STS61

NASA Photo ID: Title:

S89-48009 image text Astronaut Story Musgrave in launch/landing suit during STS-33 training

S90-34031 image text Portrait of Astronaut Jeffrey A. Hoffman

S90-45098 image text Portrait of Astronaut Richard O. Covey

S91-50404 image text NASA employee utilizes Virtual Reality (VR) equipment

S92-42896 image text Portrait of Astronaut Thomas D. Akers

S92-42897 image text Portrait of Astronaut Kathryn C. Thornton

S93-33101 image text STS-61 crewmembers in the WETF to rehearse for HST repair mission

S93-33102 image text STS-61 crewmembers in the WETF to rehearse for HST repair mission

S93-33103 image text STS-61 crewmembers in the WETF to rehearse for HST repair mission

S93-33104 image text STS-61 crewmembers in the WETF to rehearse for HST repair mission

S93-33257 image text STS-61 Hubble Space Telescope Mirrors for Wide Field/Planetary Camera

S93-33258 image text Schematic of path of image to of Wide Field Planetary Camera 2

S93-34001 image text Astronaut Story Musgrave in EMU particpates in test in thermal vacuum chamber

S93-35696 image text STS-61 air-bearing floor training in bldg 9N with Astronaut Jeff Hoffman

S93-35697 image text STS-61 air-bearing floor training in bldg 9N with Astronaut Jeff Hoffman

S93-35698 image text STS-61 air-bearing floor training in bldg 9N with Astronaut Jeff Hoffman

S93-35699 image text STS-61 crewmembers training with the Remote Manipulator System

S93-35700 image text STS-61 crewmembers training with the Remote Manipulator System

S93-35701 image text STS-61 crewmembers training with the Remote Manipulator System

S93-35702 image text STS-61 crewmembers training with the Remote Manipulator System

S93-35703 image text STS-61 crewmembers training with the Remote Manipulator System

S93-36890 image text STS-61 utilizing Virtual Reality in training for HST repair mission

S93-36891 image text STS-61 utilizing Virtual Reality in training for HST repair mission

S93-36892 image text STS-61 utilizing Virtual Reality in training for HST repair mission

S93-36893 image text STS-61 utilizing Virtual Reality in training for HST repair mission

S93-36894 image text STS-61 utilizing Virtual Reality in training for HST repair mission

S93-36895 image text STS-61 utilizing Virtual Reality in training for HST repair mission

S93-36896 image text STS-61 utilizing Virtual Reality in training for HST repair mission

S93-39735 image text STS-61 crewmembers participate in neutral buoyancy training at MSFC

S93-39736 image text STS-61 crewmembers participate in neutral buoyancy training at MSFC

S93-39738 image text Astronaut Claude Nicollier participates in RMS training at MSFC

S93-39739 image text Astronaut Jeffrey Hoffman participates in HST repair training at MSFC

S93-39740 image text STS-61 crew participates in HST optical correction training at MSFC

S93-40688 image text Portrait of ESA/Astronaut Claude Nicollier

S93-43620 image text Workers at Cape Canaveral install mirror in Wide Field/Planetary Camera II

S93-43752 image text Astronauts Ross and Helms at CAPCOM station during STS-61 simulations

S93-43756 image text EVA console personnel during STS-61 simulations

S93-43757 image text Flight Director works out problem during STS-61 simulations

S93-48699 image text Computer generated scenes depicting the HST capture and EVA repair mission

S93-48700 image text Computer generated scenes depicting the HST capture and EVA repair mission

S93-48701 image text Computer generated scenes depicting the HST capture and EVA repair mission

S93-48702 image text Computer generated scenes depicting the HST capture and EVA repair mission

S93-48703 image text Computer generated scenes depicting the HST capture and EVA repair mission

S93-48704 image text Computer generated scenes depicting the HST capture and EVA repair mission

S93-48705 image text Computer generated scenes depicting the HST capture and EVA repair mission

S93-48706 image text Computer generated scenes depicting the HST capture and EVA repair mission

S93-48707 image text Computer generated scenes depicting the HST capture and EVA repair mission

S93-48708 image text Computer generated scenes depicting the HST capture and EVA repair mission

S93-48709 image text Computer generated scenes depicting the HST capture and EVA repair mission

S93-48710 image text Computer generated scenes depicting the HST capture and EVA repair mission

S93-48711 image text Computer generated scenes depicting the HST capture and EVA repair mission

S93-48826 image text STS-61 art concept of astronauts during HST servicing

STS061(E)001 image text Hubble Space Telescope photographed by Electronic Still Camera and downlinked

STS061(E)002 image text HST Solar Arrays photographed by Electronic Still

Camera and downlinked

STS061(E)003 image text HST Solar Arrays photographed by Electronic Still Camera and downlinked

STS061(E)004 image text Latch of HST aft shroud photographed by Electronic Still Camera & downlinked

STS061(E)005 image text Latch of HST aft shroud photographed by Electronic Still Camera & downlinked

STS061(E)006 image text Astronaut Claude Nicollier working with RMS photographed by ESC

STS061(E)008 image text Hubble Space Telescope photographed by Electronic Still Camera

STS061(E)009 image text HST High Gain Antennae photographed by Electronic Still Camera

STS061(E)010 image text Latch of HST aft shroud photographed by Electronic Still Camera & downlinked

STS061(E)011 image text Astronaut Kathryn Thornton on HST photographed by Electronic Still Camera

STS061(E)012 image text Astronauts Thornton & Akers on HST photographed by Electronic Still Camera

STS061(E)014 image text Astronauts Thornton & Akers on HST photographed by Electronic Still Camera

STS061(E)015 image text Aft part of Wide Field/Planetary Camera in HST photographed with ESC

STS061(E)016 image text Astronaut Jeffrey Hoffman on RMS robot arm during HST repairs

STS061(E)017 image text Astronaut Jeffrey Hoffman on RMS robot arm during HST

repairs

STS061(E)018 image text Astronaut Jeffrey Hoffman on RMS robot arm during HST repairs

STS061(E)019 image text Astronauts Hoffman and Musgrave pose in aft flight deck

STS061(E)020 image text HST Solar Arrays photographed by Electronic Still Camera and downlinked

STS061(E)021 image text HST High Gain Antennae photographed by Electronic Still Camera

STS061(S)001 image text STS-61 Crew Insignia

STS061(S)002 image text STS-61 crew portrait

STS061(S)071 image text Landing of STS-61 Shuttle Endeavour at Kennedy Space Center

STS061(S)088 image text Launch of STS-61 mission Space Shuttle Endeavour

STS061(S)089 image text Launch of STS-61 mission Space Shuttle Endeavour

STS061(S)090 image text Launch of STS-61 mission Space Shuttle Endeavour

STS061(S)091 image text Launch of STS-61 mission Space Shuttle Endeavour

STS061(S)092 image text Mission control activity during STS-61 EVA-2

STS061(S)094 image text Mission control activity during STS-61 EVA-2

STS061(S)096 image text Mission control activity during STS-61 EVA-1

STS061(S)097 image text Mission control activity during STS-61 EVA

STS061(S)098 image text Mission control activity during STS-61 EVA

STS061(S)101 image text Mission control activity during STS-61 EVA

STS061(S)102 image text Mission control activity during STS-61 EVA-1

STS061(S)103 image text Flight Director Robert Castle uses laptop while monitoring space walk

STS061(S)104 image text Mission control activity during STS-61 EVA

STS061-03-029 image text Astronaut Jeffrey Hoffman displays tools for use on HST

STS061-05-031 image text On-board STS-61 crew portrait

STS061-07-003 image text Astronaut Claude Nicollier at RMS controls on aft flight deck

STS061-101-023 image text Northern Chile and Andes Moutnains seen from STS-61 Shuttle Endeavour

STS061-102-010 image text Astronauts Hoffman and Musgrave replace Solar Array Drive Electronics

STS061-102-035 image text Astronauts Story Musgrave deploys HST solar array panel

STS061-104-007 image text Astronauts Story Musgrave during first of five Hubble Space Telescope EVA

STS061-105-024 image text Endeavour backdropped against space with Sun displaying rayed effect

STS061-105-026 image text Astronaut Jeffrey Hoffman on RMS during third of five HST EVA's

STS061-106-091 image text Southern Africa as seen from STS-61 Shuttle Endeavour

STS061-11-004 image text Unofficial On-board STS-61 crew portrait

STS061-23-005 image text STS-61 crewmembers prepare covers for magnetometers on HST

STS061-23-037 image text Astronaut Claude Nicollier on flight deck at controls of the RMS

STS061-37-011 image text Astronaut Jeffrey Hoffman with WF/PC in payload bay during EVA

STS061-38-014 image text Astronauts Musgrave and Akers suit up for final HST spacewalk

STS061-39-010 image text Astronaut Richard Covey with control box for bicycle ergometer

STS061-47-014 image text Astronauts Thornton and Akers in payload by during EVA to replace COSTAR

STS061-48-001 image text Astronauts Musgrave and Hoffman during final STS-61 EVA

STS061-48-027 image text Astronaut Story Musgrave during deployment of solar array panels on HST

STS061-53-001 image text Astronaut Richard Covey at commanders station in Endeavour during STS-61

STS061-53-010 image text Astronaut Kenneth Bowersox at pilot's station in Endeavour during STS-61

STS061-53-026 image text View of HST as it approaches Endeavour from aft flight deck window

STS061-58-033 image text Astronaut Jeffrey Hoffman works with replacement WF/PC II for HST

STS061-65-009 image text Astronaut Story Musgrave in payload bay during EVA

STS061-65-015 image text Fisheye view of HST, spherical Earth and Australian

landmass

STS061-73-040 image text Hubble Space Telescope nears Shuttle Endeavour

STS061-77-016 image text Astronauts Thornton and Akers during one of their EVAs

STS061-77-078 image text Astronaut Jeffrey Hoffman with WF/PC during third STS-61 EVA

STS061-77-094 image text Astronaut Jeffrey Hoffman with WF/PC during third STS-61 EVA

STS061-77-102 image text Astronauts Hoffman and Musgrave install the Magnetic Sensing System on HST

STS061-79-041 image text Sunburst over the open STS-61 Endeavour payload bay

STS061-79-072 image text Hubble Space Telescoe being surved by cameras mounted on the RMS

STS061-79-087 image text Hubble Space Telescope is berthed in Endeavour's payload bay after capture

STS061-86-030 image text Hubble Space Telescope is berthed in Endeavour's payload bay after capture

STS061-86-048 image text Astronauts Musgrave and Hoffman during first STS-61 EVA

STS061-87-046 image text Astronauts Musgrave and Hoffman during first STS-61 EVA

STS061-87-062 image text Astronaut Hoffman replaces fuse plugs on Hubble Space Telescope

STS061-90-028 image text Hubble Space Telescope begins separation from Shuttle Endeavour after repair

STS061-93-031 image text Hubble Space Telescope approaches Shuttle

Endeavour

STS061-94-059 image text Astronauts Akers and Thornton during installation of COSTAR on HST

STS061-95-028 image text Astronaut Kathryn Thornton during second HST extravehicular activity

STS061-95-031 image text Solar array panel removed from Hubble Space telescope in space

STS061-95-075 image text Astronauts Akers and Thornton remove one of HST solar arrays during EVA

STS061-98-000AR image text Astronaut Kathryn Thornton during installation of COSTAR on HST

STS061-98-000K image text Astronaut Kathryn Thornton during servicing of HST

STS061-98-050 image text Astronauts Musgrave and Hoffman during servicing of HST

STS061-99-002 image text New set of solar arrays deployed on Hubble Space Telescope

STS061-99-009 image text New set of solar arrays deployed on Hubble Space Telescope

STS061-99-042 image text Hubble Space Telescope after deployment

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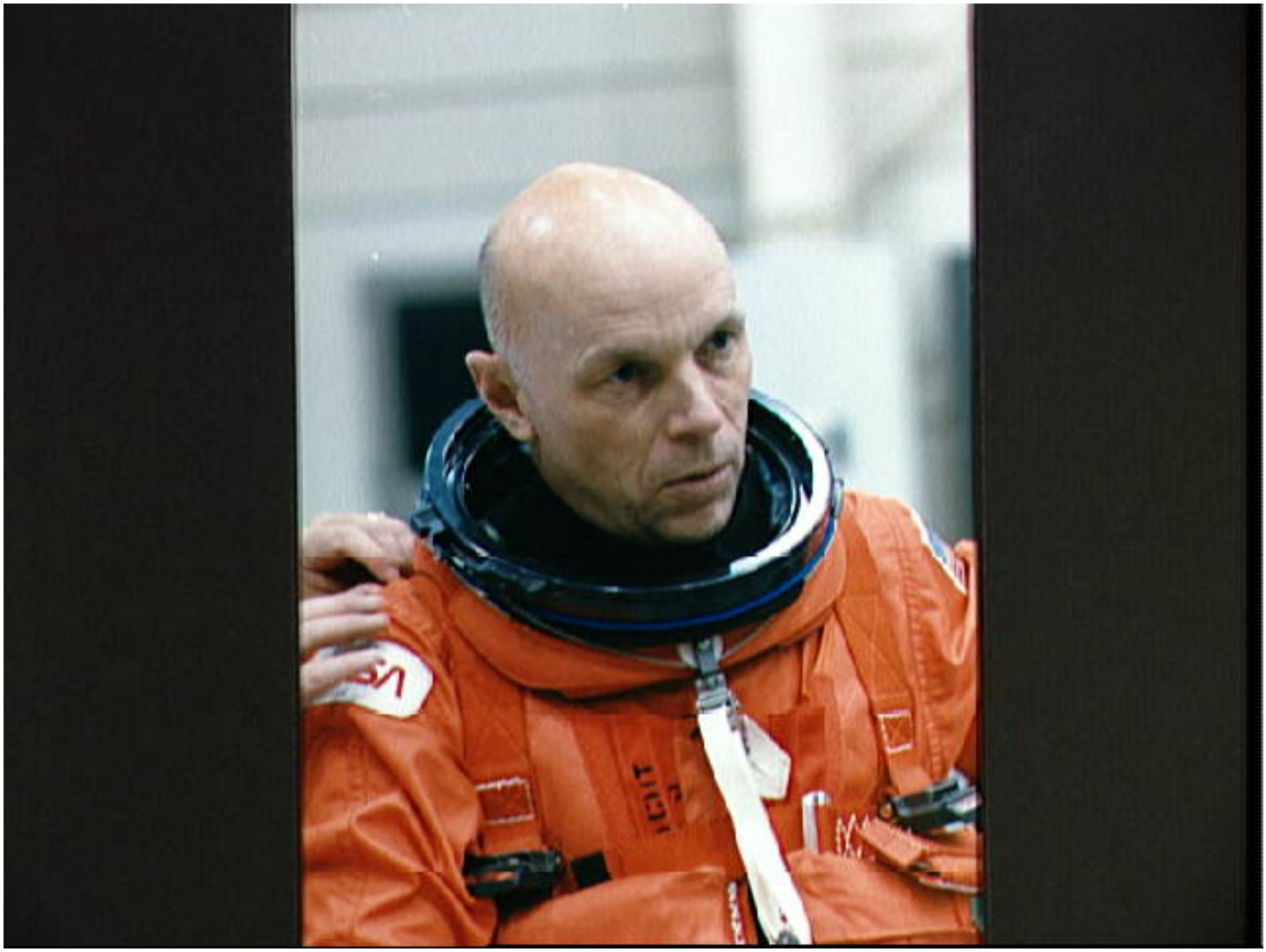

NASA Photo ID: S89-48009 File Name: 10092970.jpg
Film Type: 35mm Date Taken: 10/20/89
Title: Astronaut Story Musgrave in launch/landing suit during STS-33 training
Description:
Astronaut Story Musgrave in launch/landing suit during STS-33 ingress and emergency egress training in the bldg 9A Full Fuselage Traininer (FFT) and Crew Compartment Trainer (CCT).
Subject terms:
ASTRONAUT TRAINING
ASTRONAUTS
EGRESS
EMERGENCIES
ESCAPE SYSTEMS
LAUNCH ENTRY SUIT
MOCK-UP
RESCUE OPERATIONS
SIMULATION
STS-33

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NASA Photo ID: S90-34031 File Name: 10092965.jpg
Film Type: 4x5 Date Taken: 04/05/90
Title: Portrait of Astronaut Jeffrey A. Hoffman
Description:
Portrait of Astronaut Jeffrey A. Hoffman wearing an orange partial pressure flight suit with helmet.
Subject terms:
ASTRONAUTS
PORTRAIT

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NASA Photo ID: S90-45098 File Name: 10092962.jpg
Film Type: 4x5 Date Taken: 11/01/90
Title: Portrait of Astronaut Richard O. Covey
Description:
Portrait of Astronaut Richard O. Covey wearing a partial pressure ascent and entry suit.
Subject terms:
ASTRONAUTS
PORTRAIT

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VPL
VPL

NASA Photo ID: S91-50404 File Name: 10092971.jpg
Film Type: 120mm Date Taken: 11/12/91
Title: NASA employee utilizes Virtual Reality (VR) equipment
Description:
Bebe Ly of the Information Systems Directorate's Software Technology Branch at JSC gives virtual reality a try. The stero video goggles and headphones allow her to see and hear in a computer-generated world and the gloves allow her to move around and grasp objects.
Subject terms:
BELTS
COMPUTER SYSTEMS
GLOVES
HELMETS
PERSONNEL
SIMULATORS
VIDEO EQUIPMENT
VISUAL PERCEPTION
VISUAL STIMULI

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NASA

NASA Photo ID: S92-42896 File Name: 10092967.jpg
Film Type: 4x5 Date Taken: 08/07/92
Title: Portrait of Astronaut Thomas D. Akers
Description:
Portrait of Astronaut Thomas D. Akers wearing an extravehicular mobility unit (EMU).
Subject terms:
ASTRONAUTS
PORTRAIT

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NASA Photo ID: S92-42897 File Name: 10092968.jpg
Film Type: 4x5 Date Taken: 08/07/92
Title: Portrait of Astronaut Kathryn C. Thornton
Description:
Portrait of Astronaut Kathryn C. Thornton wearing an extravehicular mobility unit (EMU).
Subject terms:
ASTRONAUTS
PORTRAIT

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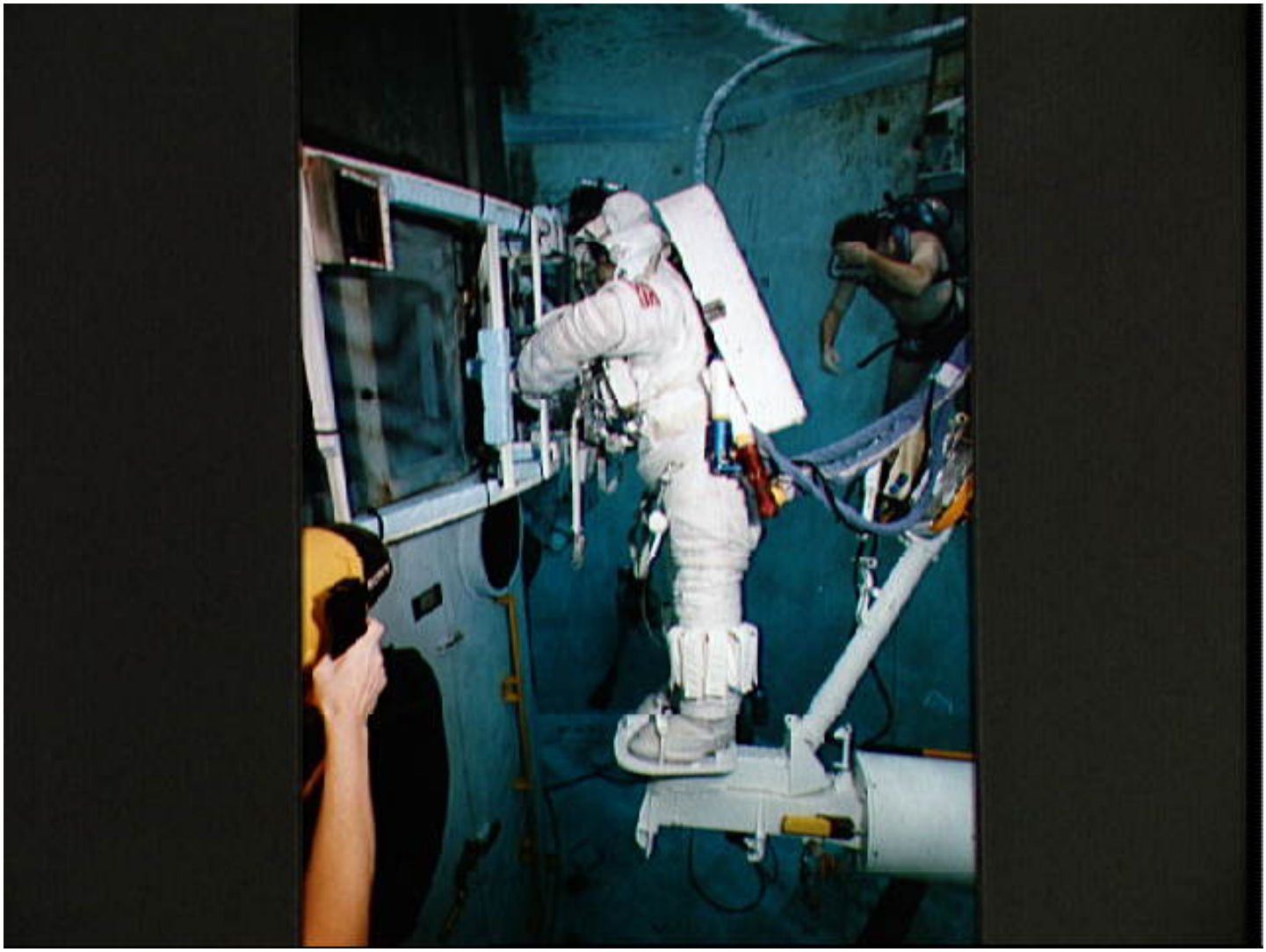

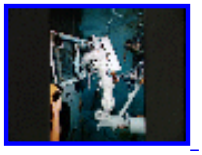

NASA Photo ID: S93-33101 File Name: 10092977.jpg
Film Type: 35mm Date Taken: 05/05/93
Title: STS-61 crewmembers in the WETF rehearsing for HST repair mission
Description:
Wearing a training version of Space Shuttle Extravehicular Mobility Unit (EMU), Astronaut Kathryn C. Thornton uses the giant pool of JSC's Weightless Environment Training Facility (WETF) to rehearse for the Hubble Space Telescope (HST) repair mission. Standing on a mobile foot restraint connected to the Shuttle's robot arm, Thornton grasps a large structure which attaches to the Wide Field/Planetary Camera (WF/PC). A SCUBA-equipped diver can be seen in the background (33101); Astronaut Thomas D. Akers uses the giant pool of JSC's WETF to rehearse for the 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 WF/PC. Several SCUBA-equipped divers assist in the rehearsal (33102); Astronauts F. Story Musgrave and Jeffrey A. Hoffman, in training versions of the EMU, use the WETF to rehearse for the HST repair mission. The two are working with a full-scale training version of the Wide Field/Planetary Camera (WF/PC) (33103); Astronaut Jeffrey A. Hoffman, wearing a training version of the Shuttle EMU, uses the WETF pool to rehearse for the HST repair mission (33104).
Subject terms:
ASTRONAUT TRAINING
CAMERAS
EXTRAVEHICULAR MOBILITY UNITS
HUBBLE SPACE TELESCOPE
NEUTRAL BUOYANCY SIMULATION
STRONAUTS
WEIGHTLESS ENVIRONMENT TRAINING

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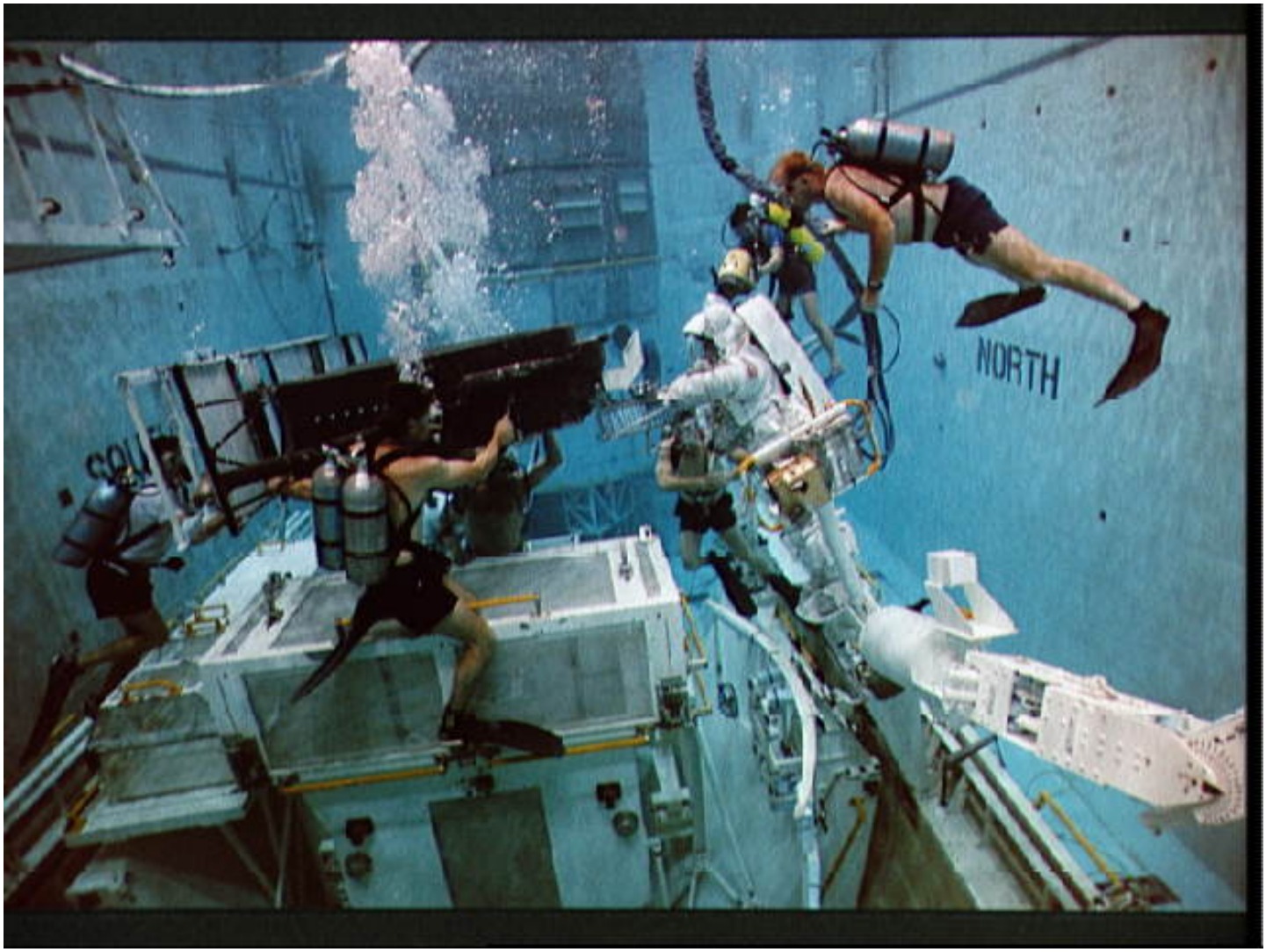
NORTH

NASA Photo ID: S93-33102 File Name: 10092978.jpg
Film Type: 35mm Date Taken: 05/05/93
Title: STS-61 crewmembers in the WETF rehearsing for HST repair mission
Description:
Wearing a training version of Space Shuttle Extravehicular Mobility Unit (EMU), Astronaut Kathryn C. Thornton uses the giant pool of JSC's Weightless Environment Training Facility (WETF) to rehearse for the Hubble Space Telescope (HST) repair mission. Standing on a mobile foot restraint connected to the Shuttle's robot arm, Thornton grasps a large structure which attaches to the Wide Field/Planetary Camera (WF/PC). A SCUBA-equipped diver can be seen in the background (33101); Astronaut Thomas D. Akers uses the giant pool of JSC's WETF to rehearse for the 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 WF/PC. Several SCUBA-equipped divers assist in the rehearsal (33102); Astronauts F. Story Musgrave and Jeffrey A. Hoffman, in training versions of the EMU, use the WETF to rehearse for the HST repair mission. The two are working with a full-scale training version of the Wide Field/Planetary Camera (WF/PC) (33103); Astronaut Jeffrey A. Hoffman, wearing a training version of the Shuttle EMU, uses the WETF pool to rehearse for the HST repair mission (33104).
Subject terms:

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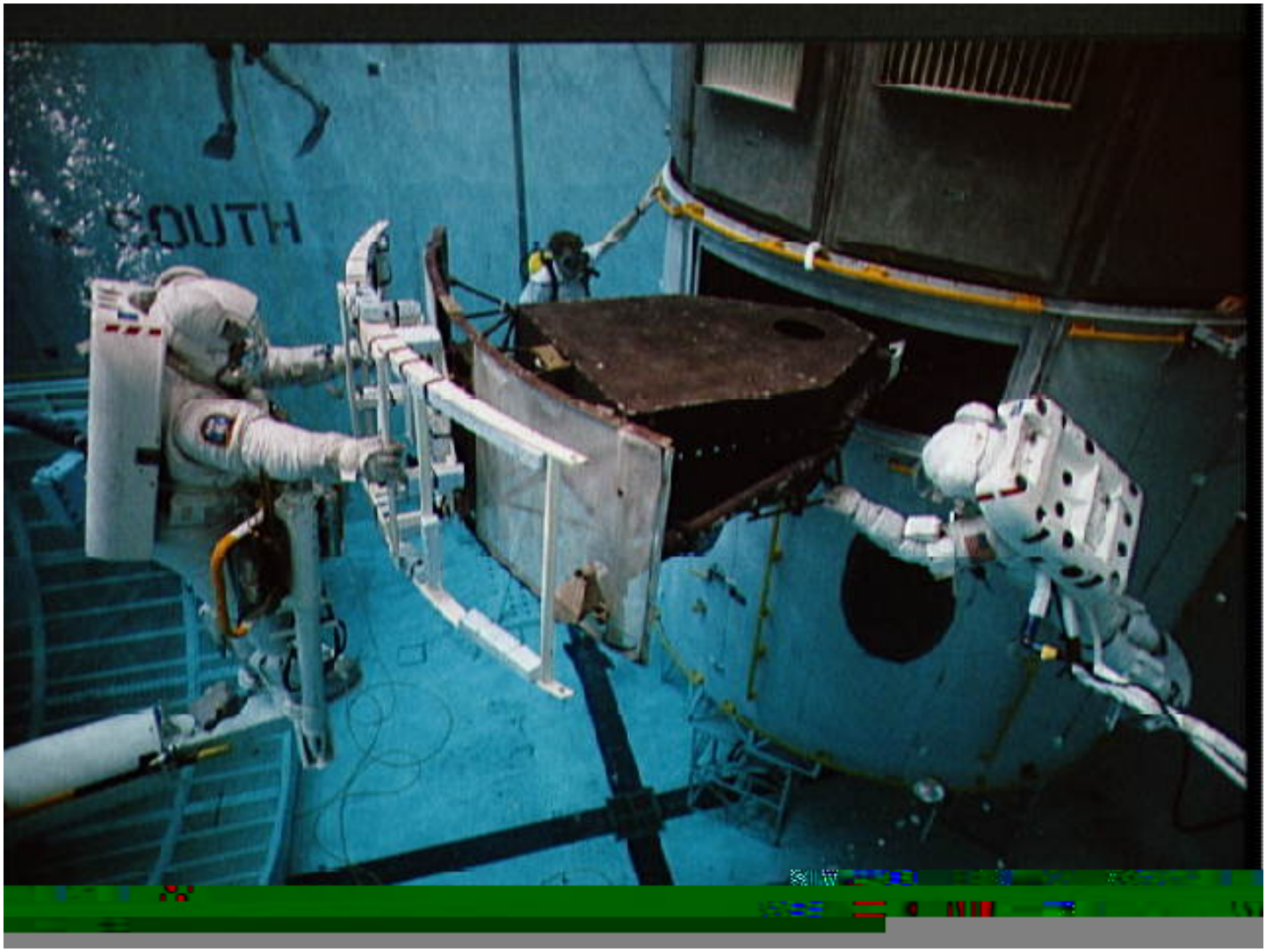
SOUTH

NASA Photo ID: S93-33103 File Name: 10092976.jpg
Film Type: 35mm Date Taken: 05/05/93
Title: STS-61 crewmembers in the WETF rehearsing for HST repair mission
Description:
Wearing a training version of Space Shuttle Extravehicular Mobility Unit (EMU), Astronaut Kathryn C. Thornton uses the giant pool of JSC's Weightless Environment Training Facility (WETF) to rehearse for the Hubble Space Telescope (HST) repair mission. Standing on a mobile foot restraint connected to the Shuttle's robot arm, Thornton grasps a large structure which attaches to the Wide Field/Planetary Camera (WF/PC). A SCUBA-equipped diver can be seen in the background (33101); Astronaut Thomas D. Akers uses the giant pool of JSC's WETF to rehearse for the 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 WF/PC. Several SCUBA-equipped divers assist in the rehearsal (33102); Astronauts F. Story Musgrave and Jeffrey A. Hoffman, in training versions of the EMU, use the WETF to rehearse for the HST repair mission. The two are working with a full-scale training version of the Wide Field/Planetary Camera (WF/PC) (33103); Astronaut Jeffrey A. Hoffman, wearing a training version of the Shuttle EMU, uses the WETF pool to rehearse for the HST repair mission (33104).
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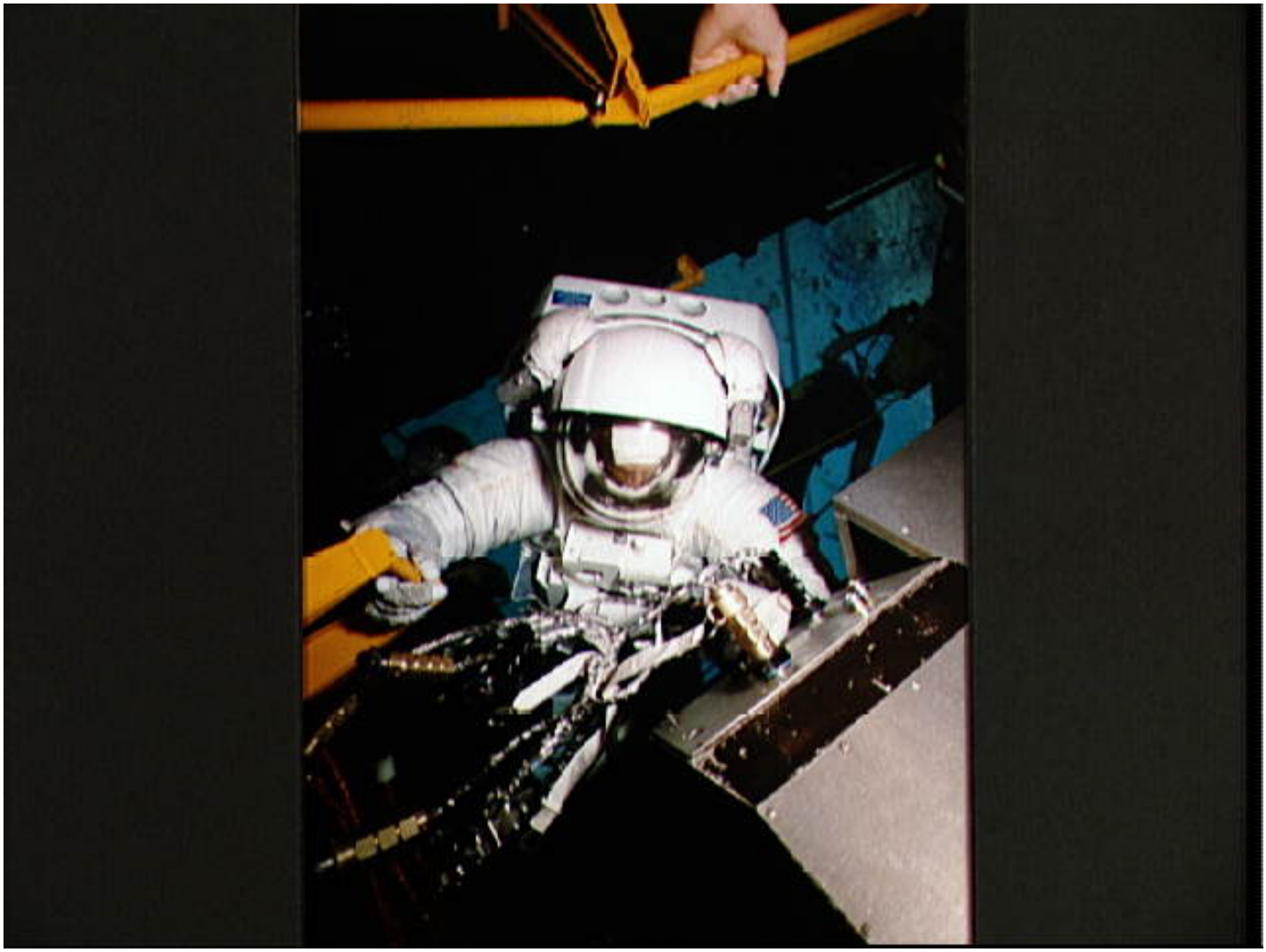

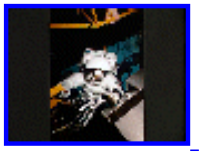

NASA Photo ID: S93-33104 File Name: 10092979.jpg
Film Type: 35mm Date Taken: 05/05/93
Title: STS-61 crewmembers in the WETF rehearsing for HST repair mission
Description:
Wearing a training version of Space Shuttle Extravehicular Mobility Unit (EMU), Astronaut Kathryn C. Thornton uses the giant pool of JSC's Weightless Environment Training Facility (WETF) to rehearse for the Hubble Space Telescope (HST) repair mission. Standing on a mobile foot restraint connected to the Shuttle's robot arm, Thornton grasps a large structure which attaches to the Wide Field/Planetary Camera (WF/PC). A SCUBA-equipped diver can be seen in the background (33101); Astronaut Thomas D. Akers uses the giant pool of JSC's WETF to rehearse for the 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 WF/PC. Several SCUBA-equipped divers assist in the rehearsal (33102); Astronauts F. Story Musgrave and Jeffrey A. Hoffman, in training versions of the EMU, use the WETF to rehearse for the HST repair mission. The two are working with a full-scale training version of the Wide Field/Planetary Camera (WF/PC) (33103); Astronaut Jeffrey A. Hoffman, wearing a training version of the Shuttle EMU, uses the WETF pool to rehearse for the HST repair mission (33104).
Subject terms:

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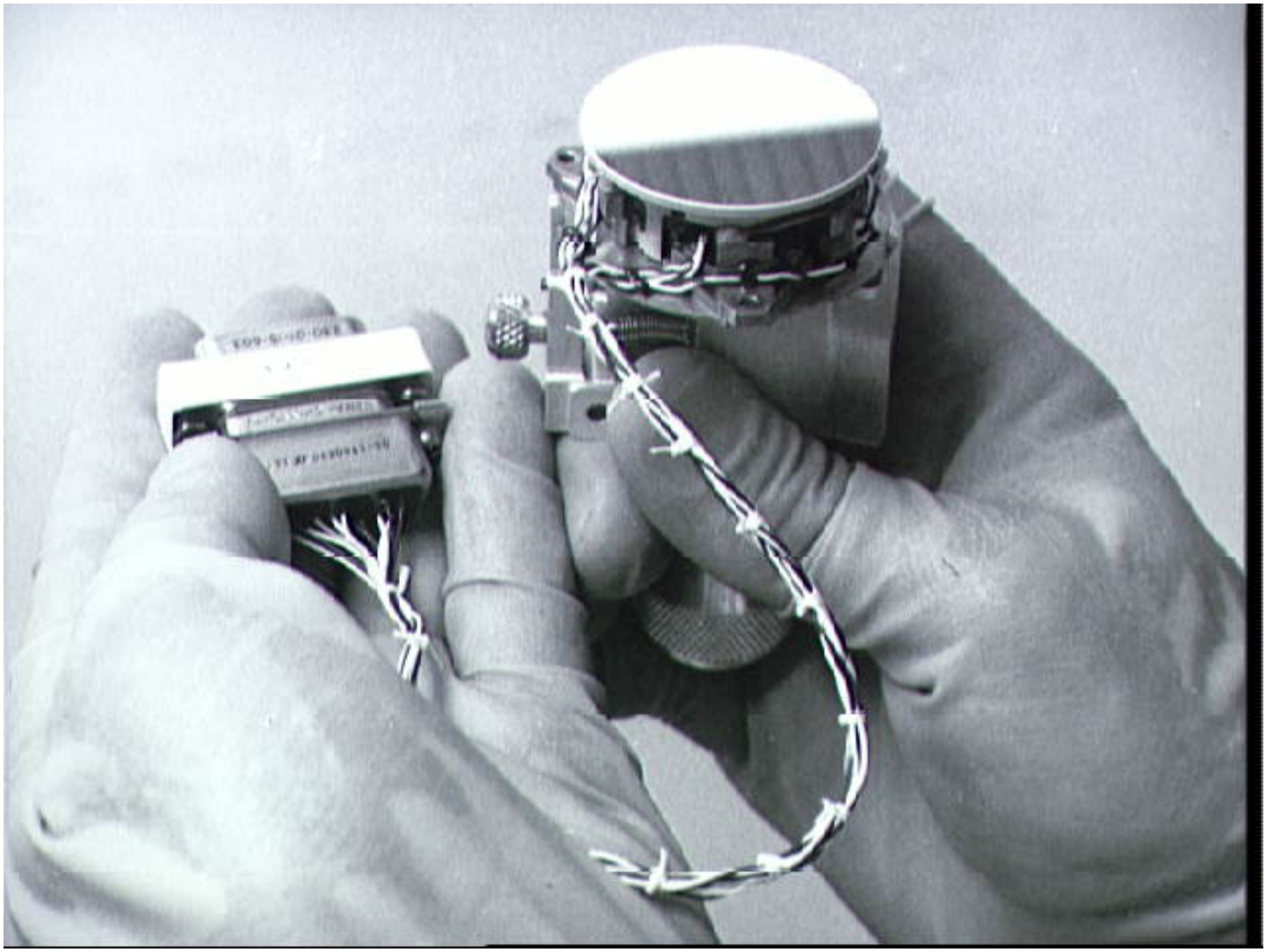

NASA Photo ID: S93-33257 File Name: 10092974.jpg
Film Type: 4x5 BW Date Taken: 05/04/93
Title: STS-61 Hubble Space Telescope Mirrors for Wide Field/Planetary Camera
Description:
This close-up view features tiny articulating fold mirrors that will go into a replacement camera for the Wide Field\Planetary Camera (WF\PC-1) currently on the Hubble Space Telescope (HST).
Subject terms:
CAMERAS
HUBBLE SPACE TELESCOPE
MIRRORS
PHOTOGRAPHIC EQUIPMENT
STS-61

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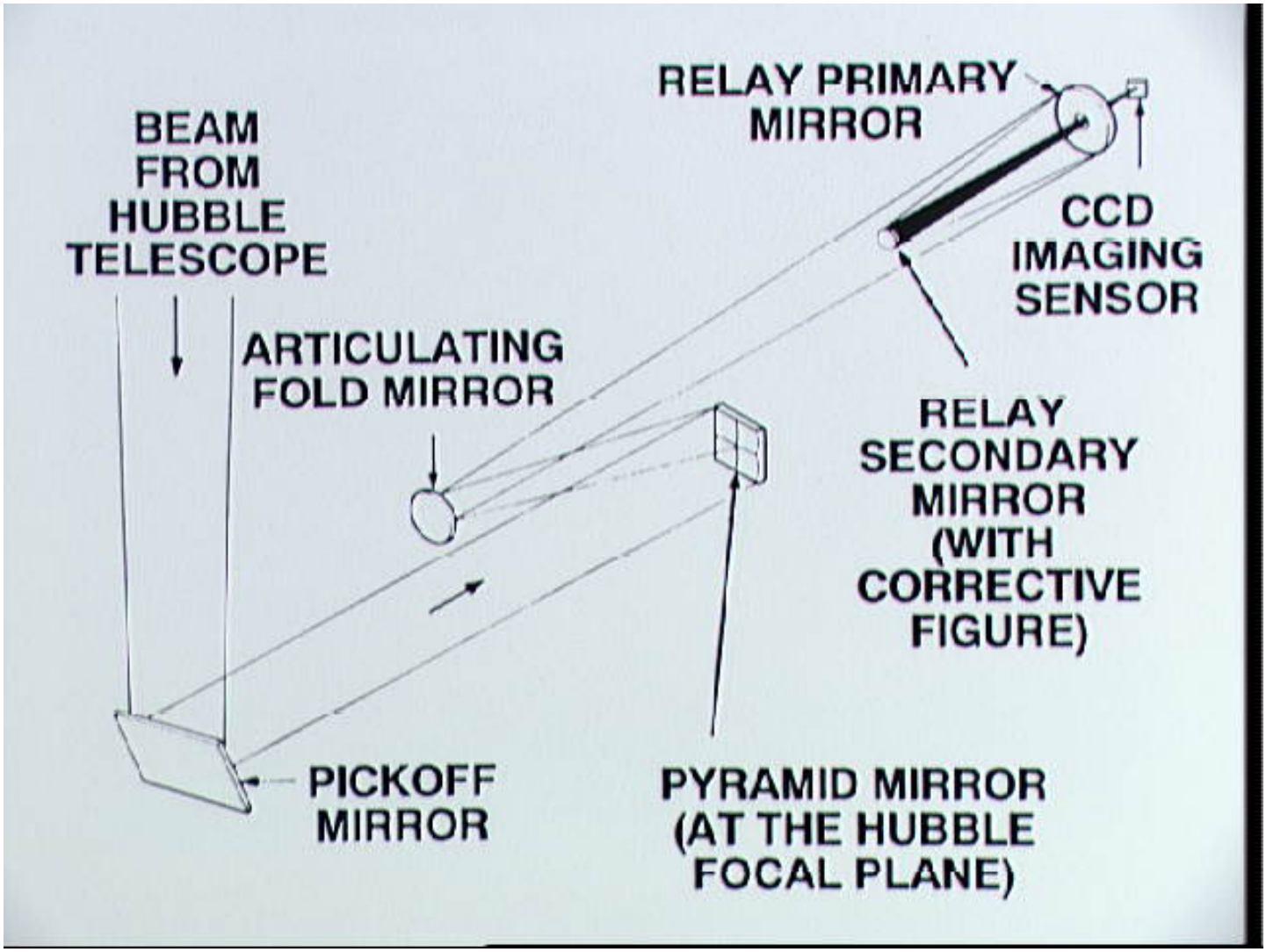
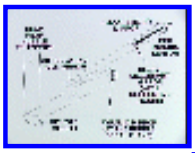

RELAY PRIMARY MIRROR
BEAM FROM HUBBLE TELESCOPE
CCD IMAGING SENSOR
ARTICULATING FOLD MIRROR
RELAY SECONDARY MIRROR (WITH CORRECTIVE FIGURE)
PICKOFF MIRROR
PYRAMID MIRROR (AT THE HUBBLE FOCAL PLANE)



NASA Photo ID: S93-33258 File Name: 10092975.jpg
Film Type: 4x5 BW Date Taken: 05/04/93
Title: Schematic diagram of light path in Wide Field Planetary Camera 2
Description:
An optical schematic diagram of one of the four channels of the Wide Field Planetary Camera 2(WF\PC-2) shows the path taken by beams from the Hubble Space Telescope (HST) before an image is formed at the camera's chargecoupled devices.
Subject terms:
CAMERAS
GRAPHIC ARTS
HUBBLE SPACE TELESCOPE
IMAGING TECHNIQUES
OPTICS
PHOTOGRAPHIC EQUIPMENT
SCHEMATICS
SPACEBORNE ASTRONOMY
VISUAL IMAGES

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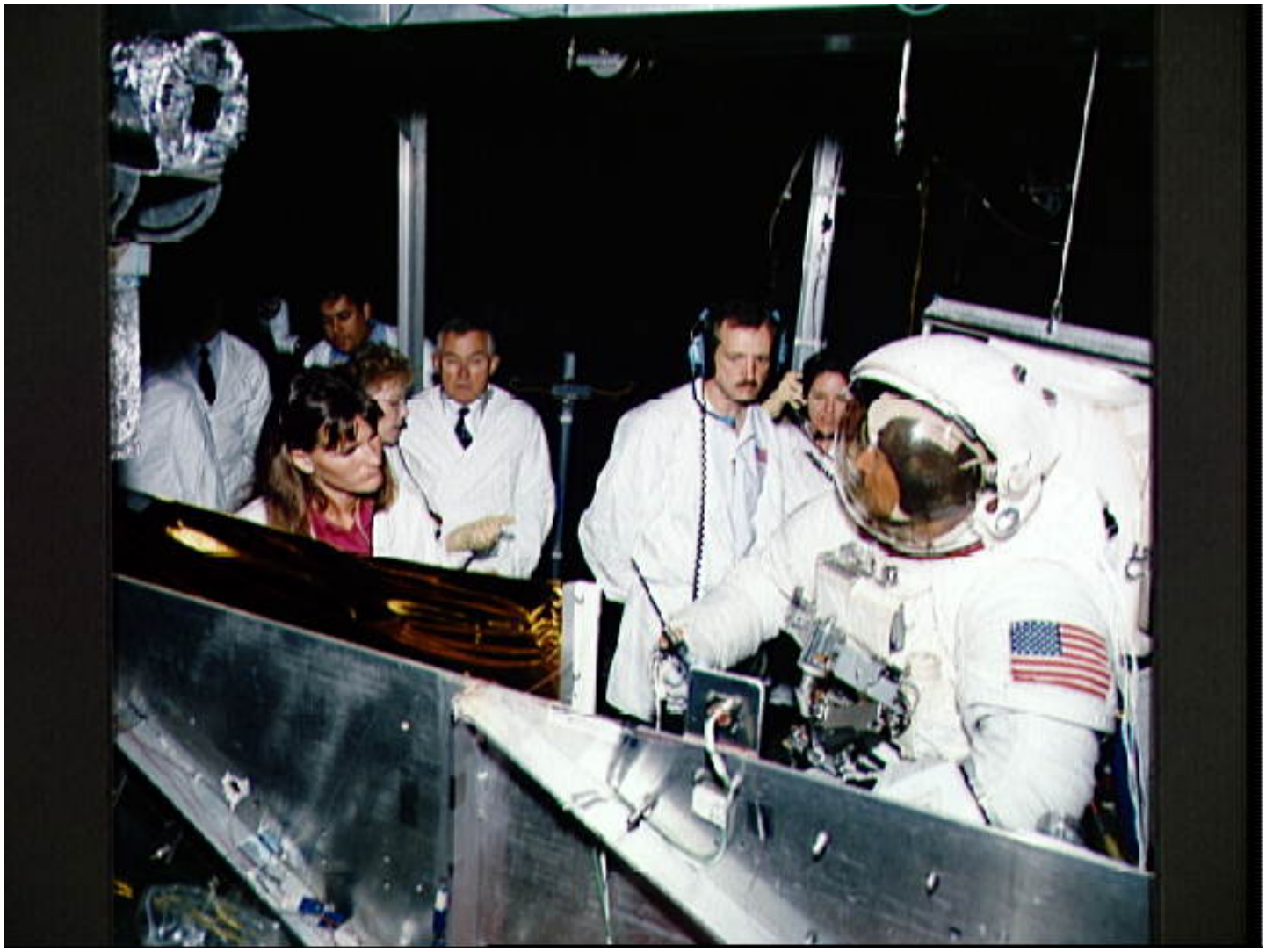

NASA Photo ID: S93-34001 File Name: 10092985.jpg
Film Type: 120mm Date Taken: 05/17/93
Title: Astronaut Story Musgrave in EMU in thermal vacuum chamber
Description:
Astronaut F. Story Musgrave, wearing a training version of the extravehicular activity unit (EMU), particpates in a dry run for tests in thermal vacuum chamber. The test, conducted in Chamber B ofthe Space Environment and Simulation Laboratory at JSC, verified that the tools being designed for the mission will work in the cold vacuum of space. Others pictured, from the left, are Andrea Tullar and Donna Fender, test directors; Leonard S. Nicholson, acting Director of engineering; and Astronauts Thomas D. Akers and Kathryn C. Thornton, STS-61 mission specialists, along with Musgrave.
Subject terms:
ASTRONAUT TRAINING
ASTRONAUTS
EXTRAVEHICULAR MOBILITY UNITS
STS-61
TOOLS
VACUUM CHAMBERS

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NASA Photo ID: S93-35696 File Name: 10092986.jpg
Film Type: 35mm Date Taken: 06/08/93
Title: STS-61 air-bearing floor training in bldg 9N with Astronaut Jeff Hoffman
Description:
Making use of the air-bearing floor in JSC's Shuttle mockup and integration laboratory, Astronaut Jeffrey A. Hoffman practices working with the Hubble Space Telescope's Wide Field/Planetary Camera (WF/PC). Changing out the large camera is one of several jobs to be performed by STS-61.

Subject terms:
ASTRONAUT TRAINING
ASTRONAUTS
CAMERAS
FRICTION REDUCTION
HUBBLE SPACE TELESCOPE
MOCK-UP
REPAIRING
SIMULATION
SIMULATORS
STS-61

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NASA Photo ID: S93-35697 File Name: 10092987.jpg
Film Type: 35mm Date Taken: 06/08/93
Title: STS-61 air-bearing floor training in bldg 9N with Astronaut Jeff Hoffman
Description:
Making use of the air-bearing floor in JSC's Shuttle mockup and integration laboratory, Astronaut Jeffrey A. Hoffman practices working with the Hubble Space Telescope's Wide Field/Planetary Camera (WF/PC). Changing out the large camera is one of several jobs to be performed by STS-61.

