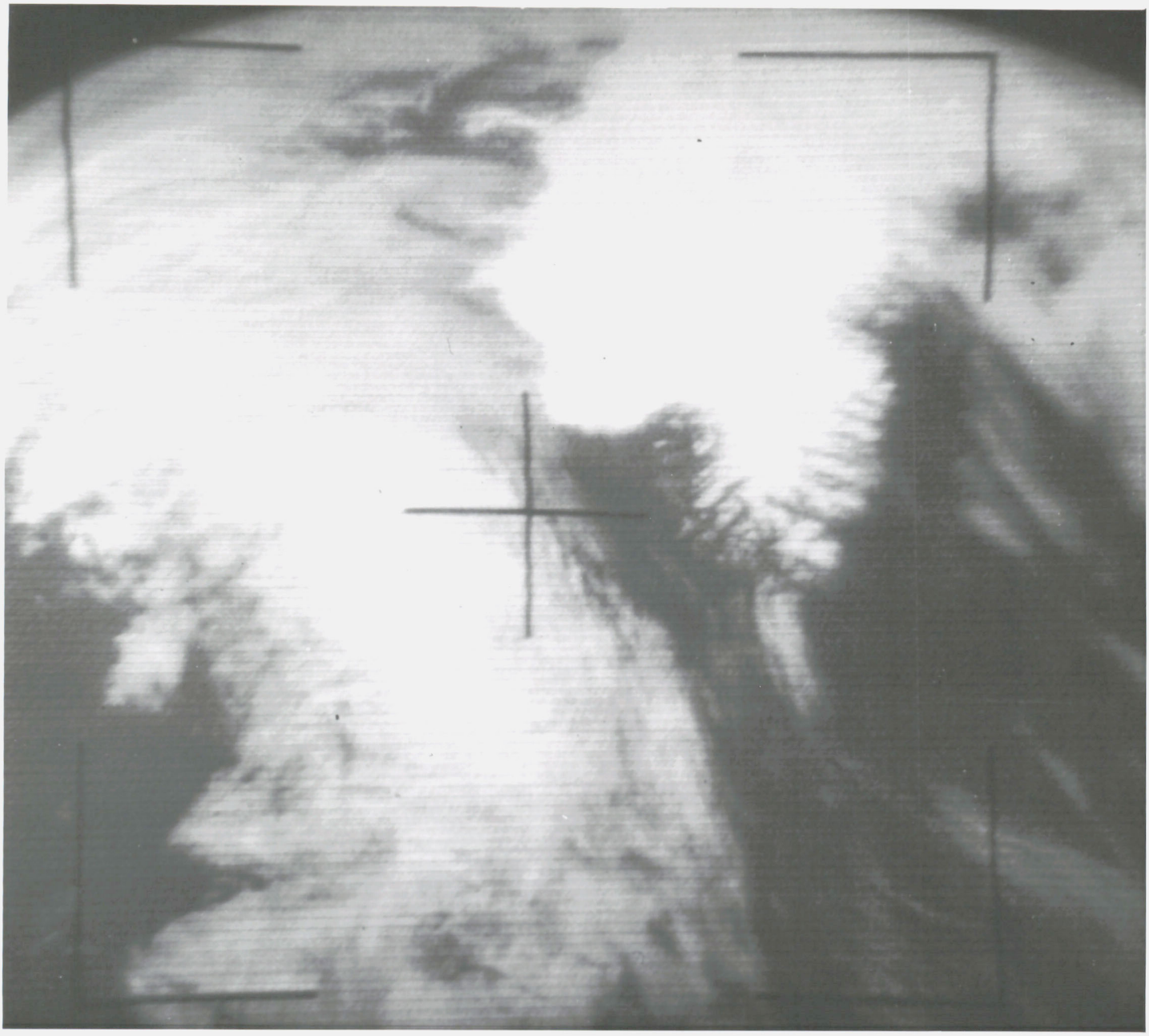

GREENLAND
TIROS VII ORBIT 1186 RO 1184
CAMERA 1 MODE TAPE
FRAME 27 AT 122700 Z
DATE 9-7-63

TIROS PHOTOGRAPH

GODDARD SPACE FLIGHT CENTER

TIROS STATION, WALLOPS ISLAND, VIRGINIA

Satellites – Tiros – Weather Photos

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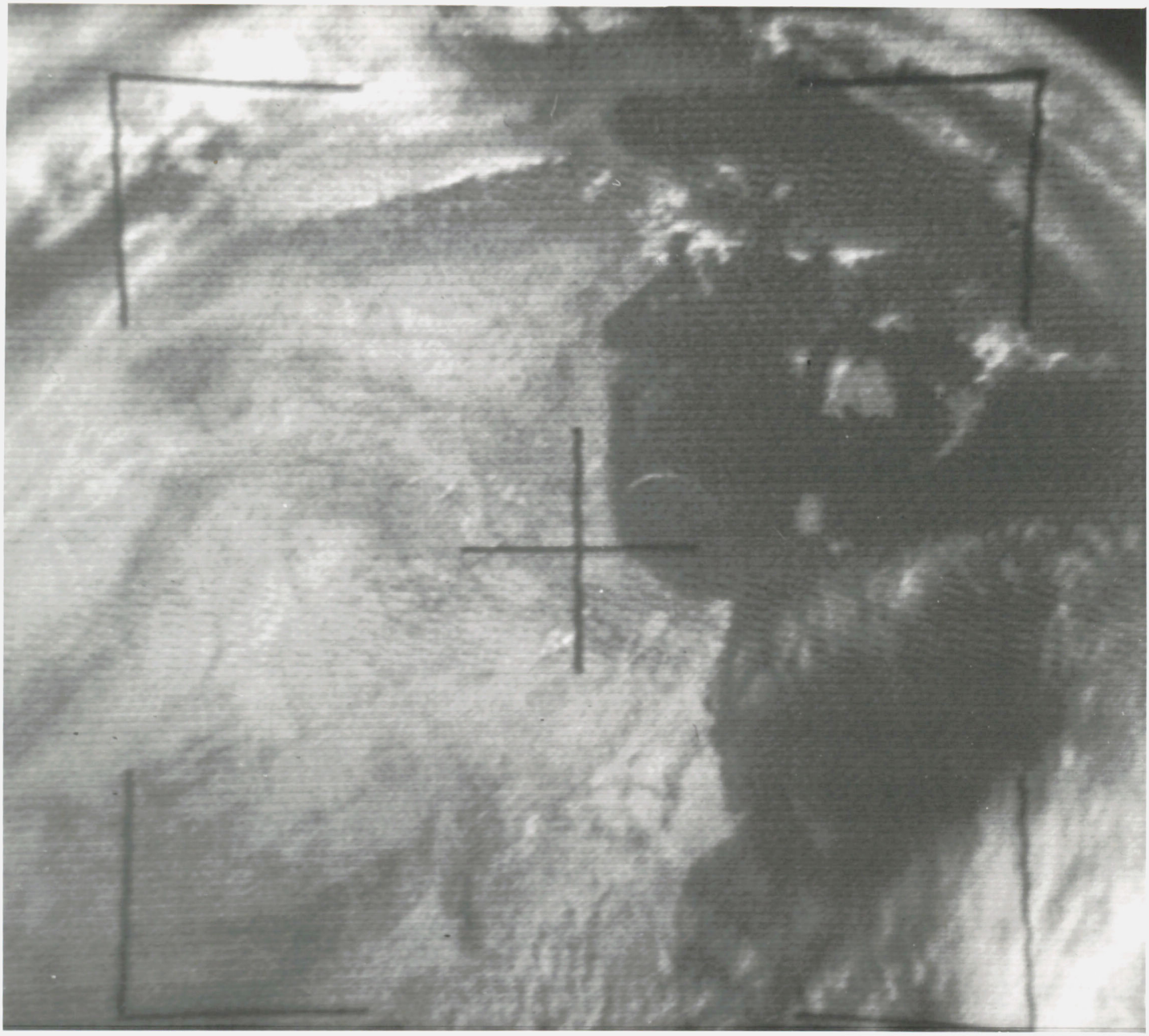
1-1965



EASTERN COAST LINE OF SPAIN
AND BALEARIC ISLANDS
TIROS VII ORBIT 1215 RO 1213
CAMERA 2 MODE TAPE
FRAME 24 AT 114030 Z
DATE 9-9-63

TIROS PHOTOGRAPH

GODDARD SPACE FLIGHT CENTER
TIROS STATION, WALLOPS ISLAND, VIRGINIA

Satellites – Tiros – Weather Photos

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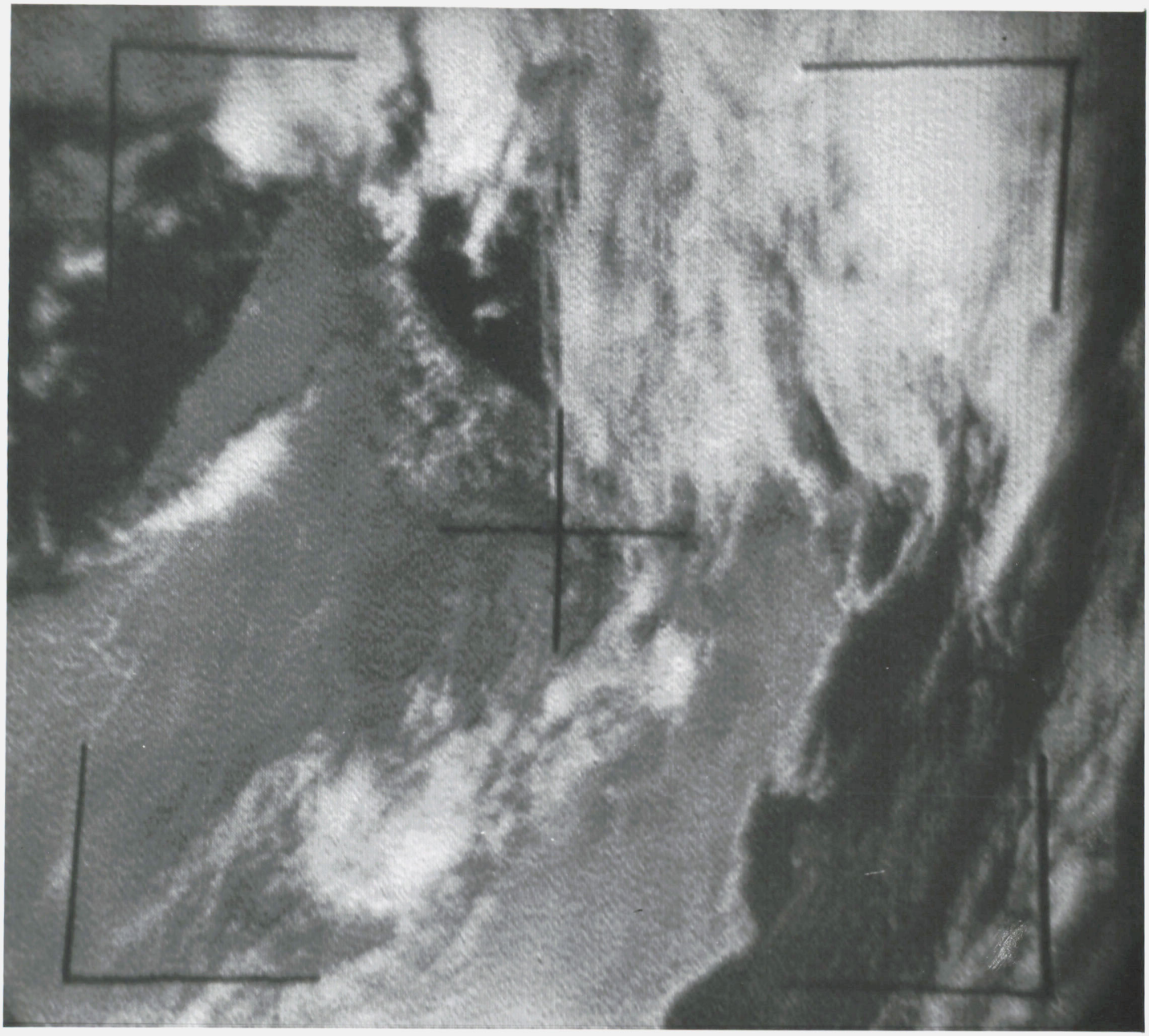
1-1965



EASTERN SAUDI ARABIA
TIROS VII ORBIT 2321 RO 2320
DATE 11-23-63 CAMERA 1
MODE TAPE FRAME 19 AT 085600 Z

TIROS PHOTOGRAPH

GODDARD SPACE FLIGHT CENTER
TIROS STATION, WALLOPS ISLAND, VIRGINIA

Satellites – Tiros – Weather – Photo

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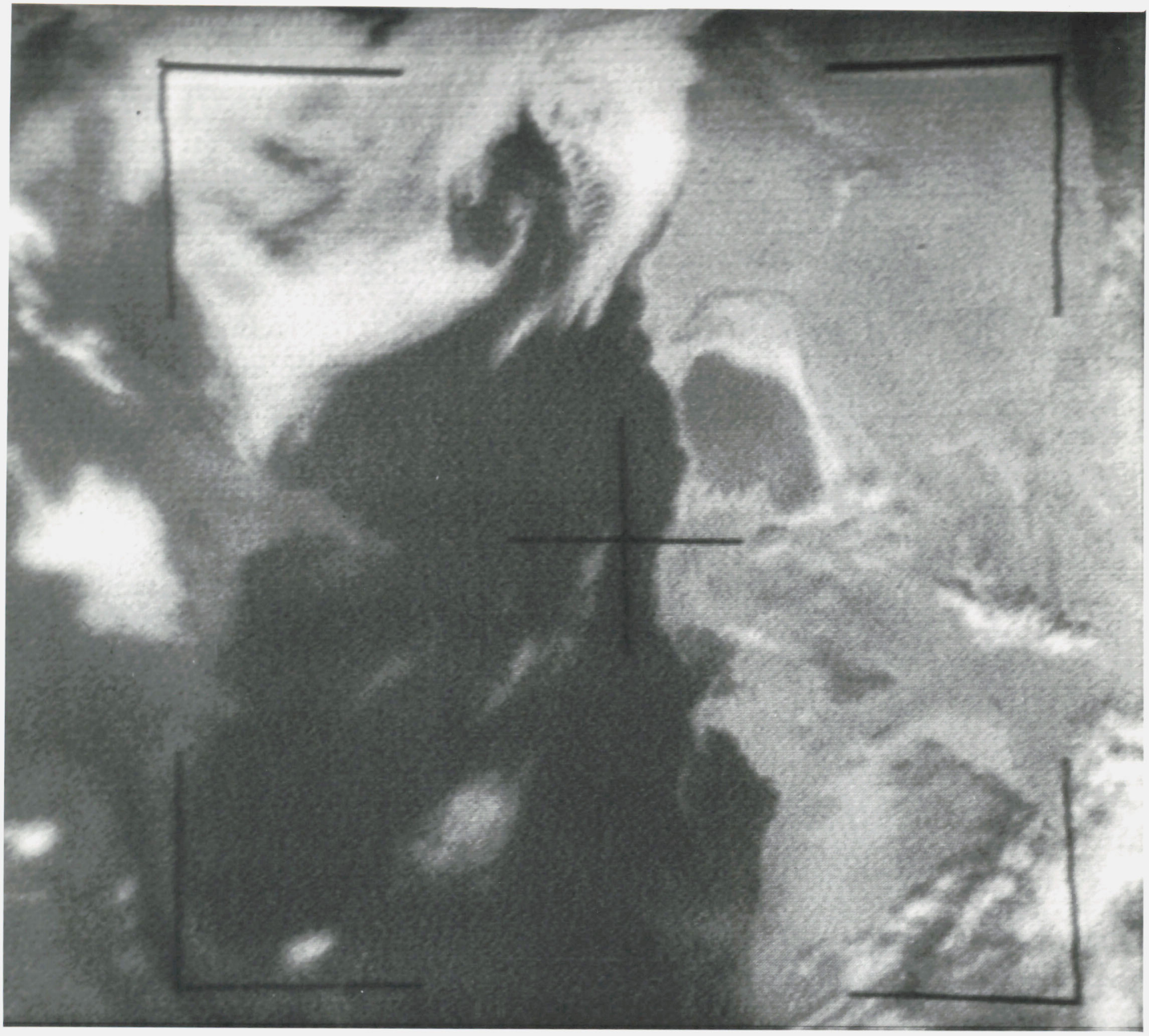

CASPIAN SEA
TIROS VII ORBIT 2306 RO 2305
DATE 11-22-63 CAMERA 1
MODE TAPE FRAME 23 AT 082930 Z

TIROS PHOTOGRAPH

GODDARD SPACE FLIGHT CENTER
TIROS STATION, WALLOPS ISLAND, VIRGINIA

Satellites – Tiros – Weather Photos

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Cape Kennedy, Fla – Photos – 1963

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Merritt Island
Cape Kennedy

NASA - USAF PHOTO

KSC 64C-49 ~~5413~~ 12-26-63

CKMTA, NASA
AERIAL OF INDIAN RIVER/ ORSINO
CAUSEWAY BASCULE BRIDGE,
MILA. CONTRACT ENG (NASA)-26.

UNCLASSIFIED (83)

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S26-(S)-099

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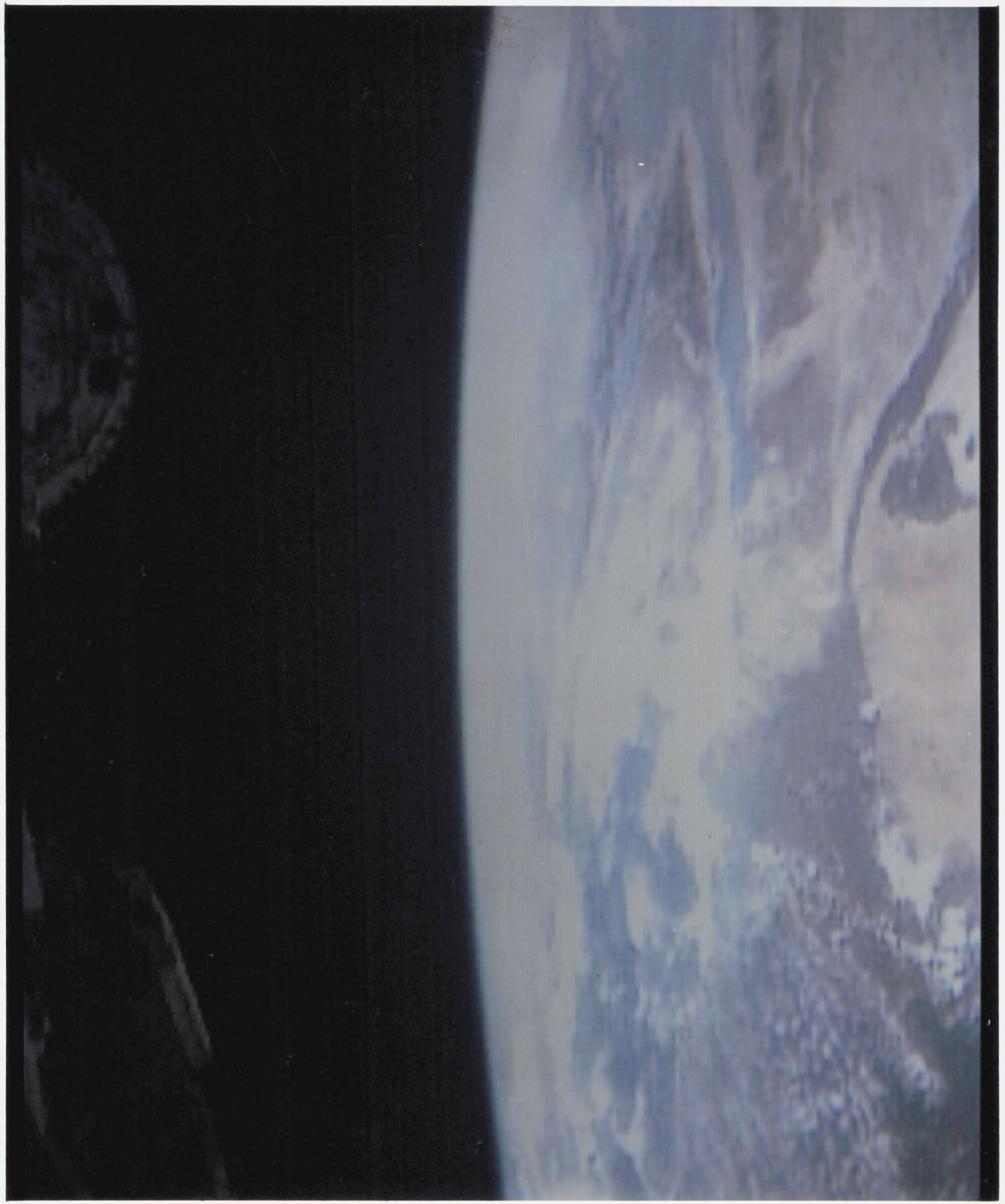
Houston, Texas 77058



Space Shuttle XXVI
1988

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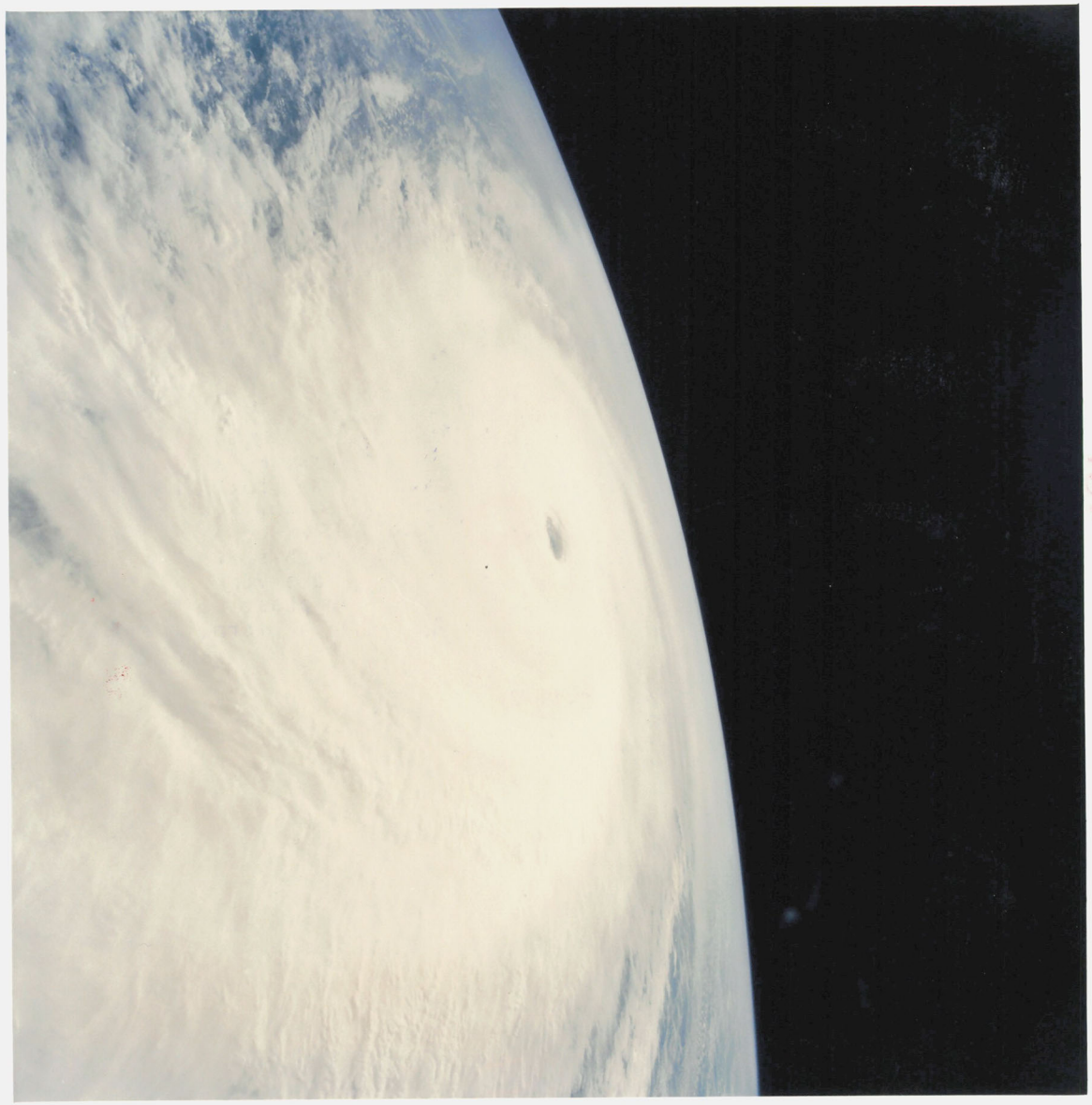

Space Shuttle 47

National Aeronautics and Space Administration

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COLOR

24 NOV. -1 DEC. 1991 S44-94-051

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-44 VIEW OF EARTH --- This is one of three views of Typhoon Yuri which were displayed by the STS-44 crewmembers at their Dec. 13 post-flight press conference. The typhoon began development approximately 1,000 miles east of the Philippine Islands. The limb of Earth is in the background. At the time of this photo, Yuri was some 1,000 nautical miles in diameter, and it had estimated maximum sustained wind speeds of 145 mph, gusting to 170 mph. The south-southwest view was captured on film with a 50mm lens and a 70mm handheld camera. S44-93-080 shows an earlier phase of the typhoon and S44-77-077 depicts it in dissipating form, with the eye wall having been collapsed.

pg.11-2

SAT DEC 14 1991 National Aeronautics and Space Administration
The Atlantis astronauts captured this panoramic view of the gargantuan Typhoon Yuri, more than 1,000 nautical miles in diameter.

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NASA National Aeronautics and Space Administration

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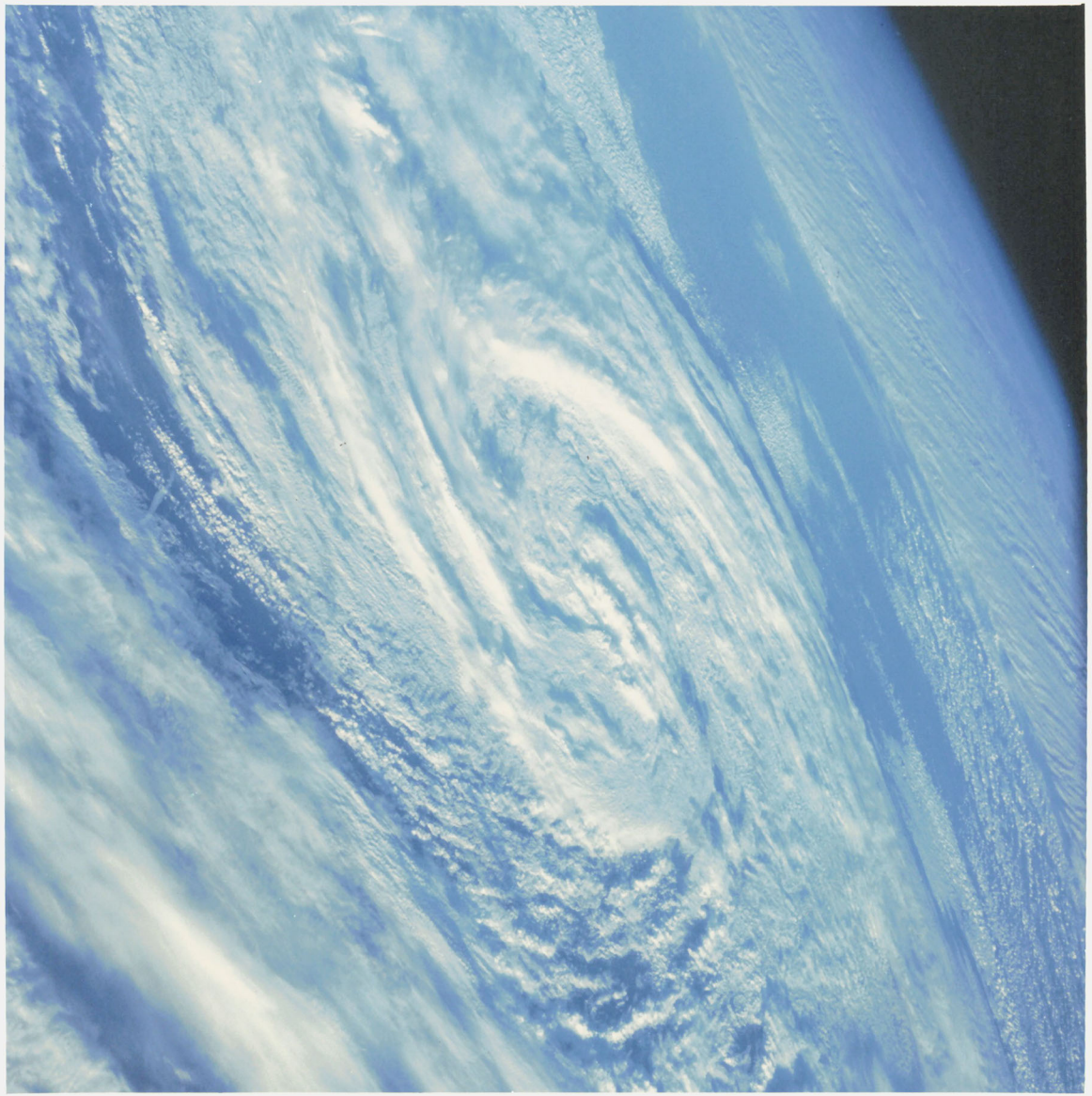

Space Shuttle XXII

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Lyndon B. Johnson Space Center

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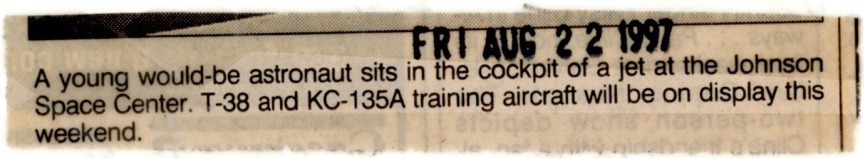

A young would-be astronaut sits in the cockpit of a jet at the Johnson Space Center. T-38 and KC-135A training aircraft will be on display this weekend.

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FRI SEP 2 2 1997

MANNED SPACECRAFT CENTER

OFFICIAL PHOTOGRAPH

C

25 June 64

S-64-23237

PANAMA CANAL ZONE

JUNGLE SURVIVAL TRAINING--Astronaut Russ Schweickart takes a bite of roasted boa constructor during jungle survival training.

The National Aeronautics and Space Administration has no objection to the publication of this photograph.

Its use in commercial advertising must be approved, along with copy and layout, by the Public Affairs Officer, National Aeronautics and Space Administration, Manned Spacecraft Center, Houston 1, Texas.

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Houston, Texas 77058

JARVIS

P. 18

2 col. x 6 1/2

Astronaut

Gregg Jarvis

for 3/22/85 flight

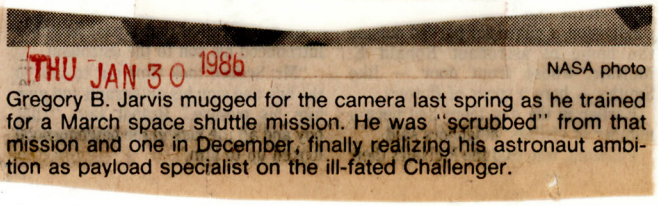
Houston Chronicle Library

MON MAR 4 1985

1-32

Gregg Jarvis -astronaut-

THURSDAY JAN 30 1986



THU JAN 30 1986

NASA photo

Gregory B. Jarvis mugged for the camera last spring as he trained for a March space shuttle mission. He was "scrubbed" from that mission and one in December, finally realizing his astronaut ambition as payload specialist on the ill-fated Challenger.

NASA
S-67-41513

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John S. Bull

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HOUSTON, TEXAS 77058

FOR RELEASE:

PHOTO NO. S-67-41513

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7-11 AUG 1967 S-67-41513

PASCO, WASHINGTON

DESERT SURVIVAL TRAINING--Astronauts Fred W. Haise Jr. (left) and John S. Bull braid strips of parachute material which was used in making their desert garb during desert survival training.

(Astronaut Fred W. Haise Jr. has been named prime crew lunar module pilot for the Apollo 13 lunar landing mission, scheduled for an April 11, 1970, launch date).

NASA
S-68-16084

Dr. Brian T. O'Leary

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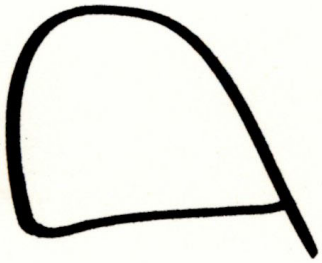

NASA
S-68-16088

Brian O'Leary

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5-13-70
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2est
2nd

O'Leary leaves

SUN MAY 10 1970

O'Leary leaves the centrifuge during his astronaut training period at Houston's Manned Spacecraft Center.

SAFETY OF FLIGHT

Carpenter, Scott M.

JUL 1 1964

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MANNED SPACECRAFT CENTER
OFFICIAL PHOTOGRAPH

June 26, 1964

OFF TO A NAVY TOUR---Astronaut M. Scott Carpenter gets his desk shipshape before he leaves his office at the Manned Spacecraft Center for a tour of duty with the U. S. Navy on Project Sea Lab 1, off the island of Bermuda.

The National Aeronautics and Space Administration has no objection to the publication of this photograph.

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NASA

S-62-6838

Thomas P. Stafford

astronaut

Stafford

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National Aeronautics and
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S98-09501

Lyndon B. Johnson Space Center
Houston, Texas 77058

National Aeronautics and Space Administration

Houston, Texas 77058

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COLOR

14 JUNE 1998 S98-09501

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-93 TRAINING VIEW --- Astronaut Eileen M. Collins, commander, participates in a simulation of an emergency egress from a Space Shuttle during preparations for her role as mission commander for next year's flight. Collins was joined by four other crew members for the training session, held in and around the deep Neutral Buoyancy Laboratory (NBL) pool at the Johnson Space Center's (JSC) Sonny Carter Training Facility (SCTF).

July 1999
File: Columbia/
Eileen Collins
- commander
also
USAF Colonel

PHOTO CREDIT: NASA or National Aeronautics and Space Administration.

THU AUG 12 1999
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astronaut

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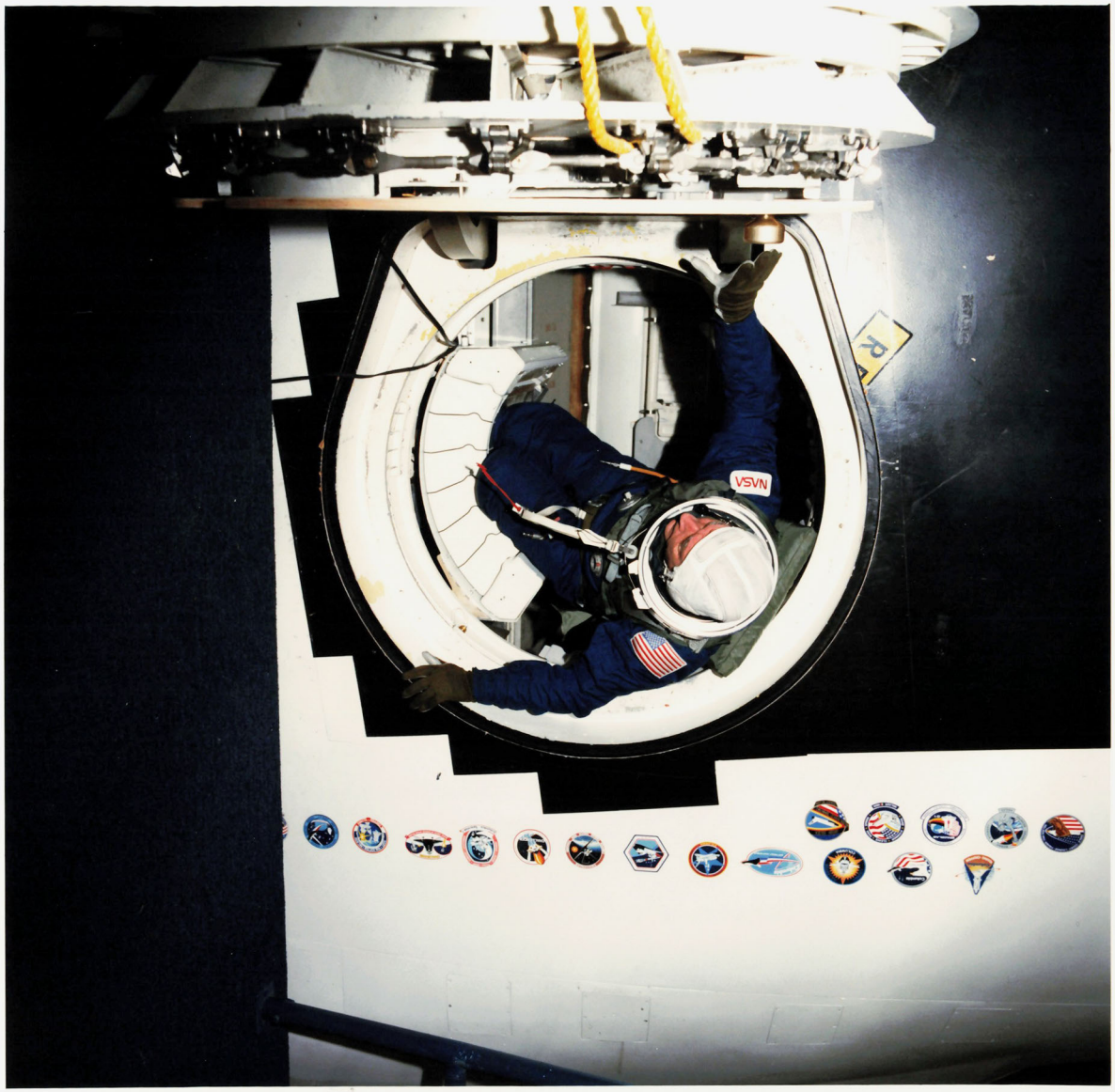

John Young

astronaut

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Eileen Collins

-astronaut-

STS-46, 1992

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S90 48862

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Eileen Collins

- astronaut -

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survival training
near Spokane Wash

candidate

NASA
National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, Texas 77058
S90 45882

10 D Tunnag 6/12 1259

Eileen Collins
-astronaut-

NASA
National Aeronautics and
Space Administration

Houston, Texas 77058

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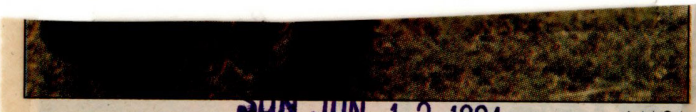
Editor

29-31 JULY 1990

VANCE AIR FORCE BASE, OKLAHOMA

ASTRONAUT CANDIDATE SURVIVAL TRAINING - Major [illegible] Collins (foreground) is dragged by some of the 29 fellow astronaut candidates who began a year's training and evaluation in July. The parachute drag training is part of survival training course at Vance Air Force Base. The overland course is designed to familiarize the trainees with procedures to follow in the event of an emergency ejection from a jet.

PR-27



SUN JUN 12 1994

NASA

Ouch! In 1990, Collins was dragged by fellow astronaut candidates as part of a survival training course.

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Eileen Collins
-astronaut-

SOS distress
red flare
wilderness survival w Spokane

NASA National Aeronautics and Space Administration

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Eileen Collins
-astronaut-

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Leroy. Chiao
another astronaut candidate

flown attract help.

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National Aeronautics and
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Houston, Texas 77058

S90-45808

Eileen Collins
-astronaut-

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NASA
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Eileen Collins
- astronaut -

using a mirror to start fire

Spokane
Fairchild AF Base

NASA National Aeronautics and Space Administration

S90 45847

Lyndon B. Johnson Space Center
Houston, Texas 77058

Eileen Collins
-astronaut-

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29 - 31 JULY 1990 S90-45847

VANCE AIR FORCE BASE, OKLAHOMA

1990 ASTRONAUT CANDIDATE SURVIVAL TRAINING --- USAF Major Eileen M. Collins, one of 23 astronaut candidates who began a year's training and evaluation this month, participates in one of many sessions at a survival training course at Vance Air Force Base. Here, Collins sits in a simulator designed to familiarize trainees with ejection from a T-38 aircraft. A sudden jolt sends the trainee upward along this mechanical sled device. The overall course is designed to provide the participants with procedures to follow in the event of ejection from a jet.

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PHOTO CREDIT: NASA or National Aeronautics and Space Administration.

NASA

National Aeronautics and
Space Administration

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Lyndon B. Johnson Space Center
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Eileen Collins
- astronaut -

A steward

Candidate

Training -

survival training

mission specialist Rich Clifford

applicants -

candidates for a year - after picked

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Eileen Collins
-astronaut-

Mother's Day - #2

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NASA National Aeronautics and Space Administration

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Eileen Collins

- astronaut -

Vance AF Base Enid Okla

simulate getting ejecting from cockpit

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Eileen Collins
– astronaut –

Simulator

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S90-45845

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Houston, Texas 77058

Eileen Collins
-astronaut-

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Eileen Collins
- astronaut -

flight shuttle simulator

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Eileen Collins
- astronaut -

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Eileen Collins
-astronaut-

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COLOR

29-31 JULY 1990 S90-45861

VANCE AIR FORCE BASE, OKLAHOMA

1990 ASTRONAUT CANDIDATE SURVIVAL TRAINING --- USAF Majo. Eileen M. Collins, one of 23 astronaut candidates who began a year's training and evaluation in July, participates in one of many sessions at a survival training course at Vance Air Force Base. A number of Collins' fellow classmates wait their turn to leap from the tall platform, attached to a simulated parachute. The overall course is designed to familiarize the trainees with procedures to follow in the event of emergency ejection from a jet.

pg.23

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PHOTO CREDIT: NASA or National Aeronautics and Space Administration

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Eileen Collins
- astronaut -

National Aeronautics and Space Administration

Houston, Texas 77058

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COLOR

29-31 JULY 1990 S90-45870

VANCE AIR FORCE BASE, OKLAHOMA

1990 ASTRONAUT CANDIDATE SURVIVAL TRAINING --- USAF Major Eileen M. Collins, one of 23 astronaut candidates who began a year's training and evaluation in July, participates in one of many sessions at a survival training course at Vance Air Force Base. Fully equipped with parachute gear, the pilot astronaut candidate is taken aloft as part of parachute familiarization. A vehicle provides the pull to enable the chute to ascend and glide, allowing the trainee to simulate a parachute-aided escape from a jet aircraft. The overall course is designed to familiarize the trainees with procedures to follow in the event of an emergency ejection from a jet.

pg.24

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S85-26106

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Astronaut
Gregg Jarvis
for Mar. 22, 1985
flight

Pls file

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Space Shuttle XXL

NASA National Aeronautics and Space Administration

S85-42714

Lyndon B. Johnson Space Center
Houston, Texas 77058

File: Astronauts

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P-6 B

NASA

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S92 35758

Lyndon B. Johnson Space Center
Houston, Texas 77058

File: Astronauts

Houston, Texas 77058

National Aeronautics and Space Administration

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COLOR

12 MAY 1992 S92-35758

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-49 TROUBLE-SHOOTING --- Wearing extravehicular mobility units (EMU's), two astronauts evaluate techniques in the Weightless Environment Facility (WETF) involving the extravehicular activity (EVA) to capture the Intelsat satellite. Astronauts Michael R. (Rich) Clifford, left, and Story Musgrave, right, grab the Intelsat mockup with their hands as part of the simulation. The capture bar can be seen attached to the remote manipulator system in the underwater mockup facility. Later, a third astronaut, James S. Voss, joined the two astronauts to simulate a three-astronaut EVA, a first for the NASA space program.

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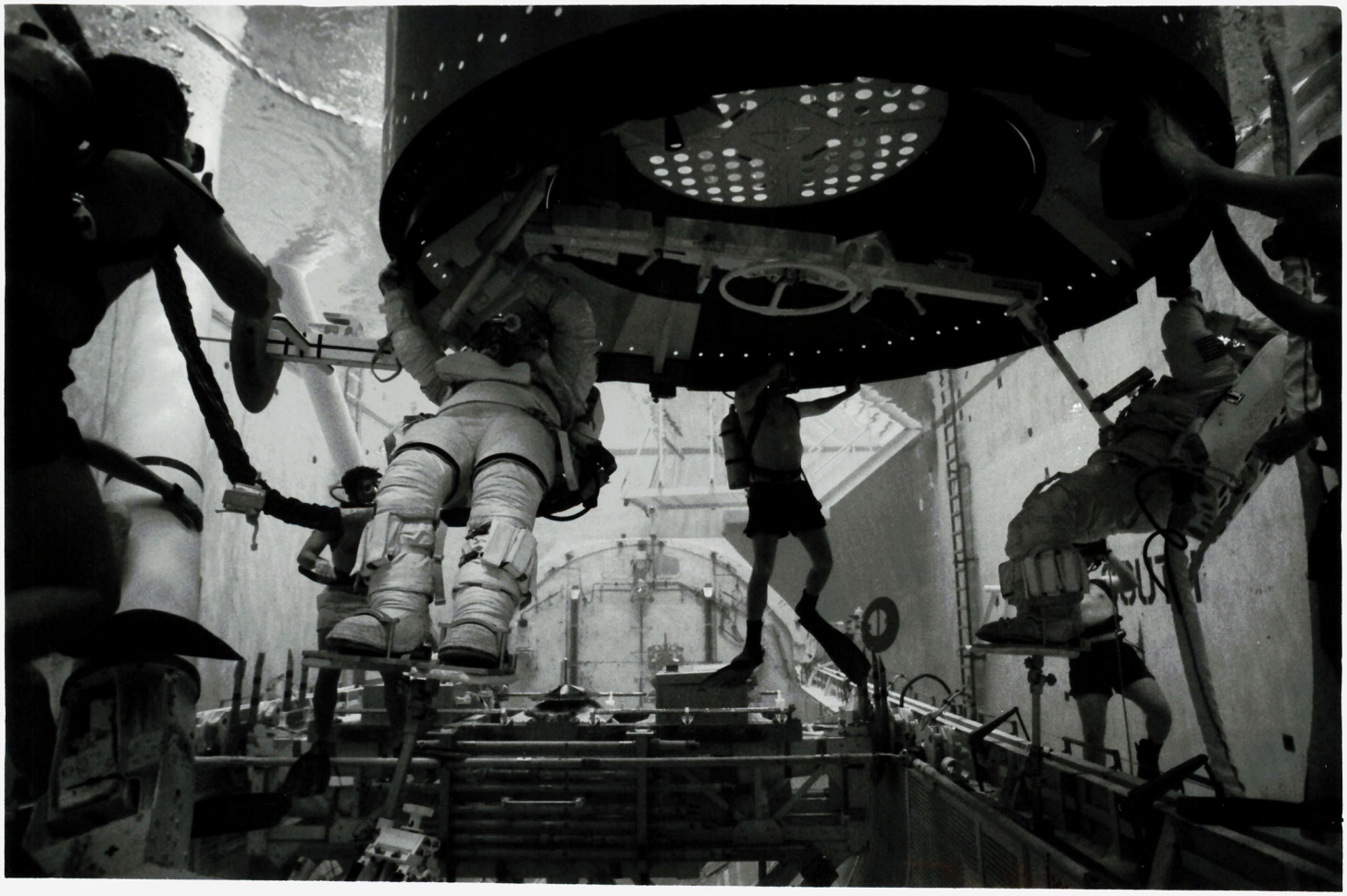

MM

File: Astronauts

National Aeronautics and Space Administration

Houston, Texas 77058

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COLOR

12 MAY 1992 S92-35755

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-49 TROUBLE-SHOOTING --- Wearing extravehicular mobility units (EMU's), two astronauts evaluate techniques in the Weightless Environment Training Facility (WETF) involving the capture of the Intelsat satellite. Astronauts Story Musgrave, left, and Michael R. (Rich) Clifford, right, practice installation of the capture bar to the Intelsat mockup in the WETF. Later, a third astronaut, James S. Voss, joined the two astronauts in the WETF to simulate a three-astronaut EVA, a first for the NASA Space program.

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NASA National Aeronautics and Space Administration

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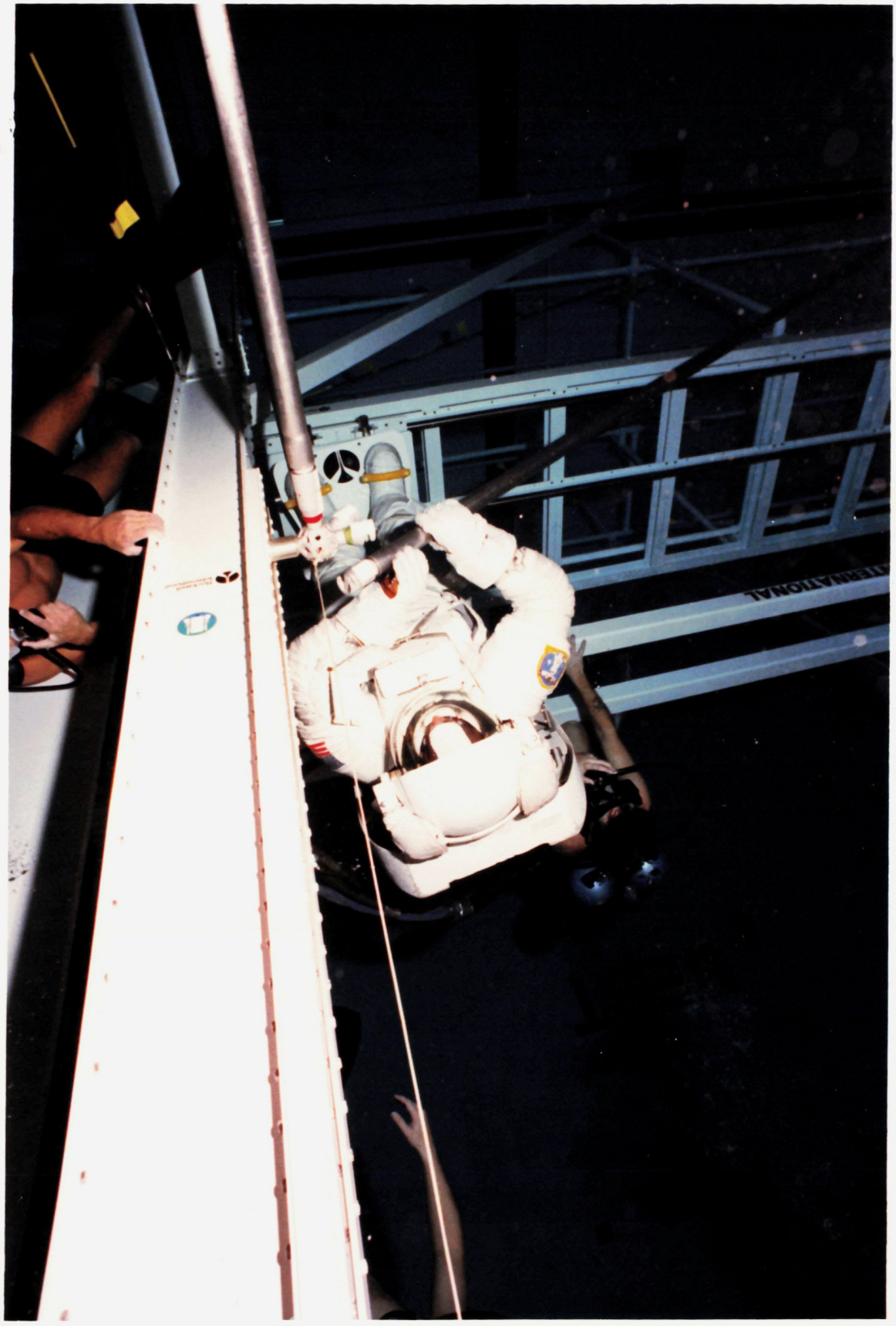

Lyndon B. Johnson

Space center

CAPTIONS FOR EXERCISES IN WEIGHTLESS ENVIRONMENT TRAINING FACILITY ON THURSDAY, 11-20-86. ASTRONAUTS JERRY ROSS (with red stripes on helmet and knees) and ASTRONAUT SHERWOOD (Woody) SPRING ASSEMBLE THE ROCKWELL VERSION OF THE TRUSS SYSTEM THAT MAY BE USED IN THE CONSTRUCTION OF THE SPACE STATION.

S-86-41522 - Sherwood Spring attempting to "lock-in" one of the truss rods

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S85-36959

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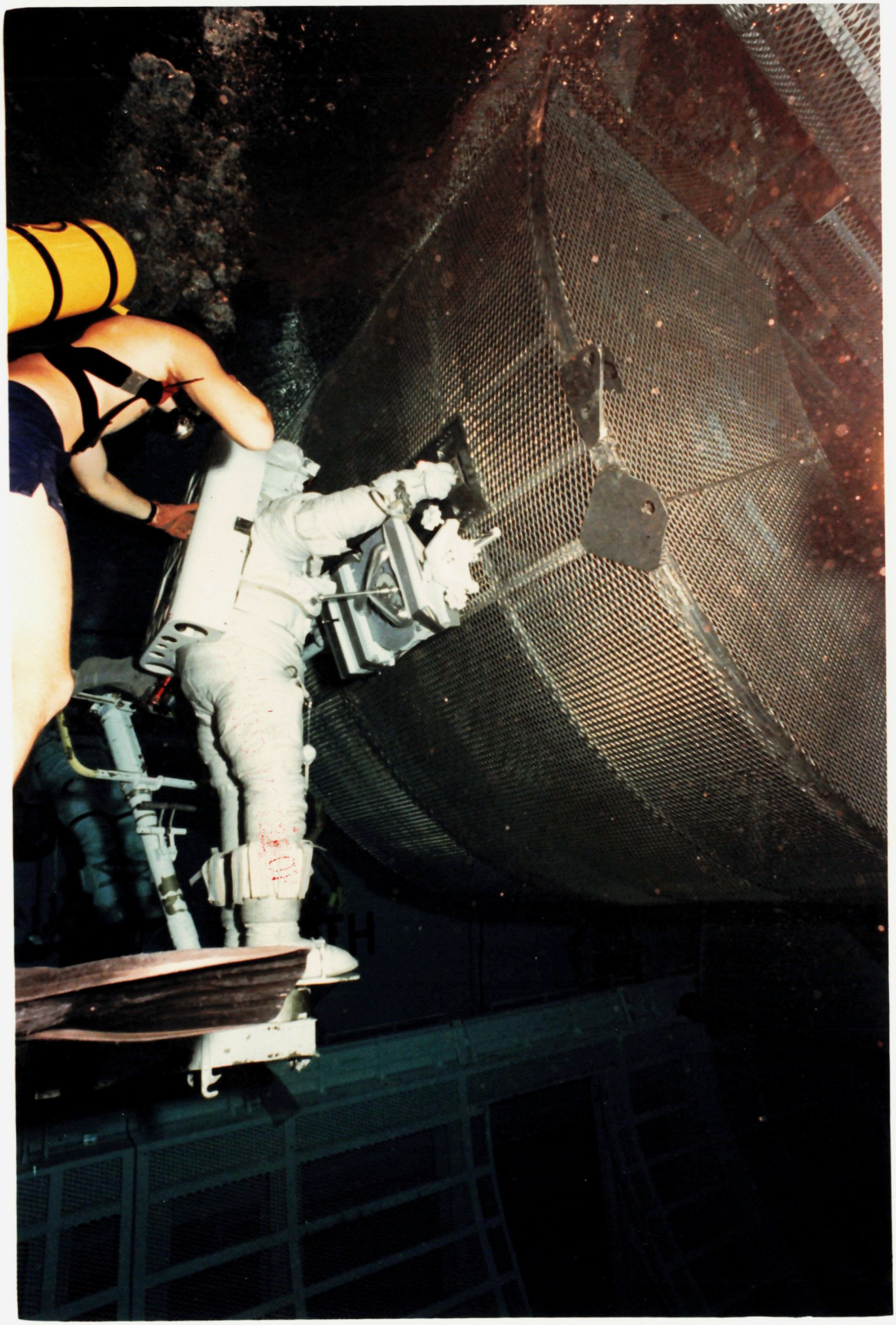

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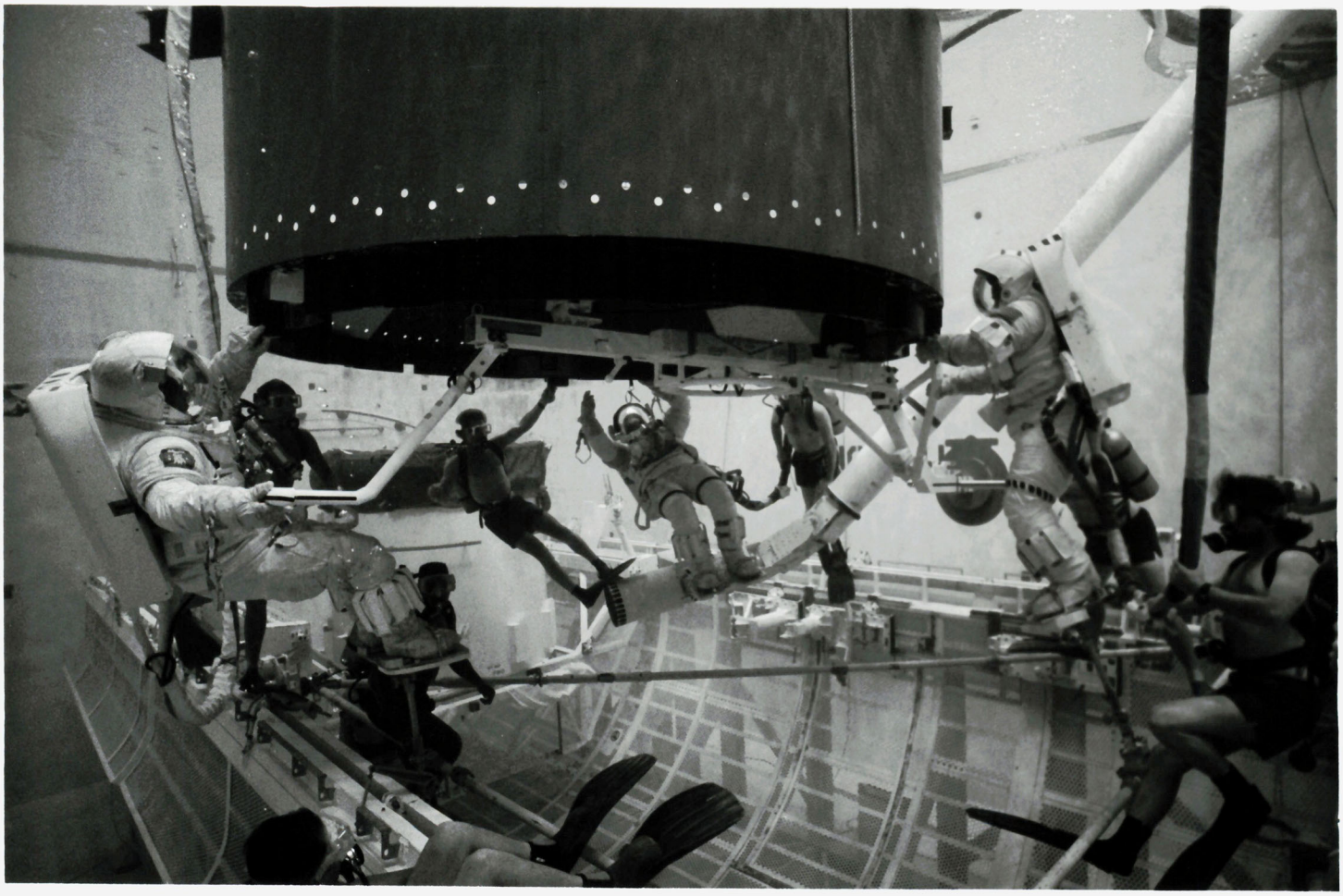
Houston, Texas 77058



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File: Astronauts

National Aeronautics and Space Administration

Houston, Texas 77058

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12 MAY 1992 S92-35764

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-49 TROUBLE-SHOOTING --- Wearing extravehicular mobility units (EMU's) and fitted with weights for neutral buoyancy are three trouble-shooting astronauts. The astronauts practiced techniques for capturing Intelsat, and climbing into the airlock mockup in the Weightless Environment Training Facility (WETF). No apparent problems were identified in placing three astronauts in the airlock at one time. Left to right are, Michael R. (Rich) Clifford, Story Musgrave, and James S. Voss. Three Endeavour astronauts, Pierre J. Thuot, Richard J. Hieb and Thomas D. Akers, will attempt to capture Intelsat again on May 13. Clifford played the role of Hieb, Musgrave for Thuot, and Voss, Akers.

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PHOTO CREDIT: NASA or National Aeronautics and Space Administration

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S83-42836

National Aeronautics and Space Administration

HOUSTON, TEXAS 77058

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MON MAY 16 1988
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OCTOBER 1983 S83-42836

JOHNSON SPACE CENTER, HOUSTON, TEXAS

SPACELAB SIMULATOR---An overall view inside the Johnson Space Center's mission simulation and training facility. The Spacelab simulator in the background towers above supportive computer hardware in the large high bay area.

pg.35

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

MANNED SPACECRAFT CENTER

OFFICIAL PHOTOGRAPH

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5-1964

CHRONICLE FILES

3/12/64

S-64-13849

Photos - 1964

(L to R) Wally Schirra, Dr. Al Chidester, Frank Borman, Ed White during Geological training in Grand Canyon, Arizona.

The National Aeronautics and Space Administration has no objection to the publication of this photograph.

Its use in commercial advertising must be approved, along with copy and layout, by the Public Affairs Officer, National Aeronautics and Space Administration, Manned Spacecraft Center, Houston 1, Texas.

DO NOT TOUCH MAP!

MANNED SPACECRAFT CENTER

OFFICIAL PHOTOGRAPH

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CHRONICLE FILES

3/12/64 S-64-13839

Photos - 1964

Al Chidester explains Canyon trip using sand table model to Bryan Adams, Tom Stafford, Ed White and Jim McDivitt in preparation for their geological training trip into the Grand Canyon of Arizona.

The National Aeronautics and Space Administration has no objection to the publication of this photograph.

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13862

MANNED SPACECRAFT CENTER

OFFICIAL PHOTOGRAPH

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5-1964

CHRONICLE FILES

March 12, 1964 S-64-13862

Photos, Group - 1964

L. Gordon Cooper and Dr. Ted Foss during geological training in Grand Canyon, Arizona.

The National Aeronautics and Space Administration has no objection to the publication of this photograph.

Its use in commercial advertising must be approved, along with copy and layout, by the Public Affairs Officer, National Aeronautics and Space Administration, Manned Spacecraft Center, Houston 1, Texas.

MANNED SPACECRAFT CENTER

OFFICIAL PHOTOGRAPH

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5 -1964

CHRONICLE FILES

March 13, 1964 — Photos - 1964 — S-64-13818

L. Gordon Cooper on his mule during geological training in Grand Canyon, Arizona.

The National Aeronautics and Space Administration has no objection to the publication of this photograph.

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7

MANNED SPACECRAFT CENTER

OFFICIAL PHOTOGRAPH

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5-1964

CHRONICLE FILES

March 12, 1964 S-64-13797

L. Gordon Cooper during geological training in Grand Canyon, Arizona.

Photos - 1964

The National Aeronautics and Space Administration has no objection to the publication of this photograph.

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L6181

NASA
S-64-14253

~~George Franklin~~ - Photos - 1964
Charles Conrad Jr.

MANNED SPACECRAFT CENTER

OFFICIAL PHOTOGRAPH

2/7/64 S-64-14253

Engineers Louis Richard, Left, and George Franklin of the NASA Manned Spacecraft Center, Houston, Texas, stand inside a mockup of the lunar excursion module (LEM) as Astronaut Charles Conrad, Jr., demonstrates how LEM pilots will be restrained inside their spacecraft. This photo was taken through one of the triangular windows of the spacecraft.

The National Aeronautics and Space Administration has no objection to the publication of this photograph.

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S80-33652

Lyndon B. Johnson Space Center
Houston, Texas 77058

Robert L. Gibson Astronaut

National Aeronautics and Space Administration

Houston, Texas 77058

For Release:

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B & W

20 MAY 1980 S-80-33652

JOHNSON SPACE CENTER, HOUSTON, TEXAS

SPACE SHUTTLE AVIONICS INTEGRATION LAB --- Astronaut Robert L. Gibson is seated at the commander's station in the cockpit of the orbiter trainer/simulator in the Shuttle avionics integration laboratory (SAIL) at the Johnson Space Center. Gibson took part in a series of tests supported by the SAIL facility.

Houston Chronicle Library
JUL 11 1980

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

National Aeronautics and
Space Administration

S96-15106

Lyndon B. Johnson Space Center
Houston, Texas 77058

file: Dr Story Musgrave

-astronaut-

National Aeronautics and Space Administration

Houston, Texas 77058

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COLOR

29 OCTOBER 1996 S96-15106

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-80 TRAINING VIEW --- Two SCUBA-equipped divers look on as Story Musgrave participates in the post-bailout portion of the training exercises. The mission specialist is awaiting "rescue" in a life raft he had earlier deployed, in Johnson Space Center's (JSC) Weightless Environment Training Facility (WET-F).

Nov 1996
Columbia
Story Musgrave
mission specialist

PHOTO CREDIT: NASA or National Aeronautics and Space Administration.

