

Appendix B-Orbiter Historic Photos

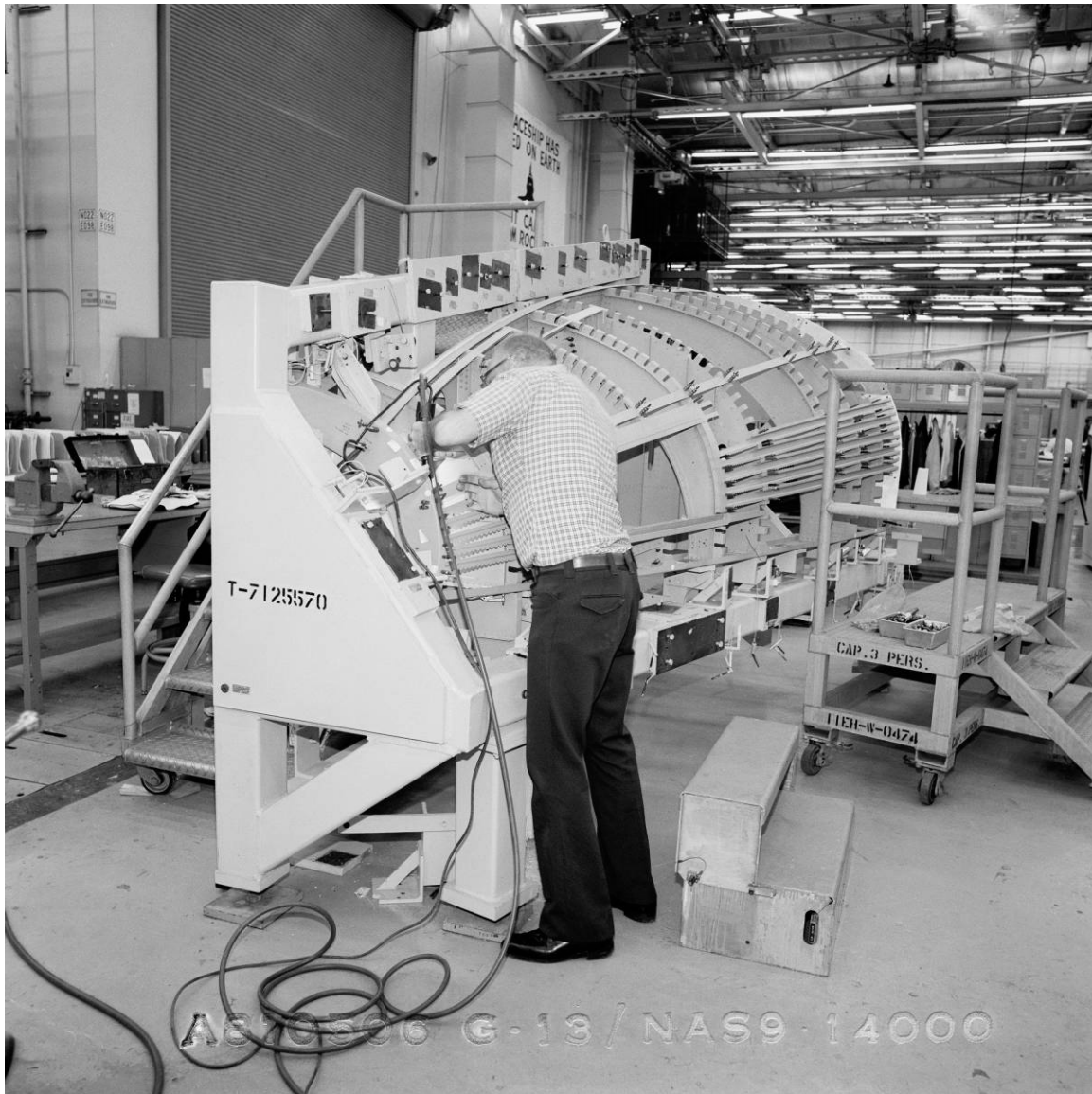


Figure B-1. Manufacturing of *Discovery's* lower forward fuselage, NAR Building 290, Downey, California, May 6, 1981.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03096.



Figure B-2. Manufacturing of *Discovery's* lower forward fuselage, NAR Building 290, Downey, California, November 10, 1981.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03198.