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NASA Photo ID: S93-35698 File Name: 10092988.jpg
Film Type: 35mm Date Taken: 06/08/93
Title: STS-61 air-bearing floor training in bldg 9N with Astronaut Jeff Hoffman
Description:
Making use of the air-bearing floor in JSC's Shuttle mockup and integration laboratory, Astronaut Jeffrey A. Hoffman practices working with the Hubble Space Telescope's Wide Field/Planetary Camera (WF/PC). Changing out the large camera is one of several jobs to be performed by STS-61.

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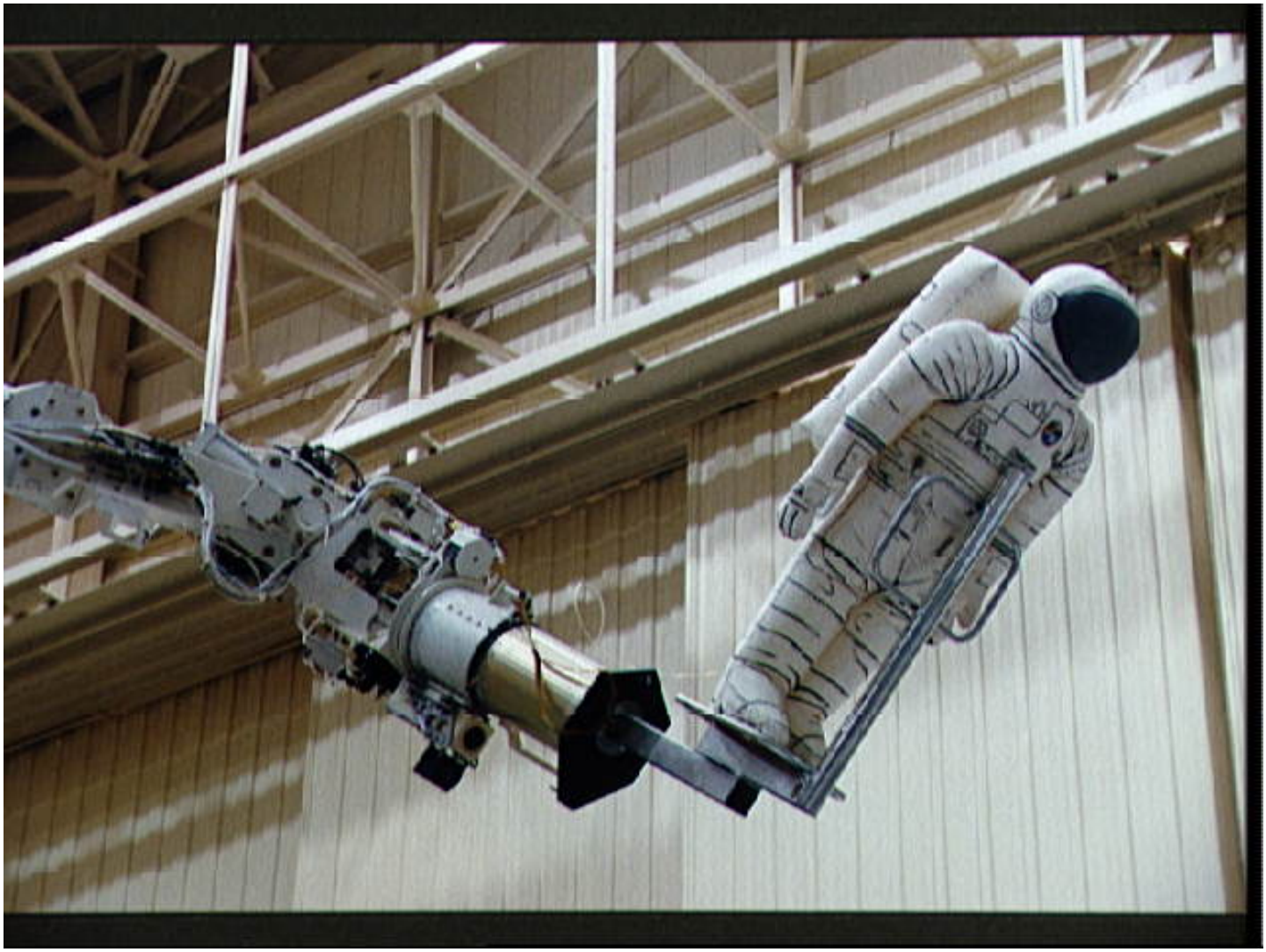

NASA Photo ID: S93-35699 File Name: 10092980.jpg
Film Type: 35mm Date Taken: 06/08/93
Title: STS-61 crewmembers training with the Remote Manipulator System
Description:
The Remote Manipulator System (RMS) eases a mannequin representing an astronaut into position for an STS-61 Hubble Space Telescope (HST) servicing task in the Space Shuttle mockup and integration laboratory at JSC (35699, 35703); Wide-angle view of the RMS easing a mannequin into position for work on the HST mock-up in bldg 9N (35700-1); Swiss scientist Claude Nicollier, mission specialist, works the control of the RMS during a training session in the manipulator development facility (MDF) in JSC's Shuttle mock-up and integration laboratory. Astronaut Kenneth D. Bowersox (left), pilot, is among the other crewmembers in training for the STS-61 HST servicing mission (35702).
Subject terms:
ASTRONAUT TRAINING
ASTRONAUTS
HUBBLE SPACE TELESCOPE
MOCK-UP
REMOTE MANIPULATOR SYSTEM
REPAIRING
SIMULATION
STS-61
TRAINING

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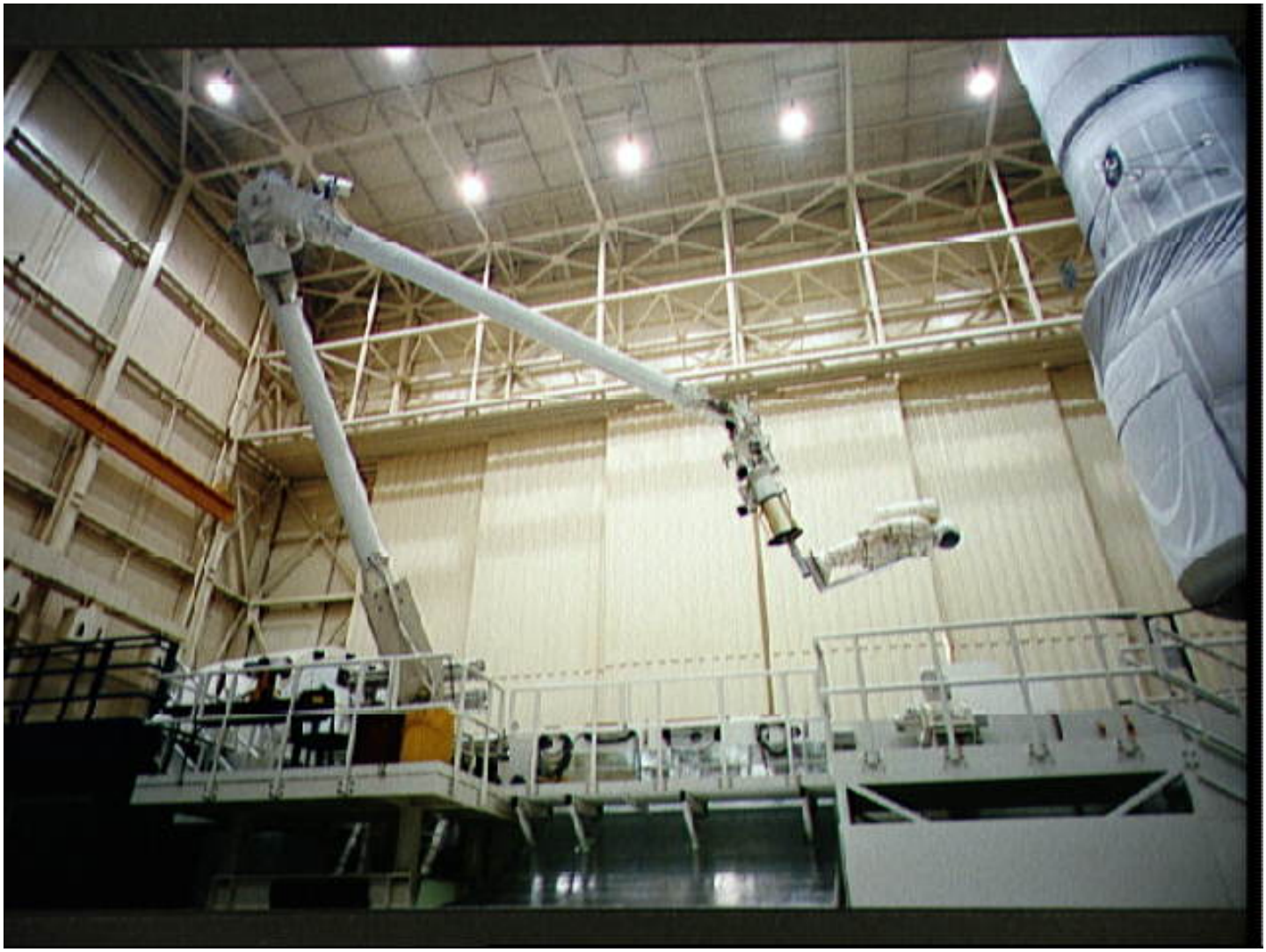

NASA Photo ID: S93-35700 File Name: 10092981.jpg
Film Type: 35mm Date Taken: 06/08/93
Title: STS-61 crewmembers training with the Remote Manipulator System
Description:
The Remote Manipulator System (RMS) eases a mannequin representing an astronaut into position for an STS-61 Hubble Space Telescope (HST) servicing task in the Space Shuttle mockup and integration laboratory at JSC (35699, 35703); Wide-angle view of the RMS easing a mannequin into position for work on the HST mock-up in bldg 9N (35700-1); Swiss scientist Claude Nicollier, mission specialist, works the control of the RMS during a training session in the manipulator development facility (MDF) in JSC's Shuttle mock-up and integration laboratory. Astronaut Kenneth D. Bowersox (left), pilot, is among the other crewmembers in training for the STS-61 HST servicing mission (35702).
Subject terms:

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NASA Photo ID: S93-35701 File Name: 10092982.jpg
Film Type: 35mm Date Taken: 06/08/93
Title: STS-61 crewmembers training with the Remote Manipulator System
Description:
The Remote Manipulator System (RMS) eases a mannequin representing an astronaut into position for an STS-61 Hubble Space Telescope (HST) servicing task in the Space Shuttle mockup and integration laboratory at JSC (35699, 35703); Wide-angle view of the RMS easing a mannequin into position for work on the HST mock-up in bldg 9N (35700-1); Swiss scientist Claude Nicollier, mission specialist, works the control of the RMS during a training session in the manipulator development facility (MDF) in JSC's Shuttle mock-up and integration laboratory. Astronaut Kenneth D. Bowersox (left), pilot, is among the other crewmembers in training for the STS-61 HST servicing mission (35702).
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NASA Photo ID: S93-35702 File Name: 10092983.jpg
Film Type: 35mm Date Taken: 06/08/93
Title: STS-61 crewmembers training with the Remote Manipulator System
Description:
The Remote Manipulator System (RMS) eases a mannequin representing an astronaut into position for an STS-61 Hubble Space Telescope (HST) servicing task in the Space Shuttle mockup and integration laboratory at JSC (35699, 35703); Wide-angle view of the RMS easing a mannequin into position for work on the HST mock-up in bldg 9N (35700-1); Swiss scientist Claude Nicollier, mission specialist, works the control of the RMS during a training session in the manipulator development facility (MDF) in JSC's Shuttle mock-up and integration laboratory. Astronaut Kenneth D. Bowersox (left), pilot, is among the other crewmembers in training for the STS-61 HST servicing mission (35702).
Subject terms:

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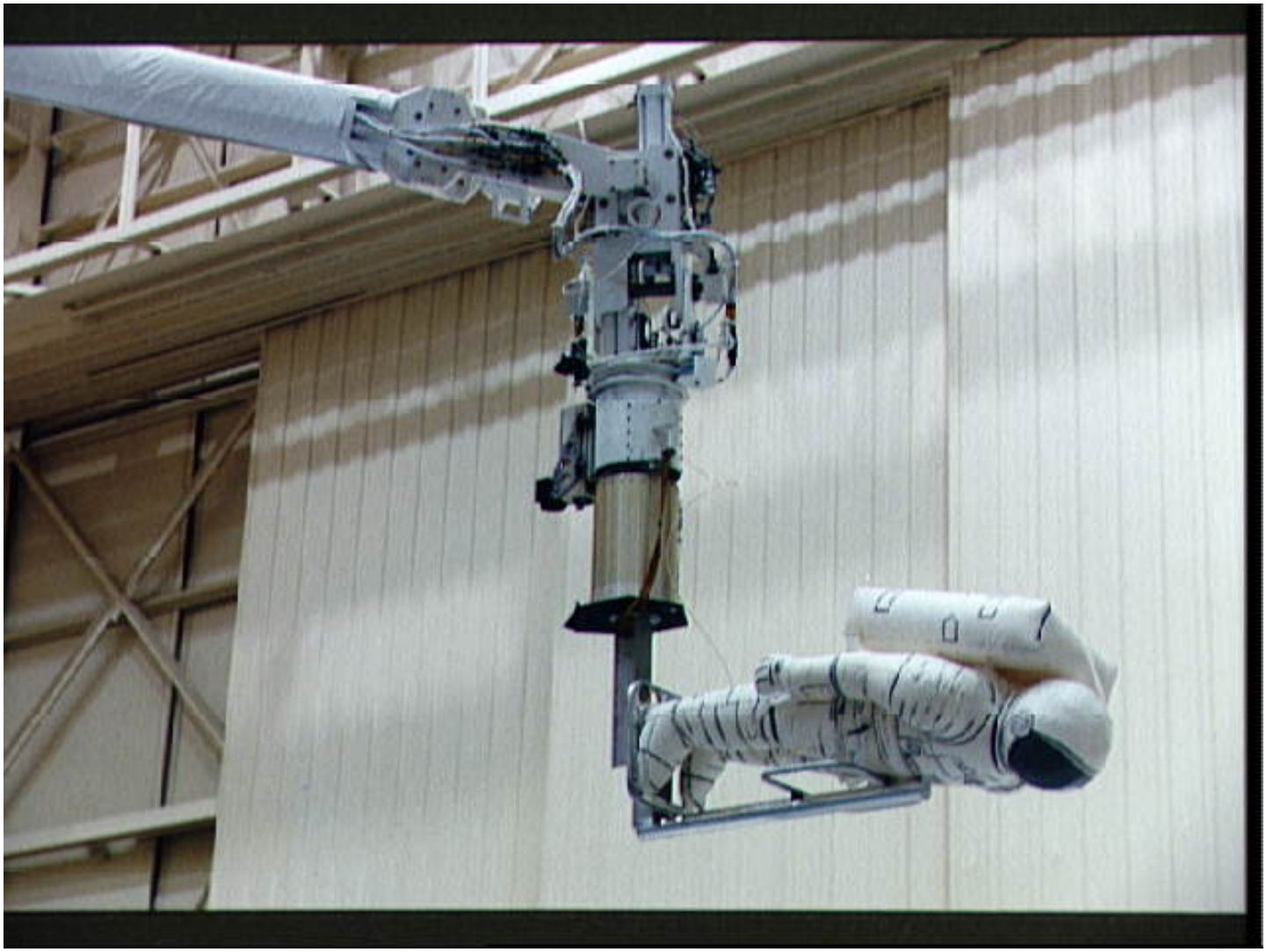

NASA Photo ID: S93-35703 File Name: 10092984.jpg
Film Type: 35mm Date Taken: 06/08/93
Title: STS-61 crewmembers training with the Remote Manipulator System
Description:
The Remote Manipulator System (RMS) eases a mannequin representing an astronaut into position for an STS-61 Hubble Space Telescope (HST) servicing task in the Space Shuttle mockup and integration laboratory at JSC (35699, 35703); Wide-angle view of the RMS easing a mannequin into position for work on the HST mock-up in bldg 9N (35700-1); Swiss scientist Claude Nicollier, mission specialist, works the control of the RMS during a training session in the manipulator development facility (MDF) in JSC's Shuttle mock-up and integration laboratory. Astronaut Kenneth D. Bowersox (left), pilot, is among the other crewmembers in training for the STS-61 HST servicing mission (35702).
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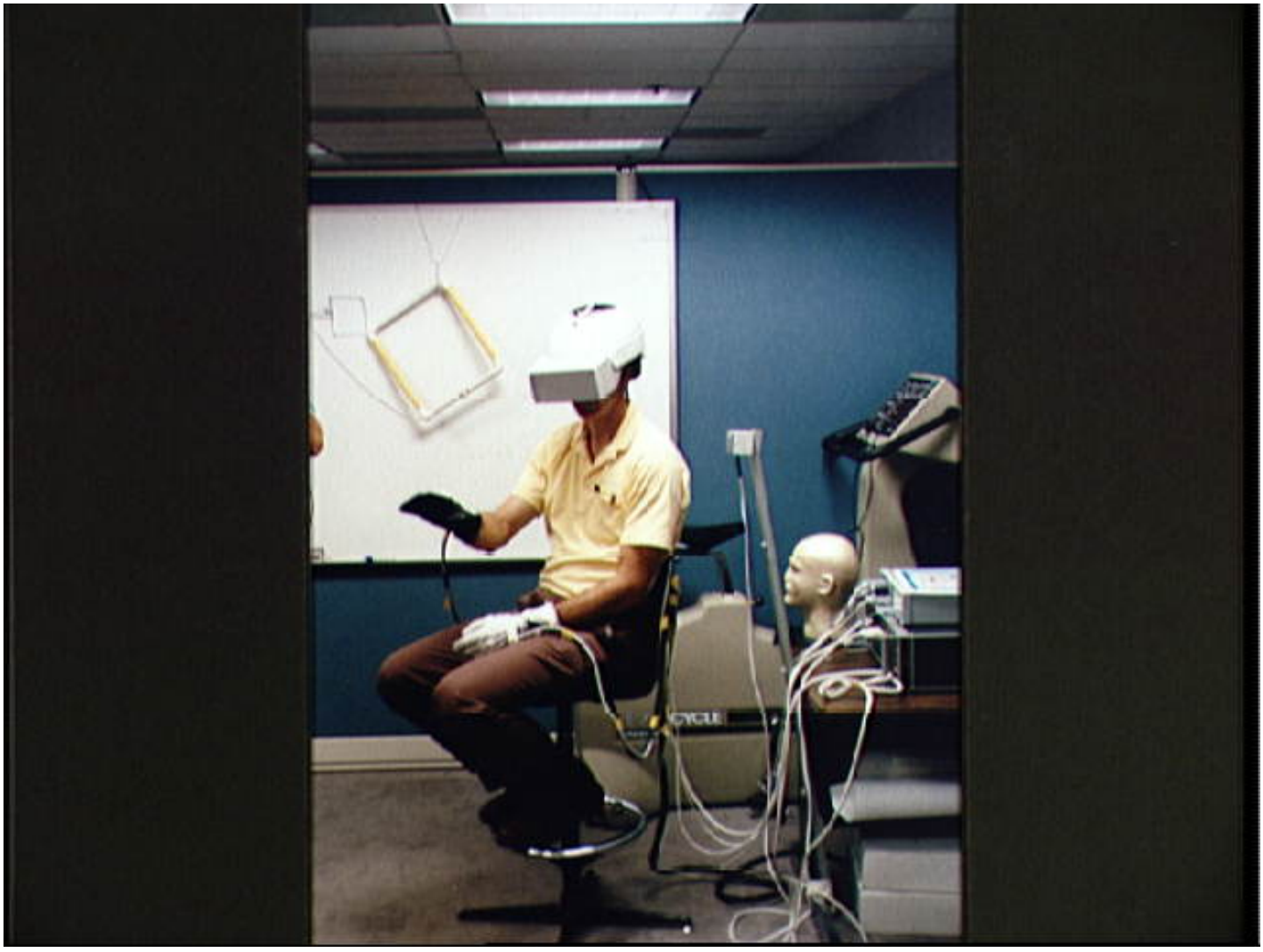

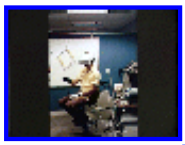

NASA Photo ID: S93-36890 File Name: 10092989.jpg
Film Type: 35mm Date Taken: 06/21/93
Title: STS-61 crew utilizing Virtual Reality in training for HST repair mission
Description:
Astronaut Jeffrey A. Hoffman, one of four crewmembers for STS-61 that will conduct scheduled spacewalks during the flight, wears a special helmet and gloves designed to assist in proper positioning near the telescope while on the end of the robot arm. Crewmembers are utilizing a new virtual reality training aid which assists in refining positioning patterns for Space Shuttle Endeavour's Remote Manipulator System (RMS) (36890); Astronaut Claude Nicollier looks at a computer display of the Shuttle's robot arm movements as Thomas D. Akers and Kathryn C. Thornton, mission specialists look on. Nicollier will be responsible for maneuvering the astronauts while they stand in a foot restraint on the end of the RMS arm (36891,36894); Hoffman wears a special helmet and gloves designed to assist in proper positioning near the telescope while on the end of the robot arm (35892); Nicollier looks at a computer display of the Shuttle's robot arm movements as Akers looks on (36893); While (l-r) Astronauts Kenneth Bowersox, Kathryn Thornton, Richard O. Covey and Thomas D. Akers watch, Nicollier moves the Robot arm to desired locations in the Shuttle's payload bay using the Virtual Reality program (36895); Bowersox takes his turn maneuvering the RMS while mission specialist Hoffman, wearing the Virtual Reality helmet, follows his own progress on the end of the robot arm. Crewmembers participating during the training session are (l-r) Astronauts Akers, Hoffman, Bowersox, Nicollier, Covey, and Thornton. In the background, David Homan, an engineer in the JSC Engineering Directorate's Automation and Robotics Division, looks on (36896).

Subject terms:
ASTRONAUT TRAINING
ASTRONAUTS
COMPUTER ASSISTED INSTRUCTION
COMPUTERIZED SIMULATION
GLOVES
HELMETS
MAN MACHINE SYSTEMS
STS-61
VISUAL PERCEPTION

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NASA Photo ID: S93-36891 File Name: 10092990.jpg
Film Type: 35mm Date Taken: 06/21/93
Title: STS-61 crew utilizing Virtual Reality in training for HST repair mission
Description:
Astronaut Jeffrey A. Hoffman, one of four crewmembers for STS-61 that will conduct scheduled spacewalks during the flight, wears a special helmet and gloves designed to assist in proper positioning near the telescope while on the end of the robot arm. Crewmembers are utilizing a new virtual reality training aid which assists in refining positioning patterns for Space Shuttle Endeavour's Remote Manipulator System (RMS) (36890); Astronaut Claude Nicollier looks at a computer display of the Shuttle's robot arm movements as Thomas D. Akers and Kathryn C. Thornton, mission specialists look on. Nicollier will be responsible for maneuvering the astronauts while they stand in a foot restraint on the end of the RMS arm (36891,36894); Hoffman wears a special helmet and gloves designed to assist in proper positioning near the telescope while on the end of the robot arm (35892); Nicollier looks at a computer display of the Shuttle's robot arm movements as Akers looks on (36893); While (l-r) Astronauts Kenneth Bowersox, Kathryn Thornton, Richard O. Covey and Thomas D. Akers watch, Nicollier moves the Robot arm to desired locations in the Shuttle's payload bay using the Virtual Reality program (36895); Bowersox takes his turn maneuvering the RMS while mission specialist Hoffman, wearing the Virtual Reality helmet, follows his own progress on the end of the robot arm. Crewmembers participating during the training session are (l-r) Astronauts Akers, Hoffman, Bowersox, Nicollier, Covey, and Thornton. In the background, David Homan, an engineer in the JSC Engineering Directorate's Automation and Robotics Division, looks on (36896).

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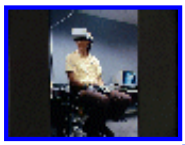

NASA Photo ID: S93-36892 File Name: 10092991.jpg
Film Type: 35mm Date Taken: 06/21/93
Title: STS-61 crew utilizing Virtual Reality in training for HST repair mission
Description:
Astronaut Jeffrey A. Hoffman, one of four crewmembers for STS-61 that will conduct scheduled spacewalks during the flight, wears a special helmet and gloves designed to assist in proper positioning near the telescope while on the end of the robot arm. Crewmembers are utilizing a new virtual reality training aid which assists in refining positioning patterns for Space Shuttle Endeavour's Remote Manipulator System (RMS) (36890); Astronaut Claude Nicollier looks at a computer display of the Shuttle's robot arm movements as Thomas D. Akers and Kathryn C. Thornton, mission specialists look on. Nicollier will be responsible for maneuvering the astronauts while they stand in a foot restraint on the end of the RMS arm (36891,36894); Hoffman wears a special helmet and gloves designed to assist in proper positioning near the telescope while on the end of the robot arm (35892); Nicollier looks at a computer display of the Shuttle's robot arm movements as Akers looks on (36893); While (l-r) Astronauts Kenneth Bowersox, Kathryn Thornton, Richard O. Covey and Thomas D. Akers watch, Nicollier moves the Robot arm to desired locations in the Shuttle's payload bay using the Virtual Reality program (36895); Bowersox takes his turn maneuvering the RMS while mission specialist Hoffman, wearing the Virtual Reality helmet, follows his own progress on the end of the robot arm. Crewmembers participating during the training session are (l-r) Astronauts Akers, Hoffman, Bowersox, Nicollier, Covey, and Thornton. In the background, David Homan, an engineer in the JSC Engineering Directorate's Automation and Robotics Division, looks on (36896).

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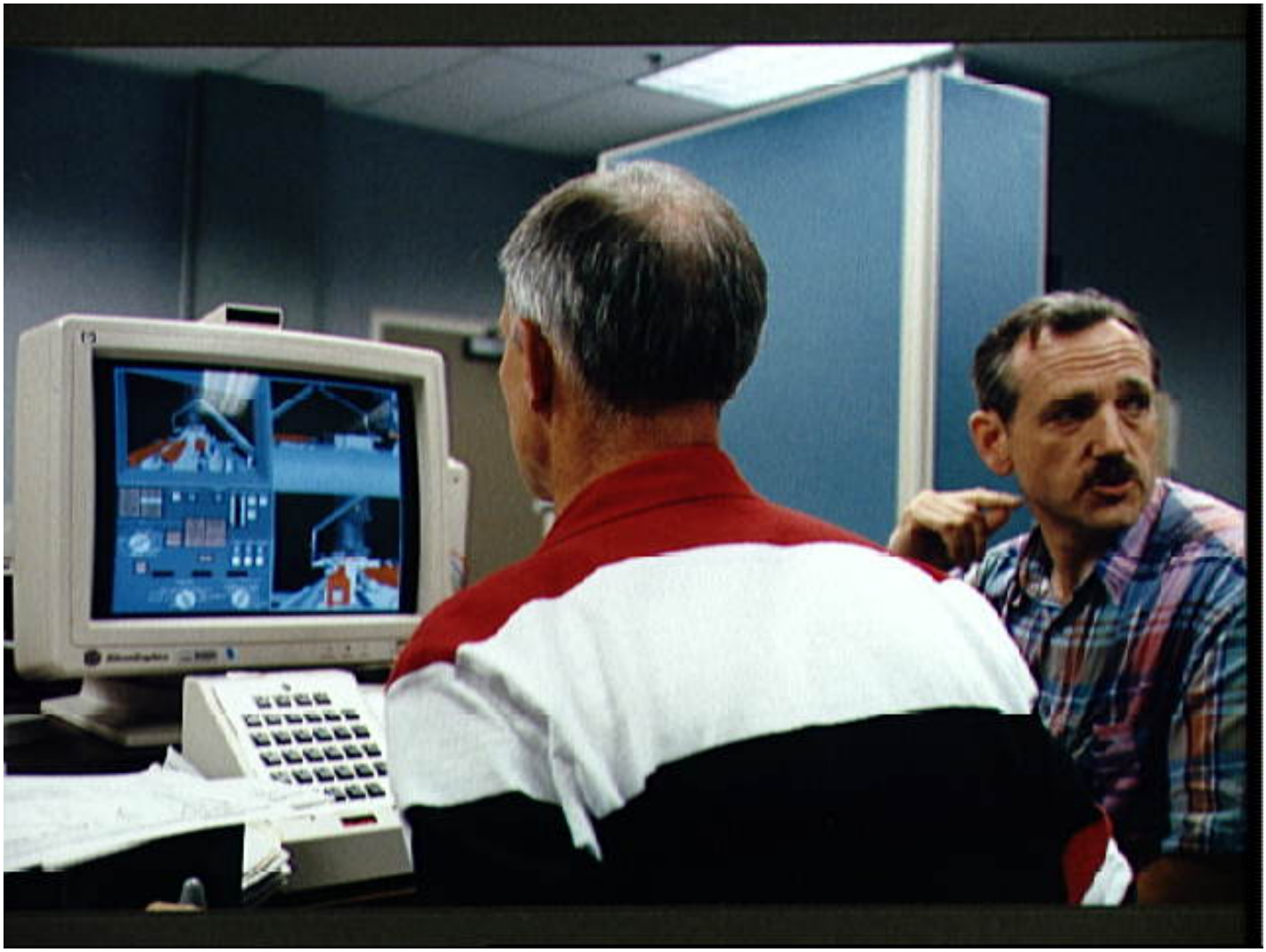

NASA Photo ID: S93-36893 File Name: 10092992.jpg
Film Type: 35mm Date Taken: 06/21/93
Title: STS-61 crew utilizing Virtual Reality in training for HST repair mission
Description:
Astronaut Jeffrey A. Hoffman, one of four crewmembers for STS-61 that will conduct scheduled spacewalks during the flight, wears a special helmet and gloves designed to assist in proper positioning near the telescope while on the end of the robot arm. Crewmembers are utilizing a new virtual reality training aid which assists in refining positioning patterns for Space Shuttle Endeavour's Remote Manipulator System (RMS) (36890); Astronaut Claude Nicollier looks at a computer display of the Shuttle's robot arm movements as Thomas D. Akers and Kathryn C. Thornton, mission specialists look on. Nicollier will be responsible for maneuvering the astronauts while they stand in a foot restraint on the end of the RMS arm (36891,36894); Hoffman wears a special helmet and gloves designed to assist in proper positioning near the telescope while on the end of the robot arm (35892); Nicollier looks at a computer display of the Shuttle's robot arm movements as Akers looks on (36893); While (l-r) Astronauts Kenneth Bowersox, Kathryn Thornton, Richard O. Covey and Thomas D. Akers watch, Nicollier moves the Robot arm to desired locations in the Shuttle's payload bay using the Virtual Reality program (36895); Bowersox takes his turn maneuvering the RMS while mission specialist Hoffman, wearing the Virtual Reality helmet, follows his own progress on the end of the robot arm. Crewmembers participating during the training session are (l-r) Astronauts Akers, Hoffman, Bowersox, Nicollier, Covey, and Thornton. In the background, David Homan, an engineer in the JSC Engineering Directorate's Automation and Robotics Division, looks on (36896).

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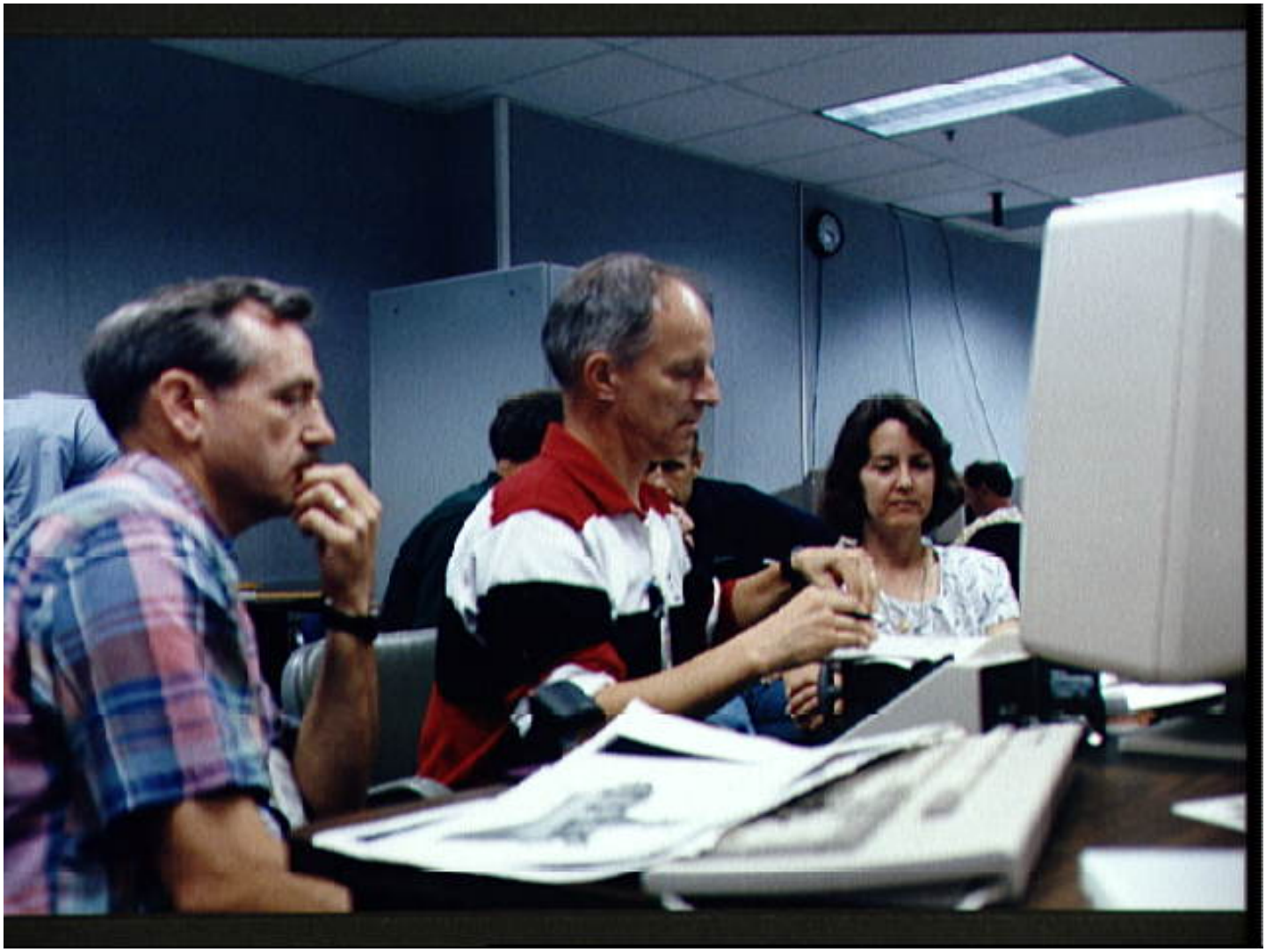

NASA Photo ID: S93-36894 File Name: 10092993.jpg
Film Type: 35mm Date Taken: 06/21/93
Title: STS-61 crew utilizing Virtual Reality in training for HST repair mission
Description:
Astronaut Jeffrey A. Hoffman, one of four crewmembers for STS-61 that will conduct scheduled spacewalks during the flight, wears a special helmet and gloves designed to assist in proper positioning near the telescope while on the end of the robot arm. Crewmembers are utilizing a new virtual reality training aid which assists in refining positioning patterns for Space Shuttle Endeavour's Remote Manipulator System (RMS) (36890); Astronaut Claude Nicollier looks at a computer display of the Shuttle's robot arm movements as Thomas D. Akers and Kathryn C. Thornton, mission specialists look on. Nicollier will be responsible for maneuvering the astronauts while they stand in a foot restraint on the end of the RMS arm (36891,36894); Hoffman wears a special helmet and gloves designed to assist in proper positioning near the telescope while on the end of the robot arm (35892); Nicollier looks at a computer display of the Shuttle's robot arm movements as Akers looks on (36893); While (l-r) Astronauts Kenneth Bowersox, Kathryn Thornton, Richard O. Covey and Thomas D. Akers watch, Nicollier moves the Robot arm to desired locations in the Shuttle's payload bay using the Virtual Reality program (36895); Bowersox takes his turn maneuvering the RMS while mission specialist Hoffman, wearing the Virtual Reality helmet, follows his own progress on the end of the robot arm. Crewmembers participating during the training session are (l-r) Astronauts Akers, Hoffman, Bowersox, Nicollier, Covey, and Thornton. In the background, David Homan, an engineer in the JSC Engineering Directorate's Automation and Robotics Division, looks on (36896).

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NASA Photo ID: S93-36895 File Name: 10092994.jpg
Film Type: 35mm Date Taken: 06/21/93
Title: STS-61 crew utilizing Virtual Reality in training for HST repair mission
Description:
Astronaut Jeffrey A. Hoffman, one of four crewmembers for STS-61 that will conduct scheduled spacewalks during the flight, wears a special helmet and gloves designed to assist in proper positioning near the telescope while on the end of the robot arm. Crewmembers are utilizing a new virtual reality training aid which assists in refining positioning patterns for Space Shuttle Endeavour's Remote Manipulator System (RMS) (36890); Astronaut Claude Nicollier looks at a computer display of the Shuttle's robot arm movements as Thomas D. Akers and Kathryn C. Thornton, mission specialists look on. Nicollier will be responsible for maneuvering the astronauts while they stand in a foot restraint on the end of the RMS arm (36891,36894); Hoffman wears a special helmet and gloves designed to assist in proper positioning near the telescope while on the end of the robot arm (35892); Nicollier looks at a computer display of the Shuttle's robot arm movements as Akers looks on (36893); While (l-r) Astronauts Kenneth Bowersox, Kathryn Thornton, Richard O. Covey and Thomas D. Akers watch, Nicollier moves the Robot arm to desired locations in the Shuttle's payload bay using the Virtual Reality program (36895); Bowersox takes his turn maneuvering the RMS while mission specialist Hoffman, wearing the Virtual Reality helmet, follows his own progress on the end of the robot arm. Crewmembers participating during the training session are (l-r) Astronauts Akers, Hoffman, Bowersox, Nicollier, Covey, and Thornton. In the background, David Homan, an engineer in the JSC Engineering Directorate's Automation and Robotics Division, looks on (36896).

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NASA Photo ID: S93-36896 File Name: 10092995.jpg
Film Type: 35mm Date Taken: 06/21/93
Title: STS-61 crew utilizing Virtual Reality in training for HST repair mission
Description:
Astronaut Jeffrey A. Hoffman, one of four crewmembers for STS-61 that will conduct scheduled spacewalks during the flight, wears a special helmet and gloves designed to assist in proper positioning near the telescope while on the end of the robot arm. Crewmembers are utilizing a new virtual reality training aid which assists in refining positioning patterns for Space Shuttle Endeavour's Remote Manipulator System (RMS) (36890); Astronaut Claude Nicollier looks at a computer display of the Shuttle's robot arm movements as Thomas D. Akers and Kathryn C. Thornton, mission specialists look on. Nicollier will be responsible for maneuvering the astronauts while they stand in a foot restraint on the end of the RMS arm (36891,36894); Hoffman wears a special helmet and gloves designed to assist in proper positioning near the telescope while on the end of the robot arm (35892); Nicollier looks at a computer display of the Shuttle's robot arm movements as Akers looks on (36893); While (l-r) Astronauts Kenneth Bowersox, Kathryn Thornton, Richard O. Covey and Thomas D. Akers watch, Nicollier moves the Robot arm to desired locations in the Shuttle's payload bay using the Virtual Reality program (36895); Bowersox takes his turn maneuvering the RMS while mission specialist Hoffman, wearing the Virtual Reality helmet, follows his own progress on the end of the robot arm. Crewmembers participating during the training session are (l-r) Astronauts Akers, Hoffman, Bowersox, Nicollier, Covey, and Thornton. In the background, David Homan, an engineer in the JSC Engineering Directorate's Automation and Robotics Division, looks on (36896).

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SYSTEM 1
SYSTEM 2
MSFC

NASA Photo ID: S93-39735 File Name: 10092996.jpg
Film Type: 35mm Date Taken: 07/26/93
Title: STS-61 crewmembers participate in neutral buoyancy training at MSFC
Description:
Astronaut Thomas D. Akers gets assistance in donning a training version of the Shuttle extravehicular mobility unit (EMU) space suit prior to a training session in the Neutral Buoyancy Simulator at Marshall Space Flight Center (MSFC) (39735); Astronaut Kathryn C. Thornton (foreground) and Thomas Akers, STS-61 mission specialists scheduled for extravehicular activity (EVA) duty, prepare for an underwater rehearsal session. Thornton recieves assistance from a technician in donning her EMU gloves (39736).

Subject terms:
ASTRONAUT TRAINING
ASTRONAUTS
EXTRAVEHICULAR MOBILITY UNITS
HUBBLE SPACE TELESCOPE
NEUTRAL BUOYANCY SIMULATION
STS-61

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NASA Photo ID: S93-39736 File Name: 10092997.jpg
Film Type: 35mm Date Taken: 07/26/93
Title: STS-61 crewmembers participate in neutral buoyancy training at MSFC
Description:
Astronaut Thomas D. Akers gets assistance in donning a training version of the Shuttle extravehicular mobility unit (EMU) space suit prior to a training session in the Neutral Buoyancy Simulator at Marshall Space Flight Center (MSFC) (39735); Astronaut Kathryn C. Thornton (foreground) and Thomas Akers, STS-61 mission specialists scheduled for extravehicular activity (EVA) duty, prepare for an underwater rehearsal session. Thornton recieves assistance from a technician in donning her EMU gloves (39736).

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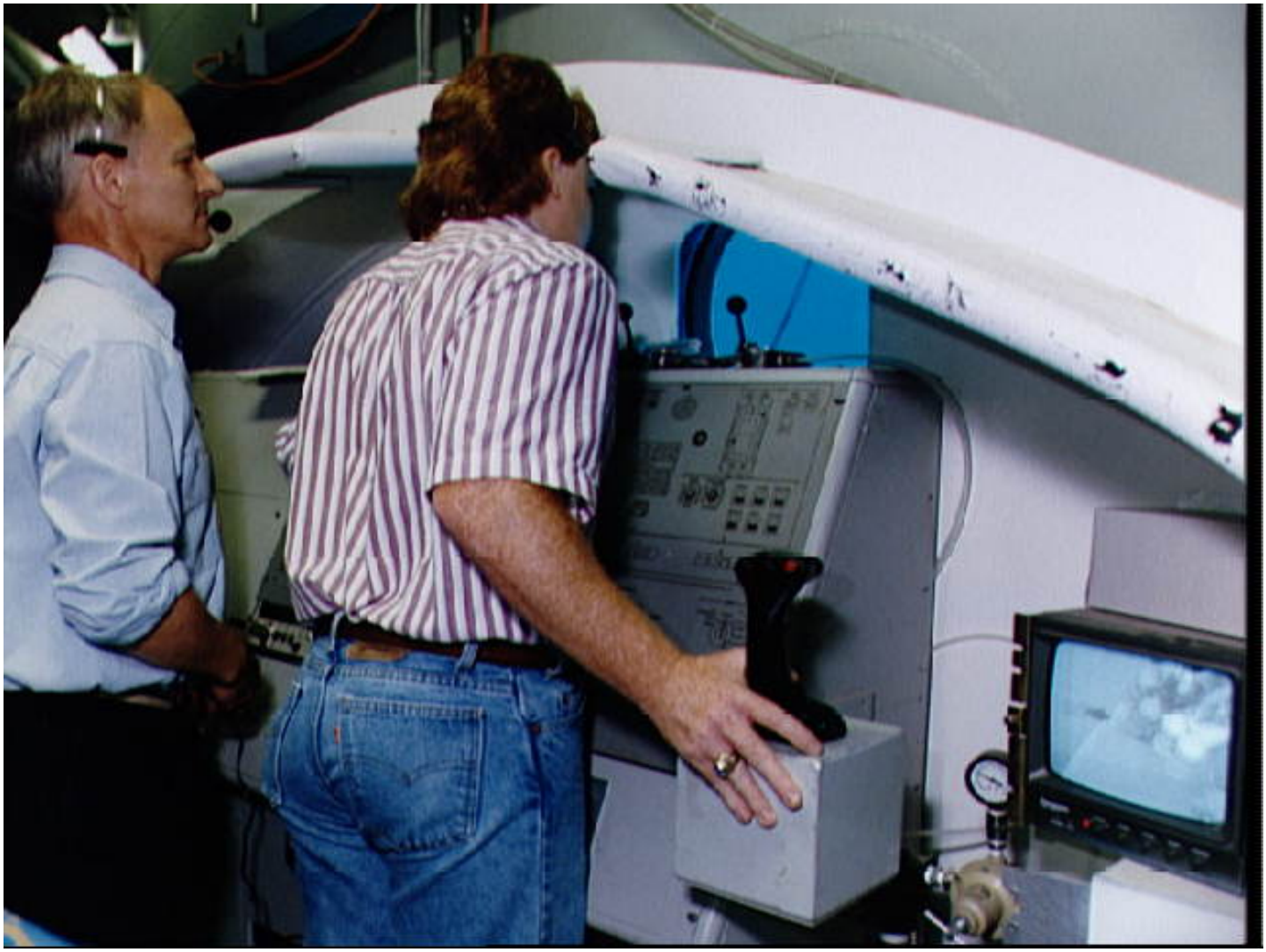

NASA Photo ID: S93-39738 File Name: 10092999.jpg
Film Type: 35mm Date Taken: 07/26/93
Title: Astronaut Claude Nicollier participates in RMS training at MSFC
Description:
Swiss scientits Claude Nicollier (left), STS-61 mission specialist, waits his turn at the controls for the remote manipulator system (RMS) during a training session in the Neutral Buoyancy Simulator at Marshall Space Flight Center (MSFC). Mark Norman of MSFC has control of the RMS in this frame.