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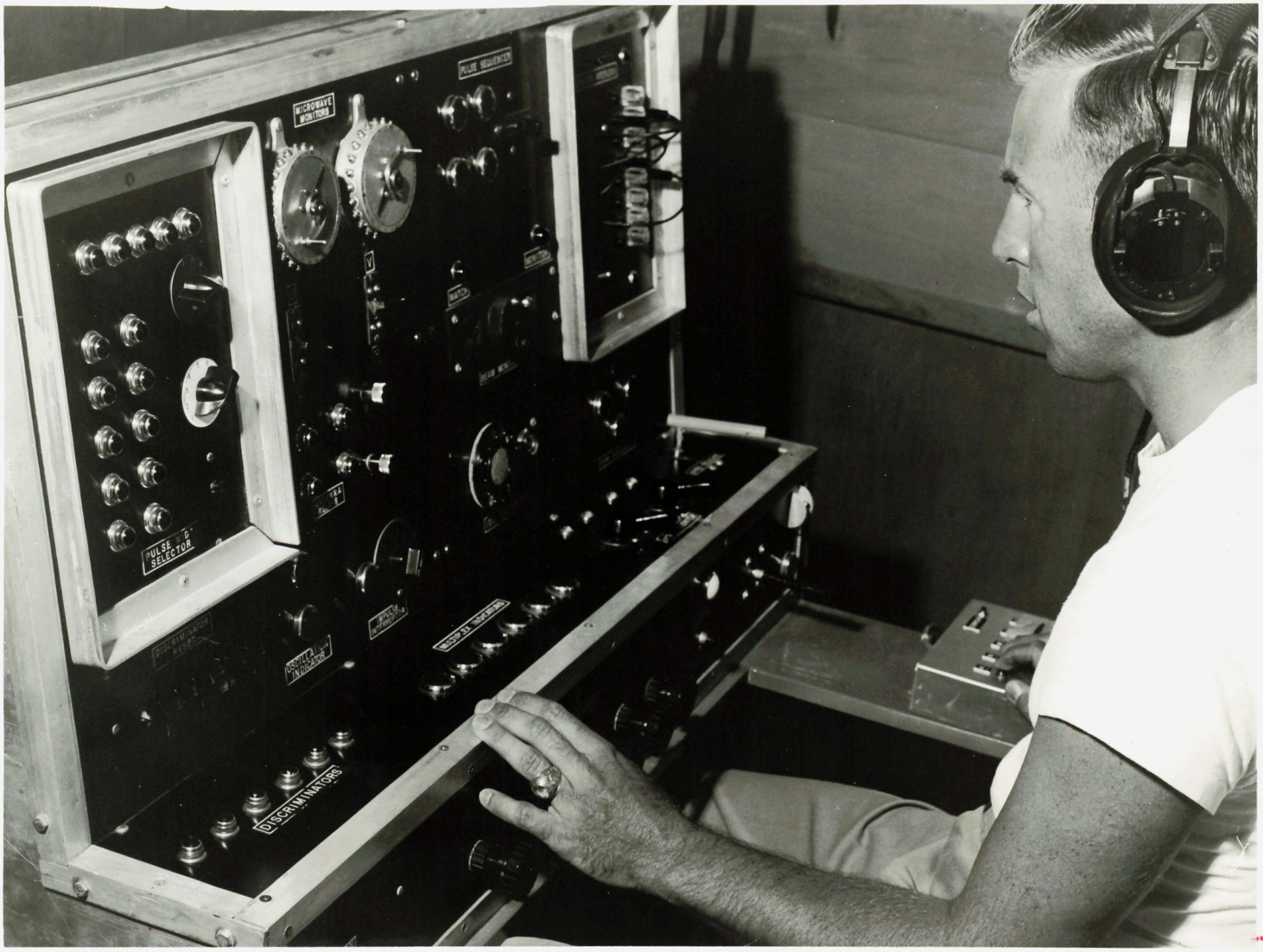
MON NOV 18 1996

NASA
S-62-6827



OFFICIAL NASA PHOTOGRAPH

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NOV 5 1962

Tours w/astronauts

3 col x 4

Before the Bug Eyed Monster

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Before the "Bug-Eyed Monster"

BEFORE THE "BUG-EYED MONSTER" —Astronaut James Lovell readies himself for action against the Complex Behavior Simulator that can call for hundreds of decisions a minute to test his skills.

National Aeronautics and
Space Administration

S96-15080

Lyndon B. Johnson Space Center
Houston, Texas 77058

File: Story Musgrave -Astronaut-

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Houston, Texas 77058

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29 OCTOBER 1996 S96-15080

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-80 TRAINING VIEW --- Story Musgrave's helmet fit is checked prior to a training session for emergency bailout and survival procedures in Johnson Space Center's (JSC) Weightless Environment Training Facility (WET-F).

Nov 1996
Columbia
Story Musgrave
Mission Specialist

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TUE DEC 10 1996

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MANNED SPACECRAFT CENTER

OFFICIAL PHOTOGRAPH

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March 12, 1964 S-64-13806

Photos-1964

Geologist Dr. John F. McCauley, John Young, and Tom Stafford during geological training in Grand Canyon, Arizona.

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National Aeronautics and
Space Administration

S93-26026

Lyndon B. Johnson Space Center
Houston, Texas 77058

File: Space Shuttle LXXIII

National Aeronautics and Space Administration

Houston, Texas 77058

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Shuttle Discovery
Jan 1995
Training Shot of
Vladimir Titov
Russian Cosmonaut

COLOR

FEBRUARY 1993 S93-26026

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-60 BAILOUT TRAINING --- Russian cosmonaut Vladimir Titov maneuvers a small life raft during bailout training at the Johnson Space Center's (JSC) Weightless Environment Training Facility (WET-F). Shuttle crew members frequently utilize the 25-ft. deep pool to learn proper procedures to follow in the event of emergency egress from their Space Shuttle via the escape pole system. Titov is one of two cosmonauts in training for the STS-60 mission. One of the two will serve as primary payload specialist joining a team of NASA astronauts on an Earth-orbital Space Shuttle mission, with the other filling an alternate's role. This pool and the facility in which it is housed are titled the WET-F because they are also used by astronauts rehearsing both mission-specific and contingency extravehicular activities (EVA).

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National Aeronautics and
Space Administration

S94-39442

Lyndon B. Johnson Space Center
Houston, Texas 77058

File: Space Shuttle LXXIII

National Aeronautics and Space Administration

Houston, Texas 77058

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COLOR

Jan. 1995
Discovery
Vladimir Titov
~~Training Shot~~

SEPTEMBER 1993 S93-39442

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-60 TRAINING VIEW --- Cosmonaut Vladimir Titov, an alternate mission specialist for STS-60, simulates a parachute glide into water during a bailout training exercise at the Johnson Space Center (JSC). This phase of emergency egress training routinely takes place in JSC's Weightless Environment Training Facility (WET-F).

Training Picture
Russian Cosmonaut leaves Shuttle parachute bail out procedures at NASA Johnson Space Center

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

HOUSTON CHRONICLE LIBRARY WED FEB 22 1995

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March 12, 1964 S-64-13770

Astronaut L. Gordon Cooper on Grand Canyon Trail during geological training in Arizona. Photos - 1964

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121

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S-63-13014

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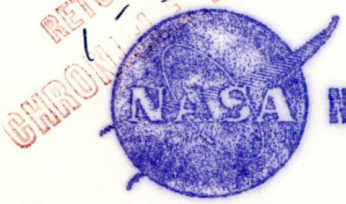

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HOUSTON, TEXAS 77058

FOR RELEASE:

PHOTO NO. S-63-13014

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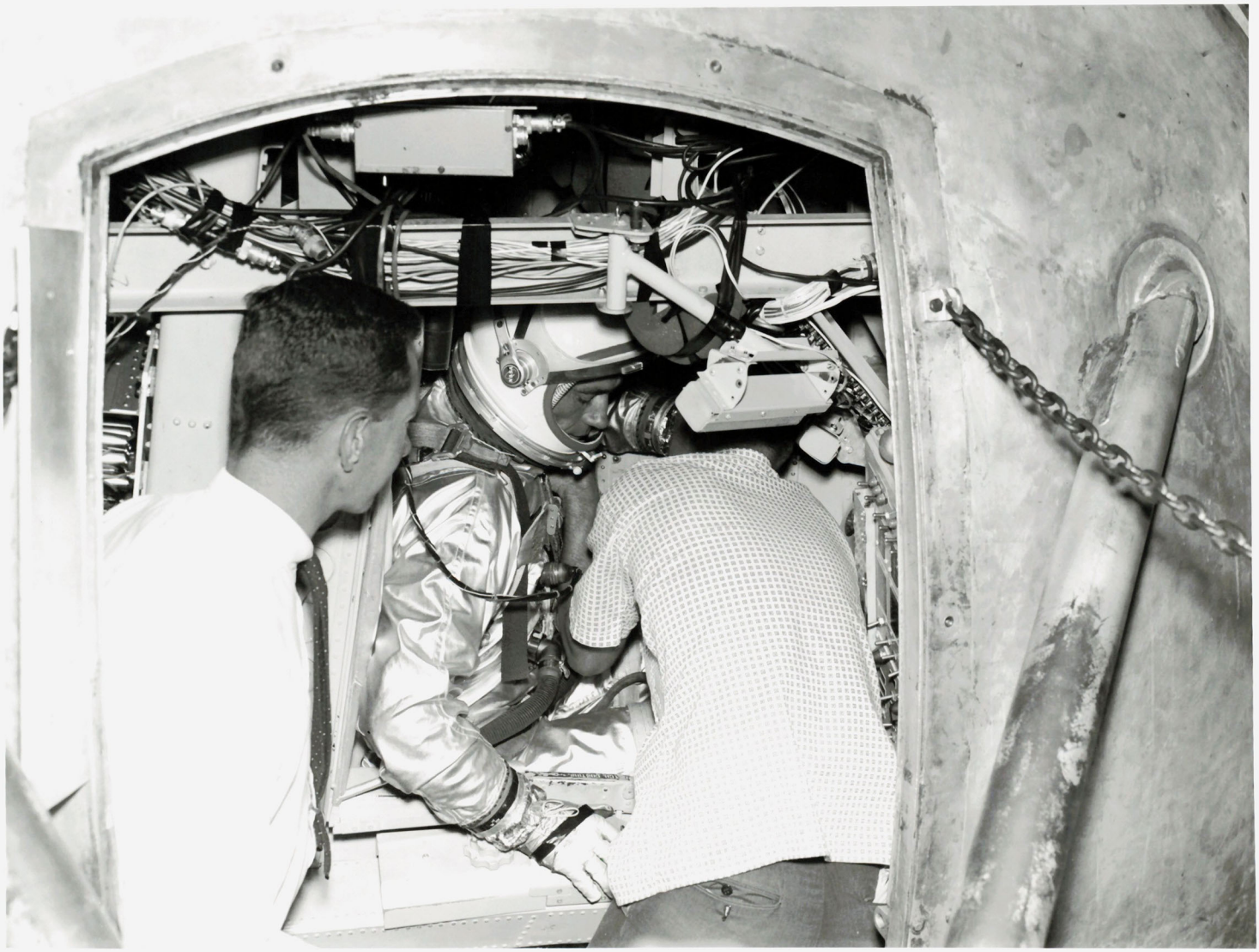
B & W

SEPT 1963 S-63-13014

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

PARASAIL TRAINING---Astronaut James A. Lovell Jr., being strapped into parachute harness, participates in parasail training at Ellington Air Force Base, Houston, Texas.

NASA
S-63-11195



S-63-11195 7/63

Astronaut Donald K. "Deke" Slayton is readied for a ride in the world's largest centrifuge at Johnsville, Pa. Called the "Wheel" by astronauts, the centrifuge has been fitted with the two-man Gemini project displays and controls. It is used for evaluation of equipment and astronaut training.

OFFICIAL NASA PHOTOGRAPH

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MANNED SPACECRAFT CENTER

OFFICIAL PHOTOGRAPH

Photos - 1964

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5 - 1964

CHRONICLE FILES

March 13, 1964 S-64-13817

Astronauts and geologists in Grand Canyon, Arizona during training.

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9

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Astro results - Photos - Miracle 1964

MANNED SPACECRAFT CENTER

OFFICIAL PHOTOGRAPH

March 13, 1964 S-64-13857

Dr. Ted Foss, Bryan Adams, Dr. Al Chidester, Wally Schirra, Dr. Dale Jackson, Gordon Cooper, Charles Conrad, Uel Clanton, Frank Borman, Jim Lovell, Gus Grissom, Ed White, John Young, Vern Fryklund, Jim McDivitt, Tom Stafford, Dr. John F. McCauley, Deke Slayton, and Al Chop at Grand Canyon, Arizona, for Geological Training. (persons L to R)

C10

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MANNED SPACECRAFT CENTER
OFFICIAL PHOTOGRAPH

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5-1964

Astronauts - Photos - 1964

March 13, 1964 S-64-13882

Front to back: Dr. Ted Foss, Gordon Cooper, John Young, Tom Stafford, Gus Grissom, Dr. John F. McCauley, Bryan Adams during Geological Training at the Grand Canyon, Arizona.

The National Aeronautics and Space Administration has no objection to the publication of this photograph.

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NASA National Aeronautics and Space Administration

S- 78- 35421

Lyndon B. Johnson Space Center
Houston, Texas 77058

Astronauts—Women

NASA
National Aeronautics and Space Administration

Houston, Texas 77058

For Release:

Photo No.

S-78-35421

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COLOR

28 AUGUST 1978

S-78-35421

VANCE AIR FORCE BASE, OKLAHOMA

ASTRONAUT CANDIDATE IN SURVIVAL TRAINING ---- Eight of eleven astronaut candidates who attended a survival school at Vance Air Force Base, Oklahoma, watch as one of their fellow trainees takes part (out of frame) in a training exercise. Ronald E. McNair is in the immediate foreground. Others, left to right, are George D. Nelson, Judith A. Resnik, Sally K. Ride, Kathryn D. Sullivan, Margaret R. (Rhea) Seddon, Anna L. Fisher and Shannon W.Lucid. Not pictured are Steven A. Hawley, Jeffrey A. Hoffman and Ellison S. Onizuka. The overall course was designed to prepare the trainee with proper measures to take in the event of ejection from an aircraft over land. A pickup truck was used to pull the trainee and his chute behind and aloft, to simulate a parachute glide, in the exercise being witnessed by the trainees in this view.

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

FRI APR 24 1981

Houston Chronicle Library

NASA
B-60-1516

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5-1964
CHRONICLE FILES

12

Photos - 1963

Astronauts preparing at Stead AFB, Nev. for desert survival training.

OFFICIAL NASA PHOTO

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PHOTO NO.: 63-Astronauts-101

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PANAMA - NASA's sixteen astronauts participate in tropic survival training from June 3 through June 6, 1963 at Albrook Air Force Base, Canal Zone.

Astronaut Gus Grissom plays Napoleon in a palm rain hat. This hat is part of the many survival aids they are taught how to make.

CHRONICLE MAGAZINE
ISSUE 8-4-63
PAGE 17

Hamming it up with homemade hat is (Napoleon) Gus Grissom.

NASA
S-63-6645

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4/23/63

Astronauts Trainees White, McDivitt, Armstrong participating in weightless flight.

Onboard camera photographic coverage by AF Photographer during weightless condition.
W/P AFB - Apr 23, '63

OFFICIAL NASA PHOTOGRAPH

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NASA
S-63-6657

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4/23/63

Astronauts Trainees White, McDivitt, Armstrong participating in weightless flight.

Onboard camera photographic coverage by AF Photographer during weightless condition. W/P AFB - Apr. 23, 1963.

OFFICIAL NASA PHOTOGRAPH

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NASA
S-63-6640

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4/23/63

Astronauts Trainees White, McDivitt, Armstrong participating in weightless flight.

Onboard camera photographic coverage by AF Photographer during weightless condition.
W/P AFB - Apr 23, '63

OFFICIAL NASA PHOTOGRAPH

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TROPIC SURVIVAL SCHOOL
ALBROOK
ANAL ZONE

MANNED SPACECRAFT CENTER

OFFICIAL PHOTOGRAPH

June 1963

Panama-NASA's sixteen astronauts participate in tropic survival training from June 3 through June 6, 1963, at Albrook Air Force Base, Canal Zone.

NO CREDIT

(4)

CHRONICLE MAGAZINE
ISSUE 5-31-64
PAGE 34

NASA SECTION

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Survival training in the Panama Canal Zone is not all work for astronauts Gordon Cooper, center, and Alan Shepard Jr., right.

5X7 4-7

NASA National Aeronautics and Space Administration

S87-50632 File

Lyndon B. Johnson Space Center
Houston, Texas 77058

HOUSTON, TEXAS 77058

National Aeronautics and
Space Administration

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COLOR

27 DECEMBER 1987 S-87-50632

JOHNSON SPACE CENTER, HOUSTON, TEXAS

MISSION SIMULATION AND TRAINING FACILITY (BLDG.5)
Controllers at network consoles in support of
Shuttle Mission Simulator in the Mission
Simulation and Training Center (MSTC).

pg. 23

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MON MAY 16 1988

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

NASA

National Aeronautics and
Space Administration

S84-38696

Lyndon B. Johnson Space Center
Houston, Texas 77058

Space Shuttle
XVI

NASA
National Aeronautics and Space Administration

Houston, Texas 77508

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-

COLOR

MAY 1984 S84-34696

JOHNSON SPACE CENTER, HOUSTON, TEXAS

51-E ZERO-GRAVITY TRAINING---Astronaut S. David Griggs, 51-E mission specialist, simulates donning (and doffing) of the Space Shuttle extravehicular mobility unit (EMU) during a flight aboard a KC-135, "zero gravity" aircraft. Griggs and Jeffrey A. Hoffman have been training for extravehicular activity (EVA) contingencies on the planned February 1985 flight. The photo was taken by Otis Imboden.

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TUESDAY FEB 19 1985

709

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NASA
S-67-34275

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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COLOR

12-16 JUNE 1967 S-67-34275

JUNGLE SURVIVAL SCHOOL, PANAMA

JUNGLE TRAINING---These three astronauts construct a lean-to shelter during training at the Panama Jungle Survival School. Left to right, are Stuart A. Roosa, Thomas K. Mattingly II, and Alfred M. Worden.

Alfred M. Worden

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JUNGLE FILES

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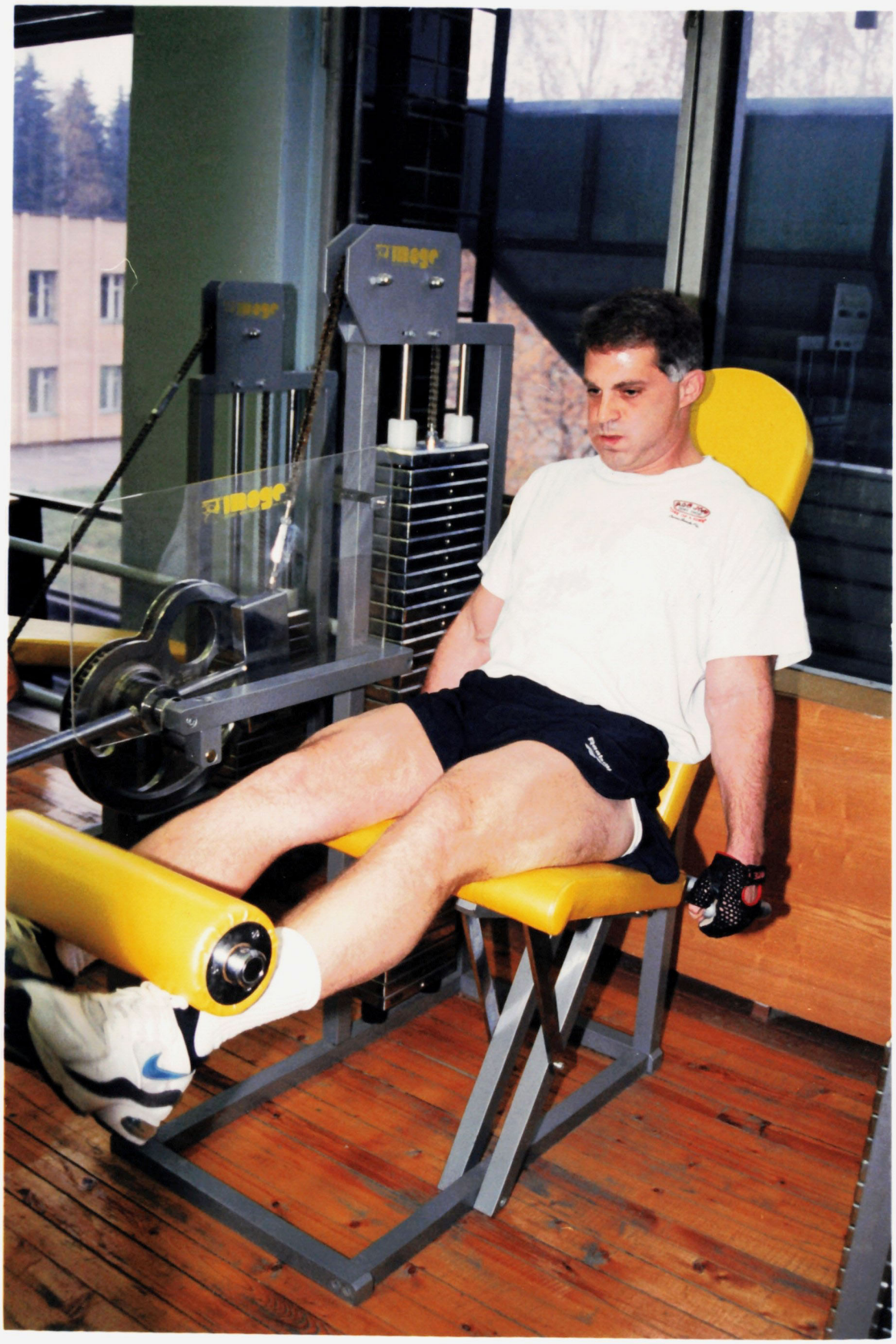
Space Administration

S96-17446

Lyndon B. Johnson Space Center
Houston, Texas 77058



National Aeronautics and Space Administration

Houston, Texas 77058

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COLOR

SEPTEMBER 1996 File: S96-17446

GAGARIN COSMONAUT TRAINING CENTER, STAR CITY, RUSSIA

MIR TRAINING VIEW --- Astronaut David A. Wolf works out in a gymnasium at the Gagarin Cosmonaut Training Center in Star City, Russia. Wolf, in training as cosmonaut guest researcher, will be assigned to a future Mir Space Station mission.

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NASA National Aeronautics and Space Administration

S81-29053

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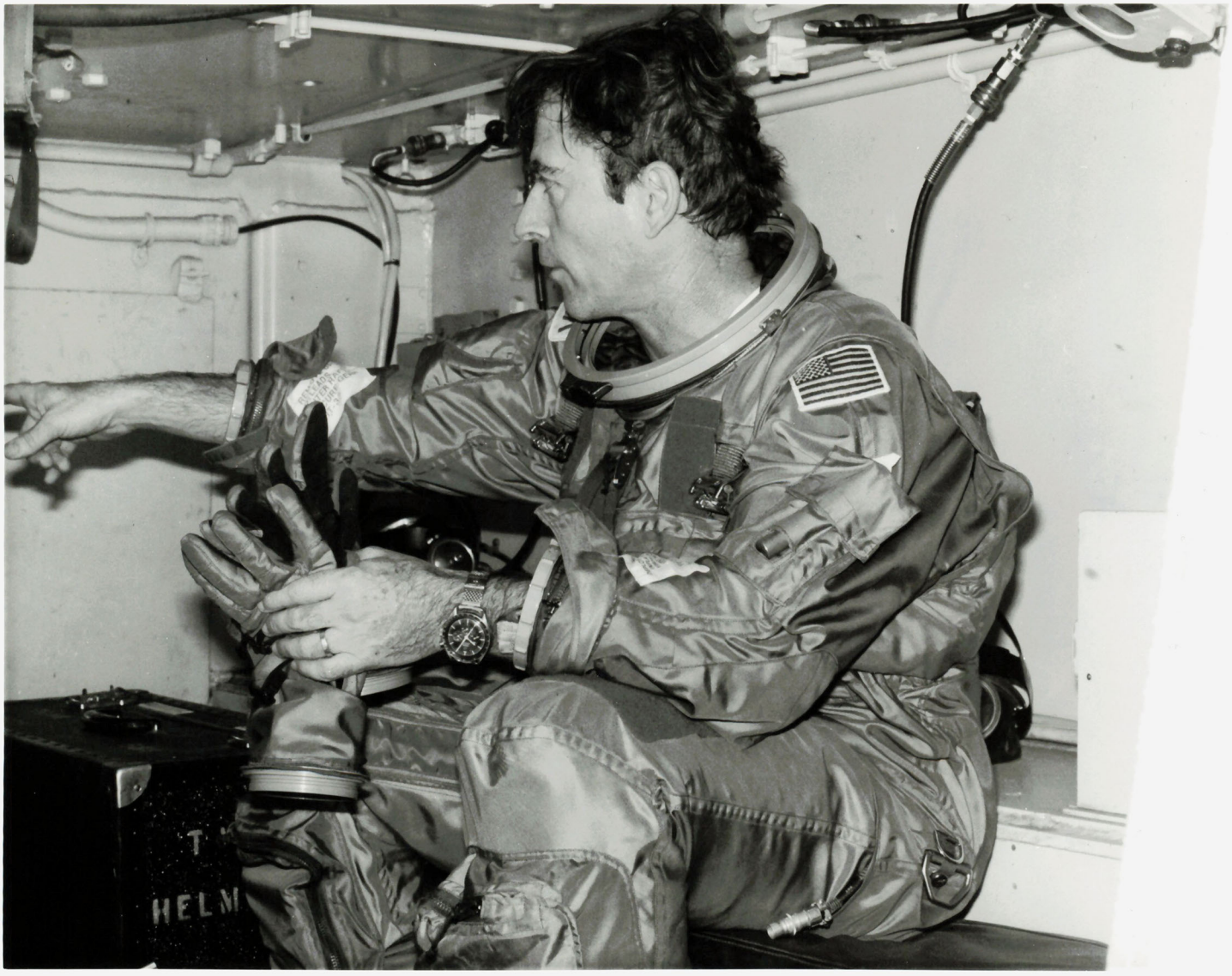

John W. Young
Astronaut

NASA
National Aeronautics and Space Administration

Houston, Texas 77058

FRIDAY AUG 1 1980
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COLOR

MARCH 1981 S-81-29053

JOHN F. KENNEDY SPACE CENTER, FL

STS-1 CREW AT KSC --- Astronaut John W. Young, commander of STS-1, takes part in a simulation of a rescue operation at Launch Complex 39, near pad 4. He is inside a rescue vehicle which the crew would ingress following a ride from the launch tower in the basket protion of a slidewire escape system setup in the event of emergency at the pad. Fellow STS-1 crewmember and pilot, Astronaut Robert L. Crippen also took part in the contingency simulations.

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

CHRONICLE MAGAZINE
ISSUE 5-31-64
PAGE 54

NASA SECTION

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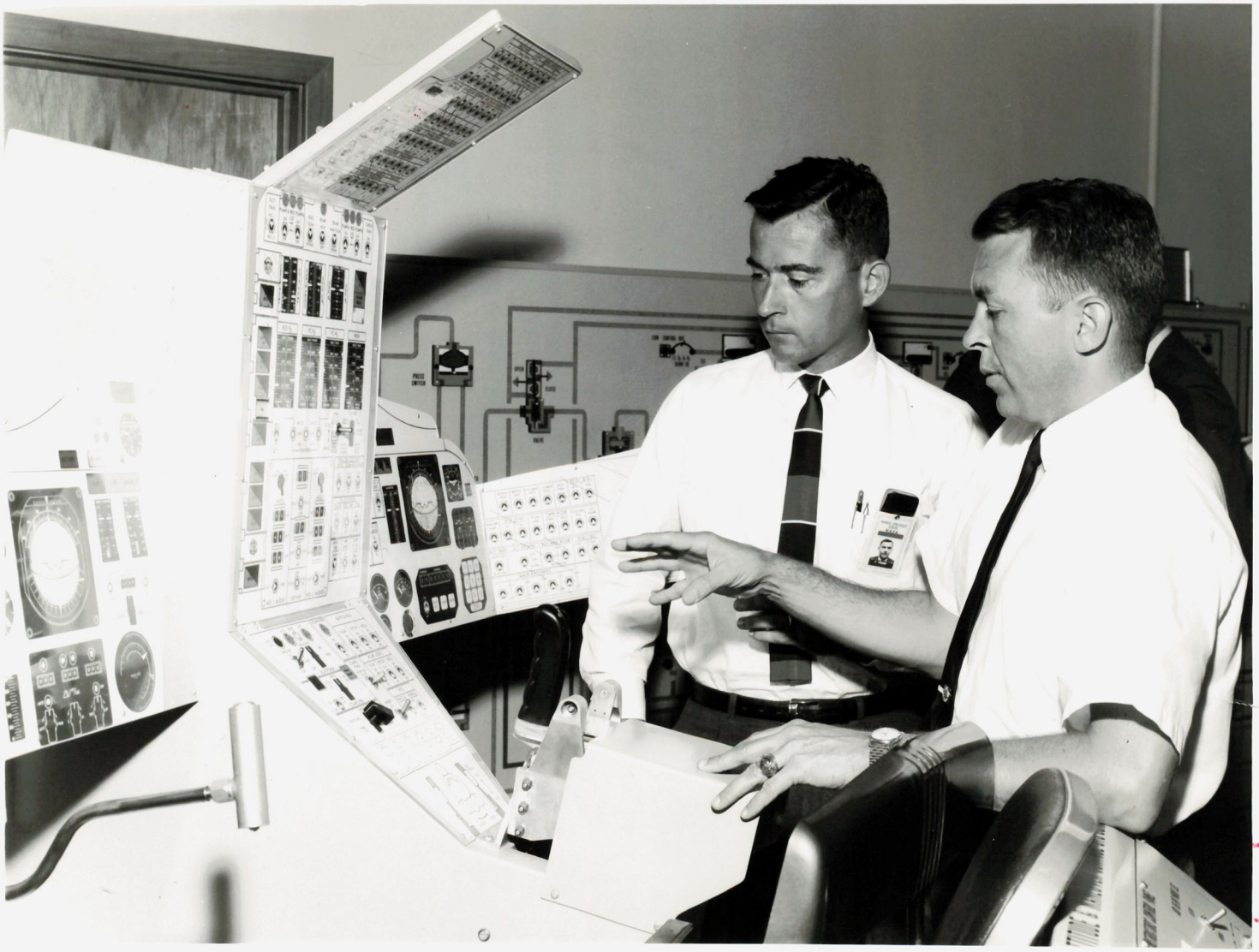
SUN MAY 31 1964

Wyatt Earp? Nope, it's John W. Young, Gemini pilot, on geological training at the Grand Canyon.

NASA

S-63-6342



JUN 28 1963

3 col x 5

Pin-Ball Space

Friday Blue

Wired

Some fine spacecraft flying points seem to be the subject of discussion by Astronauts Elliott See (right) and John Young over one of the new Gemini systems trainers newly arrived at the Manned Spacecraft Center. The Gemini cockpit layout console (above) equipped with a spacecraft control stick will be used by astronauts and engineers to actualize classroomize animated diagrams (shown in the background) of major systems in the Gemini spacecraft. Signal flow patterns through a system of lights will illustrate to the "student" the way each major Gemini spacecraft system works.

OFFICIAL NASA PHOTOGRAPH

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ER I JUN 28 19

Astronauts John Young, left, and Elliott See watch the flashing lights of training board that is an oversize model of the Gemini cockpit. This, and other training boards, set up at Ellington A.F.B., are wired with switches and control handles. By working them as they would actual spacecraft controls, the astronauts can watch the flickering lights trace out the flow of oxygen, electricity, fuel, cooling water and automatic control systems in response to their commands. The training board also can simulate emergency conditions. Astronauts will begin flying the Gemini two-man space ship in about a year.

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OFFICIAL PHOTOGRAPH

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CHRONICLE FILES

March 13, 1964 S-64-13821

Photos- 1964

John Young on his mule during geological training in Grand Canyon, Arizona.

6

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National Aeronautics and
Space Administration

S94-41838

Lyndon B. Johnson Space Center
Houston, Texas 77058

File: Space Shuttle LXXIII

National Aeronautics and Space Administration
Houston, Texas 77058

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COLOR

NOVEMBER 1994 S94-41838

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-63 CREW --- Wearing training versions of the orange partial pressure suit used for Shuttle ascent and entry, five NASA astronauts and a Russian cosmonaut assemble for an STS-63 training session. The six are in the Johnson Space Center's Shuttle mockup and integration laboratory. They are, left to right, astronauts James D. Wetherbee, mission commander; Eileen M. Collins, pilot; Bernard A. Harris Jr., payload commander; and C. Michael Foale, Janice E. Voss, and cosmonaut Vladimir G. Titov, all mission specialists.

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

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John Young

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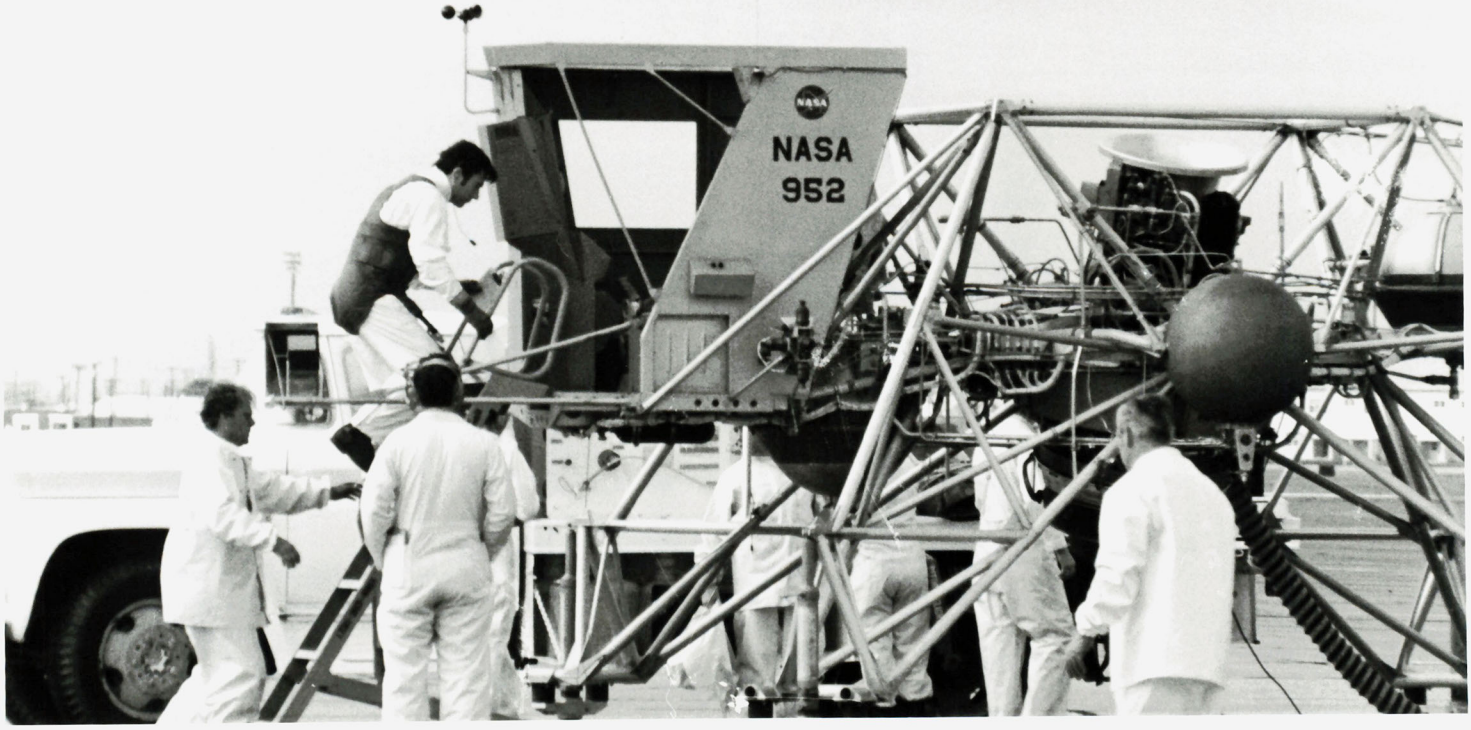
COLOR

14 FEBRUARY 1972 S-72-31479

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

APOLLO 16 LLTV TRAINING---Astronaut John W. Young, commander of the Apollo 16 lunar landing mission, is seated in the cockpit of the Lunar Landing Training Vehicle in preparation for a training flight at Ellington Air Force Base, Houston, Texas. However, soon after this photograph was taken the flight was cancelled due to high winds. The LLTV is used to train Apollo crewmen in lunar-landing techniques.

NASA
S-72-31480



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John Young

COLOR

14 FEBRUARY 1972 S-72-31480

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

APOLLO 16 LLTV TRAINING----Astronaut John W. Young, commander of the Apollo 16 lunar landing mission, climbs into the cockpit of the Lunar Landing Training Vehicle in preparation for a training flight at Ellington Air Force Base, Houston, Texas. However, soon after this photograph was taken the flight was cancelled due to high winds. The LLTV is used to train Apollo crewmen in lunar-landing techniques.

MANNED SPACECRAFT CENTER

OFFICIAL PHOTOGRAPH

C

25 June 64 S-64-23232

PANAMA CANAL ZONE

JUNGLE SURVIVAL TRAINING--Astronaut Donn Eisele samples the milk from a coconut in the jungles of the Panama Canal Zone.

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NASA
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Harrison H. Schmitt

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COLOR

11-12 MARCH 1971 S-71-23768

TAOS, NEW MEXICO

APOLLO 15 EVA TRAINING---Two members of the backup crew of the Apollo 15 lunar landing mission participate in a simulation of lunar surface extravehicular activity in the Taos, New Mexico area. Scientist-Astronaut Harrison H. Schmitt (right), backup crew lunar module pilot, operates a self-recording penetrometer. Astronaut Richard F. Gordon Jr., backup crew commander, photographs the scene.

NASA
S-71-23767

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8 1/2" 7 1/2
GRUMMAN FILES

Harrison H. Schmitt

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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11-12 MARCH 1971 S-71-23767

TAOS, NEW MEXICO

APOLLO 15 EVA TRAINING---- Two members of the backup crew of the Apollo 15 lunar landing mission participate in a simulation of lunar surface extravehicular activity in the Taos, New Mexico area. Scientist-Astronaut Harrison H. Schmitt (right), backup crew lunar module pilot, operates a self-recording penetrometer. Astronaut Richard F. Gordon Jr., backup crew commander, helps to hold the penetrometer.

NASA
S-63-3397

space suits - 1963

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5-1963

1/20/63 S-63-339

Space-suited Joseph J. Kosmo of the Manned Spacecraft Center's Crew Systems Division responds to "cockpit inputs" from Richard Sandridge (right), one of a series of tests which will help to evaluate the suit for mobility under operating conditions. The specially-built testing and evaluating device consists of an operator's console, a physiograph and a molded couch facing a subject's testing board. It will be used to set standards for the development of MSC space suits.

OFFICIAL NASA PHOTOGRAPH

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NASA
S-63-3397

Space-Suits - 1963

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5-1963

3/20/63 S-63-3397

Space-suited Joseph J. Kosmo of the Manned Spacecraft Center's Crew Systems Division responds to "cockpit inputs" from Richard Sandridge (right), one of a series of tests which will help to evaluate the suit for mobility under operating conditions. The specially-built testing and evaluating device consists of an operator's console, a physiograph and a molded couch facing a subject's testing board. It will be used to set standards for the development of MSC space suits.

OFFICIAL NASA PHOTOGRAPH

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NASA National Aeronautics and Space Administration

S-79-30354

Lyndon B. Johnson Space Center
Houston, Texas 77058

Ronald E. McNair astronaut candidate

National Aeronautics and Space Administration

Houston, Texas 77058

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COLOR

30 MARCH 1979

JOHNSON SPACE CENTER, HOUSTON, TEXAS

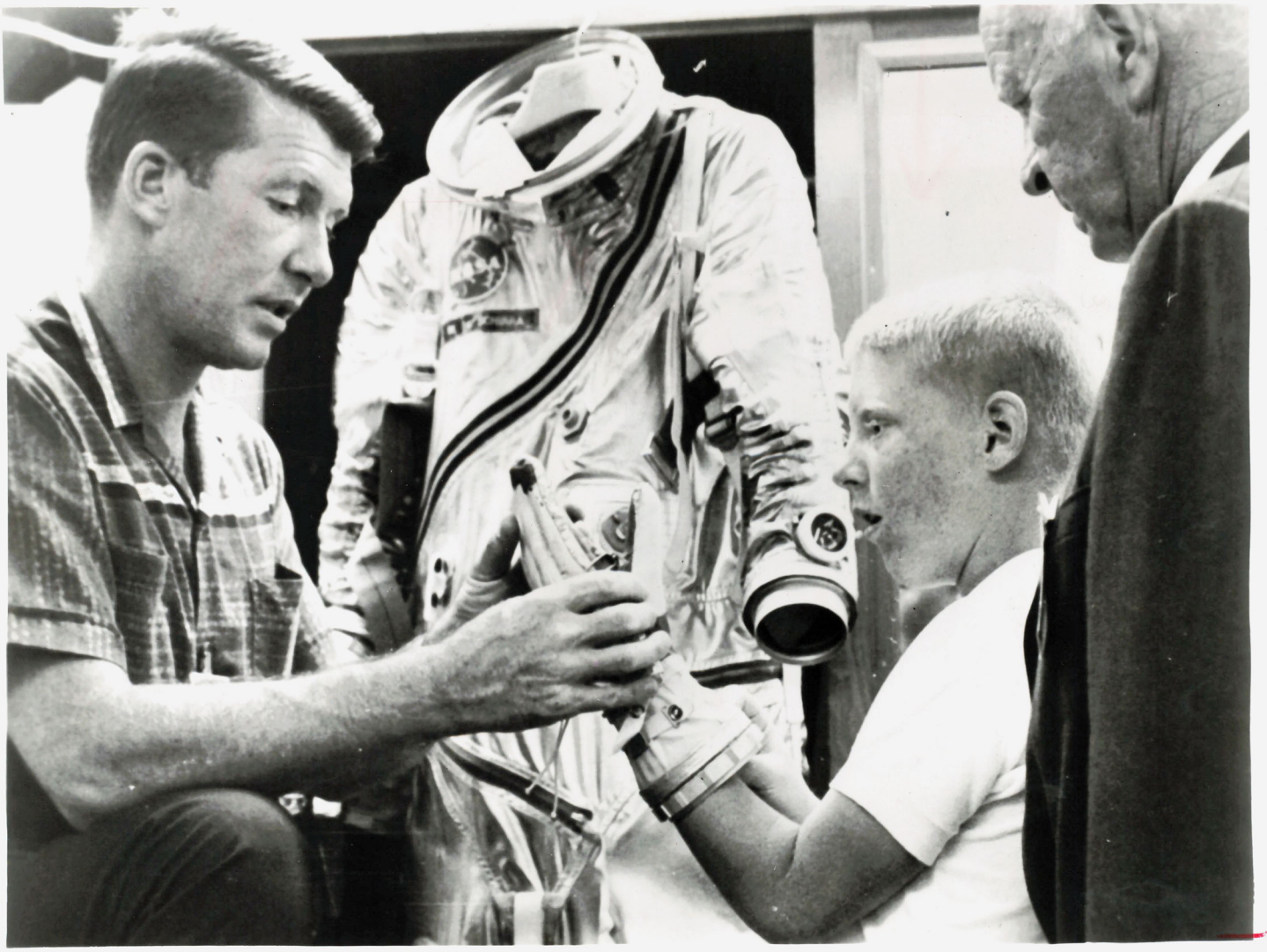
ASTRONAUT CANDIDATES IN ZERO GRAVITY AIRCRAFT --- Two NASA astronaut candidates experience zero gravity aboard a KC-135 aircraft during a familiarization flight. Rhea Seddon and Ronald E. McNair are seen here. The two scientist/astronaut candidates came aboard in July 1978 with 18 other scientist/astronaut trainees and 15 pilot/astronaut candidates, beginning a two year training and evaluation period.

FRI JUL 11 1980

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

Houston Chronicle Library

NASA
S-62-4664



OCT 3 1962
SEP 28 1962

Use of Two Pictures of Schirra

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S-62-4664

Project Mercury Astronaut Walter M. Schirra, Jr., explaining pressure gloves to his son and father.

OFFICIAL NASA PHOTOGRAPH

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3 - cols wild 3x4

Fri

X His Father's Glove

RECEIVED SEP 27 2 PM '62 NEWS DESK PRESS ROOM
RECEIVED SEP 27 2 PM '62 NEWS DESK PRESS ROOM
RECEIVED SEP 28 11 AM '62 NEWS DESK COMPARTMENT ROOM

TUE OCT 2 1962

...Wednesday to watch his pop orbit.

"I'm real excited about it," Walter Schirra III, 12, a 7th grader at Clear Creek Junior

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FRI SEP 28 1962

HIS FATHER'S GLOVES—Three Walter Schirras talk at Cape Canaveral as Astronaut Walter M. Schirra, Jr., trains for a nine-hour flight into space. Comdr. Schirra, left, explains how the pressure suit glove works for the benefit of his son, Walter III, 10, and his father, Walter M. Schirra, Sr.

NASA National Aeronautics and Space Administration

S81-29618

Lyndon B. Johnson Space Center
Houston, Texas 77058

File: John W. young
astronaut

NASA
National Aeronautics and
Space Administration

Houston, Texas 77058

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APR 23 1987

B & W

6 APRIL 1981 S-81-29618

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-1 PRE-FLIGHT BRIEFING --- STS-1 prime and backup astronaut crewmembers look at visuals during a coordinated teleconference with engineers. Seated at the table in a briefing room at the Johnson Space Center are, clockwise from the left, George W.S. Abbey, director of flight operations, John W. Young, Robert L. Crippen, Joe H. Engle and Richard H. Truly. Young and Crippen are prime crewmen preparing to man the Columbia later this week for the flight of STS-1. Rockwell International engineers in California as well as JSC engineers participated in this tele-con.

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

NASA National Aeronautics and Space Administration

S - 78 - 35427

Lyndon B. Johnson Space Center
Houston, Texas 77058

Judith Resnik
Astronaut

National Aeronautics and Space Administration

Houston, Texas 77058

For Release:

Photo No. S-78-35427

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COLOR

28 AUGUST 1978 S-78-35427

VANCE AIR FORCE BASE, OKLAHOMA

ASTRONAUT CANDIDATE IN SURVIVAL TRAINING -- Astronaut Candidate Judith A. Resnik is suspended for a short period of time in a parachute harness during one of many training exercises at a survival training course at Vance Air Force Base, near Enid, Oklahoma. Resnik was joined by 10 other astronaut candidates for the school, designed to prepare the trainee for proper measures to take in the event of ejection from an aircraft over land. She is one of 20 scientist/astronaut candidates who came aboard with 15 pilot/astronaut candidates in July of this year.

Houston Chronicle Library

FRI APR 17 1981

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

NASA National Aeronautics and

S- 78- 29320

Lyndon B. Johnson Space Center
Houston, Texas 77058

Judith Resnik
Astronaut

NASA
National Aeronautics and Space Administration

Houston, Texas 77058

For Release:

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COLOR

12 MAY 1978 S-78-29320

JOHNSON SPACE CENTER, HOUSTON, TEXAS

ASTRONAUT CANDIDATE -- Astronaut candidate Judith A. Resnik walks off flight line at Ellington Air Force Base, near the Johnson Space Center (JSC), with pilot Richard Laidley following familiarization flight in the rear seat of a T-38 jet, parked in background. Resnik is one of 35 astronaut candidates who reported to JSC on July 10, 1978 to begin a two-year training and evaluation period. She is a mission specialist candidate.

Houston Chronicle Library

FRI APR 24 1981

NASA National Aeronautics and Space Administration

S- 78- 29248

Lyndon B. Johnson Space Center
Houston, Texas 77058

Judith Resnik
Astronaut

National Aeronautics and Space Administration

Houston, Texas 77058

For Release:

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B & W

12 MAY 1978 S-78-29248

JOHNSON SPACE CENTER, HOUSTON, TEXAS

ASTRONAUT CANDIDATE --- Judith A. Resnik, one of 20 mission specialist astronaut candidates among a group of 35 newly named candidates, is about to egress a T-38 aircraft at Ellington Air Force Base, near the Johnson Space Center (JSC). She had just completed a familiarization flight in the T-38's rear seat, and Dr. Richard A. Laidley, also pictured, was her pilot.

Houston Chronicle Library

FRI APR 24 1981

NASA National Aeronautics and Space Administration

S-78-29319

Lyndon B. Johnson Space Center
Houston, Texas 77058

Judith Resnik
Astronaut

National Aeronautics and
Space Administration

Houston, Texas 77058

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COLOR

12 MAY 1978 S-78-29319

JOHNSON SPACE CENTER, HOUSTON, TEXAS

ASTRONAUT CANDIDATE -- Judith A. Resnik, one of 20 mission specialist astronaut candidates in a group of 35 newly named candidates, ingresses the cockpit of a T-38 aircraft at Ellington Air Force Base. Beginning in early July 1978, the 35 reported to the Johnson Space Center to begin a two-year training and evaluation period. Part of that period will include back-seat time in a T-38 trainer.

FRI APR 24 1981

NASA National Aeronautics and Space Administration

S-78-29250

Lyndon B. Johnson Space Center
Houston, Texas 77058

Judith Resnik

Astronaut

MON APR 20 1981
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B & W

12 MAY 1978

JOHNSON SPACE CENTER, HOUSTON, TEXAS

ASTRONAUT CANDIDATE --Judith A. Resnik, one of 20 mission specialist astronaut candidates in a group of 35 newly named candidates, walks away from a T-38 aircraft at Ellington Air Force Base, after a familiarization flight piloted by Dr. Richard A. Laidley, also pictured.

Sunday Inquirer Magazine 11/2" x 3" mug shots

NASA National Aeronautics and Space Administration

S- 78- 29247

Lyndon B. Johnson Space Center
Houston, Texas 77058

Judith A. Resnik
Astronaut

NASA
National Aeronautics and Space Administration

Houston, Texas 77058

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B & W

12 MAY 1978 S-78-29247

JOHNSON SPACE CENTER, HOUSTON, TEXAS

ASTRONAUT CANDIDATE --- Judith A. Resnik, one of 20 mission specialist astronaut candidates among a group of 35 newly named candidates, prepares to stow her flight gear following a rear-seat familiarization flight in a T-38 aircraft at Ellington Air Force Base, near the Johnson Space Center (JSC). Dr. Richard A. Laidley, also pictured, was her pilot for the flight.

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S- 78- 29246

Lyndon B. Johnson Space Center
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Judith A. Resnik
Astronaut

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JOHNSON SPACE CENTER, HOUSTON, TEXAS

ASTRONAUT CANDIDATE --Judith A. Resnik, one of 20 mission specialist astronaut candidates in a group of 35 newly named candidates, walks away from a T-38 aircraft at Ellington Air Force Base, after a familiarization flight piloted by Dr. Richard A. Laidley, also pictured.

FRI APR 24 1981

NASA National Aeronautics and Space Administration

S-78-29321

Lyndon B. Johnson Space Center
Houston, Texas 77058

Judith Resnik Astronaut

NASA
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Houston, Texas 77058

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COLOR

12 MAY 1978 S-78-29321

JOHNSON SPACE CENTER, HOUSTON, TEXAS

ASTRONAUT CANDIDATE -- Judith A. Resnik, one of 35 newly named astronaut candidates who reported for duty at the Johnson Space Center (JSC) in early July 1978, touches ground after a familiarization flight in the rear seat of a T-38 jet trainer at Ellington Air Force Base. Richard Laidley, JSC pilot, flew the T-38 for Resnik, one of 20 mission specialist candidates in the group.

FRI APR 24 1981

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NASA National Aeronautics and Space Administration

S- 78- 32746

Lyndon B. Johnson Space Center
Houston, Texas 77058

Judith Resnik
Astronaut

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APR 24 1981

B & W

20 JULY 1978 S-78-32746

JOHNSON SPACE CENTER, HOUSTON, TEXAS

ASTRONAUT CANDIDATE IN T-38 --- Astronaut-Candidate Judith A. Resnik fastens herself in rear seat position of a T-38 aircraft at Ellington Air Force Base where she and several other newly named astronaut candidates are participating in T-38 jet familiarization. Several veteran astronauts and other NASA pilots assisted in the familiarization program, including the piloting the jets for the astronaut candidates.

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NASA
S-62-5148

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OCT 1962

8-14-62

CCMTA, NASA/MERCURY Hangar "S" Astronaut Walter M. Schirra, Jr. practices egress from MA-8 Spacecraft in white room.

OFFICIAL NASA PHOTOGRAPH

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NASA

S-62-1609

7/30/63

Photos - 1963

Astronaut Walter Schirra participating in water egress training using lifecraft survival equipment

OFFICIAL NASA PHOTO

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NASA
S-62-4668

S-62-4668

Project Mercury Astronaut Walter M. Schirra, Jr., being helped into pressure suit by suit technician, Al Rochford.

OFFICIAL NASA PHOTOGRAPH

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John Young

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B & W

29 NOV 1971 S-71-58012

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

APOLLO 16 PRE-FLIGHT TRAINING SESSION--Astronaut John W. Young, prime crew commander for the Apollo 16 lunar landing mission, looks over lunar maps and photographs in preparation for the March 1972 mission. At right is Astronaut Stuart A. Roosa, backup command module pilot.

PLATEAU POINT 1½ MI.
PHANTOM RANCH 6½ MI.
COLORADO RIVER 3 MI.
"next" available drinking water
at phantom ranch area

6

MANNED SPACECRAFT CENTER

OFFICIAL PHOTOGRAPH

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March 13, 1964 S-64-13816

Photos - 1964

Donald K. Slayton on his mule during geological training at Grand Canyon, Arizona.

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NASA
S-62-6865

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John W. Young

astronaut

Young

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NASA
S-62-6828

NOV 5 1962

Rohrbaugh

Young

Jones

MENTAL Evaluation

3 col x 4 3/4

Dr Powell

Mental Evaluation

TUE NOV 6 1962

MENTAL EVALUATION—John W. Young describes what he sees in "ink blot" pictures for psychiatrist's evaluation of his personality, mental health, maturity. Astronauts all rate high psychologically.

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OFFICIAL PHOTOGRAPH

25 June 64 S-64-23235

PANAMA CANAL ZONE

JUNGLE SURVIVAL TRAINING--Astronaut Cliff Williams practices quick release with his parachute harness.

The National Aeronautics and Space Administration has no objection to the publication of this photograph.

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MANNED SPACECRAFT CENTER

OFFICIAL PHOTOGRAPH

C

25 June 64 S-64-23239

PANAMA CANAL ZONE

JUNGLE SURVIVAL TRAINING--Astronaut Cliff Williams, left, and Russell Schweickart east a breakfast of boa and lizard during survival training in the Panama Canal Zone.

The National Aeronautics and Space Administration has no objection to the publication of this photograph.

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COLOR

7-11 AUG 1967 S-67-41785

PASCO, WASHINGTON

DESERT SURVIVAL TRAINING-----Three astronauts stand beside their finished water still which they made during desert survival training near Pasco, Washington. Left to right, are Joe H. Engle, Gerald P. Carr, and Alfred M. Worden.

Alfred M. Worden

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NASA
S-67-41951

Alfred M. Worden

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COLOR

7-11 AUG 1967 S-67-41951

PASCO, WASHINGTON

DESERT SURVIVAL TRAINING----Astronauts Alfred M. Worden (holding radio) and Gerald P. Carr maintain contact with search aircraft during desert survival training.

NASA
S-67-41953

Alfred M. Worden

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COLOR

7-11 AUG 1967 S-67-41953

PASCO, WASHINGTON

DESERT SURVIVAL TRAINING----Astronaut Alfred M. Worden uses a mirror to flash signals for search aircraft during desert survival training.

NASA
S-67-35762

Alfred M. Worden

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COLOR

12-16 JUNE 1967 S-67-35762

JUNGLE SURVIVAL SCHOOL, PANAMA

JUNGLE TRAINING-----Astronauts Stuart A. Roosa (in foreground) and Alfred M. Worden cool their feet in a jungle stream during training at the Panama Jungle Survival School.

NASA
S-67-34339

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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COLOR

12-16 JUNE 1967 S-67-34339

JUNGLE SURVIVAL SCHOOL, PANAMA

JUNGLE TRAINING---A group of astronauts examine the craftsmanship of Indian natives during training at the Panama Jungle Survival School. Left to right, are Astronaut Don L. Lind; Air Force Major Jerry Hawkins, commander of the school; Astronauts Alfred M. Worden, Stuart A. Roosa, Bruce McCandless II (standing behind native holding vari-colored object), Vance D. Brand, and John S. Bull.

Alfred M. Worden

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NASA National Aeronautics and Space Administration

S85-26147

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Space Shuttle XVI

NASA

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Houston, Texas 77508

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14 JANUARY 1985 S85-26147

JOHNSON SPACE CENTER, HOUSTON, TEXAS

51-E TRAINING---Patrick Baudry, a French spationaut representing the Centre National d'Etudes Spatiales, in training at JSC as a payload specialist for STS 51-E, appears to enjoy the "feel" of zero gravity. The weightlessness was briefly provided by NASA's KC-135 aircraft flying a prabola pattern.

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TUESDAY FEB 19 1985

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S87-25678

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Lyndon B Johnson
Space
center

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S-63-564

$\hat{R}_c \hat{R}_p = \frac{\hat{R}_e \hat{R}_A \gamma_{fe}^2}{\hat{R}_A - \hat{R}_c}$
$\hat{V}_A^2 = \frac{2}{\hat{R}_A} - \frac{1}{\hat{a}}$
$\hat{V}_e^2 = \frac{2}{\hat{R}_e} - \frac{1}{\hat{a}}$
$2\hat{a} = \hat{R}_A + \hat{R}_p$
$\hat{R}_p = \frac{\cos^2 \gamma_e \left(\hat{R}_A \hat{R}_e - \hat{R}_e^2 \right)}{\hat{R}_e - \hat{R}_e \cos^2 \gamma_e}$

Astronauts - Hst - Pluton - 1963

S-63-564

Harm Bunning, left, Associate Professor in Aeronautical Engineering at University of Michigan, who is conducting a three day seminar in Orbital Flight Mechanics. He is explaining details to Astronaut Walter M. Schirra, Jr. and Astronaut Trainee Edward White II. This is part of Astronaut training.

OFFICIAL NASA PHOTOGRAPH

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MSC 63-P23
February 11, 1963

FOR IMMEDIATE RELEASE

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ASTRONAUTS STUDY ORBITAL MECHANICS

Manned Spacecraft Center visiting lecturer Harm Buning (left), Associate Professor in Aeronautical Engineering at University of Michigan, who recently conducted a three-day orbital flight mechanics seminar as part of the astronaut training program, explains some fine points of space and reentry mechanics to Astronauts Walter M. Schirra (center) and Edward H. White II (right).

National Aeronautics and
Space Administration

S97-00569

Lyndon B. Johnson Space Center
Houston, Texas 77058

Lyndon B. Johnson Space Center

Sonny Carter
Training Center
NBL

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National Aeronautics and
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File in: → Space Shuttle

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COLOR

29 SEPTEMBER 1975

GRUMMAN AMERICAN AVIATION, BETHPAGE, NEW YORK

SHUTTLE TRAINING AIRCRAFT------The first of two Space Shuttle Training Aircraft is photographed during its first test flight (September 29, 1975). The plane rolled out from Grumman American Aviation's Bethpage, Long Island, New York plant in September. Modified from Gulfstream II jets, the STAs will be used as crew trainers for the Shuttle Orbiter descent and landing profile. Cockpit interiors have followed the Orbiter cockpit layout, and aerodynamic modifications provide motion and visual cues and handling qualities similar to those of the Orbiter. These aircraft will be delivered to the Johnson Space Center early next year after completion of test flights at Grumman. Flight crews for the Orbiter approach and landing test will begin training in the STAs in mid-year. Jutting beneath the aircraft's wing roots are the side-force control surfaces used to simulate Shuttle sideward motion.

FRI JUL 11 1980

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NASA National Aeronautics and Space Administration

S- 79- 37005

Lyndon B. Johnson Space Center
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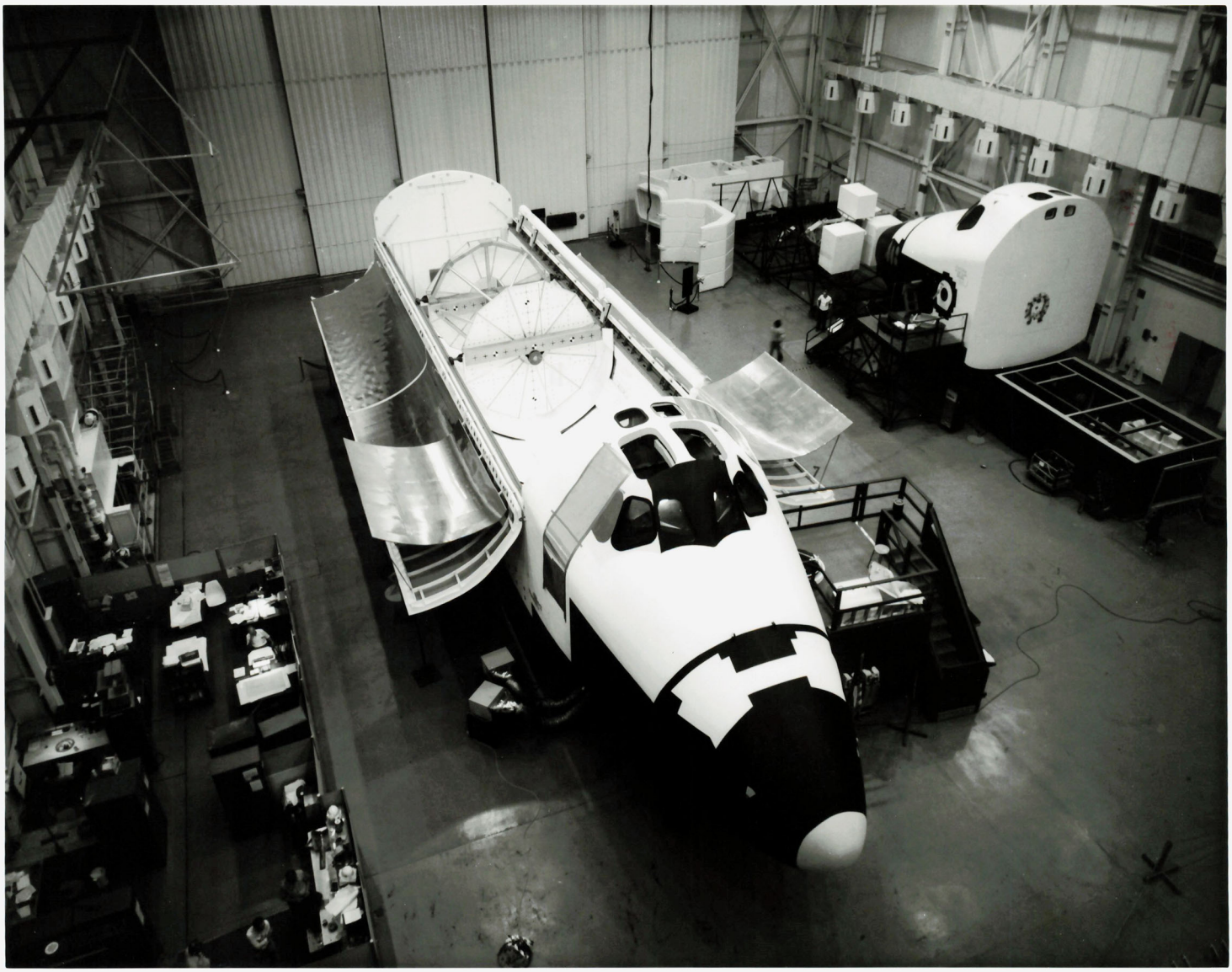

Space Shuttle

National Aeronautics and Space Administration

Houston, Texas 77058

For Release:

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FRI JUL 11 1980

COLOR

28 SEPTEMBER 1979 S-79-37005

JOHNSON SPACE CENTER, HOUSTON, TEXAS

SPACE SHUTTLE ONE-G TRAINER ----- This high angle view inside the mockup and integration laboratory reveals some of the hardware presently used in preparation for Space Shuttle flights. In the upper right is the one-g trainer, a high fidelity reproduction of the interior of the orbiter crew station where crew members train for tasks performed during in-orbit missions. And, immediately behind the one-g trainer (partially out of view at right) is a stand onto which the trainer rotates when put into the vertical position for prelaunch types of training activities. In center foreground is a one-g engineering mockup of orbiter crew compartments used primarily for engineering evaluations. On the aft side of it is a one-g engineering mockup of orbiter payload bay (the only high fidelity cargo bay in existence except for the flight article). The payload bay doors are open revealing a mockup of the flight test article (FTA) which will fly on STS-2 and represent the first payload handled by the re-

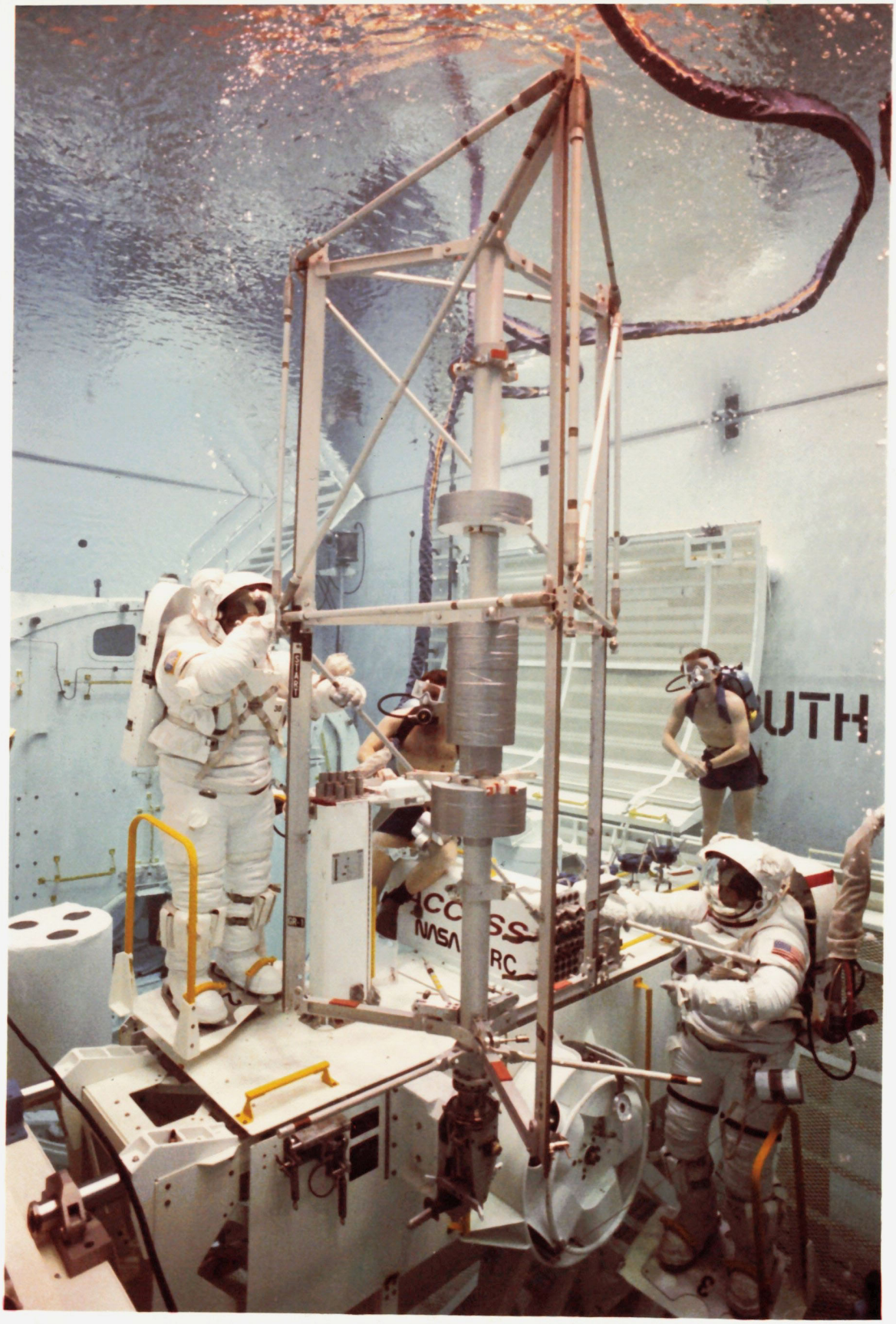
PHOTO CREDIT: NASA or National Aeronautics and Space Administration

mote manipulator arm. At the front end of the doors can be seen deployable radiators which stow as a part of the doors. The "e"-shaped article in upper center background is a mockup of the OFT pallet which is a standard pallet that goes into the payload and serves as a mounting surface for experiments. The three prisms or cubes near the nose of the one g trainer in upper right represent a mockup of the development flight instrumentation pallet which will fly in the cargo during test missions. Against the wall in upper center/upper right is a mockup of the white room located at the end of the swing arm on the gantry at Kennedy Space Center's launch facility. It serves as a clean room facility just outside the orbiter hatch.