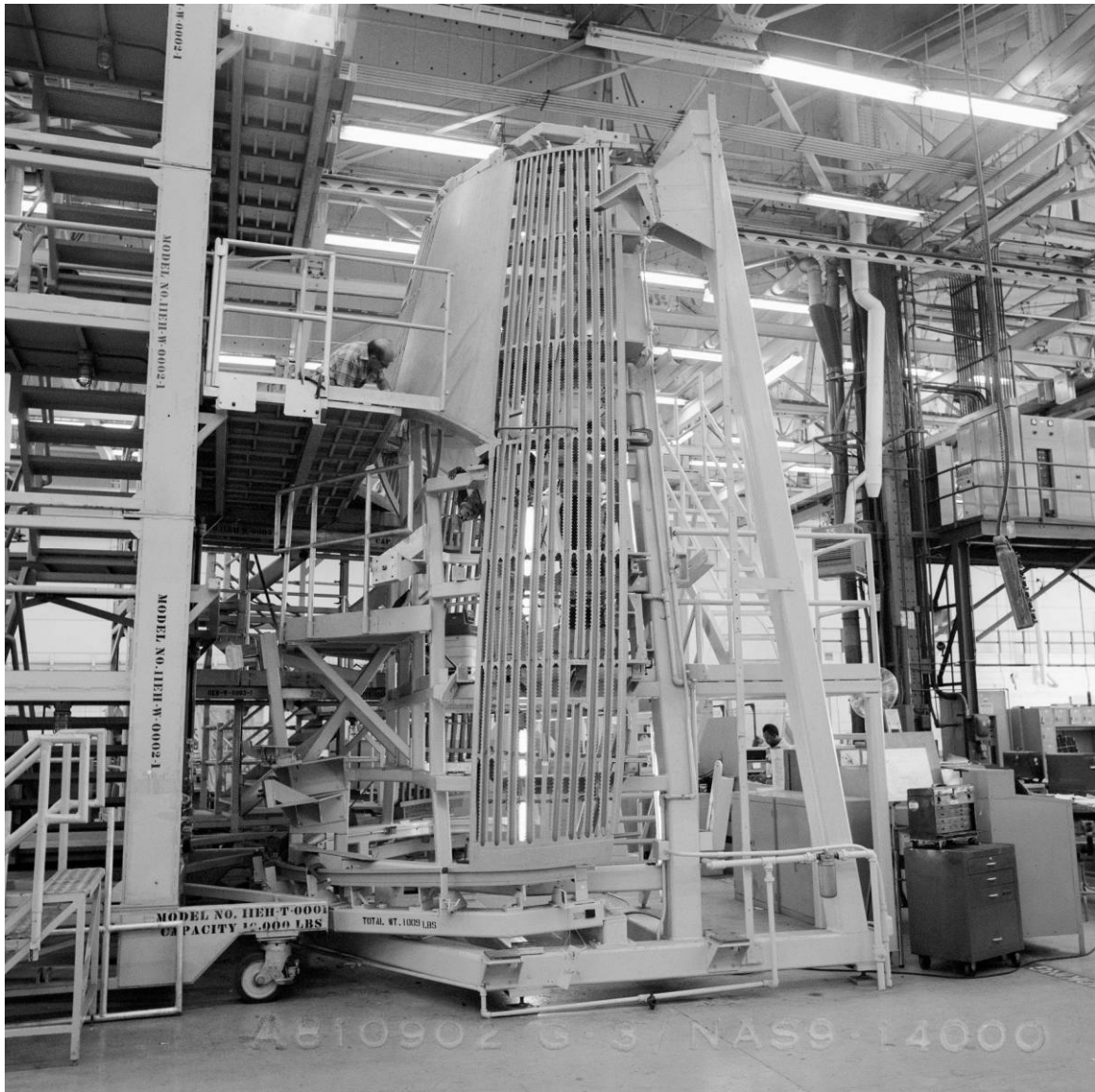


Figure B-3. Manufacturing of *Discovery's* upper forward fuselage, NAR Building 290, Downey, California, September 2, 1981.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03146.



Figure B-4. Manufacturing of *Discovery's* upper forward fuselage, NAR Building 290, Downey, California, November 20, 1981.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03204.