Subject terms:
ASTRONAUT TRAINING
ASTRONAUTS
CREW WORKSTATIONS
HUBBLE SPACE TELESCOPE
NEUTRAL BUOYANCY SIMULATION
REMOTE MANIPULATOR SYSTEM
STS-61

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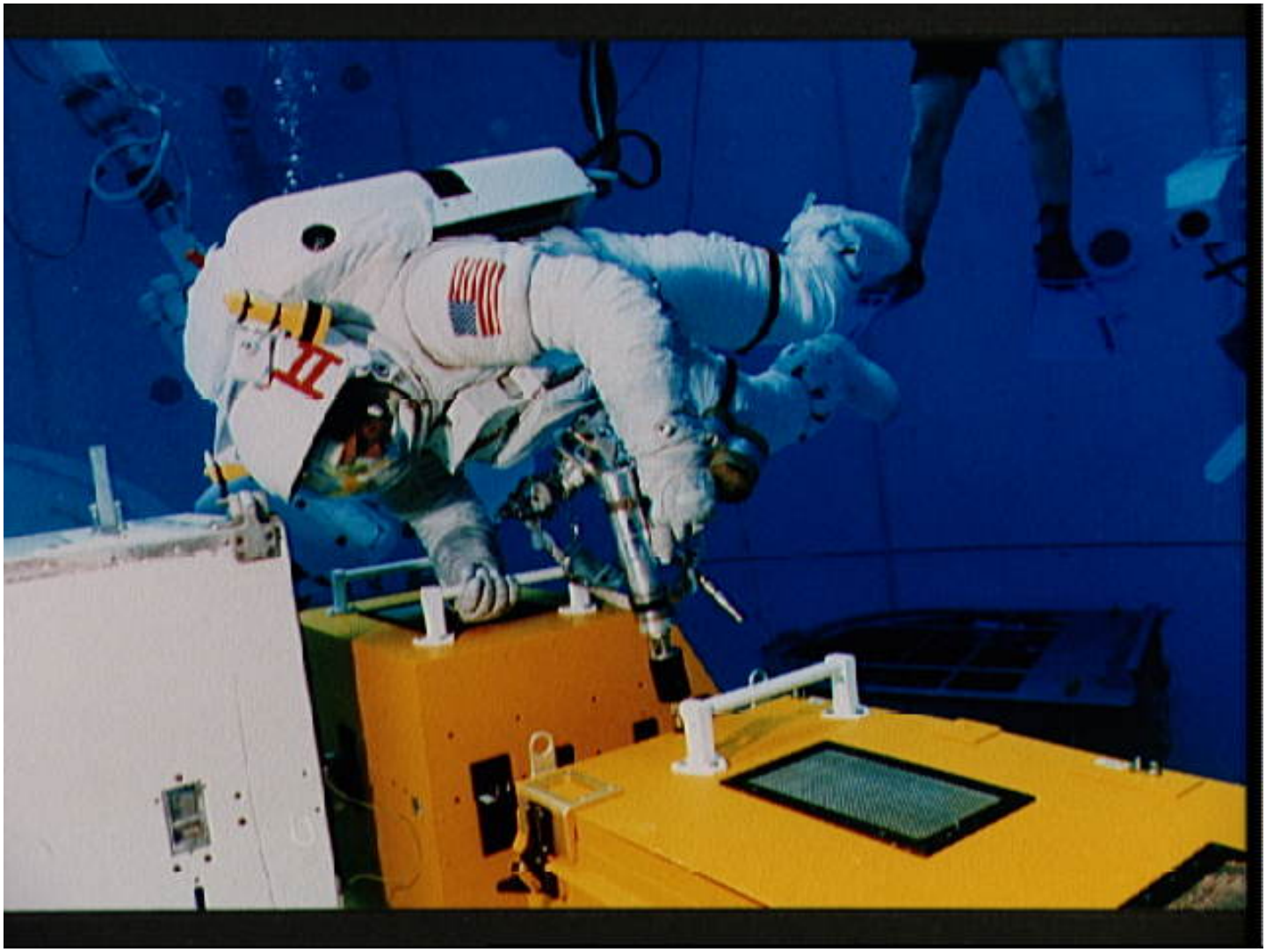

NASA Photo ID: S93-39739 File Name: 10093000.jpg
Film Type: 35mm Date Taken: 07/26/93
Title: Astronaut Jeffrey Hoffman participates in HST repair training at MSFC
Description:
Astronaut Jeffrey A. Hoffman uses a power wrench to open a stowage facility during a training session in the Neutral Buoyancy Simulator at Marshall Space Flight Center (MSFC).
Subject terms:
ASTRONAUT TRAINING
ASTRONAUTS
CREW WORKSTATIONS
HUBBLE SPACE TELESCOPE
NEUTRAL BUOYANCY SIMULATION
REMOTE MANIPULATOR SYSTEM
STS-61
TOOLS

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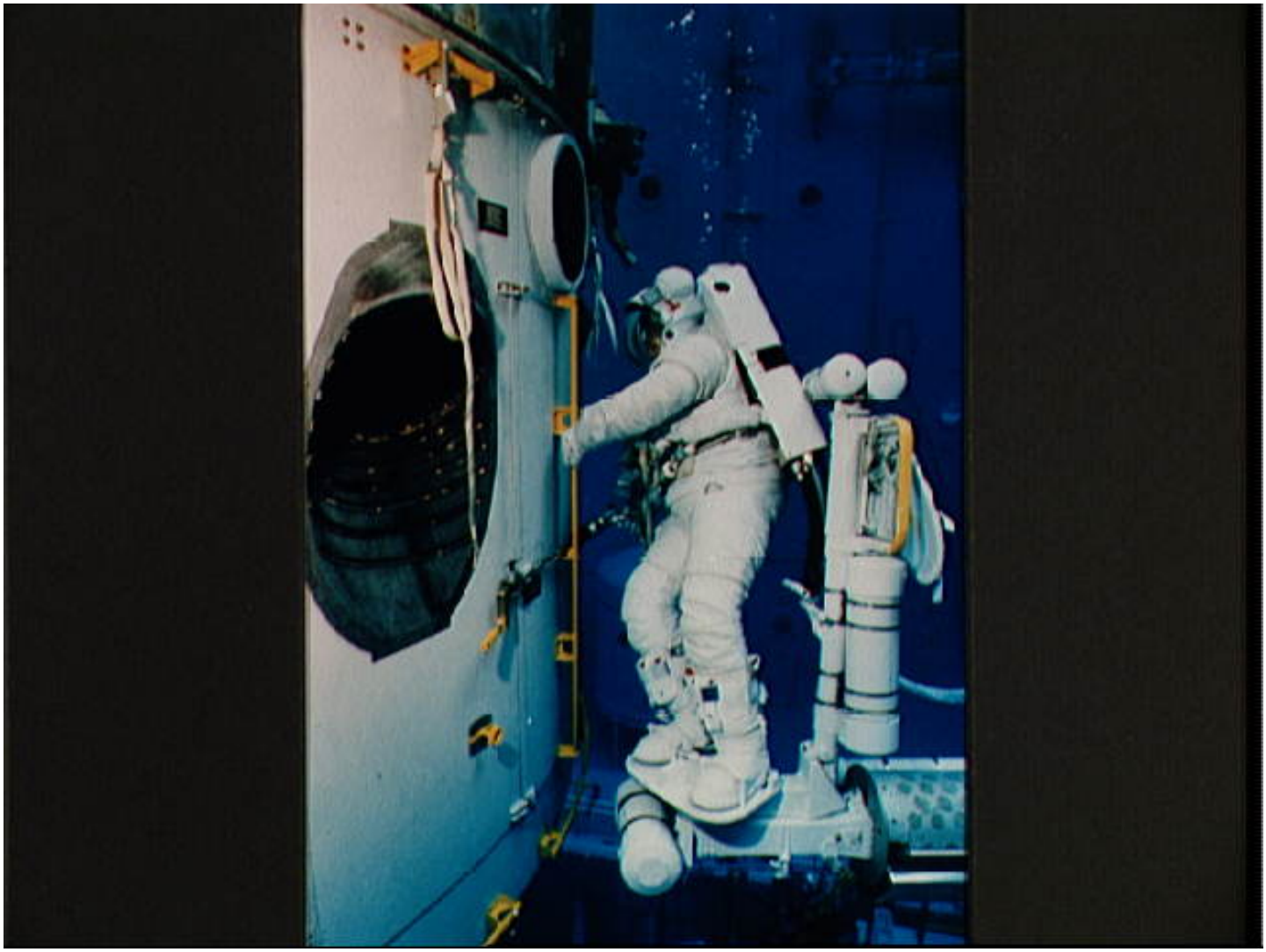

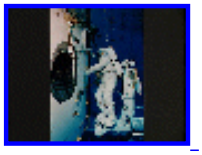

NASA Photo ID: S93-39740 File Name: 10093001.jpg
Film Type: 35mm Date Taken: 07/26/93
Title: STS-61 crew participates in HST optical correction training at MSFC
Description:
Astronaut Thomas D. Akers uses a power wrench to deploy one of the tools on the Hubble Space Telescope (HST) during a training session in the Neutral Buoyancy Simulator at Marshall Space Flight Center.
Subject terms:
ASTRONAUT TRAINING
ASTRONAUTS
EXTAVEHICULAR MOBILITY UNITS
HUBBLE SPACE TELESCOPE
NEUTRAL BUOYANCY SIMULATION
REPAIRING
SIMULATORS
STS-61
TOOLS

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NASA Photo ID: S93-40688 File Name: 10092964.jpg
Film Type: 4x5 Date Taken: 07/01/93
Title: Portrait of ESA/Astronaut Claude Nicollier
Description:
Portrait of ESA/Astronaut Claude Nicollier wearing an orange partial pressure flight suit with helmet.
Subject terms:
ASTRONAUTS
EUROPEAN SPACE AGENCY
PORTRAIT

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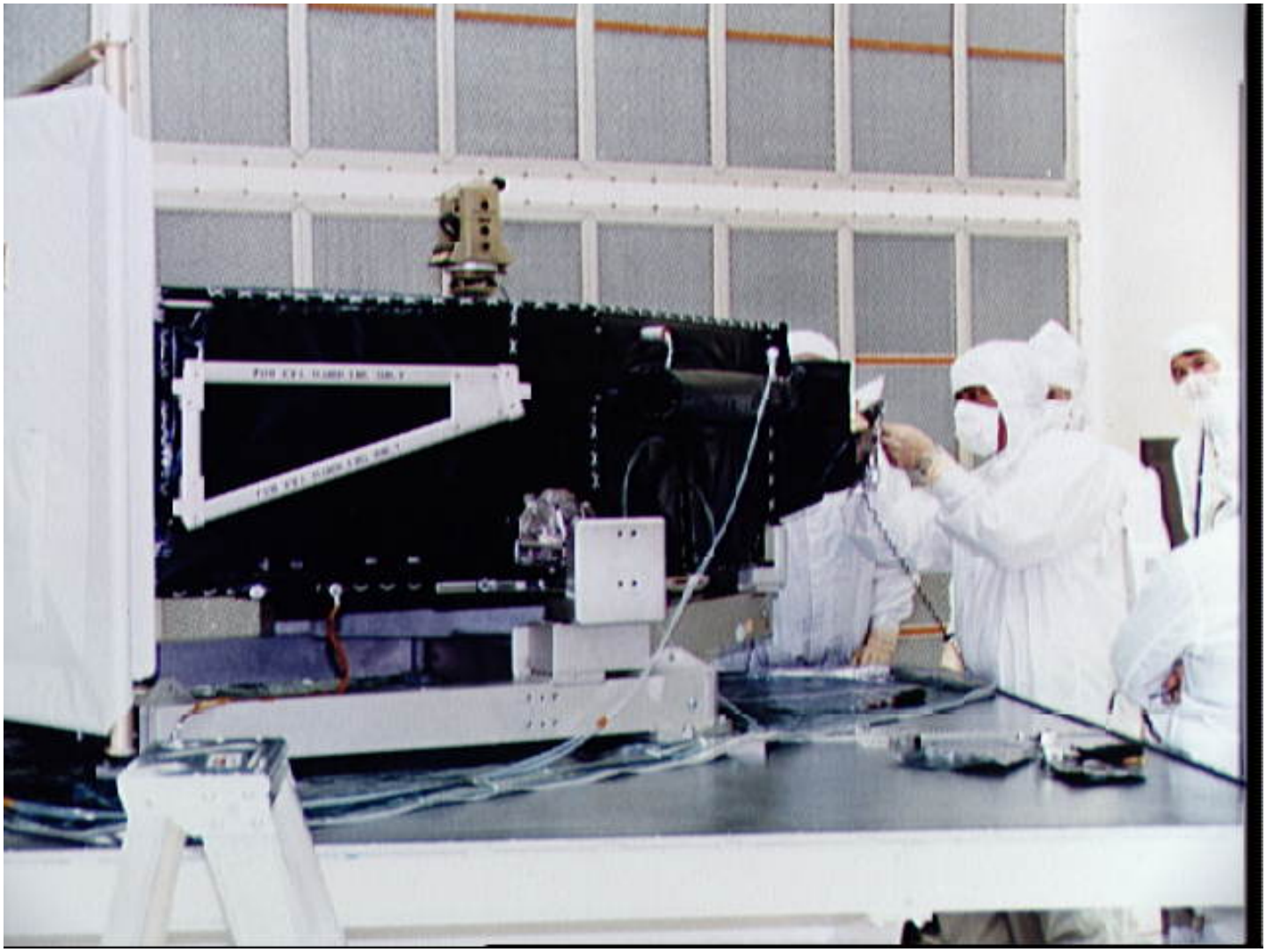

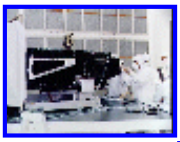

NASA Photo ID: S93-43620 File Name: 10093003.jpg
Film Type: 4x5 Date Taken: 09/03/93
Title: Workers at Cape Canaveral install mirror in Wide Field/Planetary Camera II
Description:
Workers in bldg AE, Cape Canaveral Air Force Station, install a mirror on the Wide Field/Planetary Camera II as part of the preparations for launch later this year on the first servicing mission of the Hubble Space Telescope (HST).
Subject terms:
CAMERAS
HUBBLE SPACE TELESCOPE
MIRRORS
PREFLIGHT OPERATIONS
REPAIRING
STS-61

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NASA Photo ID: S93-43752 File Name: 10093004.jpg
Film Type: 35mm Date Taken: 09/07/93
Title: Astronauts Ross and Helms at CAPCOM station during STS-61 simulations
Description:
Astronauts Jerry L. Ross and Susan J. Helms are pictured at the Spacecraft Communicators console during joint integrated simulations for the STS-61 mission. Astronauts assigned to extravehicular activity (EVA) tasks with the Hubble Space Telescope (HST) were simultaneously rehearsing in a neutral buoyancy tank at the Marshall Space Flight Center (MSFC) in Alabama.
Subject terms:
ASTRONAUT TRAINING
ASTRONAUTS
CONSOLES
IN-FLIGHT MONITORING
INTEGRATED MISSION CONTROL CENTER
PERSONNEL
SIMULATION
STS-61

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EVA

NASA Photo ID: S93-43756 File Name: 10093005.jpg
Film Type: 35mm Date Taken: 09/07/93
Title: EVA console personnel during STS-61 simulations
Description:
Susan P. Rainwater monitors an extravehicular activity (EVA) simulation from the EVA console at JSC's Mission Control Center (MCC) during joint integrated simulations for the STS-61 mission. Astronauts assigned to extravehicular activity (EVA) tasks with the Hubble Space Telescope (HST) were simultaneously rehearsing in a neutral buoyancy tank at the Marshall Space Flight Center (MSFC) in Alabama.
Subject terms:
ASTRONAUT TRAINING
ASTRONAUTS
CONSOLES
IN-FLIGHT MONITORING
INTEGRATED MISSION CONTROL CENTER
PERSONNEL
SIMULATION
STS-61

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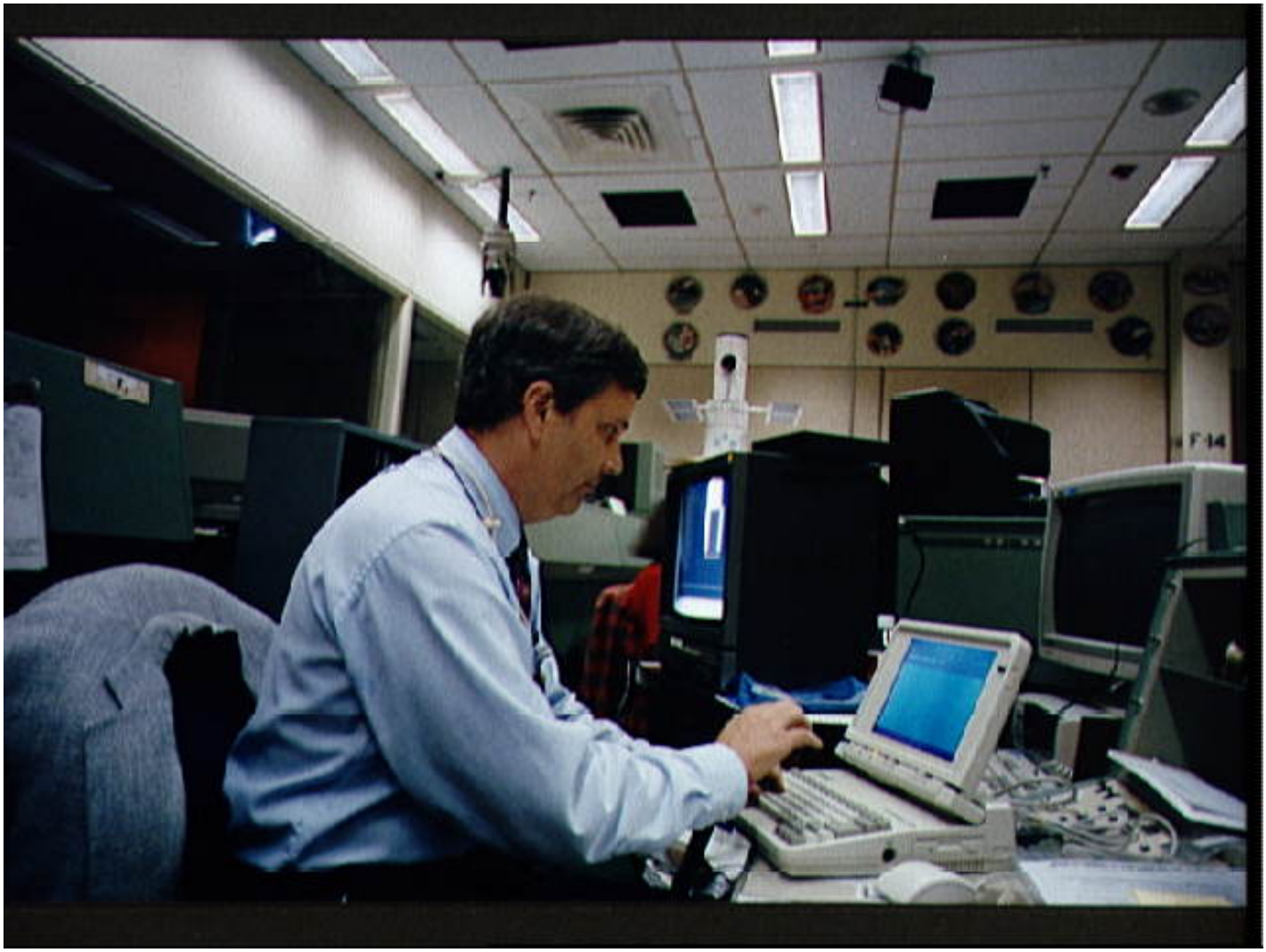

NASA Photo ID: S93-43757 File Name: 10093006.jpg
Film Type: 35mm Date Taken: 09/07/93
Title: Flight Director works out problem during STS-61 simulations
Description:
Flight Director Robert E. Castle Jr. works out a problem during joint integrated simulations for the STS-61 mission. Astronauts assigned to extravehicular activity (EVA) tasks with the Hubble Space Telescope (HST) were simultaneously rehearsing in a neutral buoyancy tank at the Marshall Space Flight Center (MSFC) in Alabama.
Subject terms:
ASTRONAUT TRAINING
ASTRONAUTS
CONSOLES
IN-FLIGHT MONITORING
INTEGRATED MISSION CONTROL CENTER
PERSONNEL
SIMULATION
STS-61

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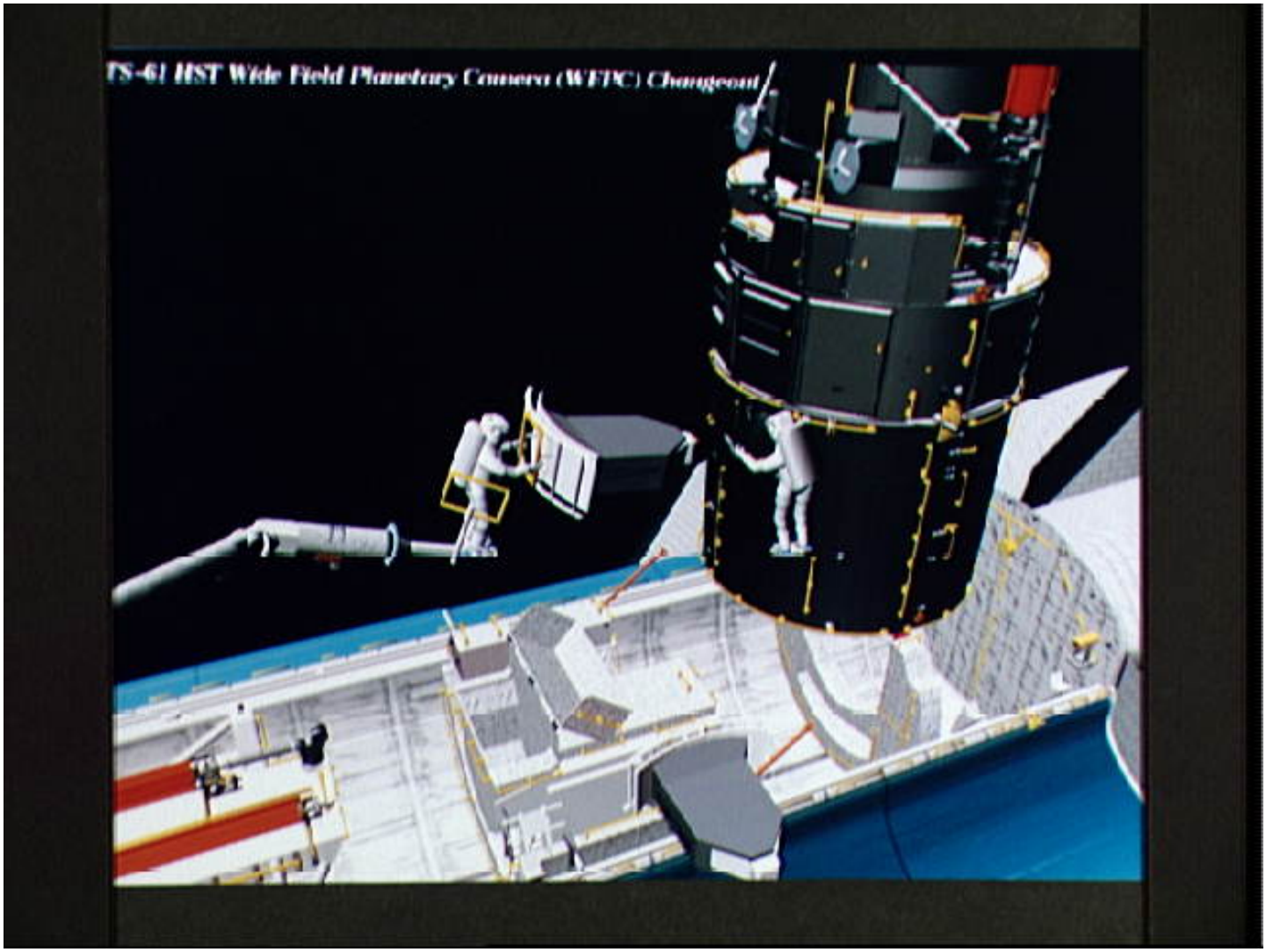
STS-61 HST Wide Field Planetary Camera (WFPC) Changeout

NASA Photo ID: S93-48699 File Name: 10093007.jpg
Film Type: 35mm Date Taken: 11/12/93
Title: Computer-generated scenes depicting the HST capture and EVA repair mission
Description:
Computer generated scenes depicting the Hubble Space Telescope capture and a sequence of planned events on the planned extravehicular activity (EVA). Scenes include the Remote Manipulator System (RMS) arm assisting two astronauts changing out the Wide Field/Planetary Camera (WF/PC) (48699); RMS arm assisting in the temporary mating of the orbiting telescope to the flight support system in Endeavour's cargo bay (48700); Endeavour's RMS arm assisting in the "capture" of the orbiting telescope (48701); Two astronauts changing out the telescope's coprocessor (48702); RMS arm assistign two astronauts replacing one of the telescope's electronic control units (48703); RMS assisting two astronauts replacing the fuse plugs on the telescope's Power Distribution Unit (PDU) (48704); The telescope's High Resolution Spectrograph (HRS) kit is depicted in this scene (48705); Two astronauts during the removal of the high speed photometer and the installation of the COSTAR instrument (48706); Two astronauts, standing on the RMS, during installation of one of the Magnetic Sensing System (MSS) (48707); High angle view of the orbiting Space Shuttle Endeavour with its cargo bay doors open, revealing the bay's pre-capture configuration. Seen are, from the left, the Solar Array Carrier, the ORU Carrier and the flight support system (48708); Two astronauts performing the replacement of HST's Rate Sensor Units (RSU) (48709); The RMS arm assisting two astronauts with the replacement of the telescope's solar array panels (48710); Two astronauts replacing the telescope's Solar Array Drive Electronics (SADE) (48711).

Subject terms:
CAMERAS
COMPUTER GRAPHICS
DRAWINGS
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
HUBBLE SPACE TELESCOPE
REMOTE MANIPULATOR SYSTEM
REPAIRING
STS-61
VISUAL AIDS

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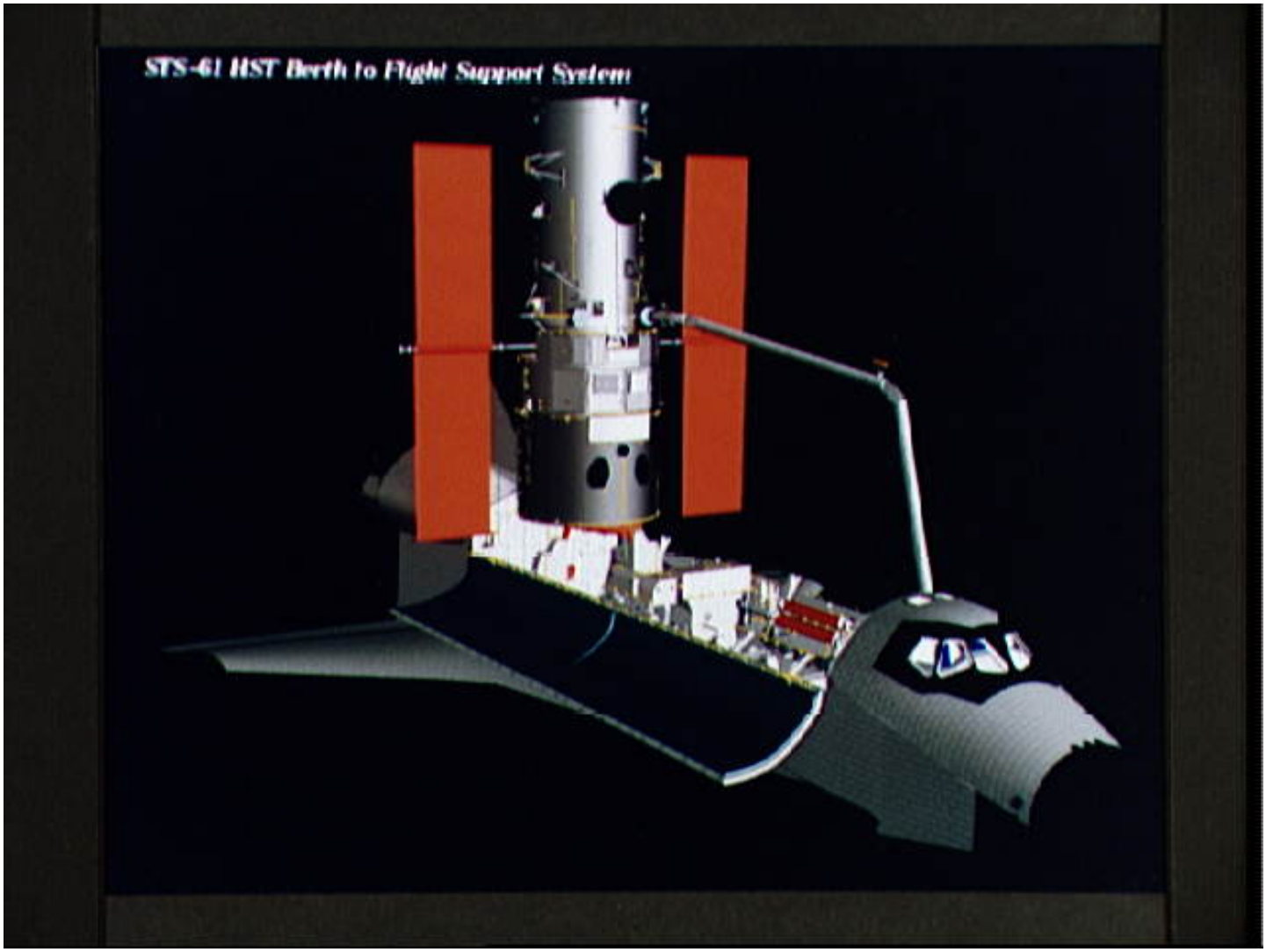
STS-61 HST Berth to Flight Support System

NASA Photo ID: S93-48700 File Name: 10093008.jpg
Film Type: 35mm Date Taken: 11/12/93
Title: Computer-generated scenes depicting the HST capture and EVA repair mission
Description:
Computer generated scenes depicting the Hubble Space Telescope capture and a sequence of planned events on the planned extravehicular activity (EVA). Scenes include the Remote Manipulator System (RMS) arm assisting two astronauts changing out the Wide Field/Planetary Camera (WF/PC) (48699); RMS arm assisting in the temporary mating of the orbiting telescope to the flight support system in Endeavour's cargo bay (48700); Endeavour's RMS arm assisting in the "capture" of the orbiting telescope (48701); Two astronauts changing out the telescope's coprocessor (48702); RMS arm assistign two astronauts replacing one of the telescope's electronic control units (48703); RMS assisting two astronauts replacing the fuse plugs on the telescope's Power Distribution Unit (PDU) (48704); The telescope's High Resolution Spectrograph (HRS) kit is depicted in this scene (48705); Two astronauts during the removal of the high speed photometer and the installation of the COSTAR instrument (48706); Two astronauts, standing on the RMS, during installation of one of the Magnetic Sensing System (MSS) (48707); High angle view of the orbiting Space Shuttle Endeavour with its cargo bay doors open, revealing the bay's pre-capture configuration. Seen are, from the left, the Solar Array Carrier, the ORU Carrier and the flight support system (48708); Two astronauts performing the replacement of HST's Rate Sensor Units (RSU) (48709); The RMS arm assisting two astronauts with the replacement of the telescope's solar array panels (48710); Two astronauts replacing the telescope's Solar Array Drive Electronics (SADE) (48711).

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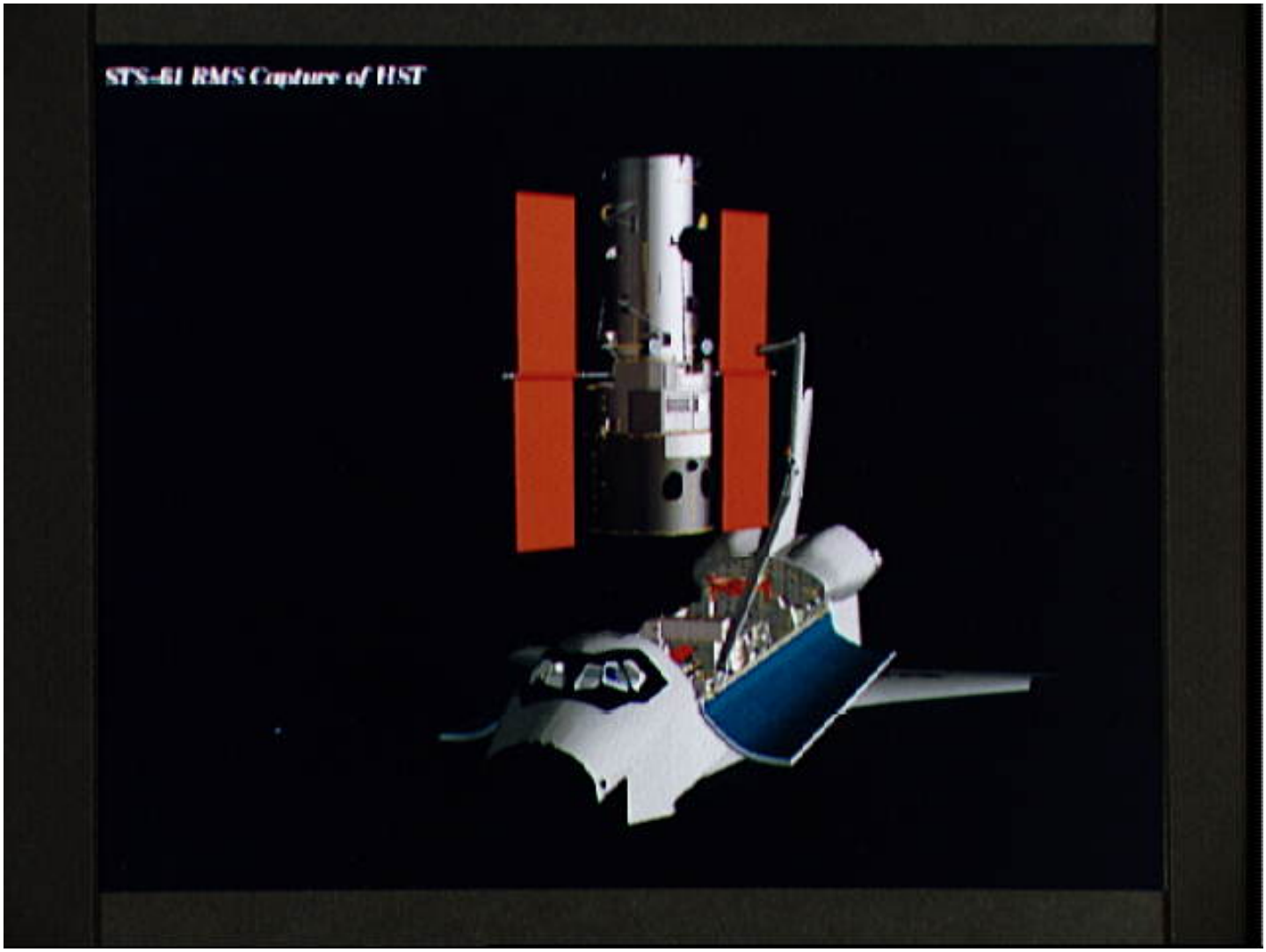
STS-61 RMS Capture of HST

NASA Photo ID: S93-48701 File Name: 10093009.jpg
Film Type: 35mm Date Taken: 11/12/93
Title: Computer-generated scenes depicting the HST capture and EVA repair mission
Description:
Computer generated scenes depicting the Hubble Space Telescope capture and a sequence of planned events on the planned extravehicular activity (EVA). Scenes include the Remote Manipulator System (RMS) arm assisting two astronauts changing out the Wide Field/Planetary Camera (WF/PC) (48699); RMS arm assisting in the temporary mating of the orbiting telescope to the flight support system in Endeavour's cargo bay (48700); Endeavour's RMS arm assisting in the "capture" of the orbiting telescope (48701); Two astronauts changing out the telescope's coprocessor (48702); RMS arm assistign two astronauts replacing one of the telescope's electronic control units (48703); RMS assisting two astronauts replacing the fuse plugs on the telescope's Power Distribution Unit (PDU) (48704); The telescope's High Resolution Spectrograph (HRS) kit is depicted in this scene (48705); Two astronauts during the removal of the high speed photometer and the installation of the COSTAR instrument (48706); Two astronauts, standing on the RMS, during installation of one of the Magnetic Sensing System (MSS) (48707); High angle view of the orbiting Space Shuttle Endeavour with its cargo bay doors open, revealing the bay's pre-capture configuration. Seen are, from the left, the Solar Array Carrier, the ORU Carrier and the flight support system (48708); Two astronauts performing the replacement of HST's Rate Sensor Units (RSU) (48709); The RMS arm assisting two astronauts with the replacement of the telescope's solar array panels (48710); Two astronauts replacing the telescope's Solar Array Drive Electronics (SADE) (48711).

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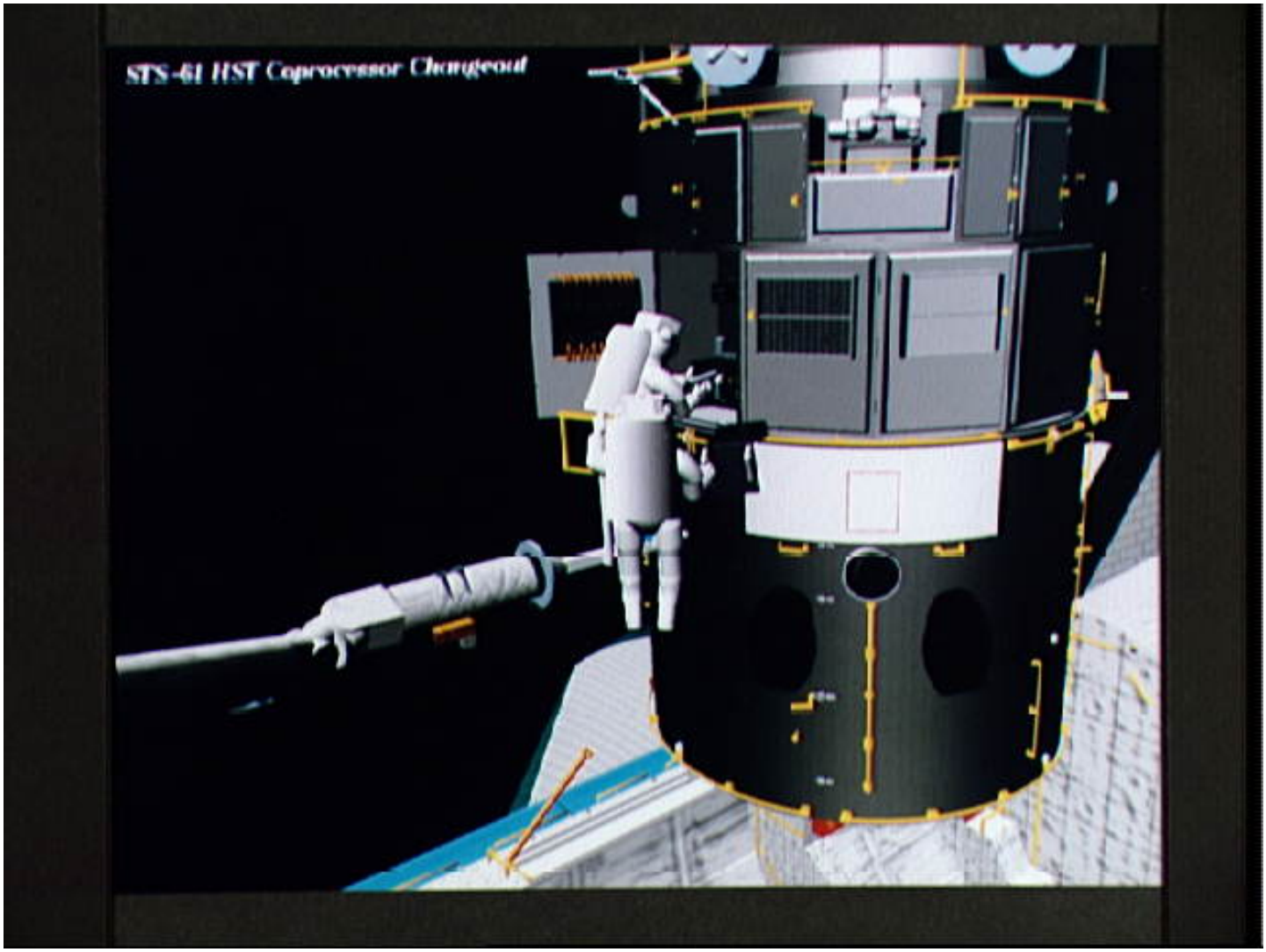
STS-61 HST Coprocessor Changeout

NASA Photo ID: S93-48702 File Name: 10093010.jpg
Film Type: 35mm Date Taken: 11/12/93
Title: Computer-generated scenes depicting the HST capture and EVA repair mission
Description:
Computer generated scenes depicting the Hubble Space Telescope capture and a sequence of planned events on the planned extravehicular activity (EVA). Scenes include the Remote Manipulator System (RMS) arm assisting two astronauts changing out the Wide Field/Planetary Camera (WF/PC) (48699); RMS arm assisting in the temporary mating of the orbiting telescope to the flight support system in Endeavour's cargo bay (48700); Endeavour's RMS arm assisting in the "capture" of the orbiting telescope (48701); Two astronauts changing out the telescope's coprocessor (48702); RMS arm assistign two astronauts replacing one of the telescope's electronic control units (48703); RMS assisting two astronauts replacing the fuse plugs on the telescope's Power Distribution Unit (PDU) (48704); The telescope's High Resolution Spectrograph (HRS) kit is depicted in this scene (48705); Two astronauts during the removal of the high speed photometer and the installation of the COSTAR instrument (48706); Two astronauts, standing on the RMS, during installation of one of the Magnetic Sensing System (MSS) (48707); High angle view of the orbiting Space Shuttle Endeavour with its cargo bay doors open, revealing the bay's pre-capture configuration. Seen are, from the left, the Solar Array Carrier, the ORU Carrier and the flight support system (48708); Two astronauts performing the replacement of HST's Rate Sensor Units (RSU) (48709); The RMS arm assisting two astronauts with the replacement of the telescope's solar array panels (48710); Two astronauts replacing the telescope's Solar Array Drive Electronics (SADE) (48711).

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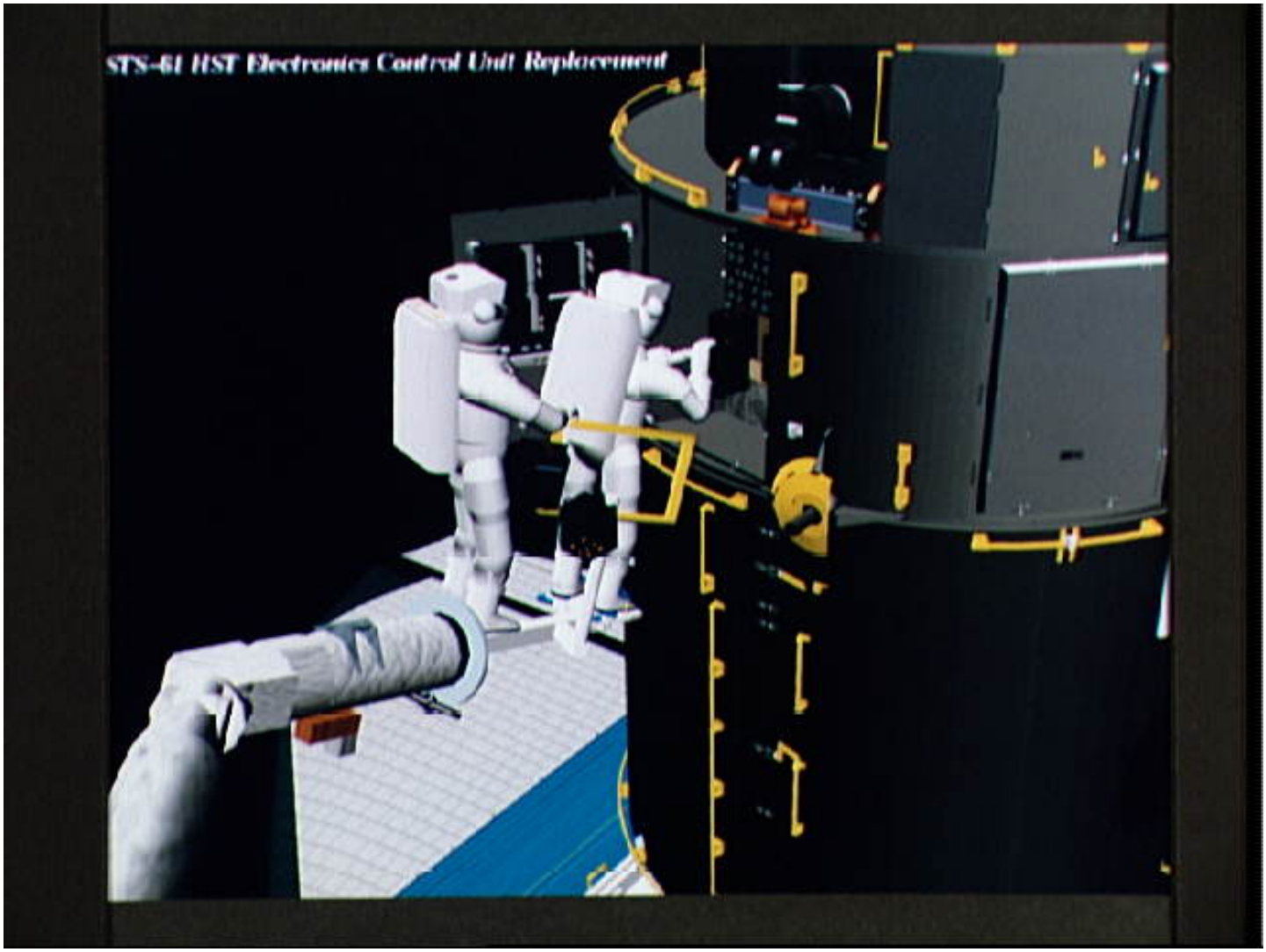
STS-61 HST Electronics Control Unit Replacement

NASA Photo ID: S93-48703 File Name: 10093011.jpg
Film Type: 35mm Date Taken: 11/12/93
Title: Computer-generated scenes depicting the HST capture and EVA repair mission
Description:
Computer generated scenes depicting the Hubble Space Telescope capture and a sequence of planned events on the planned extravehicular activity (EVA). Scenes include the Remote Manipulator System (RMS) arm assisting two astronauts changing out the Wide Field/Planetary Camera (WF/PC) (48699); RMS arm assisting in the temporary mating of the orbiting telescope to the flight support system in Endeavour's cargo bay (48700); Endeavour's RMS arm assisting in the "capture" of the orbiting telescope (48701); Two astronauts changing out the telescope's coprocessor (48702); RMS arm assistign two astronauts replacing one of the telescope's electronic control units (48703); RMS assisting two astronauts replacing the fuse plugs on the telescope's Power Distribution Unit (PDU) (48704); The telescope's High Resolution Spectrograph (HRS) kit is depicted in this scene (48705); Two astronauts during the removal of the high speed photometer and the installation of the COSTAR instrument (48706); Two astronauts, standing on the RMS, during installation of one of the Magnetic Sensing System (MSS) (48707); High angle view of the orbiting Space Shuttle Endeavour with its cargo bay doors open, revealing the bay's pre-capture configuration. Seen are, from the left, the Solar Array Carrier, the ORU Carrier and the flight support system (48708); Two astronauts performing the replacement of HST's Rate Sensor Units (RSU) (48709); The RMS arm assisting two astronauts with the replacement of the telescope's solar array panels (48710); Two astronauts replacing the telescope's Solar Array Drive Electronics (SADE) (48711).

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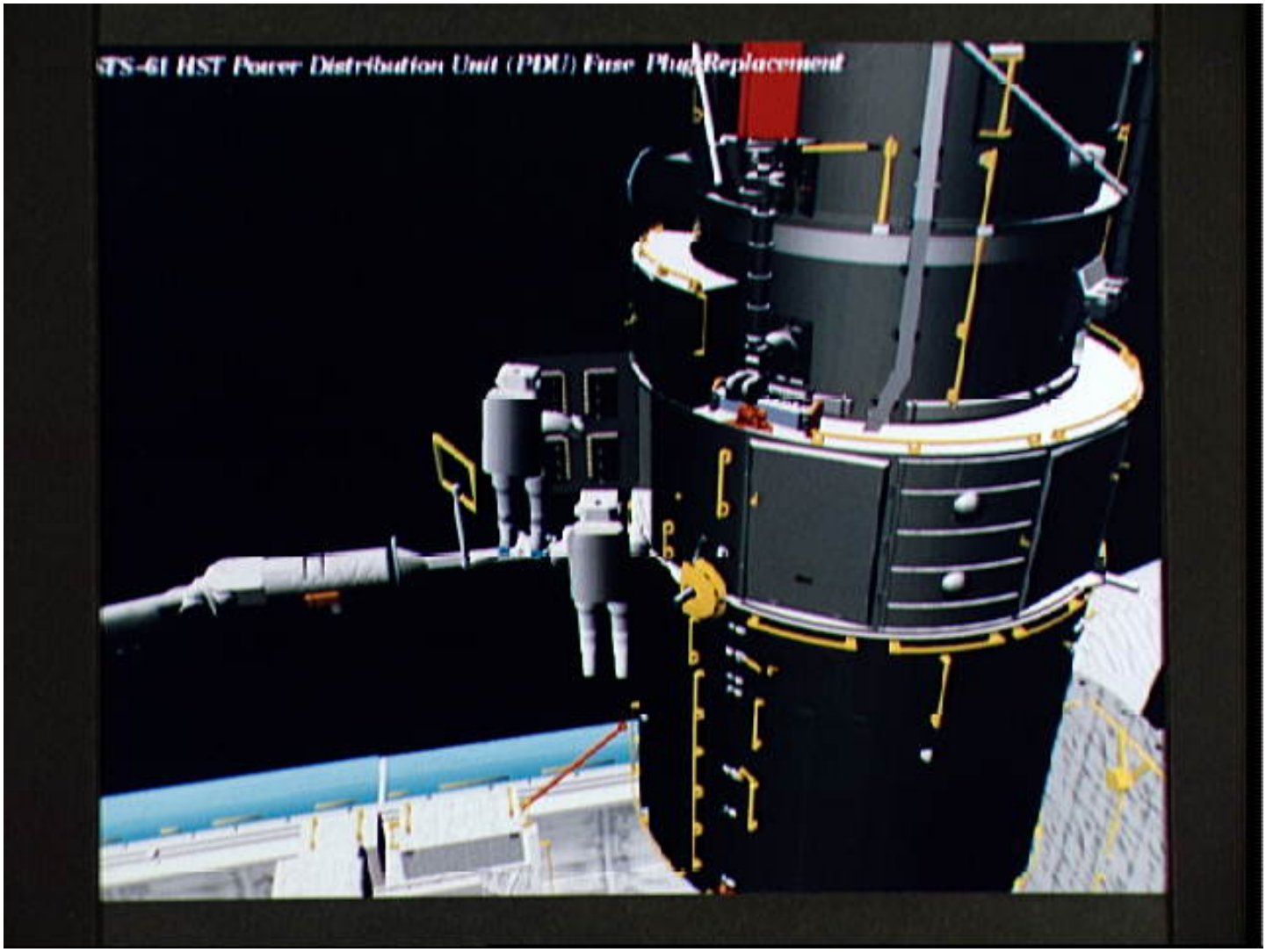
STS-61 HST Power Distribution Unit (PDU) Fuse Plug Replacement

NASA Photo ID: S93-48704 File Name: 10093012.jpg
Film Type: 35mm Date Taken: 11/12/93
Title: Computer-generated scenes depicting the HST capture and EVA repair mission
Description:
Computer generated scenes depicting the Hubble Space Telescope capture and a sequence of planned events on the planned extravehicular activity (EVA). Scenes include the Remote Manipulator System (RMS) arm assisting two astronauts changing out the Wide Field/Planetary Camera (WF/PC) (48699); RMS arm assisting in the temporary mating of the orbiting telescope to the flight support system in Endeavour's cargo bay (48700); Endeavour's RMS arm assisting in the "capture" of the orbiting telescope (48701); Two astronauts changing out the telescope's coprocessor (48702); RMS arm assistign two astronauts replacing one of the telescope's electronic control units (48703); RMS assisting two astronauts replacing the fuse plugs on the telescope's Power Distribution Unit (PDU) (48704); The telescope's High Resolution Spectrograph (HRS) kit is depicted in this scene (48705); Two astronauts during the removal of the high speed photometer and the installation of the COSTAR instrument (48706); Two astronauts, standing on the RMS, during installation of one of the Magnetic Sensing System (MSS) (48707); High angle view of the orbiting Space Shuttle Endeavour with its cargo bay doors open, revealing the bay's pre-capture configuration. Seen are, from the left, the Solar Array Carrier, the ORU Carrier and the flight support system (48708); Two astronauts performing the replacement of HST's Rate Sensor Units (RSU) (48709); The RMS arm assisting two astronauts with the replacement of the telescope's solar array panels (48710); Two astronauts replacing the telescope's Solar Array Drive Electronics (SADE) (48711).

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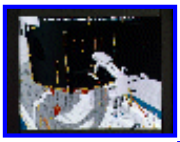
STS-61 HST High Resolution Spectrograph (HRS) Kit Installation



NASA Photo ID: S93-48705 File Name: 10093013.jpg
Film Type: 35mm Date Taken: 11/12/93
Title: Computer-generated scenes depicting the HST capture and EVA repair mission
Description:
Computer generated scenes depicting the Hubble Space Telescope capture and a sequence of planned events on the planned extravehicular activity (EVA). Scenes include the Remote Manipulator System (RMS) arm assisting two astronauts changing out the Wide Field/Planetary Camera (WF/PC) (48699); RMS arm assisting in the temporary mating of the orbiting telescope to the flight support system in Endeavour's cargo bay (48700); Endeavour's RMS arm assisting in the "capture" of the orbiting telescope (48701); Two astronauts changing out the telescope's coprocessor (48702); RMS arm assistign two astronauts replacing one of the telescope's electronic control units (48703); RMS assisting two astronauts replacing the fuse plugs on the telescope's Power Distribution Unit (PDU) (48704); The telescope's High Resolution Spectrograph (HRS) kit is depicted in this scene (48705); Two astronauts during the removal of the high speed photometer and the installation of the COSTAR instrument (48706); Two astronauts, standing on the RMS, during installation of one of the Magnetic Sensing System (MSS) (48707); High angle view of the orbiting Space Shuttle Endeavour with its cargo bay doors open, revealing the bay's pre-capture configuration. Seen are, from the left, the Solar Array Carrier, the ORU Carrier and the flight support system (48708); Two astronauts performing the replacement of HST's Rate Sensor Units (RSU) (48709); The RMS arm assisting two astronauts with the replacement of the telescope's solar array panels (48710); Two astronauts replacing the telescope's Solar Array Drive Electronics (SADE) (48711).

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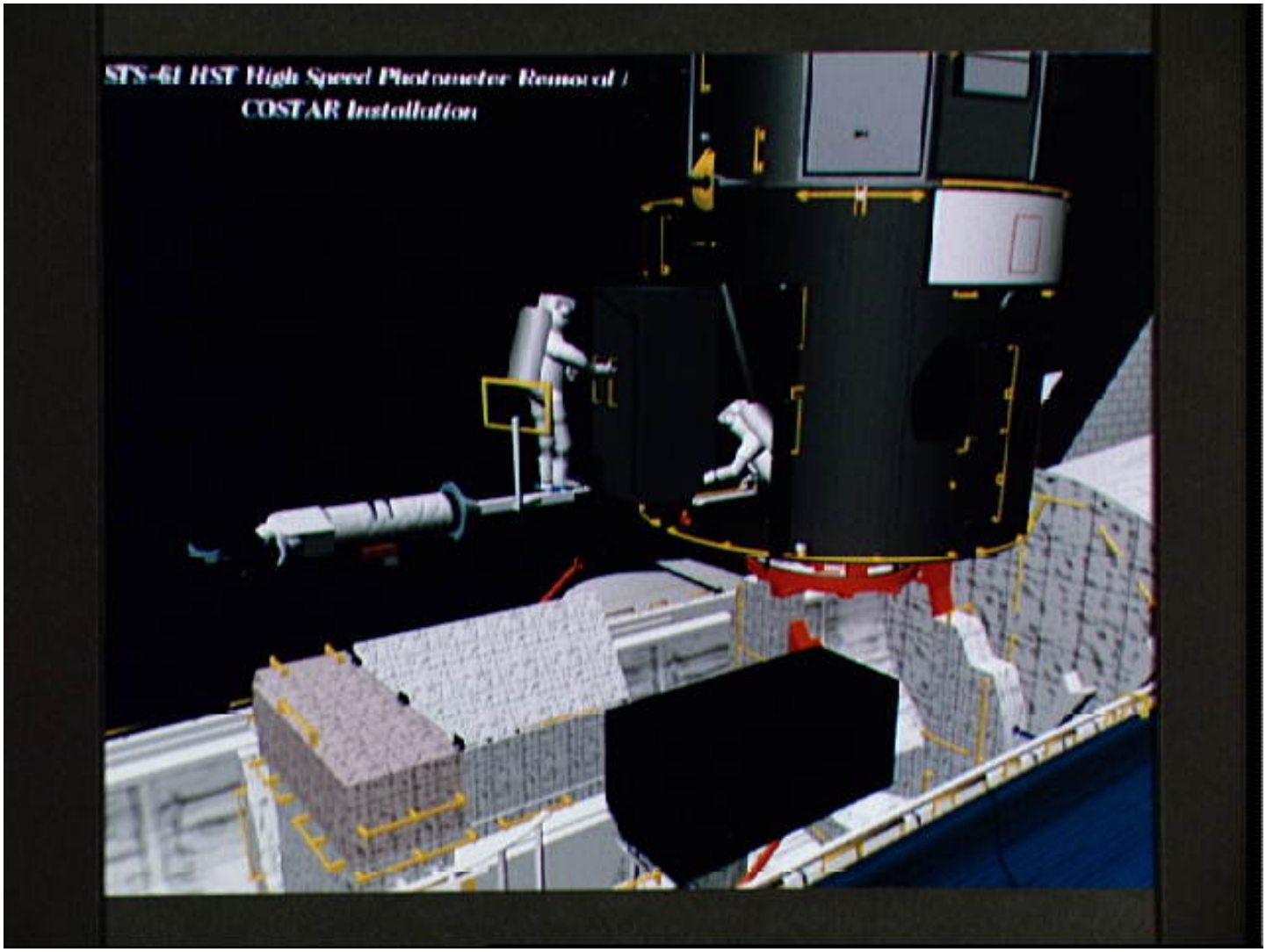
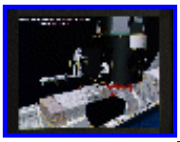

STS-61 HST High Speed Photometer Removal /
COSTAR Installation



NASA Photo ID: S93-48706 File Name: 10093014.jpg
Film Type: 35mm Date Taken: 11/12/93
Title: Computer-generated scenes depicting the HST capture and EVA repair mission
Description:
Computer generated scenes depicting the Hubble Space Telescope capture and a sequence of planned events on the planned extravehicular activity (EVA). Scenes include the Remote Manipulator System (RMS) arm assisting two astronauts changing out the Wide Field/Planetary Camera (WF/PC) (48699); RMS arm assisting in the temporary mating of the orbiting telescope to the flight support system in Endeavour's cargo bay (48700); Endeavour's RMS arm assisting in the "capture" of the orbiting telescope (48701); Two astronauts changing out the telescope's coprocessor (48702); RMS arm assistign two astronauts replacing one of the telescope's electronic control units (48703); RMS assisting two astronauts replacing the fuse plugs on the telescope's Power Distribution Unit (PDU) (48704); The telescope's High Resolution Spectrograph (HRS) kit is depicted in this scene (48705); Two astronauts during the removal of the high speed photometer and the installation of the COSTAR instrument (48706); Two astronauts, standing on the RMS, during installation of one of the Magnetic Sensing System (MSS) (48707); High angle view of the orbiting Space Shuttle Endeavour with its cargo bay doors open, revealing the bay's pre-capture configuration. Seen are, from the left, the Solar Array Carrier, the ORU Carrier and the flight support system (48708); Two astronauts performing the replacement of HST's Rate Sensor Units (RSU) (48709); The RMS arm assisting two astronauts with the replacement of the telescope's solar array panels (48710); Two astronauts replacing the telescope's Solar Array Drive Electronics (SADE) (48711).