National Aeronautics and
Space Administration

S85 42718

Lyndon B. Johnson Space Center
Houston, Texas 77058



Lyndon B. Johnson
Space Center

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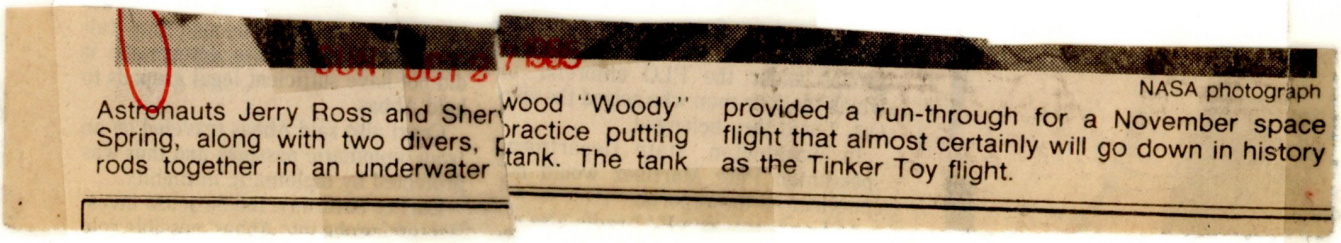

Astronauts Jerry Ross and Sher
Spring, along with two divers, p
rods together in an underwater
wood "Woody"
practice putting
tank. The tank
provided a run-through for a November space flight that almost certainly will go down in history as the Tinker Toy flight.

NASA photograph

NASA
S-72-19739

John Young

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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COLOR

22 DECEMBER 1971 S-72-19739

CAPE KENNEDY, FLORIDA

APOLLO 16 EVA TRAINING----Astronaut John W. Young, Commander of the Apollo 16 lunar landing mission, participates in lunar surface extravehicular activity training in the Flight Crew Training Building at the Kennedy Space Center. Young adjusts a training model of a Far Ultraviolet Camera/Spectroscope, an instrument which will be emplaced on the Moon during the Apollo 16 EVA. Deep-space sources of hydrogen in interplanetary, interstellar and intergalactic regions will be mapped by this instrument which gathers both photographic images and spectroscope data in the far ultraviolet spectrum. This experiment will be the first such astronomical observation emplaced on the lunar surface.

NASA
S-71-59355

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John Young

COLOR

17-18 NOV 1971 S-71-59355

U.S. NAVAL ORDNANCE TEST STATION, COSO RANGE, CALIFORNIA

APOLLO 16 EVA TRAINING----Astronauts John W. Young, right, prime crew commander for Apollo 16, and Charles M. Duke Jr., lunar module pilot, study rock formations along their simulated lunar traverse route. The prime and backup commanders and lunar module pilots for Apollo 16 took part in the two-day geology field trip and simulations in the Coso Range, near Ridgecrest, California, about 160 miles north-northeast of Los Angeles. The training and simulations were conducted Nov. 17-18, 1971, at the U.S. Naval Ordnance Test Station.

NASA
S-65-10486

MANNED SPACECRAFT CENTER

OFFICIAL PHOTOGRAPH

B & W

24 NOV 64

CAPE KENNEDY, FLORIDA

GEMINI TRAINING---View of Astronaut John W. Young in suiting trailer at pad 16 during Gemini-Titan 2 wet mock simulation launch activity.

CHRONICLE MAGAZINE
ISSUE Mar 28
PAGE 9

10

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SUN MAR 28 1965

SUN MAR 28 1965

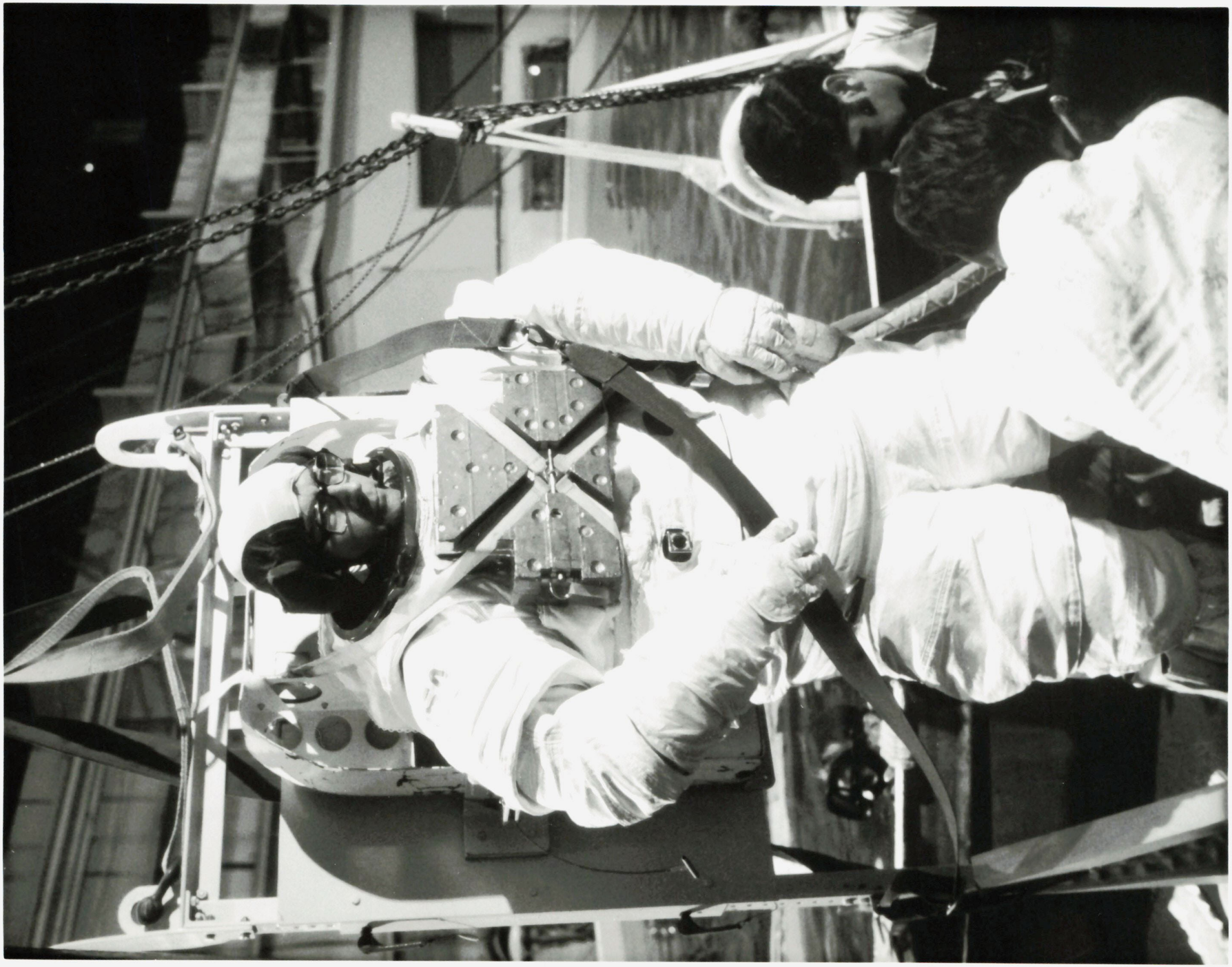
Getting attention in a suiting trailer is astronaut John Young.

CLE, TEXAS MAGAZINE, SUNDAY, MARCH 28, 1965

NASA National Aeronautics and Space Administration

S-79-36609

Lyndon B. Johnson Space Center
Houston, Texas 77058



John W. Young
astronaut

NASA
National Aeronautics and Space Administration

Houston, Texas 77058

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18 SEPTEMBER 1979

JOHNSON SPACE CENTER, HOUSTON, TEXAS

SPACE SHUTTLE TRAINING --- Astronaut John W. Young, crew commander for STS-1, prepares to be lowered into the water immersion facility for an underwater simulation of a contingency extravehicular activity (EVA) for securing payload bay doors aboard the Orbiter 102 Columbia. After donning his helmet and final readiness checkout is complete, Young will spend a period in the WIF to rehearse an extravehicular activity (EVA) that would be necessary in the event of failures in preliminary efforts to secure the large doors via remote control.

Houston Chronicle Library

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FRI JUL 11 1980

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S-63-6549

uts undergo desert survival training at Stead AFB.
four-day course included instruction on how to
, shelter making, and how to utilize survival
Astronaut James Lovell checks over his hand made sh
survival equpment as Astronaut Donald "Deke" Slayton

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(3)

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, Texas.

S-63-6547

ert survival training at Stead AFB, Nevada.
cluded instruction on how to live off the
and how to utilize survival kit equipment.
ad, Jr., is showing how to start a cigarette
light reflector.
flash

Chas Conrad, Jr

FICIAL NASA PHOTOGRAPH

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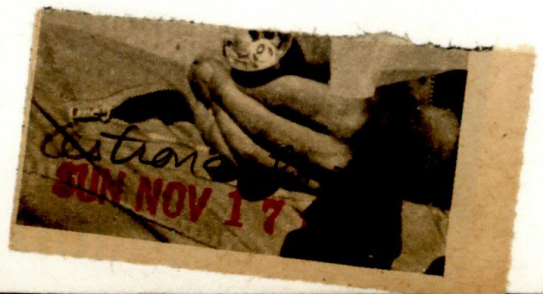

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8/6/63 S-63

Astronauts undergo desert durvival training at S
Nevada. The four day course included instruction on
of d the land, shelter making, and how to utilize su
equipment. Emphasis was placed on the means and met
off the natural resources of the land.

Astronaut Edward d. White, II, is shown in his d
clothing which was made by the astronaut from his pa
material.

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ts undergo desert survival training a

The four-day course included instruc
f the land, shelter making, and how
equipment. Emphasis was placed on tha
ving off the natural resources of tha

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Astronauts 1963

NASA National Aeronautics and Space Administration

S85 36649

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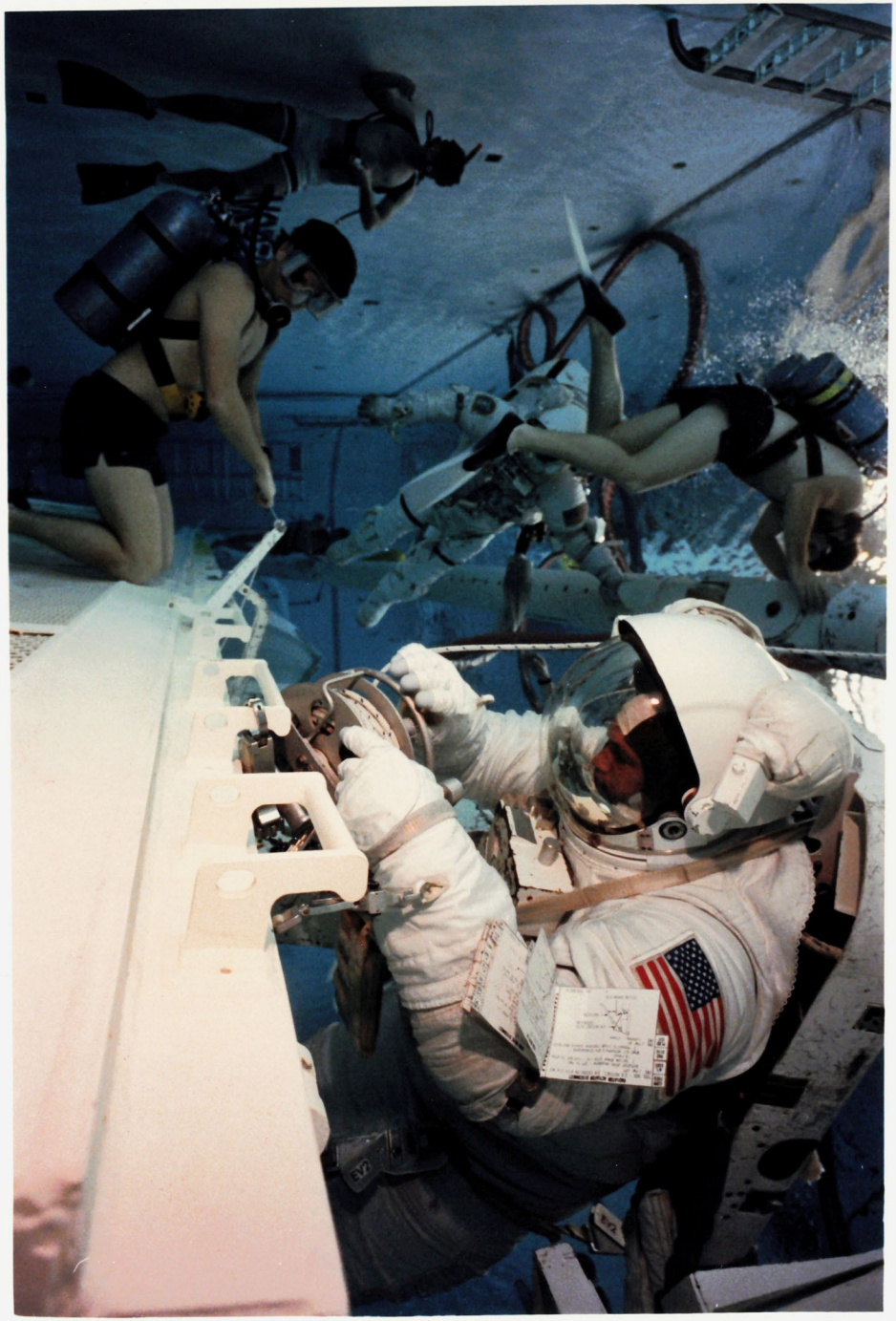

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10/2/63

Astronaut trainees participate in parasail training at Shell Island Galveston Bay, Texas

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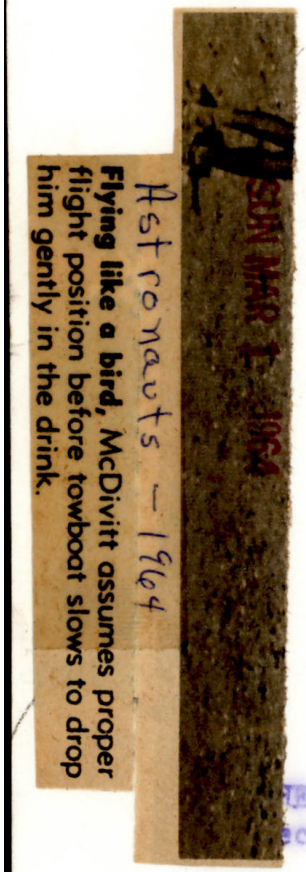

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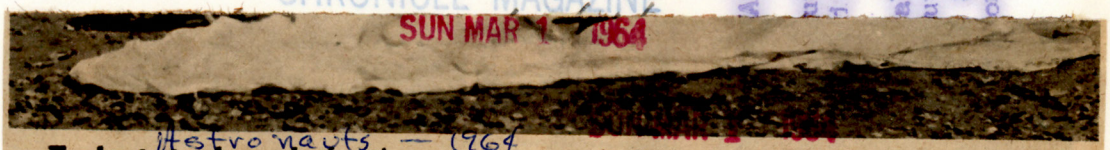

Astronauts — 1964

Towboat stands ready for the next astronaut's flight. Parasail training is not just a fun game; it familiarizes the astronaut with space capsule water landings.

...rainees part... Parasail training at Shell Is...
...ay, Texas

...tics and Space Administration has
...ication of this photograph
...al advertising must be approved.
...ut. by the Public Affairs Officer.
Space Administration, Manned
...on l. Texas.

NASA PHOTOGRAPH

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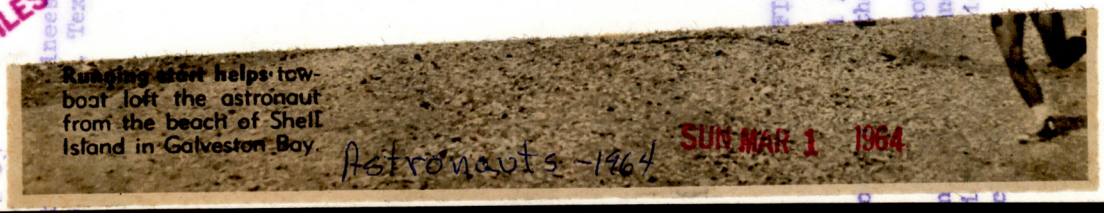
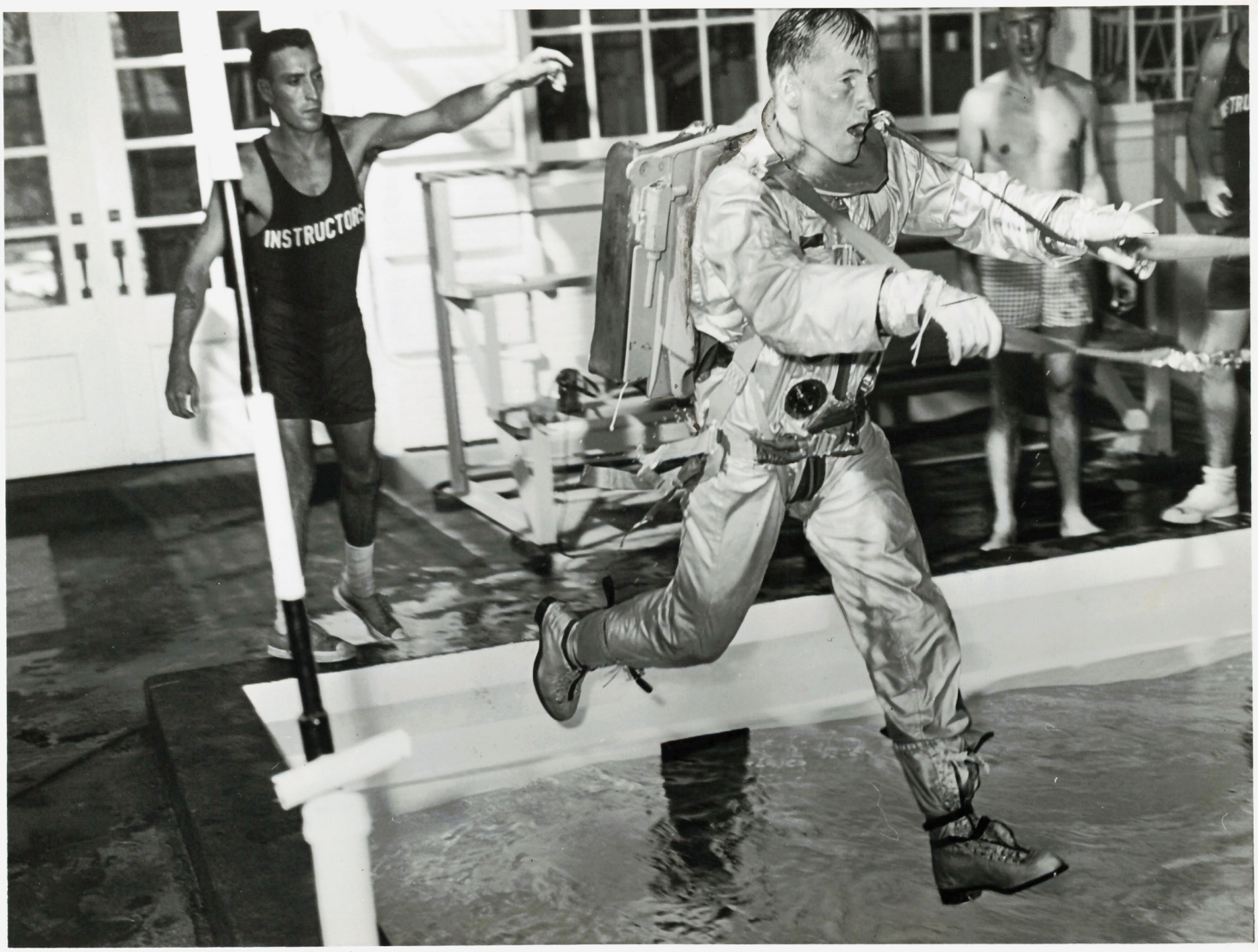


Ranging start helps tow-boat loft the astronaut from the beach of Shell Island in Galveston Bay.

Astronauts -1964

SUN MAR 1 1964

NASA
S-63-16363



9/24/63

S-63-16363

Astronaut trainee Edward White undergoes the parachute drag test during water survival training at the Water Survival School, Naval Air Station, Pensacola, Florida.

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(1)

AR 2
Astronauts - 1964

Moments before being dunked in the pool at the Naval Air Station, Pensacola, Fla., astronaut trainee Edward White grimaces, takes a deep breath.

OFFICIAL NASA PHOTOGRAPH

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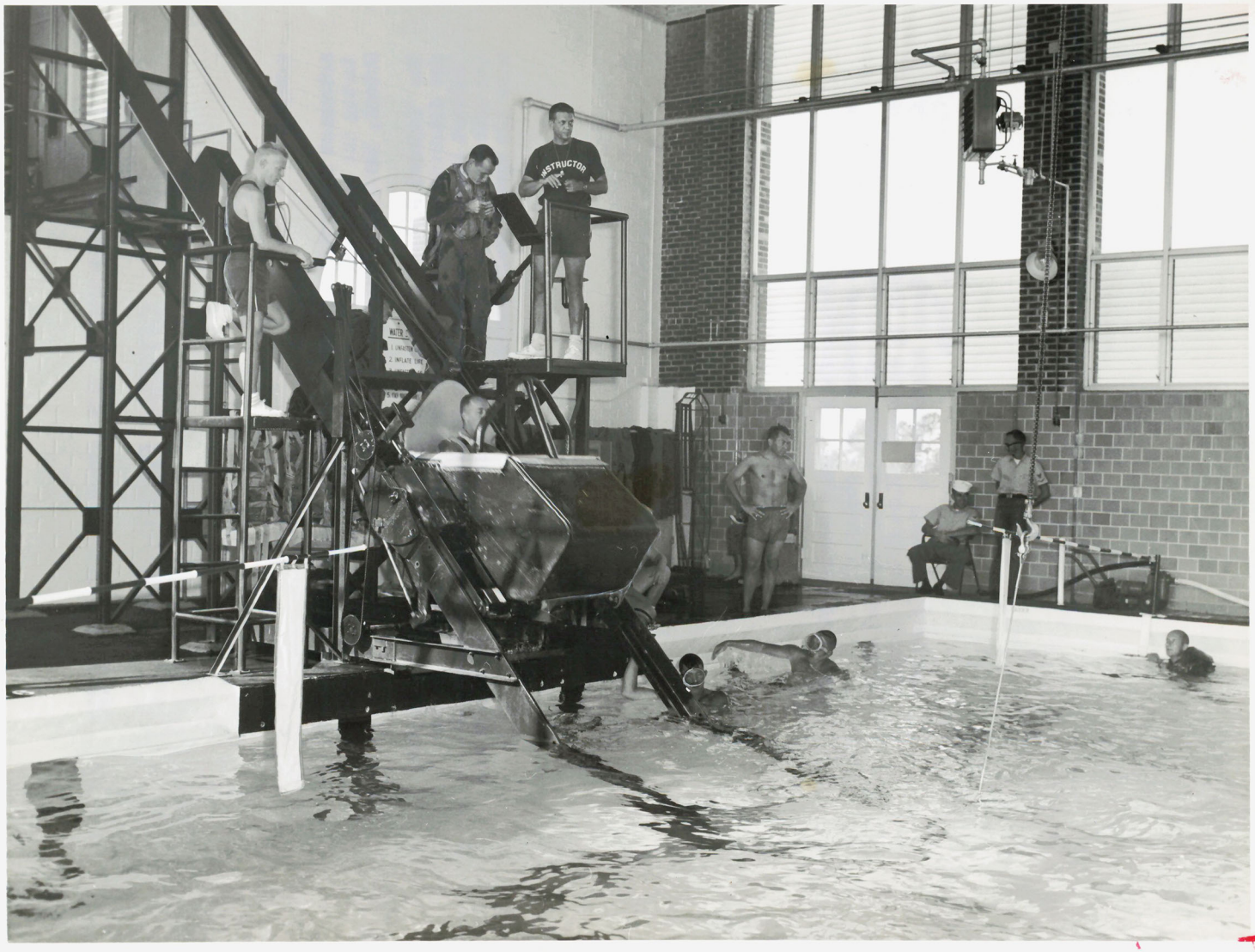

MANNED SPACECRAFT CENTER

OFFICIAL PHOTOGRAPH

9/24/63

Astronaut James McDivitt takes a ride in the "Dilbert Dunker" during the water survival training held at the Water Survival School, Naval Air Station, Pensacola, Fla.

The "Dilbert Dunker" is used to train pilots the proper procedure for ditching an aircraft after crash landing in water. As the "Dilbert Dunker" hits the water it flips over on its back and the astronaut must release himself from the parachute harness and make his egress from underwater.

(8)

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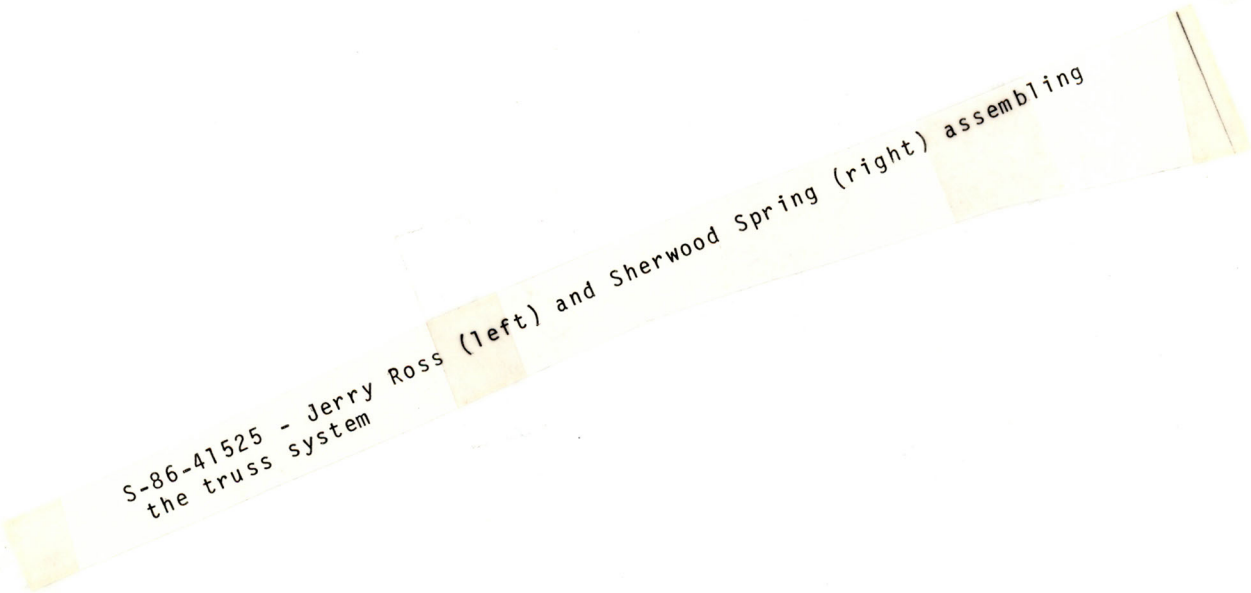

S-86-41525 - Jerry Ross (left) and Sherwood Spring (right) assembling the truss system

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B & W

27 FEB 1967 S-67-26894

ELLYSON FIELD, PENSACOLA, FLORIDA

HELICOPTER TRAINING---Astronaut Fred W. Haise Jr. (on right) participates in helicopter training at Ellyson Field in Florida. His instructor is Capt. Don Muyskens, U.S. Marine Corps.

NASA
S-63-16355

Sept. 24, 1963 S-63-16355

Astronaut trainee Thomas P. Stafford takes a ride in the "Dilbert Dunker" during the water survival training held at the Water Survival School, Naval Air Station, Pensacola, Fla.

The "Dilbert Dunker" is used to train pilots the proper procedure for ditching an aircraft after crash landing in water. As the "Dilbert Dunker" hits the water it flips over on its back and the trainee must release himself from the parachute harness and make his egress from underwater.

Water survival training for astronauts trainees includes this ingenious device called the "Dilbert Dunker." The Dilbert is an aid in learning procedure for ditching aircraft.

CHRONICLE MAGAZINE
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(W)

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NASA
S-63-16366

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9/24/63

Astronaut trainee Edward White in life raft during water survival training at the Water Survival School, Naval Air Station, Pensacola, Florida.

CHRONICLE MAGAZINE
ISSUE 3-29-64
PAGE 9

(4)

Bundled up and liking it is astronaut trainee White in the big middle of a swimming pool. Special rubber life raft is supposed to keep you warm and dry after abandoning aircraft.

OFFICIAL NASA PHOTOGRAPH

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NASA
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MON AUG 21 1978

Lyndon B. Johnson Space Center

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15 APRIL 1977

JOHNSON SPACE CENTER, HOUSTON, TEXAS

SHUTTLE OAS COMPUTERS-----An overall view of the computers for the Space Shuttle Orbiter Aeroflight Simulator (OAS) located in Building 5 at the Johnson Space Center. The OAS will support crew and flight controller training for the early Shuttle Orbiter development program and the aerodynamic portion of the Shuttle orbital missions. The OAS has a simulator computer complex comprised of an IBM 360/65, two Interdata 8/32 mini computers, and three general purpose flight type computers. This equipment provides digital simulation of vehicle dynamics and systems at the level representative of the vehicle and subsystems performance as perceived by the flight crew. Also, there is an Orbiter avionics flight computer complex interfaced with the simulator computers to provide flight data processing functions.

Nasa mission control

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S- 79- 34714

Lyndon B. Johnson Space Center
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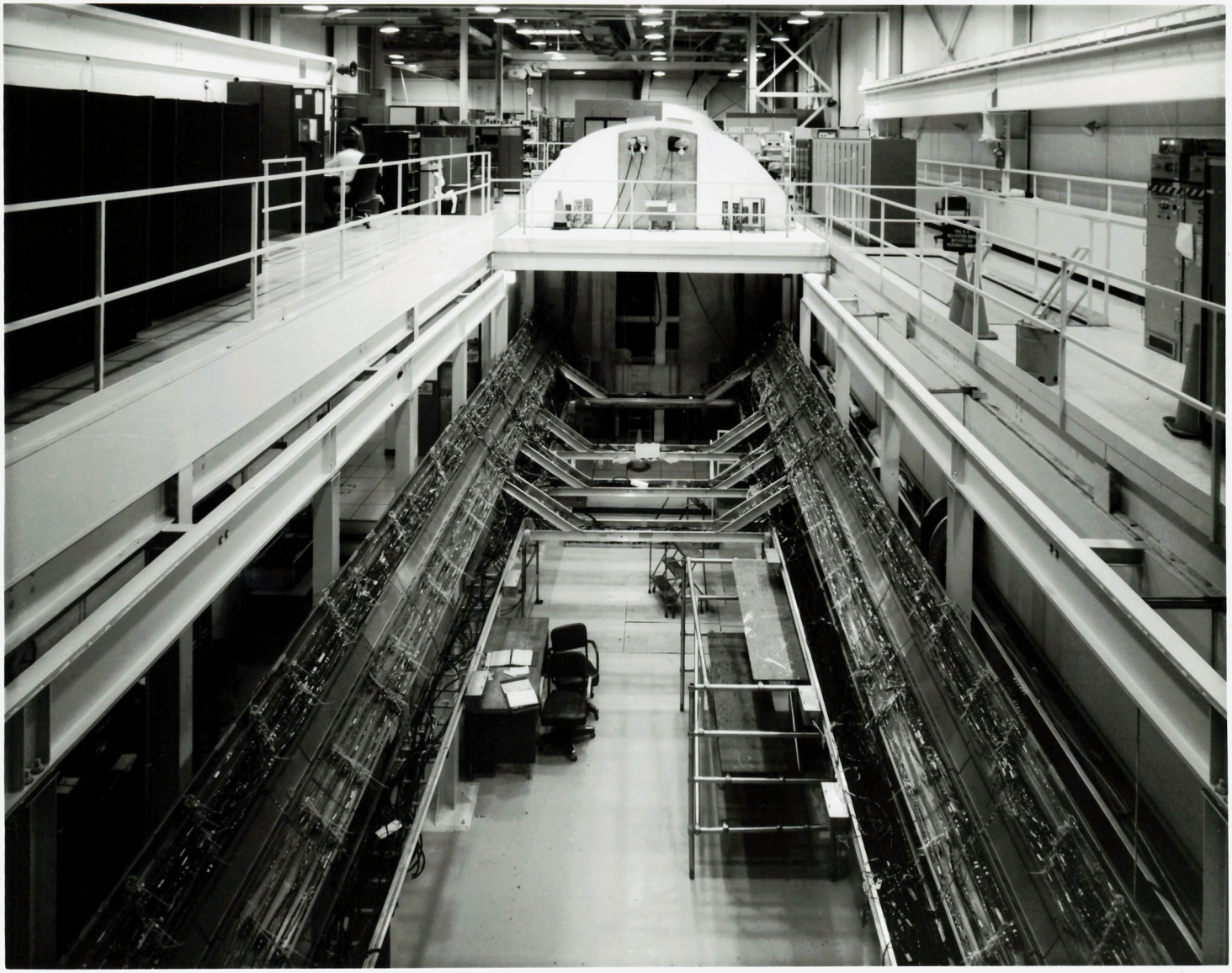

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OCTOBER 1979 S-79-34714

JOHNSON SPACE CENTER, HOUSTON, TEXAS

SPACE SHUTTLE AVIONICS INTEGRATION LABORATORY --- This high angle view gives an excellent aft-to-forward view of the mockup supporting Shuttle preparations in the Shuttle avionics integration laboratory in Bldg. 16 at the Johnson Space Center (JSC). A "cutaway" drawing (JSC photo no. S-79-37403) gives a clear picture of how this area fits into the overall scene and operation in the SAIL facility.

NOTE: This photo is one of ten non-sequentially-numbered listed in support of NASA-JSC News Release No. 80-016, dated March 20, 1980, featuring the objectives and functions of JSC's SAIL facility.

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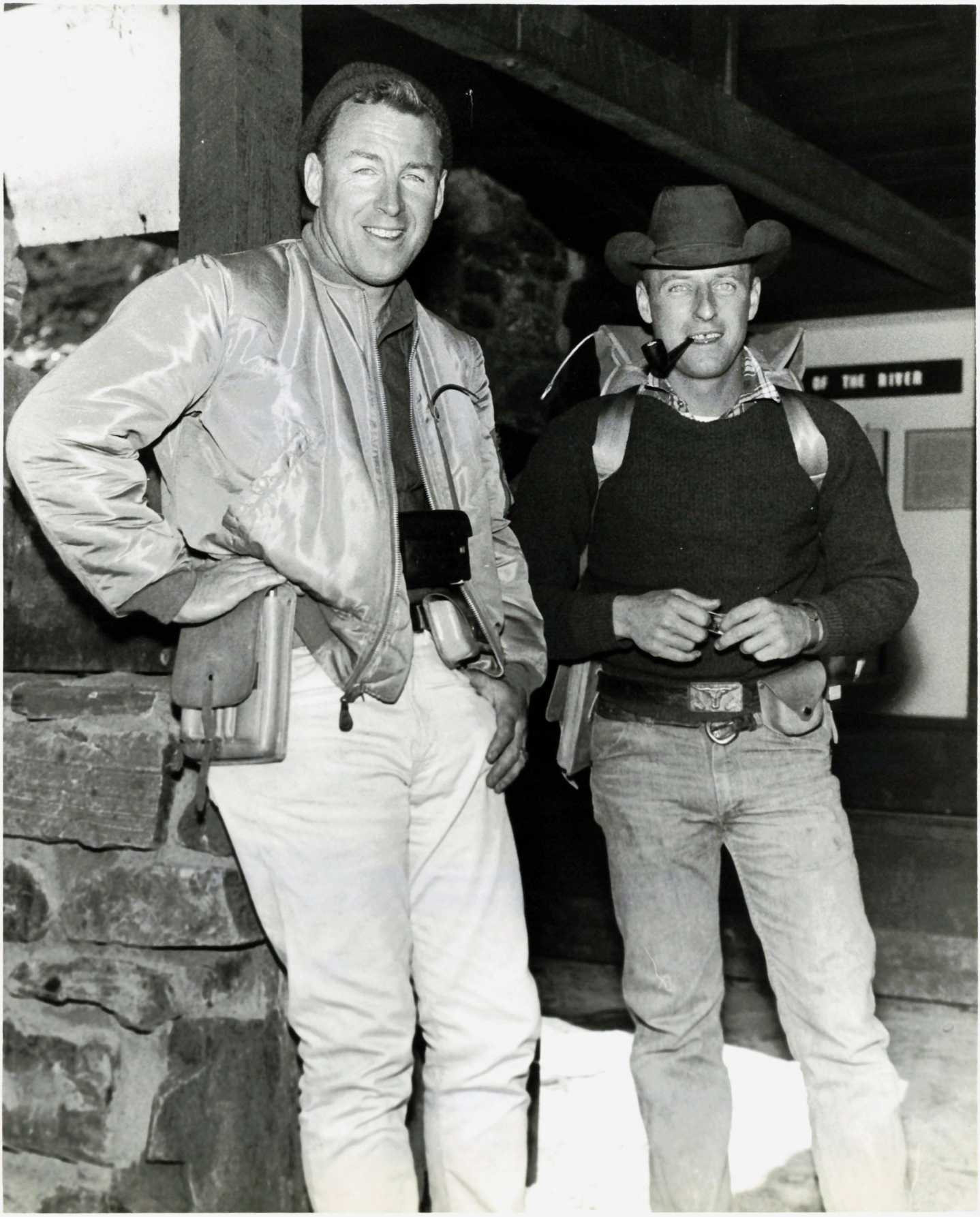
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March 13, 1964 S-64-13880

Photos- 1964

Jim Lovell, Charles Conrad at the bottom of Grand Canyon during Geological Training at Grand Canyon, Arizona.

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S 89-50836

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Astronauts

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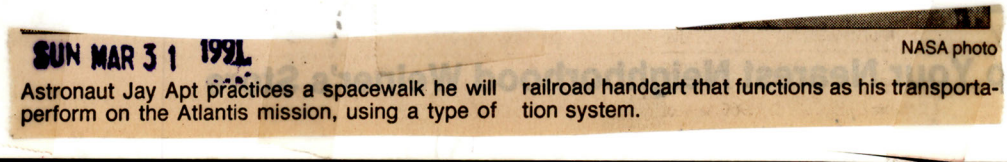

SUN MAR 3 1 1991

NASA photo

Astronaut Jay Apt practices a spacewalk he will perform on the Atlantis mission, using a type of railroad handcart that functions as his transportation system.

NASA National Aeronautics and Space Administration

S85-36962 File

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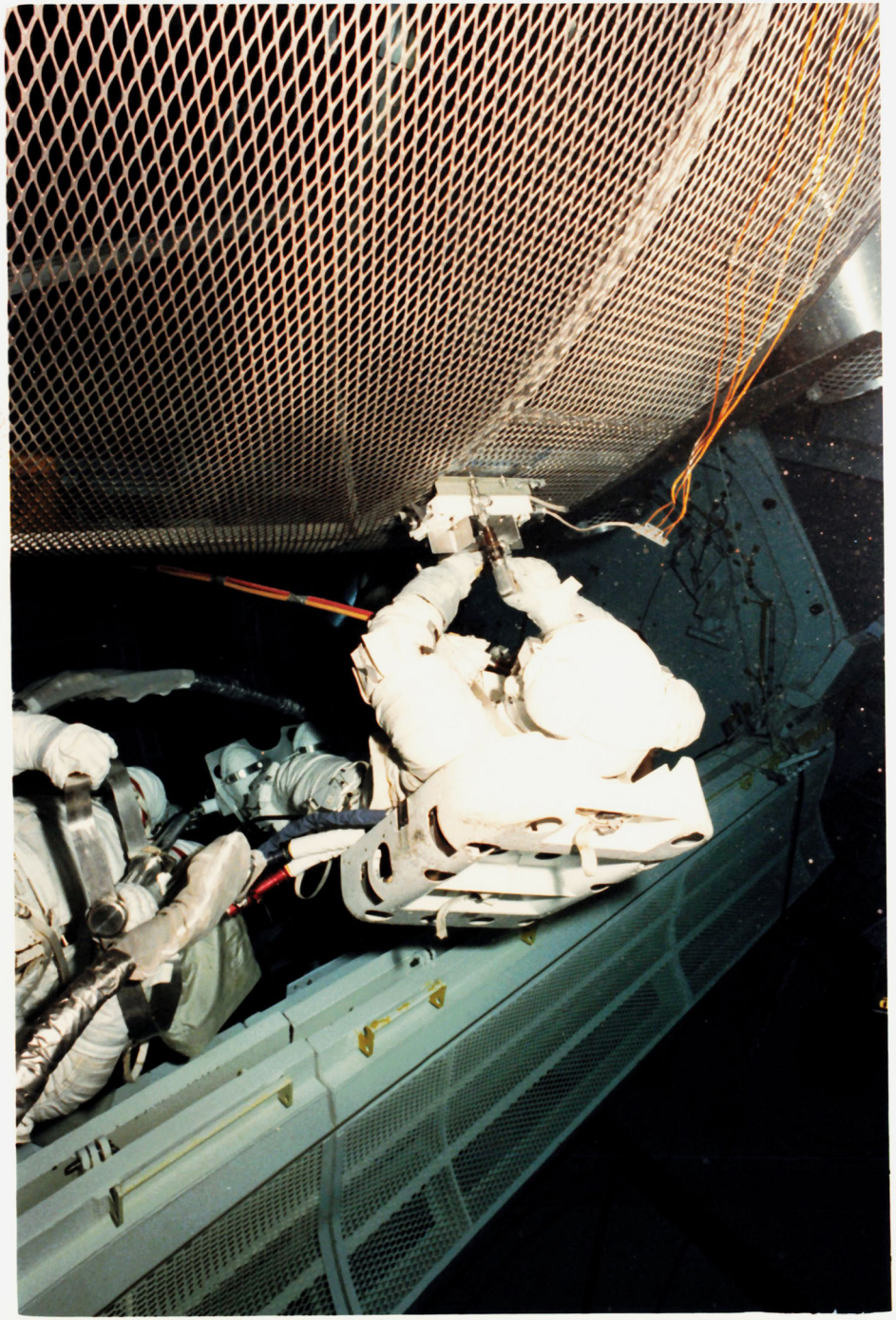

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S85-25617

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Space Shuttle XVI

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JANUARY 17, 1985

JOHNSON SPACE CENTER, HOUSTON, TEXAS

S85-25616

Sen. Jake Garn gets an initial "feel" of weightlessness as his feet float freely while he anchors himself with his hands. Seated nearby is Jeff Bingham, an aide to the senator.

S85-25618

Sen. Jake Garn (background) shares some of the ceiling space of the KC-135 with Jeff Bingham, an aide to the senator.

S85-25619

Sen. Jake Garn (foreground), his first session in weightlessness behind him, takes a seat behind the KC-135's crew in the forward cabin. Roger Dwig and Joseph S. Algranti, pilot and co-pilot, are partially visible in the background.

S85-25618

Sen. Jake Garn appears to be springing from a trampoline in this scene. Taken during a brief period of weightlessness provided by a parabola flown by the KE-135. Jeff Bingham, an aide to the senator, floats freely nearby.

S85-25613

Sen. Jake Garn and Jeff Bingham, an aide to the senator prepare to move from a partially anchored position to a totally free-floating mode during a brief weightless session. Others onboard to experience zero gravity or to lend support to the participants are pictured in background.

NASA National Aeronautics and Space Administration

S85-25620

Lyndon B. Johnson Space Center
Houston, Texas 77058

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JANUARY 17, 1985

JOHNSON SPACE CENTER, HOUSTON, TEXAS

s85-25618

Sen. Jake Garn gets an initial "feel" of weightlessness as his feet float freely while he anchors himself with his hands. Seated nearby is Jeff Bingham, an aide to the senator.

s85-25619

Sen. Jake Garn (background) shares some of the ceiling space of the KC-135 with Jeff Bingham, an aide to the senator.

s85-25620

Sen. Jake Garn (foreground), his first session in weightlessness behind him, takes a seat behind the KC-135's crew in the forward cabin. Roger Zweig and Joseph S. Algranti, pilot and co-pilot, are partially visible in the background.

s85-25616

Sen. Jake Garn appears to be springing from a trampoline in this scene, taken during a brief period of weightlessness provided by a parabola flown by the KC-135. Jeff Bingham, an aide to the senator, floats freely nearby.

s85-25617

Sen. Jake Garn and Jeff Bingham, an aide to the senator prepare to ease from a partially anchored position to a totally free-flying mode during a brief weightless session. Others onboard to experience zero gravity or to lend support to the participants are pictured in background.

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Space Shuttle XVI

NASA National Aeronautics and Space Administration

S85-25618

Lyndon B. Johnson Space Center
Houston, Texas 77058

Space Shuttle
XVI

TUESDAY FEB 19 1985

COLOR

JANUARY 17, 1985

JOHNSON SPACE CENTER, HOUSTON, TEXAS

S85-25615

Sen. Jake Garn gets an initial "feel" of weightlessness as [illegible] feet float freely while he anchors himself with his [illegible]. Seated nearby is Jeff Bingham, an aide to the senator.

S85-25619

Sen. Jake Garn (background) shares some of the ceiling space of the KC-135 with Jeff Bingham, an aide to the senator.

S85-25620

Sen. Jake Garn (foreground), his first session in weightlessness behind him, takes a seat behind the KC-135's crew in the forward cabin. Roger Zweig and Joseph S. Algranti, pilot and co-pilot, are partially visible in the background.

S85-25615

Sen. Jake Garn appears to be springing from a trampoline in this scene taken during a brief period of weightlessness provided by a parabola flown by the KC-135. Jeff Bingham, an aide to the senator, floats freely nearby.

S85-25[illegible]

Sen. Jake Garn and Jeff Bingham, an aide to the senator prepare to ease from a partially anchored position to a totally free-flying mode during a brief weightless session. Other crewmembers aboard to experience zero gravity or [illegible] to the participants are pictured in background.

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National Aeronautics and Space Administration

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Space Shuttle XVI

COLOR

JANUARY 17, 1985

JOHNSON SPACE CENTER, HOUSTON, TEXAS

S85-25618

Sen. Jake Garn gets an initial "feel" of weightlessness as his feet float freely while he anchors himself with his hands. Seated nearby is Jeff Bingham, an aide to the senator.

S85-25619

Sen. Jake Garn (background) shares some of the ceiling space of the KC-135 with Jeff Bingham, an aide to the senator.

S85-25620

Sen. Jake Garn (foreground), his first session in weightlessness behind him, takes a seat behind the KC-135's crew in the forward cabin. Roger Zweig and Joseph S. Algranti, pilot and co-pilot, are partially visible in the background.

S85-25616

Sen. Jake Garn appears to be springing from a trampoline in this scene, taken during a brief period of weightlessness provided by a parabola flown by the KC-135. Jeff Bingham, an aide to the senator, floats freely nearby.

S85-25617

Sen. Jake Garn and Jeff Bingham, an aide to the senator prepare to ease from a partially anchored position to a totally free-flying mode during a brief weightless session. Others onboard to experience zero gravity or to lend support to the participants are pictured in background.

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S85-26146

Lyndon B. Johnson Space Center
Houston, Texas 77058

Space shuttle XVI

NASA

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14 JANUARY 1985 S85-26146

JOHNSON SPACE CENTER, HOUSTON, TEXAS

51-E TRAINING---Patrick Baudry, center right, and Jean Loup-Chretien are pictured between sessions of weightlessness provided by a parabola pattern flown by the KC-135. The two spationauts, representing France's Centre National d'Etudes Spatiales, are training as payload specialists. Baudry has been assigned to NASA's STS 51-E mission and Chretien will serve as his backup. The two watch technicians prepare an experiment to be monitored during an upcoming session of weightlessness.

TUESDAY FEB 19 1985

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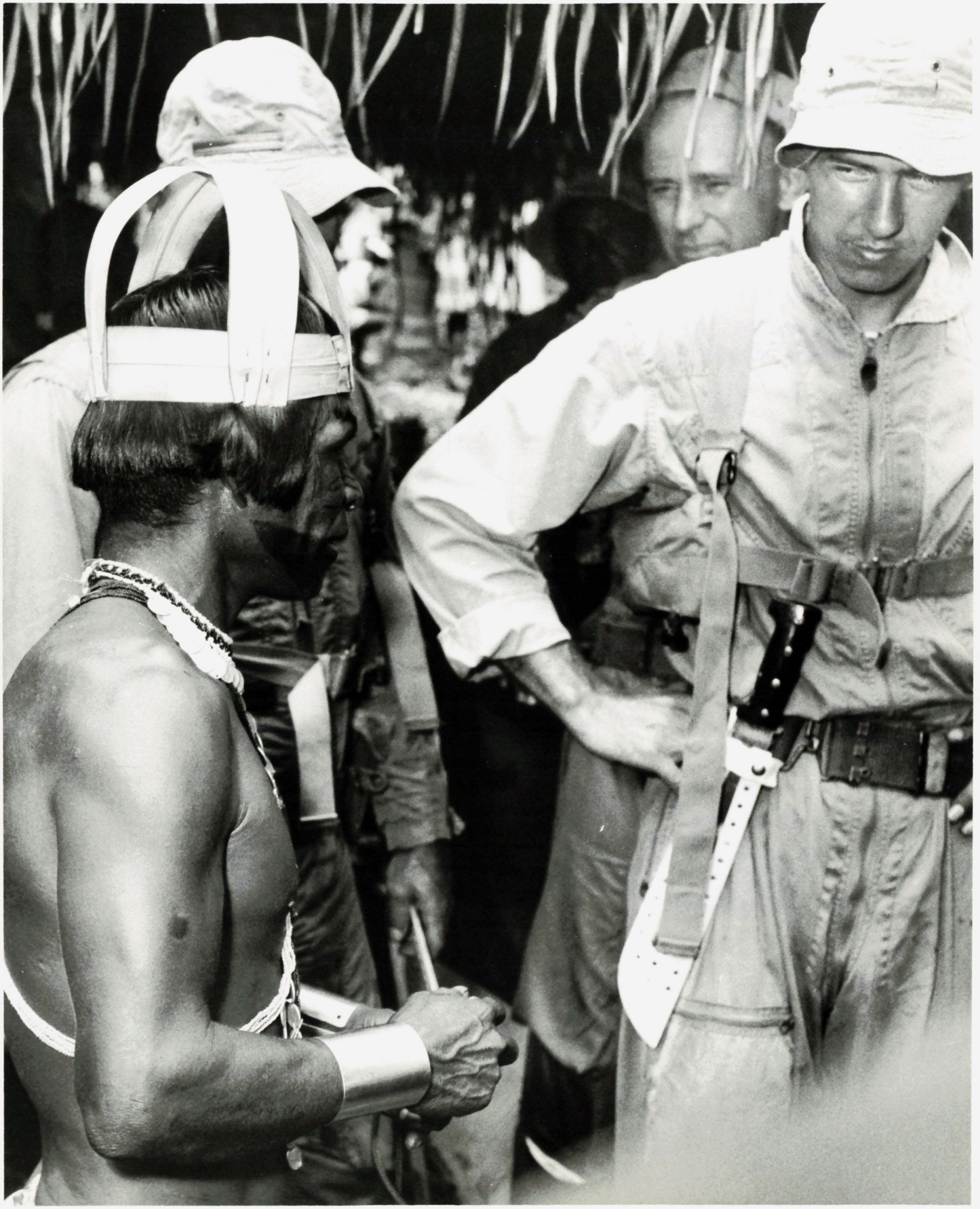

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C

25 June 64 S-64-23223

PANAMA CANAL ZONE

Astronauts

JUNGLE SURVIVAL TRAINING--Astronaut Ray Zedekar tries to communicate with King Antonio Zarco of the Choco tribe.

The National Aeronautics and Space Administration has no objection to the publication of this photograph.

Its use in commercial advertising must be approved, along with copy and layout, by the Public Affairs Officer, National Aeronautics and Space Administration, Manned Spacecraft Center, Houston 1, Texas.

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OFFICIAL PHOTOGRAPH

25 June 64 S-64-23224

PANAMA CANAL ZONE

JUNGLE SURVIVAL TRAINING- Astronauts David R. Scott, left, and Theodore Freeman, extreme right, listen to King Antonio Zarco of the Choco tribe exchange ideas on jungle survival, with Wright Smith, Head Instructor.

The National Aeronautics and Space Administration has no objection to the publication of this photograph.

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25 June 64 S-64-23226

PANAMA CANAL ZONE

JUNGLE SURVIVAL TRAINING- Astronauts try edible fruit found in the jungle. From left, Ed Aldrin, Ted Freeman, William Anders, Roger Chaffee, and Charles Bassett.

The National Aeronautics and Space Administration has no objection to the publication of this photograph.

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C

25 June 64 S-64-23228

PANAMA CANAL ZONE

JUNGLE SURVIVAL TRAINING--Astronauts receive instructions on hammock making.

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C

25 June 64 S-64-23230

PANAMA CANAL ZONE

JUNGLE SURVIVAL TRAINING--Astronauts receive briefing before entering dense area of the jungle.

The National Aeronautics and Space Administration has no objection to the publication of this photograph.

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C

25 June 64 S-64-23231

PANAMA CANAL ZONE *Astronauts*

JUNGLE SURVIVAL TRAINING--Native instructor shows how to make a lean-to as astronauts Russ Schweickart, left, and Alan Bean observe. Instructor Minners is in the background.

The National Aeronautics and Space Administration has no objection to the publication of this photograph.

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25 June 64

S-64-23233

PANAMA CANAL ZONE

JUNGLE SURVIVAL TRAINING--Astronauts prepare to enter jungle with a native guide.

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OFFICIAL PHOTOGRAPH

C

25 June 64 S-64-23240

PANAMA CANAL ZONE

JUNGLE SURVIVAL TRAINING--From left, Astronauts Edwin E. Aldrin Jr., Theodore Freeman, William A. Anders, Roger Chaffee, Charles Bassett and Russell Schweickart, at extreme left, listen to a briefing on edible jungle fruit.

The National Aeronautics and Space Administration has no objection to the publication of this photograph.

Its use in commercial advertising must be approved, along with copy and layout, by the Public Affairs Officer, National Aeronautics and Space Administration, Manned Spacecraft Center, Houston 1, Texas.

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OFFICIAL PHOTOGRAPH

C

25 June 64 S-64-23238

PANAMA CANAL ZONE

JUNGLE SURVIVAL TRAINING--Astronauts R. Walter Cunningham, left, drinks cocoanut milk while Astronaut Alan Bean eats a center from a palm for a jungle breakfast.

The National Aeronautics and Space Administration has no objection to the publication of this photograph.

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C

25 June 64

PANAMA CANAL ZONE

JUNGLE SURVIVAL TRAINING--Astronauts Dave Scott, William Anders and Roger Chaffee enjoy a Iguana lizard and boa constrictor lunch in the jungle.

The National Aeronautics and Space Administration has no objection to the publication of this photograph.

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S89 50817

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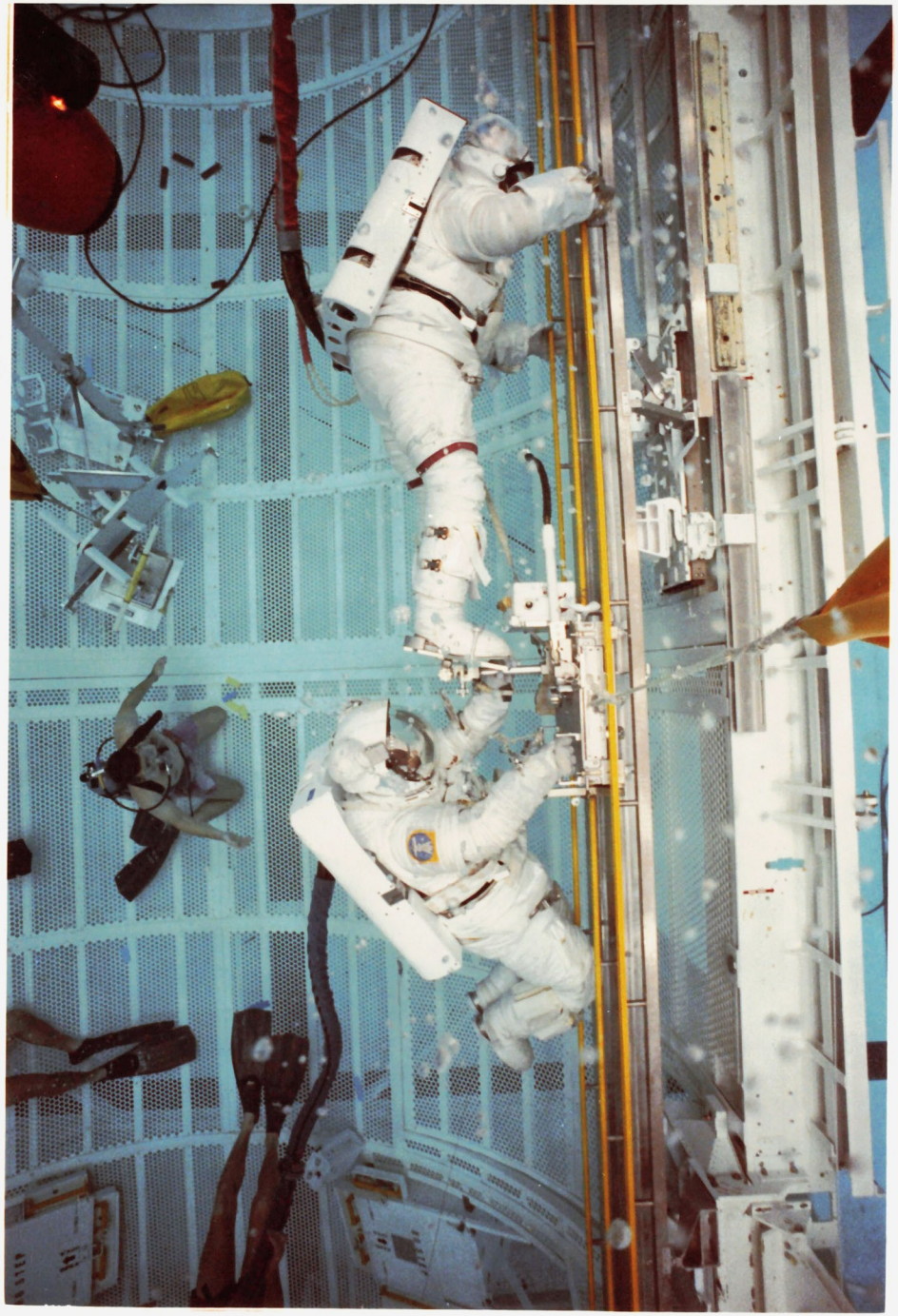

File: Space Station

CAPTION INFORMATION FOR PHOTOS ACCOMPANYING CETA RELEASE

S90-27795:
McDonnell Douglas Space Systems Company engineer Gary Peters tests an electrical version of the Crew and Equipment Translation Aid, a spacewalker's transportation system planned for Space Station Freedom that will tested in orbit during STS-37 in November. The electrical cart is moved by electricity generated from turning hand pedals. Peters is suspended in a special harness to simulate weightlessness on the equipment.

S89-50836:
Astronaut Jay Apt, a mission specialist on STS-37, practices a spacewalk he will perform on that flight. Apt is using a mechanical version of the Crew and Equipment Translation Aid, a type of railroad handcart planned as a spacewalker's transportation system along the 400-foot long truss of Space Station Freedom.

S89-46985:
In JSC's Weightless Environment Training Facility pool, astronauts Jerry Ross and Jay Apt practice one the experiments they will do in space aboard shuttle mission STS-37. The experiment uses an electrically powered version of the Crew and Equipment Translation Aid (CETA), a cart designed to move astronauts up and down the Space Station Freedom truss. Apt is pulling Ross along to test the cart's ability to carry one person plus cargo.

S89-50817:
Astronaut Jerry Ross prepares to test a hand-powered version of the Crew and Equipment Translation Aid (CETA) flight experiment in JSC's Weightless Environment Training Facility pool. Ross pulls the cart along hand-over-hand during the test while fellow crewman Jay Apt holds on to the back. The test will determine how difficult it is to maneuver a cargo in such a manner when it is done in space on STS-37. The goal is to find the best method for astronauts to move around the exterior of Space Station Freedom.

S90-28518 and S-90-28547
From left, Langley Research Center's John Gustafson and JSC's Ed Whitsett, Steve Poulos and Jim O'Kane inspect the Crew and Equipment Translation Aid (CETA) transportation cart that will fly aboard STS-37 in November 1990. The four engineers have headed a team of hundreds that have contributed to the project.