Figure B-5. Manufacturing of *Discovery's* crew module aft bulkhead, NAR Building 290, Downey, California, February 26, 1981.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03081.



Figure B-6. Upper skin panel assembly for *Discovery's* crew module, NAR Building 290, Downey, California, June 10, 1981.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03105.

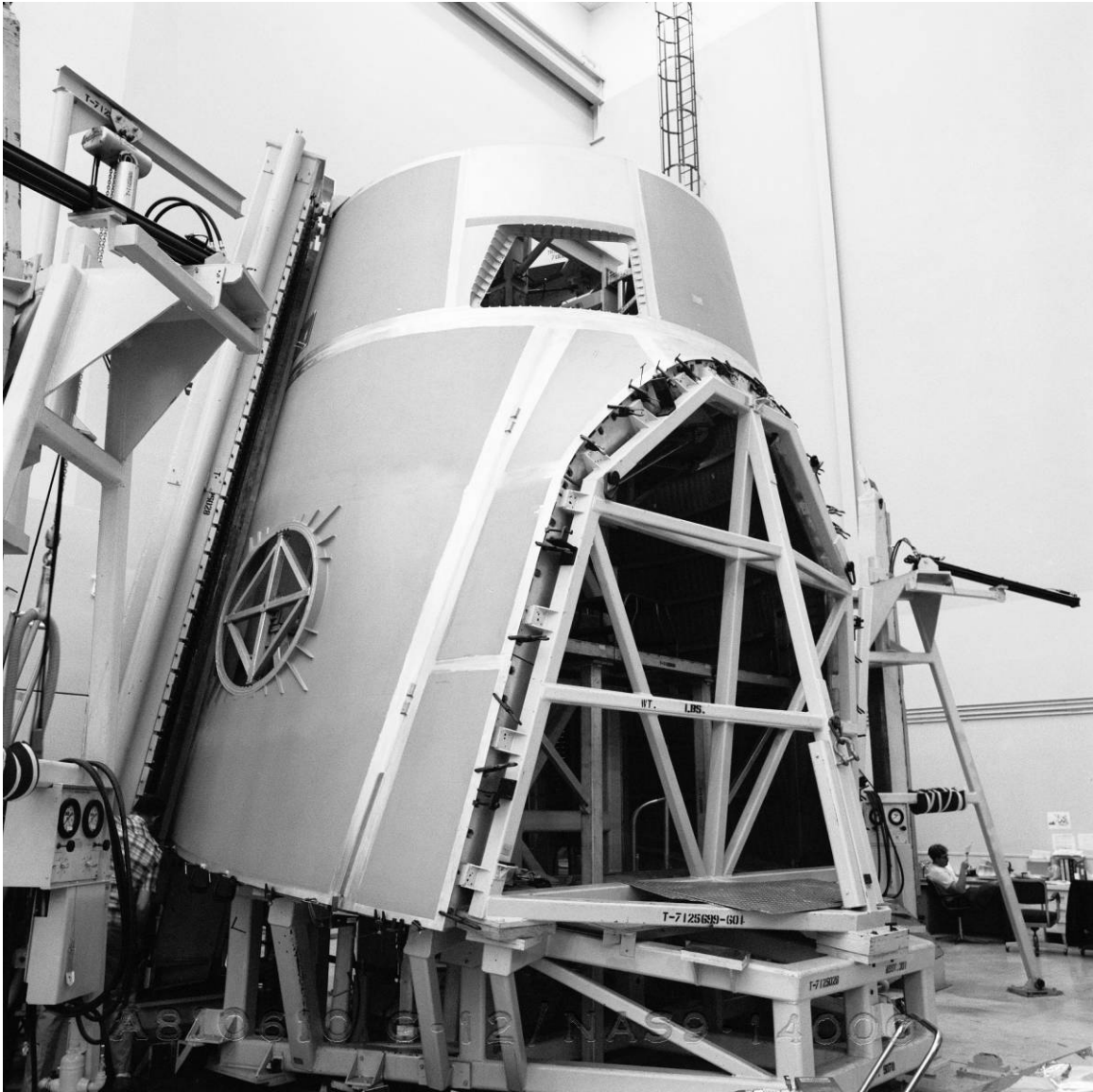


Figure B-7. Intermediate structure assembly for *Discovery's* crew module, NAR Building 290, Downey, California, June 10, 1981.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03104.