Subject terms:

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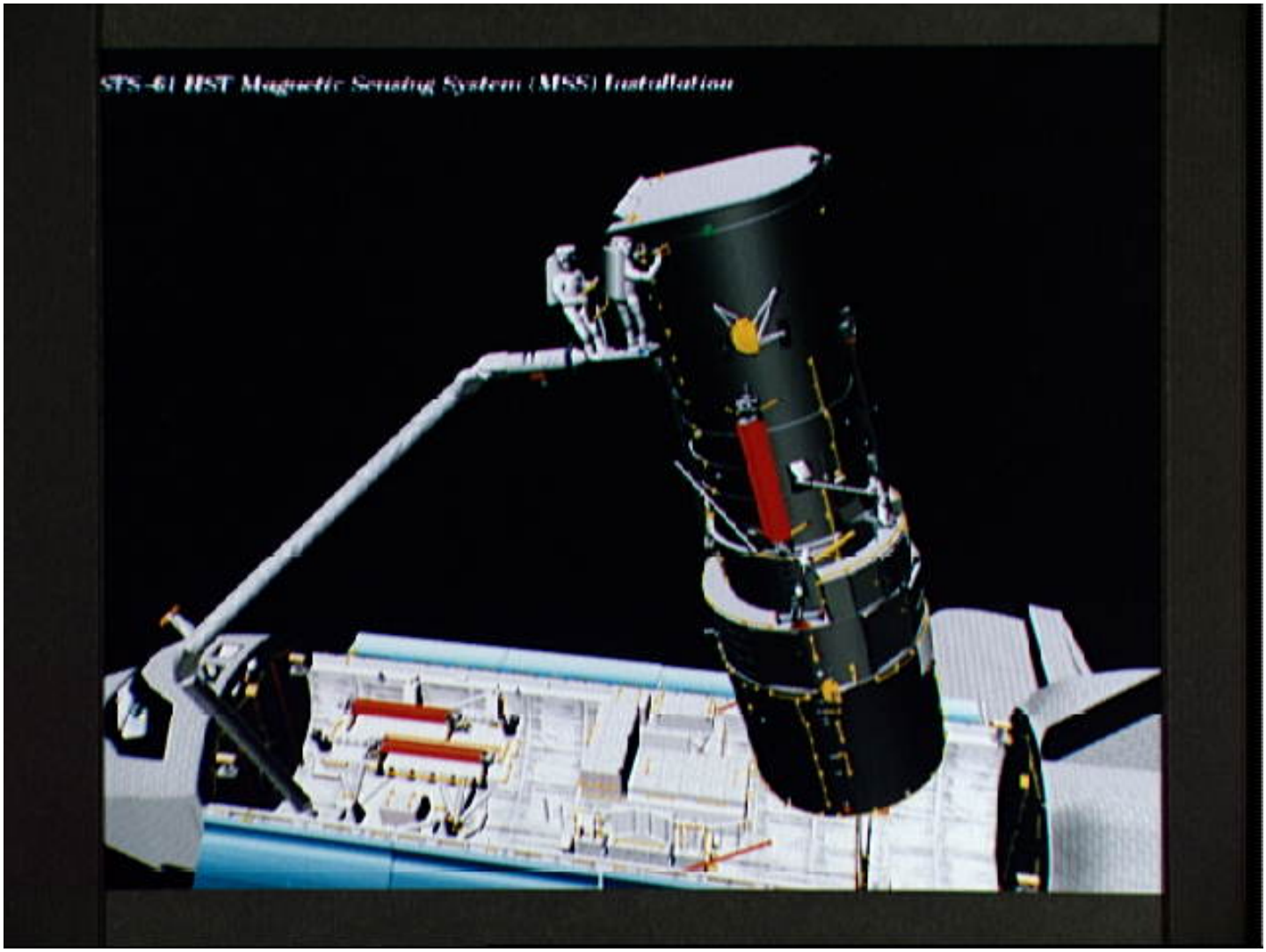
STS-61 HST Magnetic Sensing System (MSS) Installation

NASA Photo ID: S93-48707 File Name: 10093015.jpg
Film Type: 35mm Date Taken: 11/12/93
Title: Computer-generated scenes depicting the HST capture and EVA repair mission
Description:
Computer generated scenes depicting the Hubble Space Telescope capture and a sequence of planned events on the planned extravehicular activity (EVA). Scenes include the Remote Manipulator System (RMS) arm assisting two astronauts changing out the Wide Field/Planetary Camera (WF/PC) (48699); RMS arm assisting in the temporary mating of the orbiting telescope to the flight support system in Endeavour's cargo bay (48700); Endeavour's RMS arm assisting in the "capture" of the orbiting telescope (48701); Two astronauts changing out the telescope's coprocessor (48702); RMS arm assistign two astronauts replacing one of the telescope's electronic control units (48703); RMS assisting two astronauts replacing the fuse plugs on the telescope's Power Distribution Unit (PDU) (48704); The telescope's High Resolution Spectrograph (HRS) kit is depicted in this scene (48705); Two astronauts during the removal of the high speed photometer and the installation of the COSTAR instrument (48706); Two astronauts, standing on the RMS, during installation of one of the Magnetic Sensing System (MSS) (48707); High angle view of the orbiting Space Shuttle Endeavour with its cargo bay doors open, revealing the bay's pre-capture configuration. Seen are, from the left, the Solar Array Carrier, the ORU Carrier and the flight support system (48708); Two astronauts performing the replacement of HST's Rate Sensor Units (RSU) (48709); The RMS arm assisting two astronauts with the replacement of the telescope's solar array panels (48710); Two astronauts replacing the telescope's Solar Array Drive Electronics (SADE) (48711).

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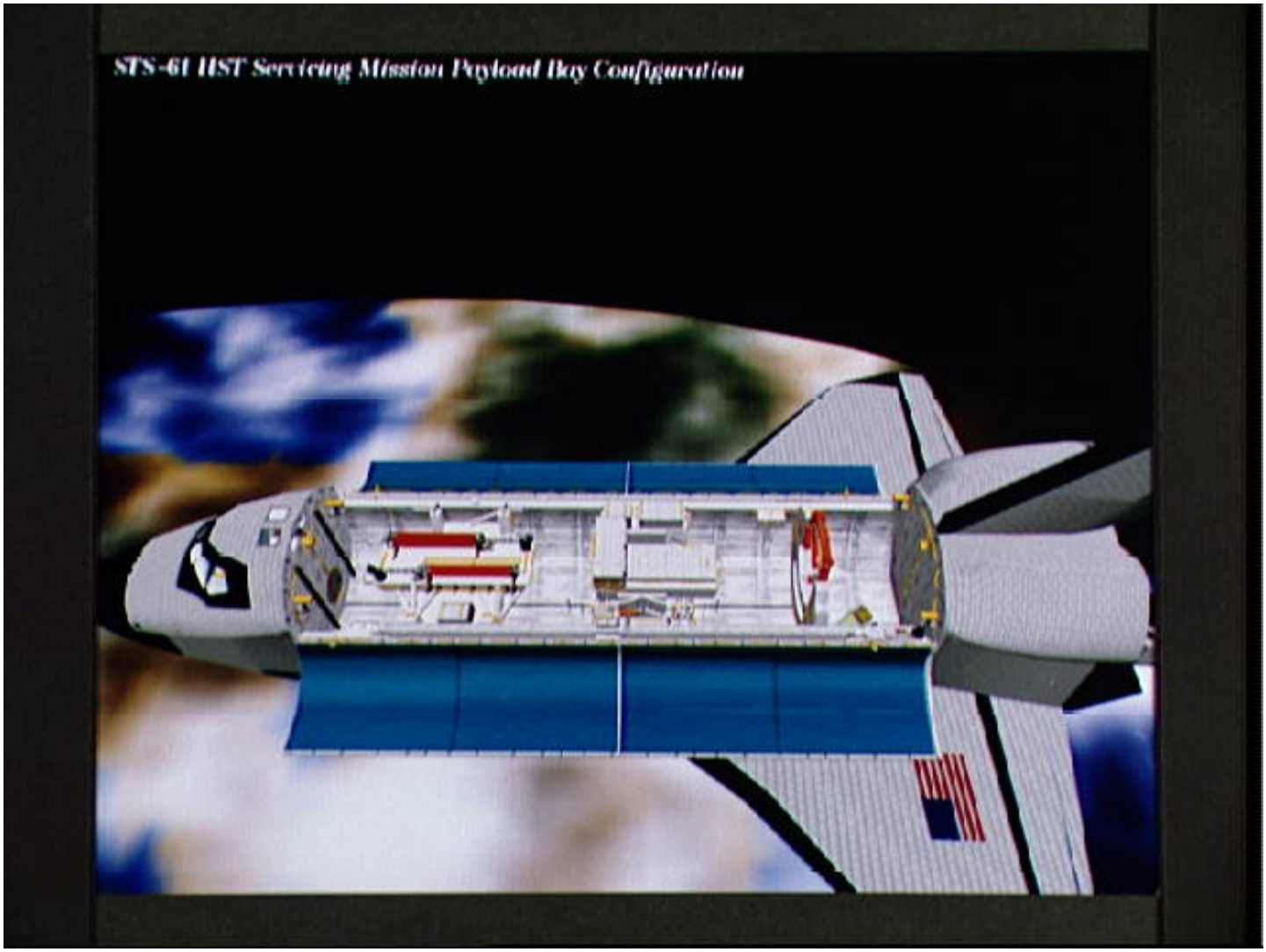
STS-61 HST Servicing Mission Payload Bay Configuration

NASA Photo ID: S93-48708 File Name: 10093016.jpg
Film Type: 35mm Date Taken: 11/12/93
Title: Computer-generated scenes depicting the HST capture and EVA repair mission
Description:
Computer generated scenes depicting the Hubble Space Telescope capture and a sequence of planned events on the planned extravehicular activity (EVA). Scenes include the Remote Manipulator System (RMS) arm assisting two astronauts changing out the Wide Field/Planetary Camera (WF/PC) (48699); RMS arm assisting in the temporary mating of the orbiting telescope to the flight support system in Endeavour's cargo bay (48700); Endeavour's RMS arm assisting in the "capture" of the orbiting telescope (48701); Two astronauts changing out the telescope's coprocessor (48702); RMS arm assistign two astronauts replacing one of the telescope's electronic control units (48703); RMS assisting two astronauts replacing the fuse plugs on the telescope's Power Distribution Unit (PDU) (48704); The telescope's High Resolution Spectrograph (HRS) kit is depicted in this scene (48705); Two astronauts during the removal of the high speed photometer and the installation of the COSTAR instrument (48706); Two astronauts, standing on the RMS, during installation of one of the Magnetic Sensing System (MSS) (48707); High angle view of the orbiting Space Shuttle Endeavour with its cargo bay doors open, revealing the bay's pre-capture configuration. Seen are, from the left, the Solar Array Carrier, the ORU Carrier and the flight support system (48708); Two astronauts performing the replacement of HST's Rate Sensor Units (RSU) (48709); The RMS arm assisting two astronauts with the replacement of the telescope's solar array panels (48710); Two astronauts replacing the telescope's Solar Array Drive Electronics (SADE) (48711).

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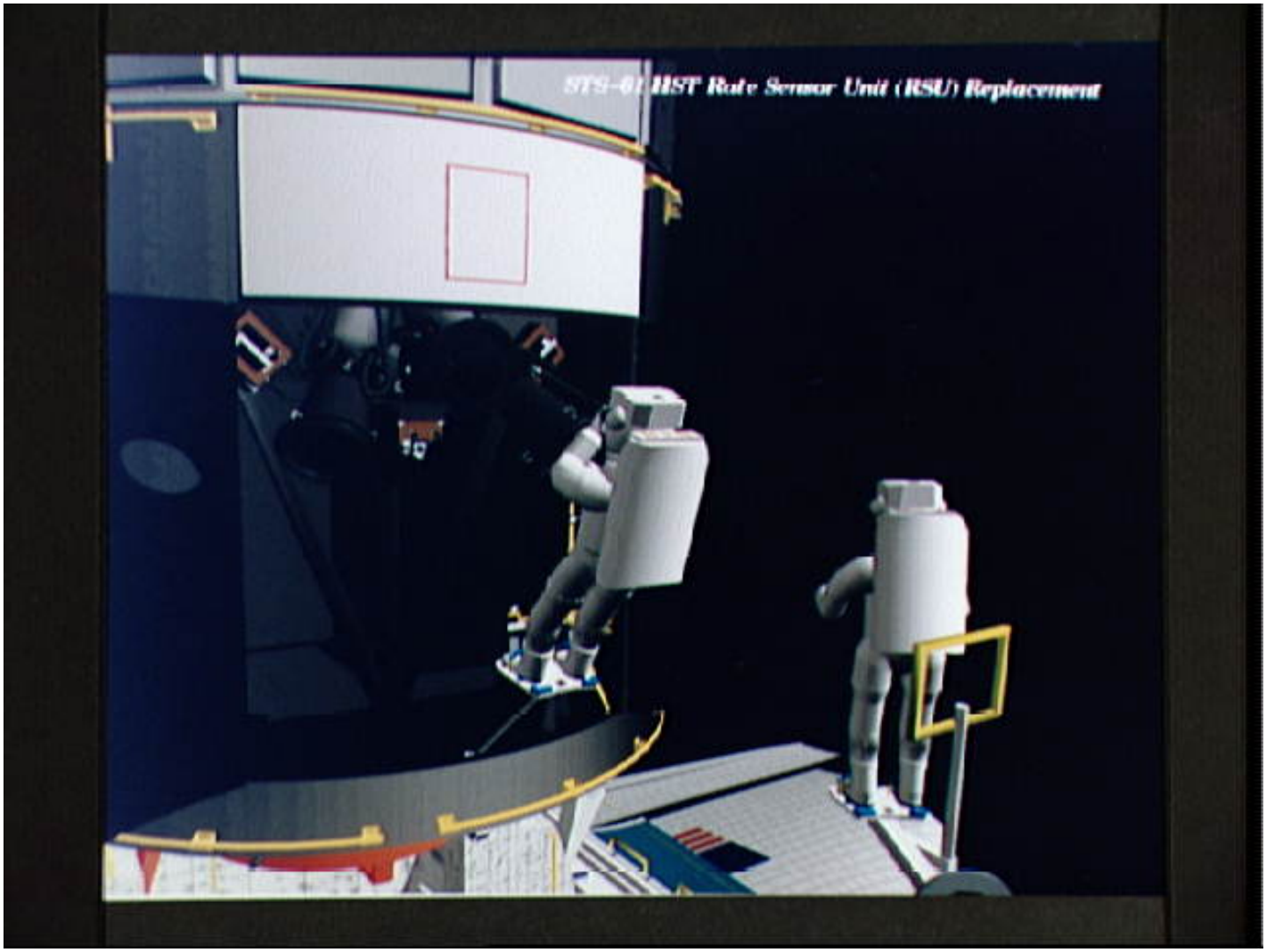
HST Rate Sensor Unit (RSU) Replacement

NASA Photo ID: S93-48709 File Name: 10093017.jpg
Film Type: 35mm Date Taken: 11/12/93
Title: Computer-generated scenes depicting the HST capture and EVA repair mission
Description:
Computer generated scenes depicting the Hubble Space Telescope capture and a sequence of planned events on the planned extravehicular activity (EVA). Scenes include the Remote Manipulator System (RMS) arm assisting two astronauts changing out the Wide Field/Planetary Camera (WF/PC) (48699); RMS arm assisting in the temporary mating of the orbiting telescope to the flight support system in Endeavour's cargo bay (48700); Endeavour's RMS arm assisting in the "capture" of the orbiting telescope (48701); Two astronauts changing out the telescope's coprocessor (48702); RMS arm assistign two astronauts replacing one of the telescope's electronic control units (48703); RMS assisting two astronauts replacing the fuse plugs on the telescope's Power Distribution Unit (PDU) (48704); The telescope's High Resolution Spectrograph (HRS) kit is depicted in this scene (48705); Two astronauts during the removal of the high speed photometer and the installation of the COSTAR instrument (48706); Two astronauts, standing on the RMS, during installation of one of the Magnetic Sensing System (MSS) (48707); High angle view of the orbiting Space Shuttle Endeavour with its cargo bay doors open, revealing the bay's pre-capture configuration. Seen are, from the left, the Solar Array Carrier, the ORU Carrier and the flight support system (48708); Two astronauts performing the replacement of HST's Rate Sensor Units (RSU) (48709); The RMS arm assisting two astronauts with the replacement of the telescope's solar array panels (48710); Two astronauts replacing the telescope's Solar Array Drive Electronics (SADE) (48711).

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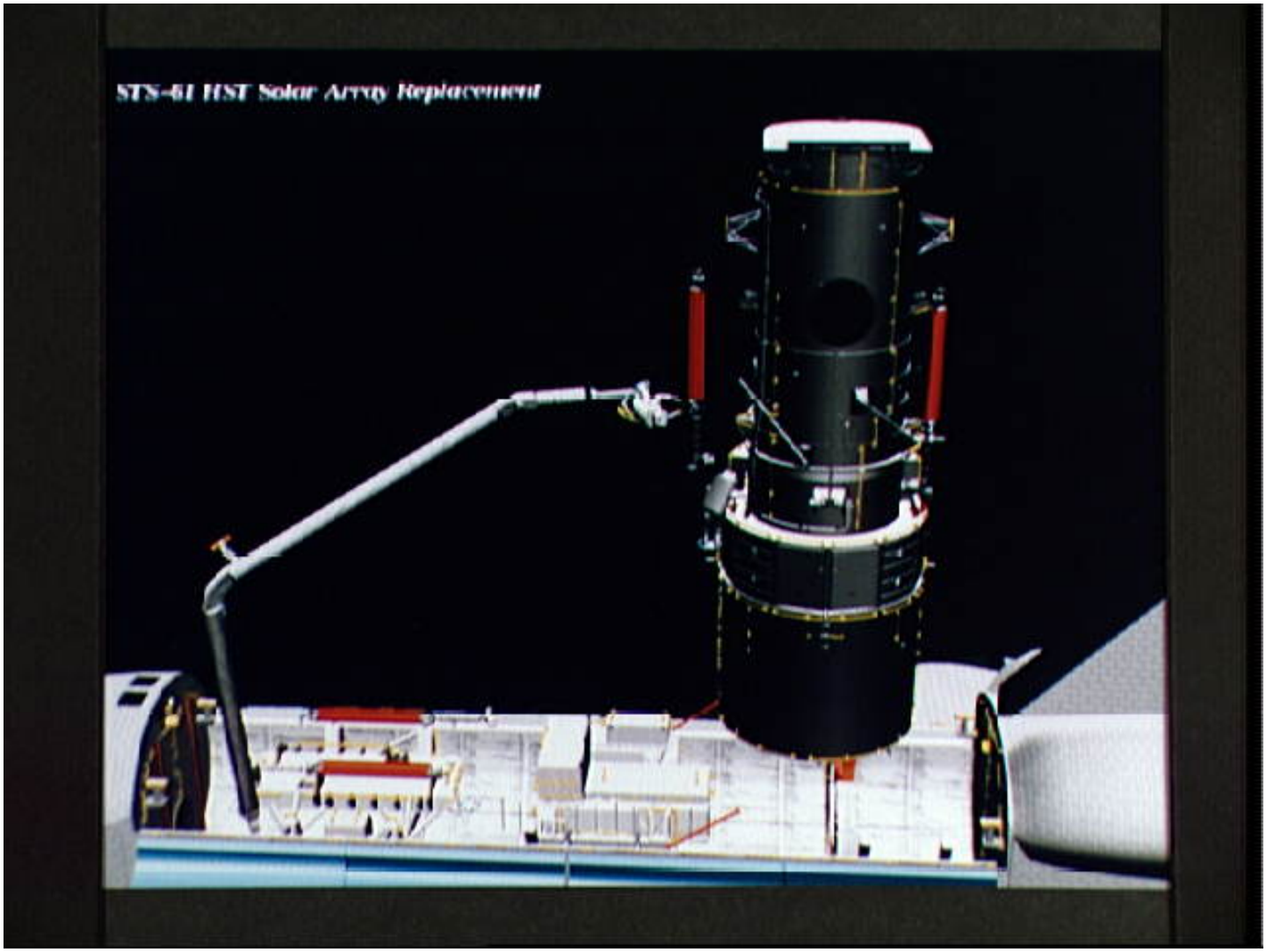
STS-61 HST Solar Array Replacement

NASA Photo ID: S93-48710 File Name: 10093018.jpg
Film Type: 35mm Date Taken: 11/12/93
Title: Computer-generated scenes depicting the HST capture and EVA repair mission
Description:
Computer generated scenes depicting the Hubble Space Telescope capture and a sequence of planned events on the planned extravehicular activity (EVA). Scenes include the Remote Manipulator System (RMS) arm assisting two astronauts changing out the Wide Field/Planetary Camera (WF/PC) (48699); RMS arm assisting in the temporary mating of the orbiting telescope to the flight support system in Endeavour's cargo bay (48700); Endeavour's RMS arm assisting in the "capture" of the orbiting telescope (48701); Two astronauts changing out the telescope's coprocessor (48702); RMS arm assistign two astronauts replacing one of the telescope's electronic control units (48703); RMS assisting two astronauts replacing the fuse plugs on the telescope's Power Distribution Unit (PDU) (48704); The telescope's High Resolution Spectrograph (HRS) kit is depicted in this scene (48705); Two astronauts during the removal of the high speed photometer and the installation of the COSTAR instrument (48706); Two astronauts, standing on the RMS, during installation of one of the Magnetic Sensing System (MSS) (48707); High angle view of the orbiting Space Shuttle Endeavour with its cargo bay doors open, revealing the bay's pre-capture configuration. Seen are, from the left, the Solar Array Carrier, the ORU Carrier and the flight support system (48708); Two astronauts performing the replacement of HST's Rate Sensor Units (RSU) (48709); The RMS arm assisting two astronauts with the replacement of the telescope's solar array panels (48710); Two astronauts replacing the telescope's Solar Array Drive Electronics (SADE) (48711).

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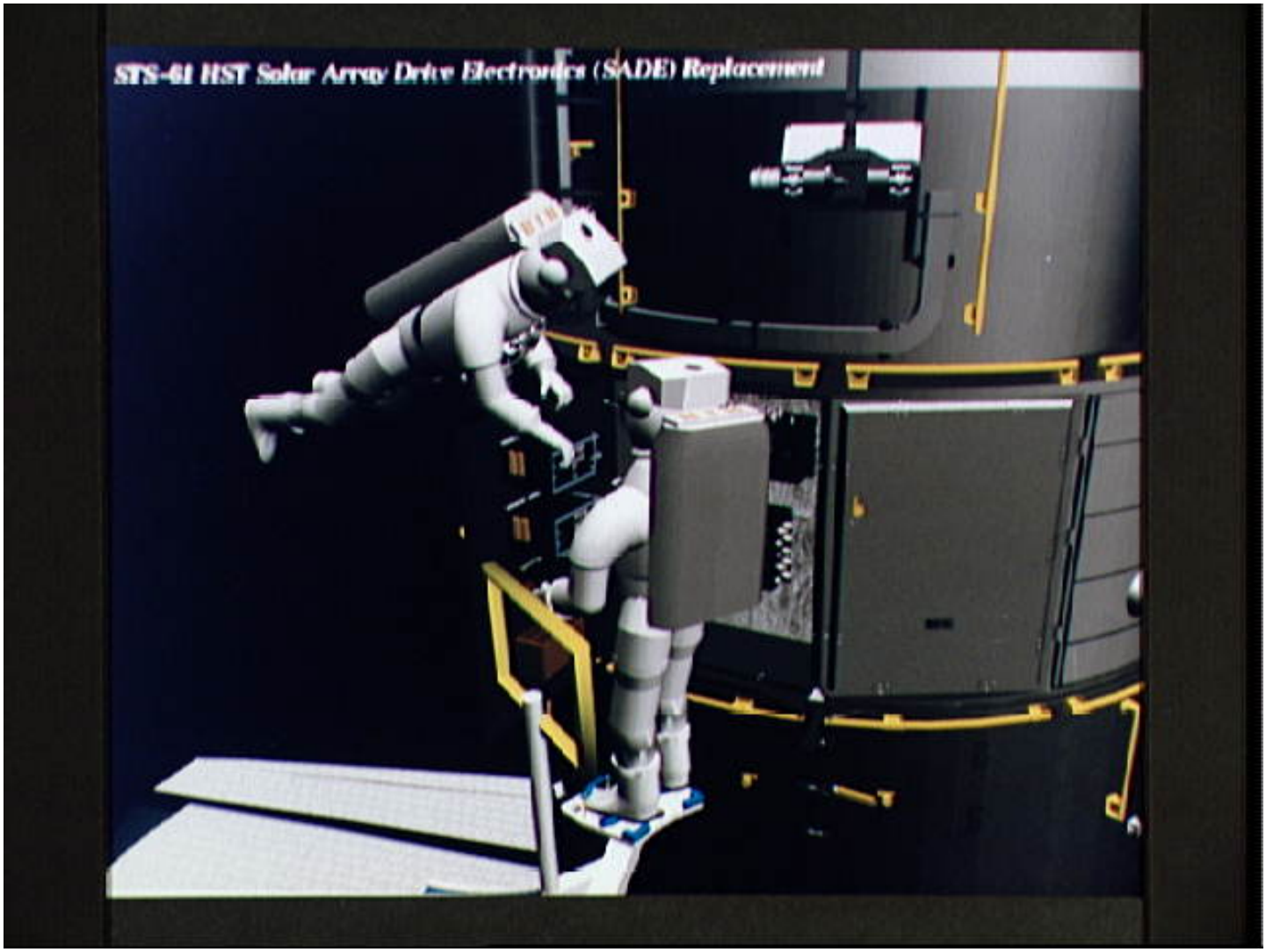
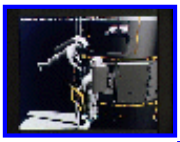

STS-61 HST Solar Array Drive Electronics (SADE) Replacement



NASA Photo ID: S93-48711 File Name: 10093019.jpg
Film Type: 35mm Date Taken: 11/12/93
Title: Computer-generated scenes depicting the HST capture and EVA repair mission
Description:
Computer generated scenes depicting the Hubble Space Telescope capture and a sequence of planned events on the planned extravehicular activity (EVA). Scenes include the Remote Manipulator System (RMS) arm assisting two astronauts changing out the Wide Field/Planetary Camera (WF/PC) (48699); RMS arm assisting in the temporary mating of the orbiting telescope to the flight support system in Endeavour's cargo bay (48700); Endeavour's RMS arm assisting in the "capture" of the orbiting telescope (48701); Two astronauts changing out the telescope's coprocessor (48702); RMS arm assistign two astronauts replacing one of the telescope's electronic control units (48703); RMS assisting two astronauts replacing the fuse plugs on the telescope's Power Distribution Unit (PDU) (48704); The telescope's High Resolution Spectrograph (HRS) kit is depicted in this scene (48705); Two astronauts during the removal of the high speed photometer and the installation of the COSTAR instrument (48706); Two astronauts, standing on the RMS, during installation of one of the Magnetic Sensing System (MSS) (48707); High angle view of the orbiting Space Shuttle Endeavour with its cargo bay doors open, revealing the bay's pre-capture configuration. Seen are, from the left, the Solar Array Carrier, the ORU Carrier and the flight support system (48708); Two astronauts performing the replacement of HST's Rate Sensor Units (RSU) (48709); The RMS arm assisting two astronauts with the replacement of the telescope's solar array panels (48710); Two astronauts replacing the telescope's Solar Array Drive Electronics (SADE) (48711).

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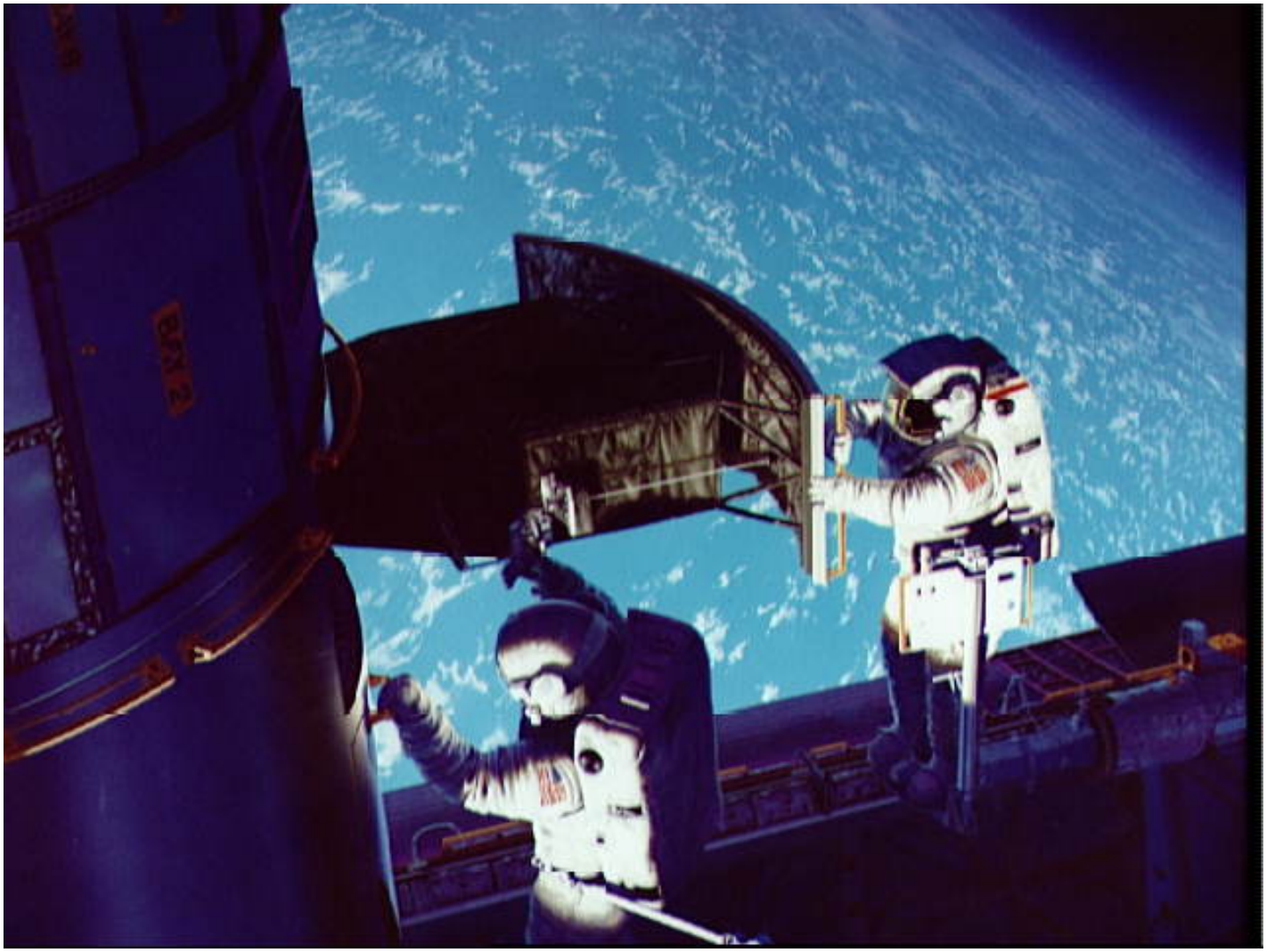

NASA Photo ID: S93-48826 File Name: 10093020.jpg
Film Type: 4x5 Date Taken: 11/12/93
Title: STS-61 art concept of astronauts during HST servicing
Description:
This artist's rendition of the 1993 Hubble Space Telescope (HST) servicing mission shows astronauts installing the new Wide Field/Planetary Camera (WF/PC2). The artwork was done for JPL by Paul Hudson.
Subject terms:
ASTRONAUTS
CAMERAS
DRAWINGS
EXTRAVEHICULAR ACTIVITY
GRAPHIC ARTS
HUBBLE SPACE TELESCOPE
REPAIRING
STS-61
VISUAL AIDS

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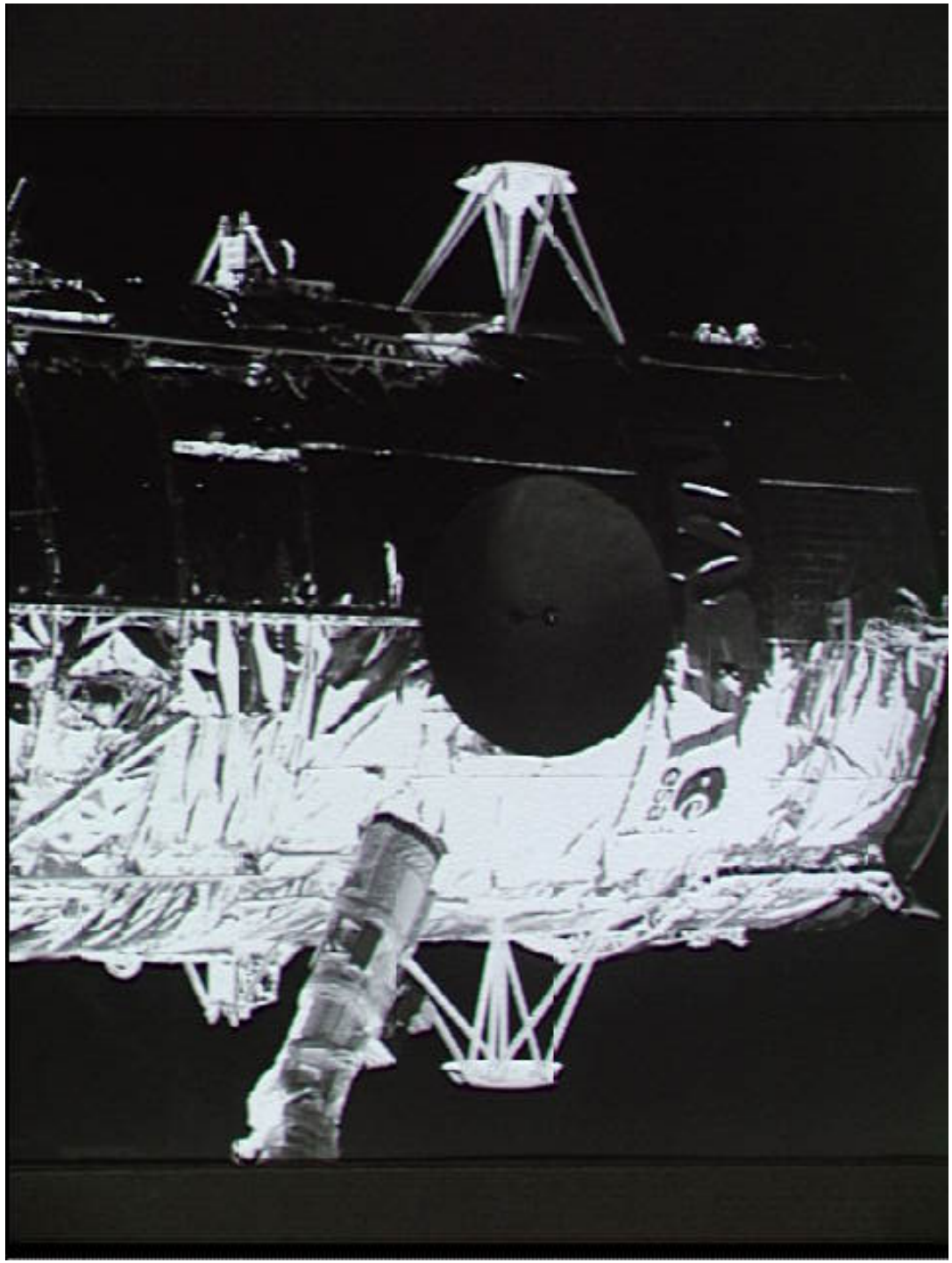

NASA Photo ID: STS061(E)001 File Name: 10093036.jpg
Film Type: 35mm BW Date Taken: 12/04/93
Title: Hubble Space Telescope photographed by Electronic Still Camera
Description:
This medium close-up view of the top portion of the Hubble Space Telescope (HST) was photographed with an Electronic Still Camera (ESC), and downlinked to ground controllers soon afterward. Electronic still photography is a technology which provides the means for a handheld camera to electronically capture and digitize an image with resolution approaching film quality.
Subject terms:
CAMERAS
DOWNLINKING
ELECTRONIC STILL CAMERA
ENDEAVOUR (ORBITER)
HUBBLE SPACE TELESCOPE
PHOTOGRAPHY
REPAIRING
STS-61

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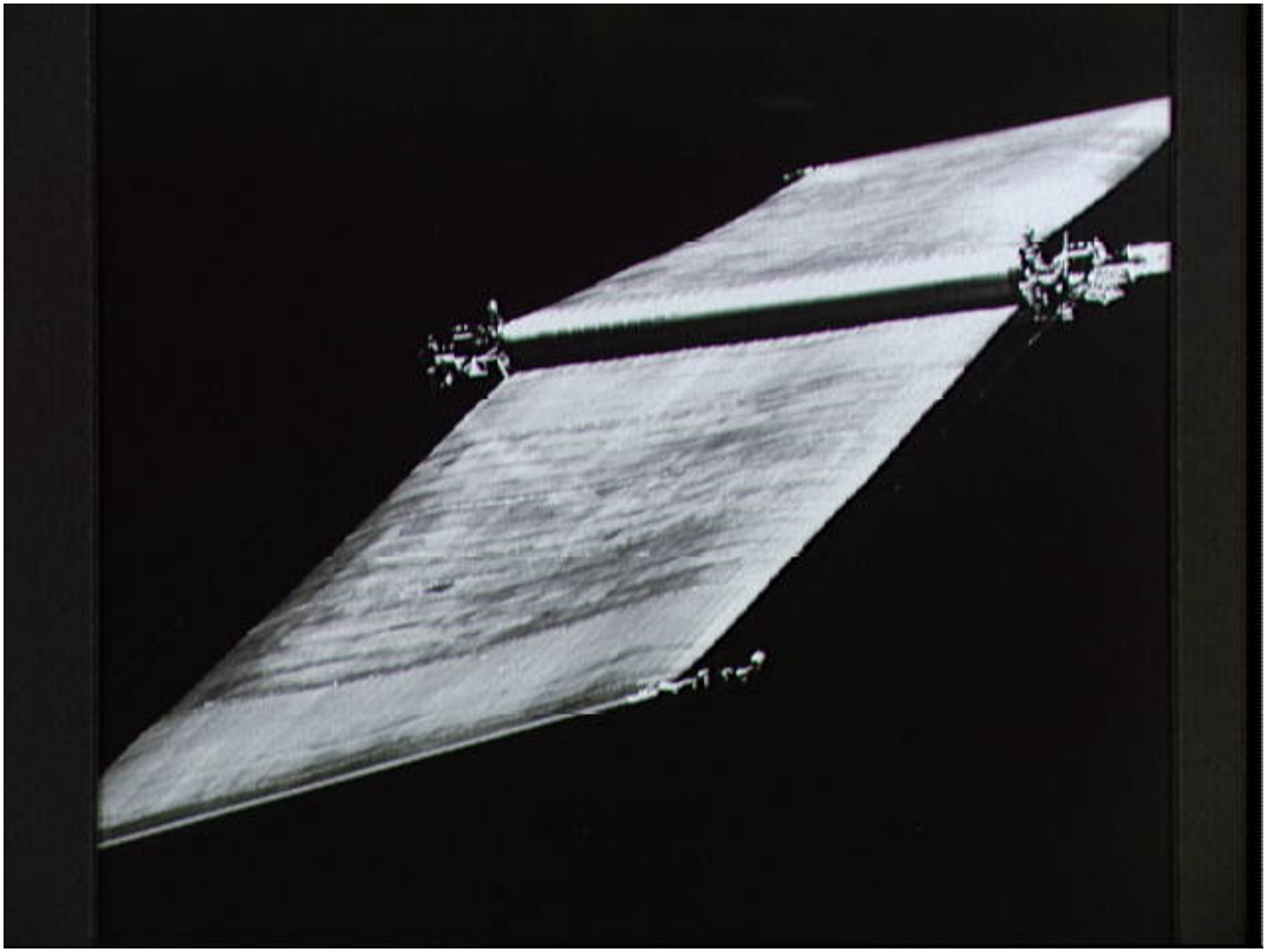

NASA Photo ID: STS061(E)002 File Name: 10093037.jpg
Film Type: 35mm BW Date Taken: 12/04/93
Title: HST Solar Arrays photographed by Electronic Still Camera
Description:
This view, backdropped against the blackness of space shows one of two original Solar Arrays (SA) on the Hubble Space Telescope (HST). The scene was photographed with an Electronic Still Camera (ESC), and downlinked to ground controllers soon afterward. Electronic still photography is a technology which provides the means for a handheld camera to electronically capture and digitize an image with resolution approaching film quality.

Subject terms:
CAMERAS
DOWNLINKING
ELECTRONIC STILL CAMERA
ENDEAVOUR (ORBITER)
HUBBLE SPACE TELESCOPE
PHOTOGRAPHY
REPAIRING
SOLAR ARRAYS
STS-61

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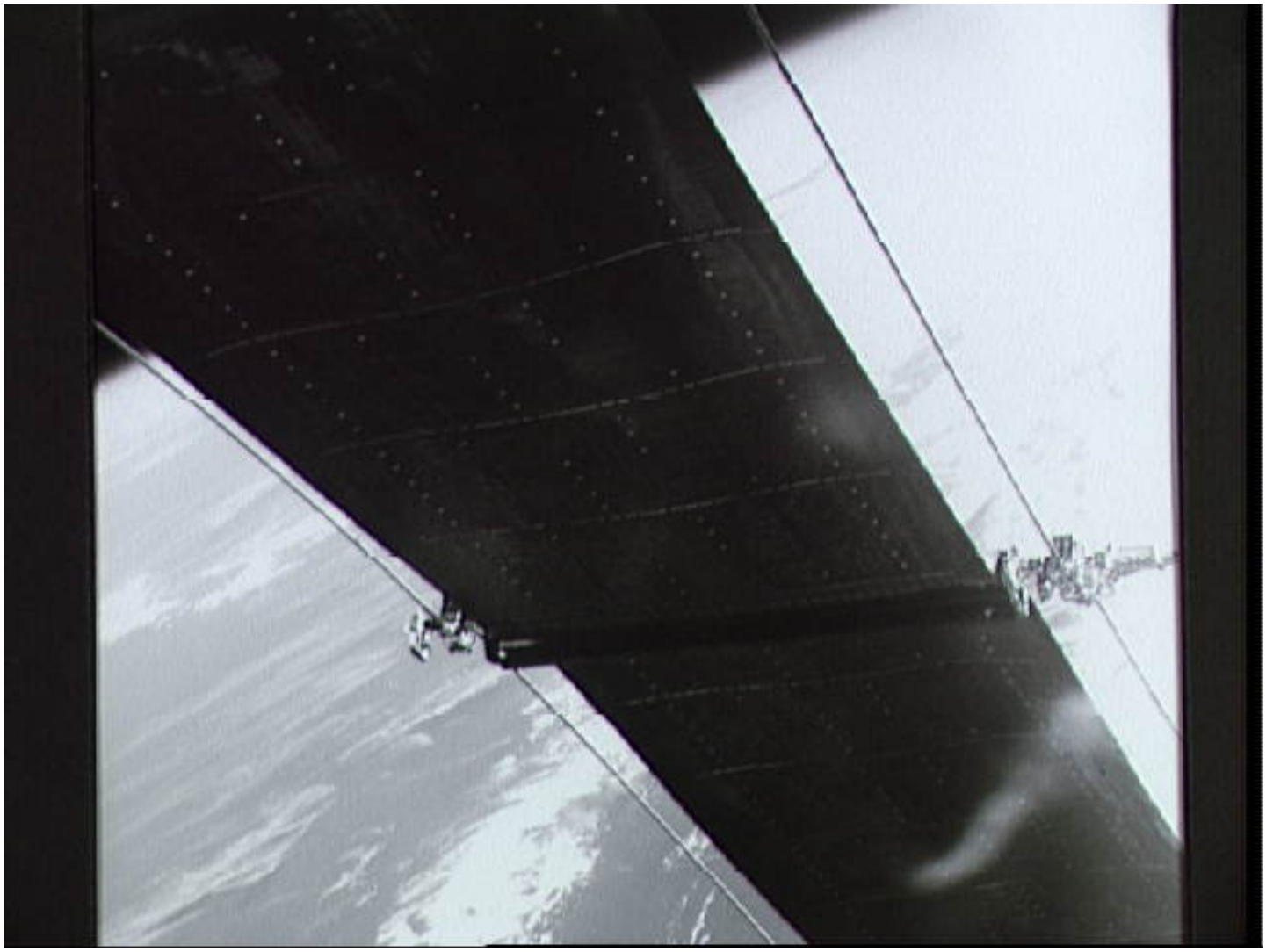

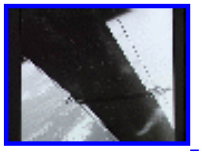

NASA Photo ID: STS061(E)003 File Name: 10093038.jpg
Film Type: 35mm BW Date Taken: 12/04/93
Title: HST Solar Arrays photographed by Electronic Still Camera
Description:
This medium close-up view of one of two original Solar Arrays (SA) on the Hubble Space Telescope (HST) was photographed with an Electronic Still Camera (ESC), and downlinked to ground controllers soon afterward. This view shows the cell side of the minus V-2 panel. Electronic still photography is a technology which provides the means for a handheld camera to electronically capture and digitize an image with resolution approaching film quality.
Subject terms:
CAMERAS
DOWNLINKING
ELECTRONIC STILL CAMERA
ENDEAVOUR (ORBITER)
HUBBLE SPACE TELESCOPE
PHOTOGRAPHY
REPAIRING
SOLAR ARRAYS
STS-61

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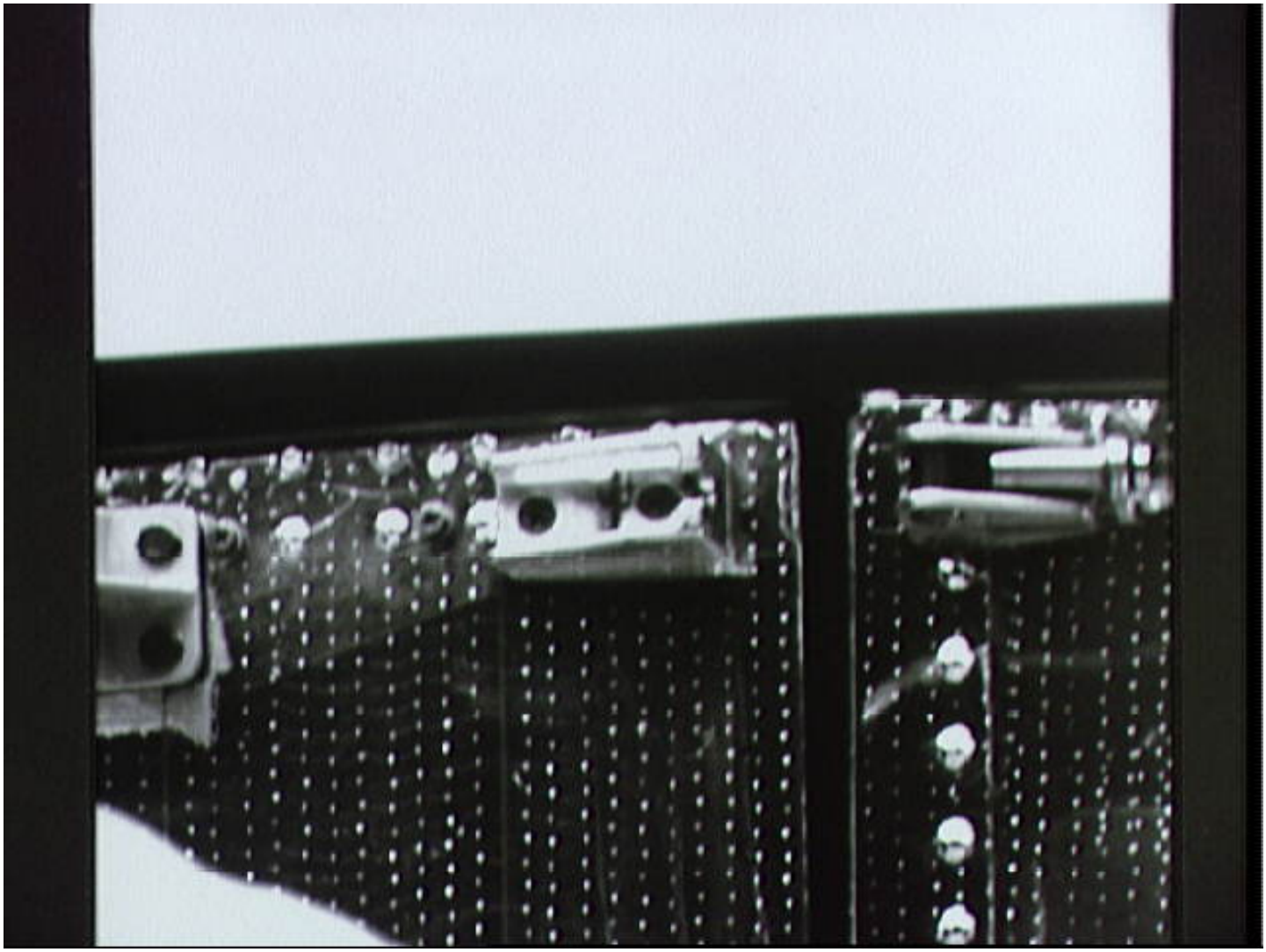

NASA Photo ID: STS061(E)004 File Name: 10093039.jpg
Film Type: 35mm BW Date Taken: 12/04/93
Title: Latch of HST aft shroud photographed by Electronic Still Camera
Description:
This close-up view of a latch on the minus V-3 aft shroud door of the Hubble Space Telescope (HST) was photographed with an Electronic Still Camera (ESC), and downlinked to ground controllers soon afterward. Electronic still photography is a technology which provides the means for a handheld camera to electronically capture and digitize an image with resolution approaching film quality.
Subject terms:
DOWNLINKING
ELECTRONIC STILL CAMERA
ENDEAVOUR (ORBITER)
HUBBLE SPACE TELESCOPE
LATCHES
PHOTOGRAPHY
REPAIRING
SPACE MAINTENANCE
STS-61

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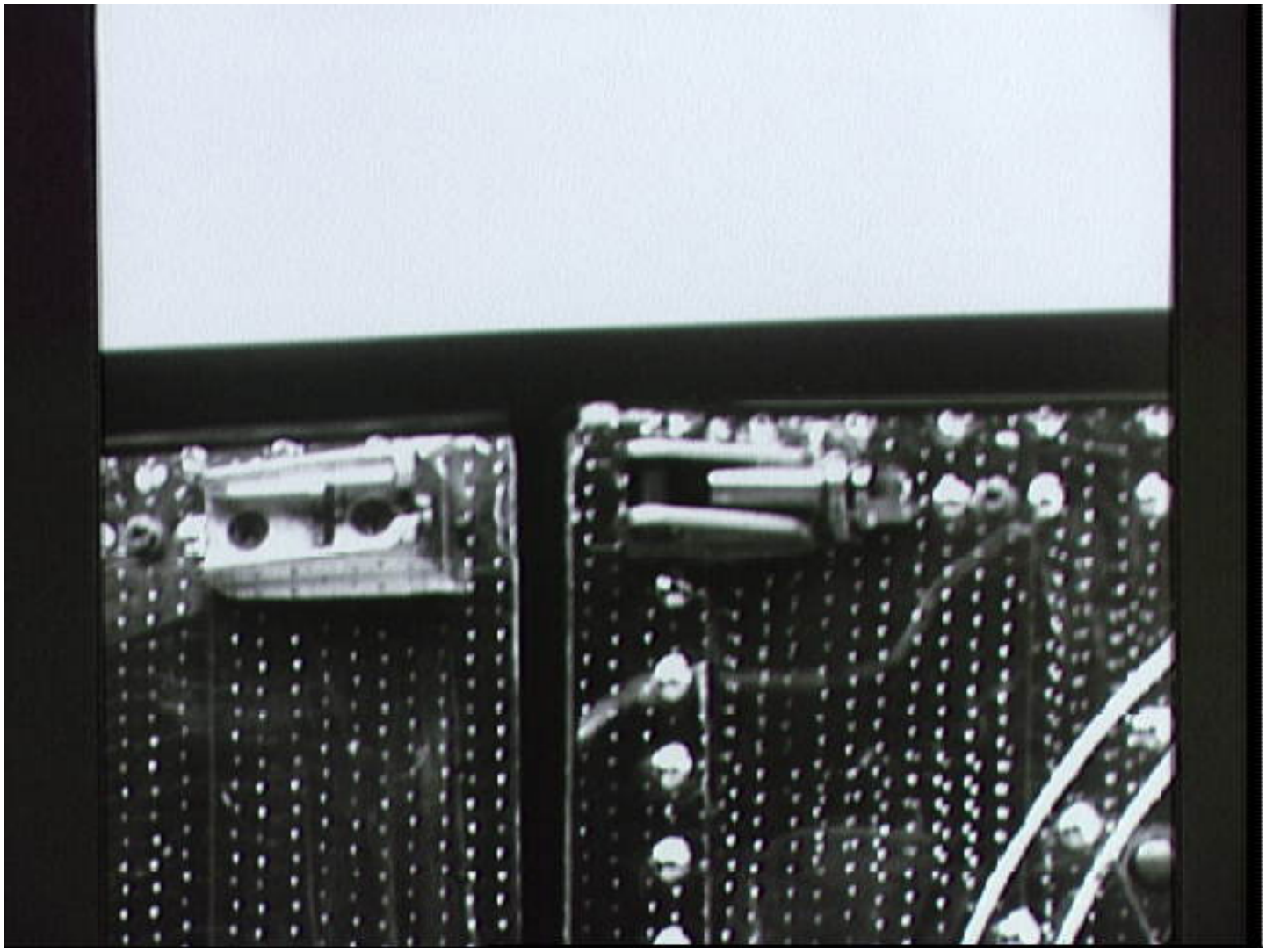