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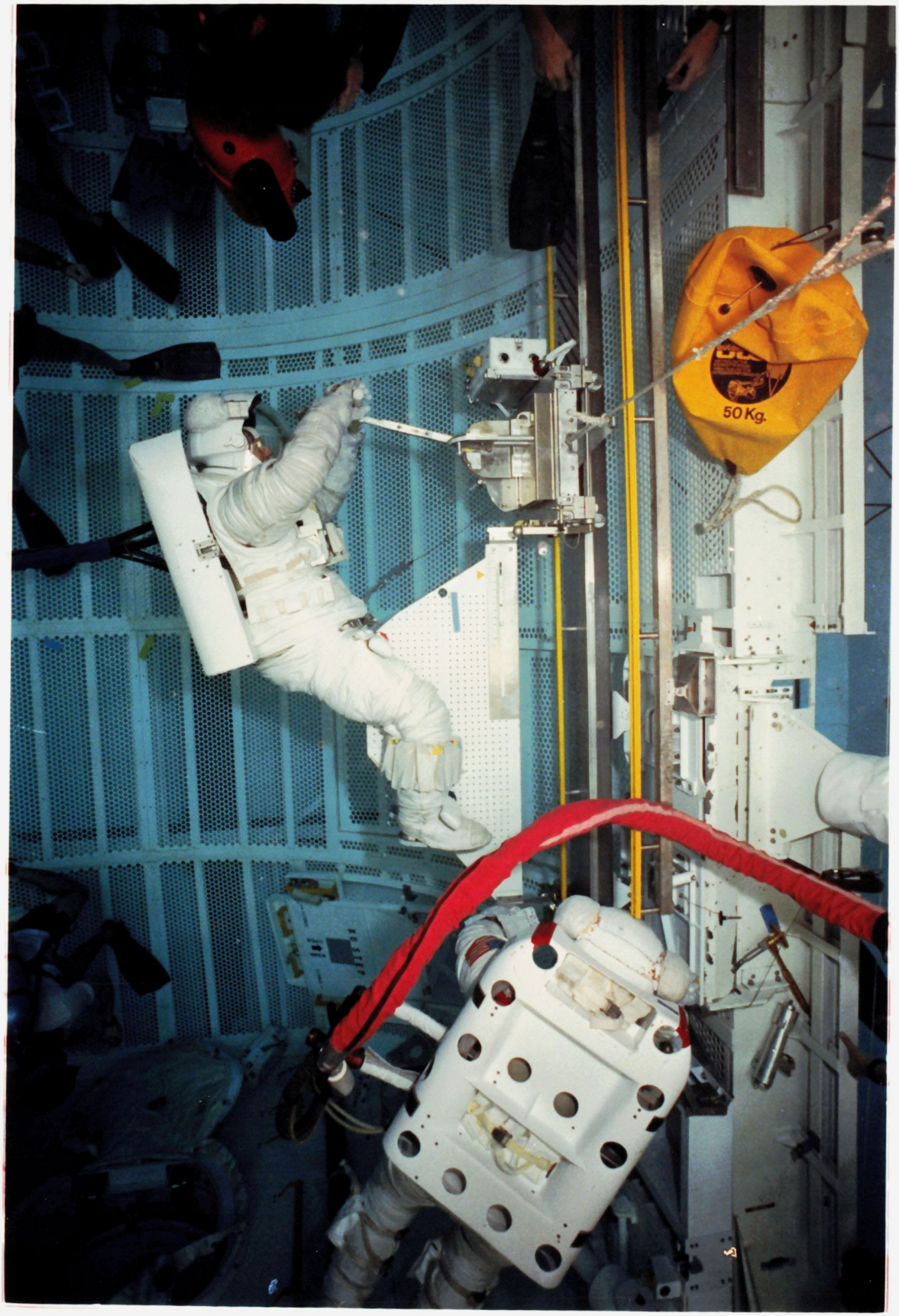

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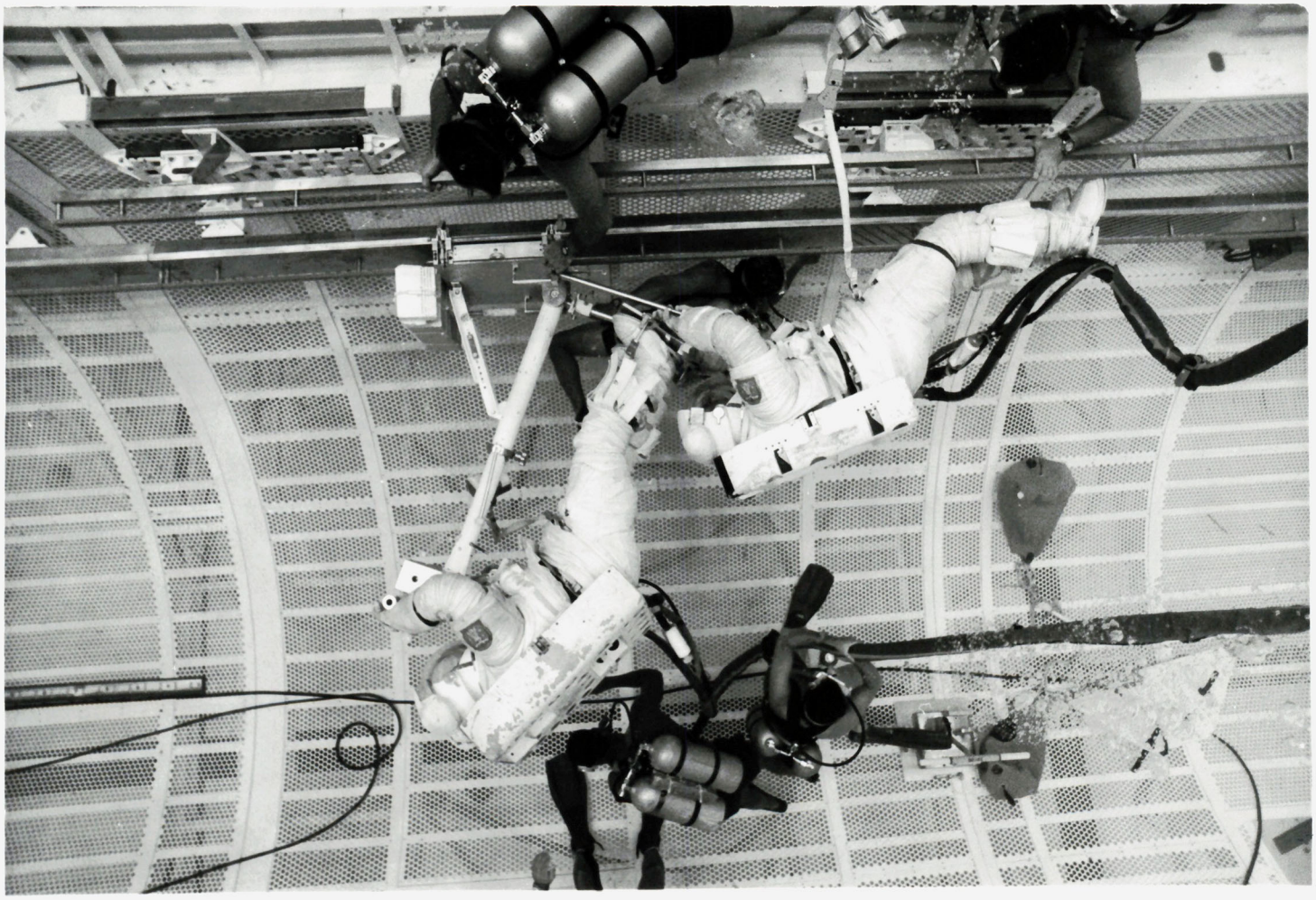

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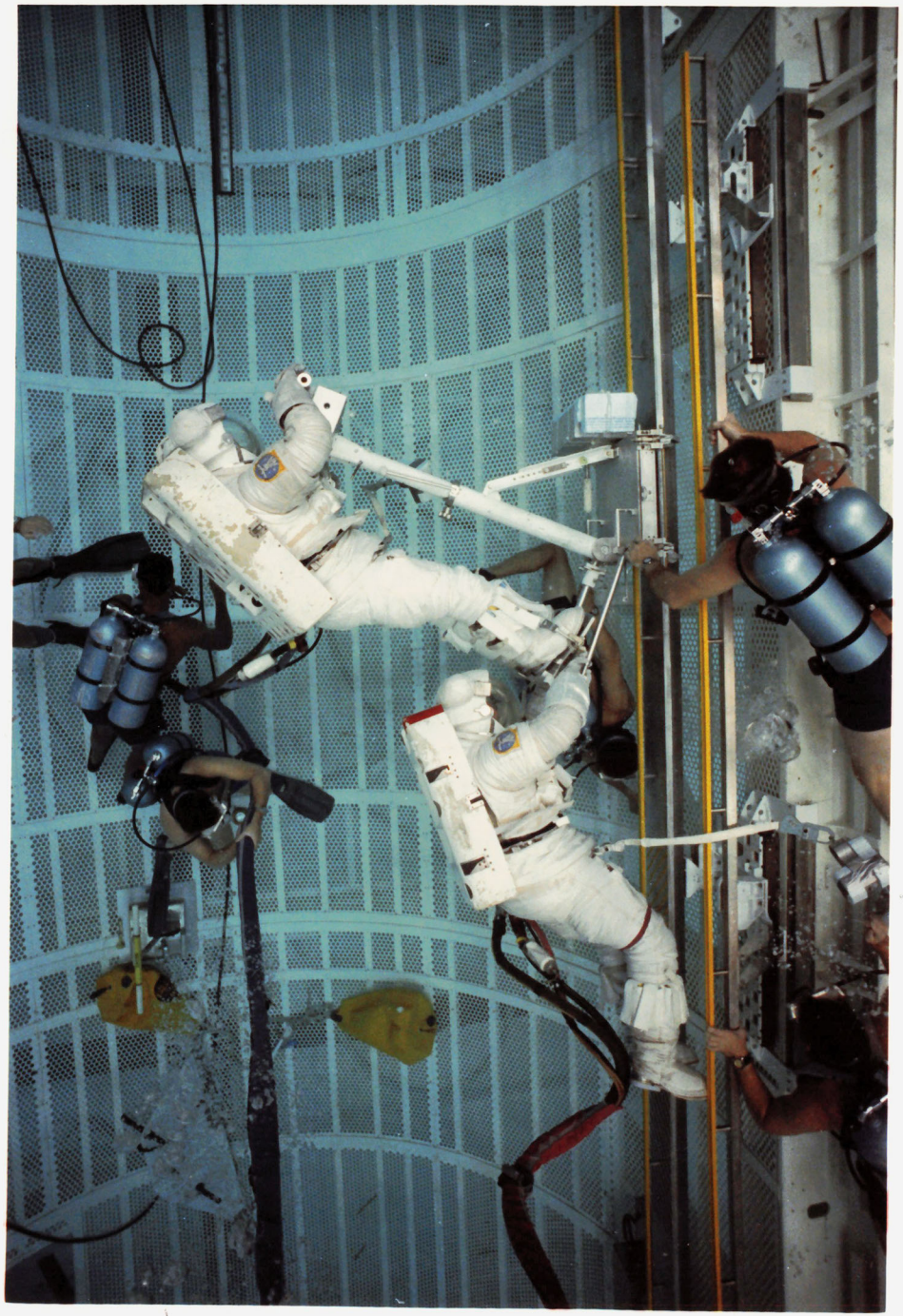

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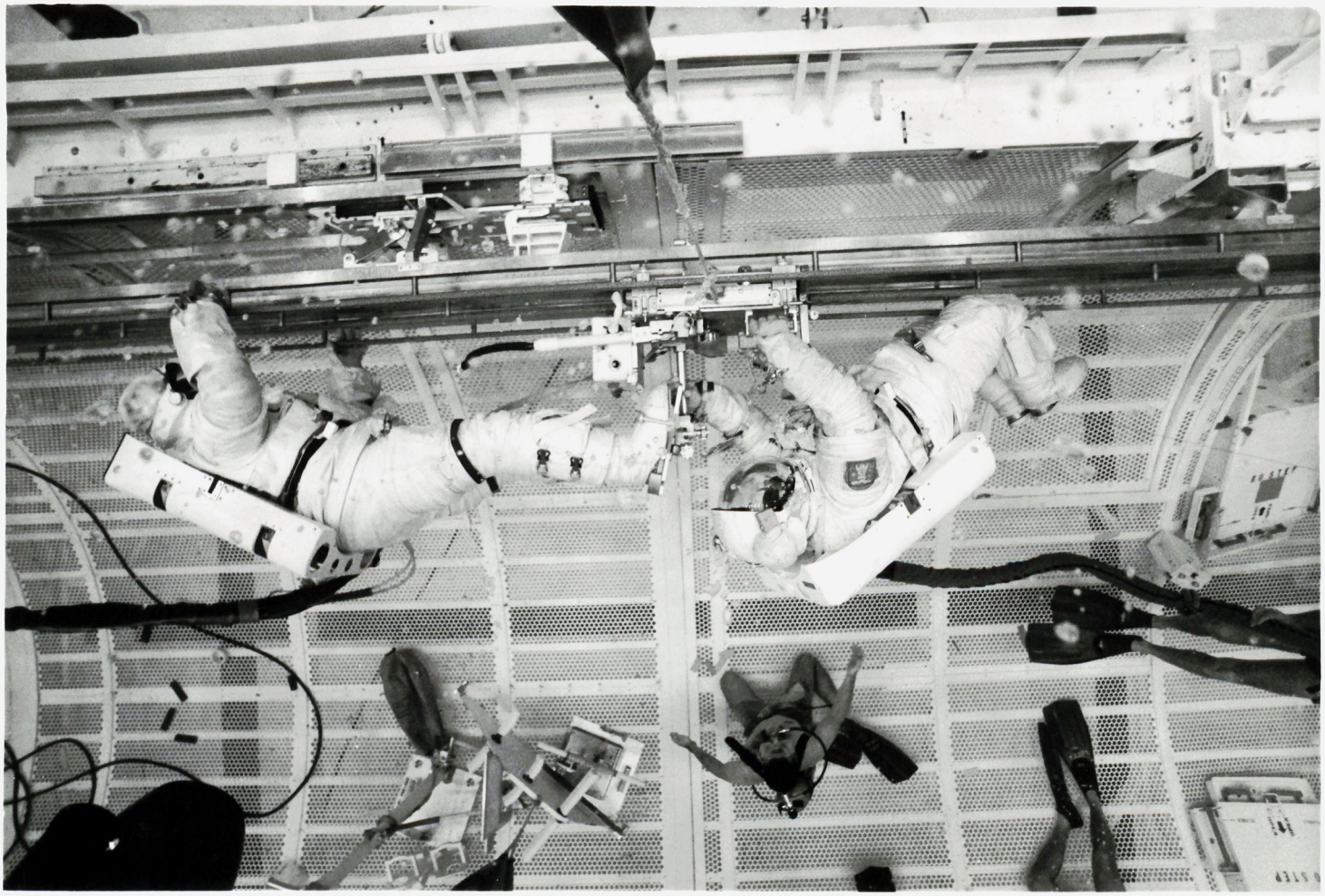
Space Station

NASA National Aeronautics and Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058



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bike: Space Station

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NASA

S-63-6640

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[illegible] Neil A. Armstrong
[illegible] Tubeless Flight

[illegible] photographic coverage by AF Photographer
[illegible] .W/P AFB - Apr. 23, 1963

OFFICIAL NASA PHOTOGRAPH

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4/23/63

Astronauts Trainees White, McDivitt, Armstrong participating in weightless flight.

Onboard camera photographic coverage by AF Photographer during weightless condition. W/P AFB - Apr. 23, 1963.

OFFICIAL NASA PHOTOGRAPH

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NASA
S-63-16355

Sept. 24, 1963 S-63-16355

Astronaut trainee Thomas P. Stafford takes a ride in the "Dilbert Dunker" during the water survival training held at the Water Survival School, Naval Air Station, Pensacola, Fla.

The "Dilbert Dunker" is used to train pilots the proper procedure for ditching an aircraft after crash landing in water. As the "Dilbert Dunker" hits the water it flips over on its back and the trainee must release himself from the parachute harness and make his egress from underwater.

OFFICIAL NASA PHOTOGRAPH

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His two visits — Photos - 1963

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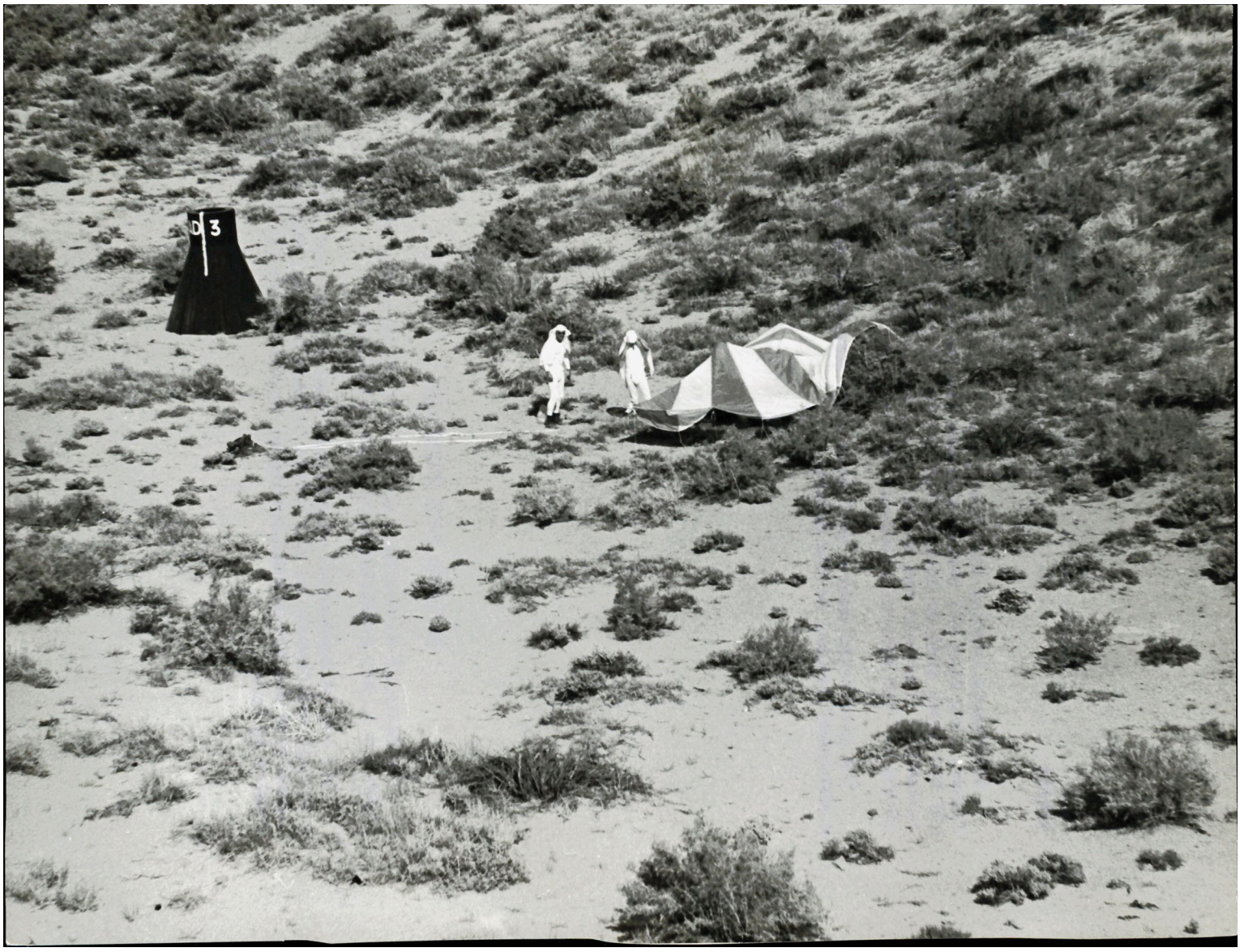
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S-63-6540

Astronauts undergo desert survival training at Stead AFB, Nevada. The four day course included instruction on how to live off the land, shelter making, and how to utilize survival kit equipment. Emphasis was placed on the means and methods of living off the natural resources of the land.

The astronauts make a tent from their parachute after a simulated landing in the desert.

CHRONICLE MAGAZIN
ISSUE 11-17-63
PAGE 20

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OFFICIAL NASA PHOTOGRAPH

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SUN NOV 17 1963

Makeshift tent provides shelter for two astronauts after simulated landing from space into barren Nevada wasteland.

Astronauts - 1963

NASA National Aeronautics and Space Administration

S86 41524

Lyndon B. Johnson Space Center
Houston, Texas 77058

Lyndon B. Johnson Space Center

S-86-41524 - Jerry Ross assembling truss system

WEDNESDAY FEB 4 1987

WEDNESDAY FEB 4 1987

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COLOR

JUNE 1987 S87-35011

JOHNSON SPACE CENTER, HOUSTON, TEXAS

SPACE STATION SHOWER --- A test subject rinses her hair following a shampoo and shower in a plexiglass prototype of the Space Station Zero-G Whole Body Shower. The test subject is using the water spray nozzle to rinse her hair and the vacuum hose to remove the excess water. The shower prototype was flown aboard the KC-135 aircraft for testing. The prototype shower was developed by JSC's Man-Systems Division.

pg. 15-2

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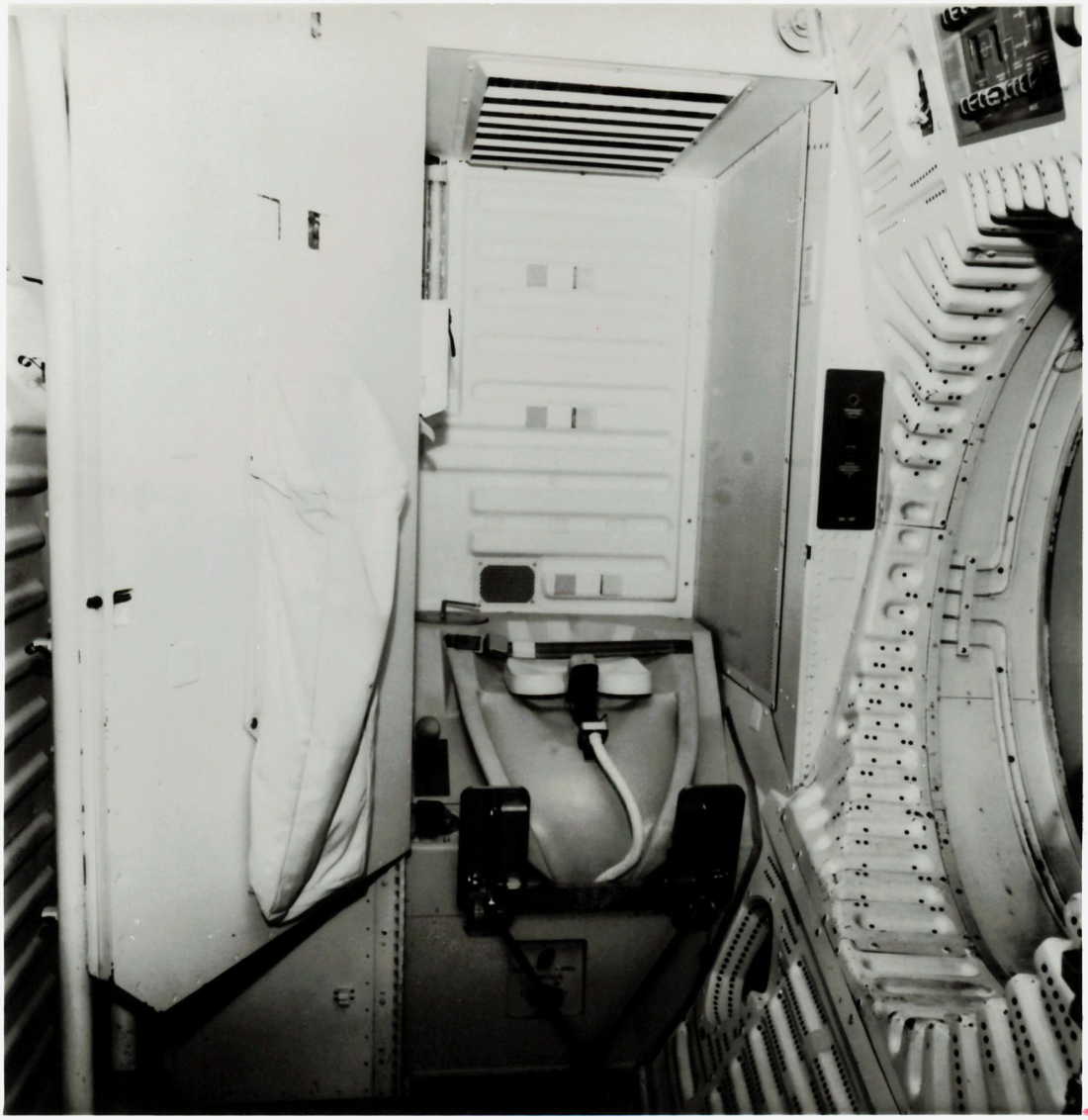
NASA-SPACE STATION

NASA National Aeronautics and Space Administration

S81-21743

Lyndon B. Johnson Space Center
Houston Texas 77058



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JANUARY 1981 S-81-31743

JOHNSON SPACE CENTER, HOUSTON, TEXAS

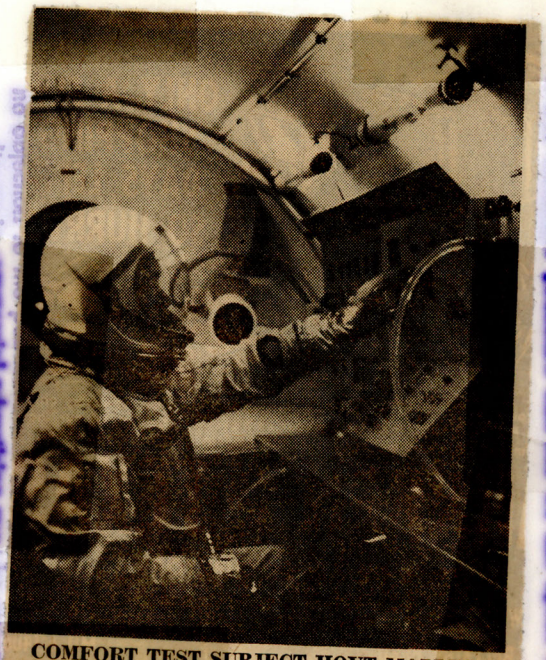
SPACE SHUTTLE ONE-G TRAINER--- This picture, taken in the mid-deck area of the Space Shuttle one-g trainer at the Johnson Space Center (JSC), reveals the waste management compartment and toilet facility. The door at left is closed when the facility is in use.

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

Million-dollar facility aboard Columbia

NASA - SPACE SHUTTLE

NASA
S-64-39937



COMFORT TEST SUBJECT HOYT MAPLES
The Panel Is Called a 'Mental Gymnastics' Panel

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MANNED SPACECRAFT CENTER
OFFICIAL PHOTOGRAPH

B&W
11 DEC 64
S-64-39937

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

SUIT TEST--Hoyt Maples, test subject for the four-day Suit Comfort Test, [illegible] task panel in the B-8, climatic [illegible] center.

Maples

National Aeronautics and Space Administration
Space Craft

180
00
172

Z-10-A
COMFORT TEST SUBJECT HOYT MAPLES →

3

National Aeronautics and
Space Administration

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

FOR RELEASE: November 15, 1999

PHOTO NO.: KSC-99PP-1318

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KENNEDY SPACE CENTER, FLA. – During Terminal Countdown Demonstration Test (TCDT) emergency egress training, STS-103 Commander Curtis L. Brown Jr. practices driving a small armored personnel carrier. Riding on the front is Capt. George Hoggard, a trainer with the KSC/CCAS Fire Department. In the carrier behind Brown is (left to right) Pilot Scott J. Kelly and Mission Specialists Steven L. Smith and John M. Grunsfeld (Ph.D.). The tracked vehicle could be used by the crew in the event of an emergency at the pad during which the crew must make a quick exit from the area. The TCDT also provides simulated countdown exercises and opportunities to inspect the mission payloads in the orbiter's payload bay. STS-103 is a "call-up" mission due to the need to replace and repair portions of the Hubble Space Telescope. Four EVA's are planned to make the necessary repairs and replacements on the telescope. The other STS-103 crewmembers are: Mission Specialists C. Michael Foale (Ph.D.), plus Claude Nicollier of Switzerland and Jean-Francois Clervoy of France, who are with the European Space Agency. The mission is targeted for launch December 6 at 2:37 a.m. EST.

PHOTO CREDIT: NASA, OR NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

RESCUE

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 321 867-7819

FOR RELEASE: August 7, 2001

PHOTO NO.: KSC-01PP-1428

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KENNEDY SPACE CENTER, FLA. – STS-105 Commander Scott Horowitz checks over the T-38 before a morning training flight. Horowitz and the STS-105 crew are preparing for launch on Aug. 9. On mission STS-105, Discovery will be transporting the Expedition Three crew and several payloads and scientific experiments to the Space Station. The Early Ammonia Servicer (EAS) tank, which contains spare ammonia for the Station's cooling system and will support the thermal control subsystems until a permanent system is activated, will be attached to the Station during two spacewalks. The three-member Expedition Two crew will be returning to Earth aboard Discovery after a five-month stay on the Station.

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COLOR

19 MAY 1995 S95-10146

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-63 PILOT WITH MEMORABILIA --- Astronaut Eileen M. Collins, pilot STS-63, who earlier this year became NASA's first female Space Shuttle pilot in space, displays a scarf that was often worn by the late Amelia Earhart during her early flights. Collins flew the scarf onboard STS-63. Collins is in one of NASA's T-38 jet trainers inside a hangar at Ellington Field, near the Johnson Space Center (JSC). Muriel Earhart Morrissey, Earhart's sister, in 1987 gave the scarf to Carol L. Osborne, aviation historian. The two were co-authors of Amelia, My Courageous Sister, an Amelia Earhart biography.

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COLOR

19 MAY 1995 S95-10150

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-63 PILOT WITH MEMORABILIA --- Astronaut Eileen M. Collins, pilot STS-63, who earlier this year became NASA's first female Space Shuttle pilot in space, holds up a scarf that was often worn by the late Amelia Earhart during her early flights. Collins flew the scarf onboard STS-63. Collins is in one of NASA's T-38 jet trainers inside a hangar at Ellington Field, near the Johnson Space Center (JSC). Muriel Earhart Morrissey, Earhart's sister, in 1987 gave the scarf to Carol L. Osborne, aviation historian. The two were co-authors of Amelia, My Courageous Sister, an Amelia Earhart biography.

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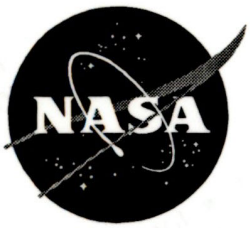

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19 MAY 1995 S95-10145

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-63 PILOT WITH MEMORABILIA --- Astronaut Eileen M. Collins, STS-63 pilot, who earlier this year became NASA's first female Space Shuttle pilot in space, holds up the FAI (Federation Aeronautique Internationale) pilot's license of Evelyn "Bobbi" Trout, another famous aviatrix, from her early pioneer days of flying. Collins took the license in space onboard STS-63. The FAI license was signed by Orville Wright January 21, 1929, certificate #7027. Trout has numerous flying records including first woman's all-night and first woman's in-flight refueling, as well as numerous speed and altitude records. In January of 1996, Trout will be the first woman to receive the Howard Hughes Memorial Award, from the Aero Club of southern California, a branch of the NAA (National Aeronautics Association). Trout's biography Just Plane Crazy, was co-authored by Donna Veca; Skip Mazzio; and Carol L. Osborne, aviation historian.

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19 MAY 1995 S95-10144

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-63 PILOT WITH MEMORABILIA --- Astronaut Eileen M. Collins, pilot STS-63, who earlier this year became NASA's first female Space Shuttle pilot in space, holds up the FAI (Federation Aeronautic International) pilot's license of Evelyn "Bobbi" Trout, another famous aviatrix, from her early pioneer days of flying. Collins took the license in space onboard STS-63. The FAI license was signed by Orville Wright January 21, 1929, certificate # 7027. Trout has numerous flying records including first woman's all-night and first woman's in-flight refueling, as well as numerous speed and altitude records. In January of 1996, Trout will be the first woman to receive the Howard Hughes Memorial Award, from the Aero Club of southern California, a branch of the NAA (National Aeronautics Association). Trout's biography Just Plane Crazy, was co-authored by Donna Veca; Skip Mazzio; and Carol L. Osborne, aviation historian.

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COLOR

28 APRIL 1997 S97-06570

KENNEDY SPACE CENTER, FLORIDA

STS-84 TRAINING VIEW --- The crew gets a ride in a M-113 Armored Personnel Carrier (APC) will participating in Terminal Countdown Demonstration Test (TCDT) activities at Launch Pad 39A, at the Kennedy Space Center (KSC). At right, from front to back, are is Jean-François Clervoy, mission specialist representing European Space Agency (ESA); Carlos I. Noriega, mission specialist; Eileen M. Collins, pilot; and Charles J. Precourt, commander. On left, from front to back, C. Michael Foale, mission specialist and future cosmonaut guest researcher; Elena V. Kondakova, mission specialist representing Russian Space Agency (RSA); and Edward T. Lu, mission specialist. George Hoggard, a training officer with the KSC Fire Services, is seated next to Lu. The mission will be the sixth docking mission of the Space Shuttle Atlantis and the Russia's Mir Space Station. After Atlantis docks with Mir during STS-84, Foale will transfer to Mir and become a cosmonaut guest researcher member of the Mir-23 crew, replacing Jerry M. Linenger, who will return to Earth aboard Atlantis during the STS-84 mission. Foale will live and work on Mir until mid-September when his replacement is expected to arrive on the STS-86 mission. STS-84 is targeted for a May 15, 1997, liftoff.

PHOTO CREDIT: NASA or National Aeronautics and Space Administration.

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29 APRIL 1997 S97-06571

KENNEDY SPACE CENTER, FLORIDA

STS-84 TRAINING VIEW --- Charles J. Precourt, commander at right, and Eileen M. Collins, pilot, practice emergency egress procedures in a slidewire basket at Launch Pad 39A, at the Kennedy Space Center (KSC). Precourt, Collins and five other members of the crew are participating in the Terminal Countdown Demonstration Test (TCDT), a dress rehearsal for launch. The STS-84 crew aboard the Space Shuttle Atlantis will be the sixth docking mission of the Space Shuttle Atlantis with the Russia's Mir Space Station. After docking, C. Michael Foale, mission specialist and future cosmonaut guest researcher, will transfer to the Mir and become a member of the Mir-23 crew, replacing United States astronaut Jerry M. Linenger, who will return to Earth aboard the Space Shuttle Atlantis, on the STS-84 mission. Foale will live and work on Mir until mid-September when his replacement is expected to arrive on the STS-86 mission. STS-84 is targeted for a May 15, 1997, liftoff.

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STS084-310-012

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15 - 24 MAY 1997 STS084-310-012

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-84 ONBOARD VIEW --- Astronaut Eileen M. Collins, pilot, occupies the commander's station on the Space Shuttle Atlantis' flight deck during rendezvous operations with Russia's Mir Space Station. She is looking over notes regarding a Risk Mitigation Experiment (RME) called the Mir Structural Dynamics Experiment (MSDE).

PHOTO CREDIT: NASA or National Aeronautics and Space Administration.

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NOVEMBER 1994 S94-41844

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-63 TRAINING VIEW --- Three members of the STS-63 crew prepare for a training exercise in the Johnson Space Center's (JSC) Shuttle mockup and integration laboratory. Left to right are astronauts James D. Wetherbee, commander; Eileen M. Collins, pilot; and Bernard A. Harris Jr., payload commander. The six-member STS-63 crew will support the third Spacehab mission in February of next year. They will also deploy and retrieve Spartan 204 and rendezvous with Russia's Mir Space Station.

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

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S90-48862

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COLOR

AUGUST 1990 S90-48862

FAIRCHILD AIR FORCE BASE, WASHINGTON

1990 ASCAN TRAINING VIEW --- Astronaut candidate Eileen M. Collins attempts to make radio contact with a potential rescue unit during a wilderness survival training school hosted by Fairchild Air Force Base in the state of Washington. The pilot astronaut trainee joined 22 other candidates in early July to begin a year's training and evaluation at the Johnson Space Center (JSC).

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

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COLOR

AUGUST 1990 S90-48887

FAIRCHILD AIR FORCE BASE, WASHINGTON

1990 ASTRONAUT CANDIDATE TRAINING VIEW --- Astronaut candidate Eileen M. Collins checks out a mirror to be used for both fire starting purposes and alerting potential rescuers during a wilderness survival training school. The school was hosted by Fairchild Air Force Base in the state of Washington. The pilot astronaut trainee joined 22 other candidates in early July to begin a year's training and evaluation at the Johnson Space Center (JSC).

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COLOR

AUGUST 1990 S90-48902

FAIRCHILD AIR FORCE BASE, WASHINGTON

1990 ASCAN TRAINING VIEW --- Astronaut candidate Eileen M. Collins prepares to set off a flare during a wilderness survival training school hosted by Fairchild Air Force Base in the state of Washington. The pilot astronaut trainee joined 22 other candidates in early July to begin a year's training and evaluation at the Johnson Space Center (JSC).

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COLOR

AUGUST 1990 S90-48860

FAIRCHILD AIR FORCE BASE, WASHINGTON

1990 ASCAN SURVIVAL TRAINING VIEW --- Astronaut candidates Eileen M. Collins and Michael R.U. (Rich) Clifford eat from a Meal Ready To Eat (MRE) packet during wilderness survival training school hosted by Fairchild Air Force Base in the state of Washington. The two were joined by 21 classmates for the training after reporting to the Johnson Space Center (JSC) in Houston for a year's training and evaluation program.

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COLOR

AUGUST 1990 S90-48634

NAVAL AIR STATION, PENSACOLA, FLORIDA

1990 ASTRONAUT CANDIDATE TRAINING VIEW --- Eileen M. Collins, a U.S.A.F. Major and candidate for a pilot astronaut position with the National Aeronautics and Space Administration (NASA) discusses parachute handling with an instructor during a water survival training course. The course was hosted by the Naval Air Station, Pensacola, Florida. Collins was joined by 22 other astronaut candidates for the three-day school. Purpose of the course was to familiarize the trainees with proper measures to take in the event of ejection from an aircraft over water.

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S90-45882

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COLOR

29 - 31 JULY 1990 S90-45882

VANCE AIR FORCE BASE, OKLAHOMA

1990 ASCAN SURVIVAL TRAINING VIEW --- U.S.A.F. Major Eileen M. Collins, one of 23 astronaut candidates who began a year's training and evaluation earlier this month, participates in one of many phases of a survival training course at Vance Air Force Base. Fully equipped with parachute gear, the pilot astronaut candidate is pulled long the ground by classmates to simulate a moving parachute's drag and pull following a landing. The overall course is designed to familiarize the trainees with procedures to follow in the event of an emergency ejection from a jet.

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COLOR

AUGUST 1990 S90-48611

NAVAL AIR STATION, PENSACOLA, FLORIDA

1990 ASCAN TRAINING VIEW --- Astronaut candidate Eileen M. Collins parachute drops into the water during a water survival training school hosted by the Naval Air Station in Pensacola, Florida. The pilot astronaut trainee joined 22 other candidates in early July to begin a year's training and evaluation at the Johnson Space Center (JSC).

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COLOR

29 - 31 JULY 1990 S90-45870

VANCE AIR FORCE BASE, OKLAHOMA

1990 ASCAN TRAINING VIEW --- U.S.A.F. Major Eileen M. Collins, one of 23 astronaut candidates who began a year's training and evaluation in July, participates in one of many sessions at a survival training course at Vance Air Force Base. Fully equipped with parachute gear, the pilot astronaut candidate is taken aloft as part of parachute familiarization. A vehicle provides the pull to enable the chute to ascend and glide, allowing the trainee to simulate a parachute-aided escape from a jet aircraft. The overall course is designed to familiarize the trainees with procedures to follow in the event of an emergency ejection from a jet.

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

NASA National Aeronautics and Space Administration

S 90-45848

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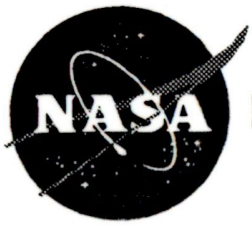

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29 - 31 JULY 1990 S90-45848

VANCE AIR FORCE BASE, OKLAHOMA

1990 ASTRONAUT CANDIDATE TRAINING VIEW --- Eileen M. Collins, a U.S.A.F. Major and candidate for a pilot astronaut position with the National Aeronautics and Space Administration (NASA) simulates an ejection from an aircraft during a special survival course at Vance Air Force Base near Enid, Oklahoma. Collins was joined by 22 other astronaut candidates for the three-day school. Purpose of the course was to familiarize the trainees with proper measures to take in the event of ejection from an aircraft over land.

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COLOR

29 - 31 JULY 1990 S90-45861

VANCE AIR FORCE BASE, OKLAHOMA

1990 ASCAN SURVIVAL TRAINING VIEW --- U.S.A.F. Major Eileen M. Collins, one of 23 astronaut candidates who began a year's training and evaluation earlier this month, participates in one of many phases of a survival training course at Vance Air Force Base. Fully equipped with parachute gear, the pilot astronaut candidate is about to leap from a tower attached to a specially rigged simulator device to get the "feel" of emergency egress from an aircraft over land. The overall course is designed to familiarize the trainees with procedures to follow in the event of an emergency ejection from a jet.

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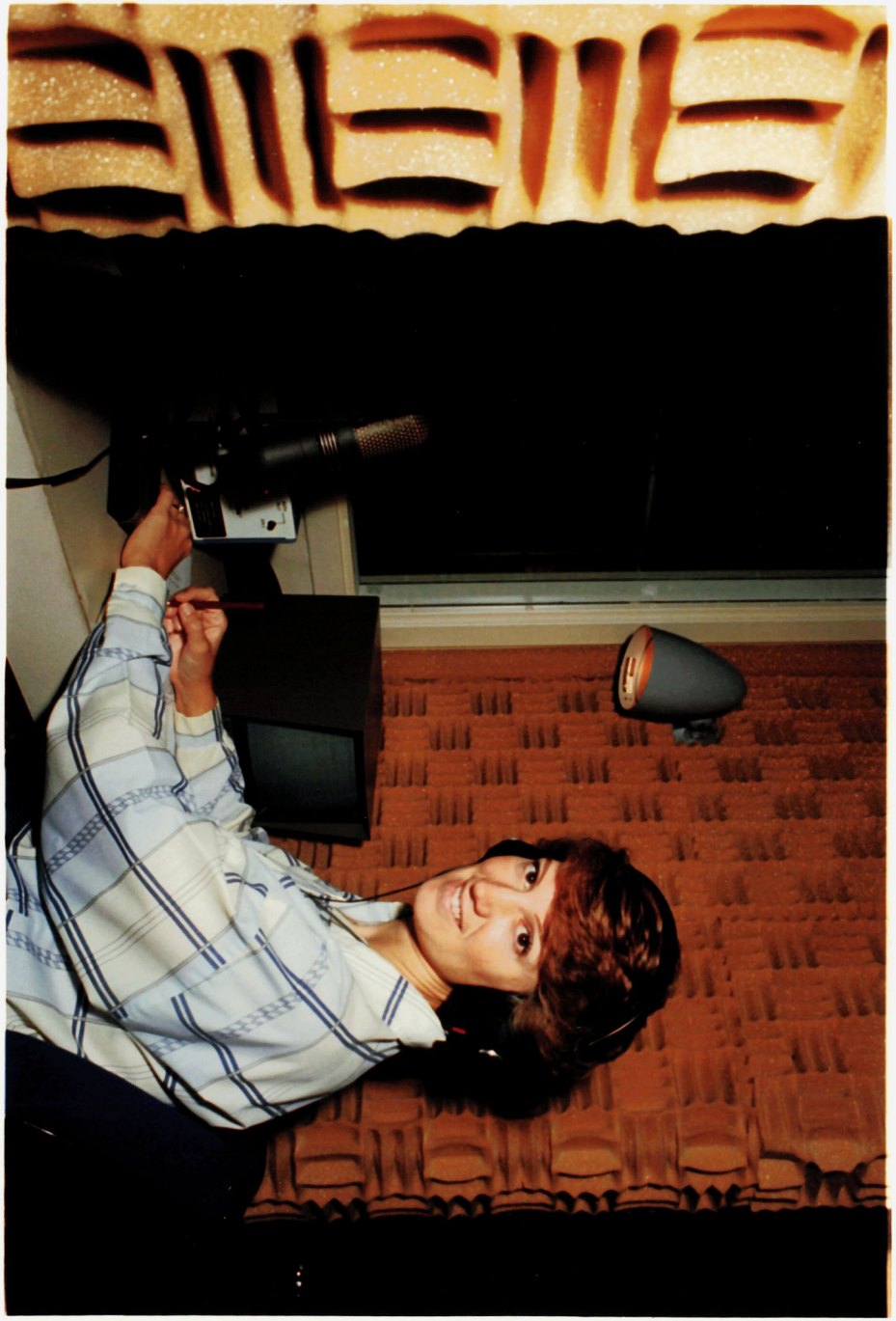

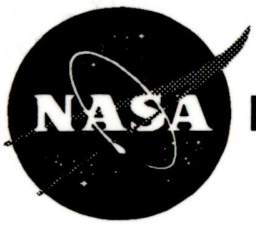

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COLOR

11 NOVEMBER 1993 S93-47823

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-63 TRAINING VIEW --- Astronaut Eileen M. Collins, pilot for the STS-63 mission, participates in a telephone interview with an out of town media representative after having been announced as the pilot on NASA's STS-63 mission aboard the Space Shuttle Discovery. Scheduled for the early part of 1995.

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

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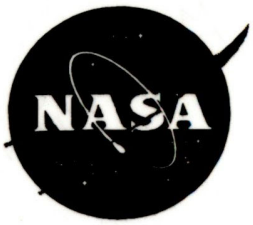

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COLOR

11 NOVEMBER 1993 S93-48401

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-63 TRAINING VIEW --- Astronaut Eileen M. Collins, pilot for the STS-63 mission, participates in STS-63 training at the Johnson Space Center's (JSC) Shuttle mockup and integration laboratory. Collins is seated at the pilot's station in a Shuttle mockup trainer. The flight is scheduled aboard the Space Shuttle Discovery in the early part of 1995.

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

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11 NOVEMBER 1993 S93-48405

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-63 TRAINING VIEW --- Astronaut Eileen M. Collins, pilot for the STS-63 mission, participates in STS-63 training at the Johnson Space Center's (JSC) Shuttle mockup and integration laboratory. Collins looks out the aft flight deck window in the Shuttle mockup trainer. The flight is scheduled aboard the Space Shuttle Discovery in the early part of 1995.

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

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COLOR

11 NOVEMBER 1993 S93-48409

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-63 TRAINING VIEW --- Astronaut Eileen M. Collins, pilot for the STS-63 mission, participates in emergency egress training at the Johnson Space Center's (JSC) Shuttle mockup and integration laboratory. The flight STS-63 mission is scheduled aboard the Space Shuttle Discovery in the early part of 1995.

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

NASA

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058

S93 33102

National Aeronautics and Space Administration

Houston, Texas 77058

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COLOR

5 APRIL 1993 S93-33102

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-61 TRAINING VIEW --- Wearing a training version of Space Shuttle Extravehicular Mobility Unit (EMU), astronaut Thomas D. Akers uses the giant pool of the Johnson Space Center's Weightless Environment Training Facility (WET-F) to rehearse for the Hubble Space Telescope (HST) repair mission. Standing on a mobile foot restraint connected to the Shuttle's robot arm, Akers works with a full-scale training version of the Wide Field/Planetary Camera (WF/PC). The current WF/PC on the HST will be replaced with WF/PC-2. The giant box is a stowage area for both WF/PC facilities. Out of frame is astronaut Kathryn C. Thornton, who will join Akers in STS-61 EVA. Several SCUBA-equipped divers assist in the rehearsal. A total of five extravehicular activity (EVA) sessions will be conducted during the scheduled December mission of the Endeavour.

Hubble Telescope

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

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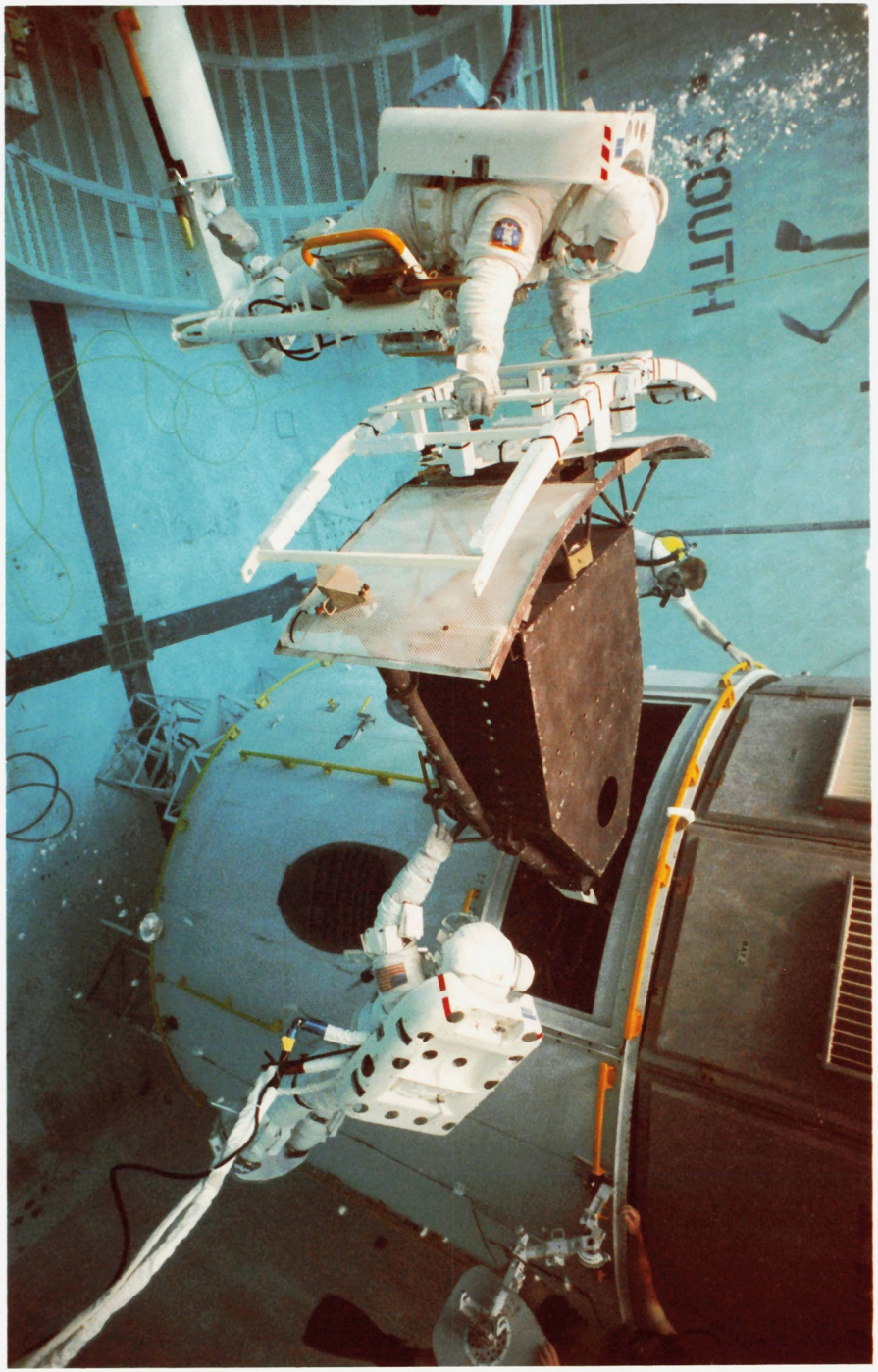
Houston, Texas 77058



NASA- EQUIPMENT

National Aeronautics and Space Administration

Houston, Texas 77058

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COLOR

2 APRIL 1993 S93-33103

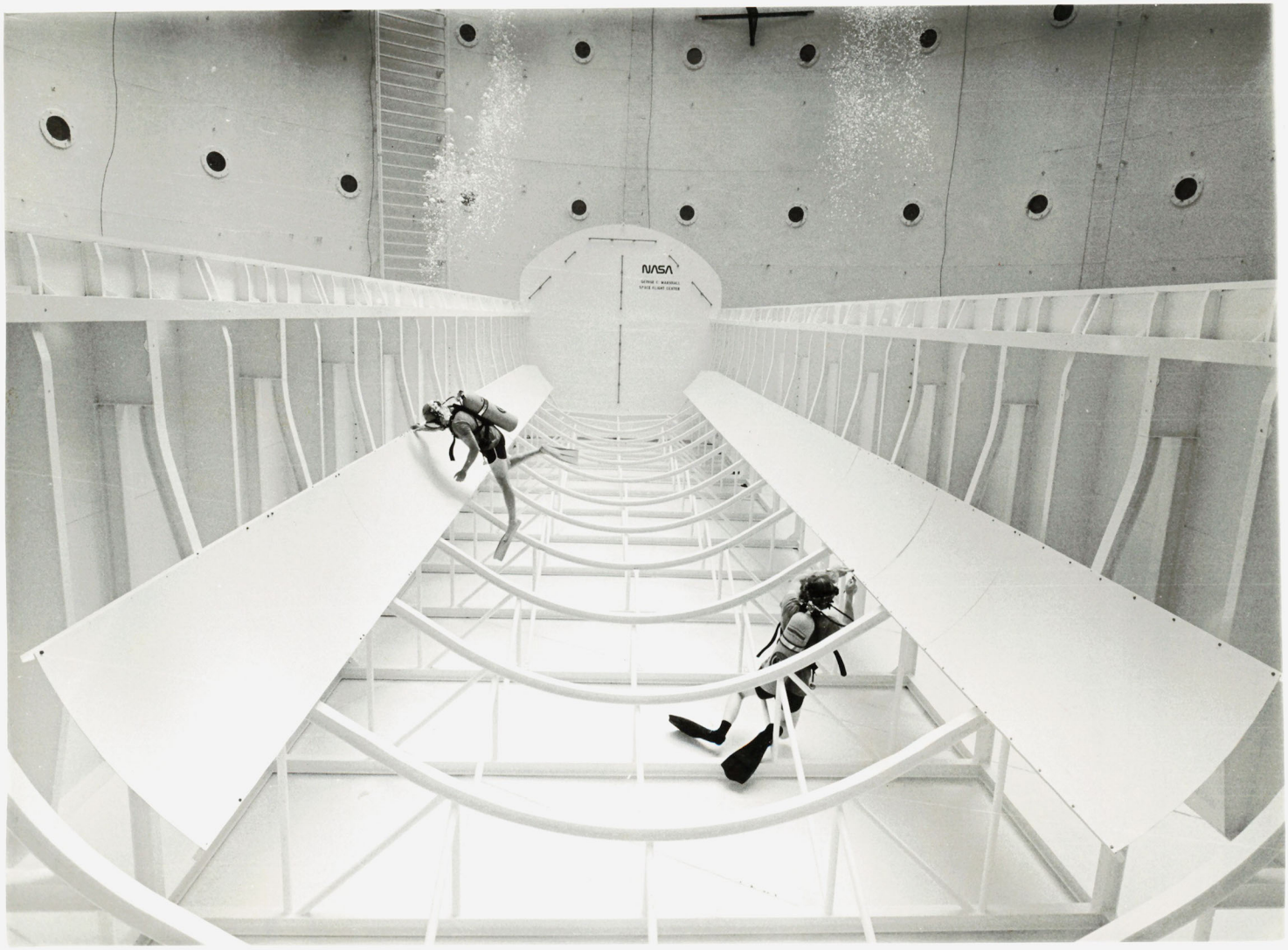
JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-61 TRAINING --- Wearing training versions of Space Shuttle Extravehicular Mobility Units (EMU), astronauts F. Story Musgrave and Jeffrey A. Hoffman use the giant pool of the Johnson Space Center's Weightless Environment Training Facility (WET-F) to rehearse for the Hubble Space Telescope (HST) repair mission. The two are working with a full-scale training version of the Wide Field/Planetary Camera (WF/PC). The current WF/PC will be replaced with WF/PC-2. A total of five extravehicular activity (EVA) sessions will be conducted during the scheduled December mission of the Endeavour.

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

NASA National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Huntsville, Alabama



HUNTSVILLE, AL

MARSHALL SPACE CENTER

An important part of the research on America's space program begins right here, in a huge indoor water tank at the Marshall Space Flight Center in Huntsville. The tank is called a "neutral bouyancy simulator" because it creates much the same effect as zero gravity in space. In this scene, NASA divers are assembling a full-scale mock-up of the space shuttle orbiter's cargo bay.

NOV 2 1979

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

FOR RELEASE: Filed: October 2, 1970
PHOTO NO. 70-H-1252

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MANNED SPACECRAFT CENTER, HOUSTON, TEXAS -- SPACE SHUTTLE REENTRY TESTING Personnel from the Systems Test Branch of the Crew Systems Division at the Manned Spacecraft Center wait by the controls in Building 24 as a test subject rides the centrifuge and became exposed to "eye balls down" reentry configurations at G-levels which ranged from 2.5 to 4.5 for periods up to six minutes and ten seconds.

75

OCT 1970

PHOTO CREDIT--NASA or National Aeronautics and Space Administration

NASA

National Aeronautics and
Space Administration

S93 26021

Lyndon B. Johnson Space Center
Houston, Texas 77058

RUSSIA - SPACE Program

National Aeronautics and Space Administration

Houston, Texas 77058

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COLOR

FEBRUARY 1993 S93-26021

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-60 BAILOUT TRAINING --- Russian cosmonaut Sergei Krikalev maneuvers a small life raft during bailout training at the Johnson Space Center's weightless environment training facility (WET-F). Two SCUBA-equipped divers assisted Krikalev in the STS-60 training exercise. Shuttle crewmembers frequently utilize the 25-ft. deep pool to learn proper procedures to follow in the event of emergency egress from their Space Shuttle via the escape pole system. Krikalev is one of two cosmonauts in training for the STS-60 mission. One of the two will serve as primary payload specialist with the other filling an alternate's role. This pool and the facility in which it is housed are titled the WET-F because they are also used by astronauts rehearsing both mission-specific and contingency extravehicular activities (EVA).

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

National
Aeronautics and
Space
Administration

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

GRINER CAROLYN S.
Aeronautical Engineer/MSFC

FOR RELEASE: 2-2-76

PHOTO NO. 6-69990

The Huntsville Times
LIBRARY

MARSHALL SPACE FLIGHT CENTER, Ala. -- Carolyn S. Griner, astronautical engineer at the NASA-Marshall Space Flight Center, enters the water to begin a practice session using scuba gear in the Neutral Buoyancy Simulator. Mrs. Griner, involved in designing experiments on materials processing in space, experiences simulated weightlessness while under water, an experience which helps her in her current duties. Knowledge of what can and cannot be done while weightless enables her to anticipate the need for handholds, foot restraints and other devices on and near experiment equipment. Mrs. Griner is a member of the staff of the Physical Sciences Branch, Materials and Processes Laboratory.

###

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AMERICAN REVOLUTION BICENTENNIAL 1776-1976
NASA--MSFC

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

FOR RELEASE: August 23, 1965
PHOTO NO. 65-H-1620

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Gulf of Mexico

Water egress Training -- Astronaut Walter M. Schirra Jr., prime crew command pilot for the Gemini VI space flight, during water egress training on board the NASA vessel Retriever.

PHOTO CREDIT -- NASA or National Aeronautics and Space Administration

NASA

National Aeronautics and
Space Administration

S90 48902

Lyndon B. Johnson Space Center
Houston, Texas 77058

Eileen Collins

with flare at

wilderness survival

Fairchild AFB, WA

1991

NASA

National Aeronautics and
Space Administration

S90 48874

Lyndon B. Johnson Space Center
Houston, Texas 77058

Eileen Collins
at wilderness survival
school, Fairchild AFB, WA

JUL 18 PM12 48

Susie
Jane
7-3-6
85 010
Eileen

NASA
National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058

S90 48887

Eileen Collins
with mirror used
for fire starter at
wilderness survival
school, Fairchild AFB, Wa

photo J
for jump

Sue
Scrc
P. 3-6
1990
Mirror

NASA
National
Aeronautics and
Space
Administration

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

WHITAKER, ANN F.
SCIENTIST / MSFC
The Huntsville Times
LIBRARY

FOR RELEASE: 12-18-75
PHOTO NO. 6-69590

MARSHALL SPACE FLIGHT CENTER, Ala. -- Mrs. Ann Whitaker, a physicist at the NASA-Marshall Space Flight Center's Materials and Processes Laboratory, watches dials as pressure rises in her space suit. Swallowing and working her jaws helped her accept the pressure change as she underwent "dry" pressure suit checkout. Mrs. Whitaker is one of three women scientists who have completed scuba training in the MSFC Neutral Buoyancy Simulator, altitude checkout in a chamber at Craig Air Force Base, Selma, Ala., and zero-g flights at Ellington Air Force Base, Houston, Tex. This training further qualifies her for her duties which involve designing experiments on materials processing in space.

###

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PHOTO CREDIT--NASA or National Aeronautics and Space Administration

AMERICAN REVOLUTION BICENTENNIAL 1776-1976
NASA--MSFC

Jun. 19 Local Hopeful

NASA
National
Aeronautics and
Space
Administration

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

WHITAKER, ANN F.
SCIENTIST/MSFC

The Huntsville Times
LIBRARY

FOR RELEASE: December 29, 1975

PHOTO NO. 6-69690

MARSHALL SPACE FLIGHT CENTER, Ala. -- Women Scientists in Training. Dr. Mary Johnston, Mrs. Carolyn Griner and Mrs. Ann Whitaker (left to right), scientists at the Marshall Space Flight Center, complete a training session in MSFC's Neutral Buoyancy Simulator, a facility used to simulate weightlessness. The scuba diving is part of special training the three are taking to better qualify them for their duties of designing experiments on materials processing in space. The training increases their understanding of the problems associated with doing experiments in space, such as aboard Spacelab. Dr. Johnston specializes in metallurgical engineering, Mrs. Griner in materials sciences and Mrs. Whitaker in lubrication and surface physics.

###

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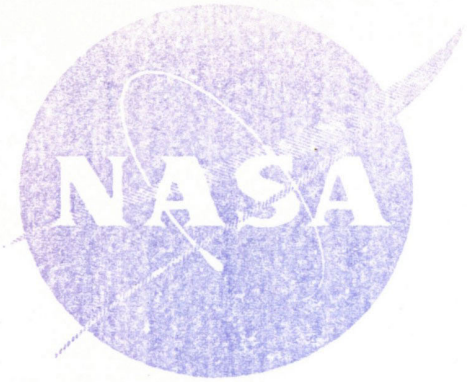
NASA--MSFC



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE: June 19, 1968
PHOTO NO. 68-H-547

REFERENCE
JUL 19 '68
N. E. A.

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SHERMAN, TEXAS

Astronaut Training--One of the NASA astronaut jumps into the water from a moving barge as part of the pilot survival training exercises. The course is being conducted by the USAF Air Defense Command at Perrin Air Force Base and simulates a parachute landing in water.

A 33813

PHOTO CREDIT--NASA or National Aeronautics and Space Administration

NO SWIMMING
PERMITTED
IN THIS AREA

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WASHINGTON, D.C. 20546

FOR RELEASE: June 19 1968
PHOTO NO. 68-H-548

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SHERMAN, TEXAS

One of the NASA astronauts is being lifted over Lake Texoma during survival training. The trainees are lifted over the lake on open parachutes, and allowed to drop in the water. Bottom picture shows one of the astronauts using an improvised sail made of sticks and flight suit, sailing towards shore during pilot survival training. The course is conducted by the USAF Air Defense Command Life Support School at Perrin Air Force Base.

A33813

REFERENCE
JUL 19 '68
N. E. A.

PHOTO CREDIT--NASA or National Aeronautics and Space Administration

NASA National Aeronautics and Space Administration

S - 78 - 35401

Lyndon B. Johnson Space Center
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National Aeronautics and Space Administration

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COLOR

28 AUGUST 1978 S-78-35401

VANCE AIR FORCE BASE, OKLAHOMA

ASTRONAUT CANDIDATE IN SURVIVAL TRAINING -- Astronaut Candidate Steven A. Hawley completes a training exercise during a survival school at Vance Air Force Base, Oklahoma. In this particular phase of the training, the trainee is harnessed with full parachute gear and then he or she is parasailed for several minutes via a pickup truck which picks up speed to pull trainee and chute through open air. Hawley was joined by 10 other astronaut candidates for the survival school, designed to prepare the trainees for proper measures to take in the event of ejection from an aircraft over land.

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

S- 78- 35401

National Aeronautics and Space Administration

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For Release:

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COLOR

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PHOTO CREDIT: NASA or National Aeronautics and Space Administration

NASA National Aeronautics and Space Administration

S85 43442

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COLOR

25 OCTOBER 1985 S85-43442

JOHNSON SPACE CENTER, HOUSTON, TEXAS

[illegible]--U.S. Representative William Nelson [illegible] Florida] undergoes training in the [illegible] zero-gravity" aircraft for his scheduled flight aboard the Space Shuttle Columbia in December 1986. Dr. Larry DeLucas joins the congressman in a brief period of weightlessness to evaluate a University of Alabama protein crystal growth experiment being considered for Nelson's Shuttle flight. The specially modified aircraft flies parabolas to produce brief periods of the kind of weightlessness or microgravity astronauts confront in space.

pg.7

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

NASA
S-65-17385

MANNED SPACECRAFT CENTER

OFFICIAL PHOTOGRAPH

B & W

23 FEB 65 S-65-17385

YUCCA FLAT, NEVADA

GEOLOGY TRAINING - - Dr. Eugene Shoemaker (right) explains to Astronauts Edwin E. Aldrin Jr. (left) and David R. Scott (center) the effects of an underground nuclear explosion on the surrounding rock at the Nevada Test Site.