Figure B-8. Primary structure assembly for *Discovery's* crew module in weld tool, NAR Building 290, Downey, California, July 8, 1981.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03119.



Figure B-9. Manufacturing operations on *Discovery's* flight deck, NAR Building 290, Downey, California, March 9, 1982.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03245.

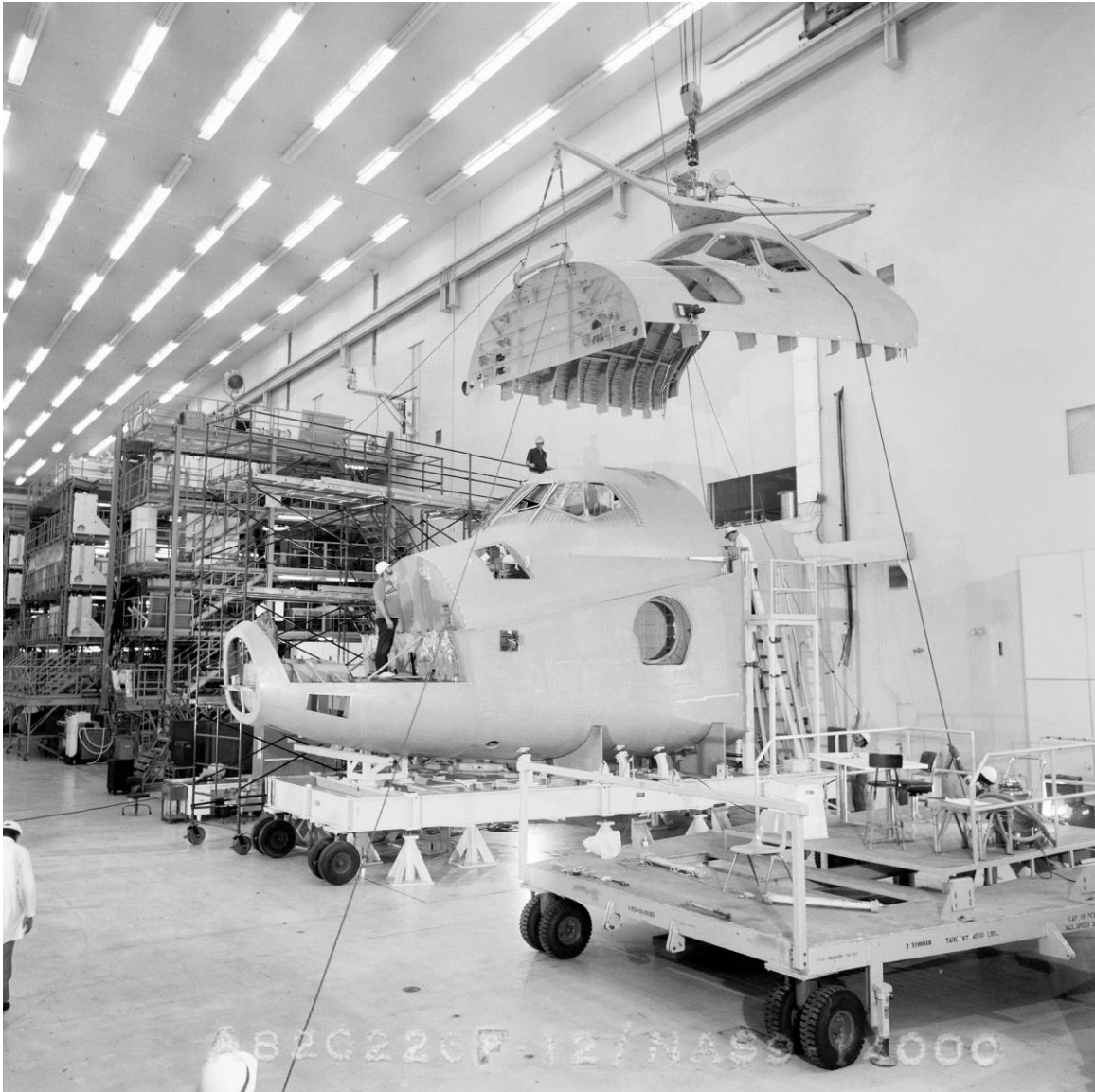


Figure B-10. Fit check of *Discovery*'s crew module, lower forward fuselage, and upper forward fuselage, NAR Building 290, Downey, California, February 26, 1982.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03237.