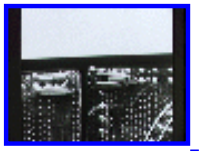

NASA Photo ID: STS061(E)005 File Name: 10093040.jpg
Film Type: 35mm BW Date Taken: 12/04/93
Title: Latch of HST aft shroud photographed by Electronic Still Camera
Description:
This close-up view of a latch on the minus V-3 aft shroud door of the Hubble Space Telescope (HST) was photographed with an Electronic Still Camera (ESC), and downlinked to ground controllers soon afterward. Electronic still photography is a technology which provides the means for a handheld camera to electronically capture and digitize an image with resolution approaching film quality.
Subject terms:
DOWNLINKING
ELECTRONIC STILL CAMERA
ENDEAVOUR (ORBITER)
HUBBLE SPACE TELESCOPE
LATCHES
PHOTOGRAPHY
REPAIRING
SPACE MAINTENANCE
STS-61

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NASA Photo ID: STS061(E)006 File Name: 10093041.jpg
Film Type: 35mm BW Date Taken: 12/05/93
Title: Electronic Still Camera image of Astronaut Claude Nicollier working with RMS
Description:
The robot arm controlling work of Swiss scientist Astronaut Claude Nicollier was photographed with an Electronic Still Camera (ESC), and downlinked to ground controllers soon afterward. Electronic still photography is a technology which provides the means for a handheld camera to electronically capture and digitze an image with resolution approaching film quality.
Subject terms:
ASTRONAUTS
CREW WORKSTATIONS
ELECTRONIC STILL CAMERA
HUBBLE SPACE TELESCOPE
PHOTOGRAPHY
REMOTE MANIPULATOR SYSTEM
REPAIRING
STS-61

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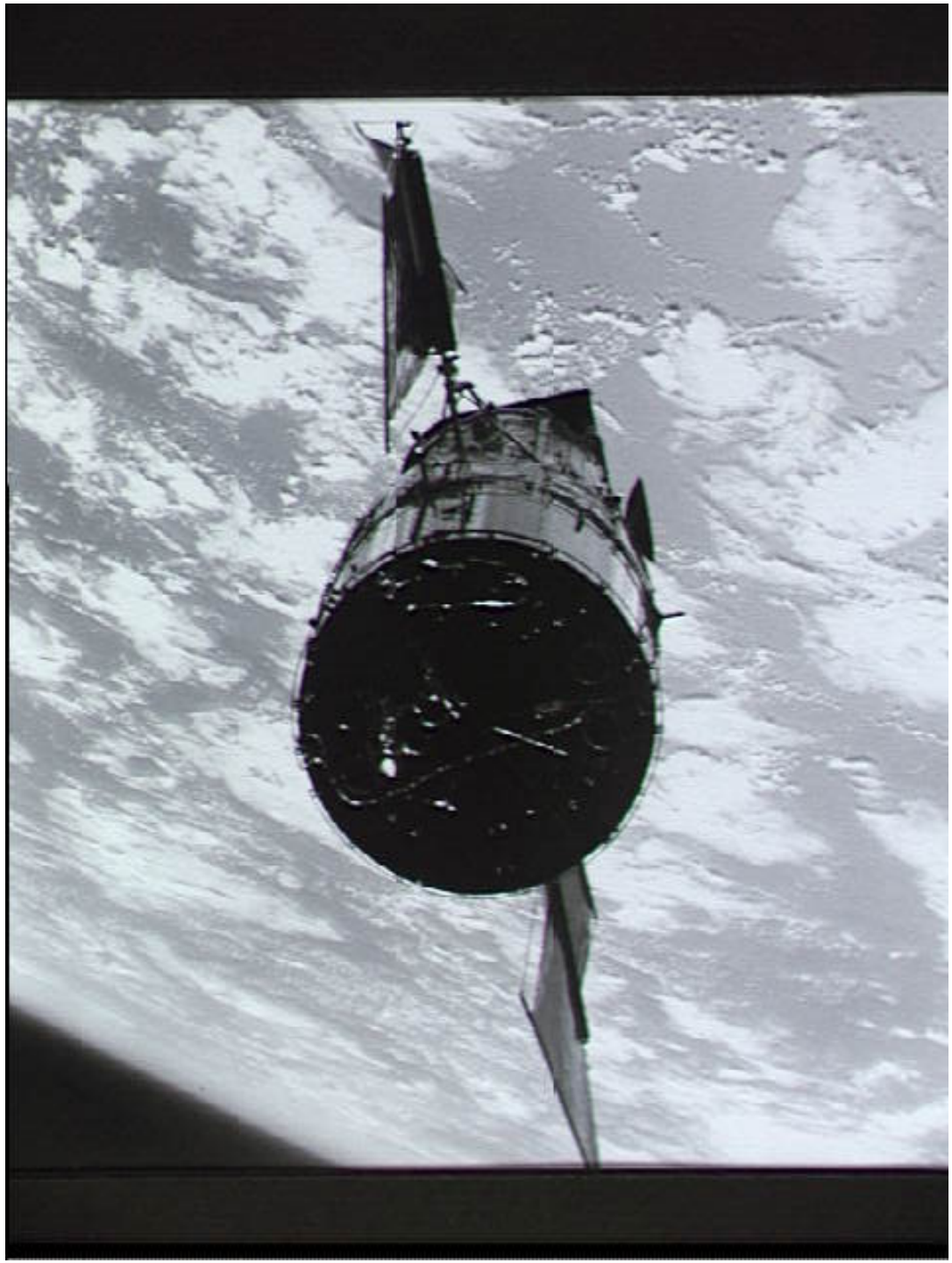

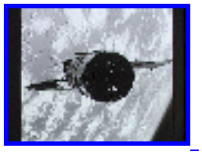

NASA Photo ID: STS061(E)008 File Name: 10093042.jpg
Film Type: 35mm Date Taken: 12/04/93
Title: Hubble Space Telescope photographed by Electronic Still Camera
Description:
This view of the Earth-orbiting Hubble Space Telescope (HST) was photographed with an Electronic Still Camera (ESC), and downlinked to ground controllers soon afterward. This view was taken during rendezvous operations. Electronic still photography is a technology which provides the means for a handheld camera to electronically capture and digitize an image with resolution approaching film quality.
Subject terms:
EARTH OBSERVATIONS (FROM SPACE)
ELECTRONIC STILL CAMERA
HUBBLE SPACE TELESCOPE
PHOTOGRAPHY
SPACEBORNE ASTRONOMY
STS-61

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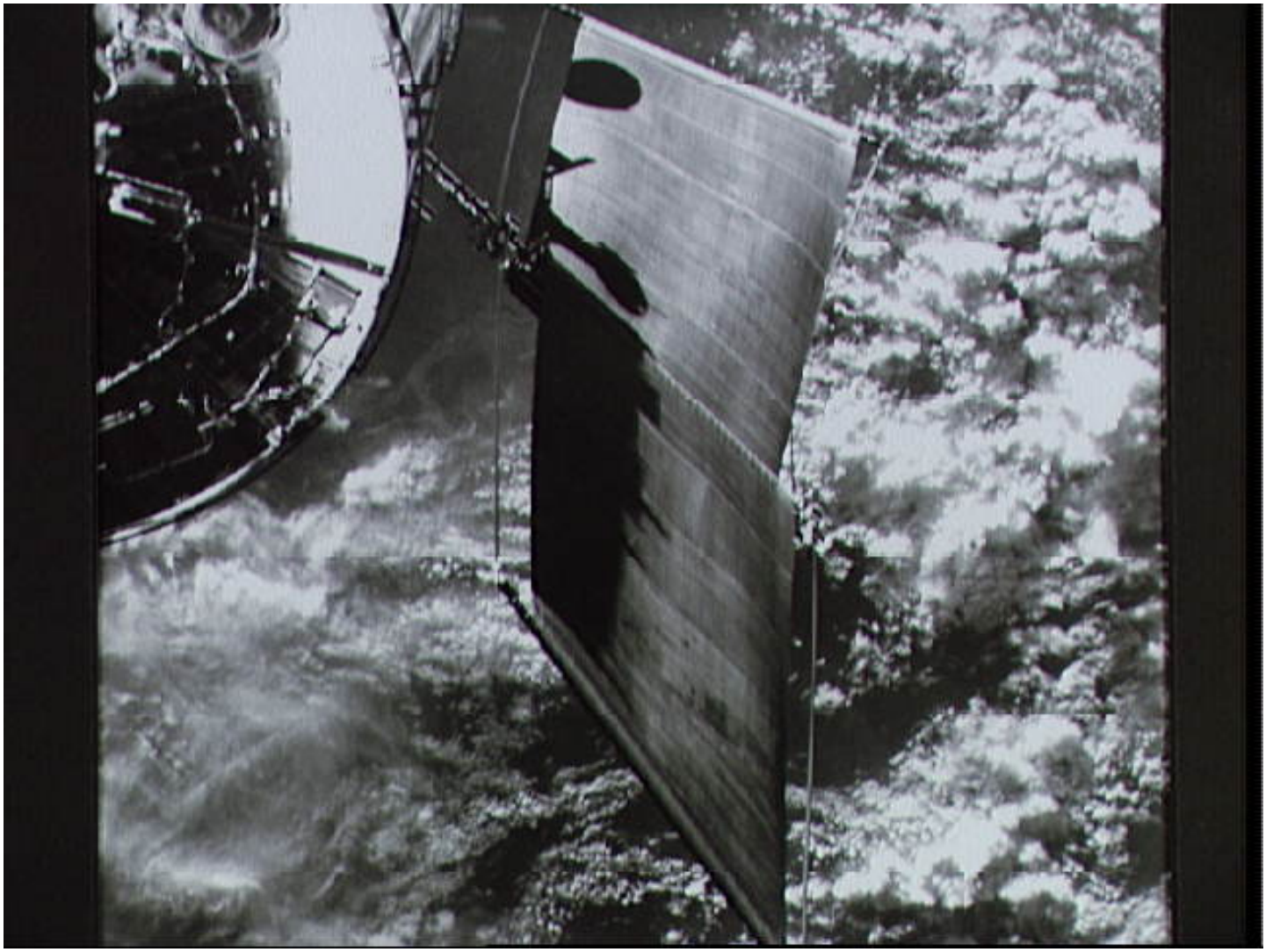

NASA Photo ID: STS061(E)009 File Name: 10093043.jpg
Film Type: 35mm Date Taken: 12/04/93
Title: HST High Gain Antennae photographed by Electronic Still Camera
Description:
This view of one of the two High Gain Antennae (HGA) on the Hubble Space Telescope (HST) was photographed with an Electronic Still Camera (ESC). The scene was downlinked to ground controllers soon after the Shuttle Endeavour caught up to the orbiting telescope. Electronic still photography is a technology which provides the means for a handheld camera to electronically capture and digitize an image with resolution approaching film quality.

Subject terms:
ANTENNAS
EARTH OBSERVATIONS (FROM SPACE)
ELECTRONIC STILL CAMERA
HUBBLE SPACE TELESCOPE
PHOTOGRAPHY
SPACEBORNE ASTRONOMY
STS-61

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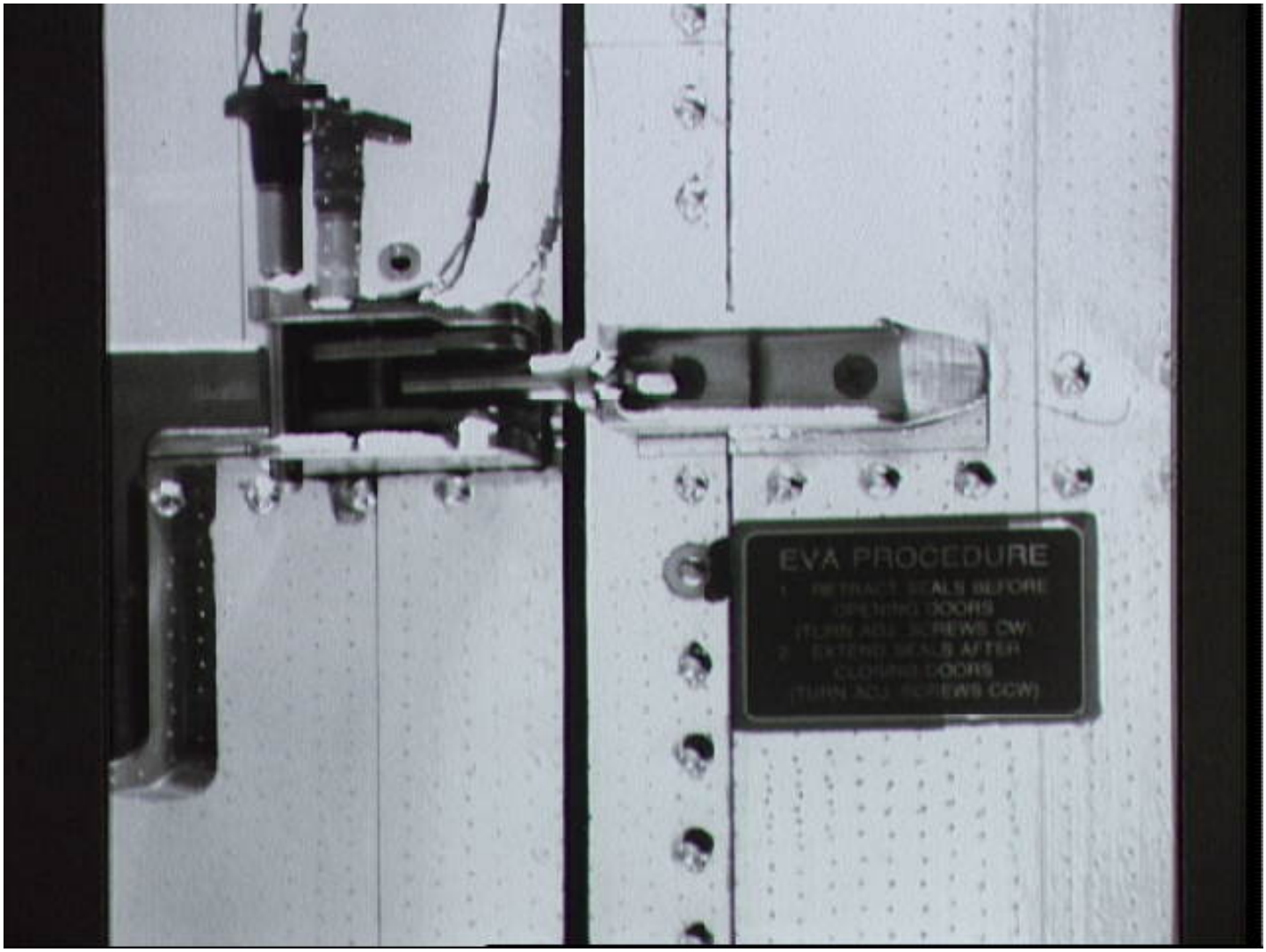
EVA PROCEDURE

NASA Photo ID: STS061(E)010 File Name: 10093044.jpg
Film Type: 35mm BW Date Taken: 12/04/93
Title: Latch of HST aft shroud photographed by Electronic Still Camera
Description:
This close-up view of a latch on the minus V-3 aft shroud door of the Hubble Space Telescope (HST) was photographed with an Electronic Still Camera (ESC), and downlinked to ground controllers soon afterward. Electronic still photography is a technology which provides the means for a handheld camera to electronically capture and digitize an image with resolution approaching film quality.
Subject terms:
DOWNLINKING
ELECTRONIC STILL CAMERA
ENDEAVOUR (ORBITER)
HUBBLE SPACE TELESCOPE
LATCHES
PHOTOGRAPHY
REPAIRING
SPACE MAINTENANCE
STS-61

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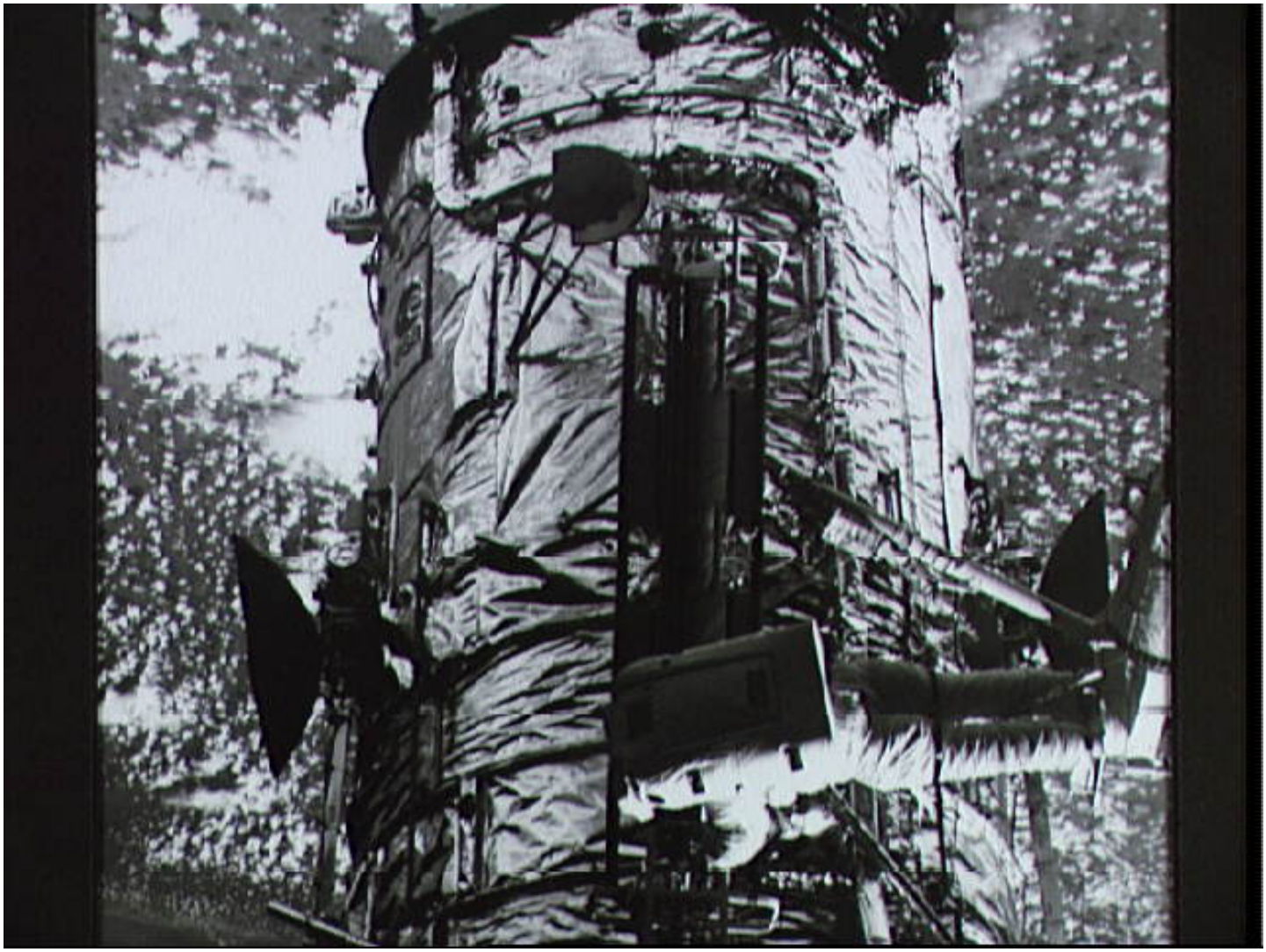

NASA Photo ID: STS061(E)011 File Name: 10093045.jpg
Film Type: 35mm BW Date Taken: 12/05/93
Title: Astronaut Kathryn Thornton on HST photographed by Electronic Still Camera
Description:
This view of Astronaut Kathryn C. Thornton working on the Hubble Space Telescope (HST) was photographed by an Electronic Still Camera (ESC), and downlinked to ground controllers soon afterward. Thornton, anchored to the end of the Remote Manipulator System (RMS) arm, is installing the +V2 Solar Array Panel as a replacement for the original one removed earlier.
Electronic still photography is a technology which provides the means for a handheld camera to electronically capture and digitize an image with resolution approaching film quality.
Subject terms:
ASTRONAUTS
ELECTRONIC STILL CAMERA
HUBBLE SPACE TELESCOPE
PHOTOGRAPHY
REMOTE MANIPULATOR SYSTEM
REPAIRING
SOLAR ARRAYS
STS-61

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NASA Photo ID: STS061(E)012 File Name: 10093046.jpg
Film Type: 35mm BW Date Taken: 12/05/93
Title: Astronauts Thornton & Akers on HST photographed by Electronic Still Camera
Description:
This view of Astronauts Kathryn C. Thornton (top) and Thomas D. Akers working on the Hubble Space Telescope (HST) was photographed by an Electronic Still Camera (ESC), and downlinked to ground controllers soon afterward. Thornton, anchored to the end of the Remote Manipulator System (RMS) arm, is teaming with Akers to install the +V2 Solar Array Panel as a replacement for the original one removed earlier. Akers uses tethers and a foot restraint to remain in position for the task. Electronic still photography is a technology which provides the means for a handheld camera to electronically capture and digitize an image with resolution approaching film quality.
Subject terms:
ASTRONAUTS
ELECTRONIC STILL CAMERA
HUBBLE SPACE TELESCOPE
PHOTOGRAPHY
REMOTE MANIPULATOR SYSTEM
REPAIRING
SOLAR ARRAYS
STS-61

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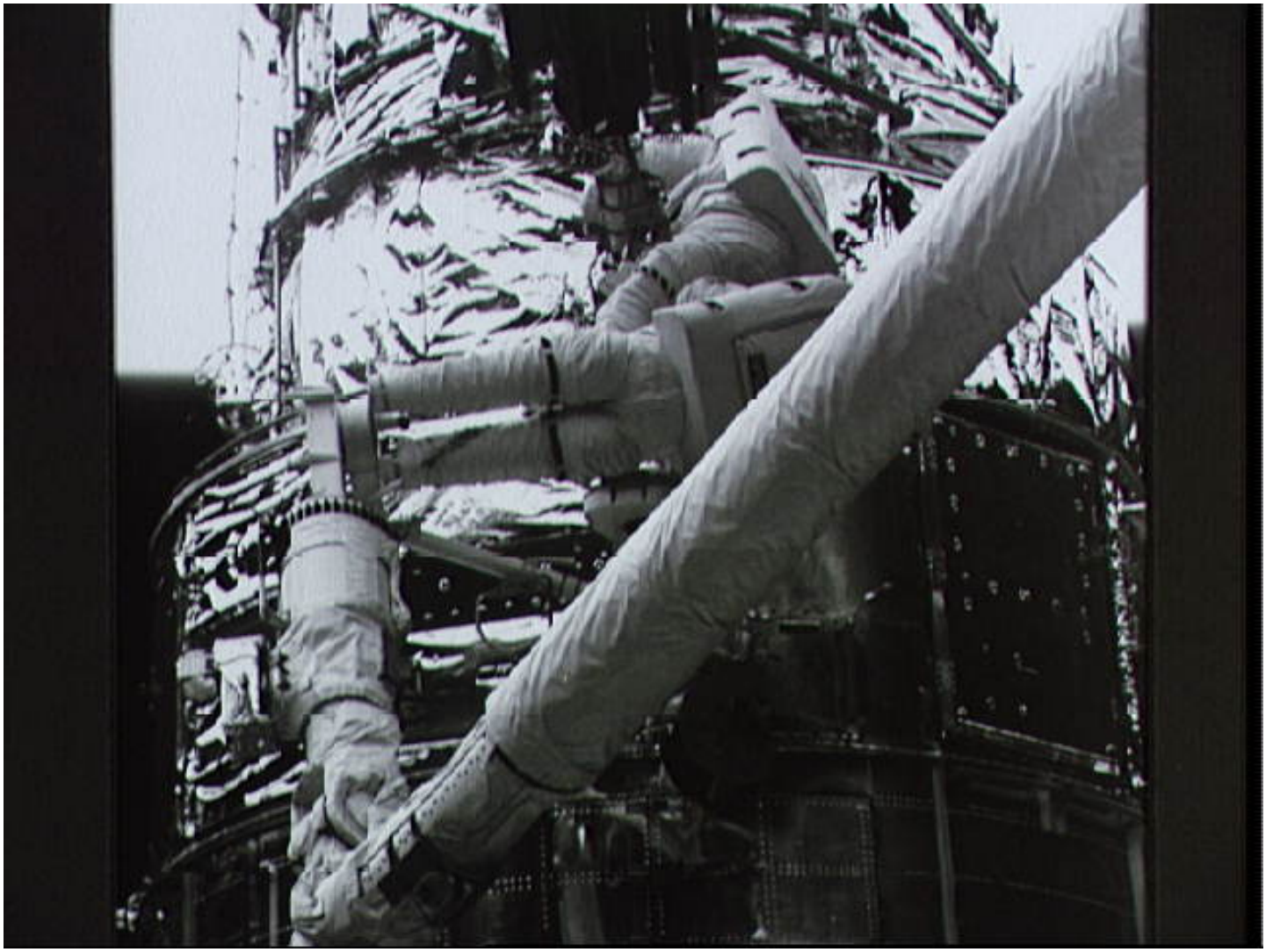

NASA Photo ID: STS061(E)014 File Name: 10093047.jpg
Film Type: 35mm BW Date Taken: 12/05/93
Title: Astronauts Thornton & Akers on HST photographed by Electronic Still Camera
Description:
This view of Astronauts Kathryn C. Thornton (top) and Thomas D. Akers working on the Hubble Space Telescope (HST) was photographed by an Electronic Still Camera (ESC), and downlinked to ground controllers soon afterward. Thornton, anchored to the end of the Remote Manipulator System (RMS) arm, is teaming with Akers to install the +V2 Solar Array Panel as a replacement for the original one removed earlier. Akers uses tethers and a foot restraint to remain in position for the task. Electronic still photography is a technology which provides the means for a handheld camera to electronically capture and digitize an image with resolution approaching film quality.
Subject terms:
ASTRONAUTS
ELECTRONIC STILL CAMERA
HUBBLE SPACE TELESCOPE
PHOTOGRAPHY
REMOTE MANIPULATOR SYSTEM
REPAIRING
SOLAR ARRAYS
STS-61

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NASA Photo ID: STS061(E)015 File Name: 10093048.jpg
Film Type: 35mm BW Date Taken: 12/06/93
Title: Electronic Still Camera view of Aft end of Wide Field/Planetary Camera in HST

Description:
A close-up view of the aft part of the Wide Field/Planetary Camera (WF/PC2) installed on the Hubble Space Telescope (HST) was photographed with the Electronic Still Camera (ESC) from inside Endeavour's cabin as Astronaut F. Story Musgrave and Jeffrey A. Hoffman moved it from its stowage position onto the giant telescope. Electronic still photography is technology which provides the means for a handheld camera to electronically capture and digitize an image with resolution approaching film quality.

Subject terms:
CAMERAS
ELECTRONIC STILL CAMERA
HUBBLE SPACE TELESCOPE
PHOTOGRAPHIC EQUIPMENT
PHOTOGRAPHY
REPAIRING
STS-61

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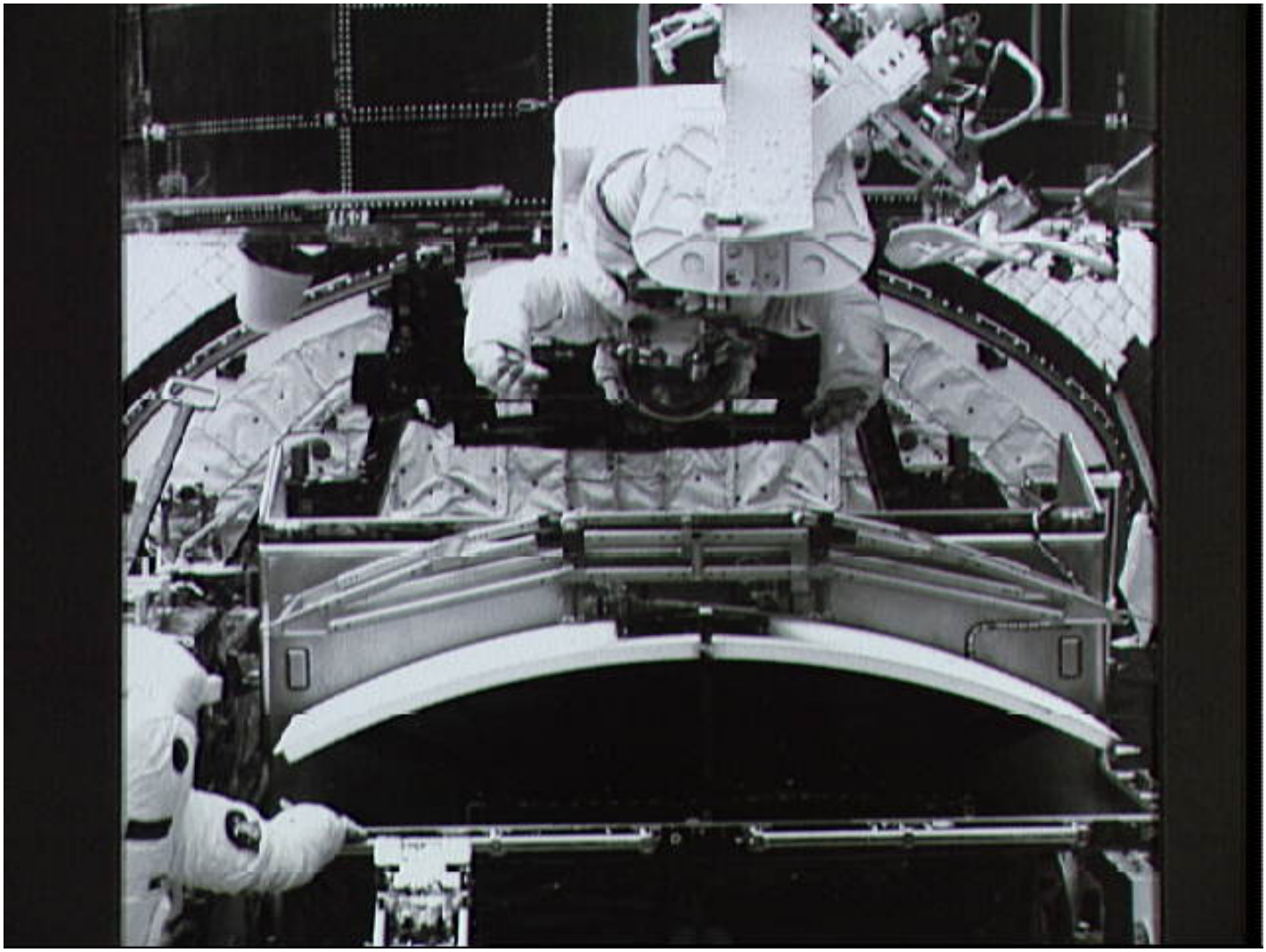

NASA Photo ID: STS061(E)016 File Name: 10093049.jpg
Film Type: 35mm BW Date Taken: 12/06/93
Title: Astronaut Jeffrey Hoffman on RMS robot arm during HST repairs
Description:
Astronaut Jeffrey A. Hoffman (frame center) remains secured by his feet on the end of the Endeavour's robot arm as he prepares to participate in the replacement of Hubble Space Telescope's (HST) Wide Field/Planetary Camera (WF/PC). Astronaut F. Story Musgrave (just in frame at lower left corner) assists Hoffman in removing the new camera (WF/PC2) from the Scientific Instrument Protective Enclosure (SIPE). Electronic still photography is technology which provides the means for a handheld camera to electronically capture and digitize an image with resolution approaching film quality.

Subject terms:
ASTRONAUTS
CAMERAS
ELECTRONIC STILL CAMERA
HUBBLE SPACE TELESCOPE
PHOTOGRAPHY
REMOTE MANIPULATOR SYSTEM
REPAIRING
STS-61

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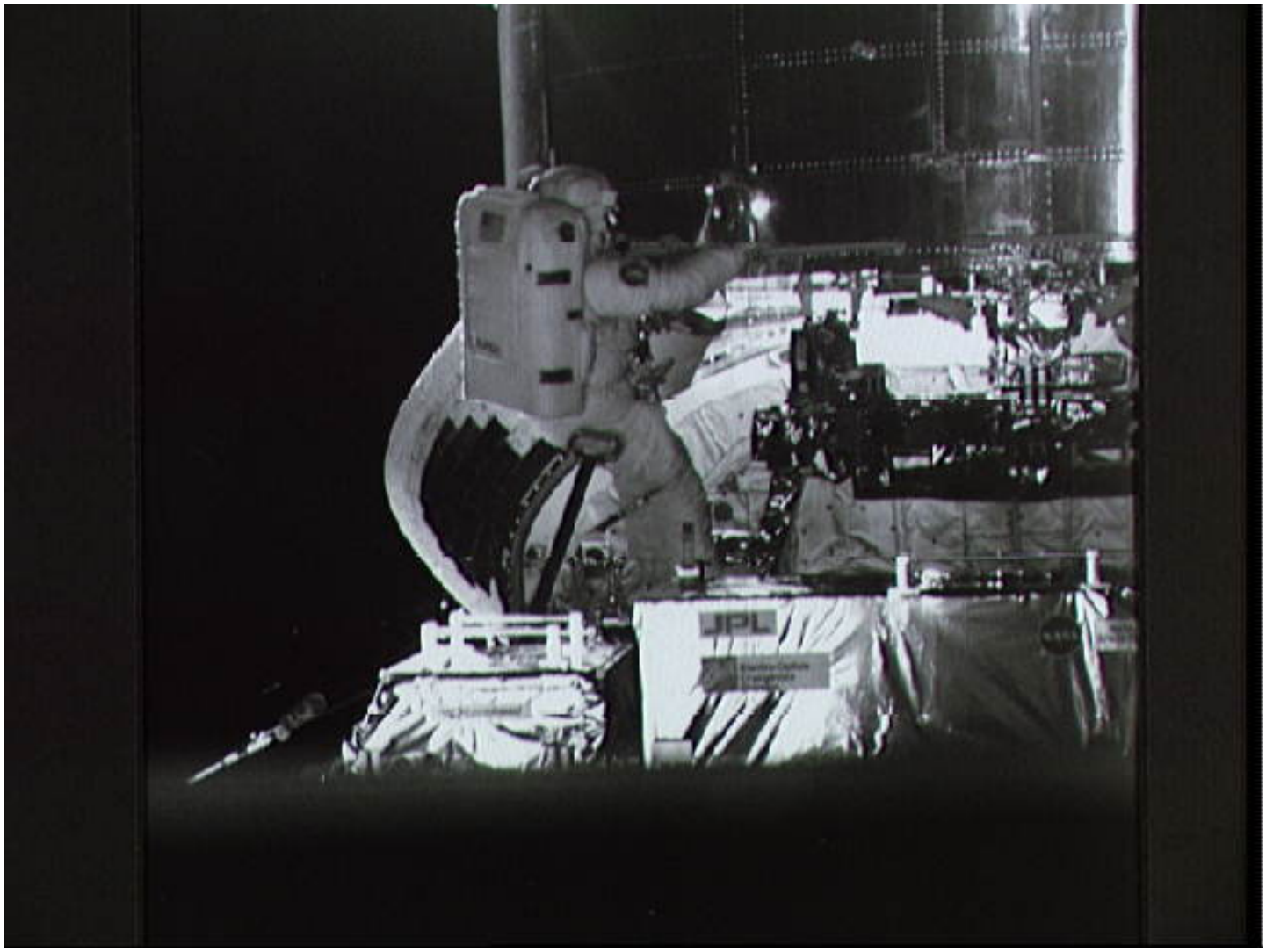
JPL

NASA Photo ID: STS061(E)017 File Name: 10093050.jpg
Film Type: 35mm BW Date Taken: 12/06/93
Title: Astronaut Jeffrey Hoffman on RMS robot arm during HST repairs
Description:
Astronaut Jeffrey A. Hoffman (frame center) remains secured by his feet on the end of the Endeavour's robot arm as he prepares to participate in the replacement of Hubble Space Telescope's (HST) Wide Field/Planetary Camera (WF/PC). Astronaut F. Story Musgrave (just in frame at lower left corner) assists Hoffman in removing the new camera (WF/PC2) from the Scientific Instrument Protective Enclosure (SIPE). Electronic still photography is technology which provides the means for a handheld camera to electronically capture and digitize an image with resolution approaching film quality.

Subject terms:
ASTRONAUTS
CAMERAS
ELECTRONIC STILL CAMERA
HUBBLE SPACE TELESCOPE
PHOTOGRAPHY
REMOTE MANIPULATOR SYSTEM
REPAIRING
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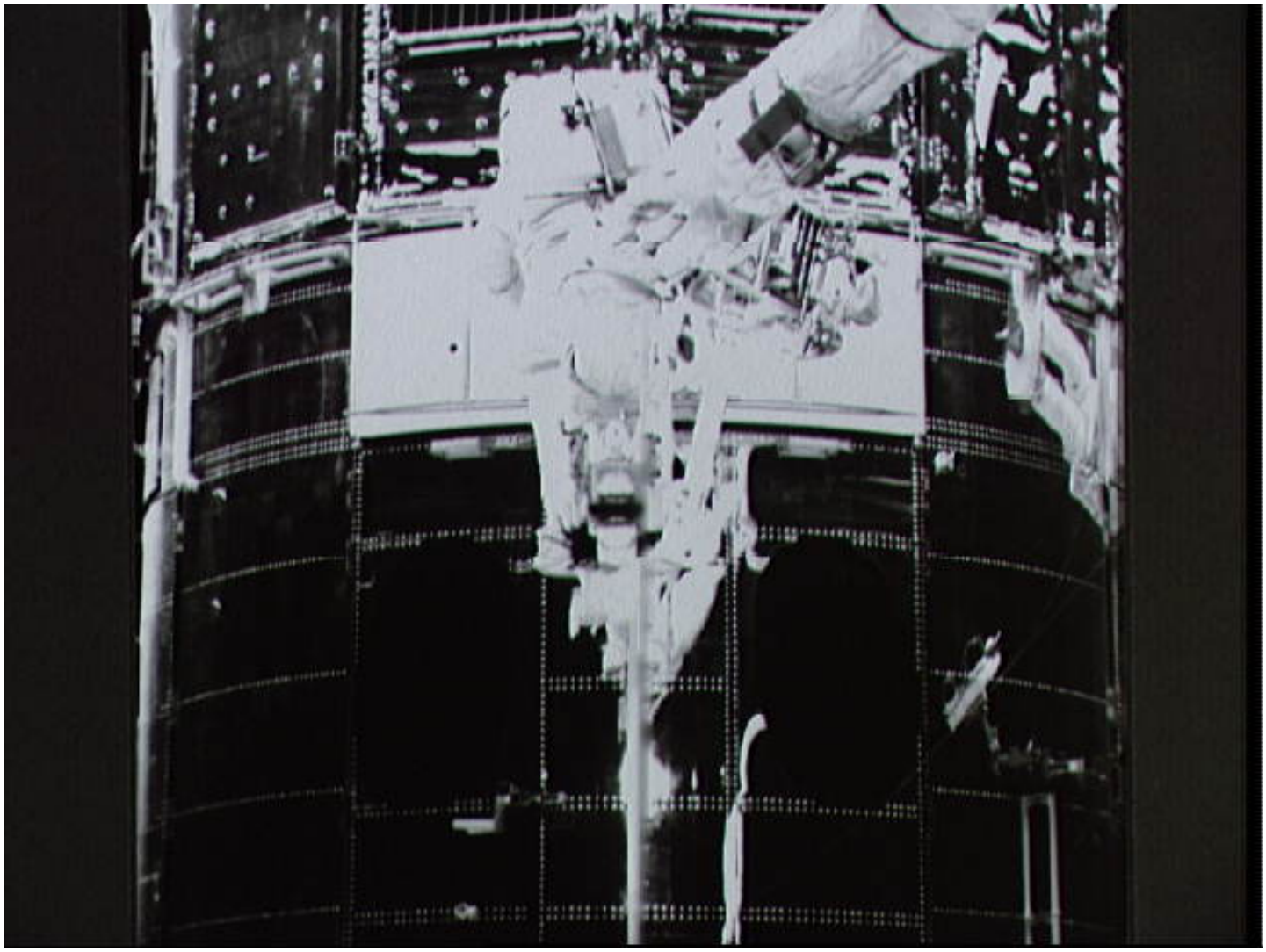

NASA Photo ID: STS061(E)018 File Name: 10093051.jpg
Film Type: 35mm BW Date Taken: 12/06/93
Title: Astronaut Jeffrey Hoffman on RMS robot arm during HST repairs
Description:
Astronaut Jeffrey A. Hoffman, anchored to a foot restraint on the end of the Endeavour's Remote Manipulator System (RMS) robot arm, inserts the new Wide Field/Planetary Camera (WF/PC2) into its place on the Hubble Space Telescope (HST). Astronaut F. Story Musgrave, who shared the duties of replacing the camera, is partially visible at right edge of frame. Electronic still photography is technology which provides the means for a handheld camera to electronically capture and digitize an image with resolution approaching film quality.
Subject terms:
ASTRONAUTS
CAMERAS
ELECTRONIC STILL CAMERA
HUBBLE SPACE TELESCOPE
PHOTOGRAPHY
REMOTE MANIPULATOR SYSTEM
REPAIRING
STS-61

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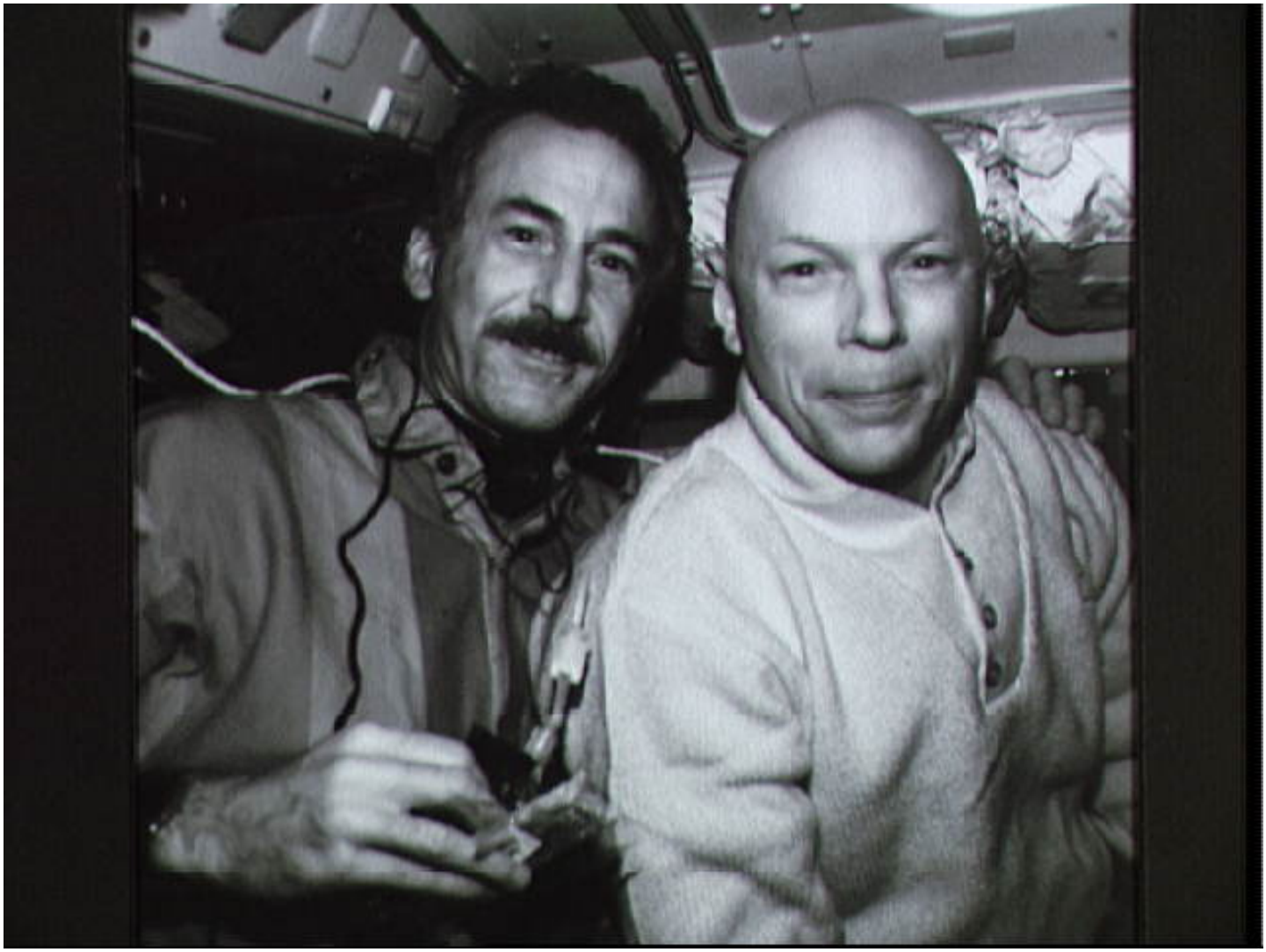

NASA Photo ID: STS061(E)019 File Name: 10093052.jpg
Film Type: 35mm BW Date Taken: 12/06/93
Title: Astronauts Hoffman and Musgrave pose in aft flight deck
Description:
Two of Endeavour's busy team of astronauts share a rare moment of leisure in the aft flight deck captured by an Electronic Still Camera (ESC). Astronauts Jeffrey A. Hoffman, left, and F. Story Musgrave also are sharing three of the mission's five planned sessions of extravehicular activity (EVA). Electronic still photography is a technology which provides the means for a handheld camera to electronically capture and digitize an image with resolution approaching film quality.
Subject terms:
ASTRONAUTS
ELECTRONIC STILL CAMERA
ENDEAVOUR (ORBITER)
FLIGHT DECK
PHOTOGRAPHY
PORTRAIT
STS-61

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NASA Photo ID: STS061(E)020 File Name: 10093053.jpg
Film Type: 35mm BW Date Taken: 12/07/93
Title: HST Solar Arrays photographed by Electronic Still Camera
Description:
This close-up view of one of two Solar Arrays (SA) on the Hubble Space Telescope (HST) was photographed with an Electronic Still Camera (ESC), and downlinked to ground controllers soon afterward. Electronic still photography is a technology which provides the means for a handheld camera to electronically capture and digitize an image with resolution approaching film quality.
Subject terms:
CAMERAS
DOWNLINKING
ELECTRONIC STILL CAMERA
ENDEAVOUR (ORBITER)
HUBBLE SPACE TELESCOPE
PHOTOGRAPHY
REPAIRING
SOLAR ARRAYS
STS-61

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NASA Photo ID: STS061(E)021 File Name: 10093054.jpg
Film Type: 35mm Date Taken: 12/04/93
Title: HST High Gain Antennae photographed by Electronic Still Camera
Description:
This close-up view of one of the two High Gain Antennae (HGA) on the Hubble Space Telescope (HST) was photographed with an Electronic Still Camera (ESC), and downlinked to ground controllers soon afterward. Electronic still photography is a technology which provides the means for a handheld camera to electronically capture and digitize an image with resolution approaching film quality.
Subject terms:
ANTENNAS
EARTH OBSERVATIONS (FROM SPACE)
ELECTRONIC STILL CAMERA
HUBBLE SPACE TELESCOPE
PHOTOGRAPHY
SPACEBORNE ASTRONOMY
STS-61

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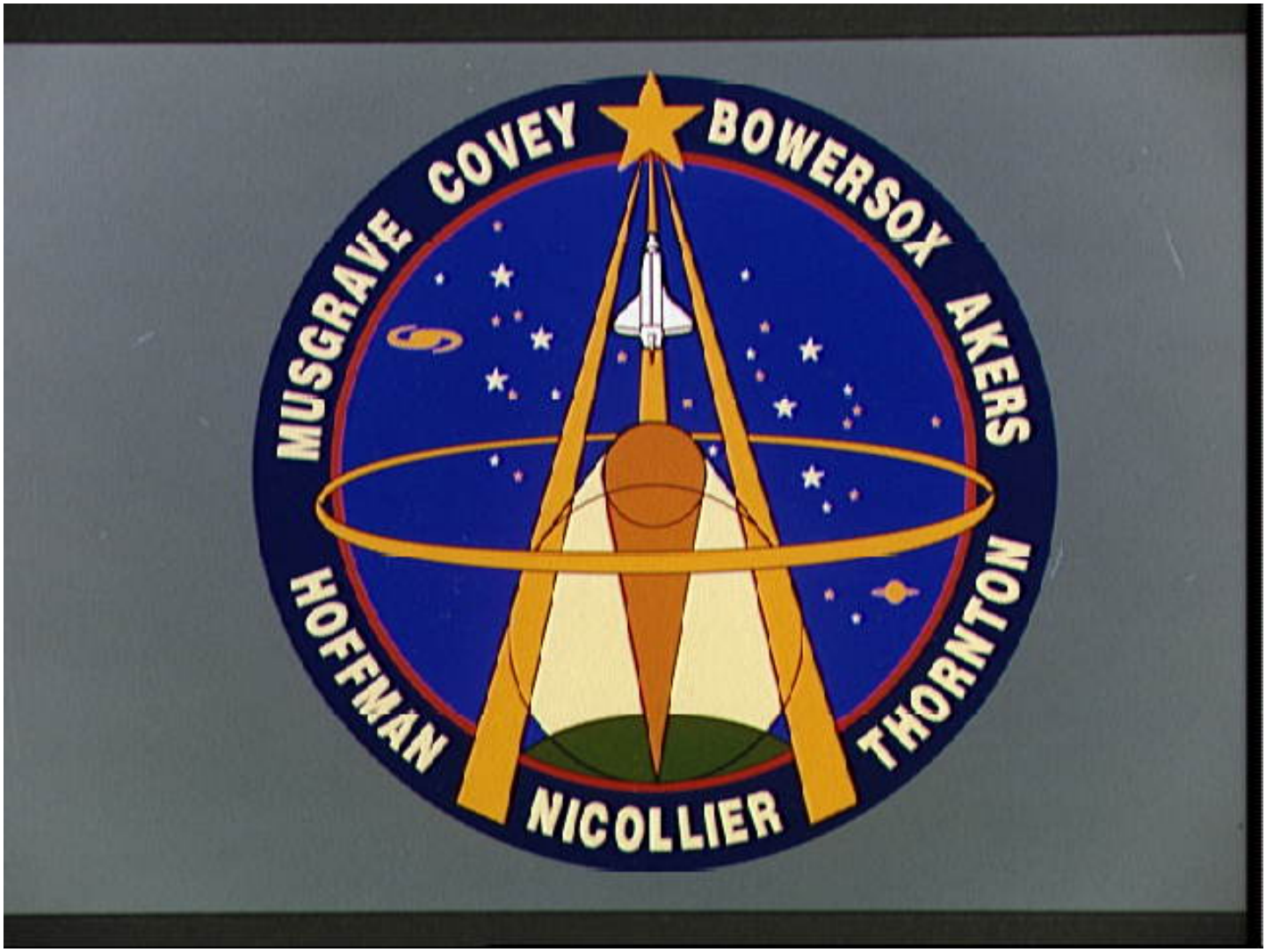
MUSGRAVE COVEY
BOWERSOX AKERS
HOFFMAN
NICOLLIER
THORNTON

NASA Photo ID: STS061(S)001 File Name: 10092960.jpg
Film Type: 4x5 Date Taken: 10/01/93
Title: STS-61 Crew Insignia
Description:
The STS-61 crew insignia depicts the astronaut symbol superimposed against the sky with the Earth underneath. Also seen are two circles representing the optical configuration of the Hubble Space Telescope (HST). The Space Shuttle Endeavour is also represented. The overall design of the emblem, with lines converging to a high point, is also a symbolic representation of the large-scale Earth-based effort to reach goals of knowledge and perfection.
Subject terms:
INSIGNIAS
LOGO
STS-61

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MUSGRAVE GOVEY BOWERSOX ALLEN
NICOLLIER THORNTON

NASA Photo ID: STS061(S)002 File Name: 10092961.jpg
Film Type: 35mm Date Taken: 10/01/93
Title: STS-61 crew portrait
Description:
STS-61 crew portrait. Left to right (seated) are Astronauts Kenneth D. Bowersox, pilot; Kathryn C. Thornton, F. Story Musgrave, and Claude Nicollier, all mission specialists. Left to right (standing) are Astronauts Ricard O. Covey, mission commander; Jeffrey A. Hoffman and Thomas D. Akers, mission specialists. On the left side of the table is a model of the Hubble Space Telescope, on the right a model of the Space Shuttle. In the middle is a plaque of the STS-61 crew insignia.
Subject terms:
ASTRONAUTS
CREWS
PORTRAIT
STS-61

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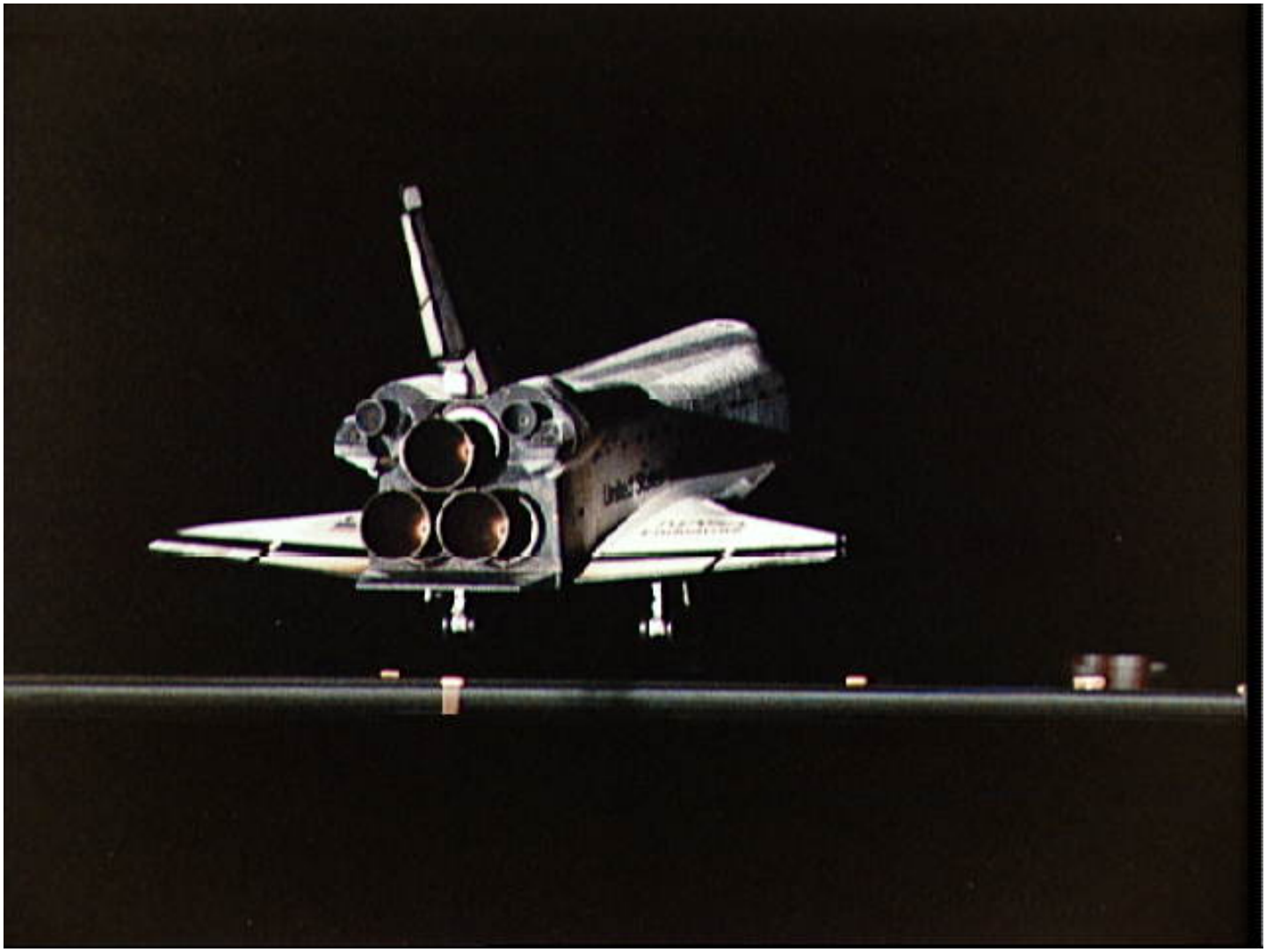

NASA Photo ID: STS061(S)071 File Name: 10093107.jpg
Film Type: 35mm Date Taken: 12/13/93
Title: Landing of STS-61 Shuttle Endeavour at Kennedy Space Center
Description:
A rear view of the Space Shuttle Endeavour as it touches down on the Shuttle Landing Facility at Kennedy Space Center (KSC) at 12:26 a.m. December 13, 1993. This is the second night landing at KSC in the history of the Shuttle program.
Subject terms:
FLORIDA
LANDING
LANDING SITES
NIGHT
RUNWAYS
STS-61

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NASA Photo ID: STS061(S)088 File Name: 10093022.jpg
Film Type: 70mm Date Taken: 12/02/93
Title: Launch of Space Shuttle Endeavour on mission STS-61
Description:
The Space Shuttle Endeavour lifts off from Launch Pad 39B with a crew of six NASA astronauts, a Swiss mission specialist and a variety of special tools aboard. Launch occured at 4:27:00 a.m., December 2, 1993.
Subject terms:
ENDEAVOUR (ORBITER)
FLORIDA
LAUNCHING SITES
LIFTOFF (LAUNCHING)
STS-61

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NASA Photo ID: STS061(S)089 File Name: 10093023.jpg
Film Type: 70mm Date Taken: 12/02/93
Title: Launch of Space Shuttle Endeavour on mission STS-61
Description:
The Space Shuttle Endeavour lifts off from Launch Pad 39B with a crew of six NASA astronauts, a Swiss mission specialist and a variety of special tools aboard. Launch occured at 4:27:00 a.m., December 2, 1993. The launch is reflected in a pool of water in the marsh nearby.
Subject terms:
ENDEAVOUR (ORBITER)
FLORIDA
LAUNCHING SITES
LIFTOFF (LAUNCHING)
STS-61

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NASA Photo ID: STS061(S)090 File Name: 10093024.jpg
Film Type: 70mm Date Taken: 12/02/93
Title: Launch of Space Shuttle Endeavour on mission STS-61
Description:
The Space Shuttle Endeavour lifts off from Launch Pad 39B with a crew of six NASA astronauts, a Swiss mission specialist and a variety of special tools aboard. Launch occured at 4:27:00 a.m., December 2, 1993. The launch is reflected in a pool of water in the marsh nearby.
Subject terms:
ENDEAVOUR (ORBITER)
FLORIDA
LAUNCHING SITES
LIFTOFF (LAUNCHING)
STS-61

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NASA Photo ID: STS061(S)091 File Name: 10093025.jpg
Film Type: 70mm Date Taken: 12/02/93
Title: Launch of Space Shuttle Endeavour on mission STS-61
Description:
The Space Shuttle Endeavour lifts off from Launch Pad 39B with a crew of six NASA astronauts, a Swiss mission specialist and a variety of special tools aboard. Launch occured at 4:27:00 a.m., December 2, 1993. The launch is reflected in a pool of water in the marsh nearby.
Subject terms:

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NASA Photo ID: STS061(S)092 File Name: 10093026.jpg
Film Type: 35mm Date Taken: 12/05/93
Title: Mission control activity during STS-61 EVA-2
Description:
Harry Black, at the Integrated Communications Officer's console in the Mission Control Center (MCC), monitors the second extravehicular activity (EVA-2) of the STS-61 Hubble Space Telescope (HST) servicing mission. Others pictured, left to right, are Judy Alexander, Kathy Morrison and Linda Thomas. Note monitor scene of one of HST's original solar array panels floating in space moments after being tossed away by Astronaut Kathryn C. Thornton.
Subject terms:
CONSOLES
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
FLIGHT CONTROL
GROUND BASED CONTROL
INTEGRATED MISSION CONTROL CENTER
PERSONNEL
STS-61

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NASA Photo ID: STS061(S)094 File Name: 10093028.jpg
Film Type: 35mm Date Taken: 12/05/93
Title: Mission control activity during STS-61 EVA-2
Description:
Kyle Herring, second left, illustrates a point during mission commentary for the second extravehicular activity (EVA-2) of the STS-61 Hubble Space Telescope (HST) servicing mission. Astronaut Jerry L. Ross (center), a space walker on two previous NASA shuttle missions, amplified on Herring's explanations. At the flight surgeon's console is Dr. Klaus Lohn (third right) of the Institute for Flight Medicine in Koln.
Subject terms:
CONSOLES
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
FLIGHT CONTROL
GROUND BASED CONTROL
INTEGRATED MISSION CONTROL CENTER
PERSONNEL
STS-61

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NASA Photo ID: STS061(S)096 File Name: 10093029.jpg
Film Type: 35mm Date Taken: 12/05/93
Title: Mission control activity during STS-61 EVA-1
Description:
Joseph Fanelli, at the Integrated Communications Officer console, monitors the televised activity of Astronauts Story Musgrave and Jeffrey A. Hoffman. The vetern astronauts were performing the first extravehicular activity (EVA-1) of the STS-61 Hubble Space Telescope (HST) servicing mission.