30778

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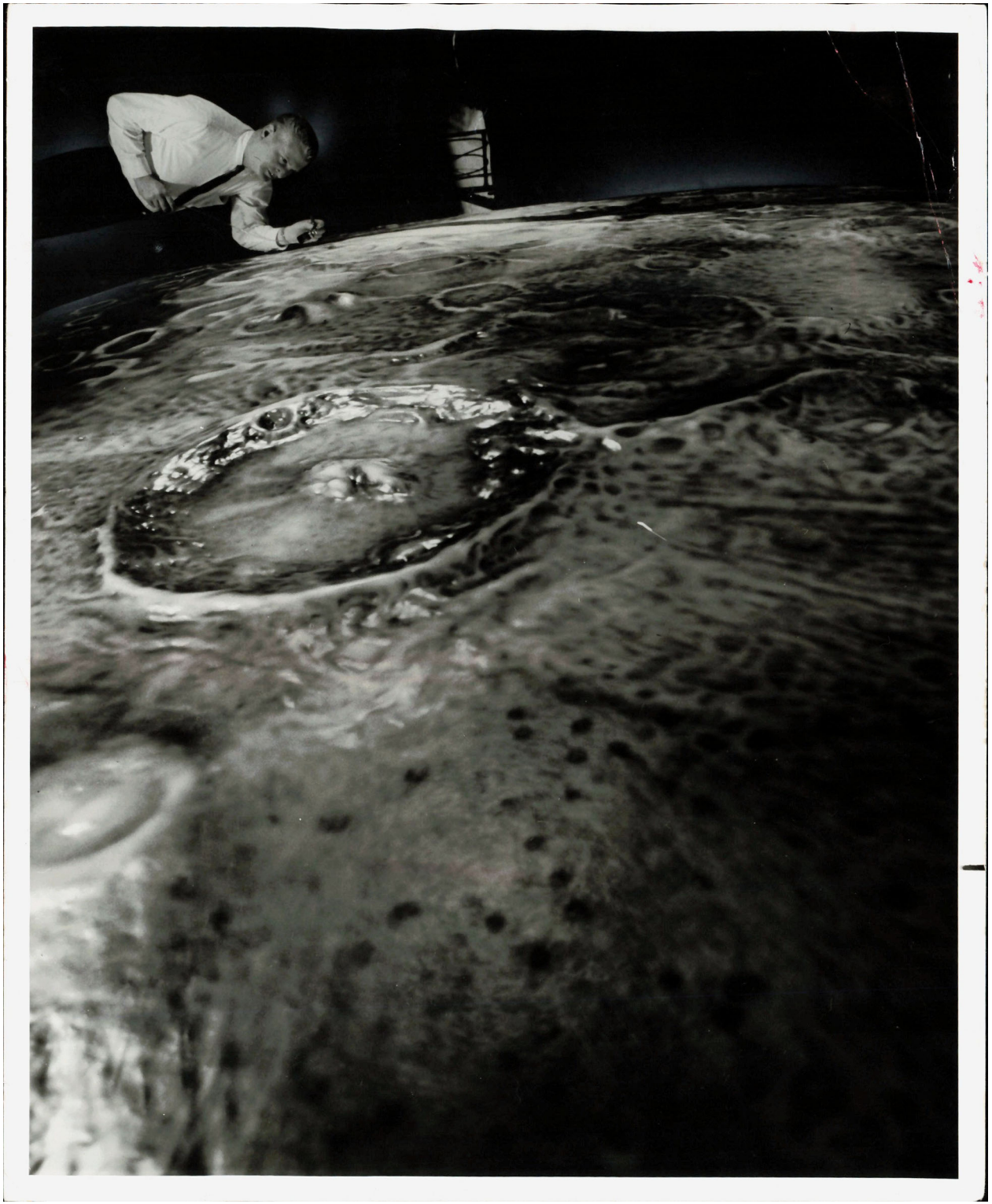

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE: Immediate
PHOTO NO.: 64-H-2622

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THEY'VE GOT THE MOON MADE -- Long before the first U.S. expedition takes off for the moon, a thorough understanding of the guidance and control capabilities of the lunar spacecraft is required. At the National Aeronautics and Space Administration's Langley Research Center, Hampton, Virginia, scientists are developing the Lunar Orbit and Landing Approach (LOLA) simulator to determine an effective man-machine integration for the moon mission. LOLA will give research pilots terrain simulations from upwards of 150 feet above the moon's surface.

SU JUN 20 1965

The man on the moon is an artisan at the Langley research center of the National Aeronautics and Space administration at Hampton, Va. The moon is part of a huge device which will be used to train astronauts. The machine will show future spacemen how the moon surface looks from any distance down to 150 feet. —NASA Photo

(Space - Moon - Photos
U.S. - Moon - Photos)

NASA National Aeronautics and Space Administration

S89-41597

Lyndon B. Johnson Space Center
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National Aeronautics and Space Administration

Houston, Texas 77058

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COLOR

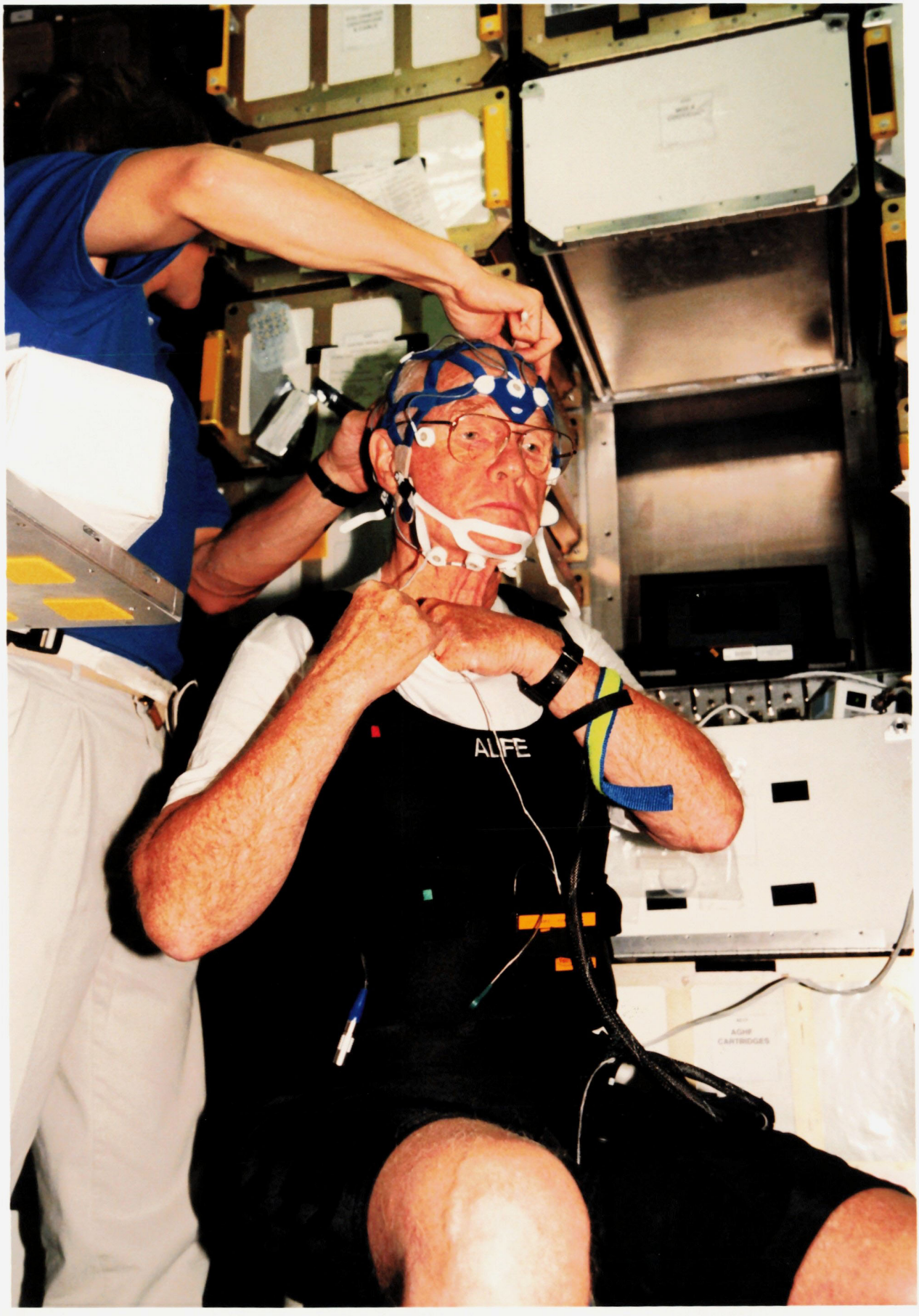
NOVEMBER 1989 S-89-41597

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-32 CONTINGENCY EVA TRAINING --- Astronaut Bonnie J. Dunbar, wearing an extravehicular mobility unit (EMU) spacesuit, prepares to don gloves and subsequently a helmet and to be lowered by a hoist device for a session of underwater training in the Johnson Space Center's weightless environment training facility (WET-F). Minutes later, Astronauts Dunbar and G. David Low, mission specialists, were neutrally buoyant in the nearby 25-ft. deep pool simulating a contingency extravehicular activity (EVA) for the scheduled December 1989 STS-32 mission. There are no scheduled EVAs for the crew, whose main missions are to retrieve the Long Duration Exposure Facility (LDEF) and to deploy a Syncom satellite.

pg.13

PHOTO CREDIT: NASA or National Aeronautics and Space Administration


ALIFE

National Aeronautics and
Space Administration

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

FOR RELEASE: August 21, 1998

PHOTO NO.: KSC-98PC-976

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KENNEDY SPACE CENTER, FLA. -- Inside the SPACEHAB training module, STS-95 Mission Specialist Scott Parazynski, M.D., helps with connections on the mesh cap worn by Payload Specialist John Glenn, who is a senator from Ohio. Glenn is also wearing the Respiratory Inductance Plethysmograph (RIP) suit he will wear on the mission to monitor respiration. The cap and suit are part of the equipment that will be used to seek to improve the quality of sleep for future astronauts. The STS-95 crew are participating in SPACEHAB familiarization at the SPACEHAB Payload Processing Facility, Cape Canaveral. The mission, scheduled to launch October 29, includes research payloads such as the Spartan solar-observing deployable spacecraft, the Hubble Space Telescope Orbital Systems Test Platform, the International Extreme Ultraviolet Hitchhiker, as well as the SPACEHAB single module with experiments on space flight and the aging process.

6

PHOTO CREDIT: NASA, OR NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NASA National Aeronautics and Space Administration

S84-34694

Lyndon B. Johnson Space Center
Houston, Texas 77058

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Houston, Texas 77058

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HOUSTON CHRONICLE
TUESDAY FEB 19 1985

COLOR

MAY 1984 S84-34094

JOHNSON SPACE CENTER, HOUSTON, TEXAS

S84-6 ZERO GRAVITY TRAINING---Astronaut S. David Griggs, having just donned an extravehicular mobility unit (EMU), gets the "feel" of weightlessness aboard a KC-135 "zero gravity" aircraft. Griggs is a mission specialist in training for NASA's STS 51-E mission, scheduled for launch in February 1985. The photograph was taken by Otis Imboden.

Space shuttle XVI

940

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

NASA National Aeronautics and Space Administration

S85-41795

Lyndon B. Johnson Space Center
Houston, Texas 77058

National Aeronautics and Space Administration

Houston, Texas 77058

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COLOR

5 OCTOBER 1985 S85-41755

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS 61-A TRAINING---Astronaut Bonnie J. Dunbar, wearing an extravehicular mobility unit (EMU), is about to be submerged to a neutral buoyancy state in the weightless environment test facility (WETF) at the Johnson Space Center to simulate a contingency extravehicular activity (EVA) for the STS 61-A mission. An eight-member crew is currently in training for the flight, scheduled for launch no earlier than Oct. 30. The photo was taken by Otis Imboden.

pg.15

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

NASA National Aeronautics and Space Administration

S87 26822

Lyndon B. Johnson Space Center
Houston, Texas 77058

National Aeronautics and Space Administration

HOUSTON, TEXAS 77058

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COLOR

5 FEBRUARY 1986 S-86-26822

JOHNSON SPACE CENTER, HOUSTON, TEXAS

CREW COMPARTMENT TRAINER --- The mid deck of the Johnson Space Center's crew compartment trainer (CCT) formerly called the one-g trainer. Seen are a pair of sleep restraibts, stowage lockers (left and right) the airlock hatchway and the opening leading to the flight deck. Astronauts use this trainer in preparing for various life-in-space rehearsals.

pg.30

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

NASA - Space Shuttle - STS 26

CAUTION
NASA

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

FOR RELEASE: September 27, 1988

PHOTO NO. KSC-88P-985

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KENNEDY SPACE CENTER, Fla.-- Suited in his shuttle flight suit, STS-26 Pilot Richard Covey is in the cock pit of the Shuttle Training Aircraft (STS) at KSC's shuttle landing facility. The STA, a modified Grumman G-2, closely simulates the final approach the orbiter Discovery will make as it lands at Edwards Air Force Base, Calif. upon completion of the STS-26 mission. Covey, Commander Rick Hauck and Mission Specialists, Dave Hilmers, Mike Lounge and George "Pinky" Nelson, will be launched from Kennedy Space Center September 29, 1988.

PHOTO CREDIT – NASA OR NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NASA National Aeronautics and Space Administration

S- 78- 32738

Lyndon B. Johnson Space Center
Houston, Texas 77058

National Aeronautics and Space Administration

Houston, Texas 77058

For Release:

Photo No. S-78-32738

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B & W

20 JULY 1978 S-78-32738

JOHNSON SPACE CENTER, HOUSTON, TEXAS

SPACE SHUTTLE ASTRONAUT CANDIDATE IN T-38 -- Astronaut Candidate Steven A. Hawley sits in the rear seat of a T-38 jet trainer craft at Ellington Air Force Base during a familiarization session for many of the new astronaut trainees who recently came aboard at the Johnson Space Center (JSC). Hawley is being briefed by Harold (Bud) Ream. Rainy weather outside the hangar limited activity on this day as much of the briefing was moved indoors.

1983

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

NASA
BILL READDY
NASA
United States

STEVE HAWLEY
HANK HARTSFIELD
MIKE COATS

GIBSON BOLDEN
NELSON HAWLEY CHANG-DIAZ
CENKER NELSON
BOB
BILL
STEVE
CHARLIE
HOOT
FRANKLIN
RCA
Astro-Electronics
NASA
United States

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(Space - U.S. - Space Shuttle - Landing)

MAR 18 1981

1 transparency
Rockwell International

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(Space - U.S. - Space Shuttle - Landing)

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(Space - U.S. - Space Shuttle - Landing)

MAR 18 1981

1 transparency
Rockwell International

USA

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(Space - U.S. - Space Shuttle - Landing)

MAR 18 1981

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Space - U.S. - Space Shuttle - Landing)

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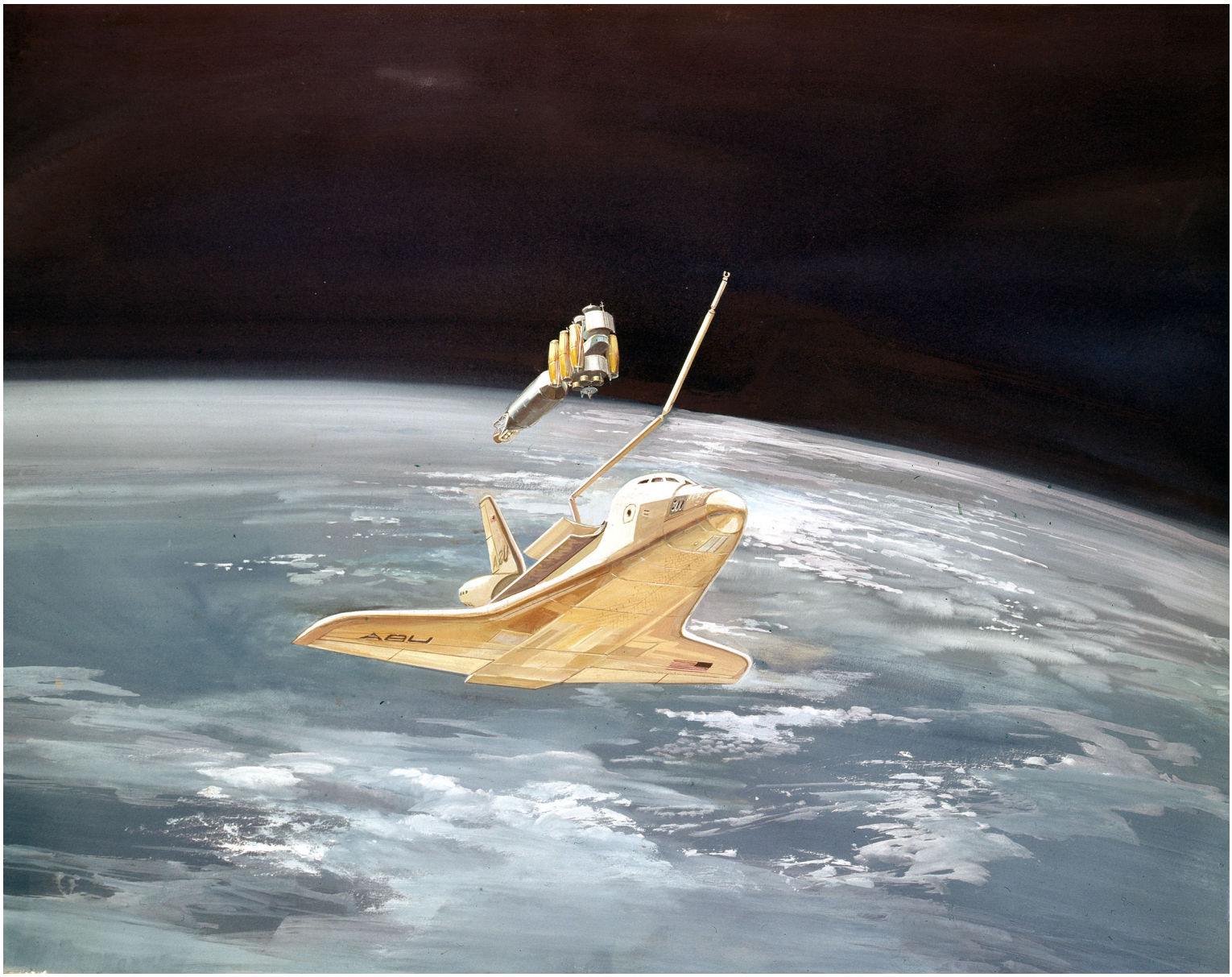
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(Space - U.S. - Space Schuttle - Landing)

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SUBJECT: Orbiter Landing
S16

Subj: Earth Survey

~~SPL2~~

SPL15

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SPL15

(Space - U.S. - Space Shuttle - Landing)

MAR 18 1981

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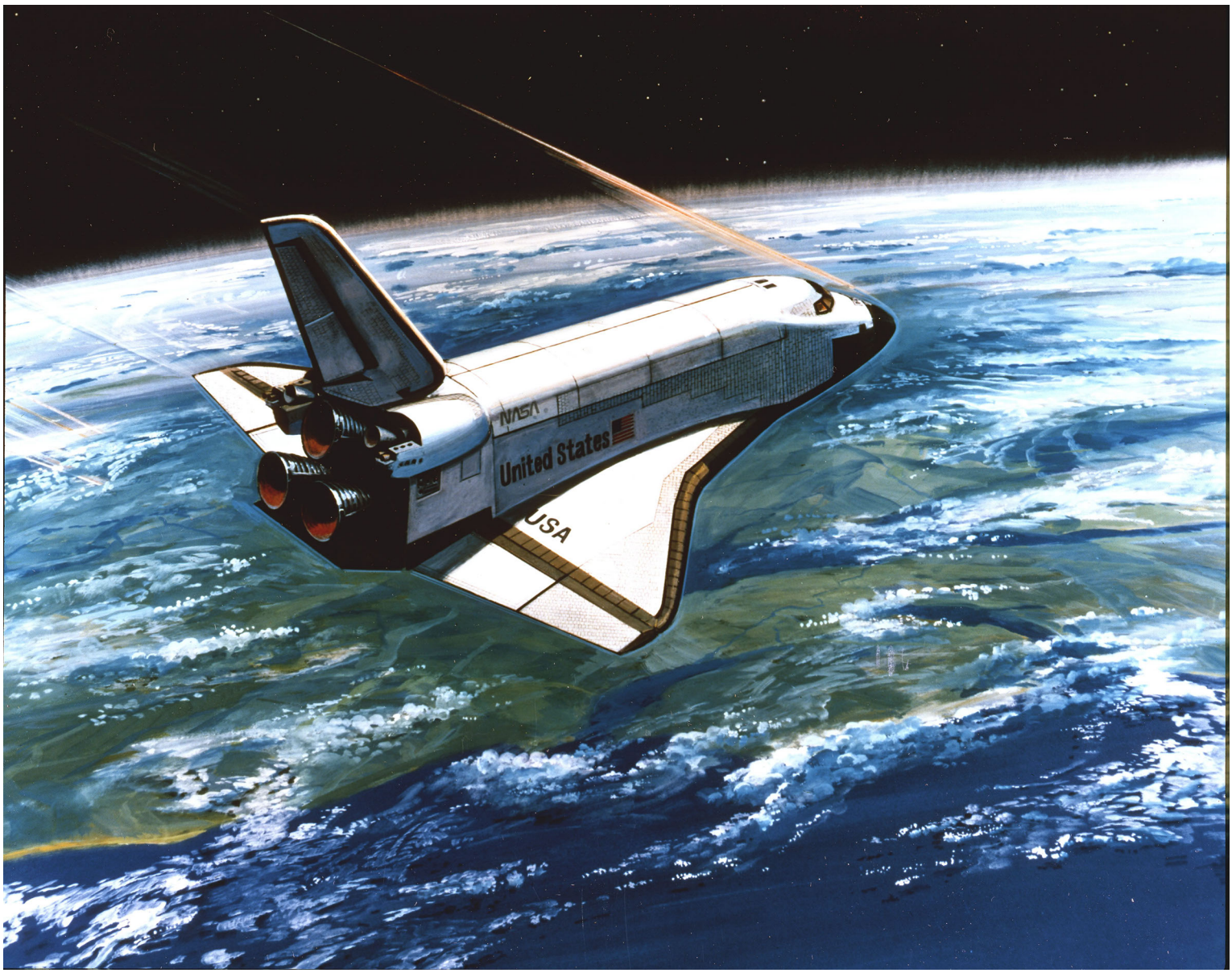
NASA
United States
USA

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(Space - U.S. - Space Shuttle - Landing)

MAR 18 1981

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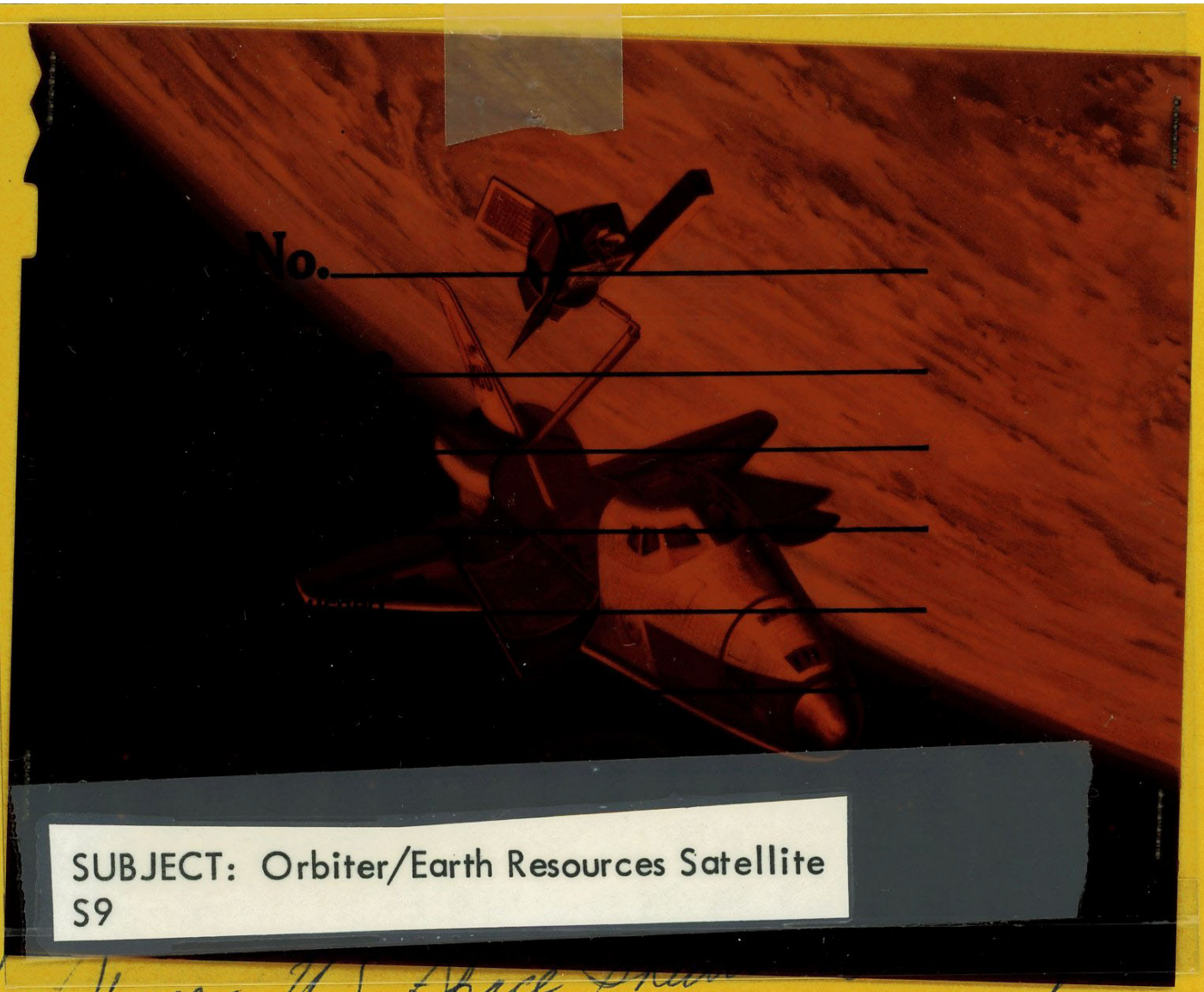
Rockwell International



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SUBJECT: Orbiter/Earth Resources Satellite
S9

Space - U.S. Space Pro

MAR 18 1981

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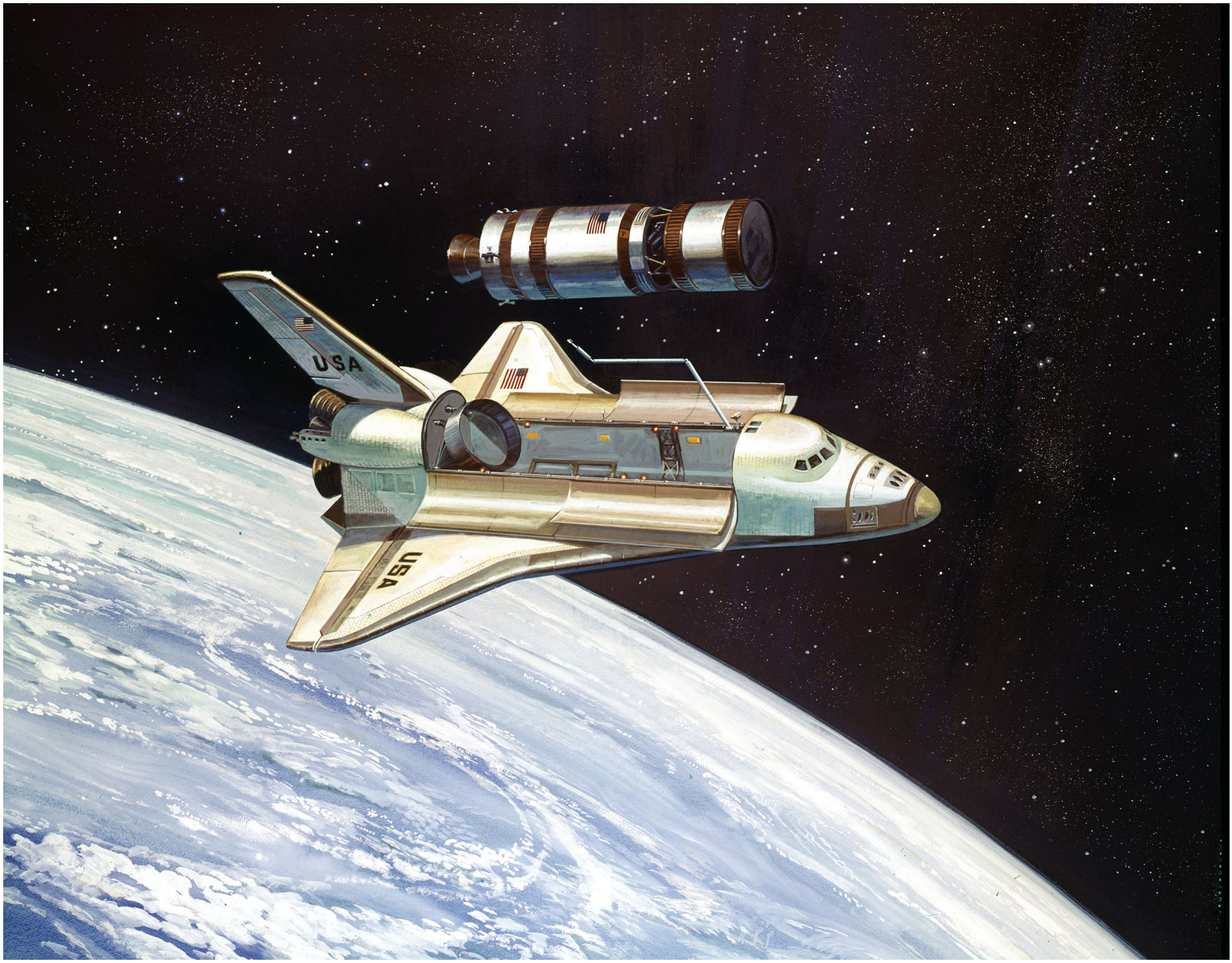
Rockwell International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SUBJECT: Orbiter/Space Tug
S11-J5

...ce - U.S. - Space Shuttle - Landing)

MAR 18 1981

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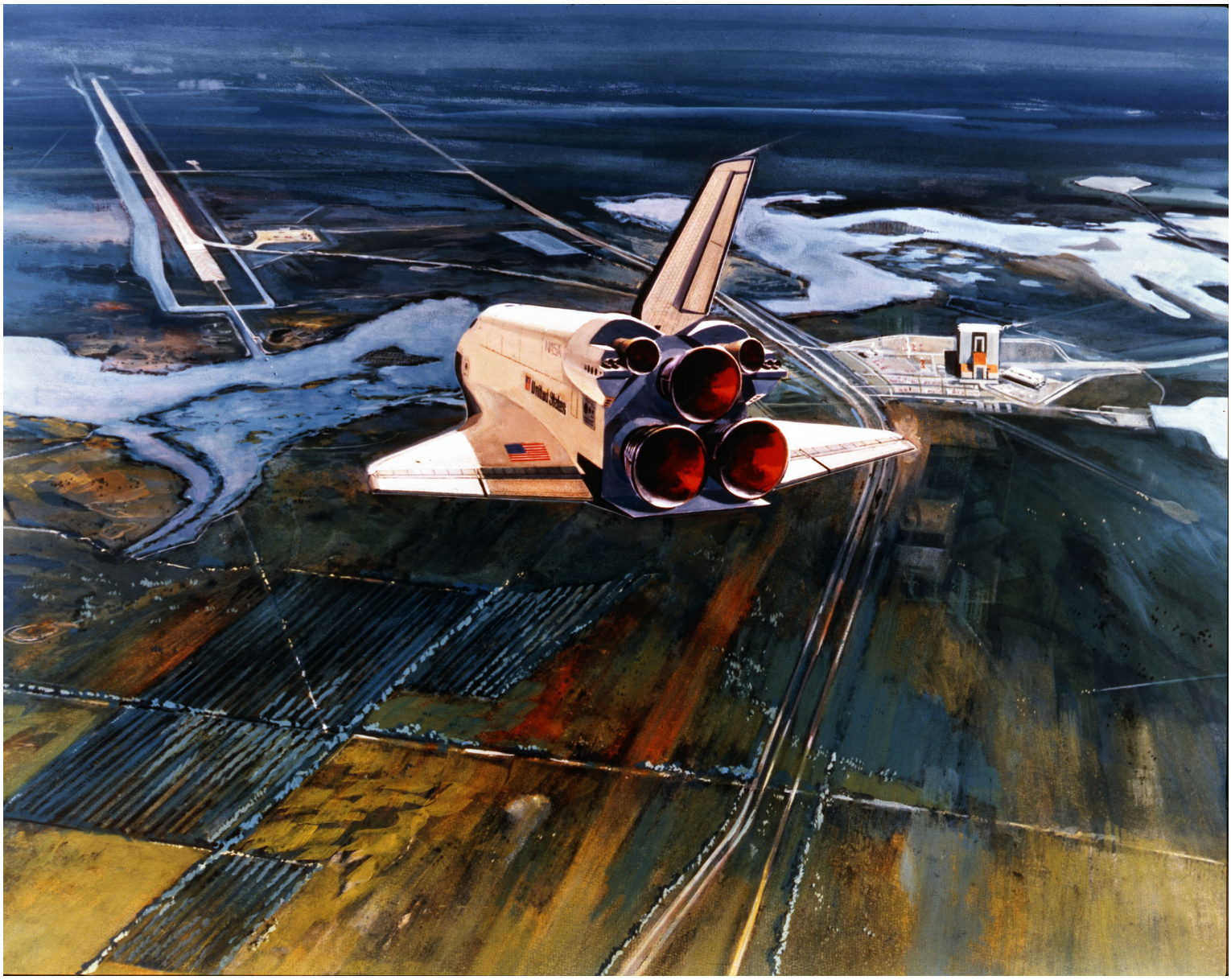
NASA
United States

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(Space - U.S. - Space Shuttle - Landing)

MAR 18 1981

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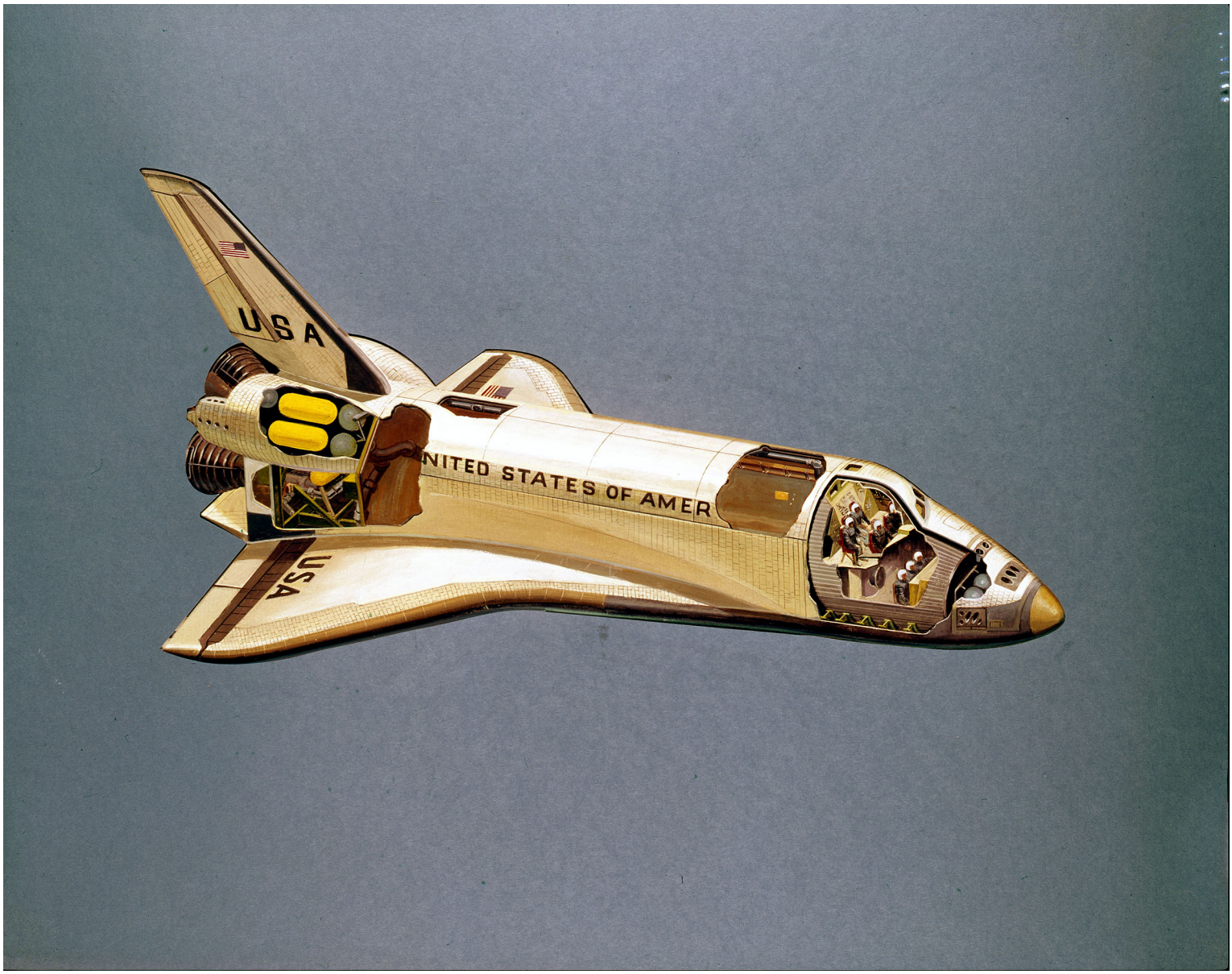
USA
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USA

SUBJECT: Orbiter Cutaway
S23-J11

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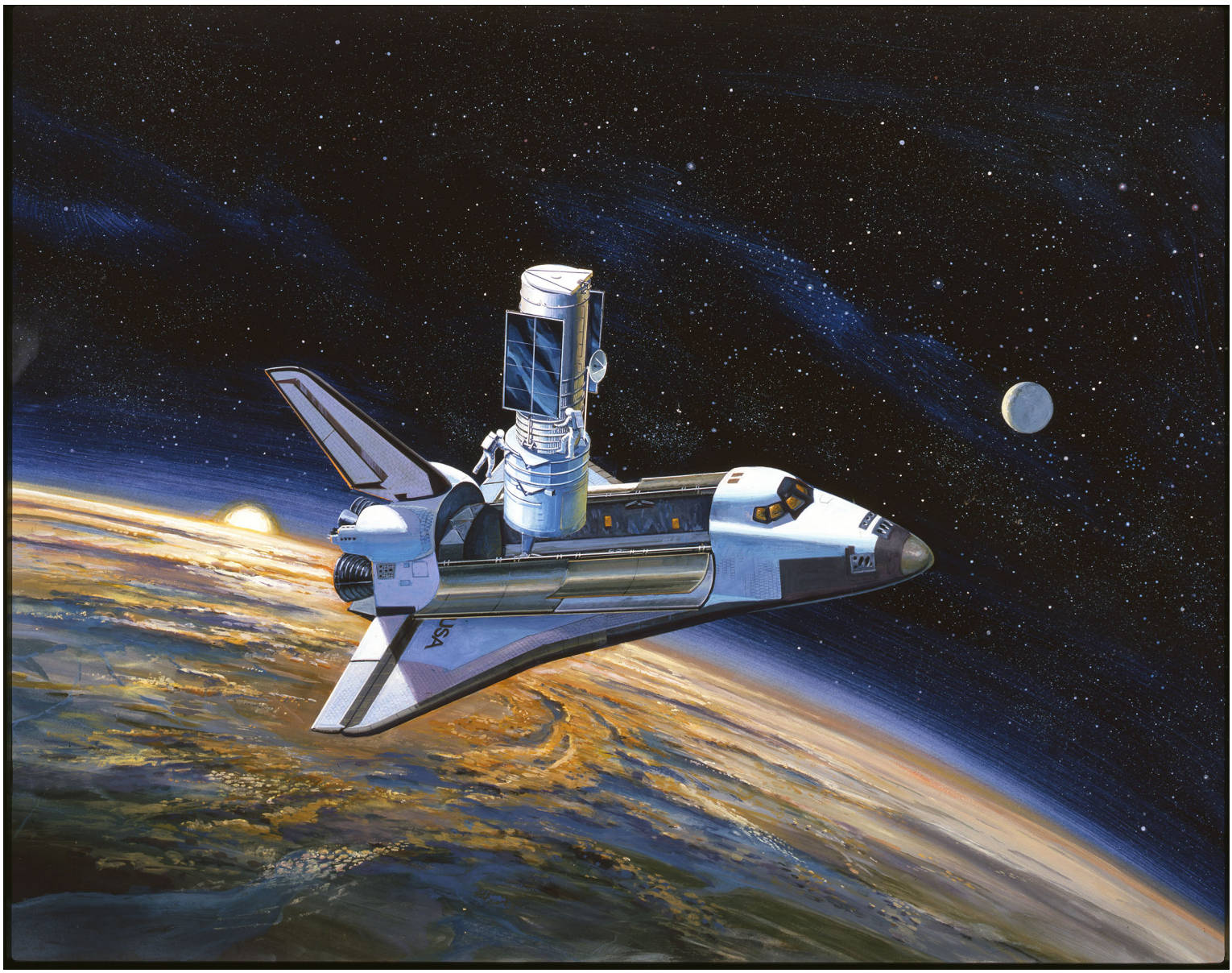
(Space - U.S. - Space Shuttle - Loading)

MAR 18 1981

Transparency
Rockwell International


USA

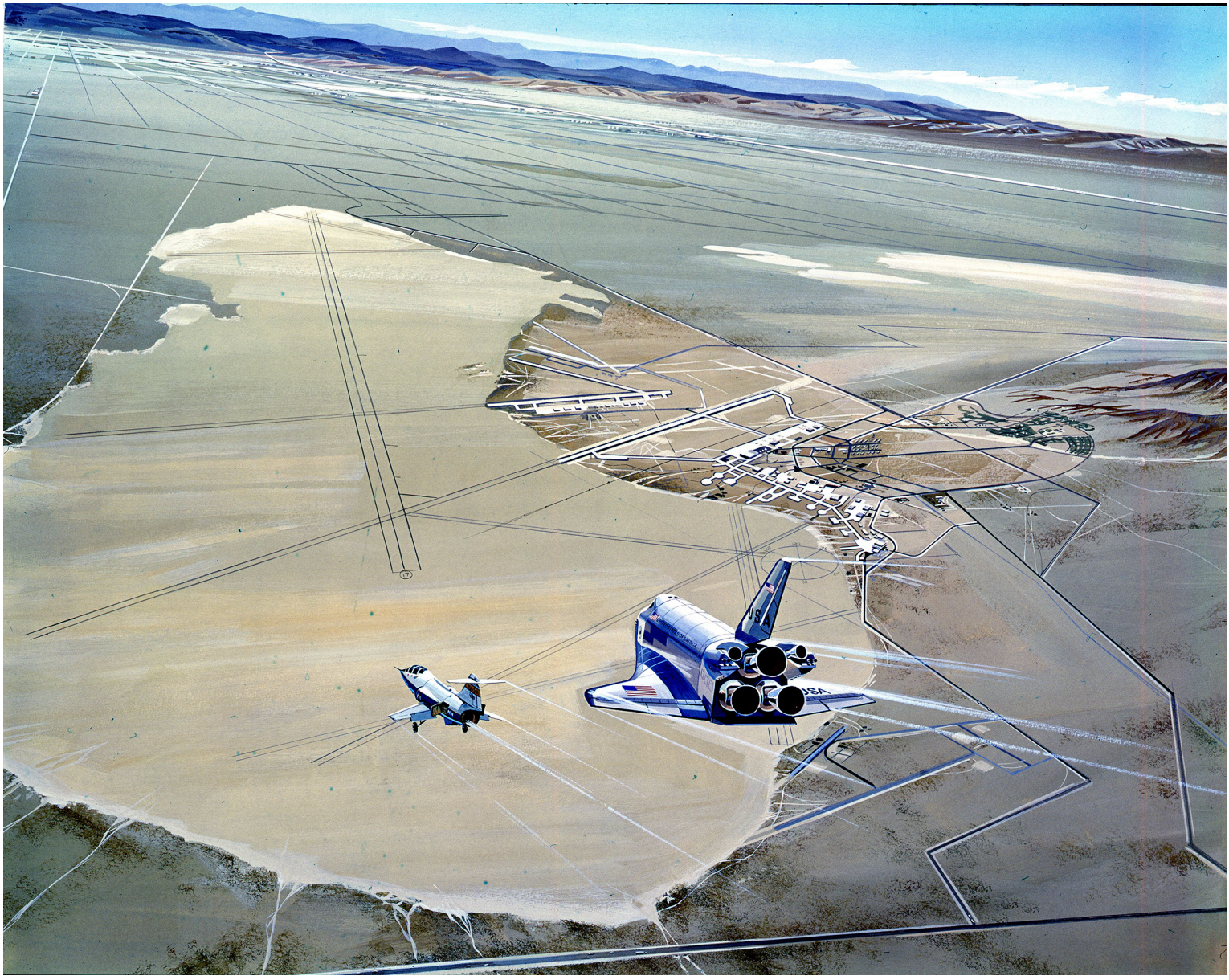
SPL 8A 11-29-78
Orbiter With 2.9 M Large Space Telescope (LST)
in Cargo Bay

Please Return to
Sue Cometa D/002
Media Relations

SUBJECT: SPACE TELESCOPE
SPL8A

Landing)

1 transparency
Rockwell International
Sue Cometa



SUBJECT: Edwards AFB Approach
S31

No.

Name

Order

Remarks

Retouched

Order Finished

Reorder

Reorder

(Space - U.S. - Space Shuttle - Landing)

MAR 19 1981

1 transparency
Rockwell International

15

No.

Name

Order

Remarks

Retouched

Order Finished

Reorder

Reorder

(Space - US - Space Shuttle - Landing)

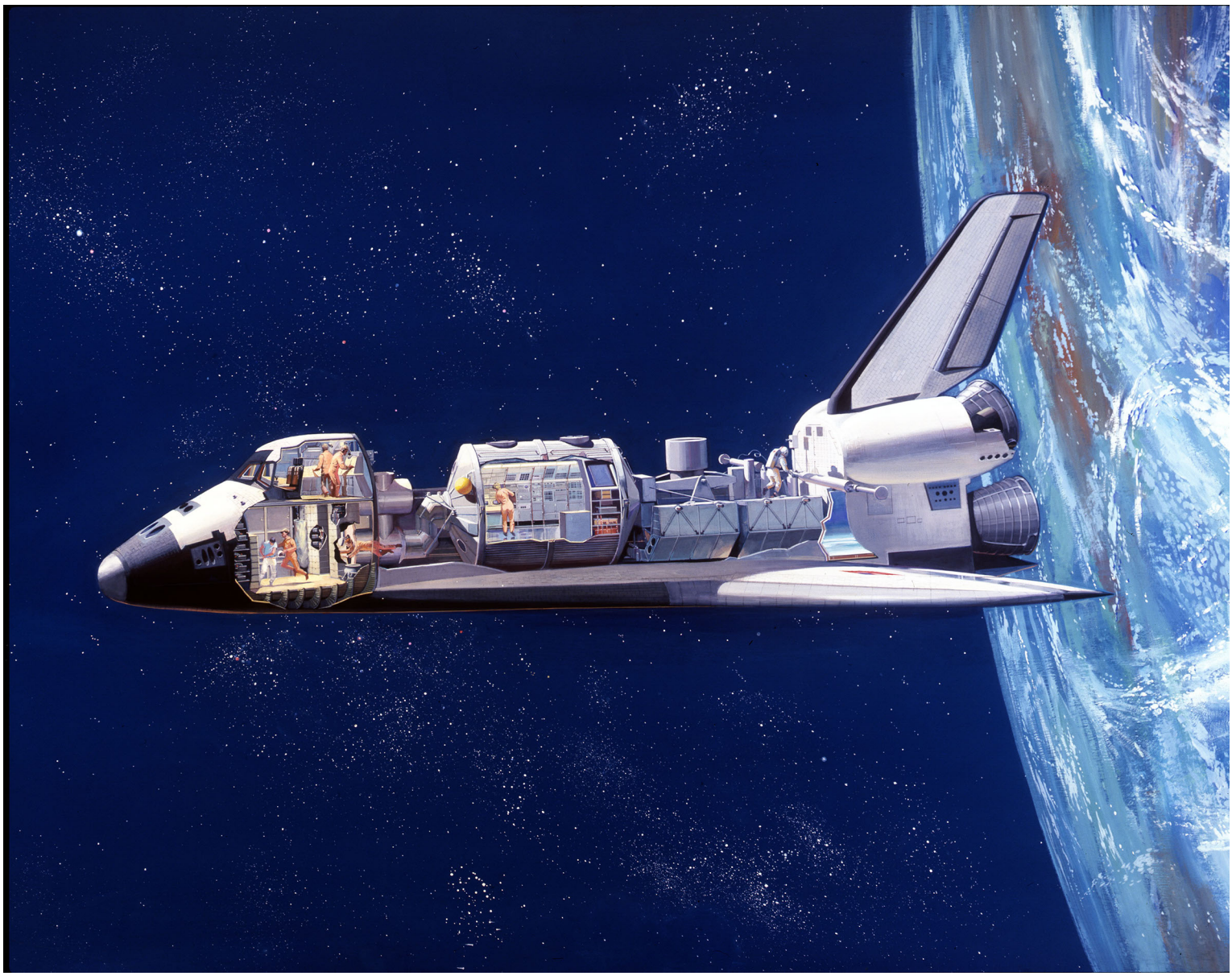
MAR 18 1981

Subj: Shuttle System Cutaway

S22

Transparency

Rockwell International



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Order Finished _____

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S82

(Space - U.S. - Space Shuttle - Landing)

MAR 18 1991

SUBJECT: SPACELAB

SPL5,11A,70, S82

1 transparency
Rockwell International

592 12-11-78

Solid Rocket Booster Inverted Frontal View

Name

Please Return to
Sue Cometa D/002
Media Relations

Order Number

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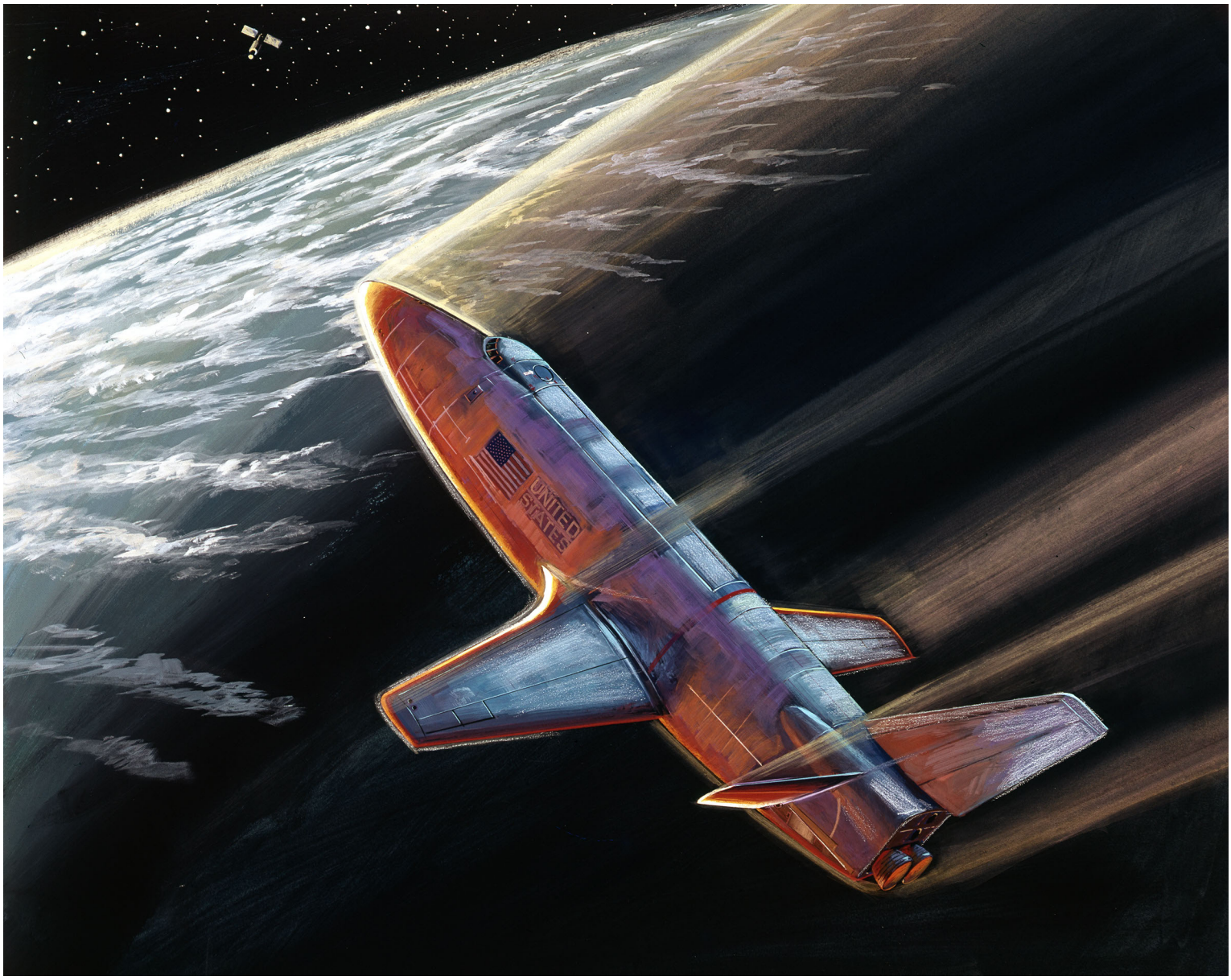
(Space Shuttle Landing)

MAR 18 1981

1 Transparency
Rockwell International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(Space - U.S. - Space Shuttle)

Shot of space shuttle orbiter

FILED JUL 2-1970

Space Div
North American
Rockwell
transparency

USA
UNITED STATES OF AMERICA
USA
M ALVAREZ

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Order _____

Remarks _____

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Order Finished _____

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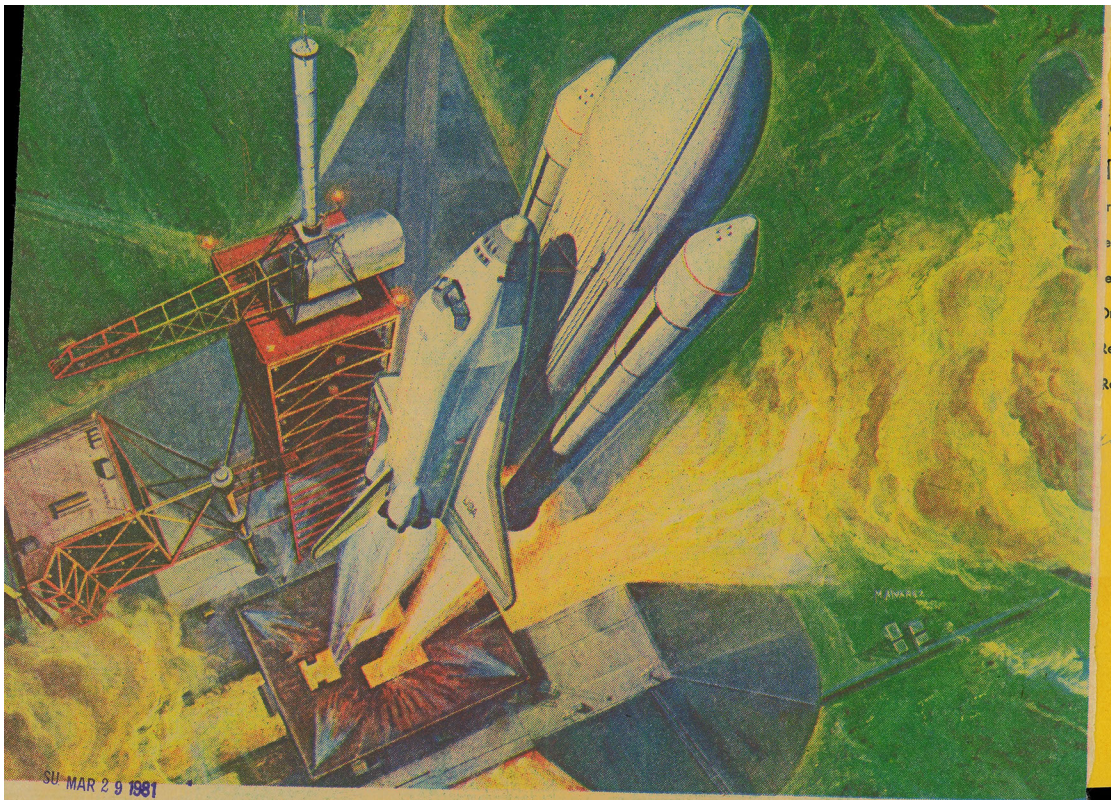
(Space - U.S. - Space Shuttle - Landing)

MAR 18 1981

1 transparency
Rockwell International

SUBJECT: Vandenberg AFB Approach
S39A Spacecraft

USA
M ALVAREZ



SU MAR 2 9 1981

SHUTTLE LAUNCH — With main engines and solid rocket motors roaring, the Space Shuttle lifts off from its launch pad in this artist's drawing. The first reusable space transportation system, the Columbia is scheduled to take off next month on its first flight and return to Earth.

—Drawing from Rockwell International

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ce - U. S. - Space Shuttle)
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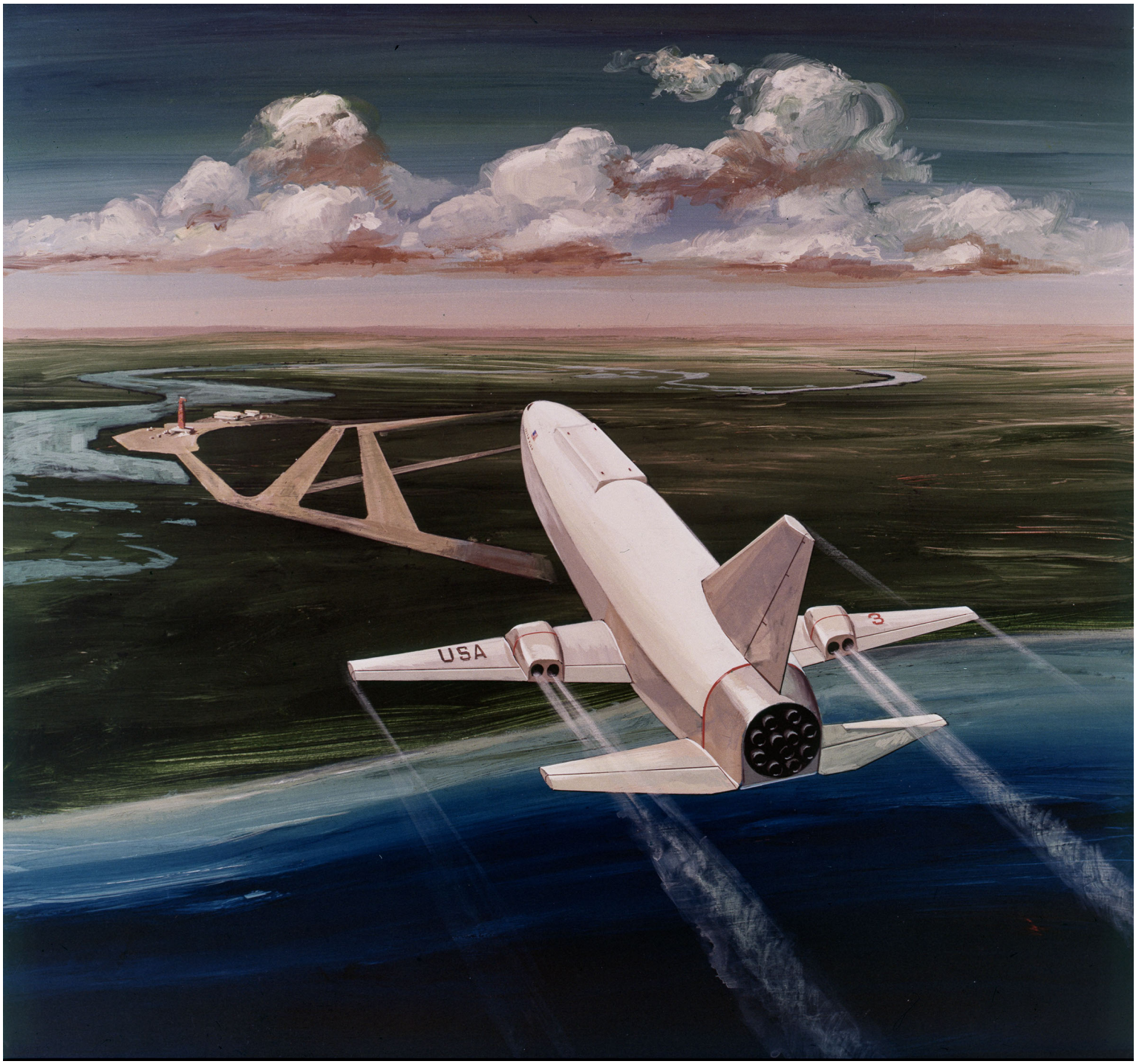
MAR 29 1981

Drawing from Rockwell International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3

21, 22, 23

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(Space - U.S. - Space Shuttle)

3 transparencies

FILED FEB -6 1970

North American Rockwell
Space Division

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21, 22, 23

No. _____

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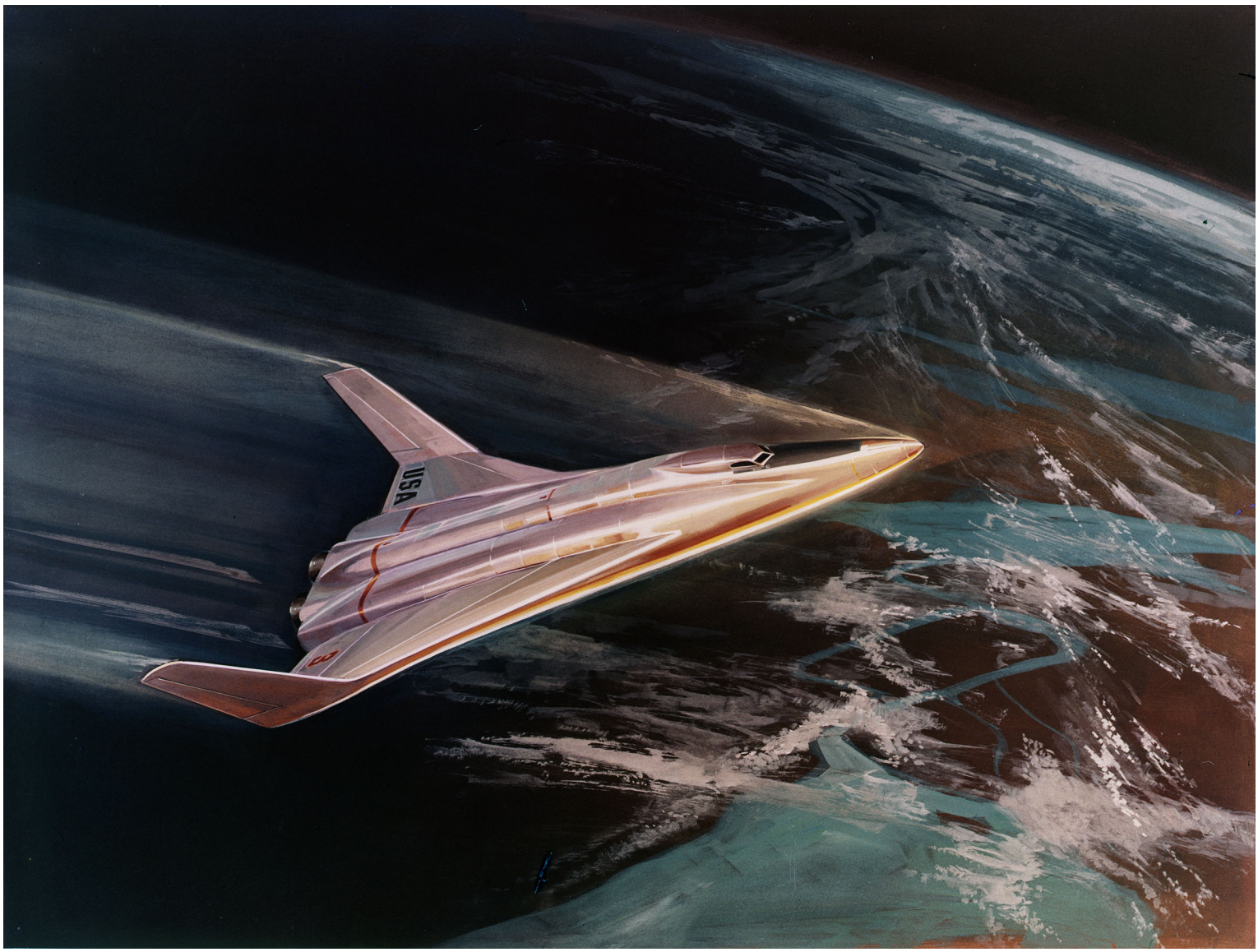
(Space - U.S. - Space Shuttle)

3 transparencies

FILED FEB -6 1970

North American Rockwell
Space Division


USA

21, 22, 23

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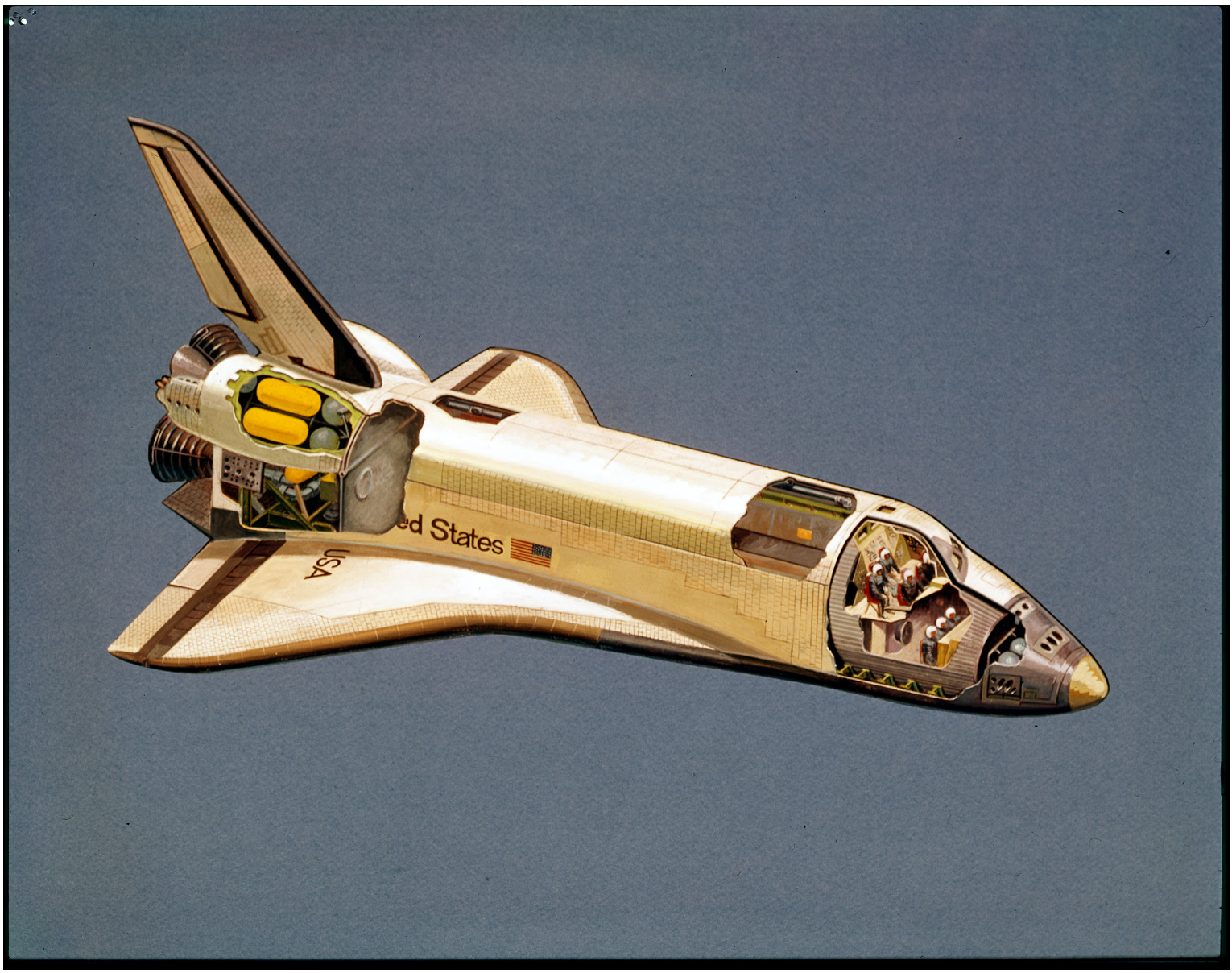
(Space - U.S. - Space Shuttle)