Figure B-11. Manufacturing operations on *Discovery's* middeck, NAR Building 290, Downey, California, March 9, 1982.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03244.

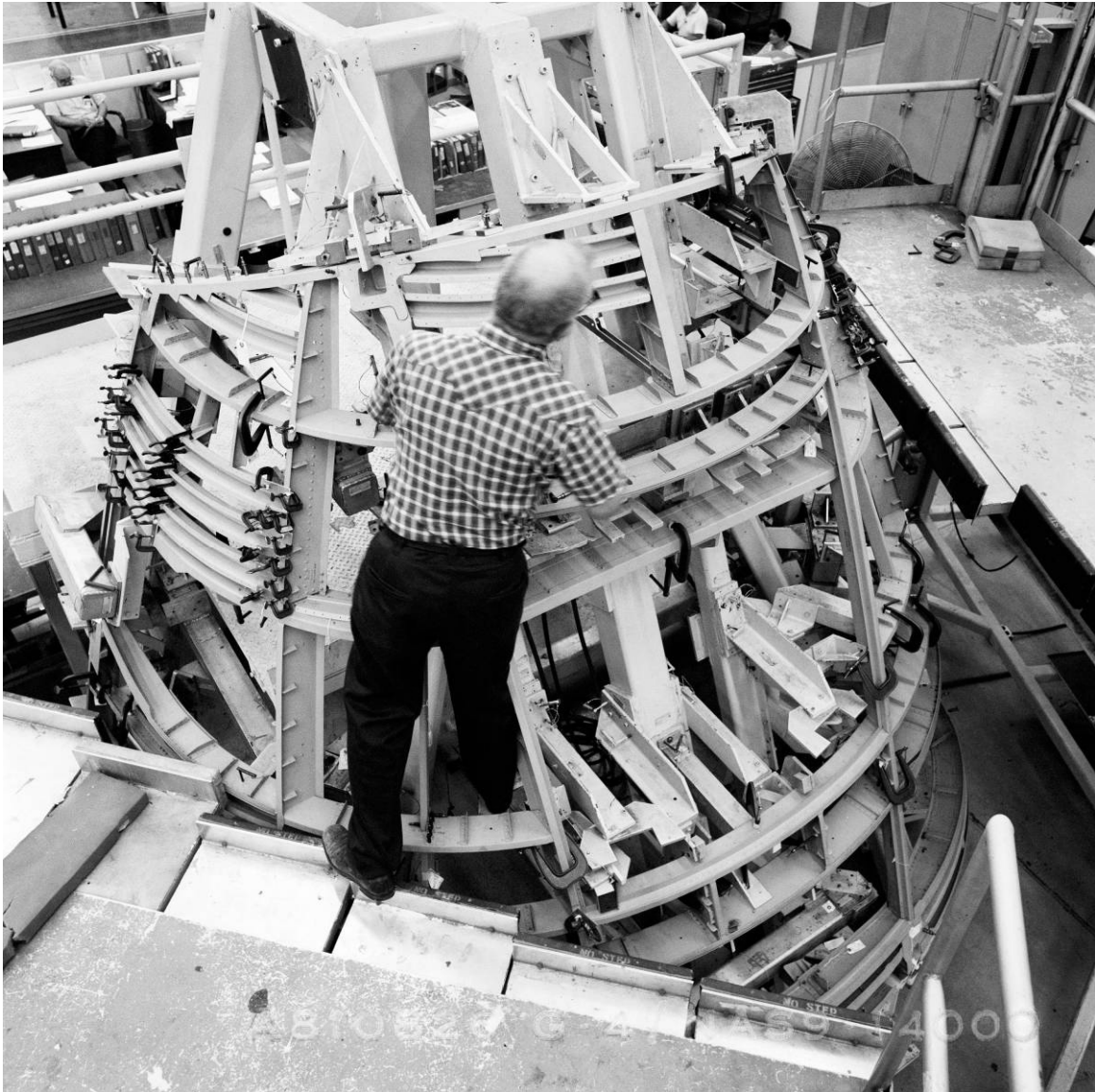


Figure B-12. Manufacturing of *Discovery's* FRCS module, NAR Building 1, Downey, California, August 26, 1981.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03142.