Subject terms:
CONSOLES
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
FLIGHT CONTROL
GROUND BASED CONTROL
INTEGRATED MISSION CONTROL CENTER
PERSONNEL
STS-61

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EVA

NASA Photo ID: STS061(S)097 File Name: 10093030.jpg
Film Type: 35mm Date Taken: 12/07/93
Title: Mission control activity during STS-61 EVA
Description:
Flight controller Susan P. Rainwater observes as two astronauts work through a lengthy period of extravehicular activity (EVA) in the cargo bay of the Earth-looking Space Shuttle Endeavour. Rainwater's EVA console was one of Mission Control's busiest during this eleven-day Hubble Space Telescope (HST) servicing mission in Earth orbit.
Subject terms:
CONSOLES
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
FLIGHT CONTROL
GROUND BASED CONTROL
INTEGRATED MISSION CONTROL CENTER
PERSONNEL
STS-61

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FLIGHT DIRECTOR

NASA Photo ID: STS061(S)098 File Name: 10093031.jpg
Film Type: 35mm Date Taken: 12/07/93
Title: Mission control activity during STS-61 EVA
Description:
Flight Director Milton Heflin monitors two space walkers as they change out the Wide Field/Planetary Camera (WF/PC) on the Hubble Space Telescope (HST), temporarily berthed in Endeavour's cargo bay. Astronaut Gregory J. Harbaugh, spacecraft communicator (CAPCOM), is at right edge. Astronauts F. Story Musgrave and Jeffrey A. Hoffman can be seen with the large camera on the screen in the front of the flight control room.

Subject terms:
CAMERAS
CONSOLES
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
FLIGHT CONTROL
GROUND BASED CONTROL
INTEGRATED MISSION CONTROL CENTER
PERSONNEL
STS-61

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NASA Photo ID: STS061(S)101 File Name: 10093032.jpg
Film Type: 35mm Date Taken: 12/07/93
Title: Mission control activity during STS-61 EVA
Description:
Astronaut Gregory J. Harbaugh, spacecraft communicator (CAPCOM), observes as two astronauts work through a lengthy period of extravehicular activity (EVA) in the cargo bay of the Earth-orbiting Space Shuttle Endeavour. Seen on the screen in the front of the flight control room, preparing to work with the Hubble Space Telescope (HST) magnetometers, are astronauts F. Story Musgrave and Jeffrey A. Hoffman. Lead flight director Milt Heflin is partially visible at left edge of frame.
Subject terms:
CAMERAS
CONSOLES
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
FLIGHT CONTROL
GROUND BASED CONTROL
INTEGRATED MISSION CONTROL CENTER
PERSONNEL
STS-61

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NASA Photo ID: STS061(S)102 File Name: 10093033.jpg
Film Type: 35mm Date Taken: 12/07/93
Title: Mission control activity during STS-61 EVA-1
Description:
Flight controllers Harry Black (left foreground) and Kevin McCluney (right foreground) monitor the televised activity of two space walkers during the first STS-61 extravehicular activity (EVA). Astronauts F. Story Musgrave and Jeffrey A. Hoffman were performing a variety of equipment replacements. At the Integrated Communications Officer Console (INCO) Black plays a role in controlling the TV while McLuney's duties deal with maintenance, mechanical, arm and crew systems.
Subject terms:
CONSOLES
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
FLIGHT CONTROL
GROUND BASED CONTROL
INTEGRATED MISSION CONTROL CENTER
PERSONNEL
REPAIRING
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NASA Photo ID: STS061(S)103 File Name: 10093034.jpg
Film Type: 35mm Date Taken: 12/07/93
Title: Flight Director Robert Castle uses laptop while monitoring space walk
Description:
Flight Director Robert E. Castle uses a laptop computer to aid his busy tasks during one of the five space walks performed to service the Hubble Space Telescope (HST) temporarily berthed in Endeavour's cargo bay. STS-61 lead Flight Director Milt Heflin is at right edge of frame.
Subject terms:
COMPUTERS
CONSOLES
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
FLIGHT CONTROL
GROUND BASED CONTROL
INTEGRATED MISSION CONTROL CENTER
PERSONNEL
PORTABLE EQUIPMENT
STS-61

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NASA Photo ID: STS061(S)104 File Name: 10093035.jpg
Film Type: 35mm Date Taken: 12/07/93
Title: Mission control activity during STS-61 EVA
Description:
An overall view in the JSC Mission Control Center (MCC) during one of the five space walks performed to service the Hubble Space Telescope (HST) temporarily berthed in Endeavour's cargo bay. STS-61 lead Flight Director Milt Heflin is at right edge of frame.
Subject terms:
CONSOLES
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
FLIGHT CONTROL
GROUND BASED CONTROL
INTEGRATED MISSION CONTROL CENTER
PERSONNEL
REPAIRING
STS-61

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NASA Photo ID: STS061-03-029 File Name: 10093095.jpg
Film Type: 35mm Date Taken: 12/05/93
Title: Astronaut Jeffrey Hoffman displays tools for use on HST
Description:
Astronaut Jeffrey A. Hoffman, floating in the forward middeck area, displays tools used in the five space walks on STS-61.
Subject terms:
ASTRONAUTS
ENDEAVOUR (ORBITER)
MIDDECK
ONBOARD ACTIVITIES
SPACE TOOLS
STS-61

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NASA Photo ID: STS061-05-031 File Name: 10093096.jpg
Film Type: 35mm Date Taken: 12/05/93
Title: On-board STS-61 crew portrait
Description:
With the Hubble Space Telescope (HST) berthed in Endeavour's cargo bay, crew members for the STS-61 mission pause for a crew portrait on the flight deck. Left to right are F. Story Musgrave, Richard O. Covey, Claude Nicollier, Jeffrey A. Hoffman, Kenneth D. Bowersox, Kathryn C. Thornton, and Thomas D. Akers.
Subject terms:
ASTRONAUTS
CREWS
FLIGHT DECK
PORTRAIT
STS-61

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NASA Photo ID: STS061-07-003 File Name: 10093097.jpg
Film Type: 35mm Date Taken: 12/05/93
Title: Astronaut Claude Nicollier at RMS controls on aft flight deck
Description:
Swiss Astronaut Claude Nicollier is pictured at the aft flight deck station he occupies. Among Nicollier 's responsibilities were the control of the Remote Manipulator System (RMS) during operations with the Hubble Space Telesocpe (HST).
Subject terms:
ASTRONAUTS
CREW WORKSTATIONS
ENDEAVOUR (ORBITER)
FLIGHT DECK
HUBBLE SPACE TELESCOPE
REMOTE MANIPULATOR SYSTEM
REPAIRING
STS-61

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NASA Photo ID: STS061-101-023 File Name: 10093104.jpg
Film Type: 70mm Date Taken: 12/09/93
Title: Northern Chile and Andes Mountains seen from STS-61 Shuttle Endeavour
Description:
This color photograph is a panoramic (southeastern view) shot that features the northern half of the country of Chile and the Andes Mountains of South America. The Atacama Desert, one of the driest regions on earth, is clearly visible along the northern Chilean coast. The north-south trending spine of the Andes Mountains can be seen on this photograph. Several of the volcanic peaks in this mountain chain exceed 20,000 feet above sea level. Interspersed with these volcanic peaks, numerous dry lake beds (salars) can be seen as highly reflective surfaces. The largest of these salars (Salar de Uyuni) is visible at the edge of the Hubble Space Telescope (HST).

Subject terms:
CHILE
DESERTS
EARTH OBSERVATIONS (FROM SPACE)
HUBBLE SPACE TELESCOPE
MOUNTAINS
SOUTH AMERICA

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NASA Photo ID: STS061-102-010 File Name: 10093089.jpg
Film Type: 70mm Date Taken: 12/09/93
Title: Astronauts Hoffman and Musgrave replace Solar Array Drive Electronics
Description:
Astronauts Jeffrey A. Hoffman (left) and F. Story Musgrave team to replace one of two Solar Array Drive Electronics (SADE) units on the Hubble Space Telescope (HST). Musgrave is standing on a foot restraint mounted on the end of the Space Shuttle Endeavour's Remote Manipulator System (RMS) arm. The black object in upper left corner is part of the window frame through which this 70mm frame was exposed inside Endeavour's cabin.

Subject terms:
ASTRONAUTS
ELECTRONICS
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
PAYLOAD BAY
REMOTE MANIPULATOR SYSTEM
REPAIRING
SOLAR ARRAYS
SPACE MAINTENANCE
STS-61

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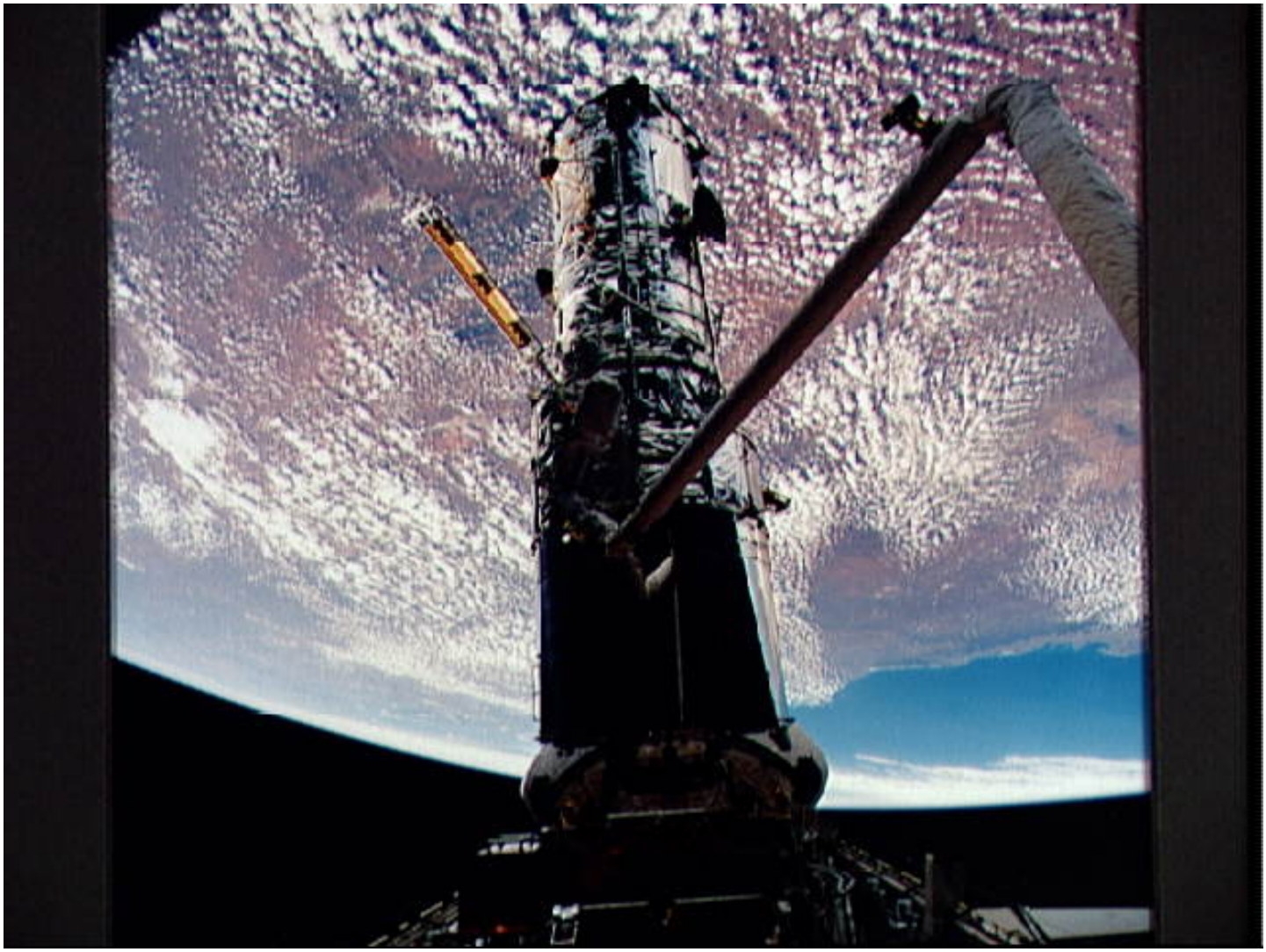

NASA Photo ID: STS061-102-035 File Name: 10093090.jpg
Film Type: 70mm Date Taken: 12/09/93
Title: Astronaut Story Musgrave deploys HST solar array panel
Description:
Astronaut F. Story Musgrave, anchored to a foot restraint on the Space Shuttle Endeavour's Remote Manipulator System (RMS) arm, aids the deployment of one of the solar array panels on the Hubble Space Telescope (HST). The action came during the final of five STS-61 space walks.
Subject terms:
ASTRONAUTS
DEPLOYMENT
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
PAYLOAD BAY
REMOTE MANIPULATOR SYSTEM
REPAIRING
SOLAR ARRAYS
SPACE MAINTENANCE
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NASA Photo ID: STS061-104-007 File Name: 10093062.jpg
Film Type: 70mm Date Taken: 12/05/93
Title: Astronaut Story Musgrave during first of five Hubble Space Telescope EVAs
Description:
Astronaut F. Story Musgrave, holding to one of many strategically placed handrails on the Hubble Space Telescope (HST), is photographed during the first of five space walks on the STS-61 HST-servicing mission.
Subject terms:
ASTRONAUTS
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
PAYLOAD BAY
RAILS
REMOTE MANIPULATOR SYSTEM
REPAIRING
SPACE MAINTENANCE
STS-61

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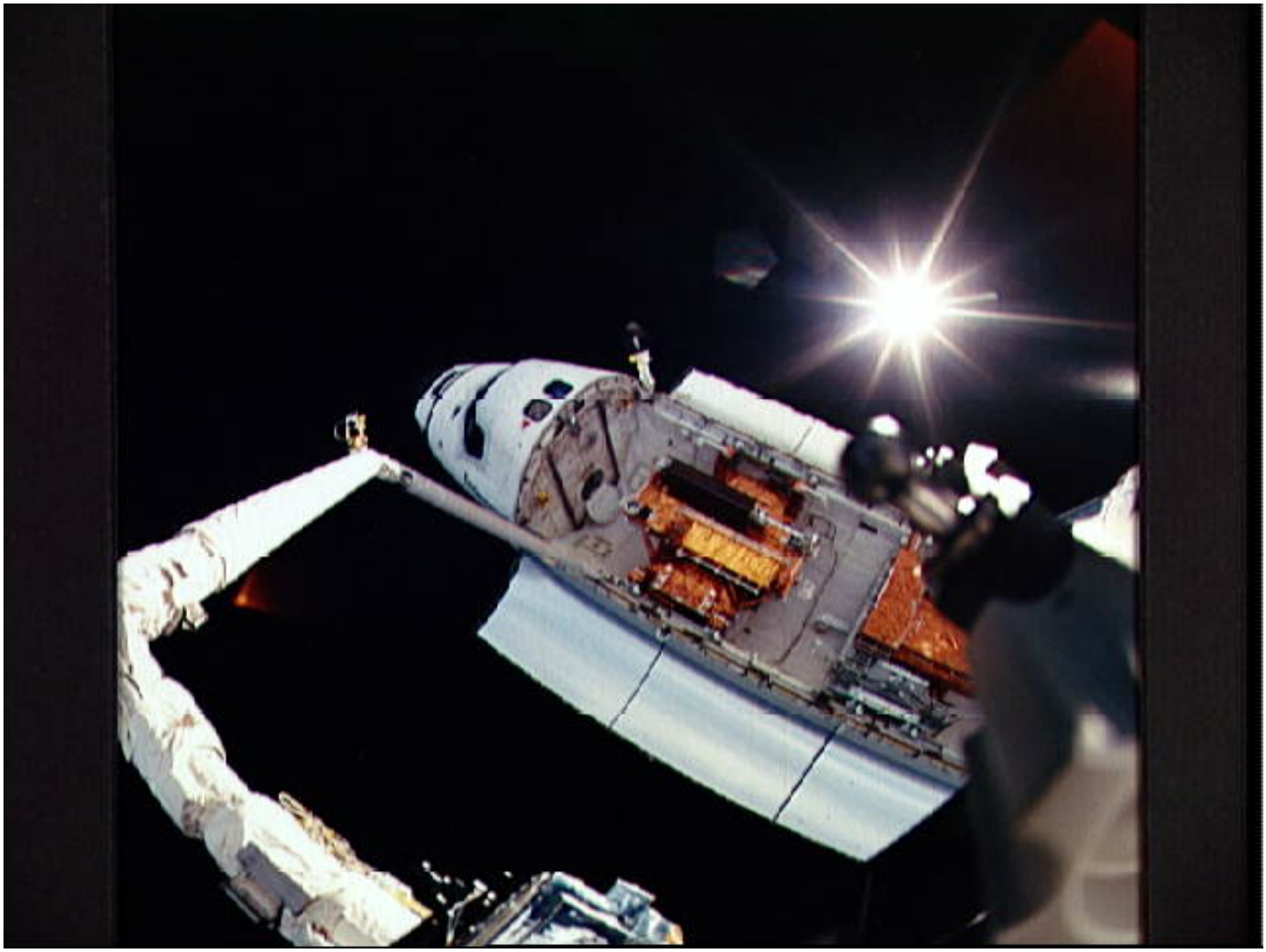

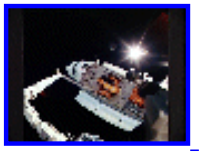

NASA Photo ID: STS061-105-024 File Name: 10093091.jpg
Film Type: 70mm Date Taken: 12/09/93
Title: Endeavour backdropped against space with Sun displaying rayed effect
Description:
One of Endeavour's space walkers captured this view of Endeavour backdropped against the blackness of space, with the Sun displaying a rayed effect. The extended Remote Manipulator System (RMS) arm that the astronaut was standing on is seen on the left side of the view.
Subject terms:
ENDEAVOUR (ORBITER)
ONBOARD ACTIVITIES
PHOTOGRAPHY
REMOTE MANIPULATOR SYSTEM
STS-61
SUN

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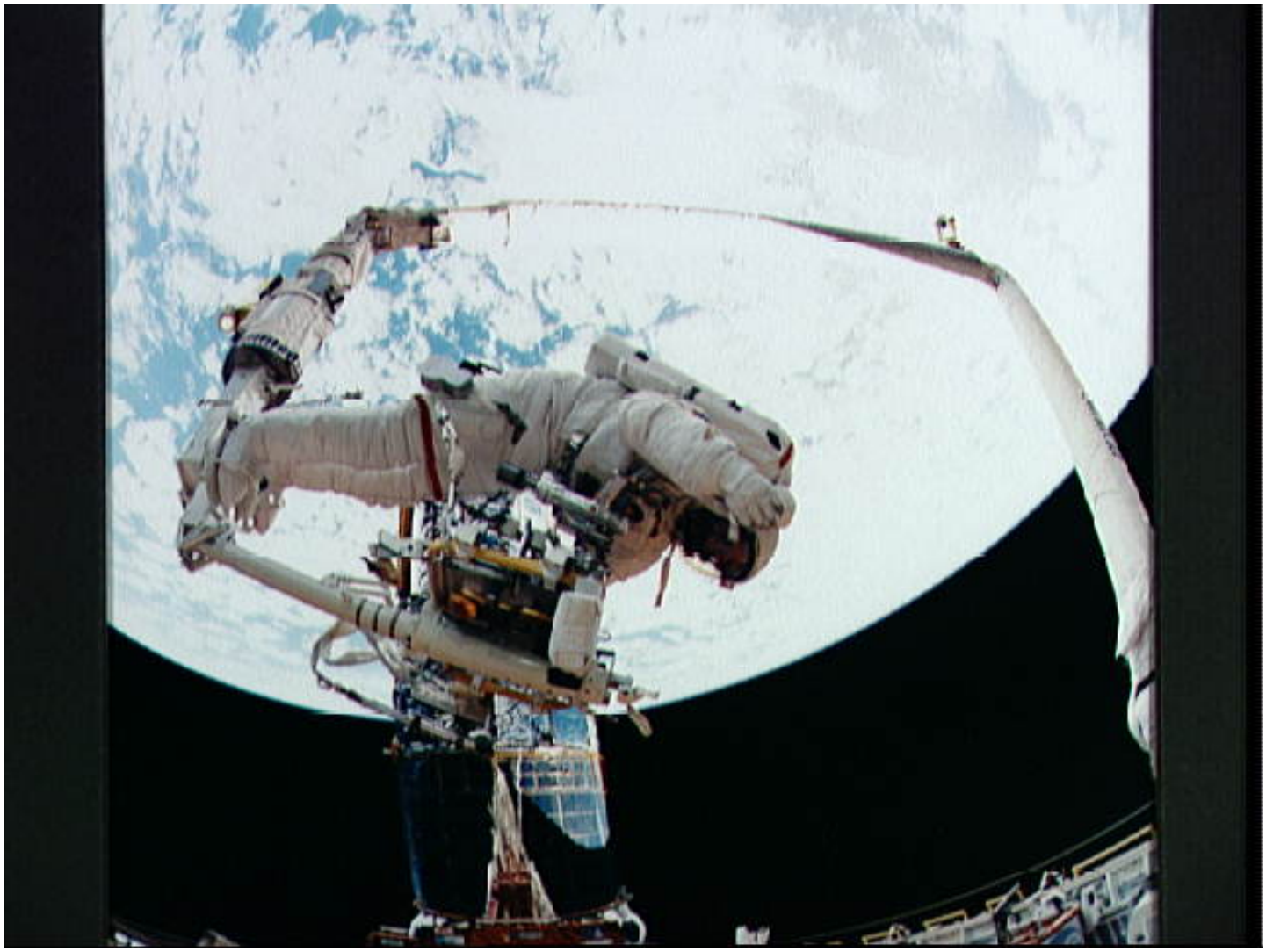

NASA Photo ID: STS061-105-026 File Name: 10093073.jpg
Film Type: 70mm Date Taken: 12/07/93
Title: Astronaut Jeffrey Hoffman on RMS during third of five HST EVAs
Description:
Astronaut Jeffrey A. Hoffman signals directions to Swiss Astronaut Claude Nicollier, as the latter controls the Remote Manipulator System (RMS) arm during the third of five space walks on the Hubble Space Telescope (HST) servicing mission. A portion of the Earth's surface can be seen directly behind him.
Subject terms:
ASTRONAUTS
EARTH OBSERVATIONS (FROM SPACE)
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
PAYLOAD BAY
REMOTE MANIPULATOR SYSTEM
SPACE MAINTENANCE
STS-61

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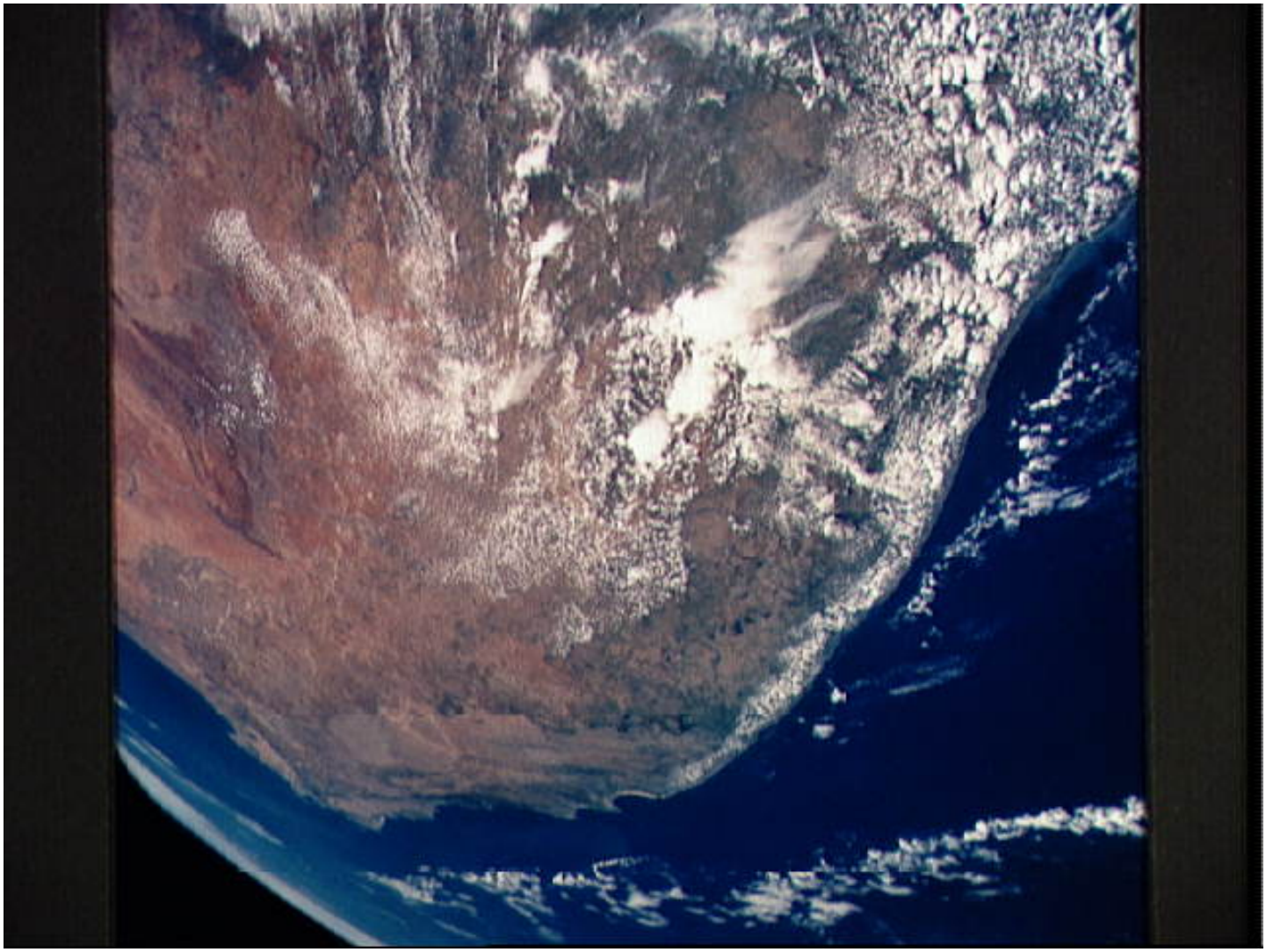

NASA Photo ID: STS061-106-091 File Name: 10093105.jpg
Film Type: 70mm Date Taken: 12/09/93
Title: Southern Africa as seen from STS-61 Shuttle Endeavour
Description:
The entire southern top of Africa is shown in this high altitude 50mm photograph. The center of the photograph is at approximately 28.0 degrees south and 24.0 degrees east. Cape Columbine is at the upper right with Durban at the lower center. The Orange River is at the upper center of the frame. Cape Agulas is the southermost part of the African continent and is visible toward the upper right corner with the great bays of South Africa trending toward the bottom right. Continuing clockwise along the coast, Durban projects out into the Indian Ocean. The oceanic clouds on the right side of the photograph probably depict a current boundary. The Drakensberg Range on the east, the great Karoo Range on the south and the Karas Mountain on the west surround the drier central plateau. The southern Kalahari Desert is at the upper left of the photograph.

Subject terms:
AFRICA
EARTH OBSERVATIONS (FROM SPACE)
ENDEAVOUR (ORBITER)
MOUNTAINS
ONBOARD ACTIVITIES
RIVERS
STS-61

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ROLLA

NASA Photo ID: STS061-11-004 File Name: 10093098.jpg
Film Type: 35mm Date Taken: 12/05/93
Title: Unofficial On-board STS-61 crew portrait
Description:
Traditional inflight portrait of the crew of the Hubble Space Telescope (HST) servicing mission. On the front row are the three crew members who assisted from inside Endeavor's cabin throughout the extravehicular activites or Spacewalks. They are, left to right, Swiss Scientist Claude Nicollier, mission specialist, along with astronauts Kenneth D. Bowersox, pilot; and Richard O. Covey, misson commander. Back row - all space walkers on this flight - are Astronauts F. Story Musgrave, payload commader; Jeffrey A. Hoffman, Kathryn D. Thornton and Thomas D. Akers, are mission specialists.
Subject terms:
ASTRONAUTS
CREWS
FLIGHT DECK
PORTRAIT
STS-61

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NASA Photo ID: STS061-23-005 File Name: 10093082.jpg
Film Type: 35mm Date Taken: 12/08/93
Title: STS-61 crewmembers prepare covers for magnetometers on HST
Description:
Three members of the STS-61 crew prepare covers to be placed on magnetometers near the top of the Hubble Space Telescope (HST). Left to right are Richard O. Covey, mission commander; Kenneth D. Bowersox, pilot and Claude Nicollier, mission specialist.
Subject terms:
ASTRONAUTS
CREWS
ENDEAVOUR (ORBITER)
FLIGHT DECK
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
REPAIRING
STS-61

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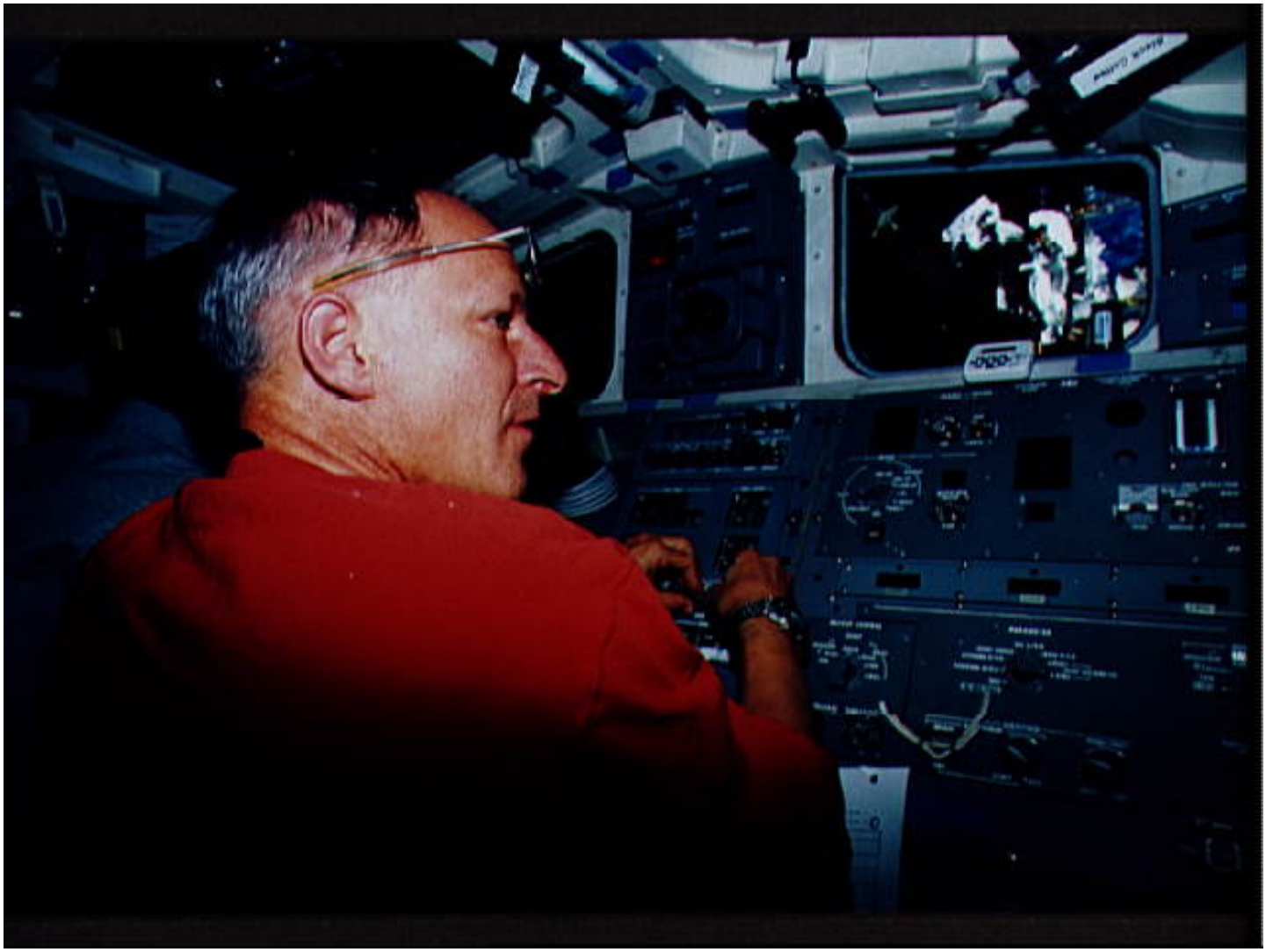

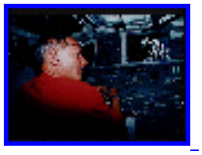

NASA Photo ID: STS061-23-037 File Name: 10093099.jpg
Film Type: 35mm Date Taken: 12/09/93
Title: Astronaut Claude Nicollier on flight deck at controls of the RMS
Description:
Swiss Astronaut Claude Nicollier, mission specialist, is stationed on Endeavour's flight deck during one of the five Hubble Space Telescope (HST) servicing space walks. The controls for the Remote Manipulator System (RMS) are left of frame center. Two space walkers can be seen through the aft windows.
Subject terms:
ASTRONAUTS
ENDEAVOUR (ORBITER)
FLIGHT DECK
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
REMOTE MANIPULATOR SYSTEM
STS-61

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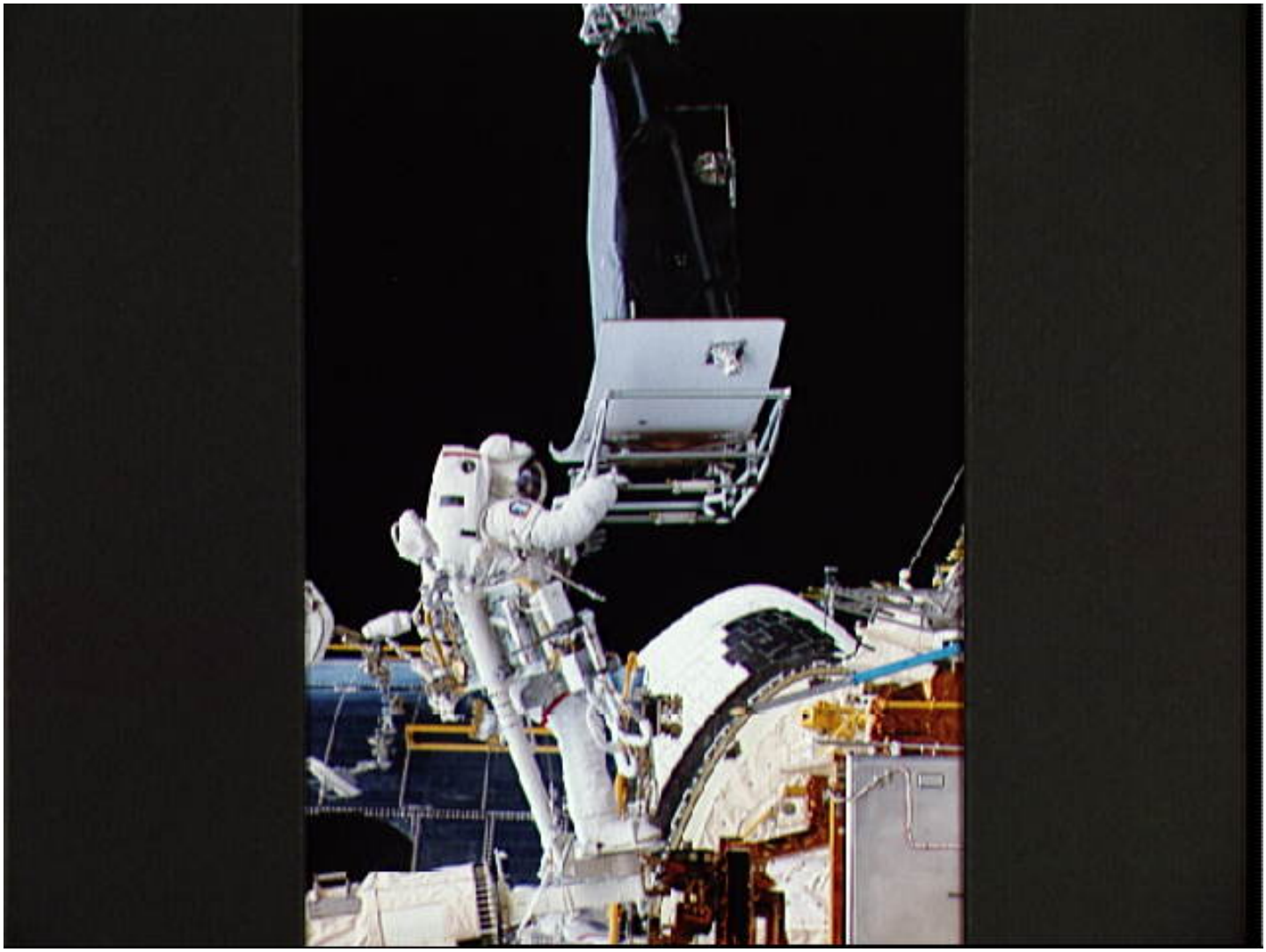

NASA Photo ID: STS061-37-011 File Name: 10093070.jpg
Film Type: 35mm Date Taken: 12/07/93
Title: Astronaut Jeffrey Hoffman with Wide Field/Planetary Camera during EVA
Description:
Astronaut Jeffrey A. Hoffman with Wide Field/Planetary Camera (WF/PC 1) in payload bay during changeout operations. Hoffman is standing on a foot restraint attached to the robot arm of the Remote Manipulator System (RMS) in order to remove the old WF/PC. The new WF/PC has already been installed in cavity (out of frame).
Subject terms:
ASTRONAUTS
CAMERAS
EXTRAVEHICULAR ACTIVITY
EXTRAVEHICULAR MOBILITY UNITS
HUBBLE SPACE TELESCOPE
PAYLOAD BAY
REMOTE MANIPULATOR SYSTEM
REPAIRING
SPACE MAINTENANCE
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NASA Photo ID: STS061-38-014 File Name: 10093083.jpg
Film Type: 35mm Date Taken: 12/09/93
Title: Astronauts Musgrave and Akers suit up for final HST spacewalk
Description:
Astronaut F. Story Musgrave gets assistance from Astronaut Thomas D. Akers while suiting up for the final spacewalk on the eleven-day, Hubble Space Telescope (HST) servicing mission. The astronauts are on the middeck of the Endeavour. Musgrave is wearing a liquid cooling and ventilation garment (LCVG) and the lower portion of the extravehicular mobility unit (EMU). Notice the stowage bags floating behind him.
Subject terms:
ASTRONAUTS
CREWS
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
EXTRAVEHICULAR MOBILITY UNITS
LIQUID COOLING AND VENTILATION GARMENT
MIDDECK
ONBOARD ACTIVITIES
STS-61

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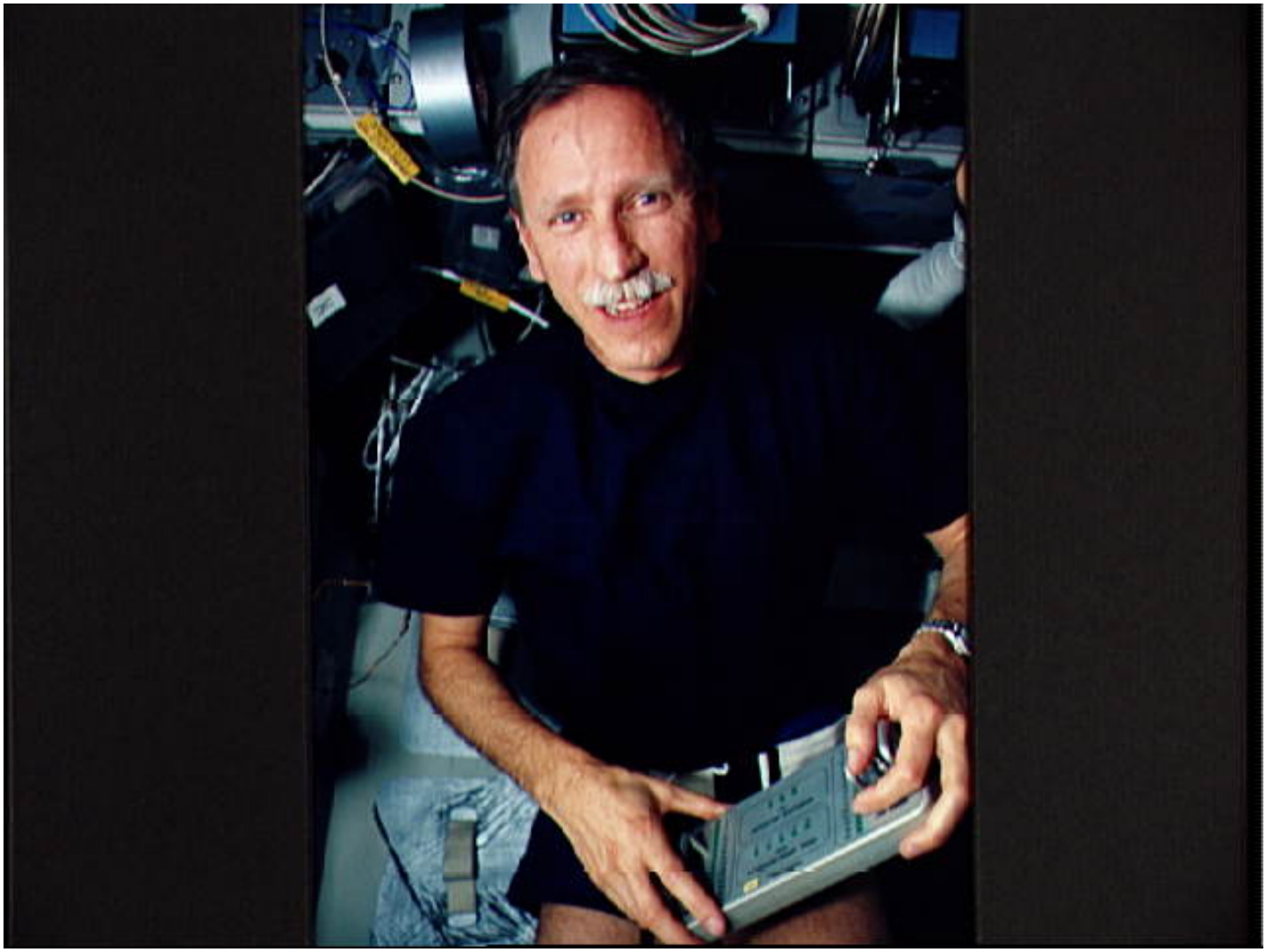

NASA Photo ID: STS061-39-010 File Name: 10093100.jpg
Film Type: 35mm Date Taken: 12/09/93
Title: Astronaut Richard Covey with control box for bicycle ergometer
Description:
Astronaut Richard O. Covey, mission commander, is seen with the control box for bicycle ergometer on Endeavour. During the eleven-day STS-61 mission, crew members not performing spacewalks found the ergometer to provide much needed exercise.
Subject terms:
ASTRONAUTS
BICYCLE
ENDEAVOUR (ORBITER)
ERGOMETERS
ONBOARD ACTIVITIES
PHYSICAL EXERCISE
STS-61

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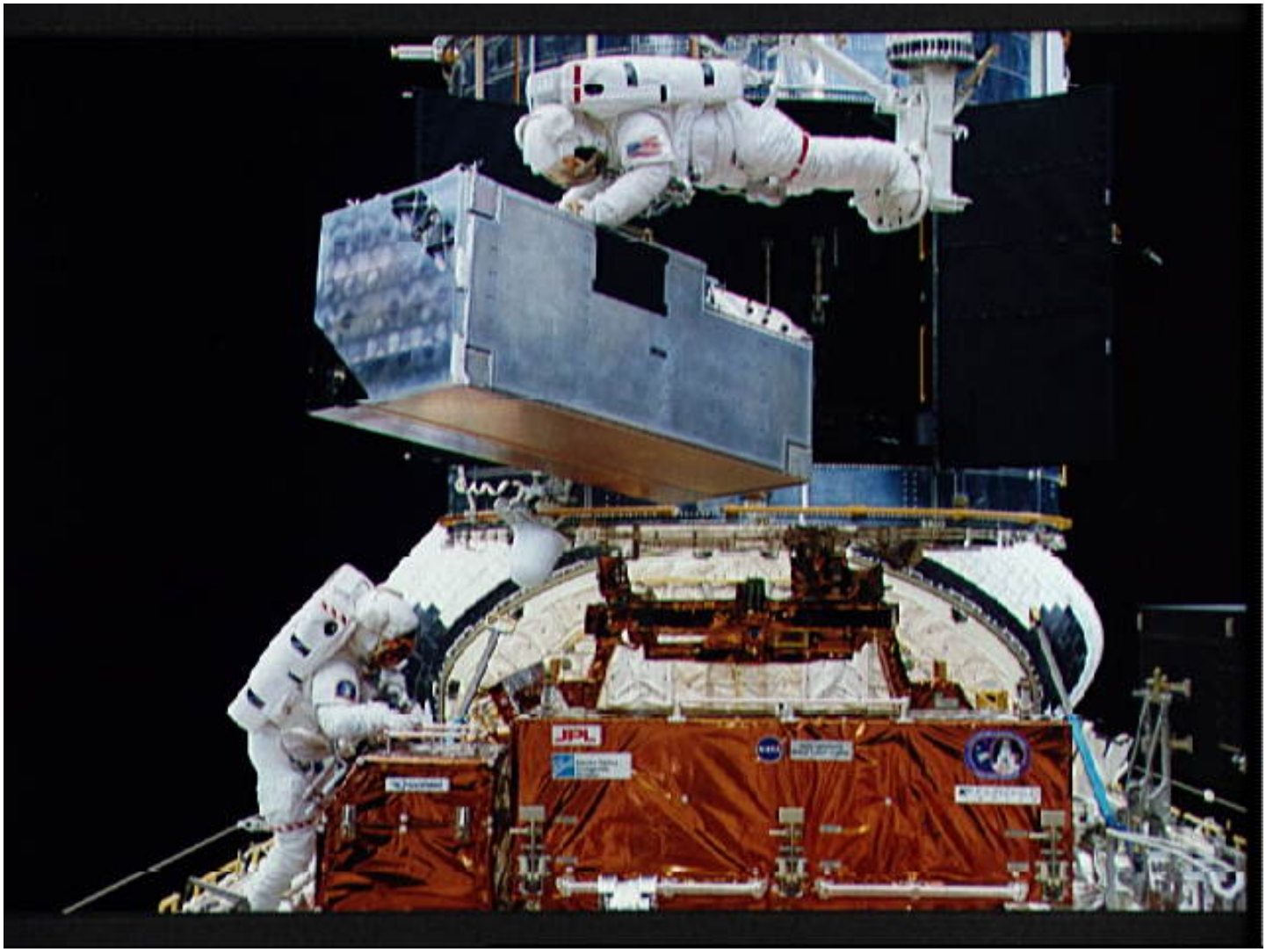
JPL

NASA Photo ID: STS061-47-014 File Name: 10093080.jpg
Film Type: 35mm Date Taken: 12/08/93
Title: Astronauts Thornton and Akers in payload bay during EVA to replace COSTAR
Description:
Astronaut Kathryn C. Thornton lifts the Corrective Optics Space Telescope Axial Replacement (COSTAR) prior to its installation on the Hubble Space Telescope (HST). Thornton is anchored to a foot restraint on the end of the Remote Manipulator System (RMS) arm. Astronaut Thomas D. Akers, who assisted in the COSTAR installation, is at lower left.
Subject terms:
ASTRONAUTS
CREWS
EXTRAVEHICULAR ACTIVITY
EXTRAVEHICULAR MOBILITY UNITS
HUBBLE SPACE TELESCOPE
ORBITAL REPLACEMENT UNIT
PAYLOAD BAY
REPAIRING
SPACE MAINTENANCE
STS-61

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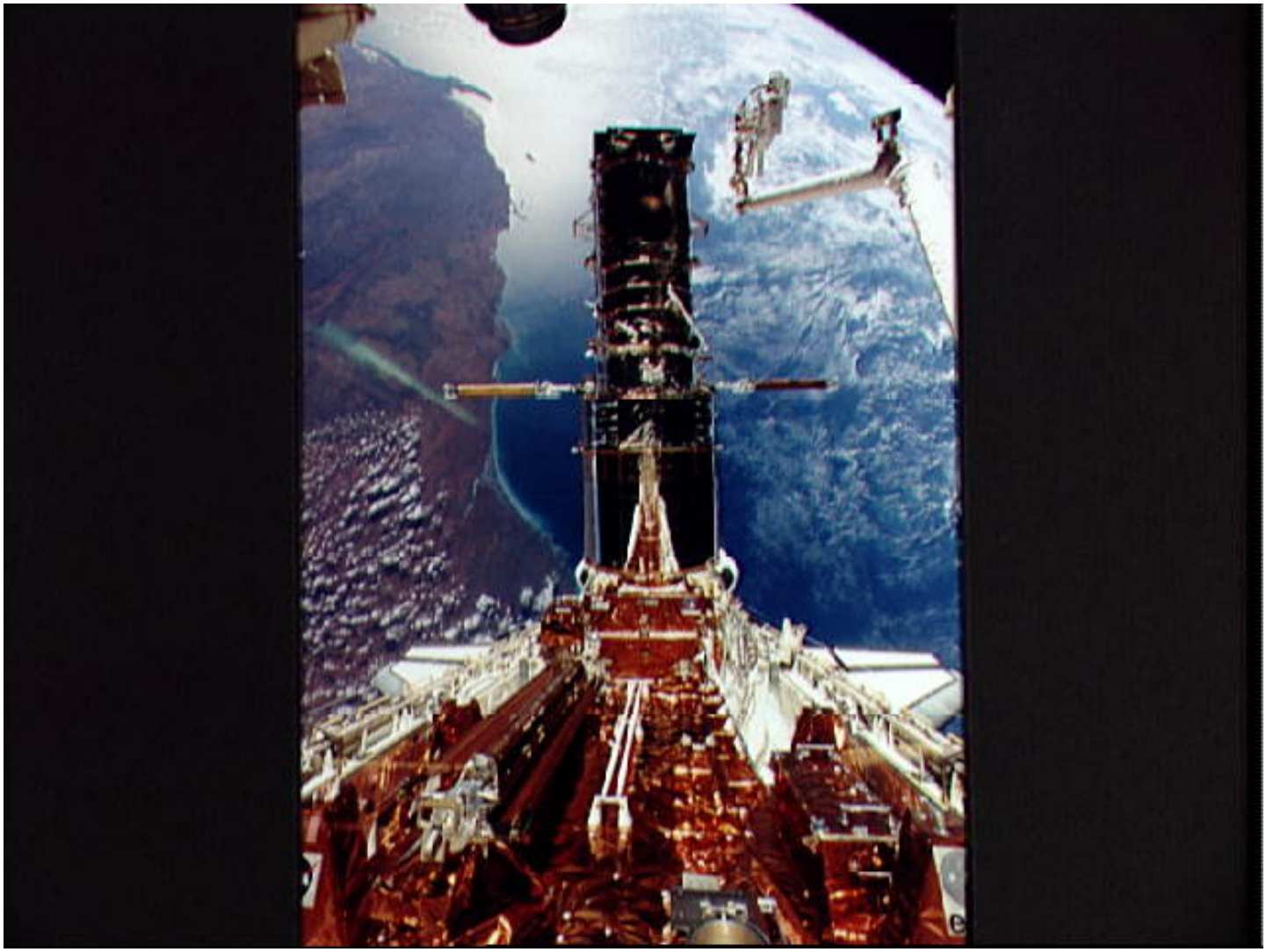

NASA Photo ID: STS061-48-001 File Name: 10093085.jpg
Film Type: 35mm Date Taken: 12/08/93
Title: Astronauts Musgrave and Hoffman during final STS-61 EVA
Description:
Orbiting Earth at an altitude of 356 nautical miles perched atop a foot restraint on Endeavour's Remote Manipulator System (RMS) arm, Astronauts F. Story Musgrave (top) and Jeffrey A. Hoffman wrap up the final of five STS-61 space walks. The Hubble Space Telescope (HST) sits just above the payload bay. The west coast of Australia forms the backdrop.