3 transparencies

FILED FEB -6 1970

North American Rockwell
Space Division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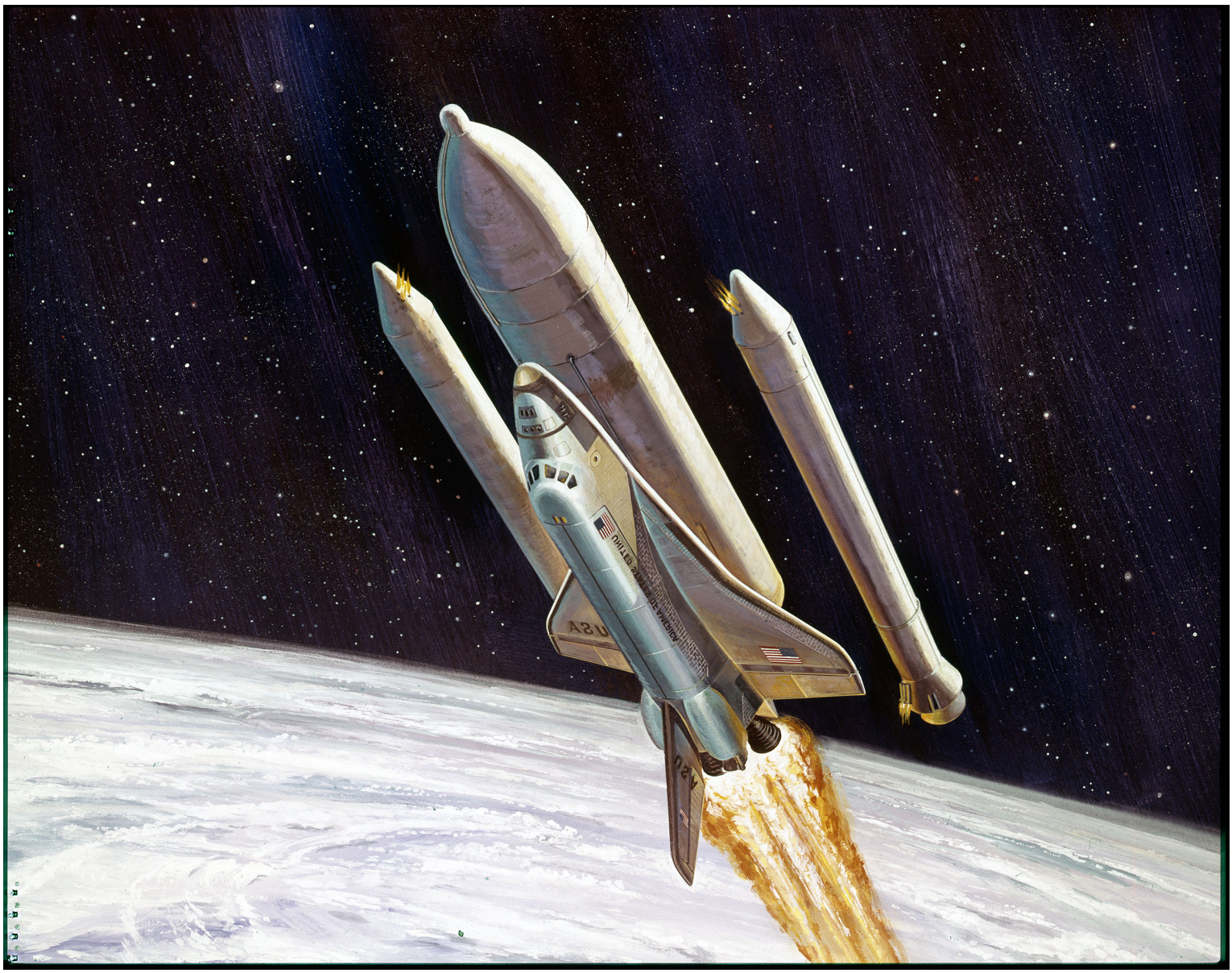
(Space - U.S. - Space Shuttle - Landing)

MAR 18 1981

Subj: Orbiter Cutaway

S23

1 transparency
Rockwell International



No. PIC 025--29

Name

Order

Remarks

Retouched

Order Finished

Reorder

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(Space-U.S.-Space Shuttle-Landing)

MAR 18 1981

1 transparency
Rockwell International

UNITED STATES

No. PIC 025--29

Name

Order

Remarks

Retouched

Order Finished

Reorder

Reorder

(Space-U.S.-Space Shuttle-Landing)

MAR 18 1981

1 transparency
Rockwell International

UNITED STATES OF AMERICA
USA
M. ALVAREZ

No. PIC 025--29

Name

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(Space-U.S.-Space Shuttle-Landing)

MAR 18 1981

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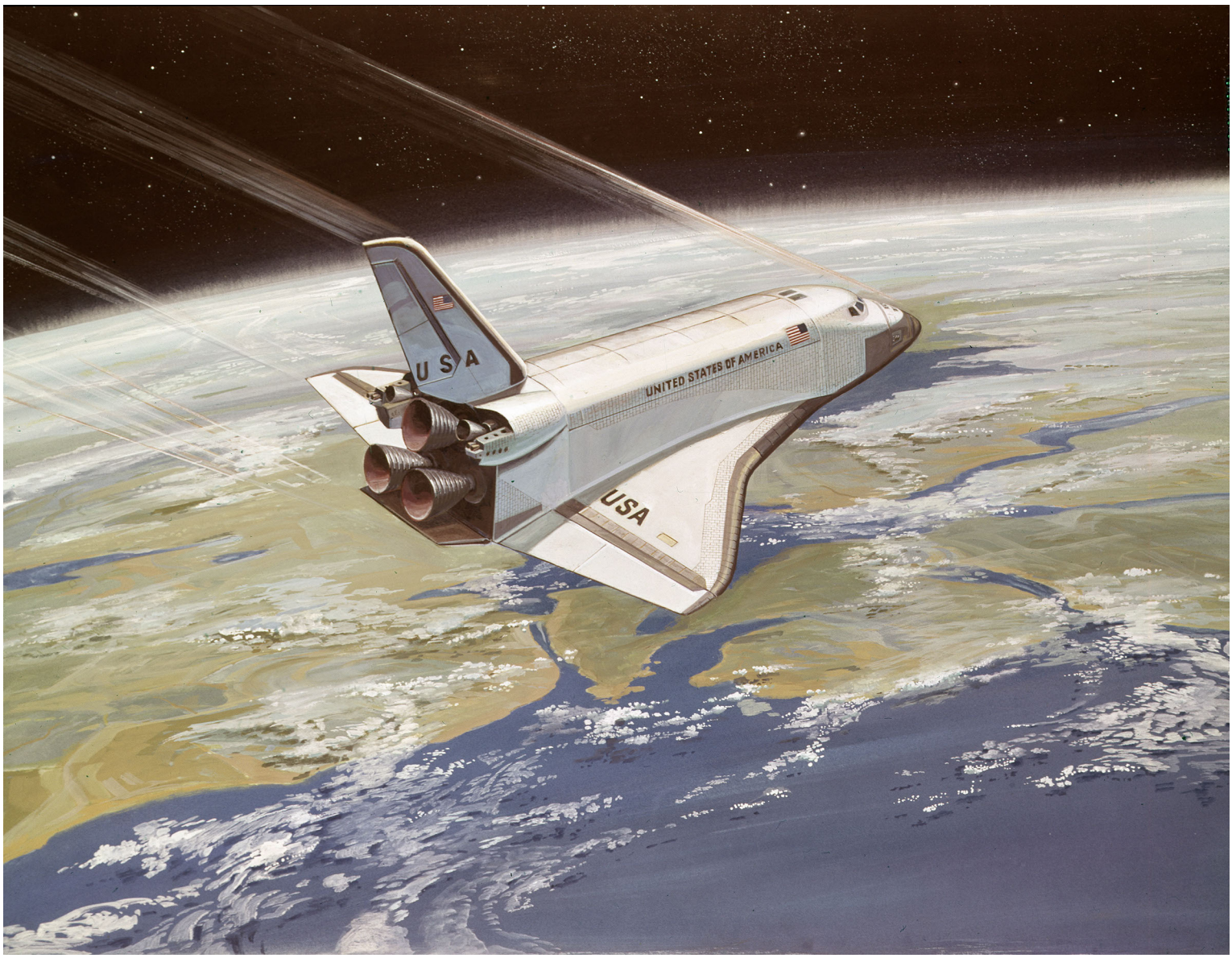
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USA

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(Space-U.S.-Space Shuttle-Landing)

MAR 18 1981

1 transparency
Rockwell International

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USA

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(Space-U.S.-Space Shuttle-Landing)

MAR 18 1981

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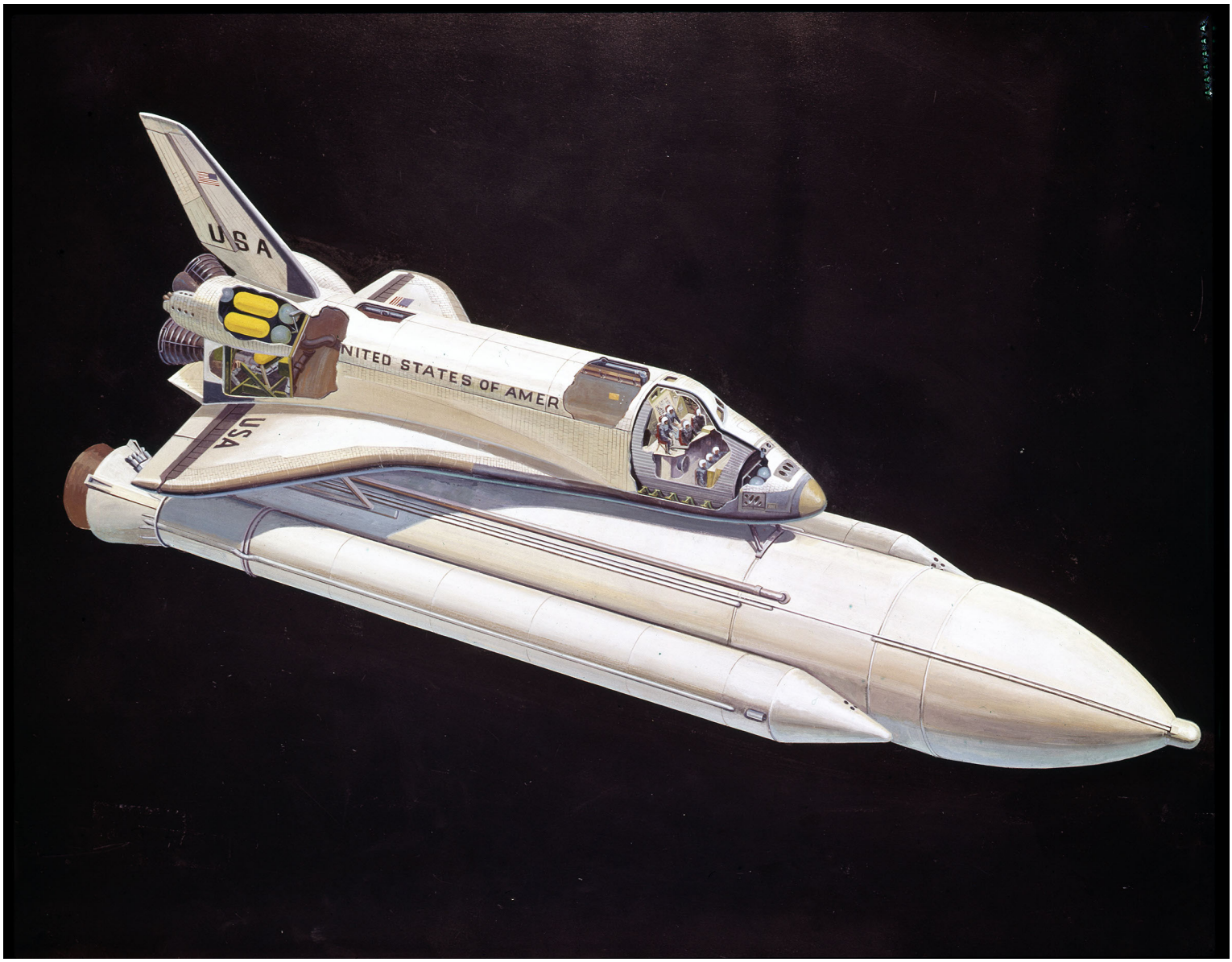
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(Space - U.S. Space Shuttle - Landing)

MAR 18 1981

SUBJECT: Workhorse System
S22-J10

1 transparency
Rockwell International

M. ALVAREZ

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(Space - U.S. - Space Stations)
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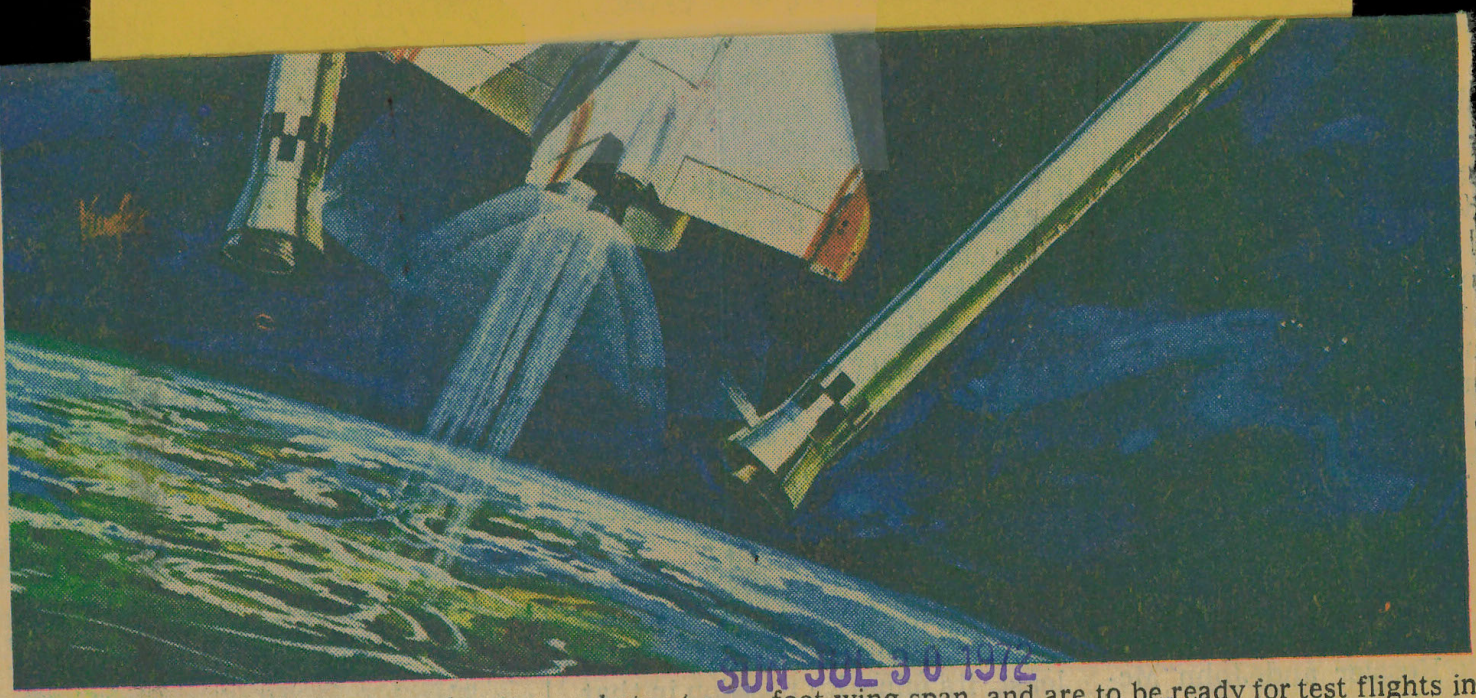
Sky Lab

Filed FRI JAN 14 1972

UNITED STATES



SUN JUL 30 1972

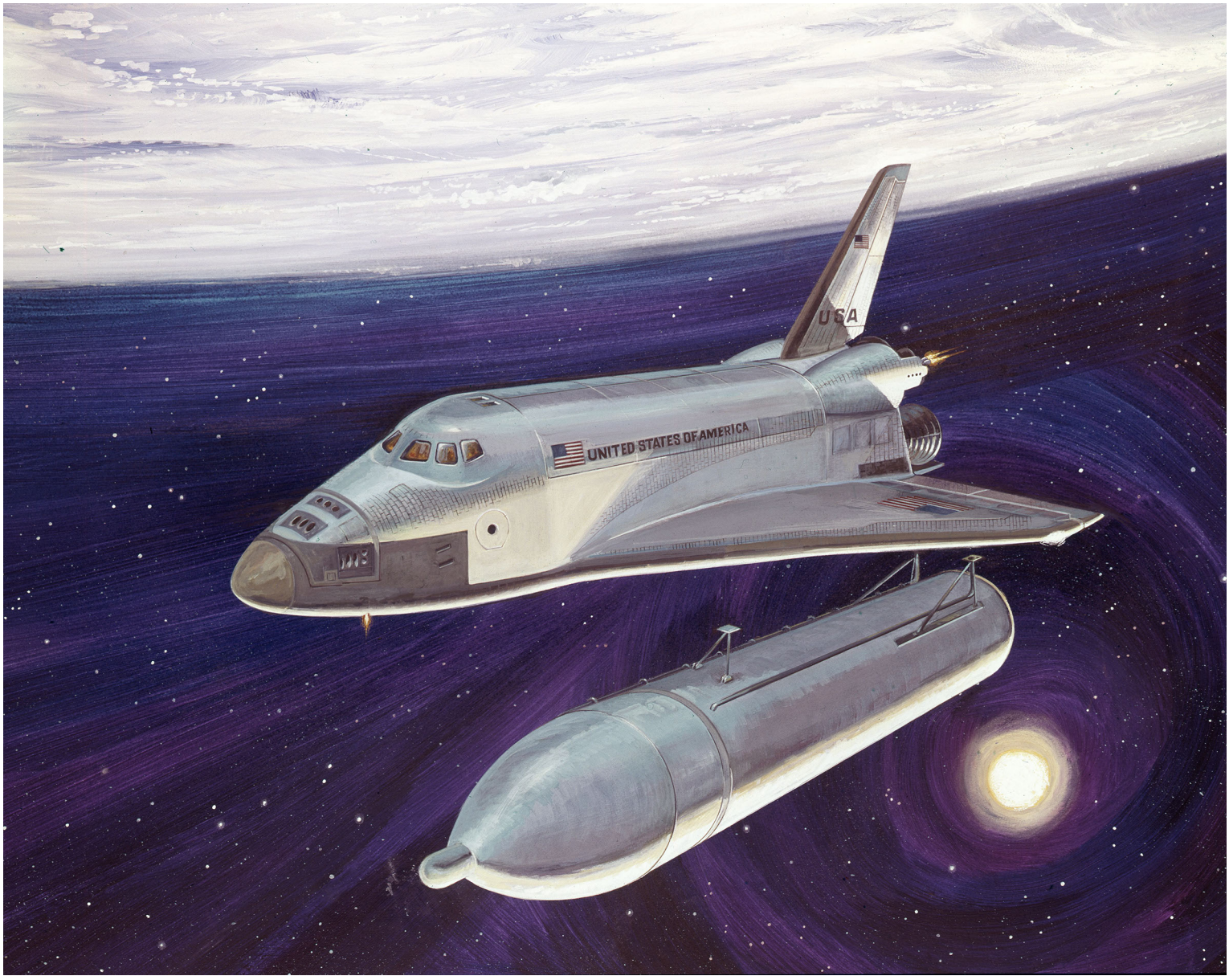
A space shuttle craft drops two booster rockets at a height of 125,000 feet above earth and carries its crew and cargo into orbit for rendezvous with a satellite space station in this artist's conception. The first five such craft are to be 120 feet long, with a 79 foot wing span, and are to be ready for test flights in 1978, with the shuttle service in full operation by 1980. Each craft is to be used many times, returning to earth and landing like an airplane after each space mission.

—AP Drawing

FILLED SEP - 7 1973

(Space - U. S. - Space Shuttle)

1 transparency
AP drawing


USA
UNITED STATES OF AMERICA

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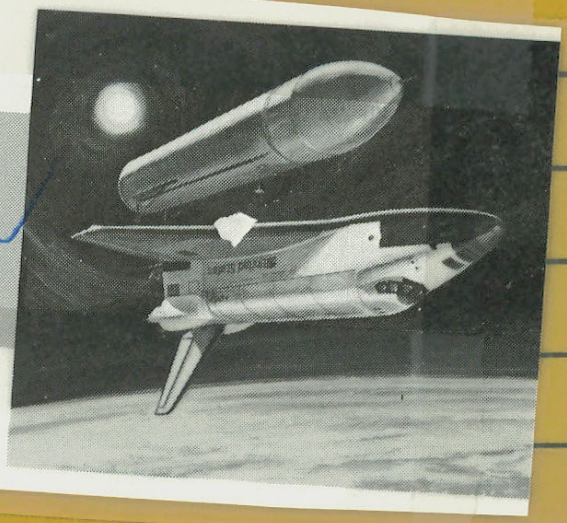
Name _____

Order _____

MAIN ENGINE CUTOFF, EXTERNAL TANK SEPARATION

Altitude: 59 nmi (68 miles); velocity: 7796 mps (25,581 fps, 17,440 mph) about 8 minutes after launch (just before orbit insertion)



(Space - U.S. - Space Shuttle - Landing)

MAR 18 1981

1 transparency
Rockwell International

Columbia
NASA
United States
M ALVAREZ

No. _____

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S98

(Space - U.S. - Space Shuttle - Landing)

MAR 19 1981

SUBJECT: LANDING

~~S15~~
S98

Transparency
Rockwell International

84-3002

Apollo 11 Blastoff

(Doug Kennedy)

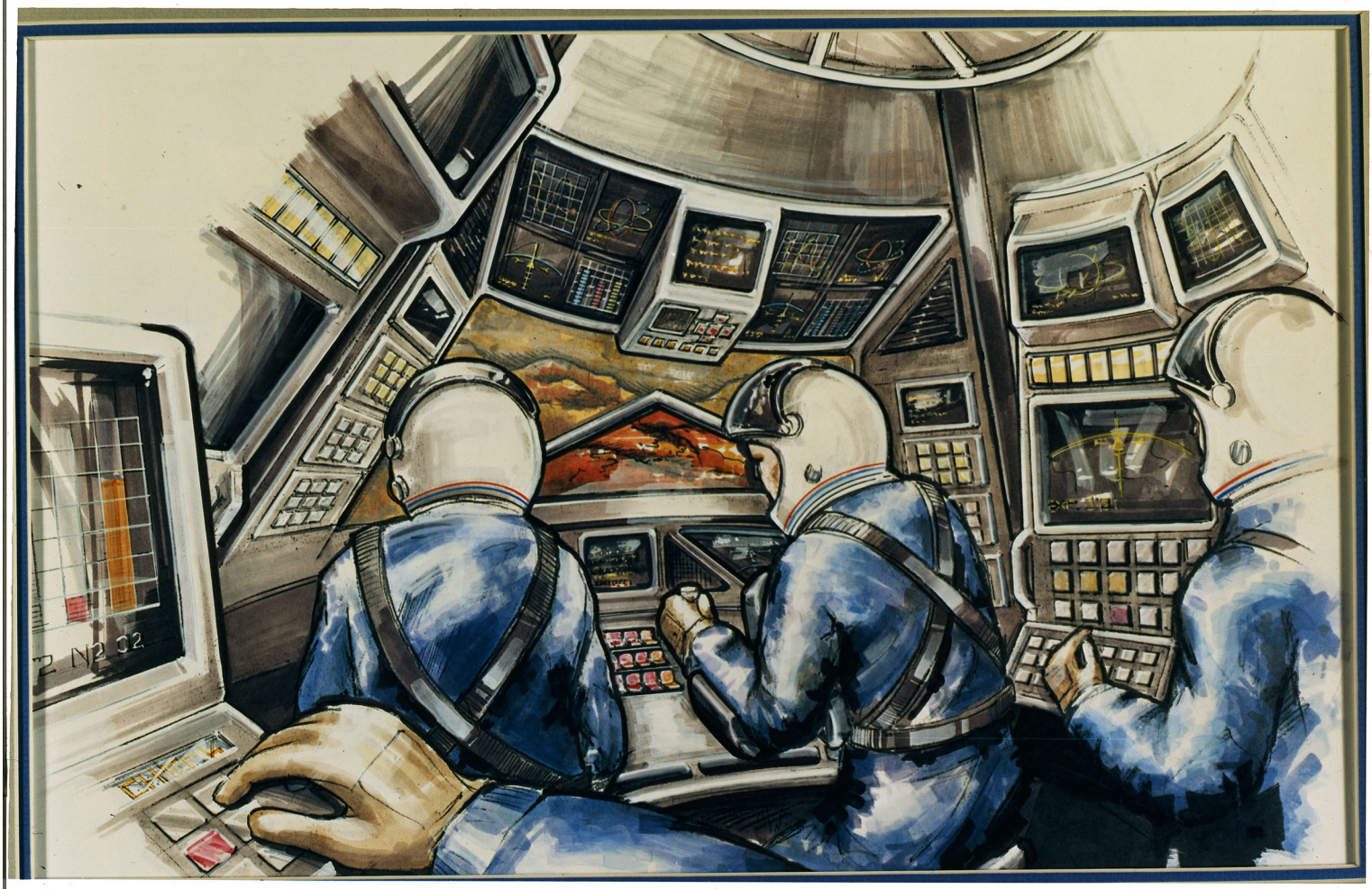
NASA-SPACE STATION

S15-E

S86-30612

Apollo 11 Blastoff

(Doug Kennedy)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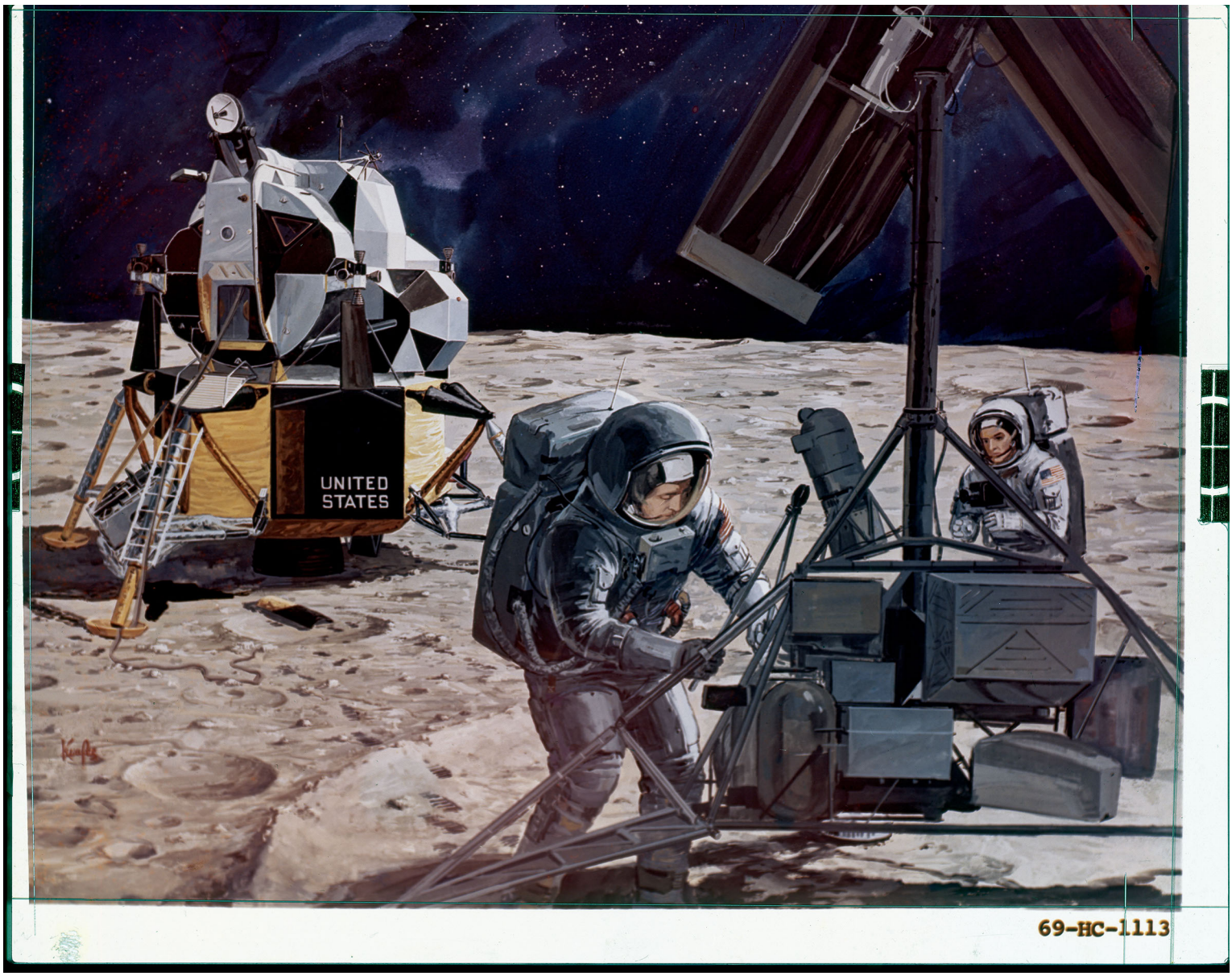
Apollo 11 Blastoff

(Doug Kennedy)



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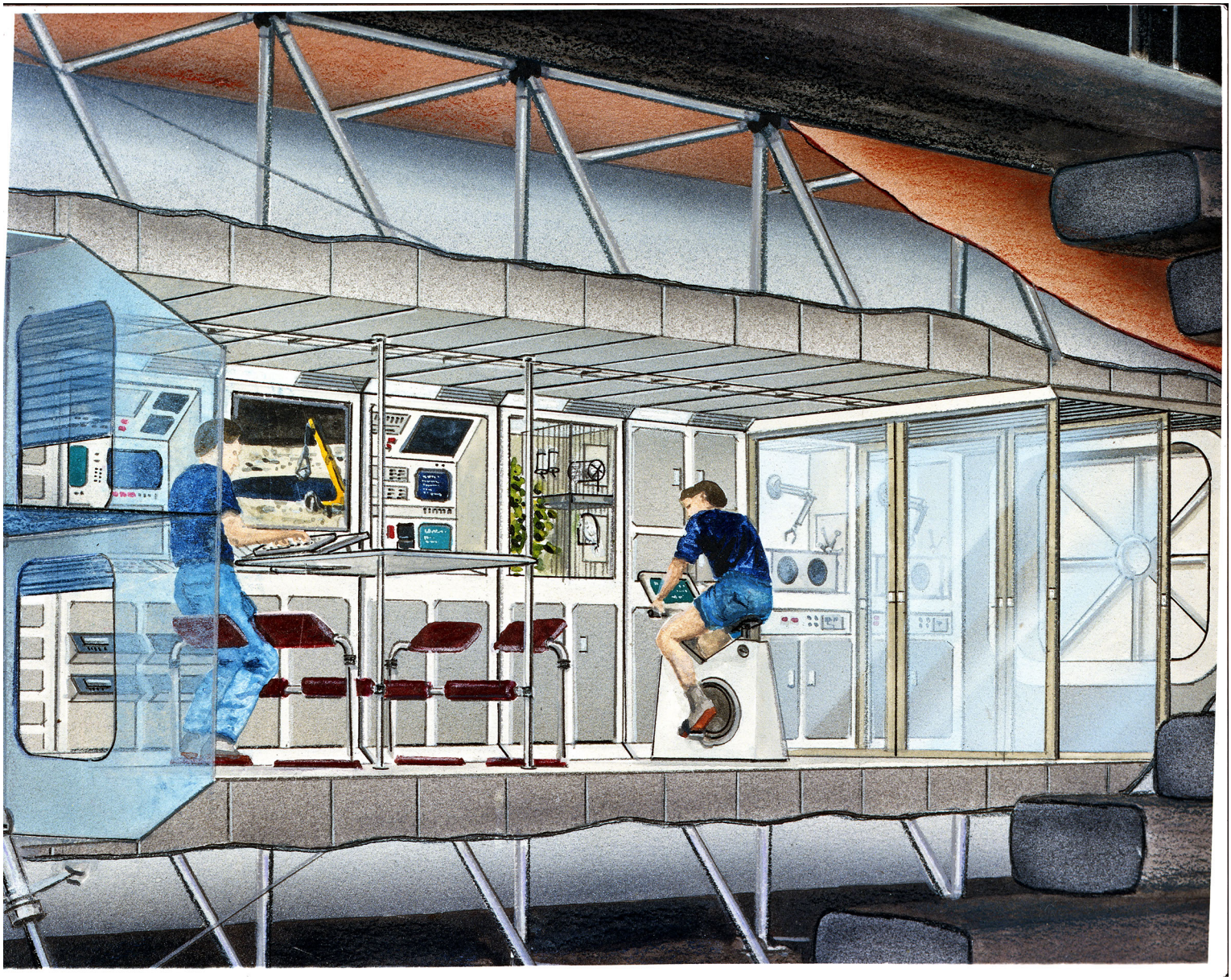
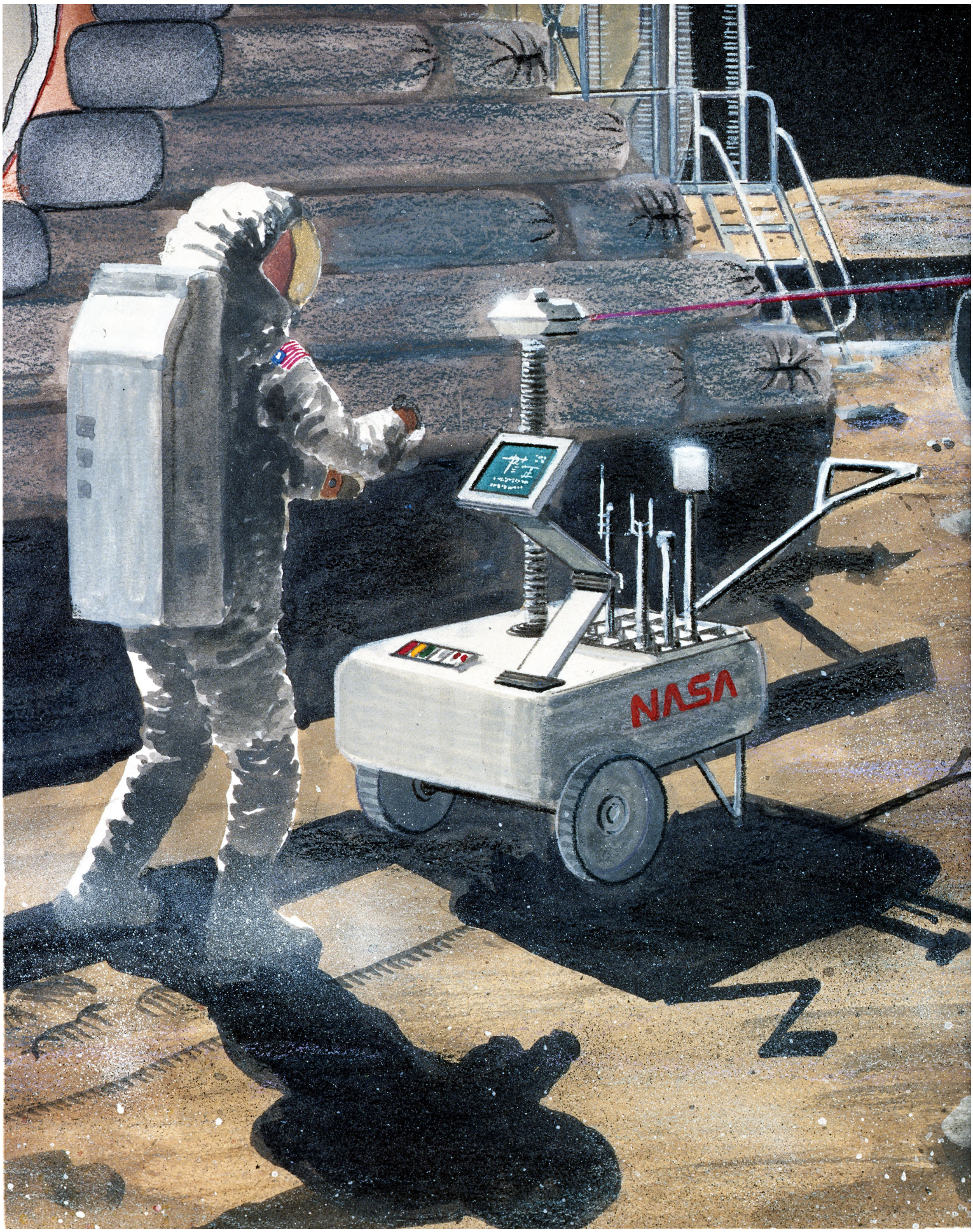
Apollo 11 Blastoff

(Doug Kennedy)



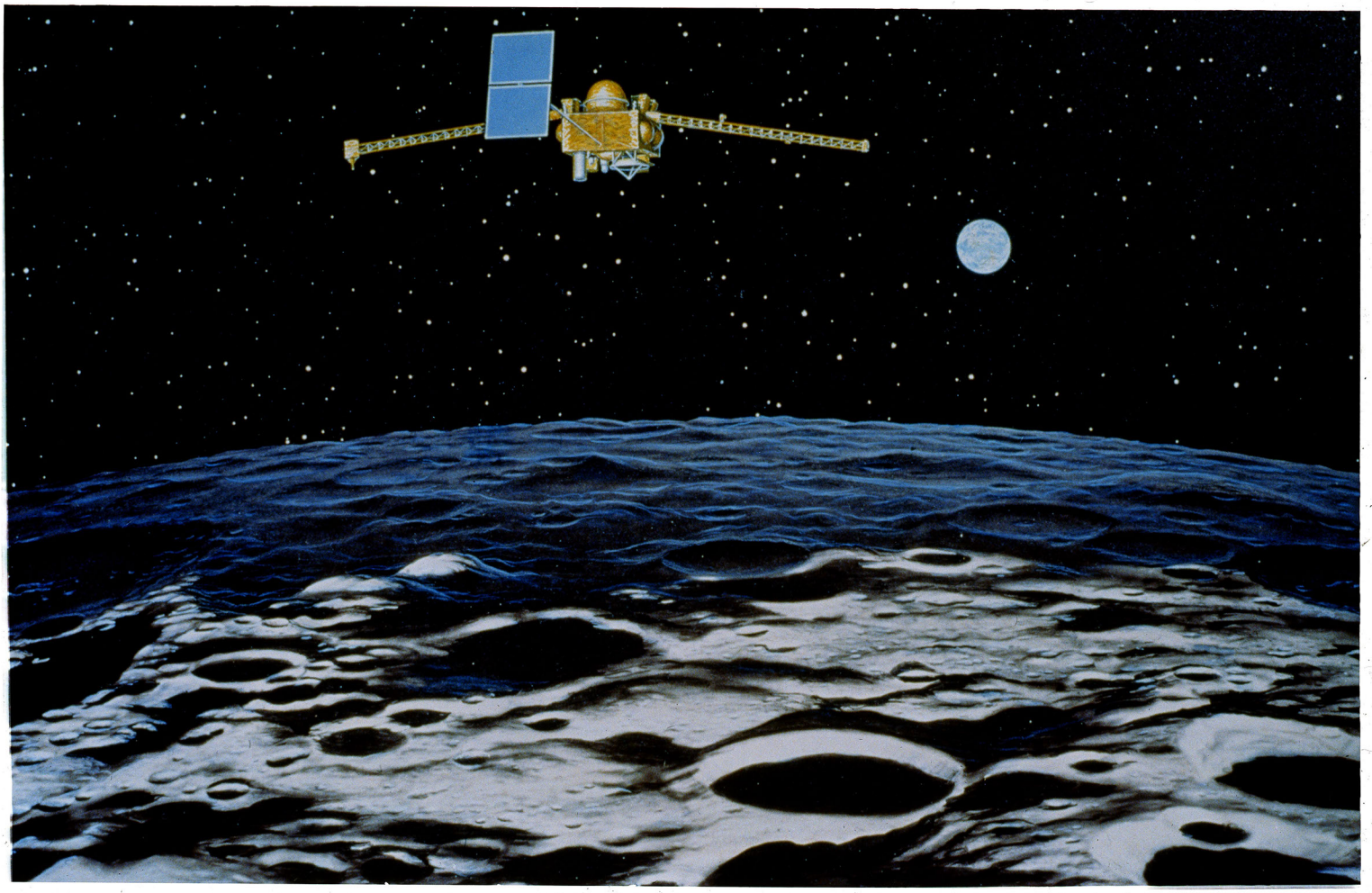
Apollo 11 Blastoff

(Doug Kennedy)


NASA

Apollo 11 Blastoff

(Doug Kennedy)



Apollo 11 Blastoff

(Doug Kennedy)

USA
NASA

THIS SIDE
TOWARD SCREEN

PLASTIMOUNT + ®
MADE IN U.S.A.

United States
NASA

PHOTO SLIDE MOUNT
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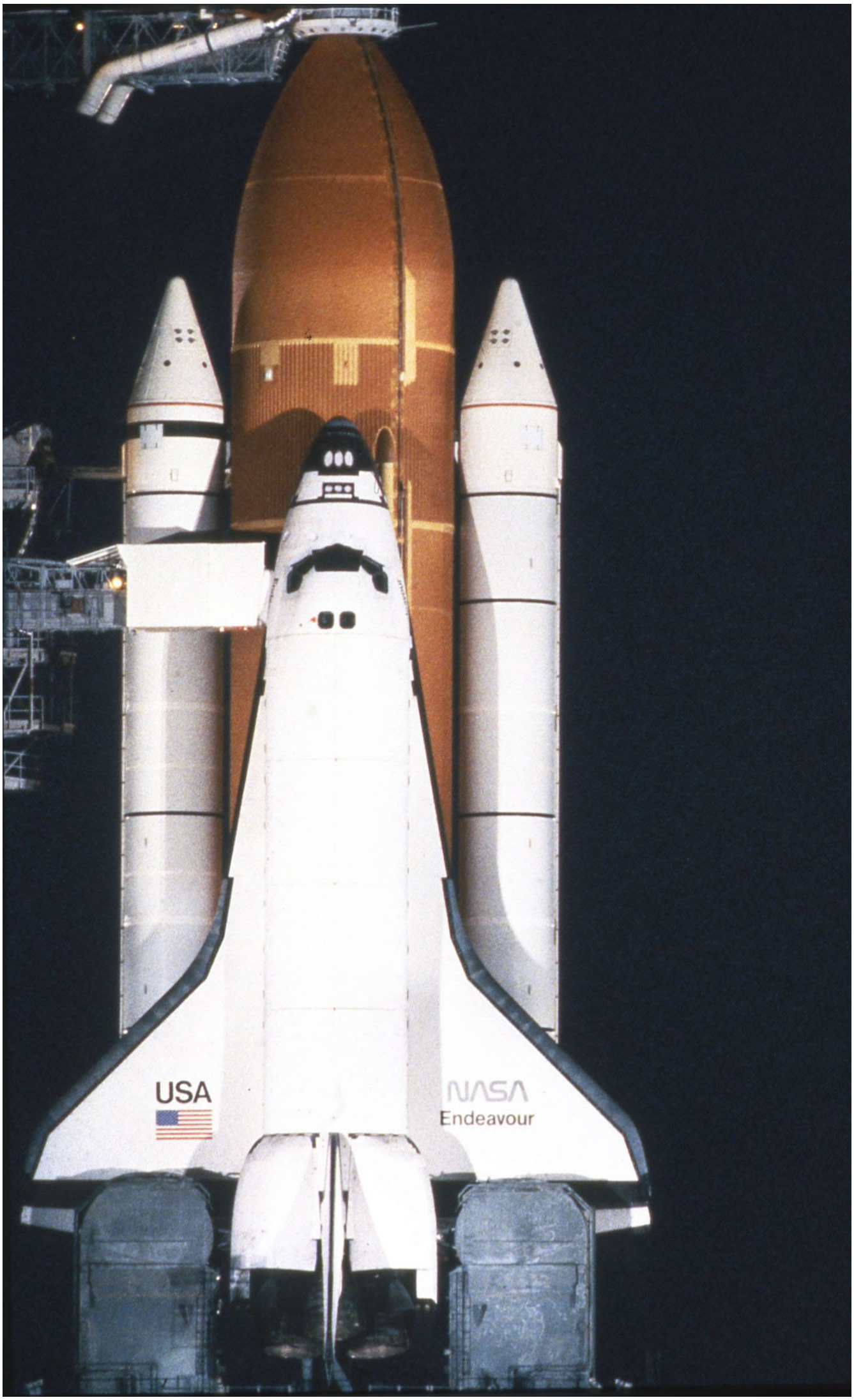
THIS SIDE
TOWARD SCREEN

FOR REPRODUCTION OF
SLIDE, SEE THE BACK


USA
NASA
Endeavour

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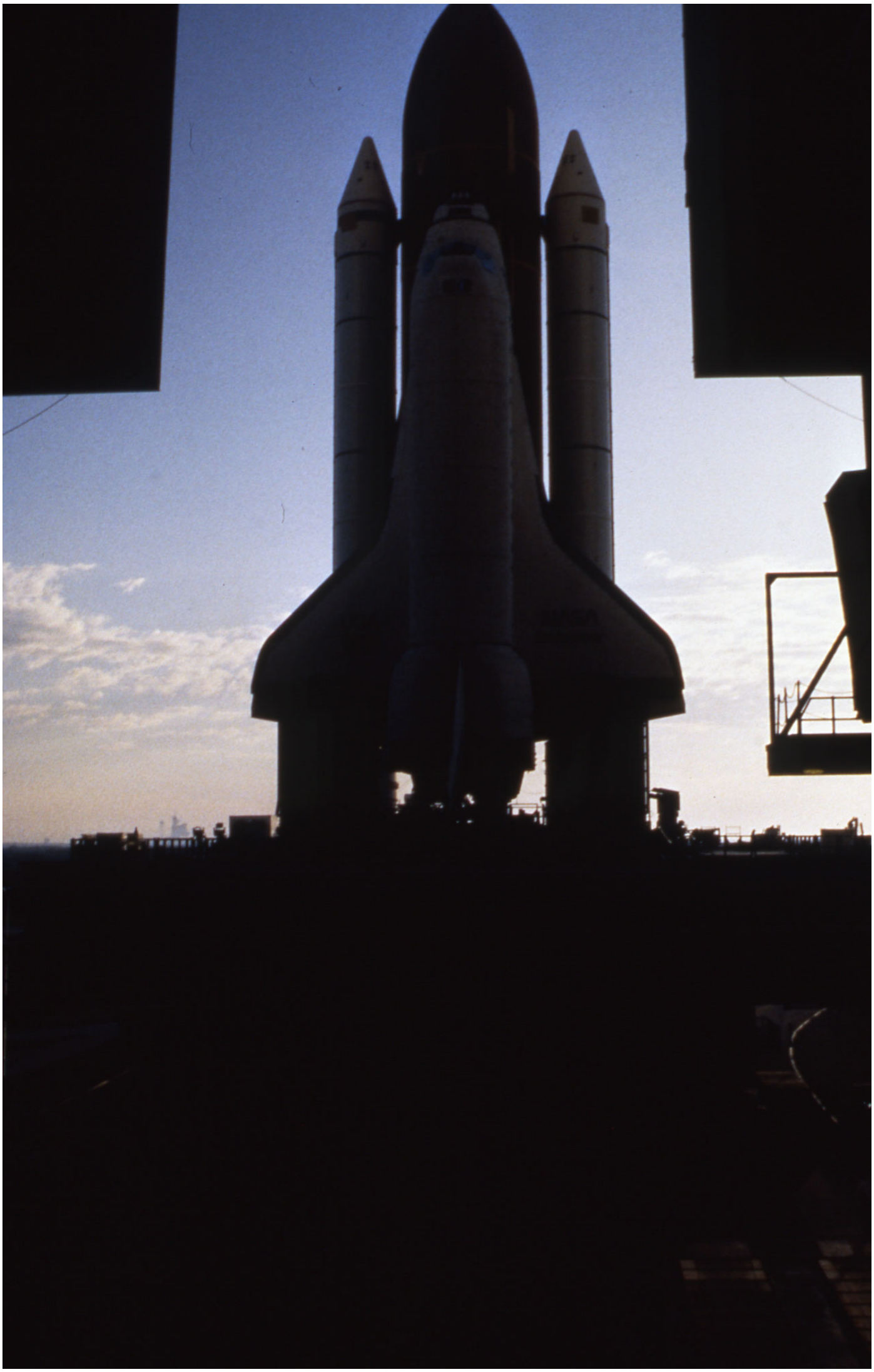

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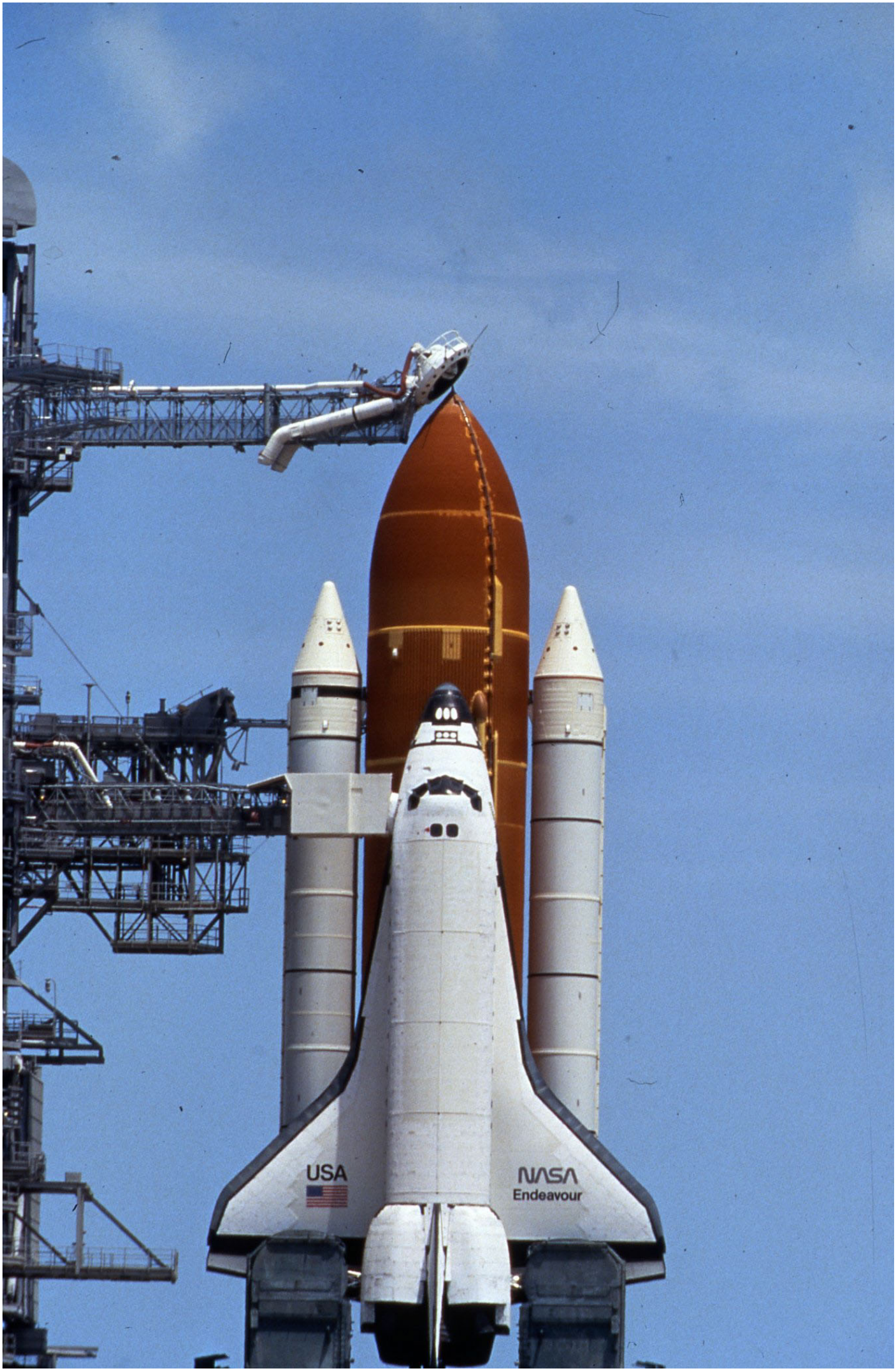

USA
NASA
Endeavour

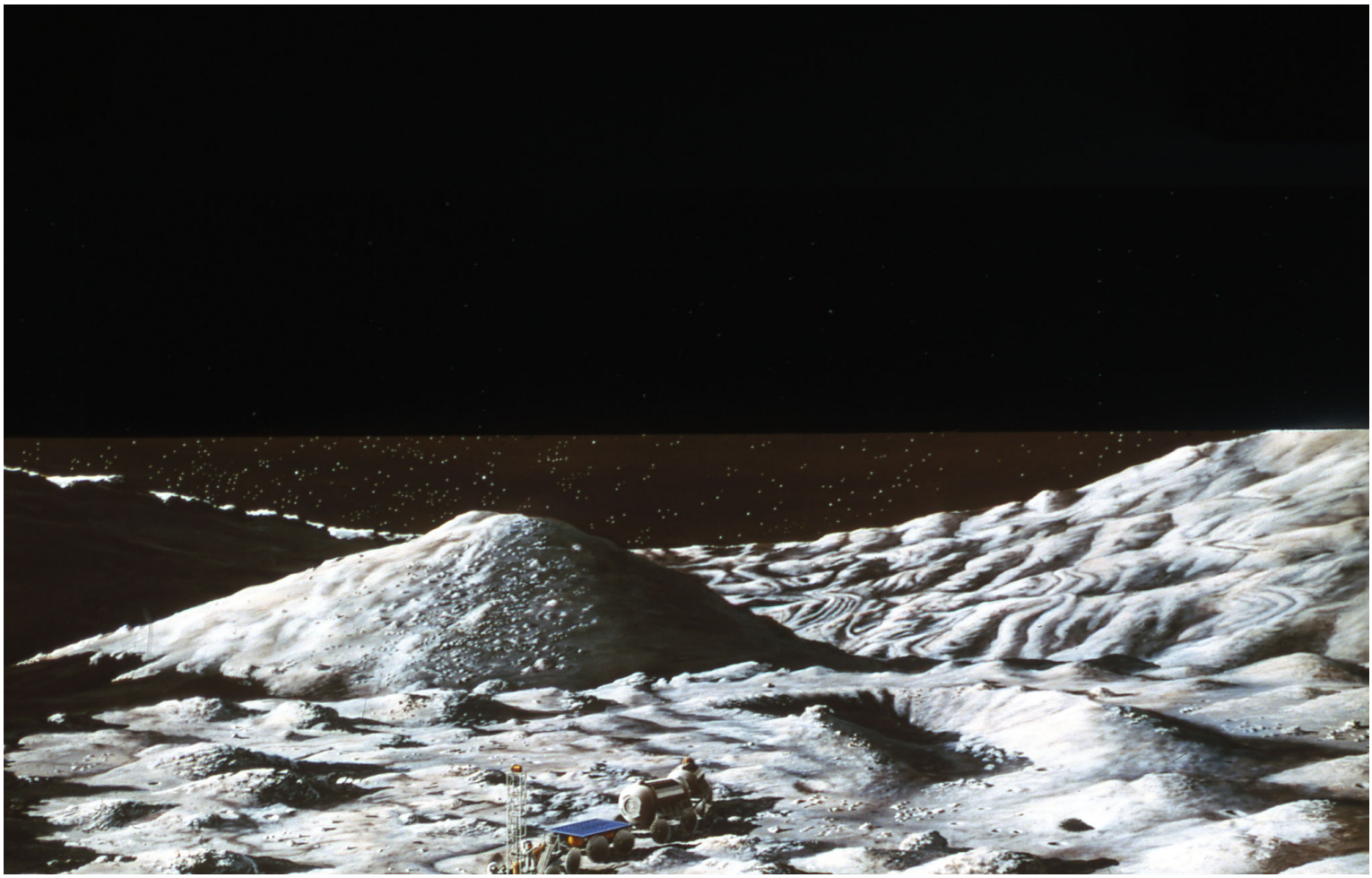
PHOTO SLIDE

FOR PROJECTION OF 2" SQUARE COLOR TRANSPARENCIES

THIS SIDE TOWARD SCREEN

MADE IN U.S.A.

PLASTIMOUNT ®



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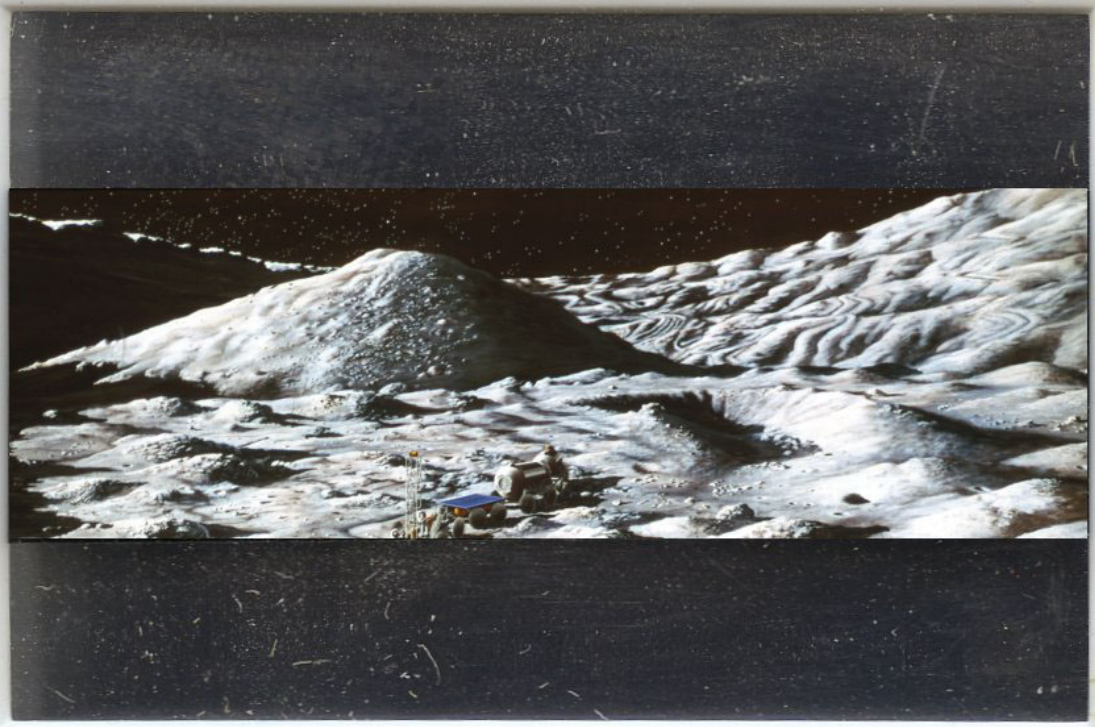
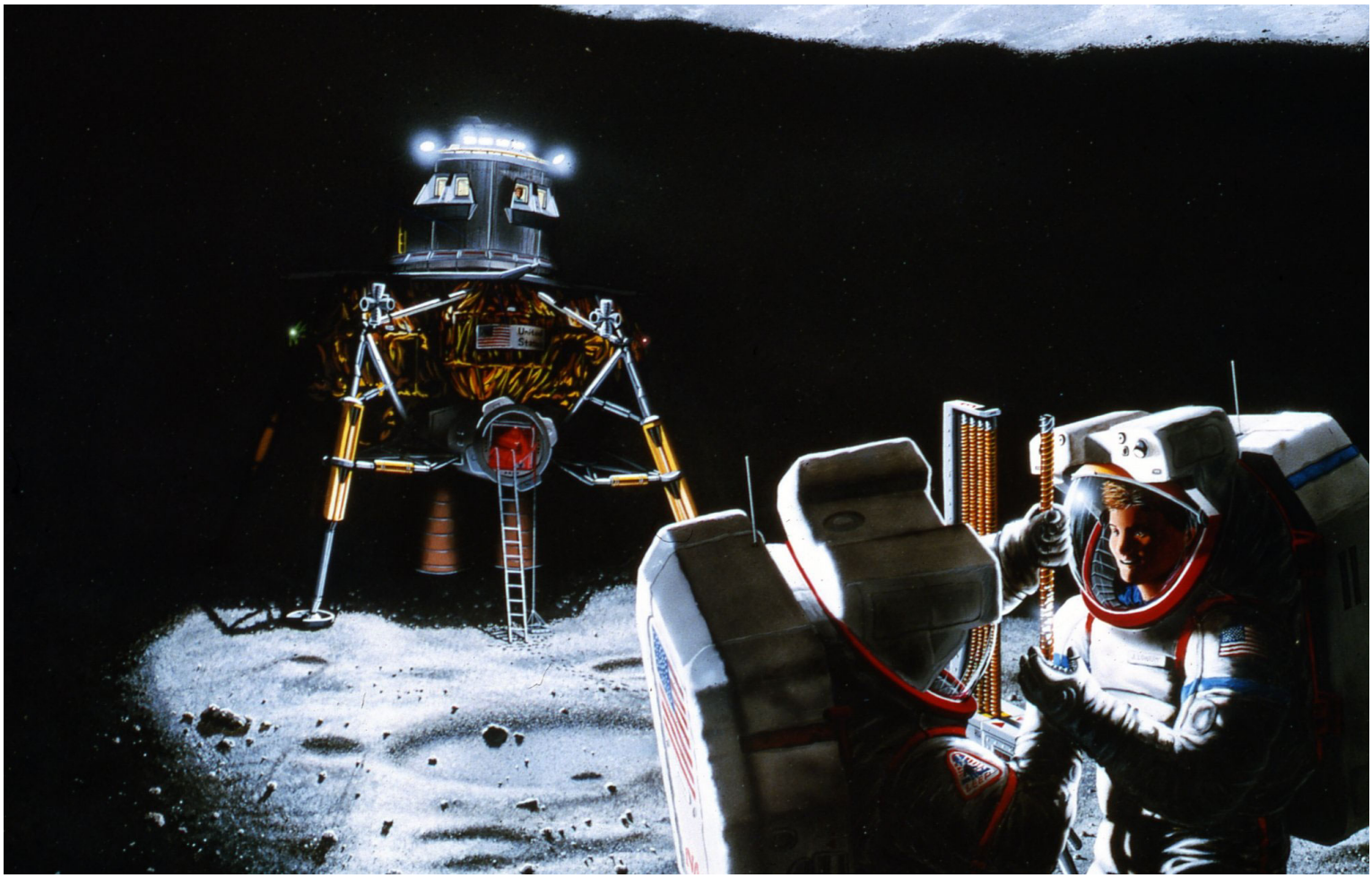


NASA
US



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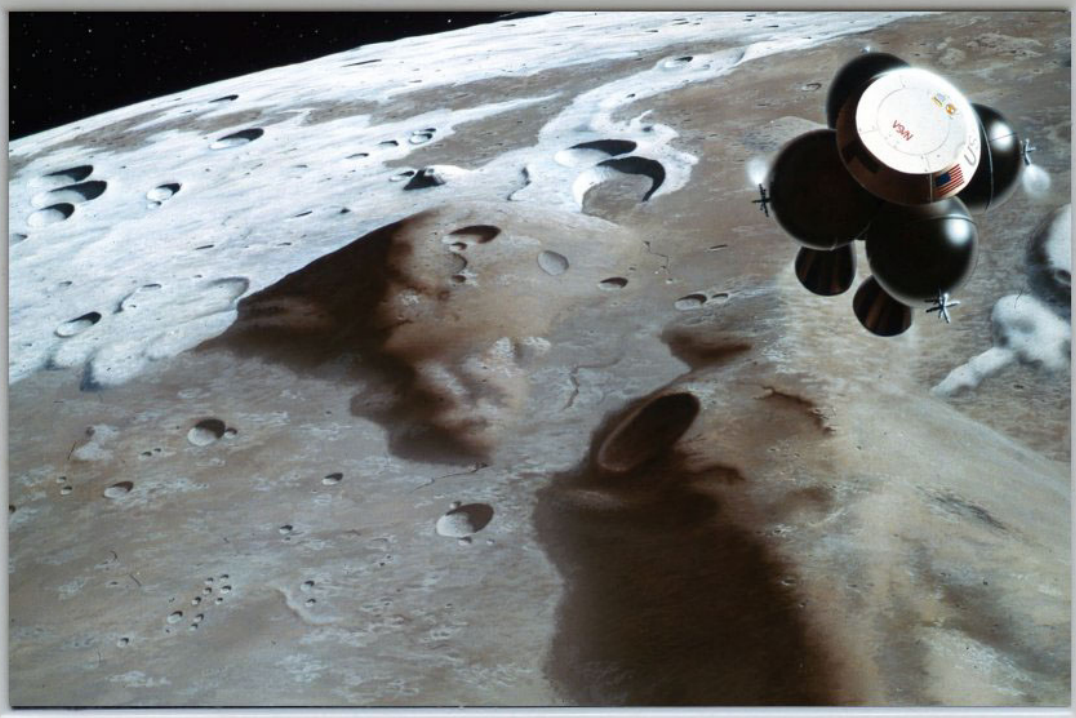

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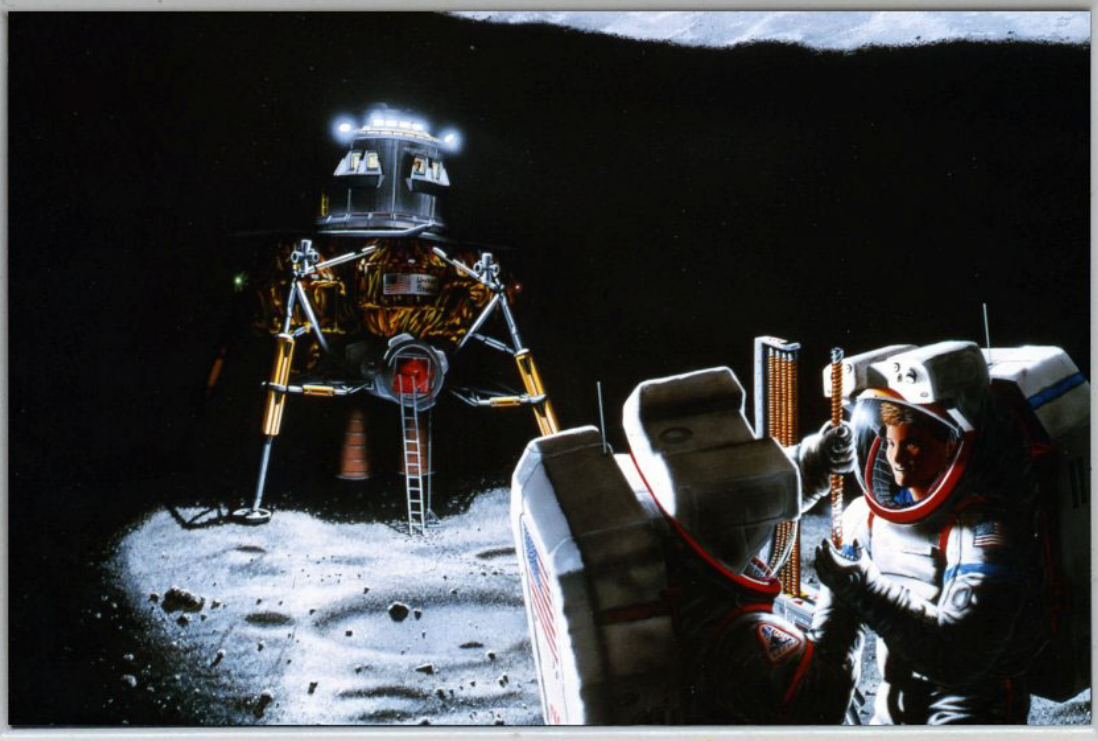

NASA 86-HC-98

FOR RELEASE:
PHOTO NO.