Figure B-13. Manufacturing of *Discovery's* FRCS module, NAR Building 1, Downey, California, January 22, 1982.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03228.

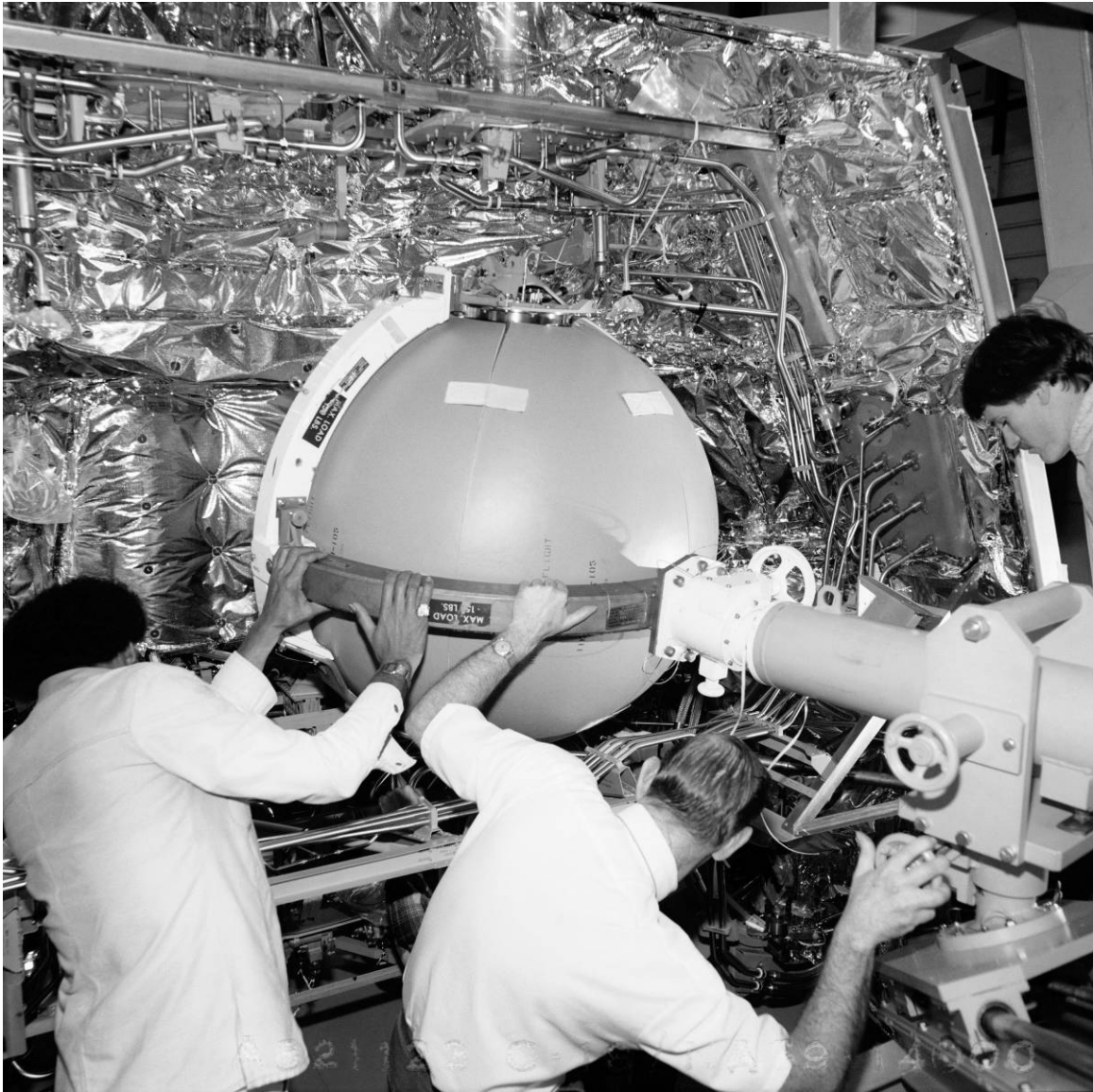


Figure B-14. Fuel tank being installed into *Discovery's* FRCS module, NAR Building 1, Downey, California, November 23, 1982.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03369.