Subject terms:
ASTRONAUTS
EARTH OBSERVATIONS (FROM SPACE)
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
HUBBLE SPACE TELESCOPE
PAYLOAD BAY
REMOTE MANIPULATOR SYSTEM
SPACE MAINTENANCE
STS-61

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esa

NASA Photo ID: STS061-48-027 File Name: 10093088.jpg
Film Type: 35mm Date Taken: 12/09/93
Title: Astronaut Story Musgrave during deployment of solar array panels on HST
Description:
Astronaut F. Story Musgrave moves about in the Space Shuttle Endeavour's cargo bay during the deployment of the solar array panels on the Hubble Space Telescope (HST) during the final of five STS-61 space walks. The left hand of Astronaut Jeffrey A. Hoffman appears at lower left corner.

Subject terms:
ASTRONAUTS
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
HUBBLE SPACE TELESCOPE
PAYLOAD BAY
REMOTE MANIPULATOR SYSTEM
REPAIRING
SOLAR ARRAYS
SPACE MAINTENANCE
STS-61

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AGGIES

NASA Photo ID: STS061-53-001 File Name: 10093101.jpg
Film Type: 35mm Date Taken: 12/09/93
Title: Astronaut Richard Covey at commander's station in Endeavour during STS-61
Description:
Astronaut Richard O. Covey mans the commander's station on the Space Shuttle Endeavour during the eleven-day mission to service the Hubble Space Telescope (HST). Covey, who has a daughter at Texas A&M University, sports an Aggie's cap.
Subject terms:
ASTRONAUTS
ENDEAVOUR (ORBITER)
FLIGHT DECK
ONBOARD ACTIVITIES
STS-61

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NASA Photo ID: STS061-53-010 File Name: 10093102.jpg
Film Type: 35mm Date Taken: 12/09/93
Title: Astronaut Kenneth Bowersox at pilot's station in Endeavour during STS-61
Description:
Astronaut Kenneth D. Bowersox mans the pilot's station on the Space Shuttle Endeavour during the eleven-day mission to service the Hubble Space Telescope (HST). Bowersox was one of three crew members who remained in the crew cabin while astronauts conducted a total of five space walks to perform various tasks on the Hubble Space Telescope (HST).
Subject terms:
ASTRONAUTS
ENDEAVOUR (ORBITER)
FLIGHT DECK
ONBOARD ACTIVITIES
STS-61

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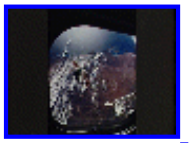

NASA Photo ID: STS061-53-026 File Name: 10093057.jpg
Film Type: 35mm Date Taken: 12/04/93
Title: View of HST as it approaches Endeavour, taken from aft flight deck window
Description:
One of the Space Shuttle Endeavour's aft flight deck windows frames this view of the Hubble Space Telescope (HST) as it approaches the Endeavour. Backdropped against western Australia, the Remote Manipulator System (RMS) arm awaits the arrival of the telescope. Shark Bay (upper left) and Perth (lower left) are visible in the frame.
Subject terms:
AUSTRALIA
EARTH OBSERVATIONS (FROM SPACE)
ENDEAVOUR (ORBITER)
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
REMOTE MANIPULATOR SYSTEM
STS-61

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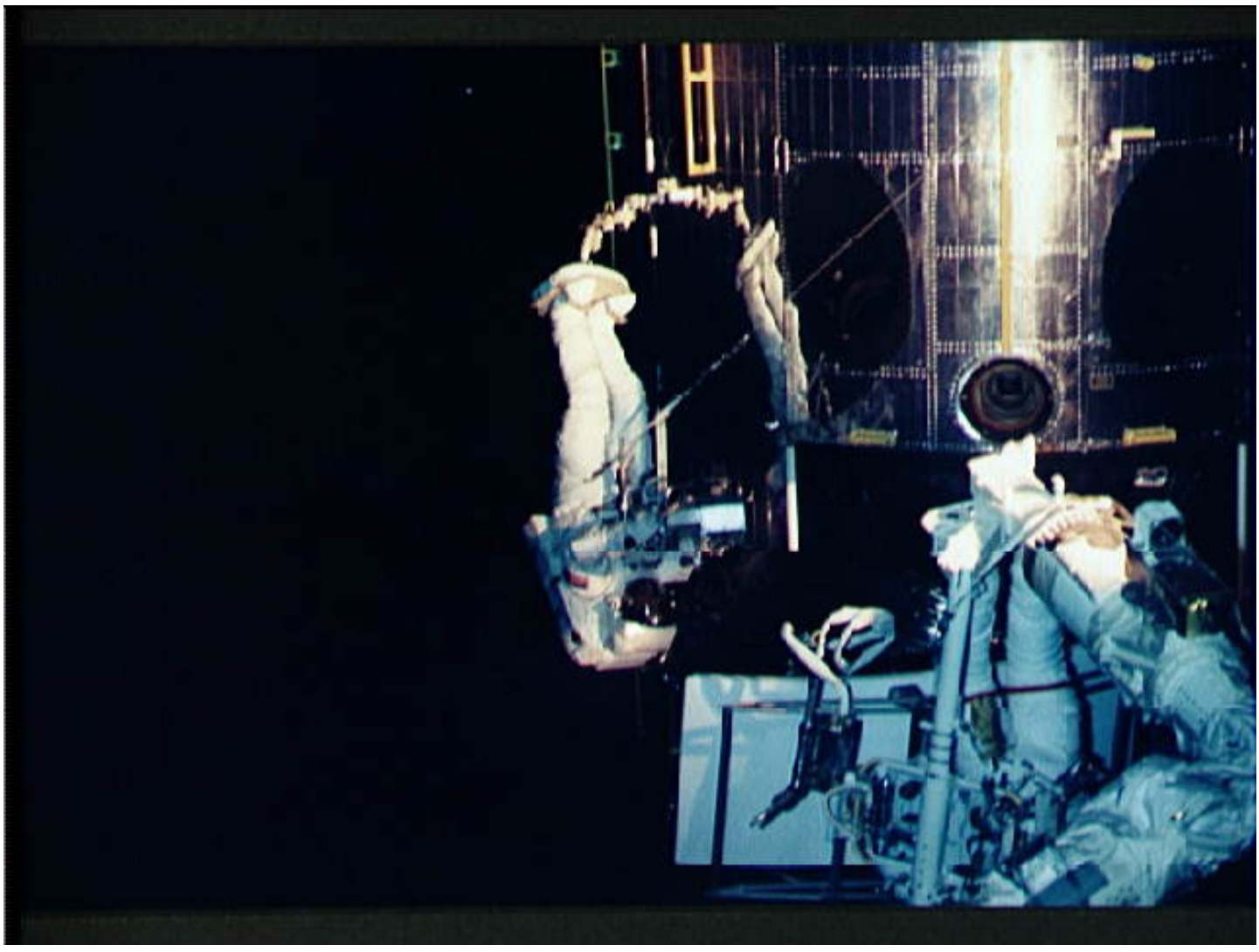

NASA Photo ID: STS061-58-033 File Name: 10093074.jpg
Film Type: 35mm Date Taken: 12/07/93
Title: Astronaut Jeffrey Hoffman works with replacement WF/PC II for HST
Description:
Anchored to the Space Shuttle Endeavour's Remote Manipulator System (RMS) arm, Astronaut Jeffrey A. Hoffman works with the replacement Wide Field/Planetary Camera (WF/PC II) for the Hubble Space Telescope (HST) during the third of five space walks. Astronaut F. Story Musgrave, who joined Hoffman for three of the five space walks, helps with alignment at center frame.
Subject terms:
ASTRONAUTS
CAMERAS
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
HUBBLE SPACE TELESCOPE
PAYLOAD BAY
REMOTE MANIPULATOR SYSTEM
REPAIRING
SPACE MAINTENANCE
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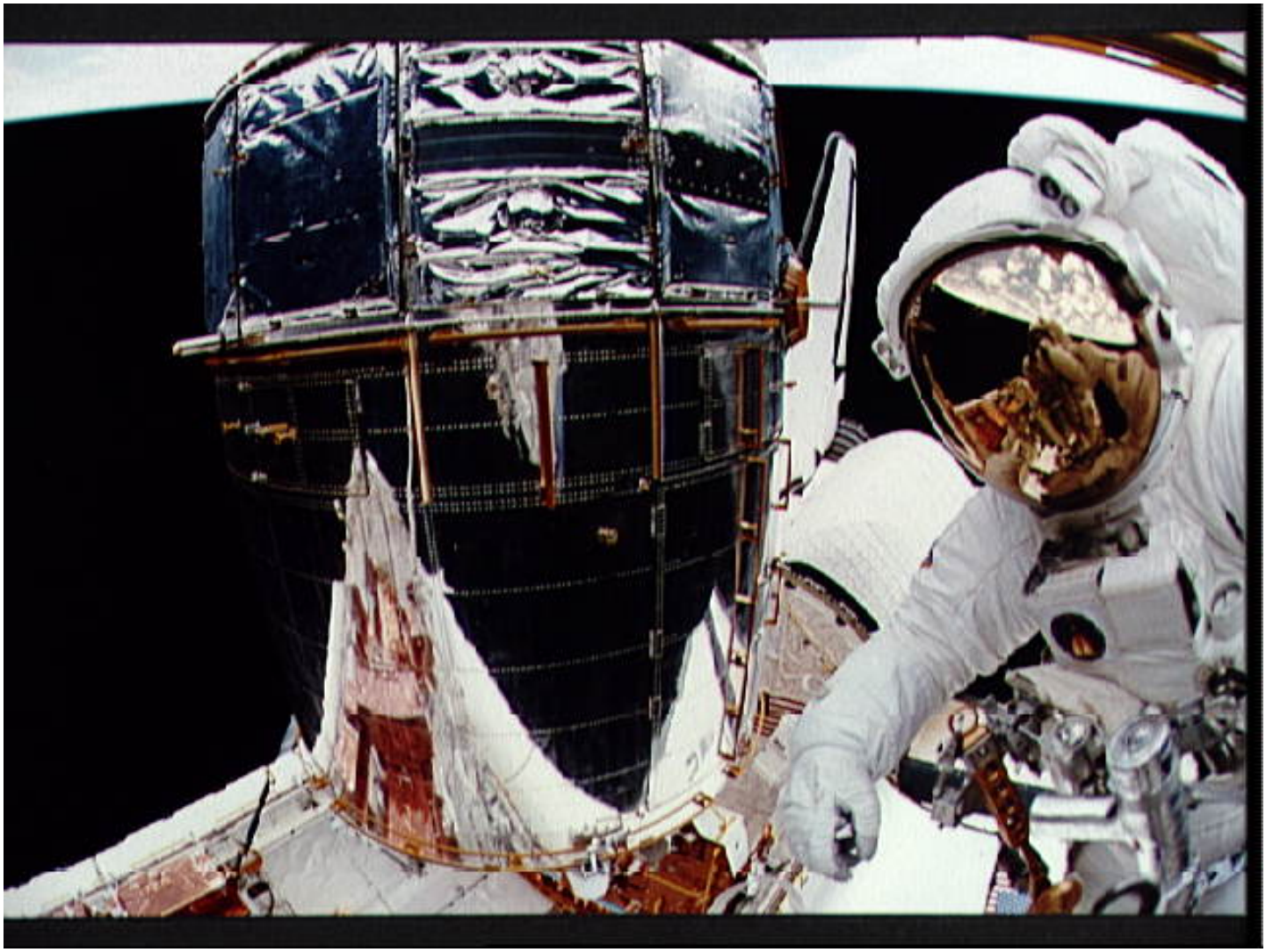

NASA Photo ID: STS061-65-009 File Name: 10093084.jpg
Film Type: 35mm Date Taken: 12/09/93
Title: Astronaut Story Musgrave in payload bay during EVA
Description:
Astronaut Jeffrey A. Hoffman is reflected in the helmet visor of F. Story Musgrave as he photographs the veteran astronaut during one of the pair's three shared spacewalks. Beside Musgrave is the Wide Field/Planetary Camera (WF/PC II).
Subject terms:
ASTRONAUTS
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
PAYLOAD BAY
PHOTOGRAPHY
SPACE MAINTENANCE
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NASA Photo ID: STS061-65-015 File Name: 10093086.jpg
Film Type: 35mm Date Taken: 12/09/93
Title: Fisheye view of HST, spherical Earth and Australian landmass
Description:
A fisheye lens was used to capture the Hubble Space Telescope (HST), a spherical Earth and Australian landmass with a bit of distortion during the final space walk on the STS-61 HST-servicing mission. Astronaut F. Story Musgrave can be seen at bottom of the frame.
Subject terms:
ASTRONAUTS
AUSTRALIA
EARTH (PLANET)
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
PHOTOGRAPHY
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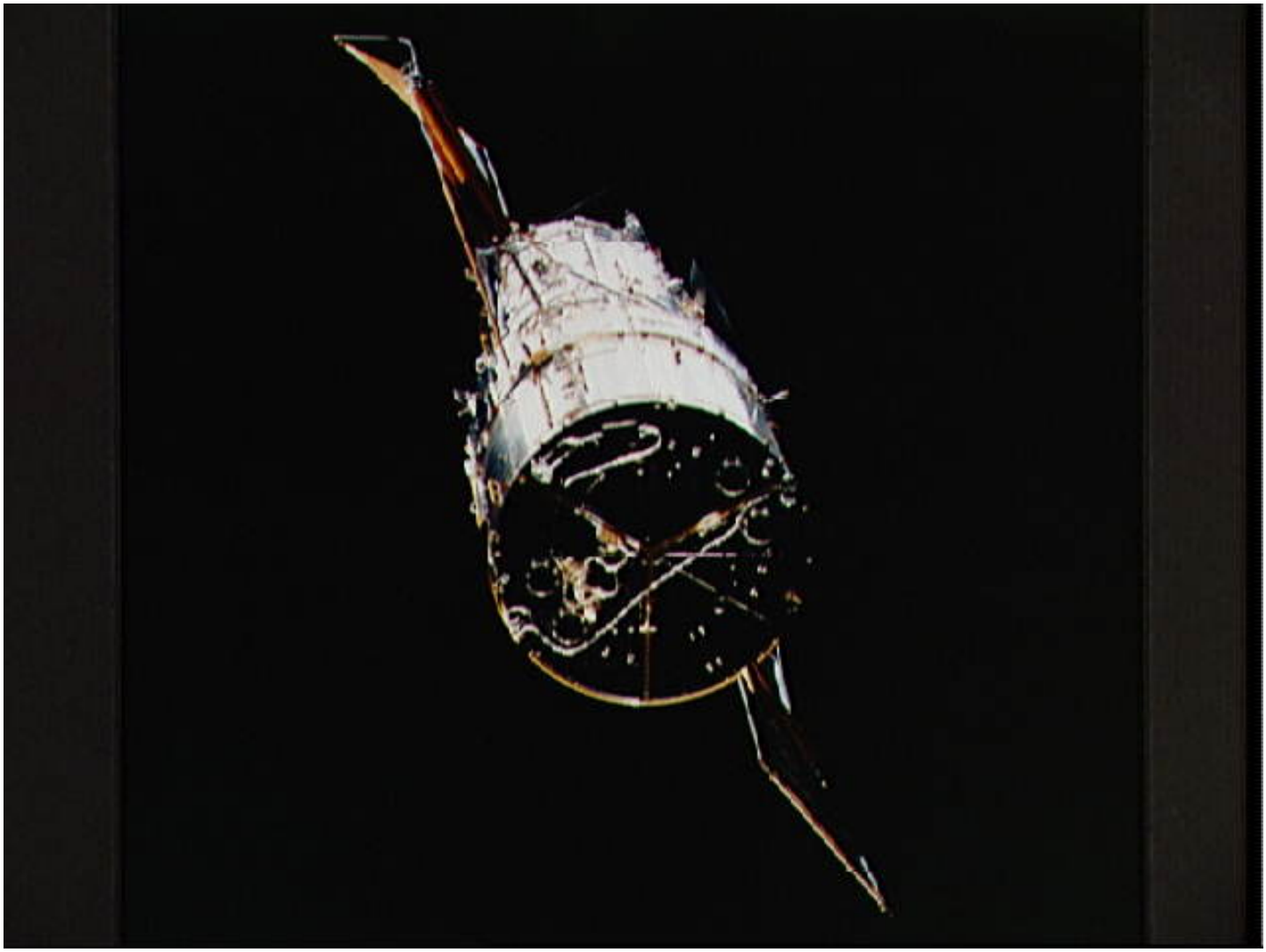

NASA Photo ID: STS061-73-040 File Name: 10093058.jpg
Film Type: 35mm Date Taken: 12/04/93
Title: Hubble Space Telescope nears Shuttle Endeavour
Description:
Backdropped against the blackness of space, the Hubble Space Telescope (HST) nears the Space Shuttle Endeavour.
Subject terms:
ENDEAVOUR (ORBITER)
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
PHOTOGRAPHY
STS-61

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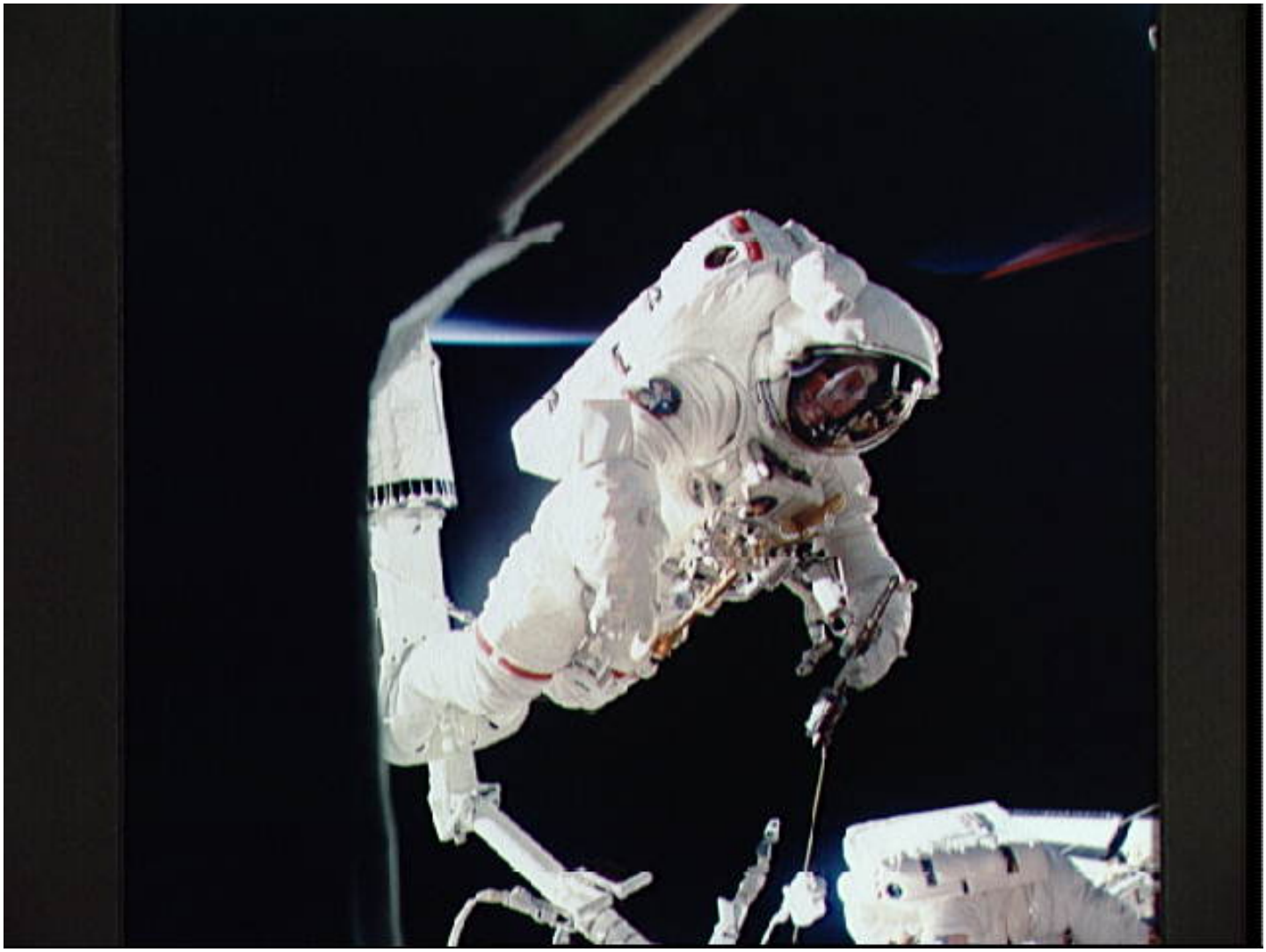

NASA Photo ID: STS061-77-016 File Name: 10093066.jpg
Film Type: 70mm Date Taken: 12/06/93
Title: Astronauts Thornton and Akers during one of their EVAs
Description:
During her first STS-61 extravehicular activity (EVA) session, Astronaut Kathryn Thornton was captured on 70mm film by one of her crewmates inside the Space Shuttle Endeavour. As Astronauts Thornton and Thomas D. Akers (seen here in the background) approached the viewing area of their crewmates while performing servicing tasks on the Hubble Space Telescope (HST), they were frequently photographed with various cameras.

Subject terms:
ASTRONAUTS
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
PAYLOAD BAY
SPACE MAINTENANCE
STS-61

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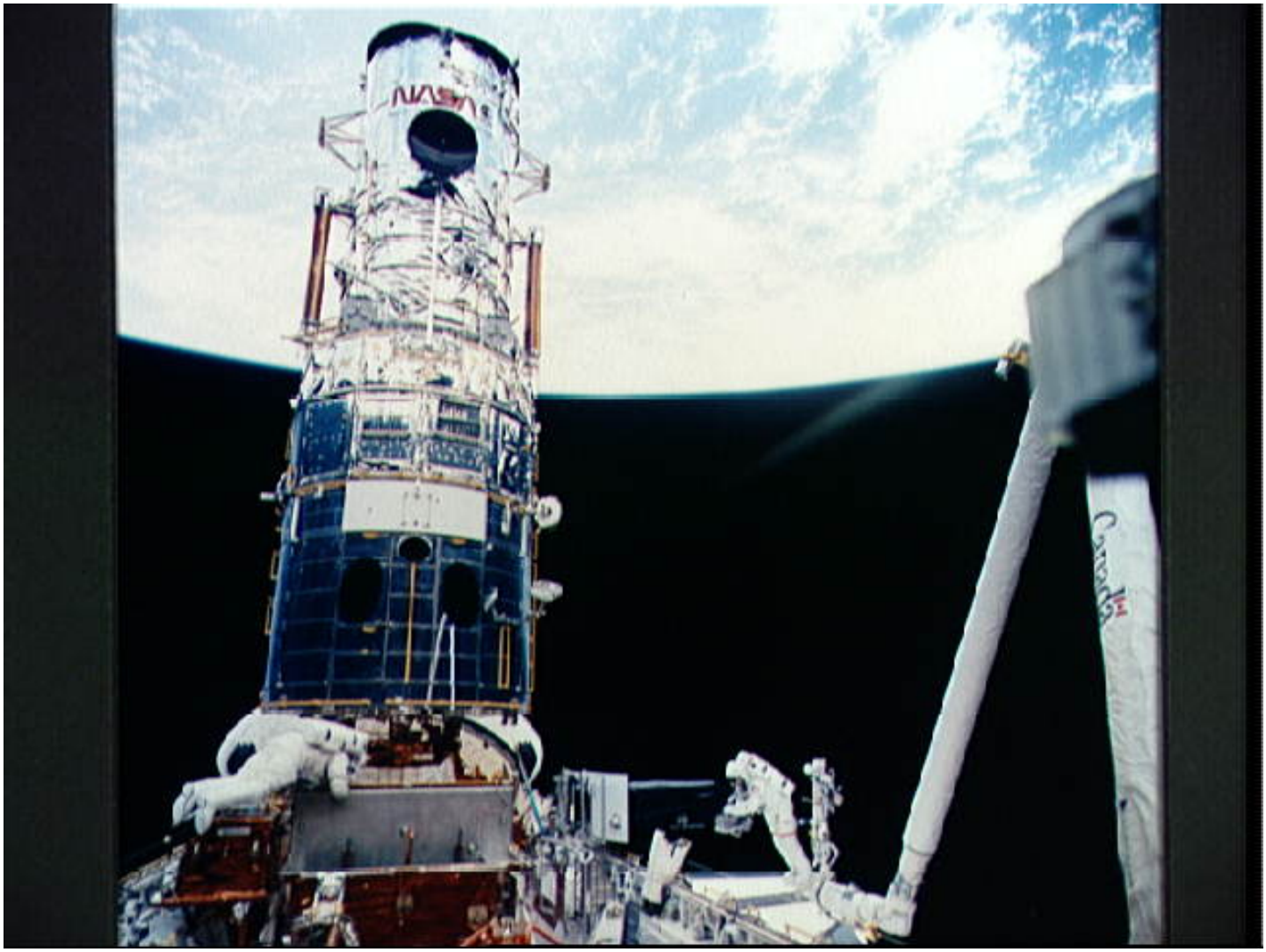
NASA
Canada

NASA Photo ID: STS061-77-078 File Name: 10093072.jpg
Film Type: 35mm Date Taken: 12/07/93
Title: Astronaut Jeffrey Hoffman with WF/PC during third STS-61 EVA
Description:
Astronaut Jeffrey A. Hoffman, anchored on the end of the Remote Manipulator System (RMS) arm, is pictured with the Wide Field/Planetary Camera (WF/PC I) during the third of the five STS-61 space walks. Astronauts Hoffman and F. Story Musgrave, seen near the stowage area for the WF/PC, had earlier installed the new camera (note white rectangle) on lower portion of telescope.
Subject terms:
ASTRONAUTS
CAMERAS
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
HUBBLE SPACE TELESCOPE
PAYLOAD BAY
REMOTE MANIPULATOR SYSTEM
SPACE MAINTENANCE
STS-61

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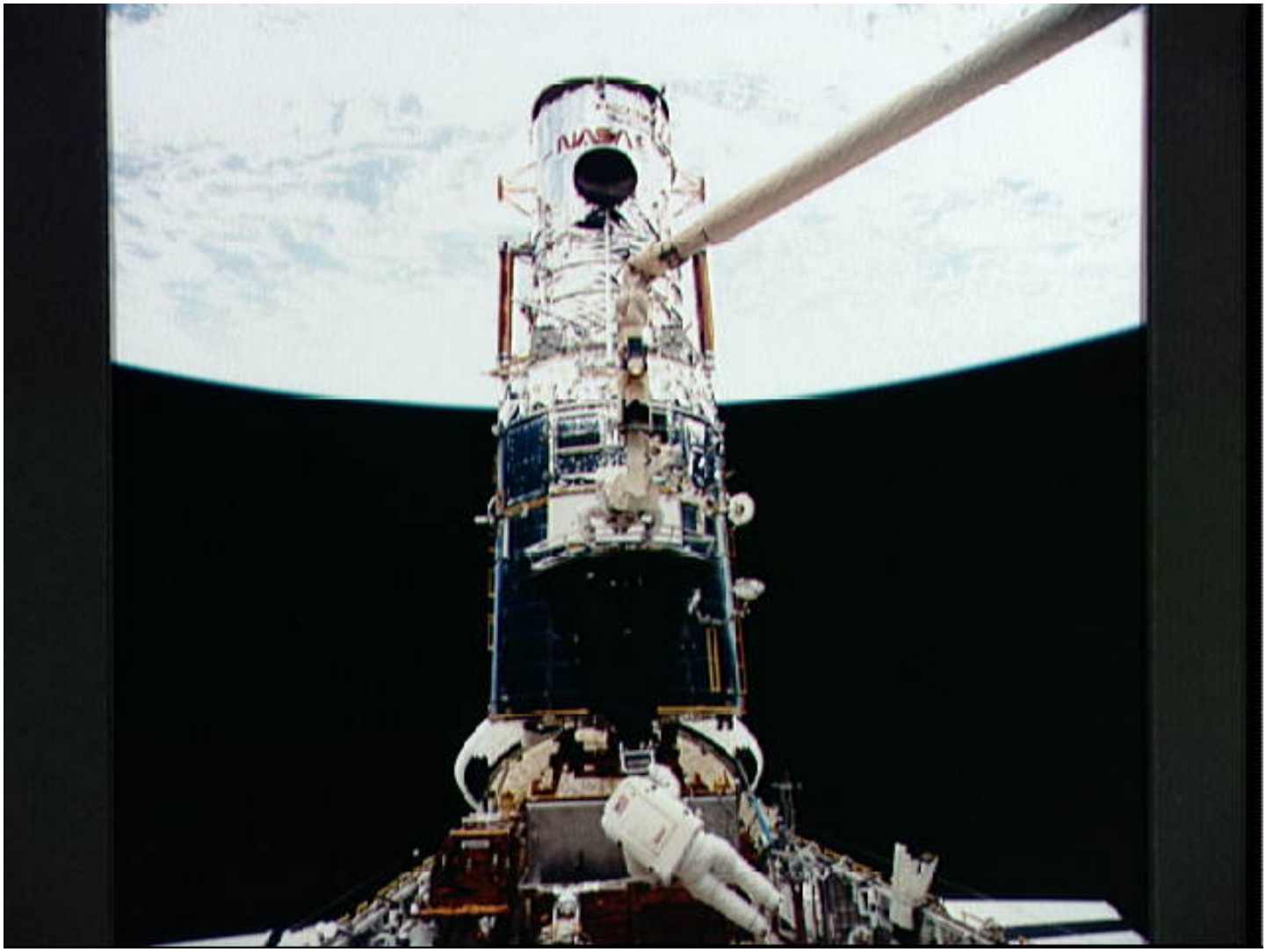

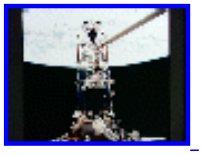

NASA Photo ID: STS061-77-094 File Name: 10093075.jpg
Film Type: 70mm Date Taken: 12/07/93
Title: Astronaut Jeffrey Hoffman with WF/PC during third STS-61 EVA
Description:
Astronaut Jeffrey A. Hoffman, anchored on the end of the Remote Manipulator System (RMS) arm, is pictured with the Wide Field/Planetary Camera (WF/PC I) during the third of the five STS-61 space walks. Astronaut F. Story Musgrave, stationed at the stowage area at bottom of frame, assists. WF/PC II is in place on the Hubble Space Telescope (HST).
Subject terms:
ASTRONAUTS
CAMERAS
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
HUBBLE SPACE TELESCOPE
PAYLOAD BAY
REMOTE MANIPULATOR SYSTEM
SPACE MAINTENANCE
STS-61

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NASA Photo ID: STS061-77-102 File Name: 10093076.jpg
Film Type: 70mm Date Taken: 12/07/93
Title: Astronauts Hoffman and Musgrave install the Magnetic Sensing System on HST
Description:
Astronauts Jeffrey A. Hoffman (left) and F. Story Musgrave are partially silhouetted against the Indian Ocean as they work to install the Magnetic Sensing System (MSS) on the Hubble Space Telescope (HST). Musgrave is anchored to the end of the Endeavour's Remote Manipulator System (RMS) arm. The HST is positioned along the southern end of Madagascar, 325 nautical miles away. Visible on the western coast are the sediment laden Onilahy and Fiherenana Rivers which empty into Saint Augustin Bay. North of Fiherenana River is the Mangoky River. The circular feature on the southern end of Madagascar and to the right of HST is the L'ivakoany Mountains. The eastern coast is relatively straight compared to the western coast.

Subject terms:
ASTRONAUTS
EARTH OBSERVATIONS (FROM SPACE)
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
HUBBLE SPACE TELESCOPE
MAGNETIC CONTROL
PAYLOAD BAY
REMOTE MANIPULATOR SYSTEM
REPAIRING
SPACE MAINTENANCE
STS-61
SYSTEMS

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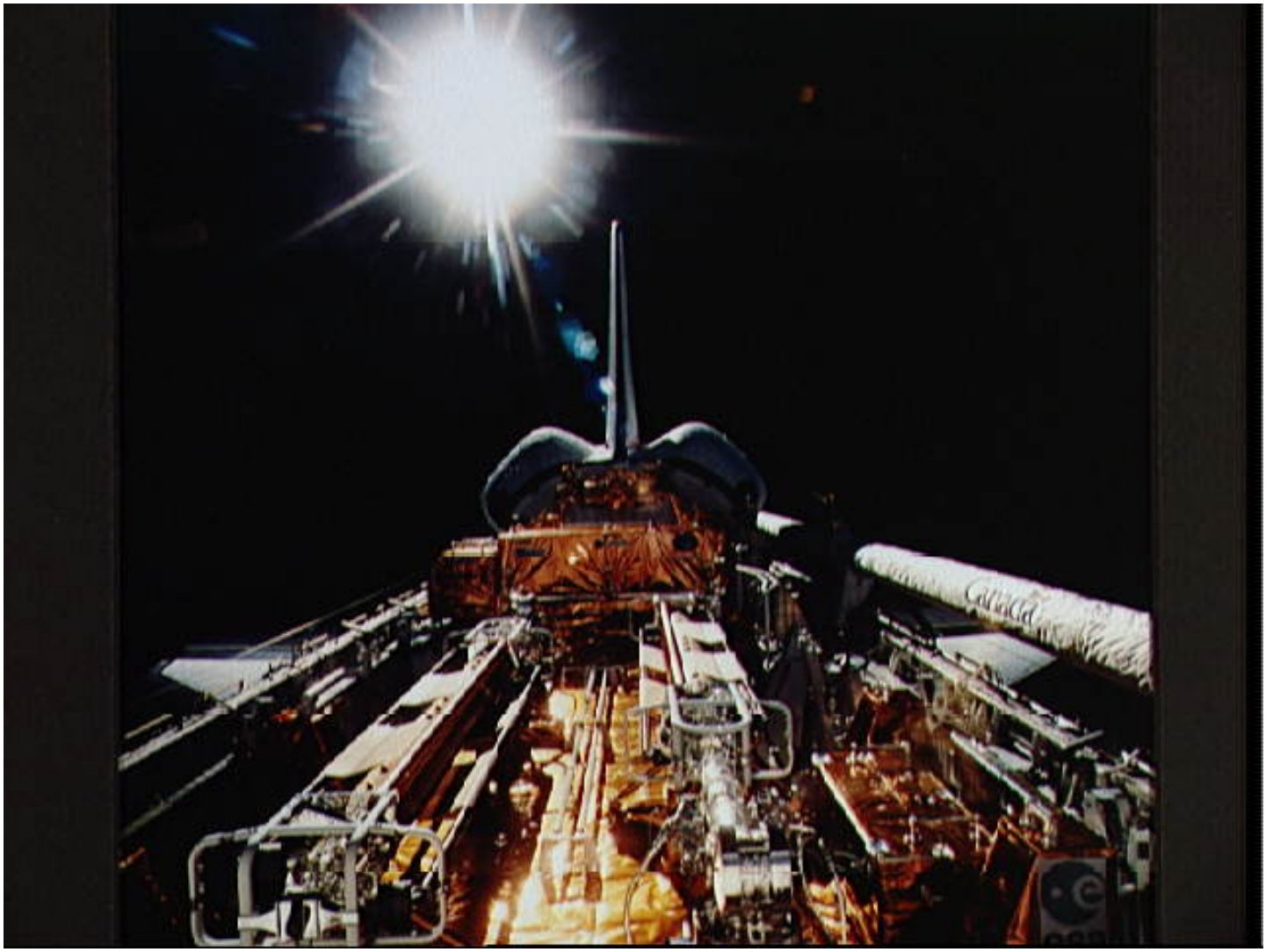

NASA Photo ID: STS061-79-041 File Name: 10093055.jpg
Film Type: 70mm Date Taken: 12/09/93
Title: Sunburst over the open STS-61 Endeavour payload bay
Description:
While photographing the cargo bay the STS-61 crew members also captured a sunburst. A 70mm camera, aimed through Endeavour's aft flight deck windows, was used to expose the image.
Subject terms:
EARTH OBSERVATIONS (FROM SPACE)
ENDEAVOUR (ORBITER)
ONBOARD ACTIVITIES
PAYLOAD BAY
STS-61
SUN

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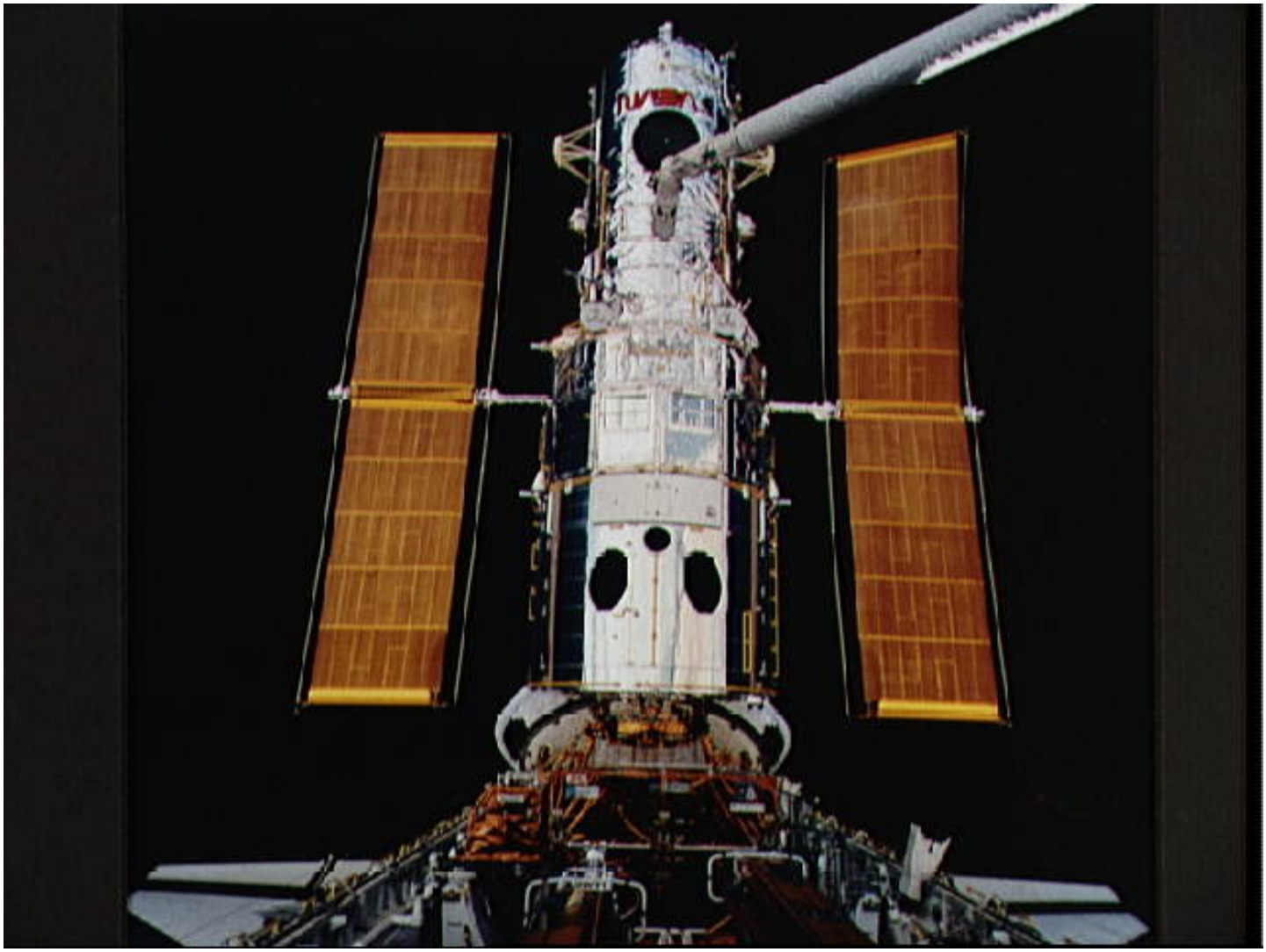

NASA Photo ID: STS061-79-072 File Name: 10093059.jpg
Film Type: 70mm Date Taken: 12/04/93
Title: Hubble Space Telescoe being surveyed by cameras mounted on the RMS
Description:
The Hubble Space Telescope (HST) is backdropped against the blackness of space in this 70mm frame recorded during a video survey of the spacecraft following the telescope's berthing in Endeavour's cargo bay. Swiss scientist Claude Nicollier controlled the Remote Manipulator System (RMS) arm slowly so that mounted TV cameras could show flight controllers the various areas on the telescope.
Subject terms:
ENDEAVOUR (ORBITER)
HUBBLE SPACE TELESCOPE
INSPECTION
ONBOARD ACTIVITIES
PAYLOAD BAY
REMOTE MANIPULATOR SYSTEM
SOLAR ARRAYS
STS-61

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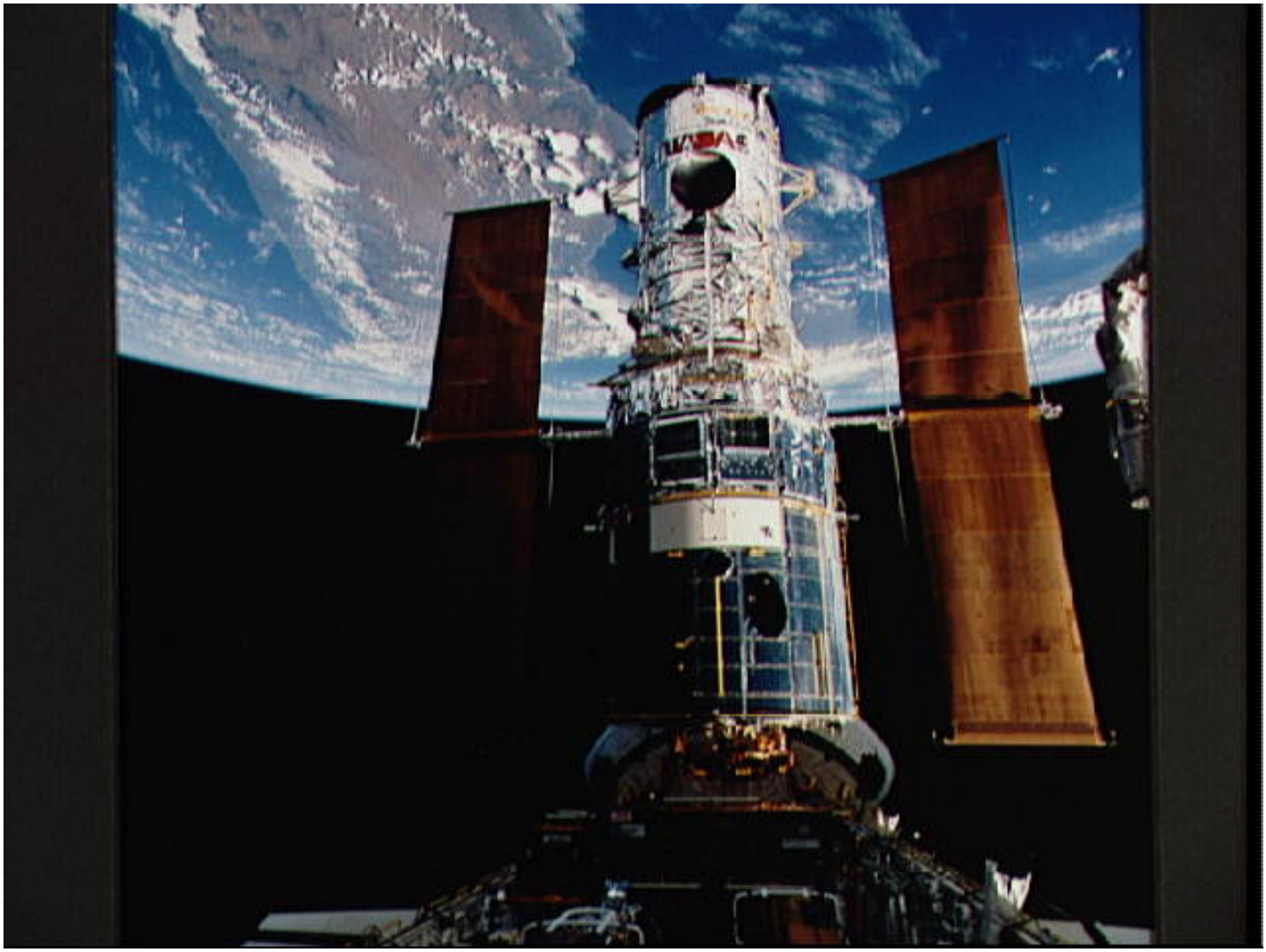

NASA Photo ID: STS061-79-087 File Name: 10093060.jpg
Film Type: 70mm Date Taken: 12/04/93
Title: Hubble Space Telescope is berthed in Endeavour's payload bay after capture
Description:
The Hubble Space Telescope (HST), backdropped over Madagascar, is berthed in Endeavour's cargo bay following its capture by the STS-61 astronauts. The crew used TV cameras to survey the spacecraft before sending out four astronauts on five separate sessions of extravehicular activity (EVA) to perform a variety of servicing tasks.
Subject terms:
EARTH OBSERVATIONS (FROM SPACE)
ENDEAVOUR (ORBITER)
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
PAYLOAD BAY
REMOTE MANIPULATOR SYSTEM
SPACECRAFT DOCKING
STS-61

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NASA Photo ID: STS061-86-030 File Name: 10093061.jpg
Film Type: 70mm Date Taken: 12/04/93
Title: Hubble Space Telescope is berthed in Endeavour's payload bay after capture
Description:
The Hubble Space Telescope (HST) is pictured in the Space Shuttle Endeavour's payload bay following its capture and berthing early in the eleven-day STS-61 mission. The Remote Manipulator System (RMS) arm, with television cameras mounted on it, was maneuvered from inside the cabin in order to survey HST.
Subject terms:
EARTH OBSERVATIONS (FROM SPACE)
ENDEAVOUR (ORBITER)
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
PAYLOAD BAY
REMOTE MANIPULATOR SYSTEM
SPACECRAFT DOCKING
STS-61

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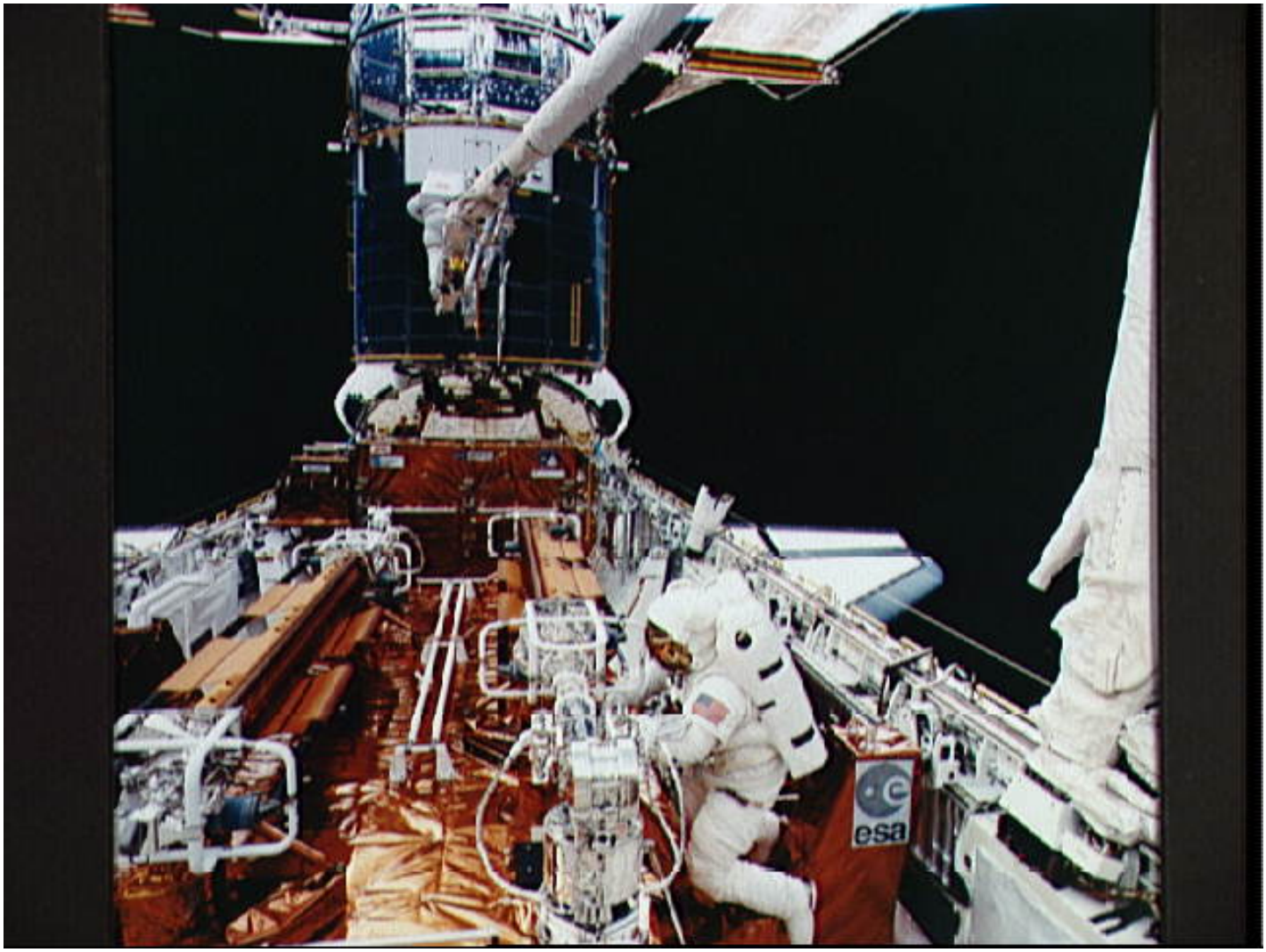
esa

NASA Photo ID: STS061-86-048 File Name: 10093063.jpg
Film Type: 70mm Date Taken: 12/05/93
Title: Astronauts Musgrave and Hoffman during first STS-61 EVA
Description:
Astronauts F. Story Musgrave (foreground) and Jeffrey A. Hoffman are pictured near the end of the first of five STS-61 space walks. Musgrave works at the Solar Array Carrier (SAC) in the Space Shuttle Endeavour's cargo bay. Hoffman, anchored to a foot restraint mounted on the end of Endeavour's Remote Manipulator System (RMS) arm, waits to be maneuvered to the forward payload bay. The original solar array panels are partially visible at top, while their replacements remain stowed in the foreground.