February 12, 1986
86-HC-98
108-KSC-386C-642/775
W/O K052-079

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NASA/SHUTTLE
STS 51-L INVESTIGATION - TIME AS OF 76.425, RH SRB NOSE CAP SEP/DROGUE CHUTE DEPLOY, ROTI/MELBOURNE BEACH. (ITEM E-206) (fc)

NASA 86-HC-100

Administration

FOR RELEASE: 2/12/86
PHOTO NO. 86-HC-100
108-KSC-386C-7091
W/O K052-077

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NASA/SHUTTLE
STS 51-L INVESTIGATION - TIME AS OF 109.604,
RH SRB RSS DESTRUCT, IFLOT UCS-15. (ITEM E-207) (fc)

NASA 86-HC-159

FOR RELEASE: January 28, 1986
PHOTO NO. 108-KSC-86PC-148
86-H-207
86-HC-159

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NNEDY SPACE CENTER, Fla.-- This photograph of the Space ıttle Challenger accident January 28, 1986 was taken by '0mm tracking camera at UCS 15 south of Pad 39-B, at 11: 16.395 EST.

NASA 86-HC-220

FOR RELEASE:

PHOTO NO. January 28, 1986
(R 6/12/86)
86-H-268
86-HC-220
108-KSC-386C-1110/83

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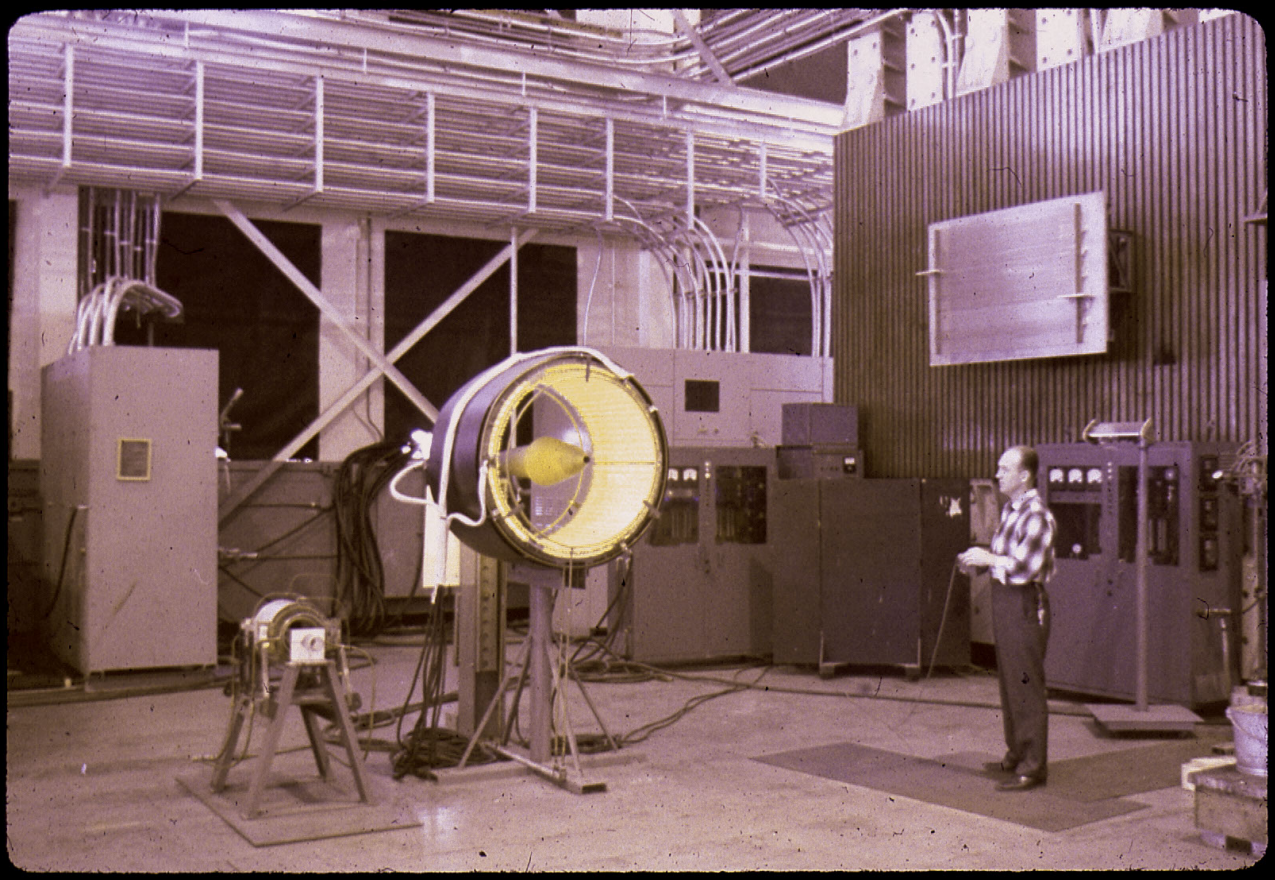
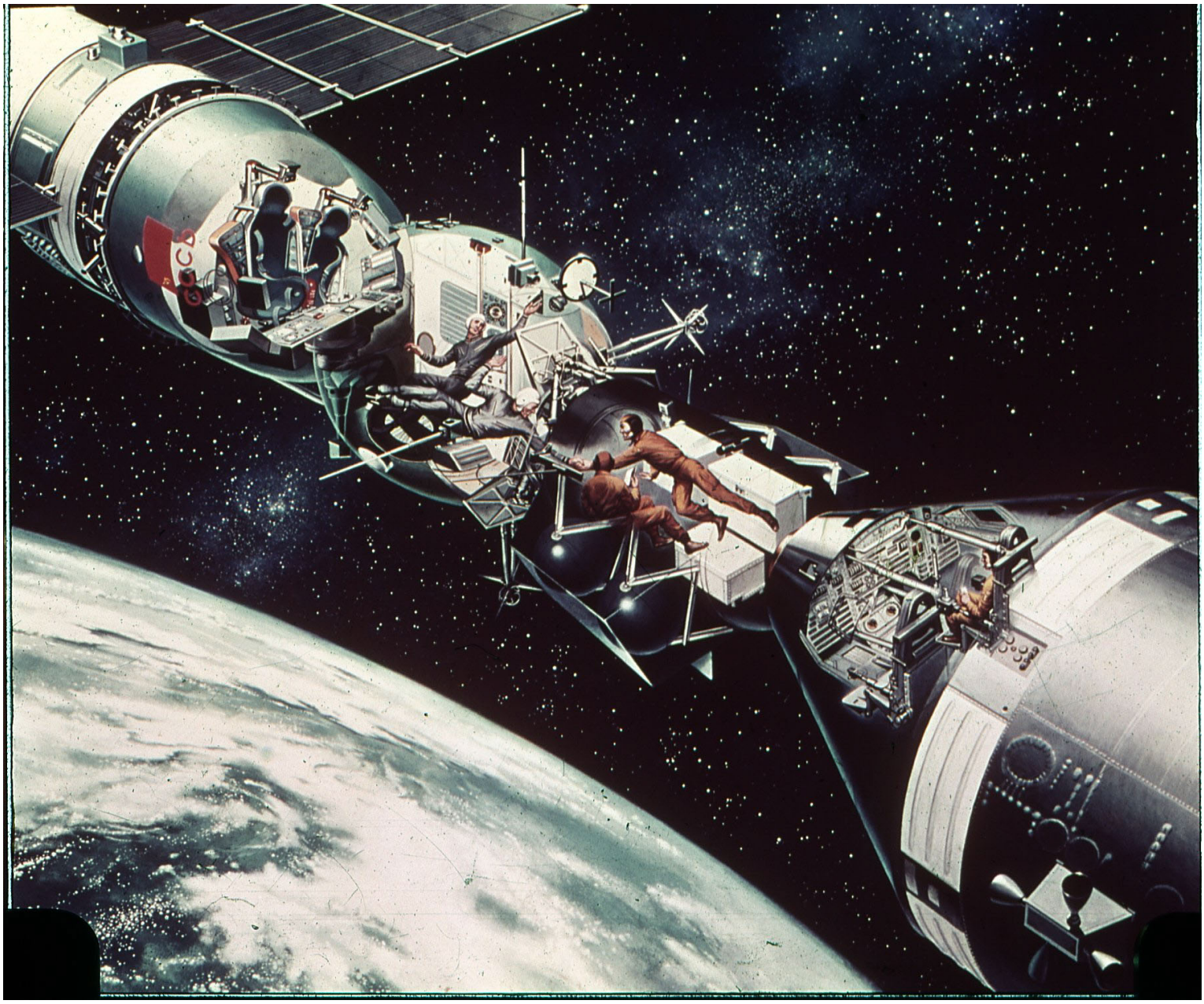
KENNEDY SPACE CENTER, Fla. -- Main engine exhaust, Solid Rocket Booster plume and an expanding ball of gas from the external tank is visible seconds after the Space Shuttle Challenger Accident on January 28, 1986.



Apollo Mission



pic 059

Missile - Apollo - Soyuz

HUGHES

pic060

Space Shuttle XII

FIRST PHOTO RELEASE OF NASA MISSION 41-D ONBOARD PHOTOGRAPHIC MATERIALS. FIVE FRAMES

S14-36-34 Less than nine hours after launch of the Discovery, the astronaut crewmembers photographed deployment of the SBS-4 communications satellite. The cylindrical spacecraft spins and rises from its cradle-like protective shield to begin life in space. A number of maneuvers will place it in its desited orbit. Aug. 30, 1984 70mm.

TUESDAY OCT 9 1984
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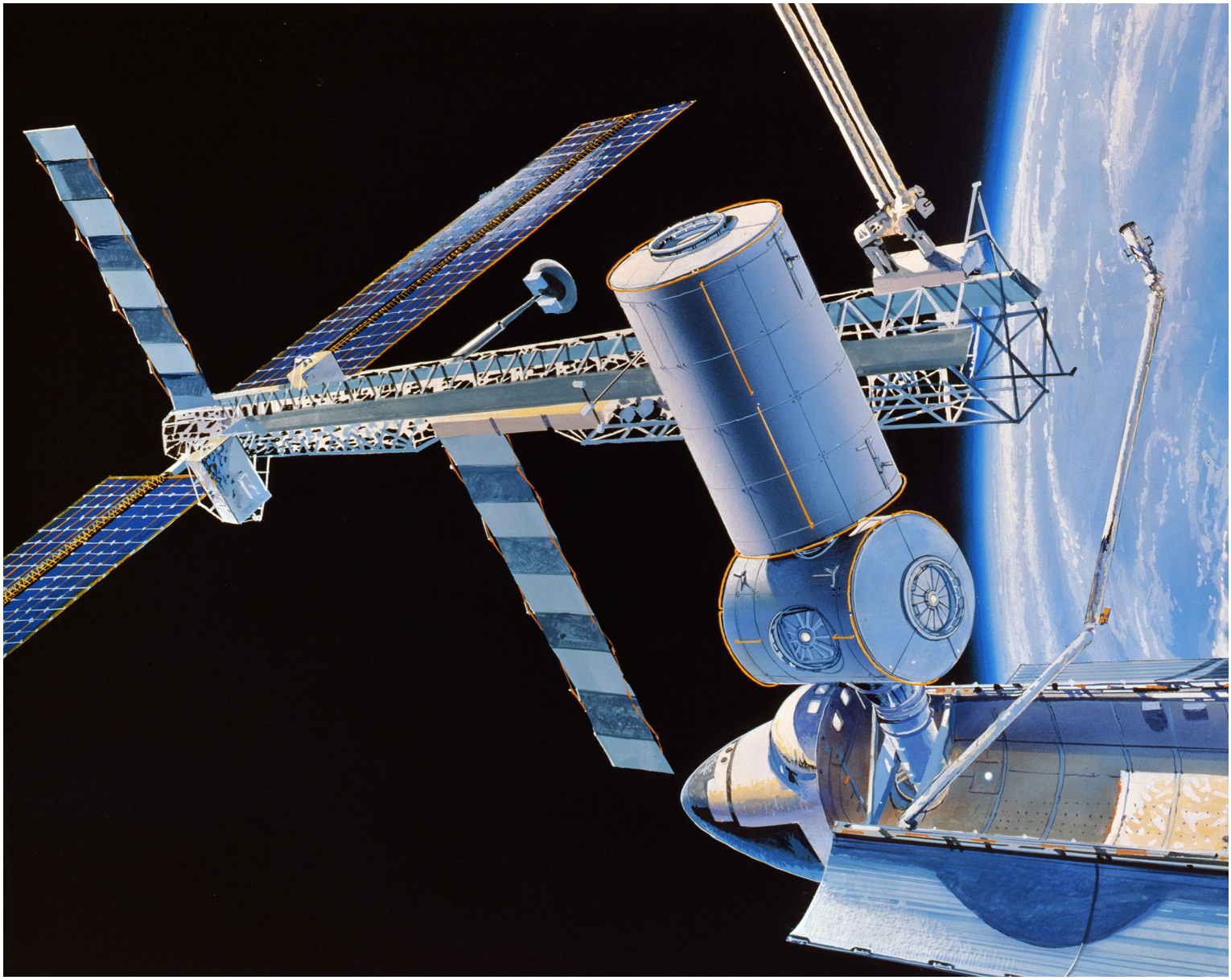

File: Space Station

pic 061

NASA

National Aeronautics and Space Administration

Houston, Texas 77058

S91-31337

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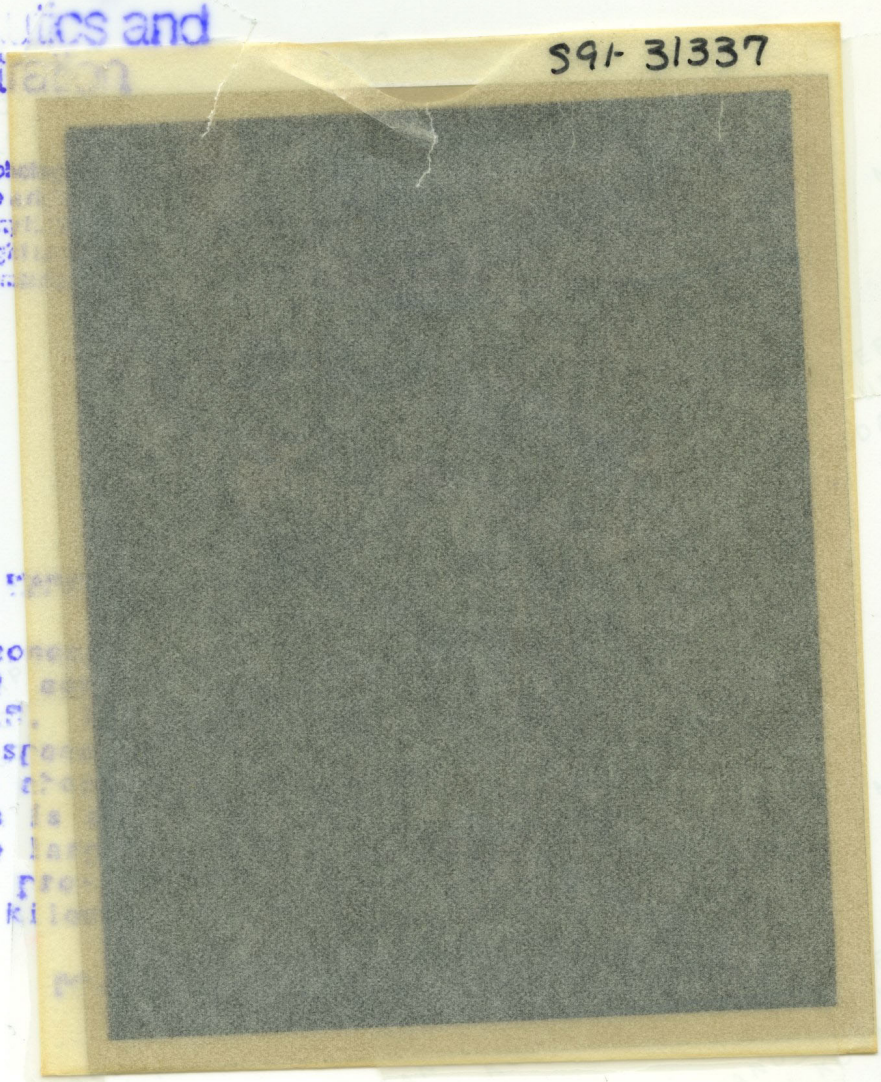


COLOR

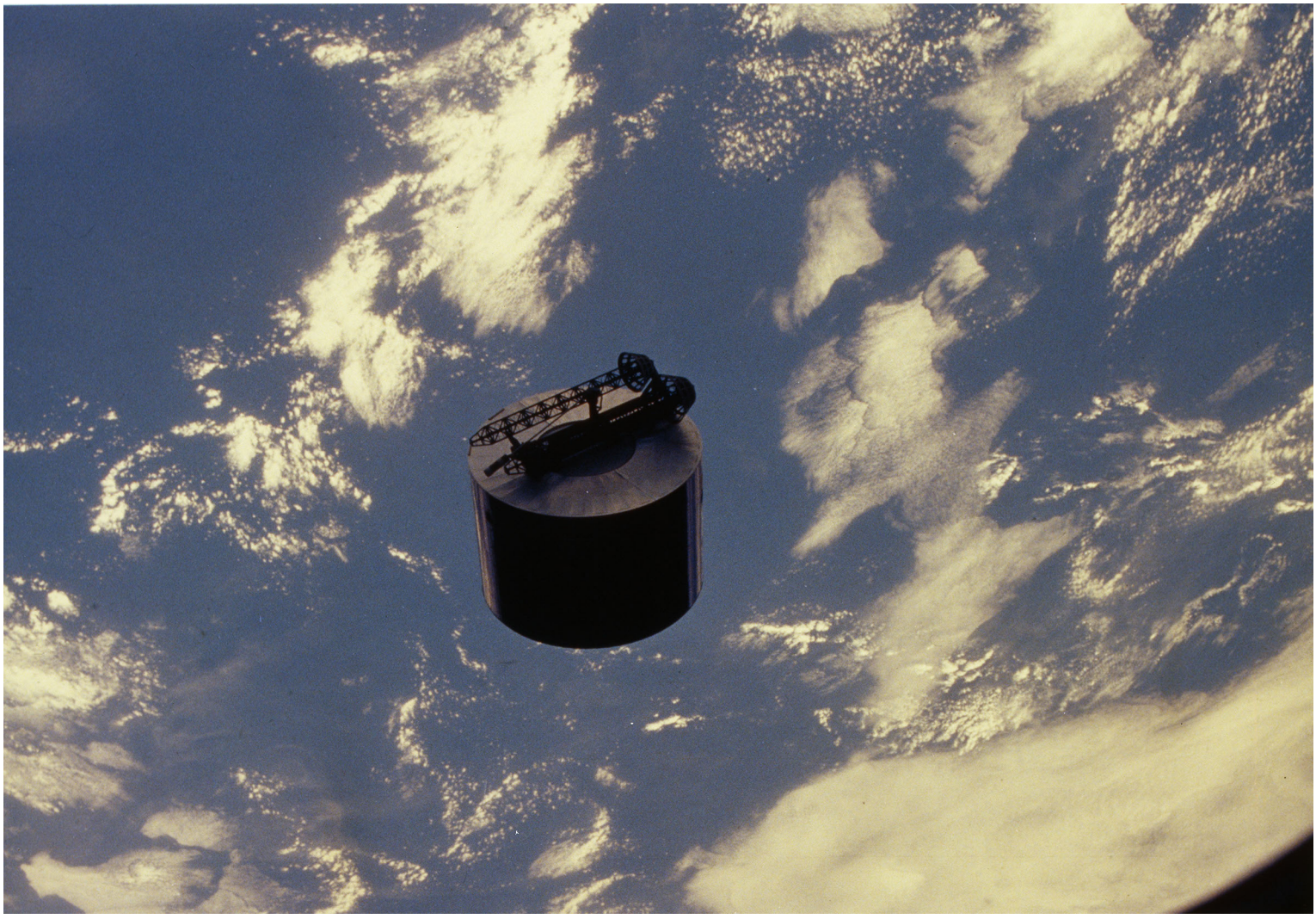
MARCH 21, 1991

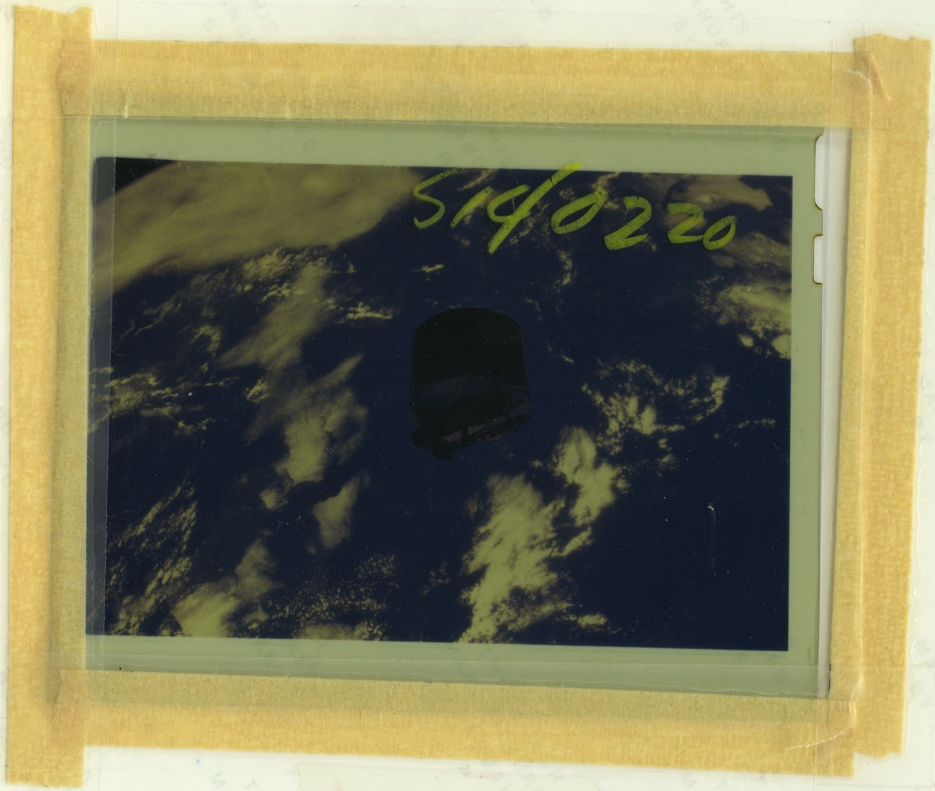
NASA HEADQUARTERS, ...

This is an artist co... at the man-tended ... nodes, and the U.S. ... pressurized work sp... carried to Freedom ... ended configuration ... late 1998. The two ... the top of the pr... Freedom with 10.75 ki...

HOUSTON CHRONICLE LIBRARY
THU SEP - 3 1992

PHOTO CREDIT: NASA or National Aeronautics and Space Administration





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CHANNAHON CHRONICLE
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S14-32-67
S14-02-20 The second of three satellites to be deployed by the 41-D crewmembers was the Syncom, a Leasat spacecraft. A frisbee-type method was used to place the spacecraft in space. In frame #67 it has deployed an antenna. Aug. 31, 1984 70mm. The coast of Angola is visible in Fr. 67.

Space Shuttle XII

PIC 062

File: Space Station

PIC063

National Aeronautics and Space Administration

Houston, Texas 77058

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COLOR

MARCH 21, 1991 S91-31338

NASA HEADQUARTERS, WASHINGTON, D.C.

This is an artist's concept of Space Station Freedom at t[illegible] permanently manned co[illegible] which is sche[illegible] The configura[illegible] European and [illegible] U.S. habitati[illegible] arrays provi[illegible] electrical po[illegible] manned confi[illegible]

S91-31338

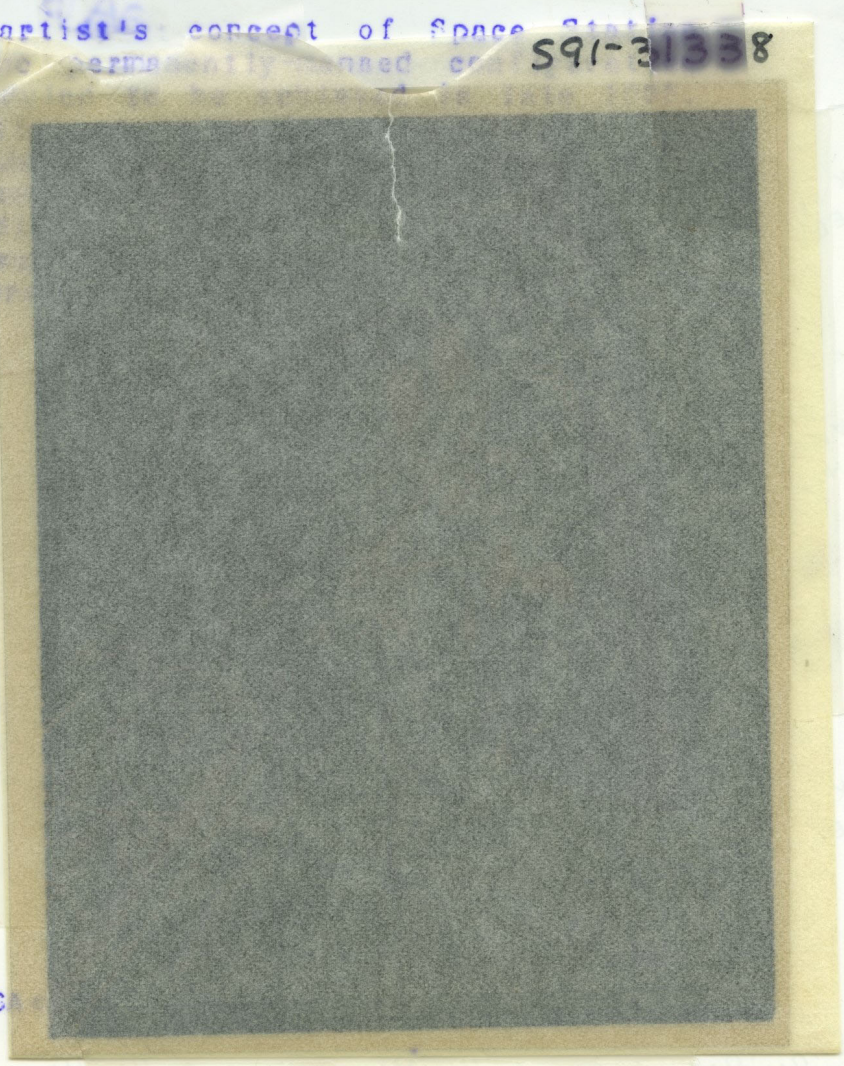

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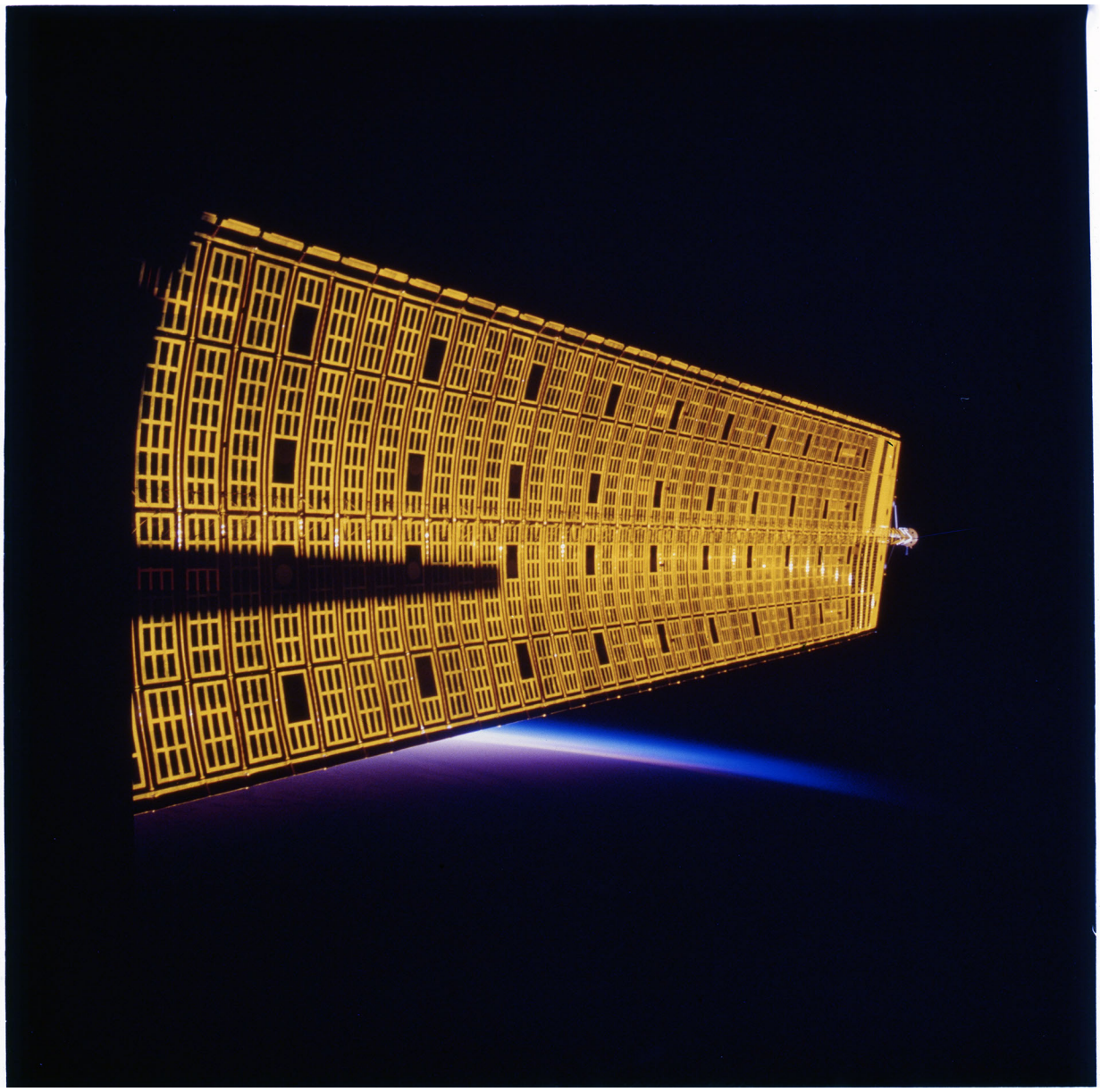
PHOTO CREDIT: NAS[illegible]

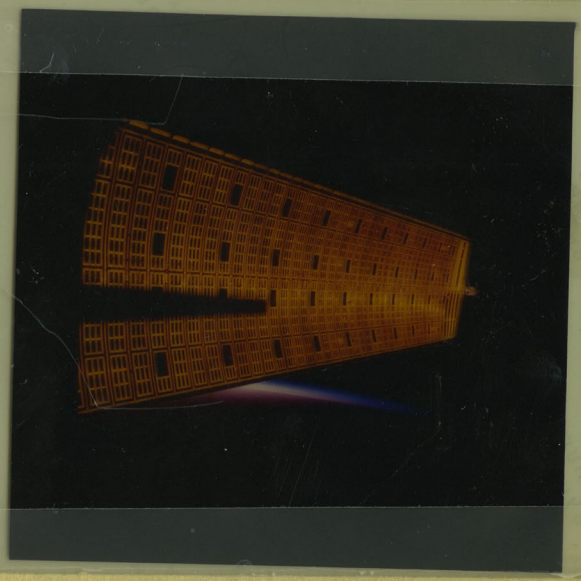


Space shuttle XII

COLOR

SEPT 6, 1984 s14-35-070

JOHNSON SPACE CENTER, HOUSTON, TEXAS



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ONBOARD SCENE---The gold colored solar array experiment (SAE) panel for the OAST-1 payload on Discovery stands out against the darkness of space as the debuting spacecraft heads toward a sunrise scene. The vertical stabilizer of Discovery is silhouetted against the accordion-like array. The frame was exposed through aft flight deck windows with a 70mm camera.

pc 464

NASA
NASA
NASA

Space Shuttle XII

pic 065

TUESDAY OCT 9 1984
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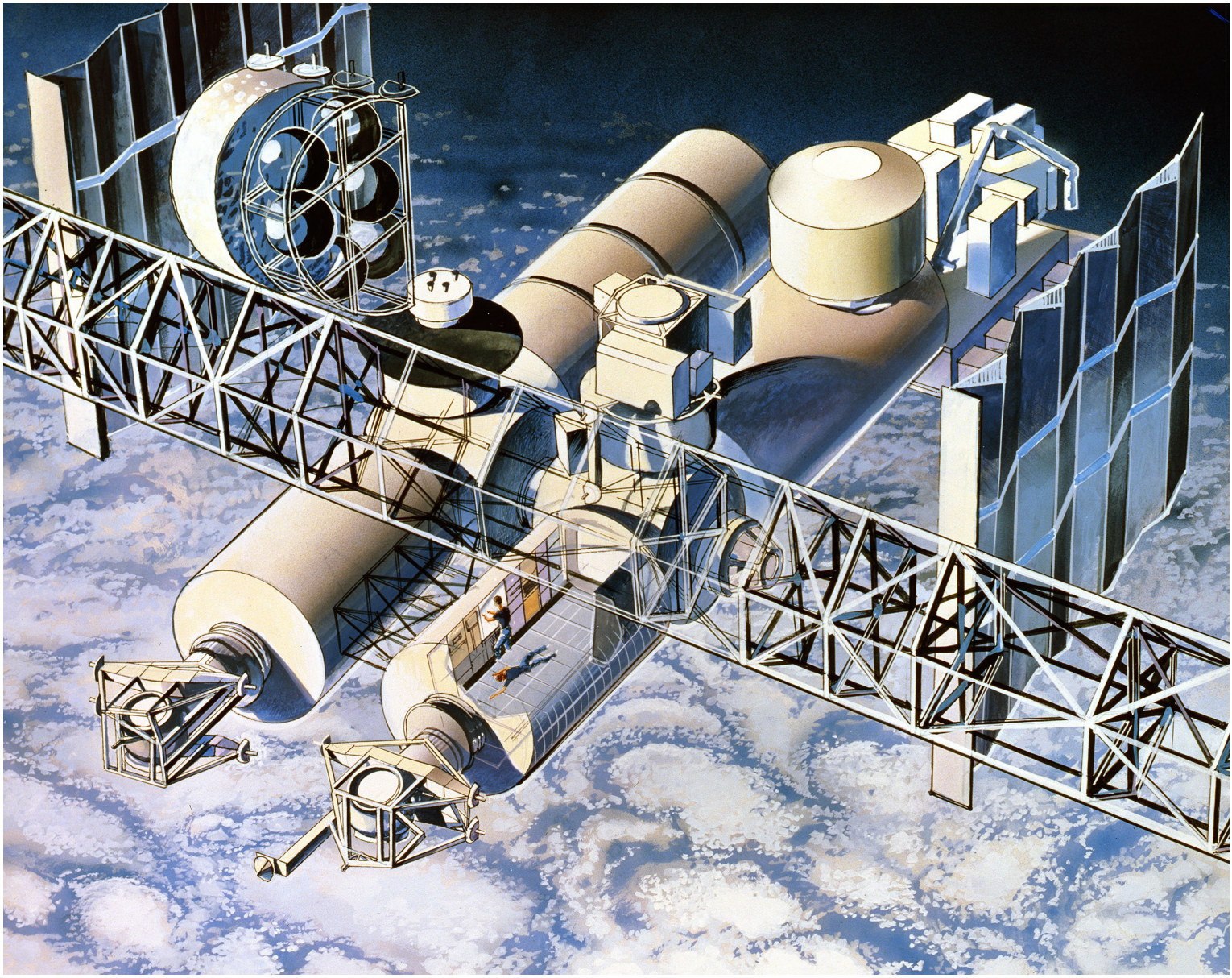
S14-12-33 Following the completion of their six-day mission in space, the six crewmembers of NASA's 41-D mission mentioned that a great deal of work was accomplished but that there were "fun" moments too. From all appearance, this group shot was one of the lighter moments aboard the Discovery. Crewmembers are (counter-clockwise from center) Henry W. Hartsfield Jr., crew commander; Michael L. Coats, pilot; Steven A. Hawley and Judith A. REsnik, both mission specialists; Charles D. Walker, payload specialist; and Richard M. (Mike) Mullane, mission specialist. A pre-set 35mm camera was used to expose the frame. Walker stands near the experiment that occupied the majority of his time onboard-- the continuous flow electrophoresis systems (CFES) experiment.



NASA

National Aeronautics and Space Administration

File: Space Station

Houston, Texas 77058

pic066

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COLOR

MARCH 21, 1991

91-81336

NASA HEADQUARTERS, WASHINGTON, D.C.

91-81336

Artist concept of
International lab
module. U.S. labo
in bottom left of
Experiment Module
module is top le
between the U.S.
Assured Crew Retu
returns to Earth
An airlock is mate
which also is outf

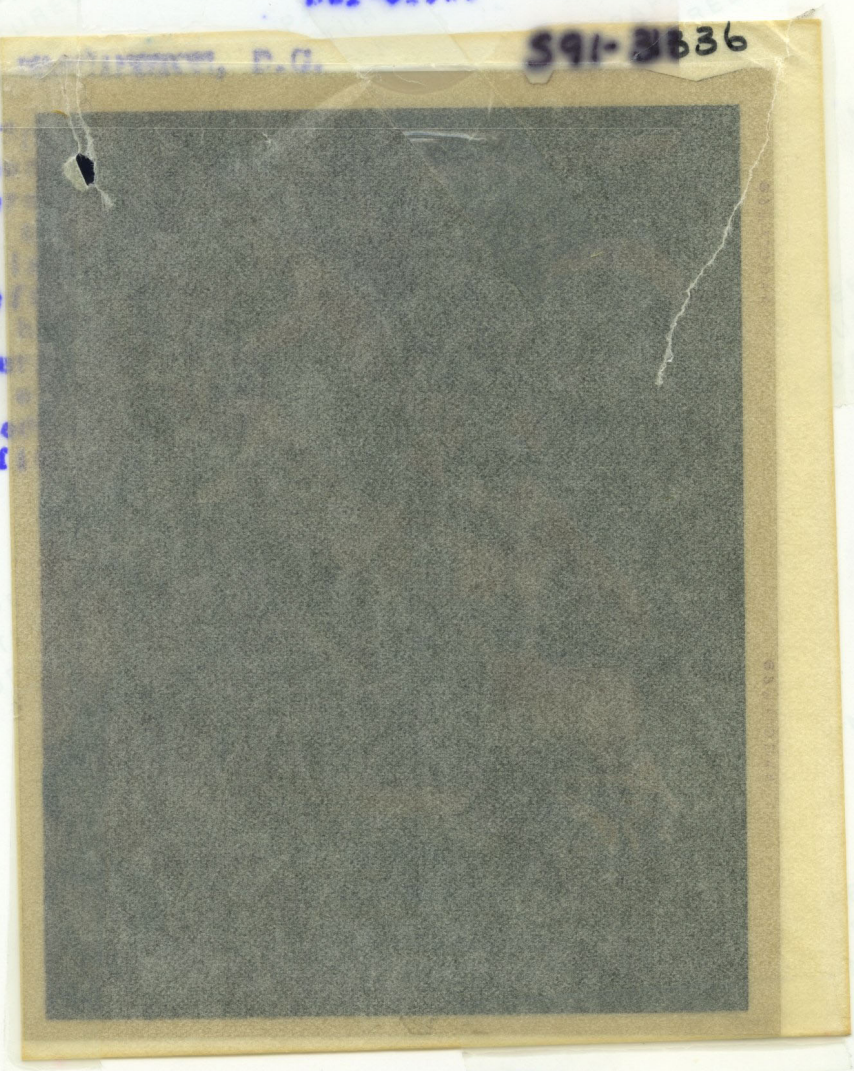

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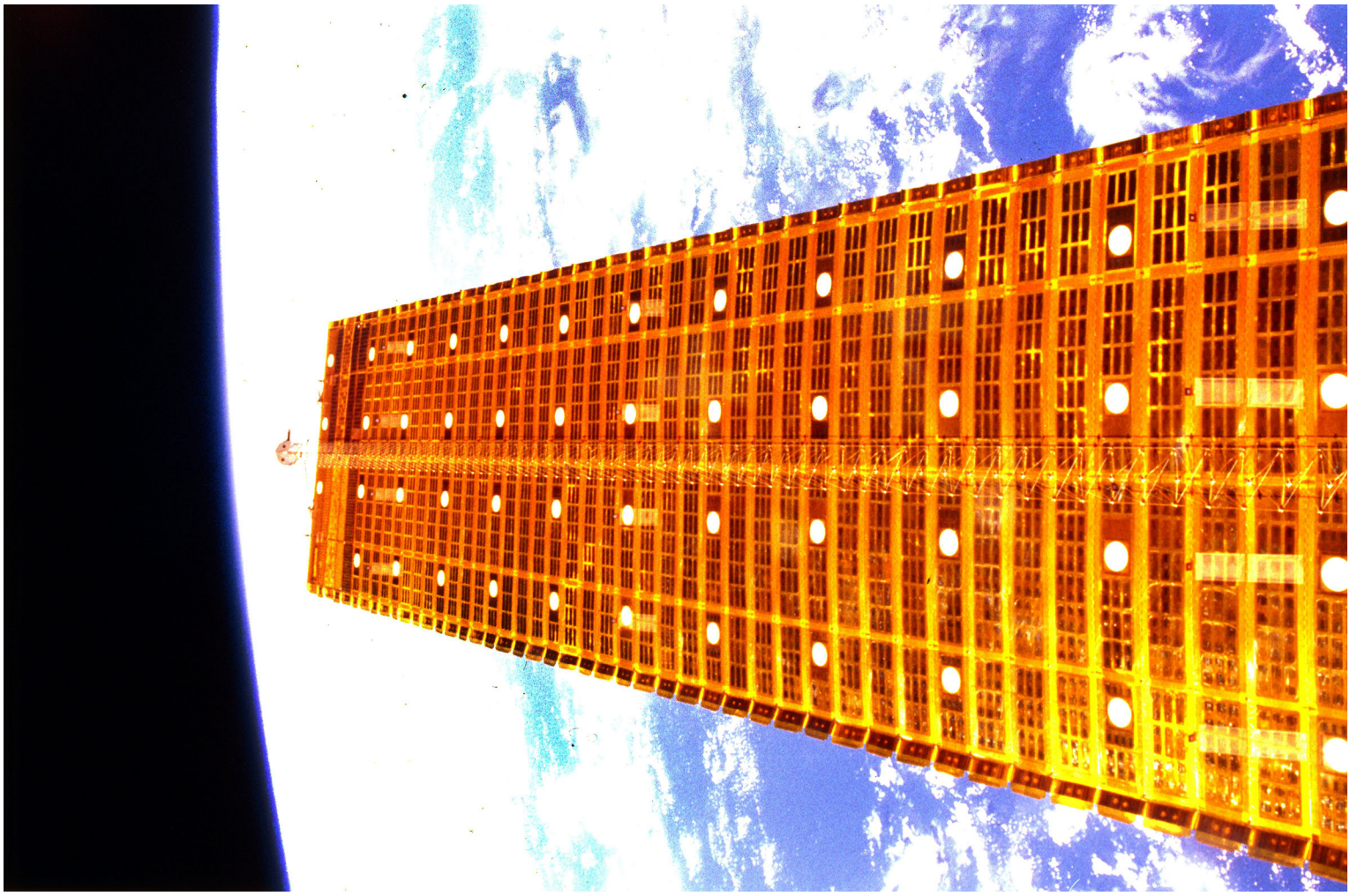
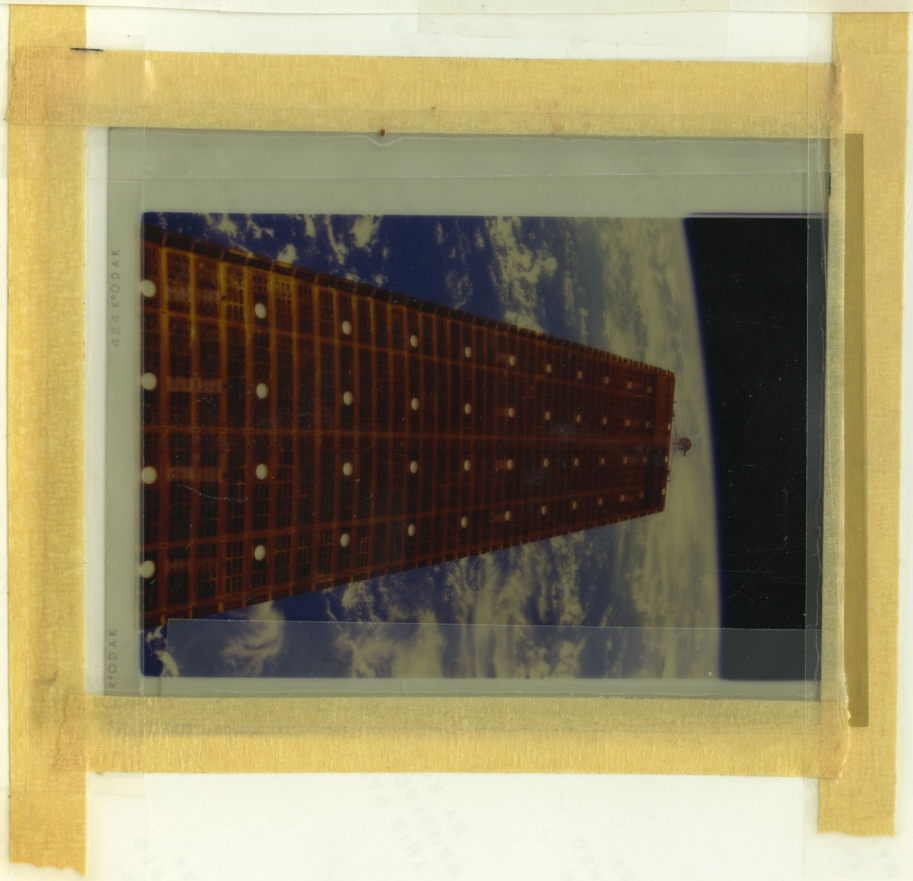
PHOTO CREDIT: NASA or National Aeronautics and Space Administration



S14-01-21 Late on its third day in orbit, the six-member crew of the Discovery began operations with this giant solar array experiment (SAE) panel. NASA's OAST-1 reached 100 per cent extension on the second day of operations--Sept. 2. The frame was exposed through the aft flight windows with a 35mm camera.



HOUSTON CHRONICLE LIBRARY
TUESDAY OCT 9

Space Shuttle
XII

PIC 007

Space Shuttle XIII

pic068

SEPT 6, 1984 s14-33-71

ONBOARD SCENE---A collection of ice that developed around an external nozzle on Discovery's port side mid fuselage sails by the manned spacecraft on Sept. 4 following a successful attempt to remove the troublesome buildup using the remote manipulator system (RMS) arm. A crewmember on the flight deck alertly grabbed a 70mm camera and recorded a final look at the chunk.

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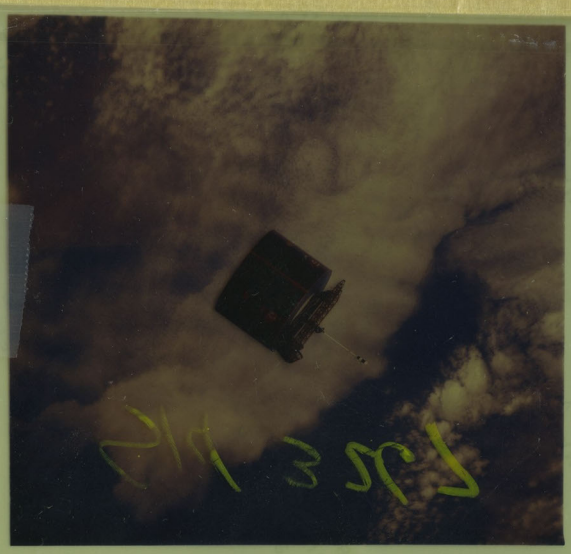
TUESDAY OCT 9 1984



S14-32-67
S14-02-20

The second of three satellites to be deployed by the 41-D crewmembers was the Syncom, a Leasat spacecraft. A frisbee-type method was used to place the spacecraft in space. In frame #67 it has deployed an antenna. Aug. 31, 1984 70mm. The coast of Angola is visible in Fr. 67.

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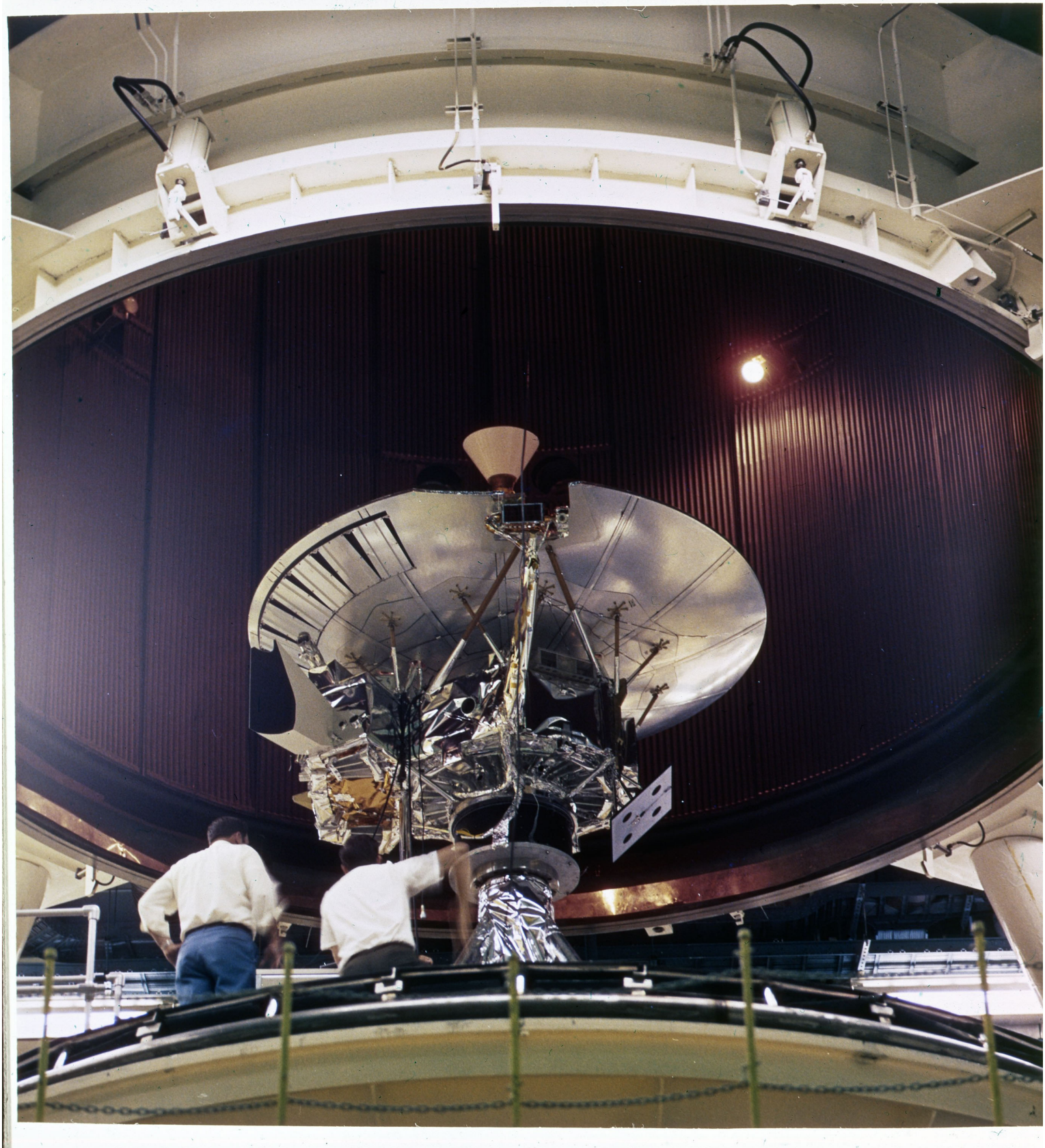
TUESDAY OCT 9 1984

Space Shuttle XII

PIC 069

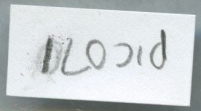
A71-8746

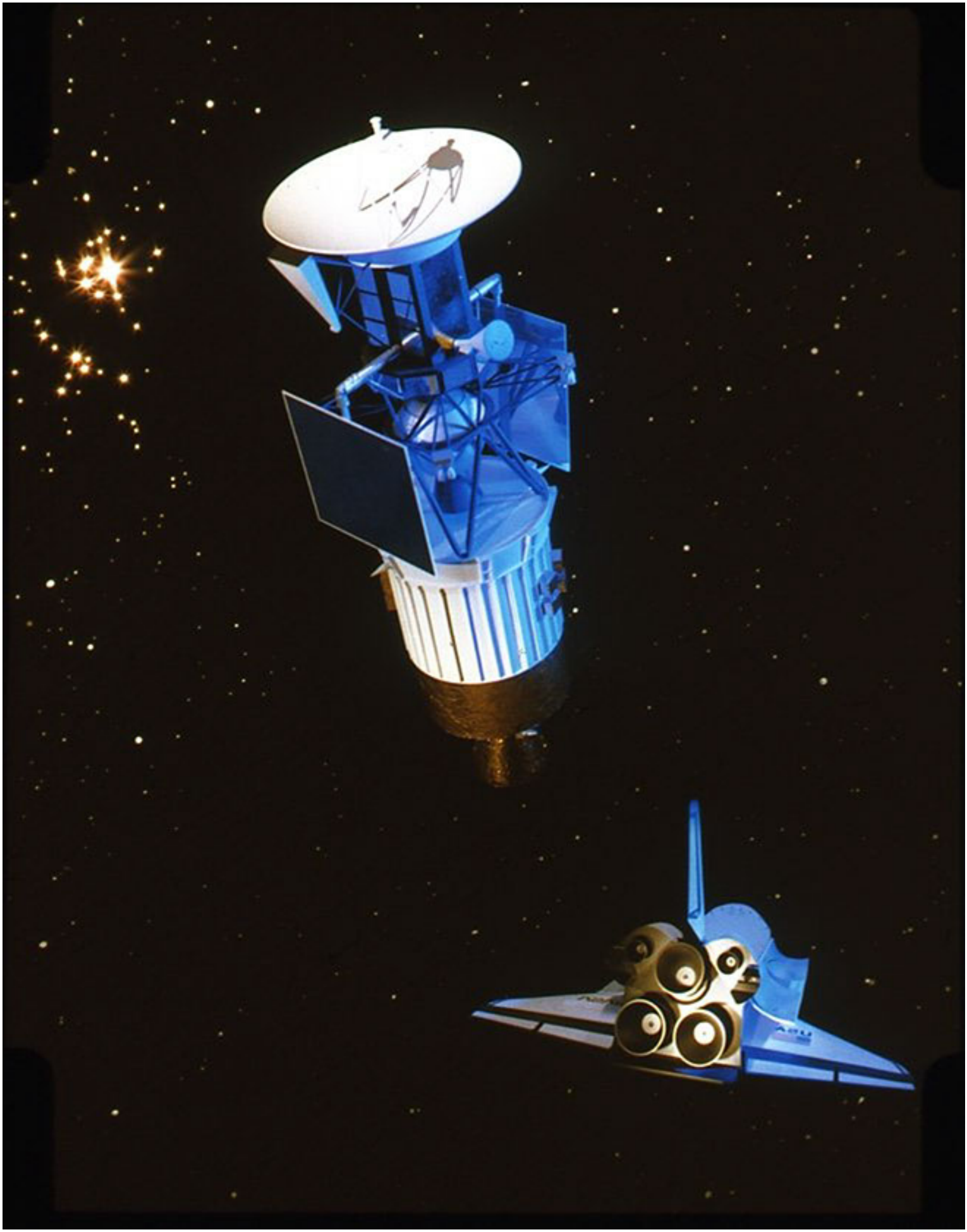


pace – Pioneer 10

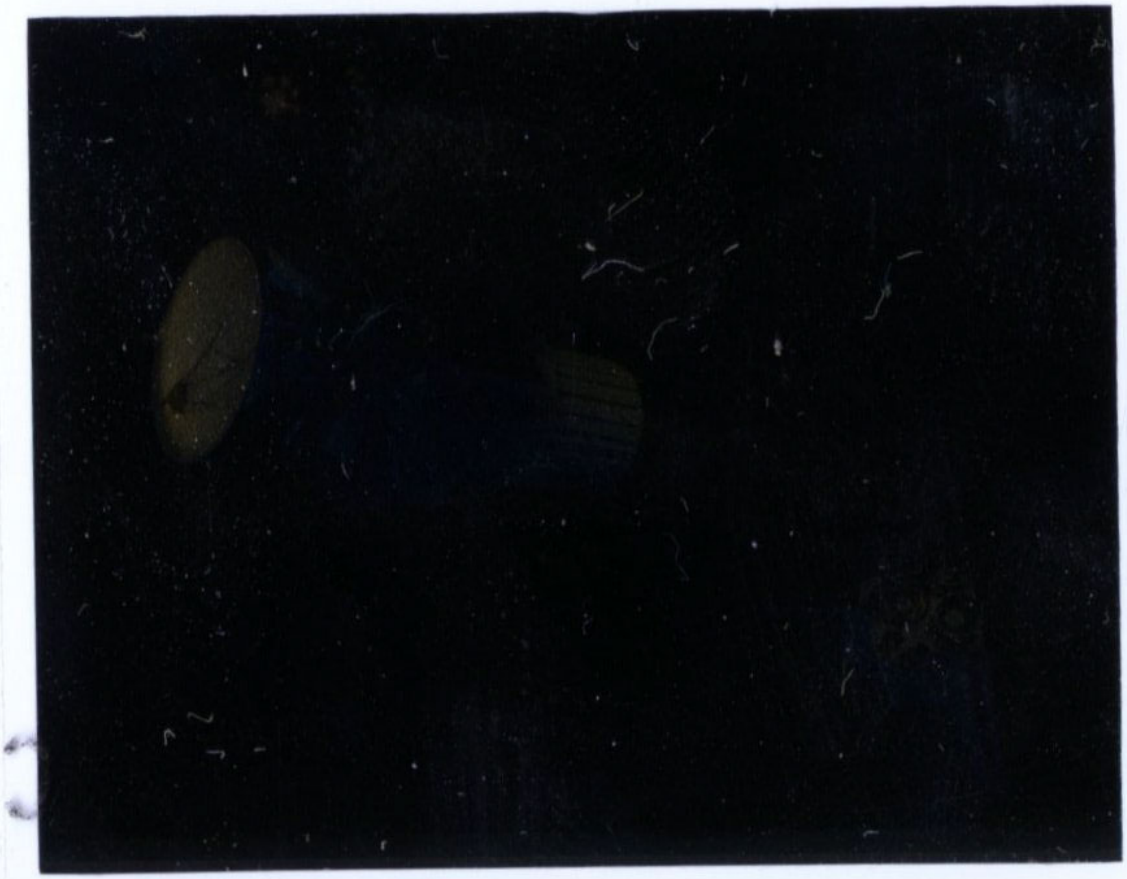
PIC070

NASA - GALILEO





FUTURE MISSIONS

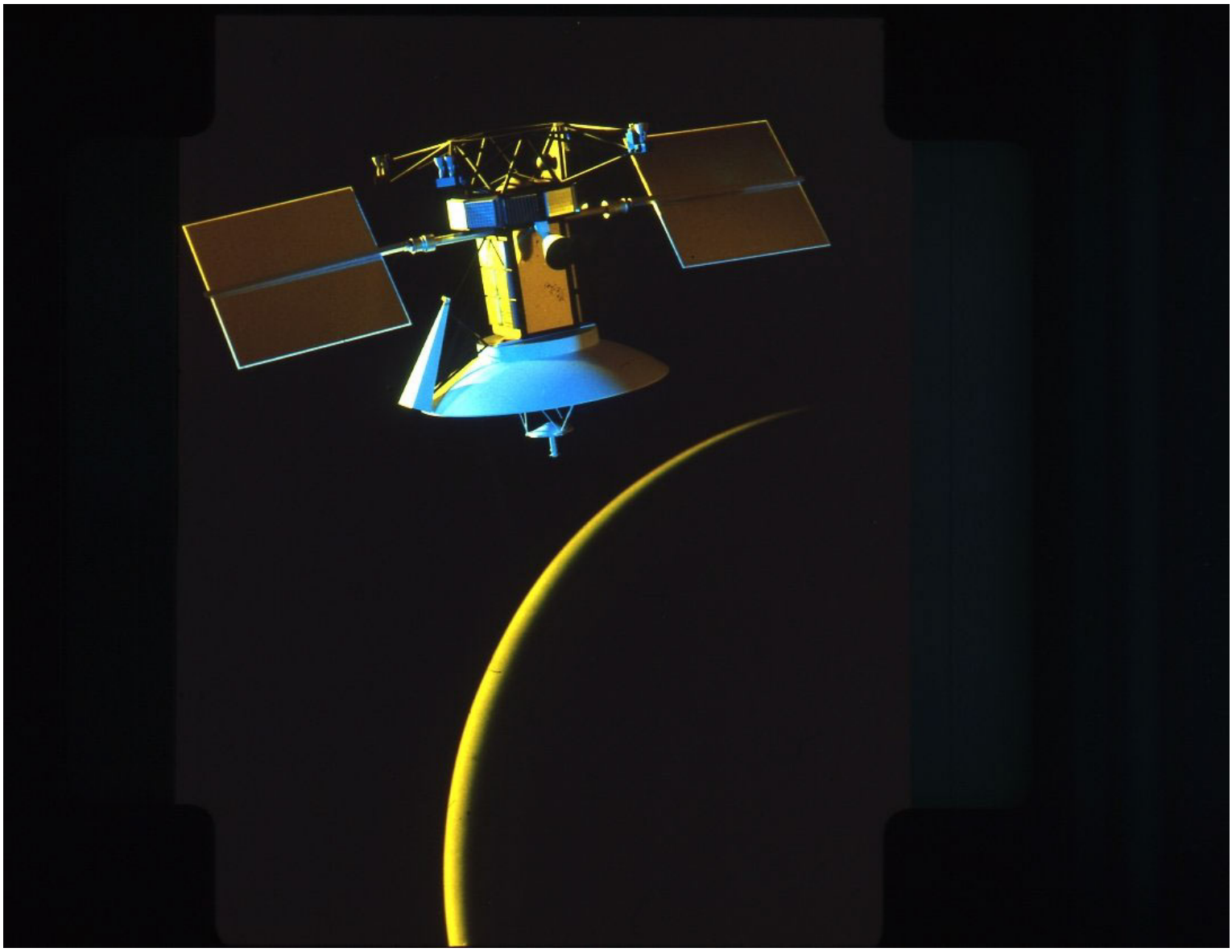


JPL-16

P33264BC

NASA -

6. Magellan on IUS



FUTURE MISSIONS

JPL-16

P31067BC

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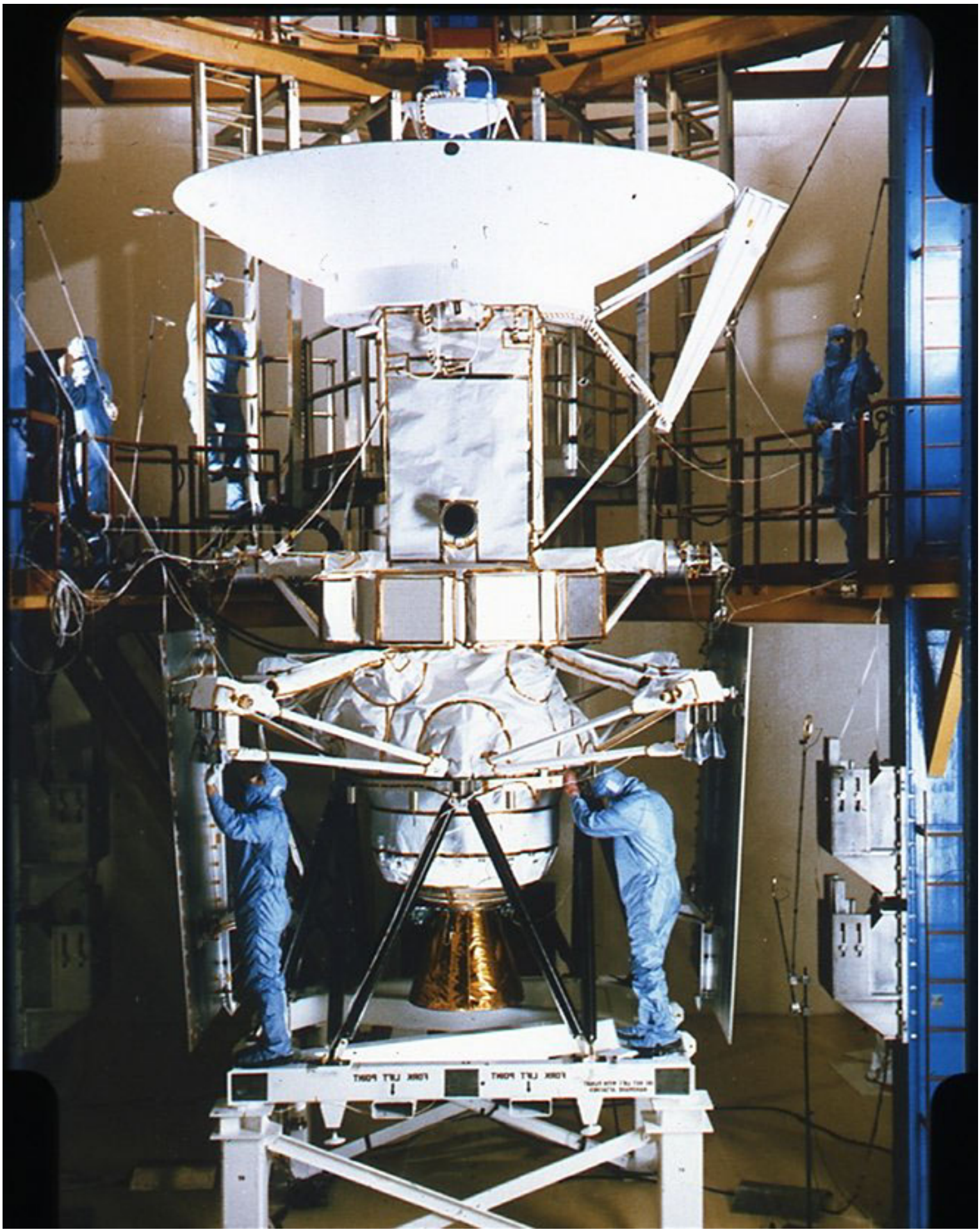
NASA -

7. Magellan at Venus



JPL-16

NASA -

5. Magellan Being Tested

FUTURE MISSIONS

P32876

NASA
OAKFORD

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

FOR RELEASE: Immediate NOV 3 1975
PHOTO NO. 75-H-329

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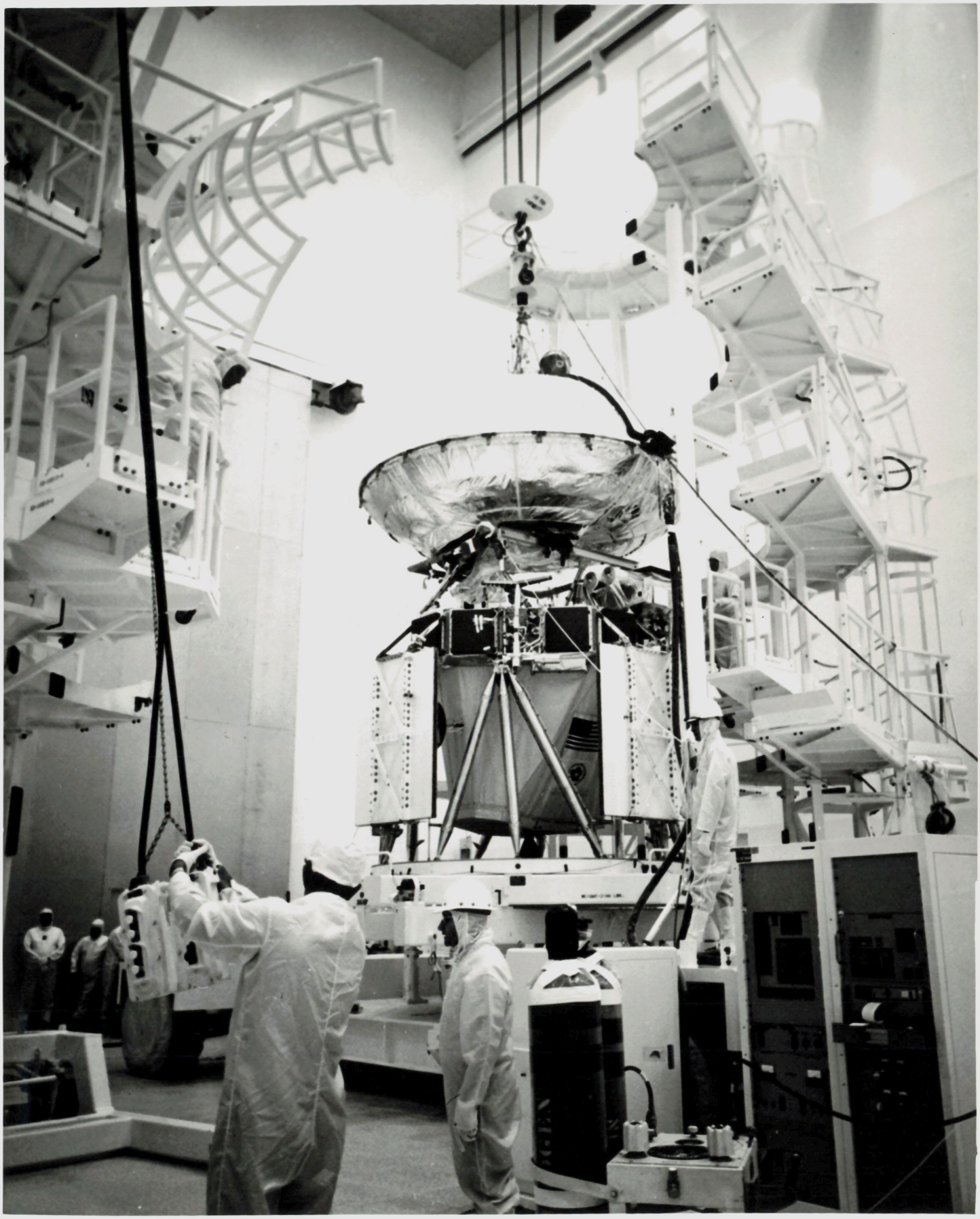
AT WORK ON MARS: The Viking Lander, an automated scientific laboratory, is shown conducting experiments on the planet's surface in this artist's concept. Two Viking spacecraft will be launched from Cape Canaveral, Fla., on August 11 and 21, on a year-long journey to Mars. If all goes as planned, Lander 1 may touchdown on July 4, 1976, the 200th anniversary of the United States.