Figure B-15. Manufacturing of a vertical truss for the thrust structure of *Discovery's* aft fuselage, NAR Building 1, Downey, California, April 23, 1981.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03093.

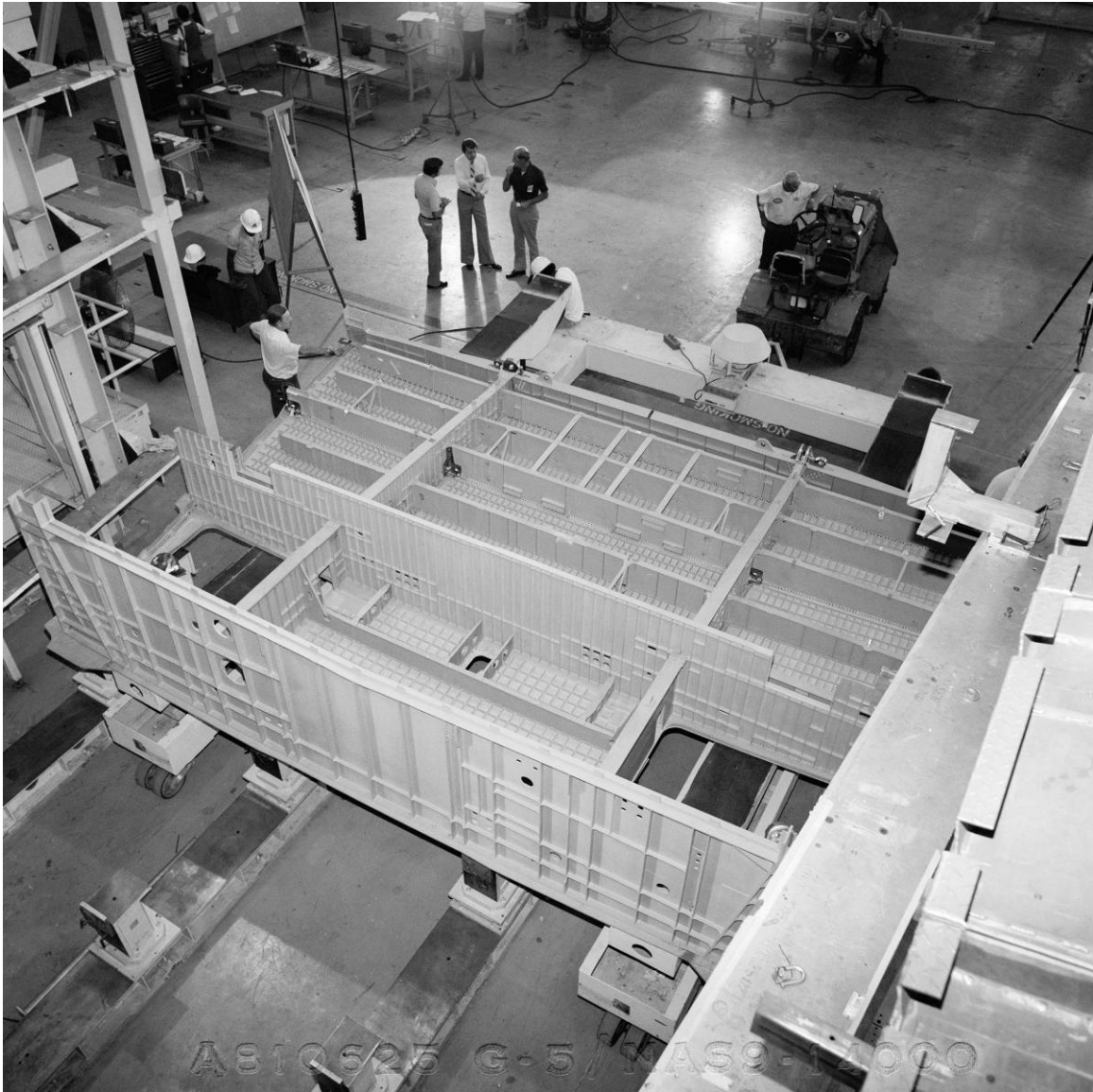


Figure B-16. Manufacturing of the lower structure assembly for *Discovery's* aft fuselage, NAR Building 1, Downey, California, June 25, 1981.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03110.