Subject terms:
ASTRONAUTS
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
PAYLOAD BAY
REMOTE MANIPULATOR SYSTEM
REPAIRING
SOLAR ARRAYS
SPACE MAINTENANCE
STS-61

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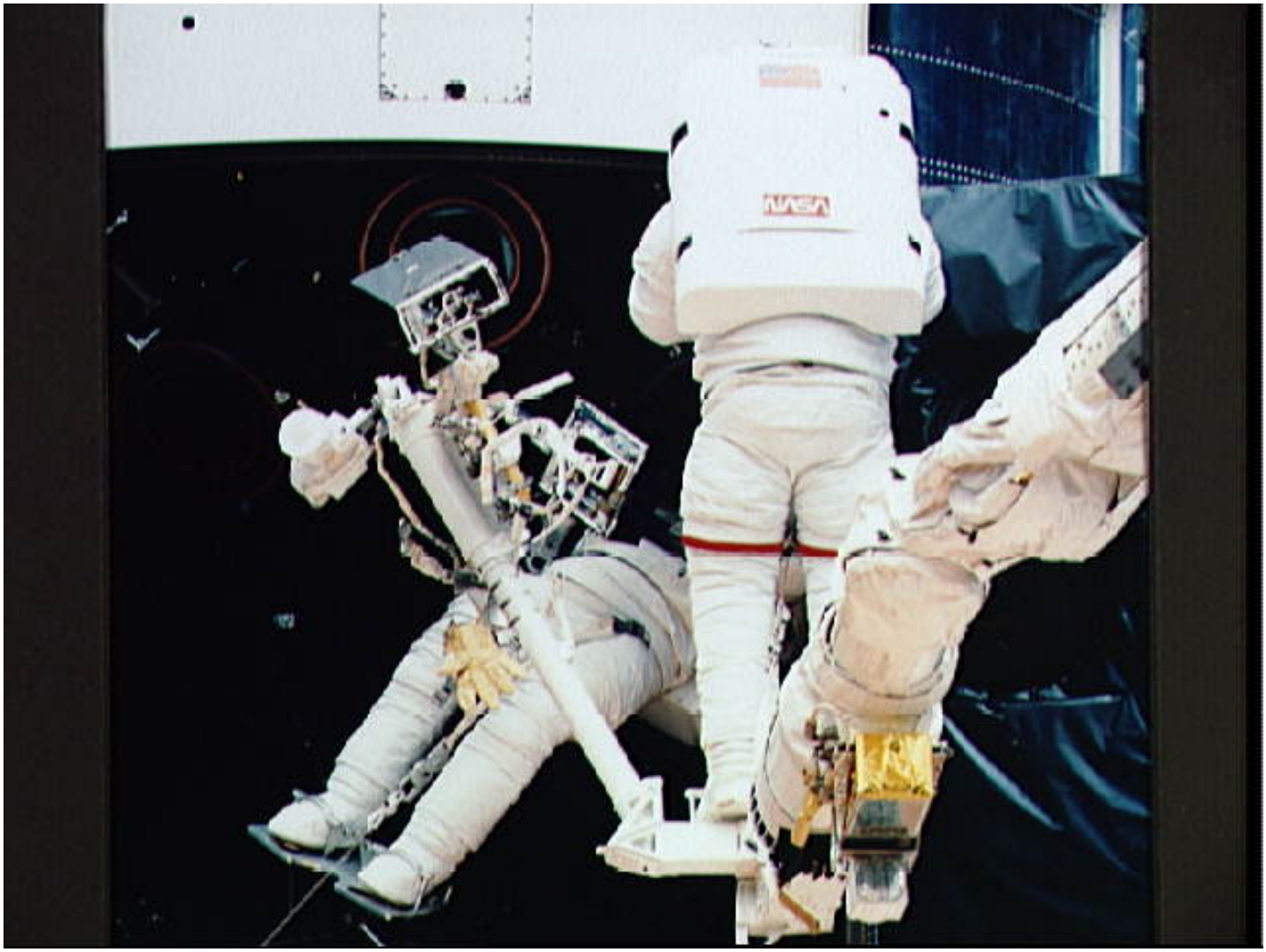
NASA

NASA Photo ID: STS061-87-046 File Name: 10093064.jpg
Film Type: 70mm Date Taken: 12/05/93
Title: Astronauts Musgrave and Hoffman during first STS-61 EVA
Description:
Astronauts Jeffrey A. Hoffman (right) and F. Story Musgrave work near the base of the Hubble Space Telescope (HST) on the first of five STS-61 space walks. Their particular mission here is to replace failed Rate Sensor Units (RSU) inside the telescope's housing. Hoffman is anchored to a foot restraint, mounted on the end of the Space Shuttle Endeavour's Remote Manipulator System (RMS) arm, while Musgrave is standing on a foot restraint attached to a support structure in the cargo bay.
Subject terms:
ASTRONAUTS
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
FOOT RESTRAINTS
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
PAYLOAD BAY
REMOTE MANIPULATOR SYSTEM
REPAIRING
SOLAR ARRAYS
SPACE MAINTENANCE
STS-61

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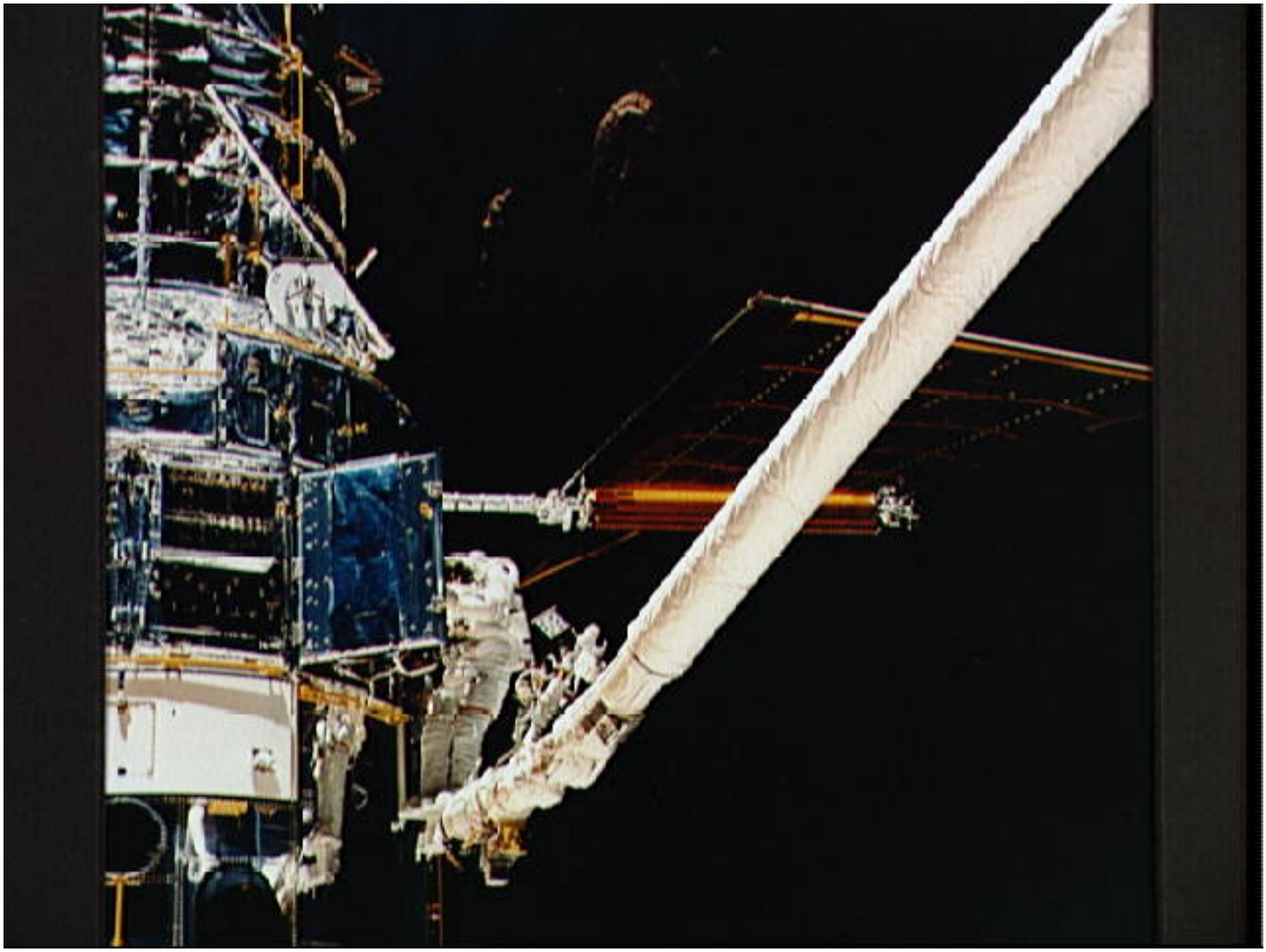

NASA Photo ID: STS061-87-062 File Name: 10093065.jpg
Film Type: 70mm Date Taken: 12/05/93
Title: Astronaut Hoffman replaces fuse plugs on Hubble Space Telescope
Description:
Astronaut Jeffrey A. Hoffman sees to the replacement of fuse plugs on the Hubble Space Telescope (HST) during the first of five space walks. Thunderclouds are all that is visible on the dark earth in the background.

Subject terms:
ASTRONAUTS
EARTH OBSERVATIONS (FROM SPACE)
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
REPAIRING
SPACE MAINTENANCE
STS-61
WIRING

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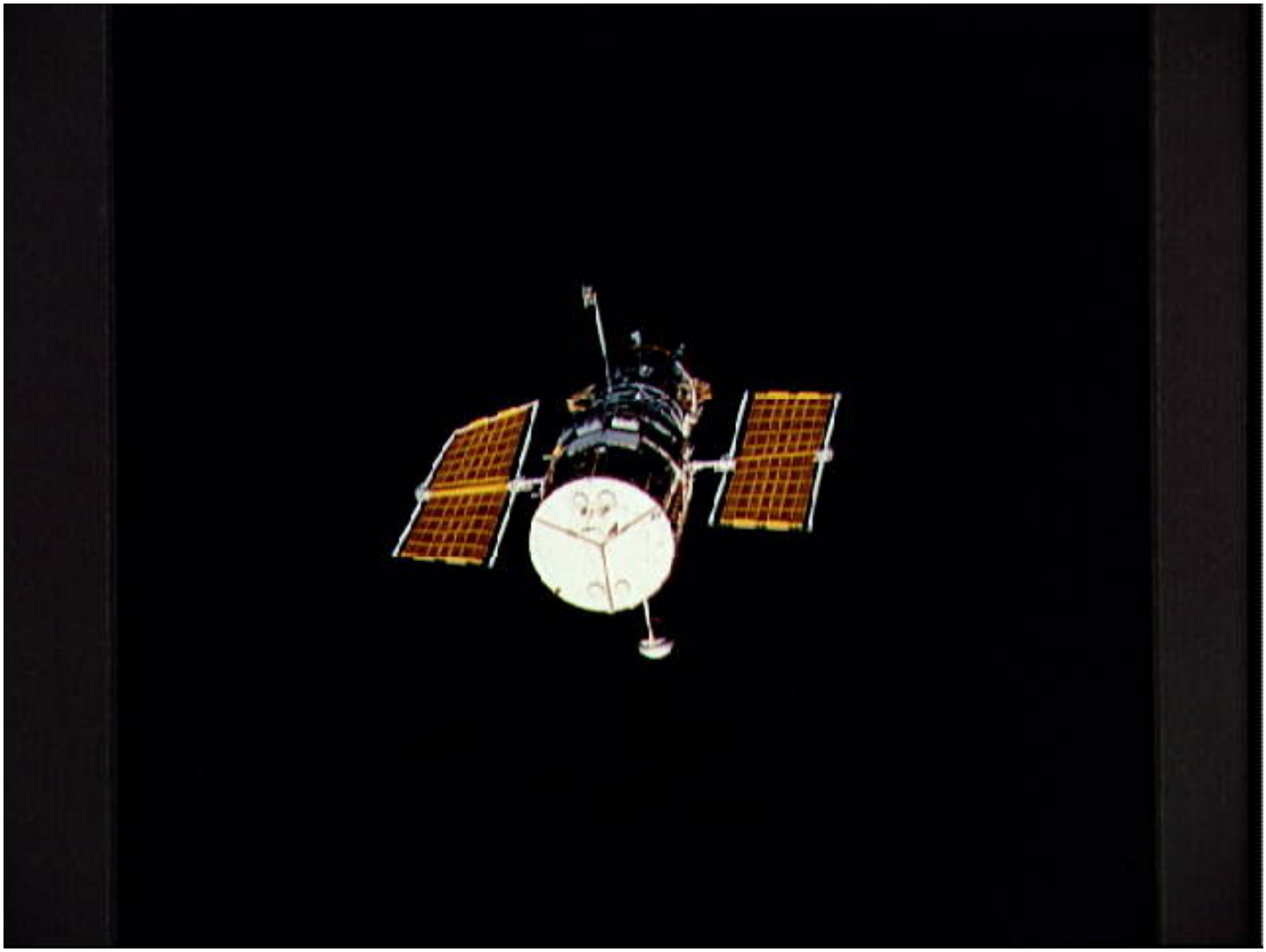

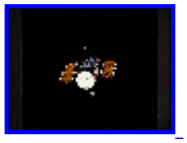

NASA Photo ID: STS061-90-028 File Name: 10093093.jpg
Film Type: 70mm Date Taken: 12/09/93
Title: Hubble Space Telescope begins separation from Shuttle Endeavour after repair
Description:
The Hubble Space Telescope (HST) begins its separation from the Space Shuttle Endeavour following a week and a half berthed in the space vehicle's cargo bay.
Subject terms:
ENDEAVOUR (ORBITER)
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
SEPARATION
STS-61

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NASA Photo ID: STS061-93-031 File Name: 10093056.jpg
Film Type: 70mm Date Taken: 12/04/93
Title: Hubble Space Telescope approaches Shuttle Endeavour
Description:
Part of the vast Indian Ocean forms the backdrop for the scene of the Hubble Space Telescope (HST) as it approaches the Space Shuttle Endeavour. Denham Sound and Shark Bay, on Australia's west coast, are just below the waiting mechanical arm at lower right corner.
Subject terms:
APPROACH
EARTH OBSERVATIONS (FROM SPACE)
ENDEAVOUR (ORBITER)
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
STS-61

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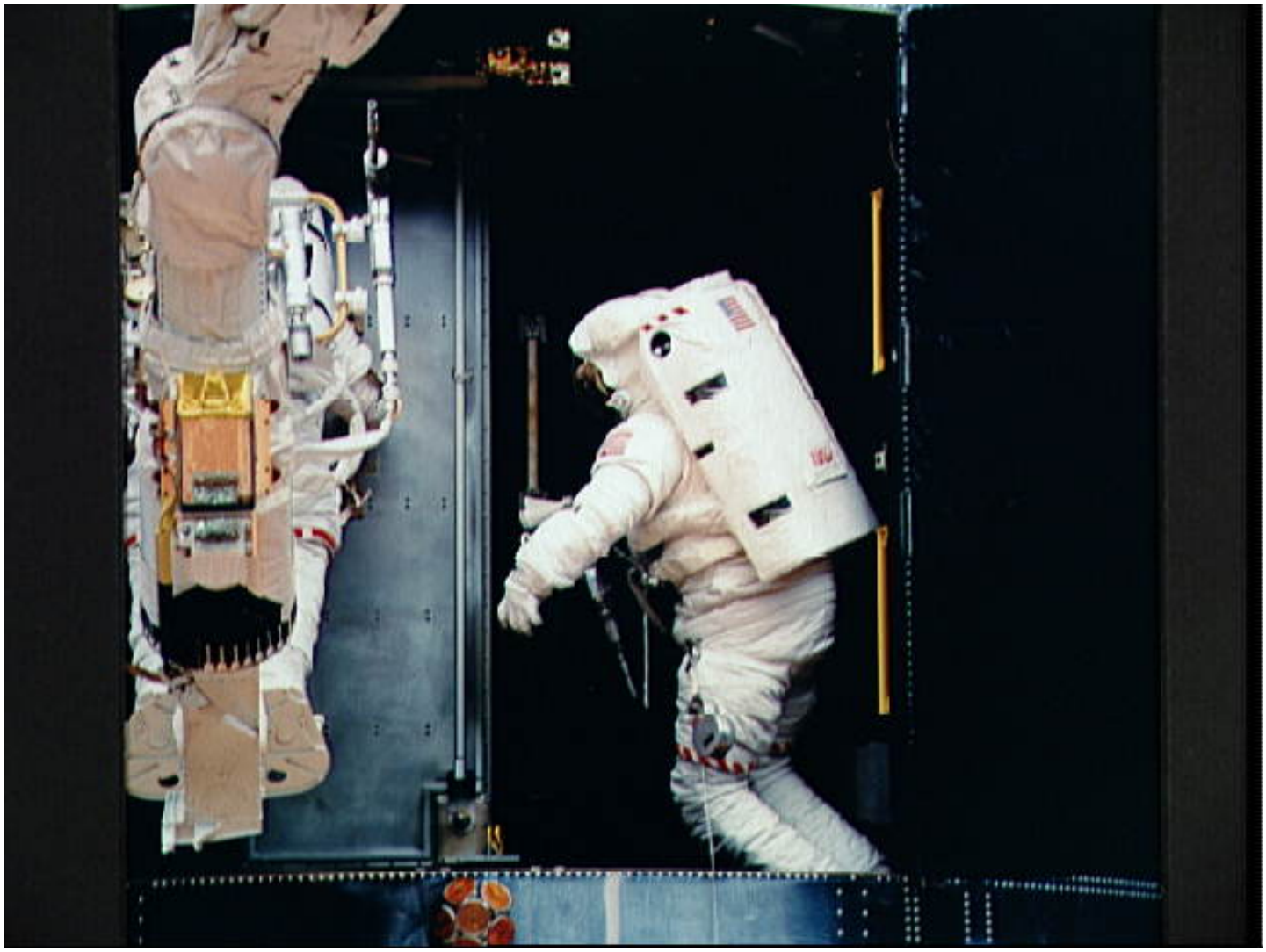

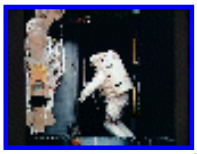

NASA Photo ID: STS061-94-059 File Name: 10093078.jpg
Film Type: 70mm Date Taken: 12/08/93
Title: Astronauts Akers and Thornton during installation of COSTAR on HST
Description:
Astronaut Thomas D. Akers maneuvers inside the bay which will house the corrective optics space telescope axial replacement (COSTAR) while assisting Astronaut Kathryn C. Thornton with the installation of the 640-pound instrument. Thornton, anchored on the end of the remote manipulator system (RMS) arm, is partially visible as she prepares to install the COSTAR.
Subject terms:
ASTRONAUTS
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
ORBITAL REPLACEMENT UNIT
REMOTE MANIPULATOR SYSTEM
REPAIRING
SPACE MAINTENANCE
STS-61

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NASA Photo ID: STS061-95-028 File Name: 10093067.jpg
Film Type: 70mm Date Taken: 12/06/93
Title: Astronaut Kathryn Thornton during second HST extravehicular activity
Description:
Astronaut Kathryn C. Thornton, on the end of Endeavour's Remote Manipulator System (RMS) arm, hovers over equipment associated with servicing chores on the Hubble Space Telescope (HST) during the second space walk on the eleven-day STS-61 mission.
Subject terms:
ASTRONAUTS
EXTRAVEHICULAR ACTIVITY
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
REMOTE MANIPULATOR SYSTEM
REPAIRING
SPACE MAINTENANCE
STS-61

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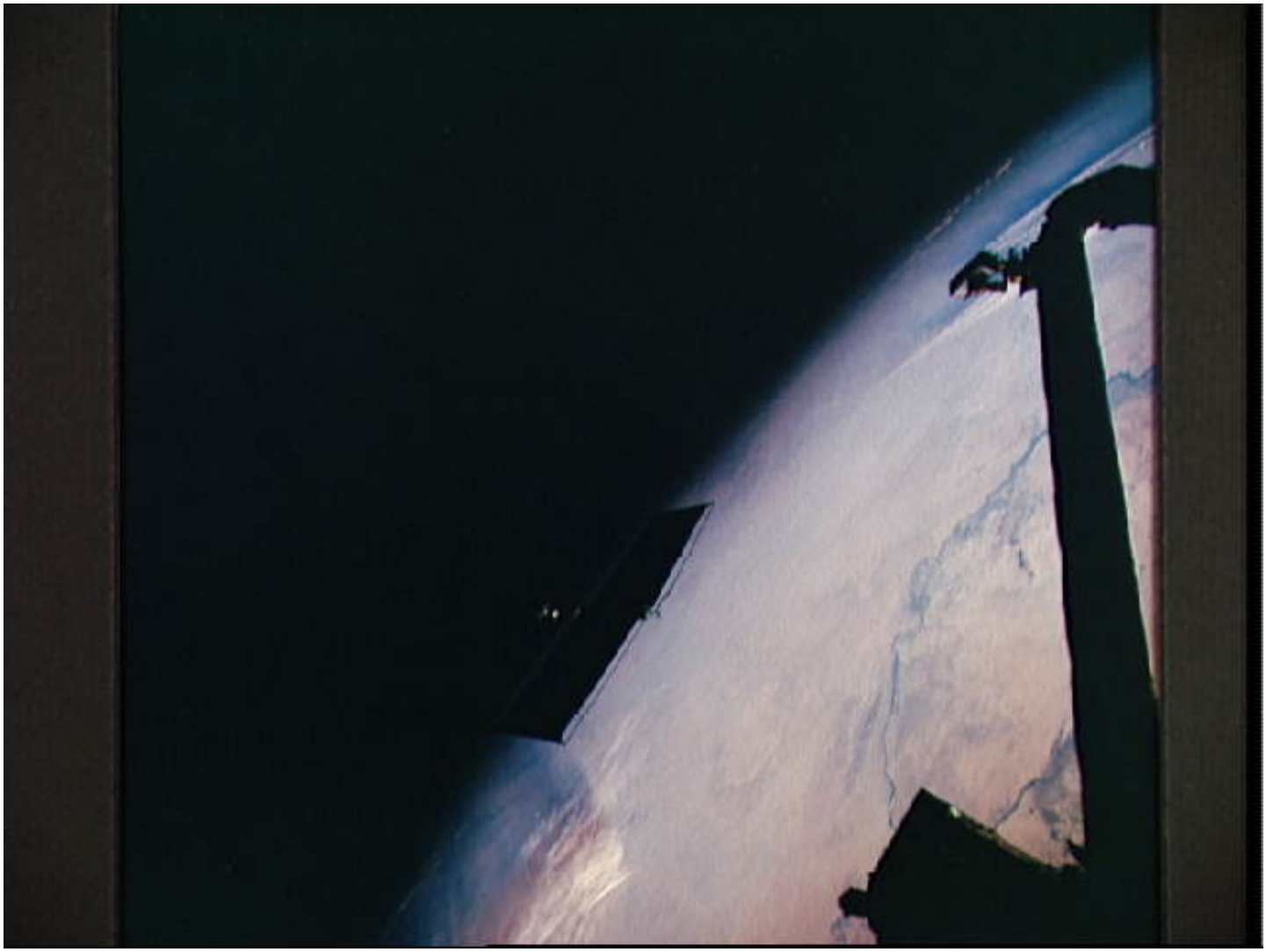

NASA Photo ID: STS061-95-031 File Name: 10093068.jpg
Film Type: 70mm Date Taken: 12/06/93
Title: Discarded solar array panel removed from Hubble Space telescope
Description:
The damaged solar array panel removed from the Hubble Space Telescope (HST) is backdropped over northern Sudan. A portion of the remote manipulator system (RMS) arm can be seen in the foreground.
Subject terms:
EARTH OBSERVATIONS (FROM SPACE)
ENDEAVOUR (ORBITER)
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
REMOTE MANIPULATOR SYSTEM
REPAIRING
SOLAR ARRAYS
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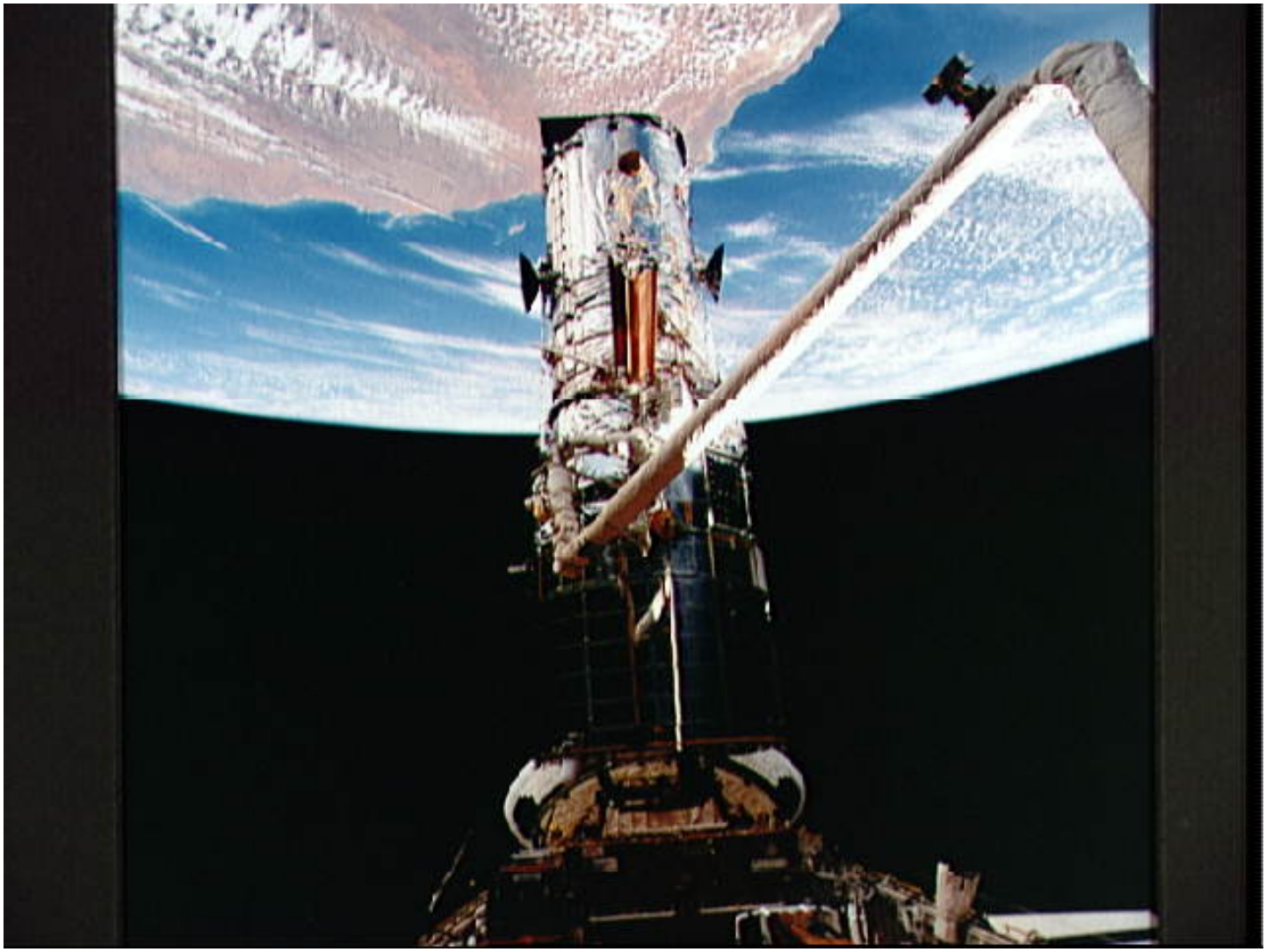

NASA Photo ID: STS061-95-075 File Name: 10093069.jpg
Film Type: 70mm Date Taken: 12/06/93
Title: Astronauts Akers and Thornton remove one of HST solar arrays during EVA
Description:
Astronauts Kathryn C. Thornton and Thomas D. Akers work to remove one of the solar arrays on the Hubble Space Telescope (HST) on the second of five STS-61 space walks. The two space walkers later replaced both solar array panels. Part of Australia is in the background.
Subject terms:
ASTRONAUTS
AUSTRALIA
ENDEAVOUR (ORBITER)
EXTRAVEHICULAR ACTIVITY
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
PAYLOAD BAY
REMOTE MANIPULATOR SYSTEM
REPAIRING
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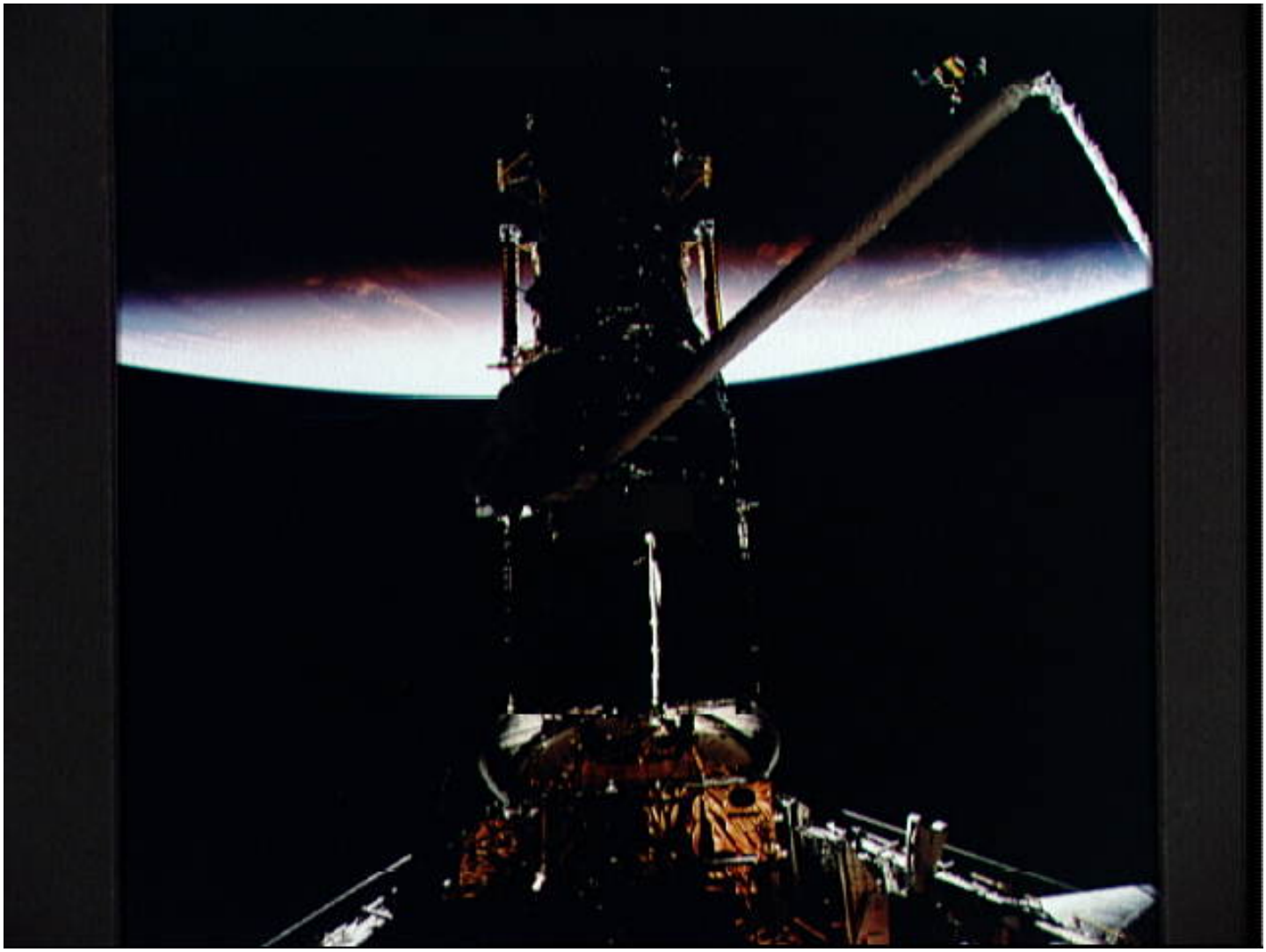

NASA Photo ID: STS061-98-000AR File Name: 10093081.jpg
Film Type: 70mm Date Taken: 12/08/93
Title: Astronaut Kathryn Thornton during installation of COSTAR on HST
Description:
Earth is partially illuminated but the Hubble Space Telescope (HST) and the Space Shuttle Endeavour are still mostly in darkness, in this 70mm frame photographed during the fourth of five space walks. Astronaut Kathryn C. Thornton, barely visible above left center in the frame, works to install the Corrective Optics Space Telescope Axial Replacement (COSTAR).

Subject terms:

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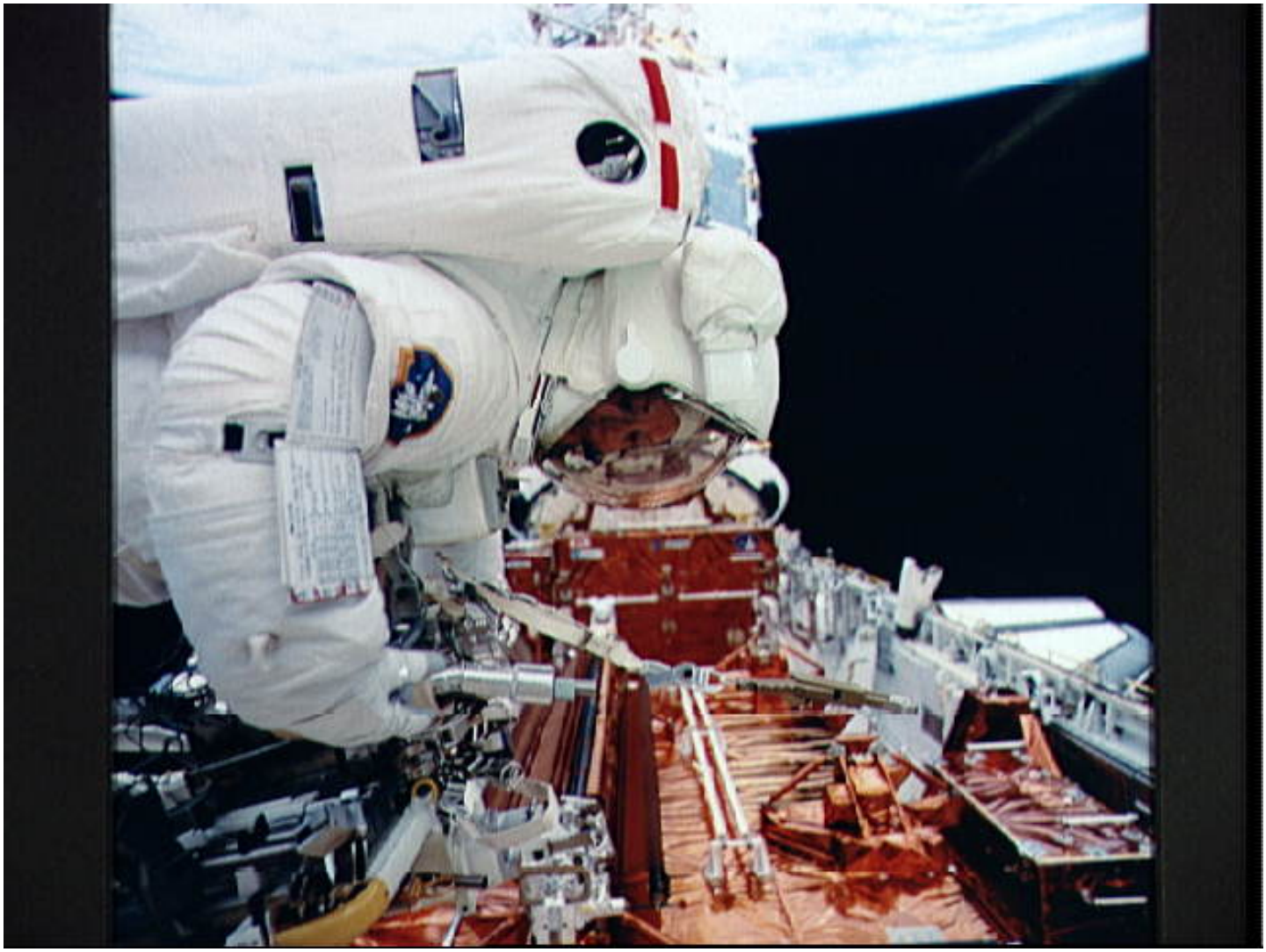

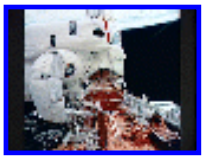

NASA Photo ID: STS061-98-000K File Name: 10093079.jpg
Film Type: 70mm Date Taken: 12/08/93
Title: Astronaut Kathryn Thornton during servicing of HST
Description:
Astronaut Kathryn C. Thornton works with equipment associated with servicing chores on the Hubble Space Telescope (HST) during the fourth space walk on the eleven day STS-61 mission.
Subject terms:

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NASA Photo ID: STS061-98-050 File Name: 10093087.jpg
Film Type: 70mm Date Taken: 12/09/93
Title: Astronauts Musgrave and Hoffman during servicing of HST
Description:
Astronaut F. Story Musgrave, anchored on the end of the Remote Manipulator System (RMS) arm, prepares to be elevated to the top of the lowering Hubble Space Telescope (HST) to install protective covers on the magnetometers. Astrronaut Jeffrey A. Hoffman (bottom of frame) assisted Musgrave with final servicing tasks on the telescope, wrapping up five days of space walks.
Subject terms:
ASTRONAUTS
EARTH OBSERVATIONS (FROM SPACE)
ENDEAVOUR (ORBITER)
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
PAYLOAD BAY
REMOTE MANIPULATOR SYSTEM
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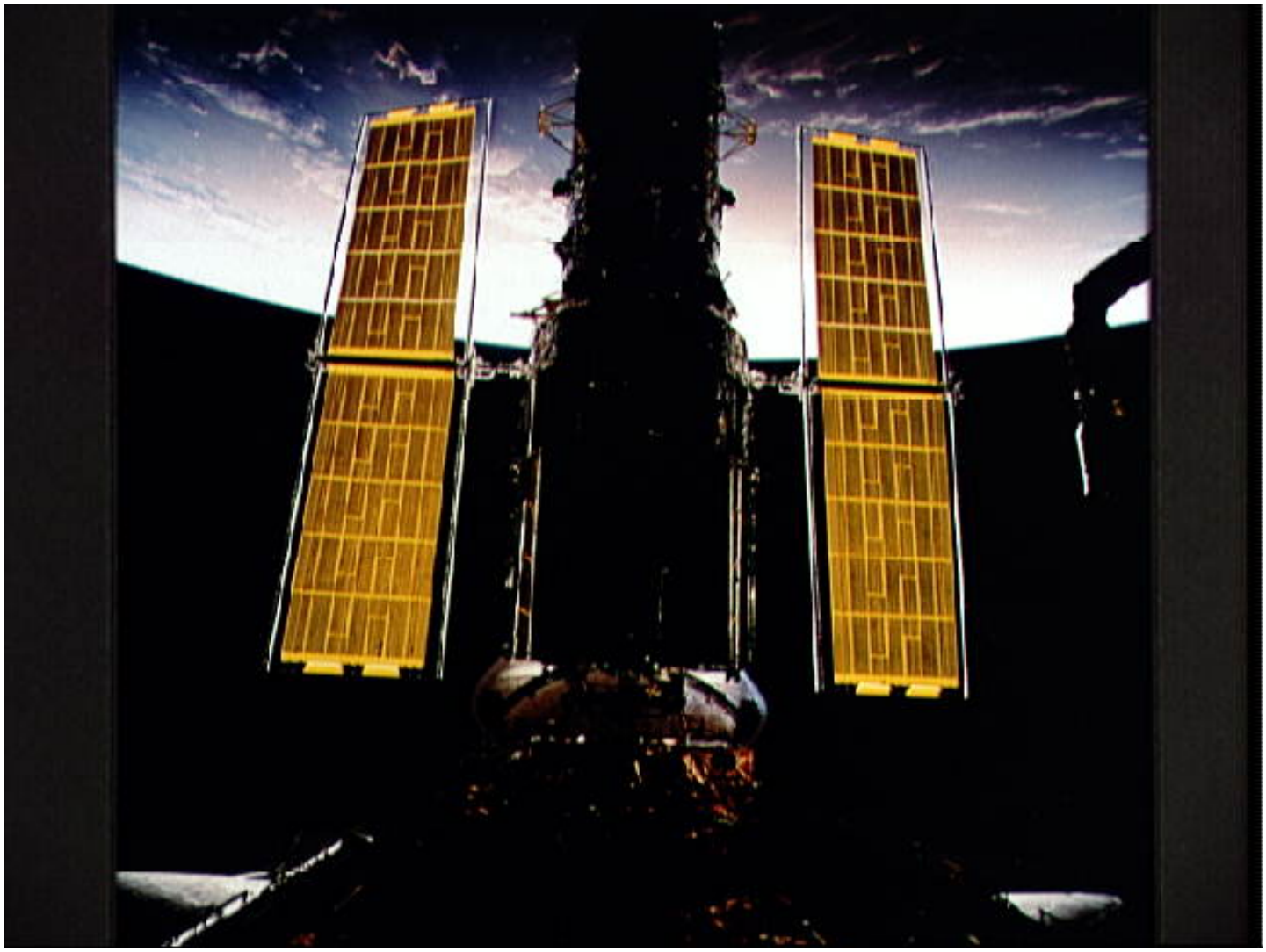

NASA Photo ID: STS061-99-002 File Name: 10093103.jpg
Film Type: 70mm Date Taken: 12/09/93
Title: New set of solar arrays deployed on Hubble Space Telescope
Description:
The new set of solar array panels deployed on the Hubble Space Telescope (HST) is backdropped against the blackness of space and a widely cloud-covered area on Earth.
Subject terms:
EARTH OBSERVATIONS (FROM SPACE)
ENDEAVOUR (ORBITER)
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
PAYLOAD BAY
REPAIRING
SOLAR ARRAYS
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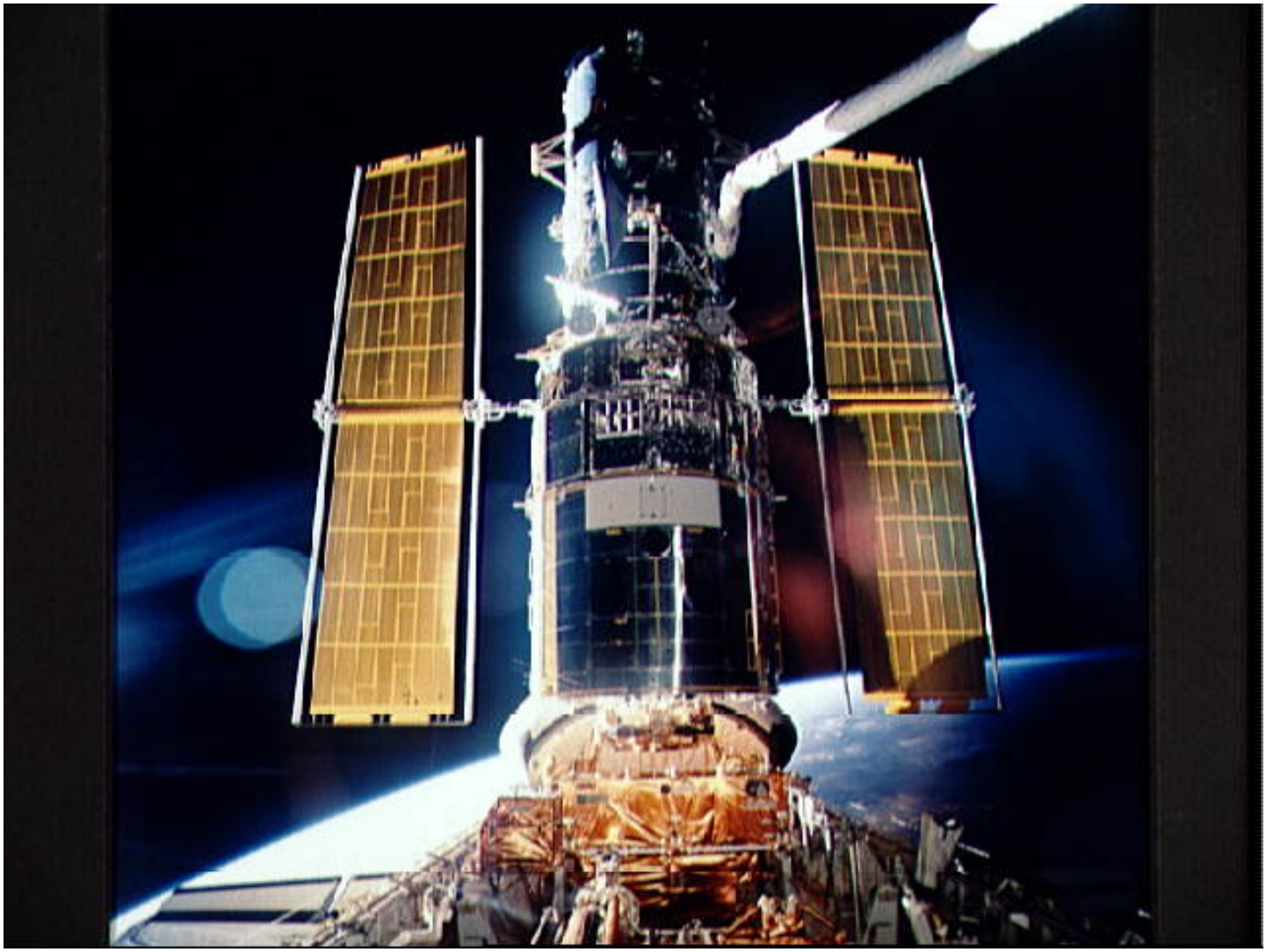

NASA Photo ID: STS061-99-009 File Name: 10093092.jpg
Film Type: 70mm Date Taken: 12/09/93
Title: New set of solar arrays deployed on Hubble Space Telescope
Description:
Sunlight reflects off Endeavour's aft windows and the shiny Hubble Space Telescope (HST) prior to its post-servicing deployment near the end of the eleven-day STS-61 mission. The Remote Manipulator System (RMS) arm is seen in the upper right hand of the scene.
Subject terms:
EARTH OBSERVATIONS (FROM SPACE)
ENDEAVOUR (ORBITER)
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
PAYLOAD BAY
REMOTE MANIPULATOR SYSTEM
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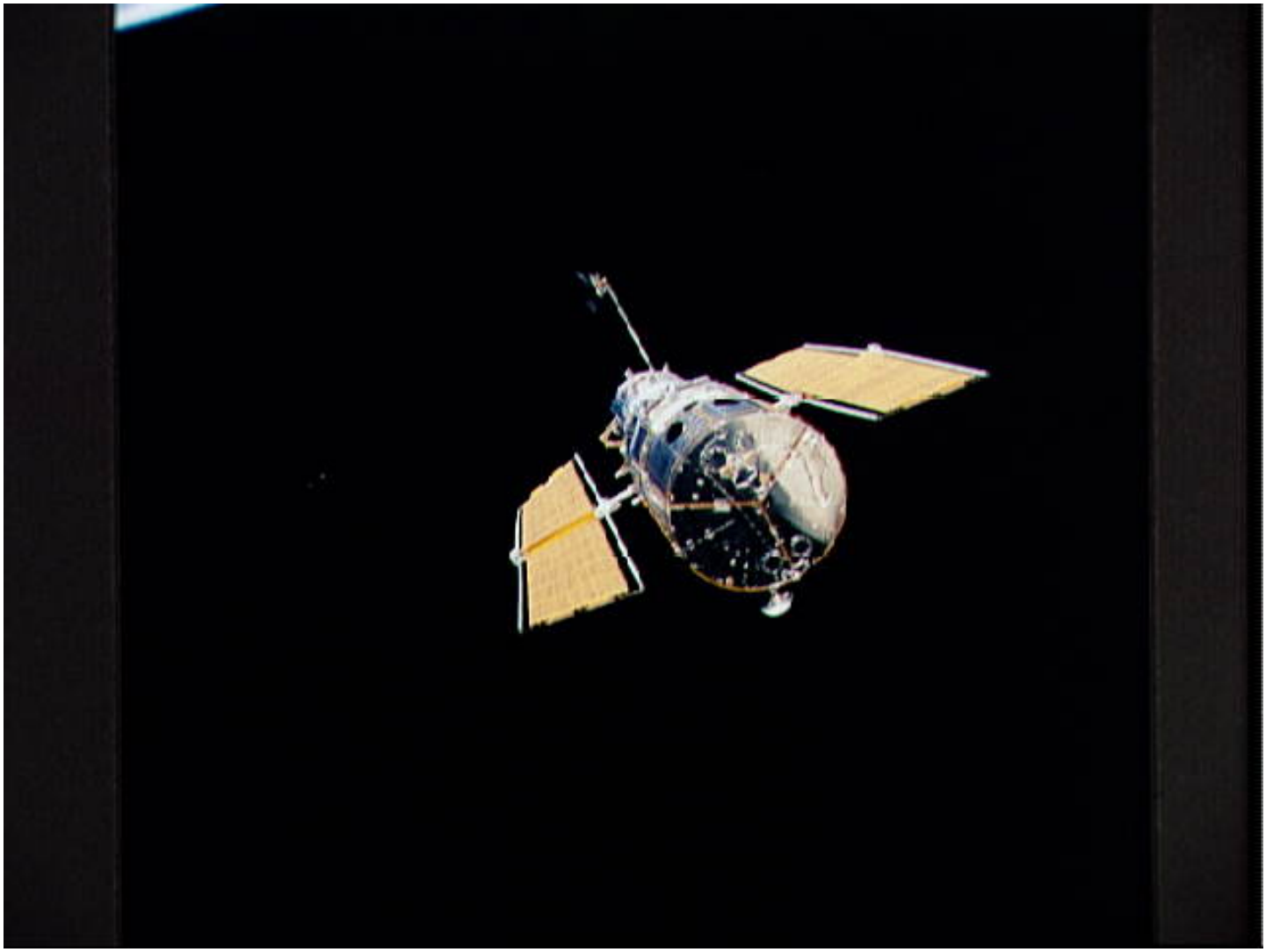

NASA Photo ID: STS061-99-042 File Name: 10093094.jpg
Film Type: 70mm Date Taken: 12/09/93
Title: Hubble Space Telescope after deployment
Description:
The Hubble Space Telescope (HST) begins its separation from the Space Shuttle Endeavour following a week and a half berthed in the space vehicle's cargo bay. Part of Earth's horizon is visible in the lower right corner.
Subject terms:
DEPLOYMENT
EARTH OBSERVATIONS (FROM SPACE)
ENDEAVOUR (ORBITER)
HORIZON
HUBBLE SPACE TELESCOPE
ONBOARD ACTIVITIES
SEPARATION
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