PHOTO CREDIT--NASA or National Aeronautics and Space Administration

Space - Viking



NASA- VIKING MARS MISSION

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VIKING SPACECRAFT: The mating of the Orbiter and Lander elements of the Viking spacecraft is shown at NASA's Kennedy Space Center, Fla. Two Vikings will be launched on August 11 and August 21 from Cape Canaveral, Fla., and are scheduled to arrive at Mars in July, 1976. The Lander elements of each spacecraft will soft-land on the planet's surface and test for signs of life.

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NASA
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SEP 29 1975

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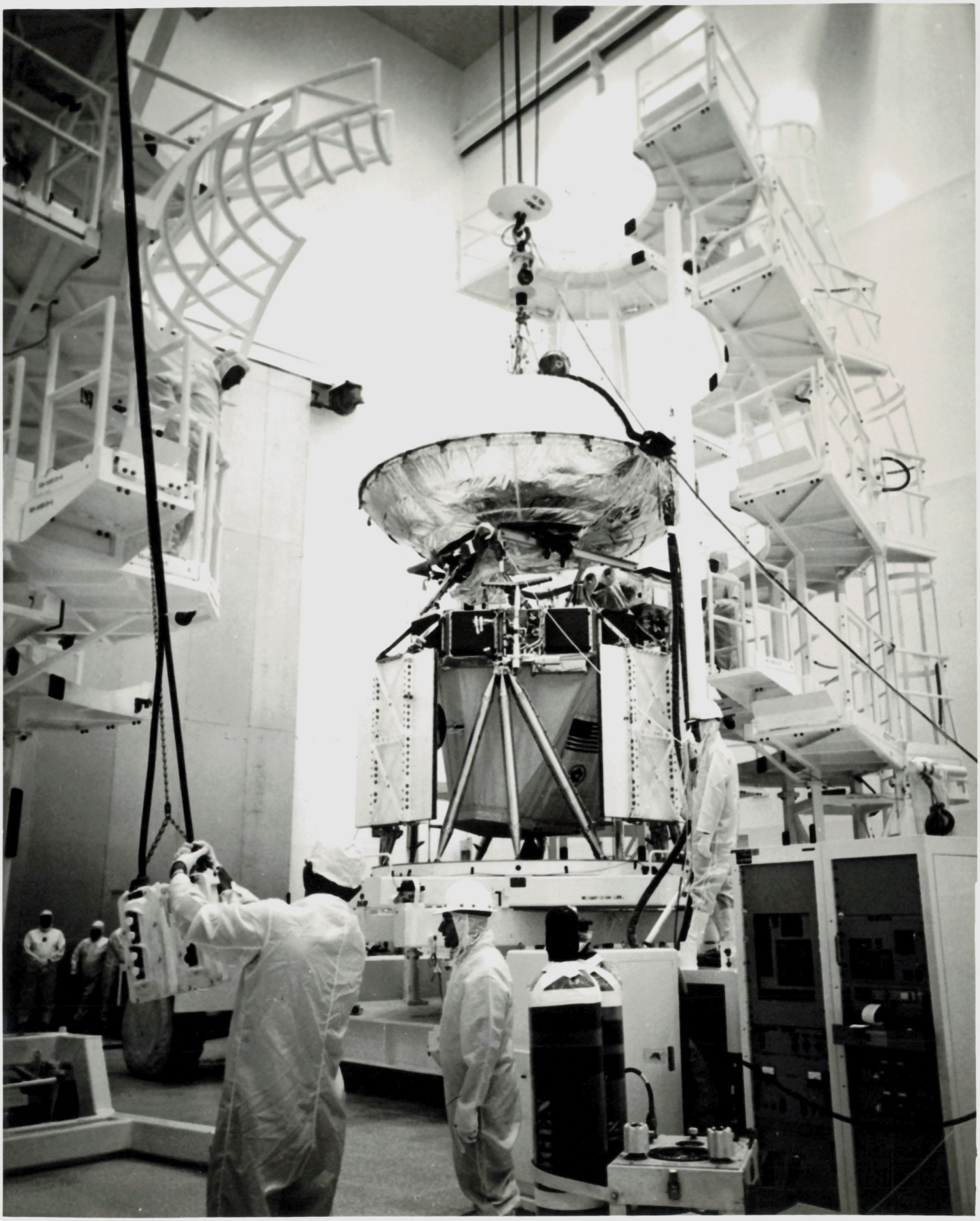

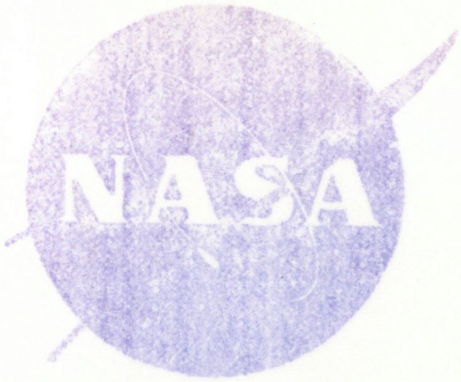

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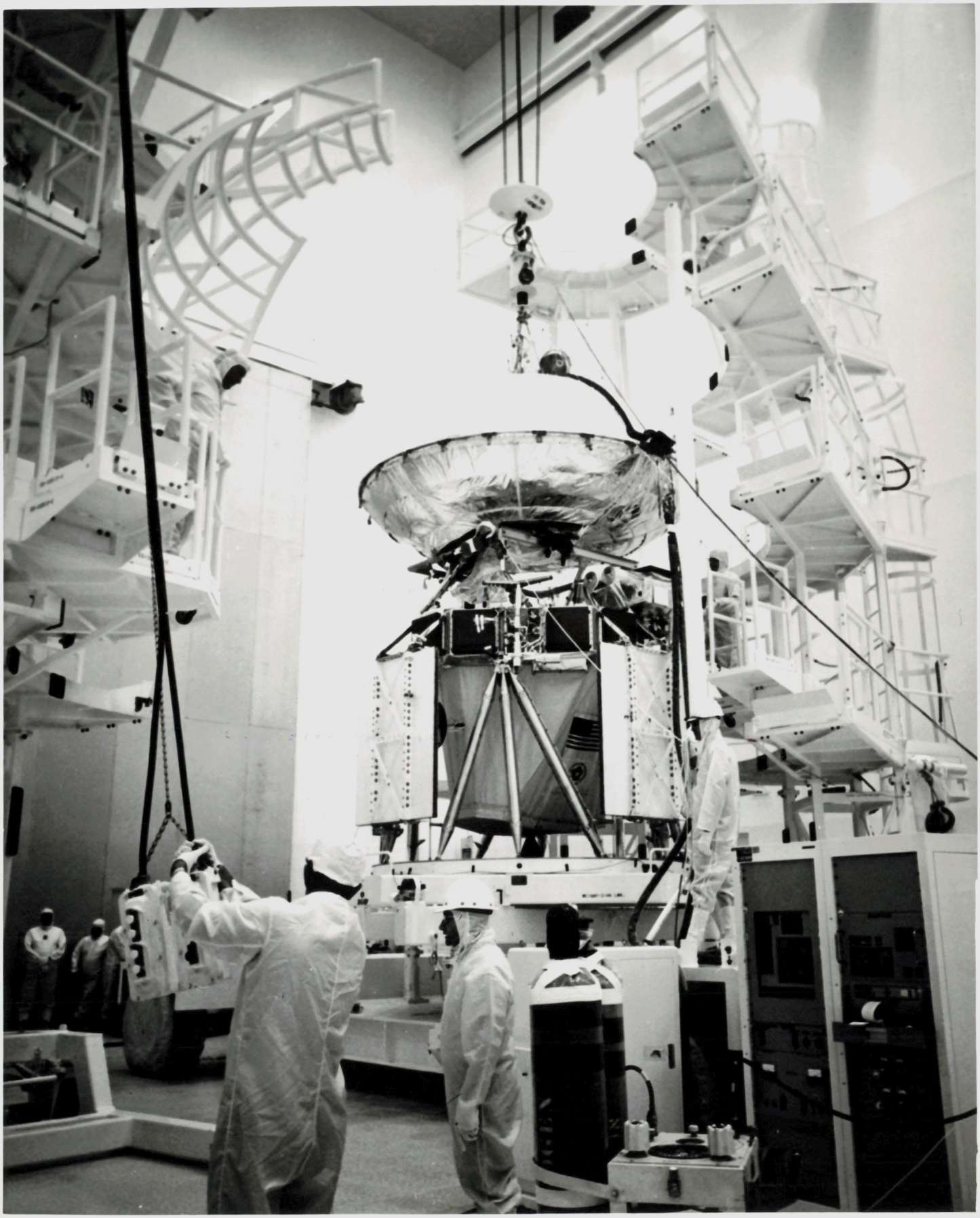

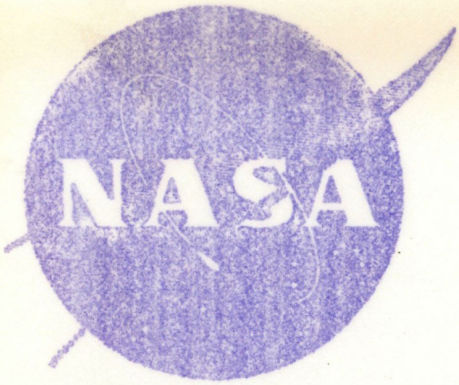

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Space-Viking

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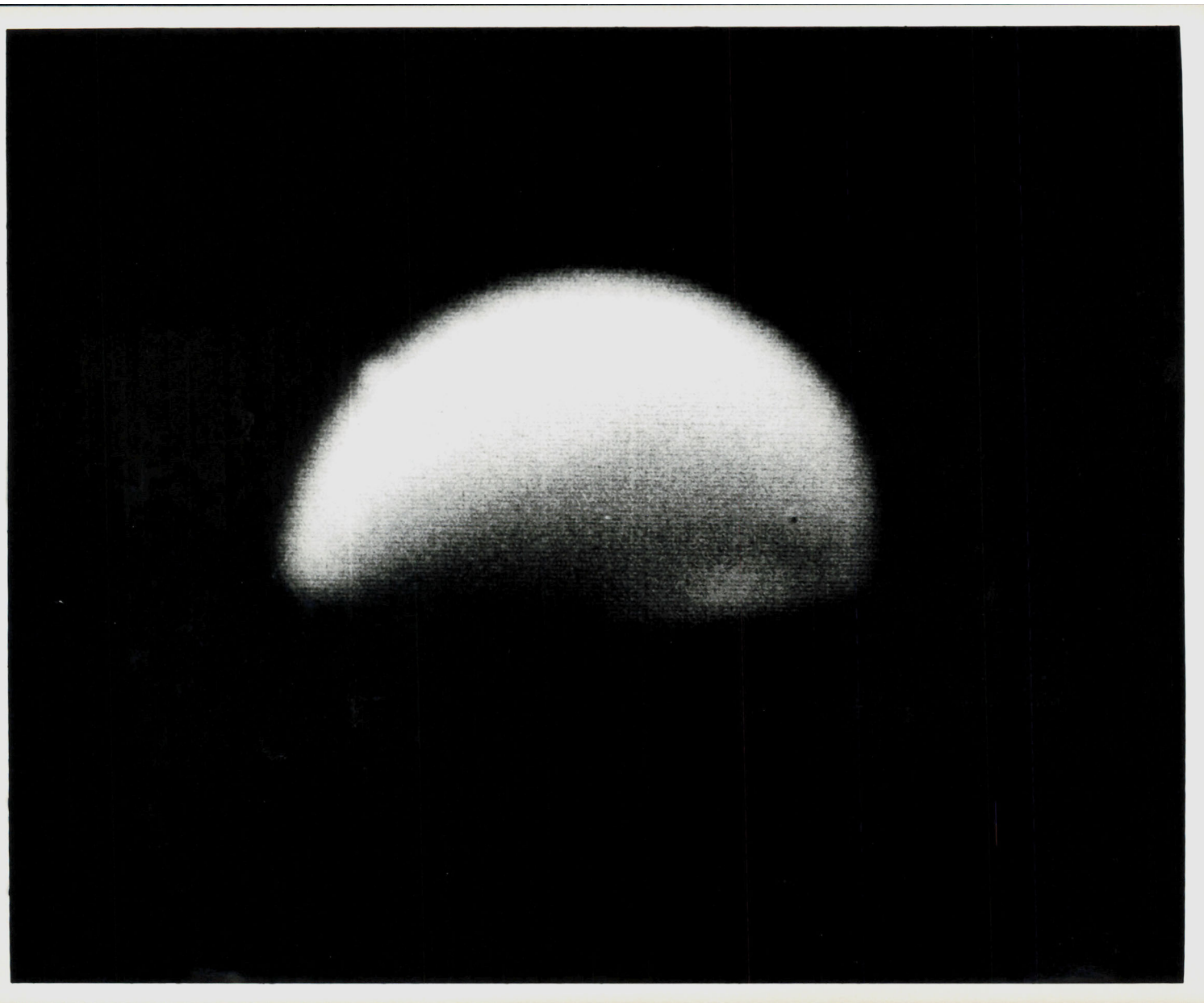

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PHOTO NO. 76-H-420

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AT 7,000,000 MILES AND CLOSING the first Viking Spacecraft's cameras are now well in view of Mars as it approaches the planet at more than 73,000 miles-per-hour relative to Earth. The small light area at upper left is Mars' south polar hood, a large bluish-white colud that covers the south pole much of the Mars year. The spacecraft has already flown more than 373,000,000 miles on its 11-month journey to a soft landing on Mars now scheduled for July 4. Viking 1 will enter Mars orbit June 19 and begin photographing the surface to verify a suitable landing site. Viking 2, an identical spacecraft now following Viking 1, will enter Mars orbit August 7, and is scheduled to make its landing September 4. The photo was received and enhanced at the Viking Mission Operations Center at the Jet Propulsion Laboratory in Pasadena, California. The Viking Project is managed by NASA's Langley Research Center, Hampton, Virginia.

EDITOR'S NOTE: Photo was taken Saturday, May 1, 1976. Small white bulge at lower right is a computer error.

JUL 19 1976

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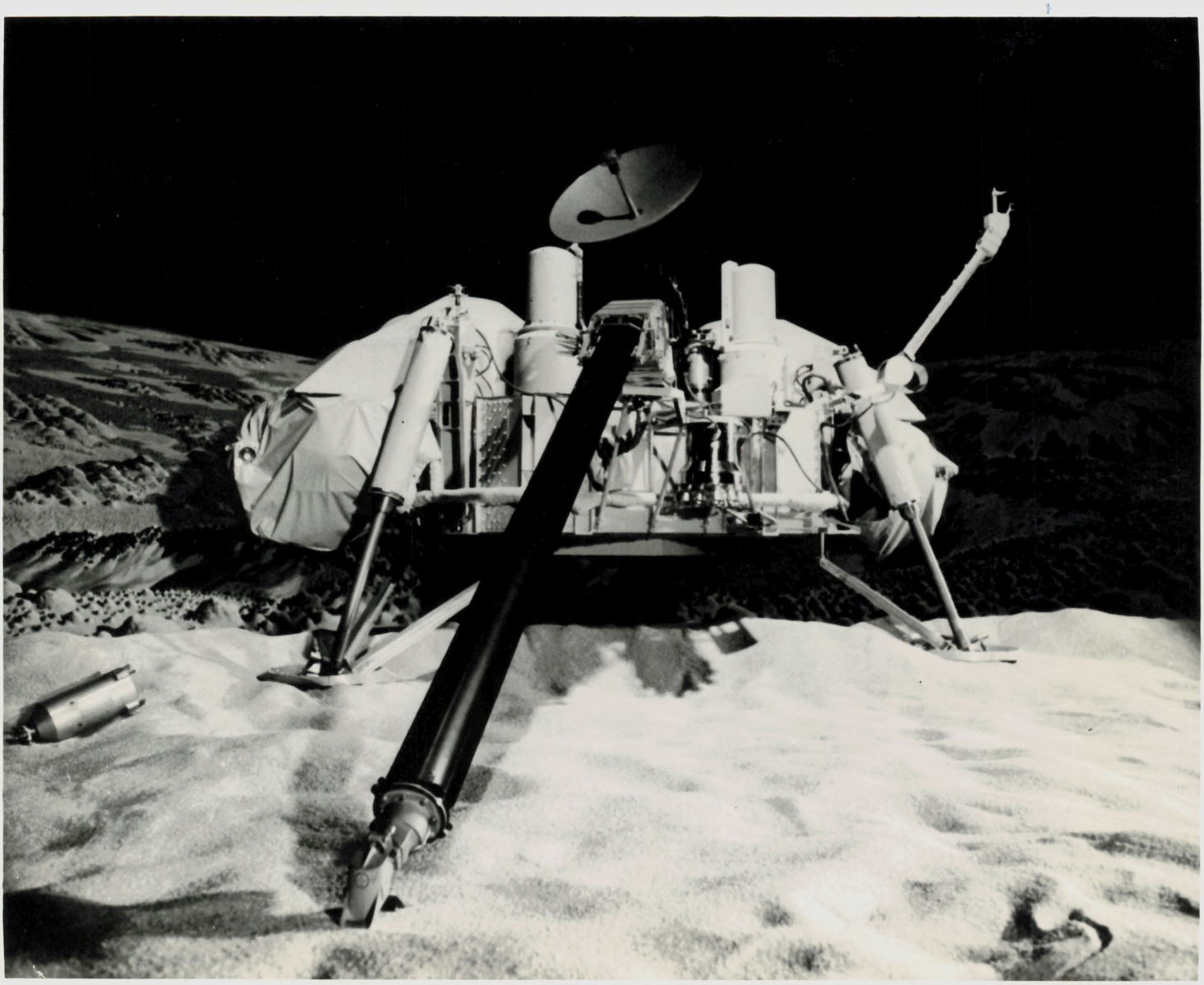
Space - Viking I



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FEB 2 2 1996

FOR RELEASE: Filed: January 28, 1976
PHOTO NO. 76-H-68
76-HC-54

JUL 19 1976

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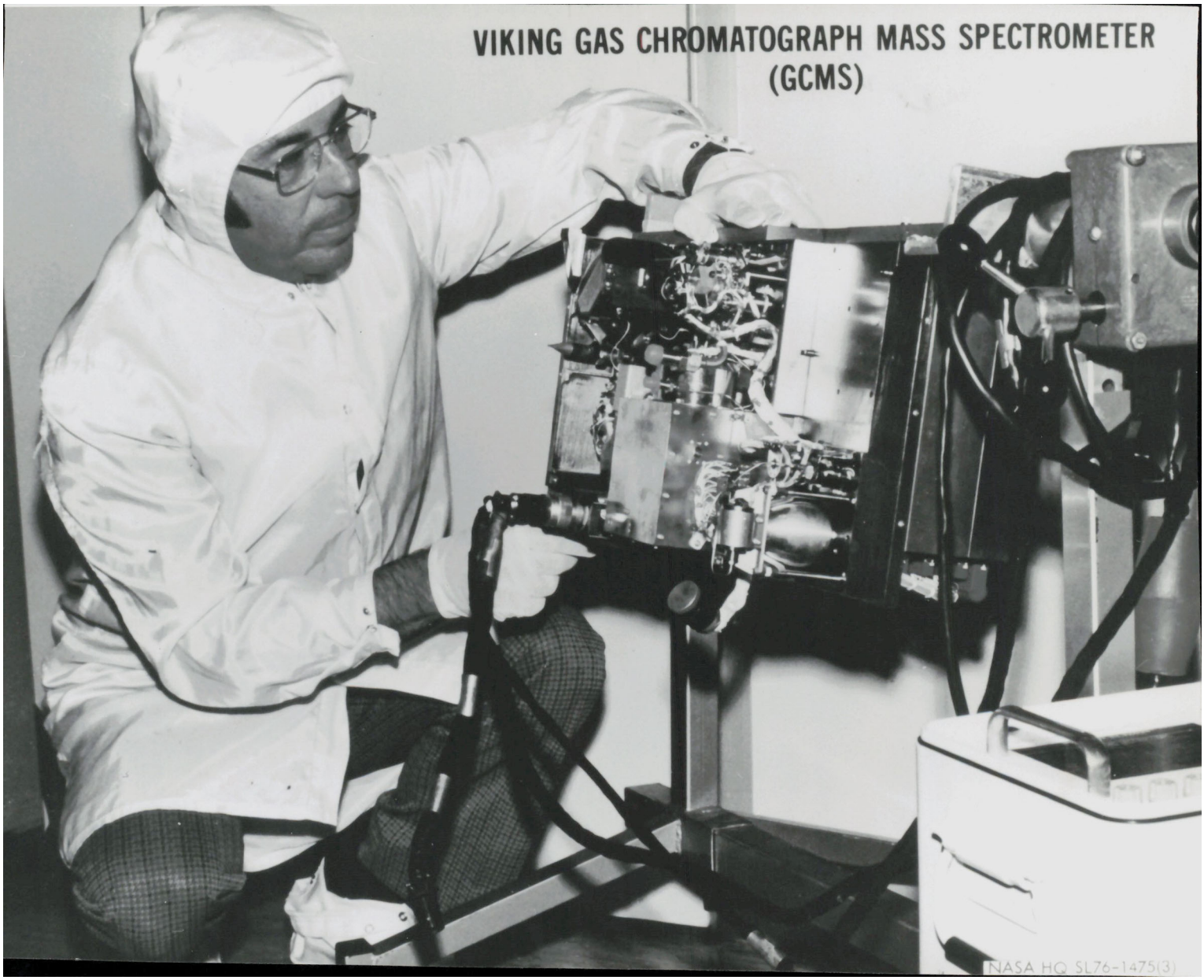
Space - Viking 1

This full-size working model of the Viking Mars lander is on display at the Jet Propulsion Laboratory in Pasadena, Calif. Two spacecraft, each composed of an orbiter and a lander, are scheduled to touch down on the surface of Mars in the Summer of 1976 to conduct a detailed scientific examination of the planet, including a search for life. The lander---a miniaturized laboratory packed in a hexagonal box 59 inches across and 18 inches high--weighs about a ton. A soil sampler extends at center, its exploded cover immediately in front. The turret-like structures are cameras.

PHOTO CREDIT-NASA or National Aeronautics and Space Administration


VIKING GAS CHROMATOGRAPH MASS SPECTROMETER
(GCMS)
NASA HQ. SL76-1475(3)

National Aeronautics and
Space Administration
John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

FOR RELEASE December 18, 1975 PHOTO NO. 116-KSC-76PC-110

KENNEDY SPACE CENTER, Fla. -- The Viking gas chromatograph-mass spectrometer has been used in medicine to save many lives by identifying quickly drugs and poisons taken by young people and infants. Potential uses in law enforcement and industry are unlimited.

JUL 2 1976

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NASA National Aeronautics and Space Administration

TOP PHOTO ONLY- 62,10 Picas Page DD2-1ST Thurs sci

Headquarters
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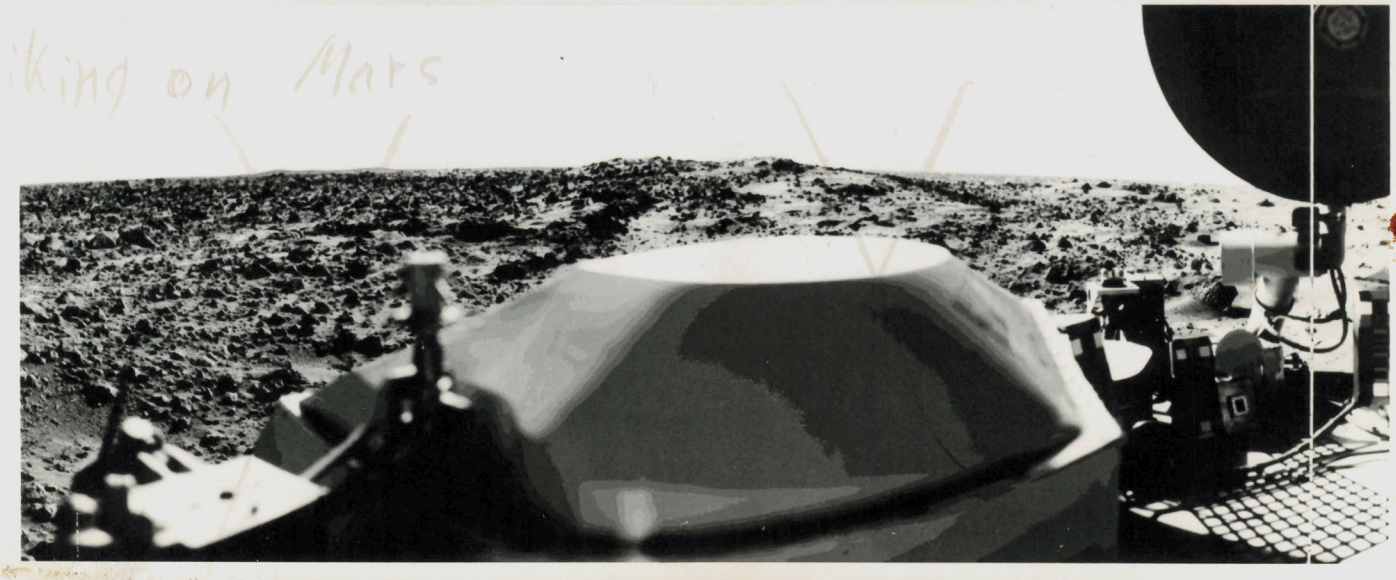
Viking on Mars



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Washington, D.C. 20546

OREGONIAN

FOR RELEASE:
PHOTO NO.

Filed: July 20, 1976
76-H-557
Viking 1-45
P-17045 (Sol 0)

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First panoramic view by Viking 1 from the surface of Mars. (Note to Editors: Top photo forms left half of panoramic view. Bottom photo should abut top photo for complete 300 panorama).

(Top half) : The out-of-focus spacecraft component toward left center is the housing for the Viking sample arm, which is not yet deployed. Parallel lines in the sky are an artifact and are not real features. However, the change of brightness from horizon towards zenith and towards the right (west) is accurately reflected in this picture, taken in late Martian afternoon. At the horizon to the left is a plateau-like prominence much brighter than the foreground material between the rocks. The horizon features are approximately three kilometers (1.8 miles) away. At left is a collection of fine-grained material reminiscent of sand dunes. The dark sinuous markings in left foreground are of unknown origin. Some unidentified shapes can be perceived on the hilly eminence at the horizon towards the right. A horizontal cloud stratum can be made out halfway from the horizon to the top of the picture.

(Bottom half): At left is seen the low-gain antenna for receipt of commands from the Earth. The projections on or near the horizon may represent the rims distant impact craters. In right foreground are color charts for Lander camera calibration, a mirror for the Viking magnetic properties experiment and part of a grid on the top of the Lander body. At upper right is the high-gain dish antenna for direct communication between landed spacecraft and Earth. Toward the right edge is an array of smooth fine-grained material which shows some hint of ripple structure and may be the beginning of a large dune field off to the right of the picture, which joins with dunes seen at the top left in this 300 panoramic view. Some of the rocks appear to be undercut on one side and partially buried by drifting sand on the other.

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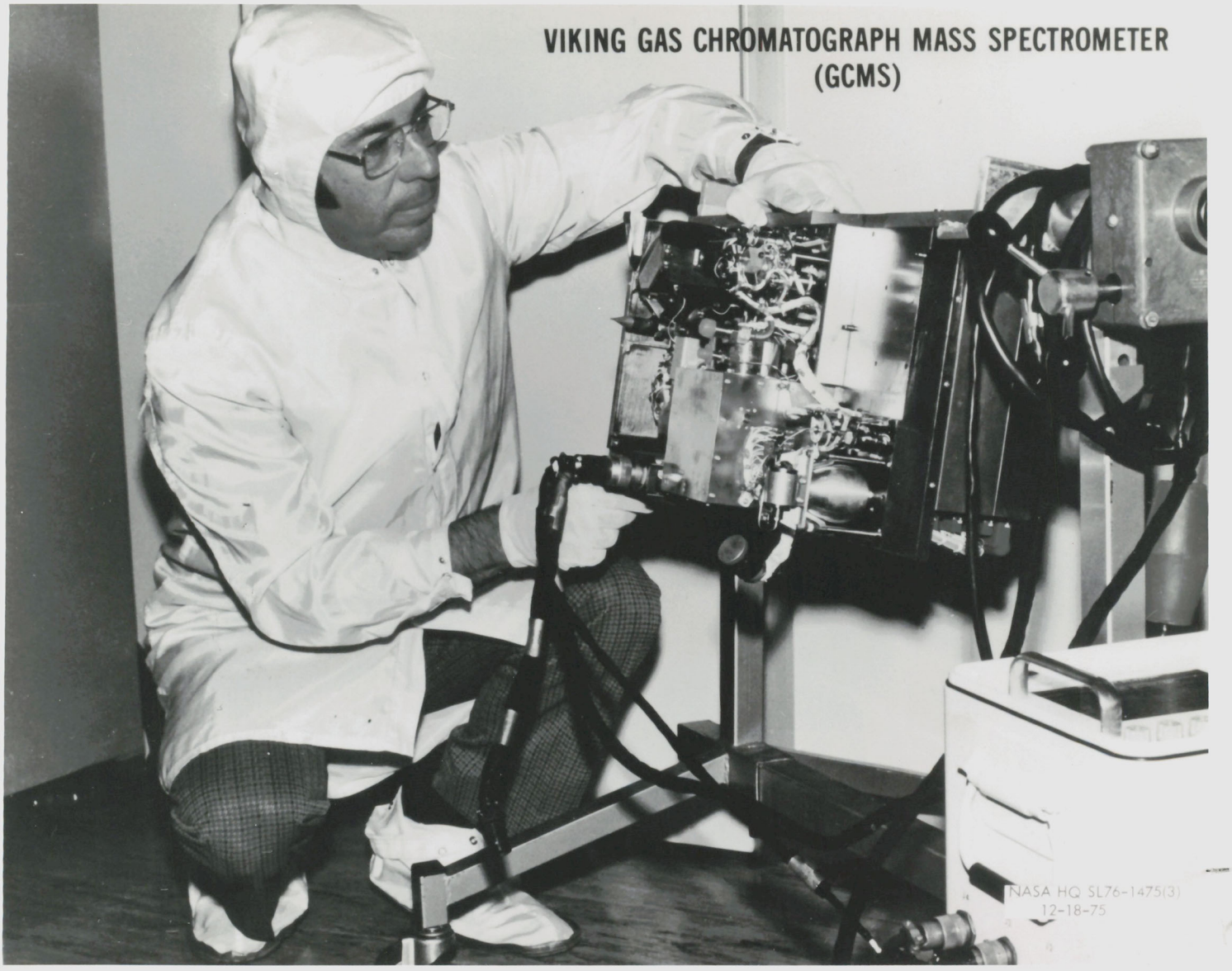
1976. The midafternoon horizon is abou 1.8 miles away.

AUG 2 1984


VIKING GAS CHROMATOGRAPH MASS SPECTROMETER
(GCMS)
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Headquarters
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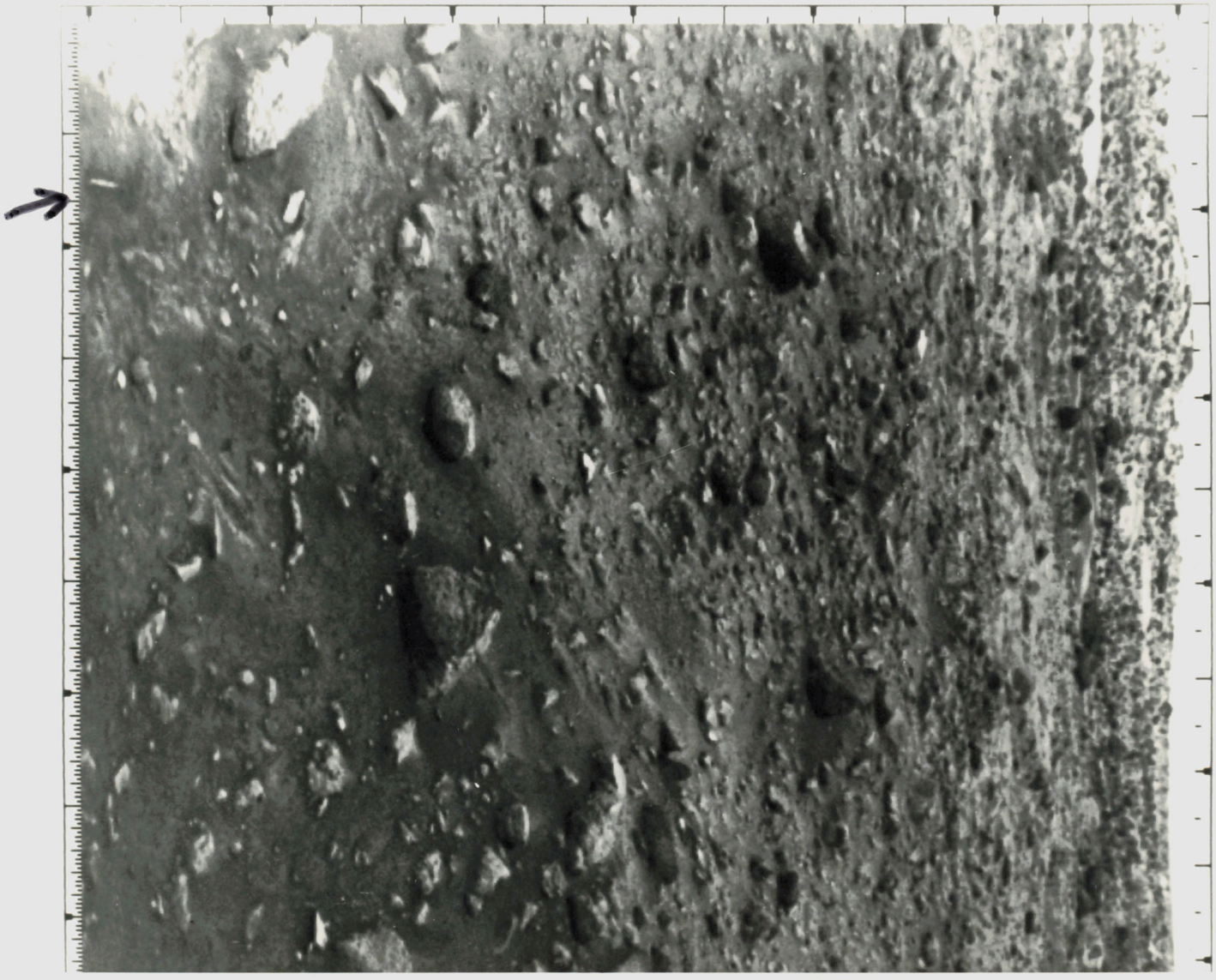

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Washington, D.C. 20546

FOR RELEASE: Filed: July 25, 1976
PHOTO NO. 76-H-574
Viking 1-54
P-17157

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Photographic evidence of the successful series of commands to the Viking 1 lander on Mars that unlocked the surface sampler arm is seen in this picture. At lower left, to the right of a whitish area is a small oblong object -- the boom latch pin that had failed to drop out of the scoop assembly causing the mechanism to lock. With the pin free, the boom and scoop can now be used for the soil sampler experiments beginning in two days, including a search for microscopic life in the Martian soil. The boom latch pin is 0.2 inches in diameter and 3.2 inches long. The pin weights 0.44 ounces, fell from about three feet and impacted the surface at eight to nine feet per second producing a mini-crater with a dark ejecta blanket. These data will be studies to determine soil properties.

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Washington, D.C. 20546

FOR RELEASE: Filed: September 17, 1976
PHOTO NO. 76-H-720
Viking 2-19
P-17876 (Sol 5)

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FEB 22 1996

Shining on the Martian surface near the Viking 2 spacecraft is the aluminum shroud, or cover, which protected the collector head of the surface sampler instrument during Viking's year-long journey from Earth. On September 5, two days after Viking 2 landed, the surface sampler was rotated from its parked position atop the spacecraft and pointed downward about 45 degrees. The shroud was then ejected by a set of eight springs positioned around its base. It struck the porous rock at the bottom of the picture, bounced about 20 inches, hit the surface again and bounced another 20 inches. The scar left by the second bounce is faintly visible halfway between the shroud and the rock it struck. The shroud is 12 inches long and 4 1/2 inches in diameter. The large rock just beyond it is about 2 feet long and about a foot thick. At lower right is the support structure of one of the spacecraft's three landing legs.

FEB 22

NOV 16 1976

PHOTO CREDIT--NASA or National Aeronautics and Space Administration

Space - Viking

UNITED STATES

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

FOR RELEASE: Immediate

PHOTO NO. 73-H-1274

NOV 3 1973

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LAUNCH VEHICLE: This is the Titan Centaur launch vehicle which on August 11 and 21, will be used to send two Viking spacecraft off into space on a year-long, 815-million-kilometer (505-million-mile) journey to Mars. The spacecraft are expected to arrive at the planet in July of 1976.

Space-Viking

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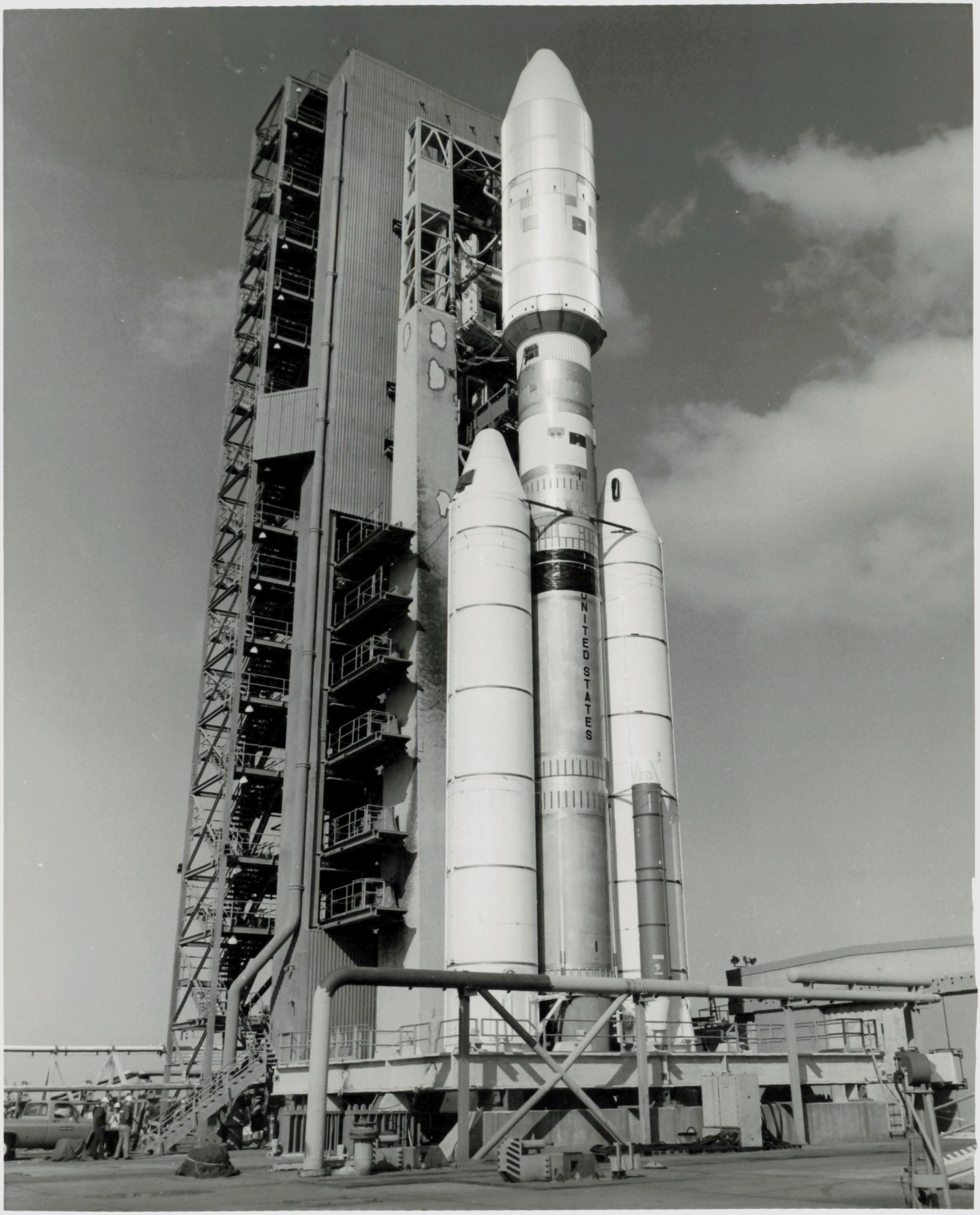
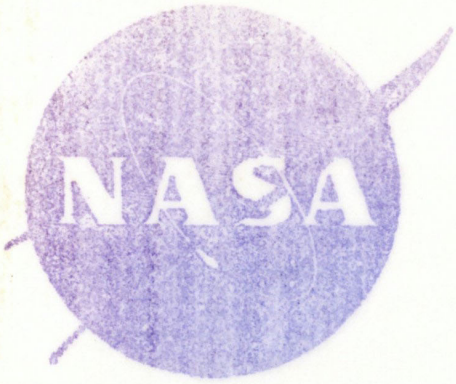

UNITED STATES



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SEP 29 1975

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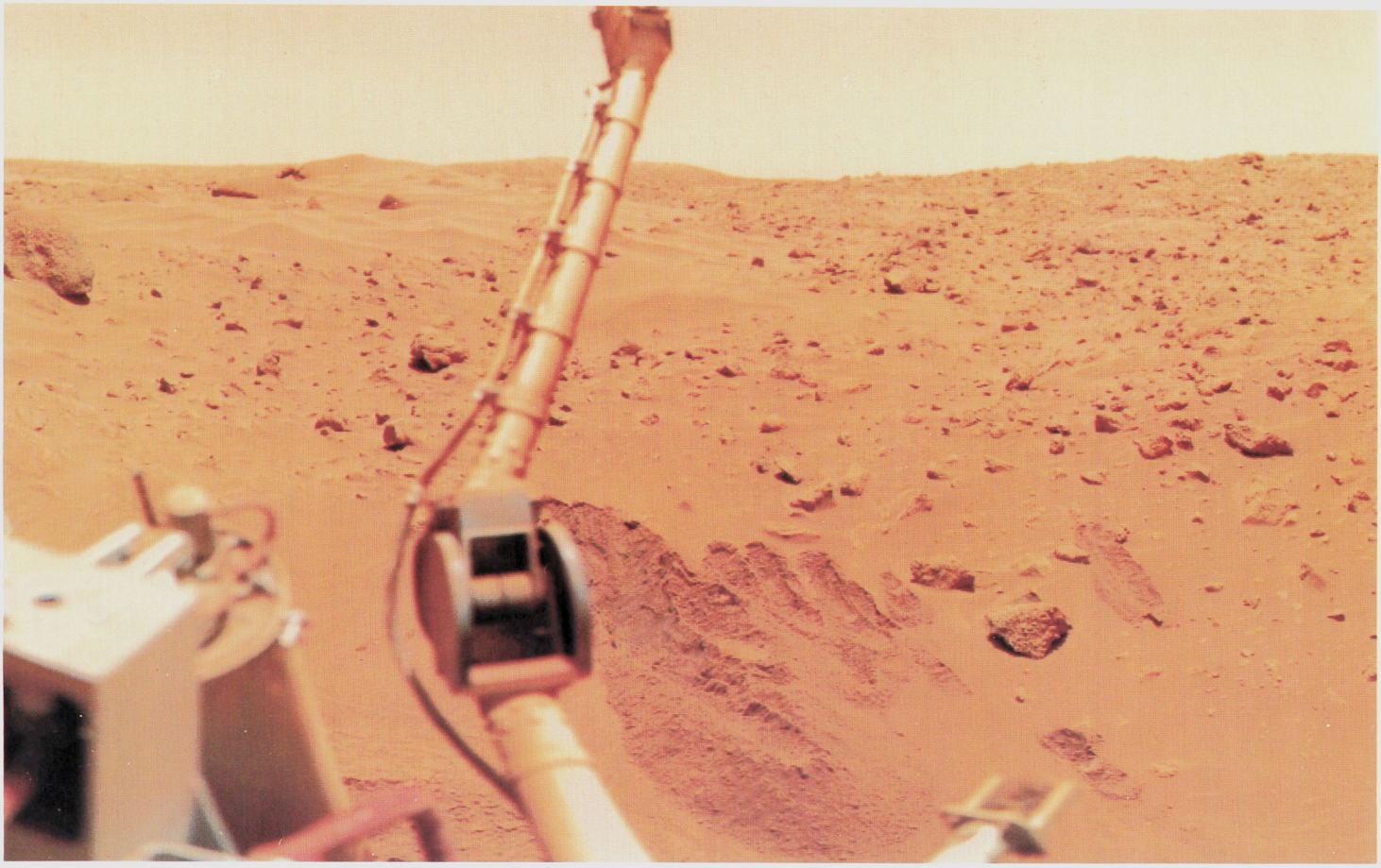


NASA - VIKING

NASA
National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

Viking 1 on Mars
P-22668

Viking Lander 1 took this photo of the surface of Mars on August 8, 1978, 730 Martian days after landing on the Red Planet. The square object at the lower right is the top of one lander leg. The arm carries the wind and temperature sensors of the meteorology instrument. To the right of the meteorology boom is a small brush used to scrape the soil scoop clean. Dust that was blown there by the wind has accumulated at the left side of the photo, and a rocky plain extends to the horizon a few kilometers away. Most of the rocks in the scene are about 50 centimeters (19 to 20 inches) across. The large rock at left, nicknamed Big Joe, is about 2.5 meters (8 feet) across and is about 8 meters (26 feet) from the lander. The trenches in the foreground were dug by Viking's soil scoop to supply the lander's chemical- and organic-analysis instruments and the life-detection experiment.

Viking Mission Highlights

The Viking mission to Mars made the most thorough exploration of any planet in the solar system except Earth. Viking 1, an orbiter and a lander, was launched from Kennedy Space Center, Florida, on August 20, 1975. An identical Viking 2 spacecraft was launched on September 9. The two Vikings spent almost a year cruising to Mars. Viking 1 arrived on June 19, 1976, and Viking 2 arrived on August 5. Viking Lander 1 separated from its orbiter and touched down in the region called Chryse Planitia on July 20, 1976. Viking Lander 2 landed in Utopia Planitia on September 3.

Each Viking lander carried 11 instruments to carry out a thorough exploration and examination of the surface of Mars. Each orbiter carried three instruments and used its radio as the source for a fourth set of experiments.

The Viking cameras took more than 57,000 photos of Mars, both from orbit and from the surface. Of that number, more than 4,500 were taken by the landers and show the Martian landscape as it changes through the seasons.

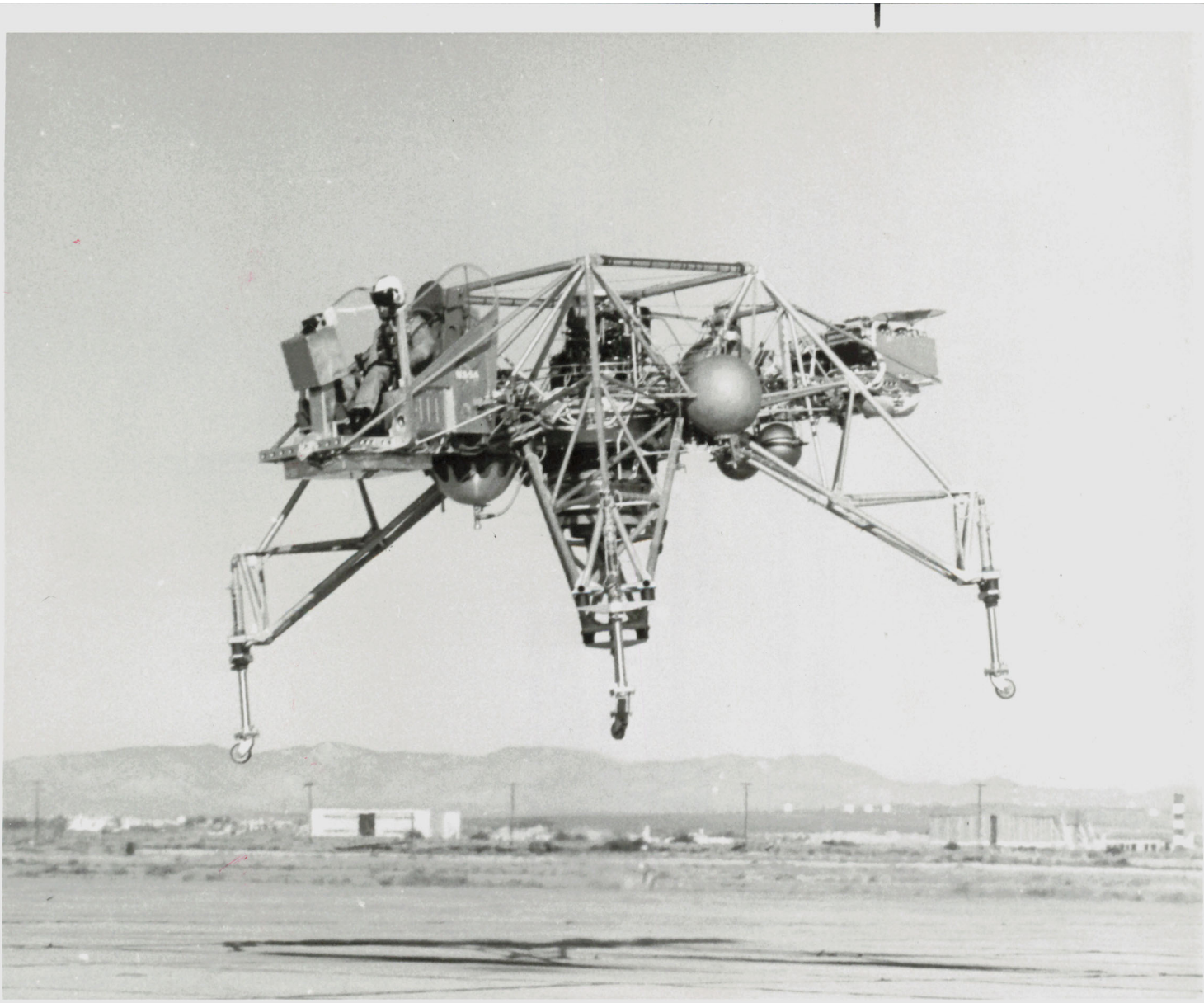
Mars' soil is an iron-rich clay composed of about 54 percent silicon dioxide. It is different from terrestrial clay because it is low in alkalis and trace elements and high in sulfur. The high iron-oxide content gives Mars its reddish appearance. From the surface, Mars' sky appears pinkish because of fine dust particles suspended in the mostly carbon dioxide atmosphere.

In the winter, the polar caps freeze and capture up to 30 percent of the carbon dioxide in the Martian atmosphere. The carbon dioxide returns to the atmosphere in summer and leaves behind polar caps composed largely of water ice.

Viking's most widely known experiment searched for signs of living organisms in the Martian soil. None was found, and now most scientists believe that life cannot exist anywhere on Mars because ultraviolet radiation from the Sun bombards Mars; the soil's corrosive nature would destroy any complex carbon molecules there. Scientists do not have an answer to the question of life on Mars in the distant past.

The Viking mission, which was supposed to last for 90 days after the landings, ended in May 1983.

JPL 400-158B, Rev 1 9/87



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FOR RELEASE: November 5, 1964
PHOTO NO.: 64-H-2602

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WINGLESS FLIGHT -- Highlighting the National Aeronautics and Space Administration's year of testing machines and equipment for ultimate exploration of the moon was this device. Called the Lunar Landing Research Vehicle, it achieved its first flight on October 30 at NASA's Flight Research Center, Edwards, California. Piloting and operational procedures in a lunar landing are studied with the aid of l the LLRV.

DEC 28 1964

Yr in Space 65

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PHOTO CAPTION (TOP)

Aug. 24, 1981
P-23924C/BW
S-2-22

Voyager 2 made its closest approach to Iapetus, the outermost of Saturn's large satellites, on Aug. 22, the day this picture was obtained. The spacecraft was 1.1 million kilometers (680,000 miles) from Iapetus; the camera resolution was about 21 km. (13 mi.). This view, which is lit from above, primarily shows the heavily cratered northern hemisphere toward the bright trailing side of the satellite. The north pole itself is near the large central-peak crater seen partly in the shadow at the top of the image. Iapetus is noteworthy for the very dark material (lower and right-hand parts of this frame) that apparently covers the ice crust of the satellite primarily at its leading hemisphere. This dark material is red and reflects only about 5 percent of the incident sunlight; it may be of either external or internal origin. Study of its relationship with the underlying topography---for example, near the large crater at the border of the dark material---may help to resolve this mystery. The Voyager project is managed for NASA by the Jet Propulsion Laboratory, Pasadena, Calif.

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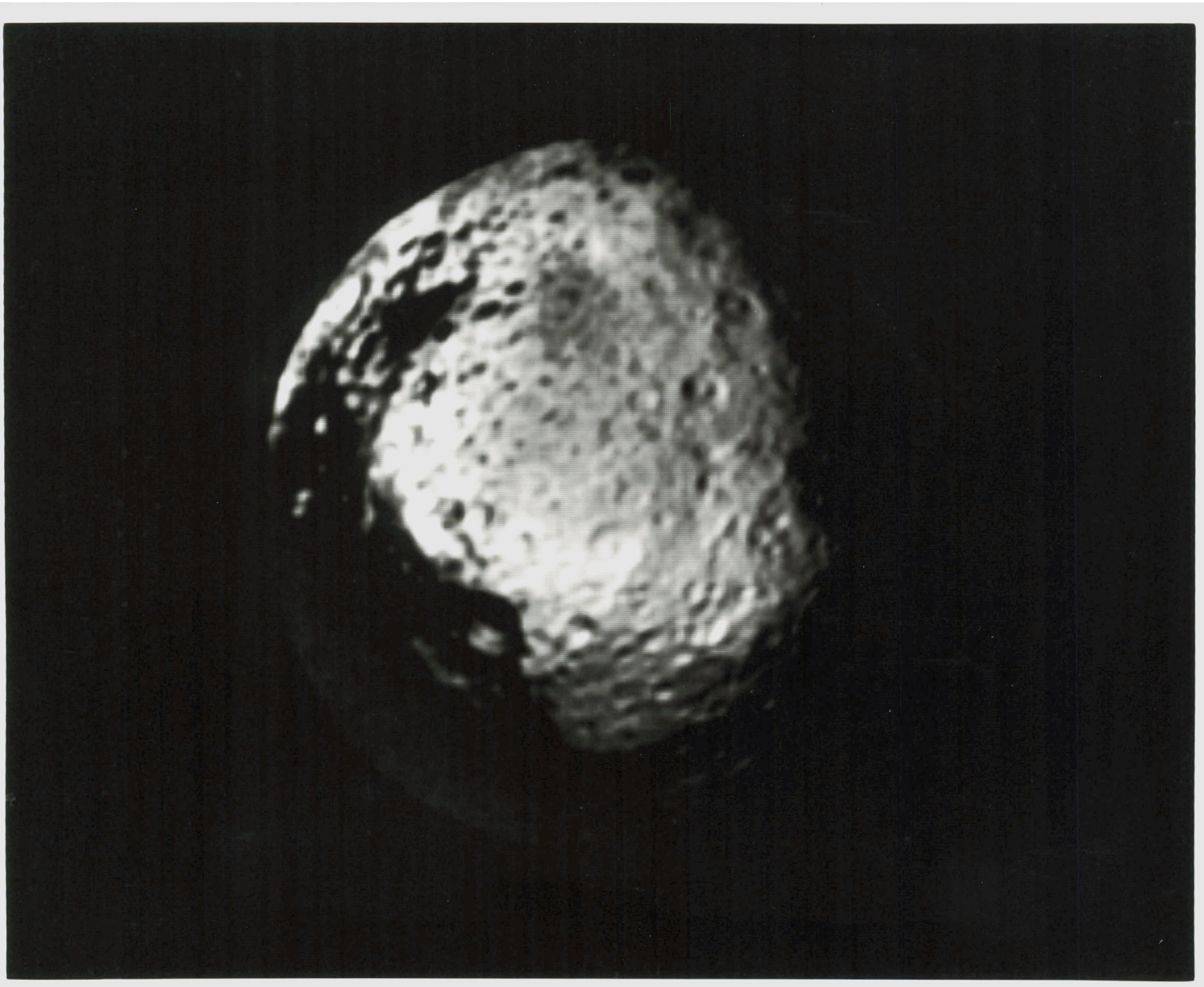

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PHOTO CAPTION (TOP)

Aug. 24, 1981
P-23920BW
S-2-18

Voyager 2 photographed Iapetus, the outermost of Saturn's large satellites, Aug. 22 from a distance of 1.1 million kilometers (680,000 miles). This image, which shows features as small as 21 km. (13 mi.) across, has been processed to reveal as much detail as possible of the bright, icy regions of the northern trailing hemisphere. The number and forms of impact craters here appear similar to those of the heavily cratered surfaces of the inner icy satellites (such as Rhea and Mimas) photographed by Voyager 1. This similarity suggests an ancient crust dating back to the early history of the solar system. Iapetus is noteworthy for the very dark material (seen here in the lower and right-hand parts of the picture) that apparently covers the satellite's ice crust primarily on its leading hemisphere. Iapetus has a diameter of 1,450 km. (900 mi.). Voyager 2 passes about four times closer to the satellite than did Voyager 1 last fall. The Voyager project is managed for NASA by the Jet Propulsion Laboratory, Pasadena, Calif.

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