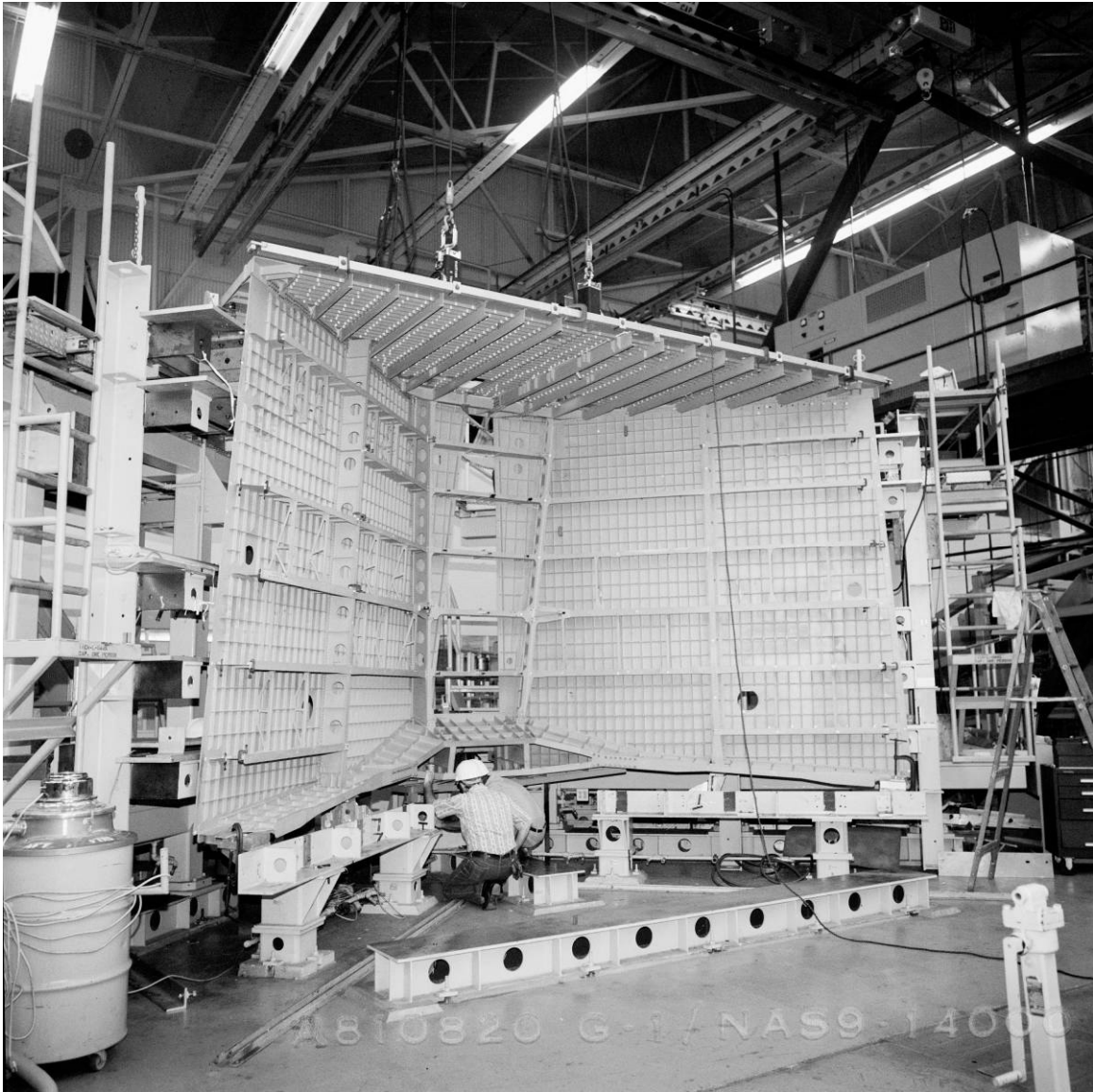


Figure B-17. Manufacturing of the upper structure assembly for *Discovery's* aft fuselage, NAR Building 1, Downey, California, August 20, 1981.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03139.

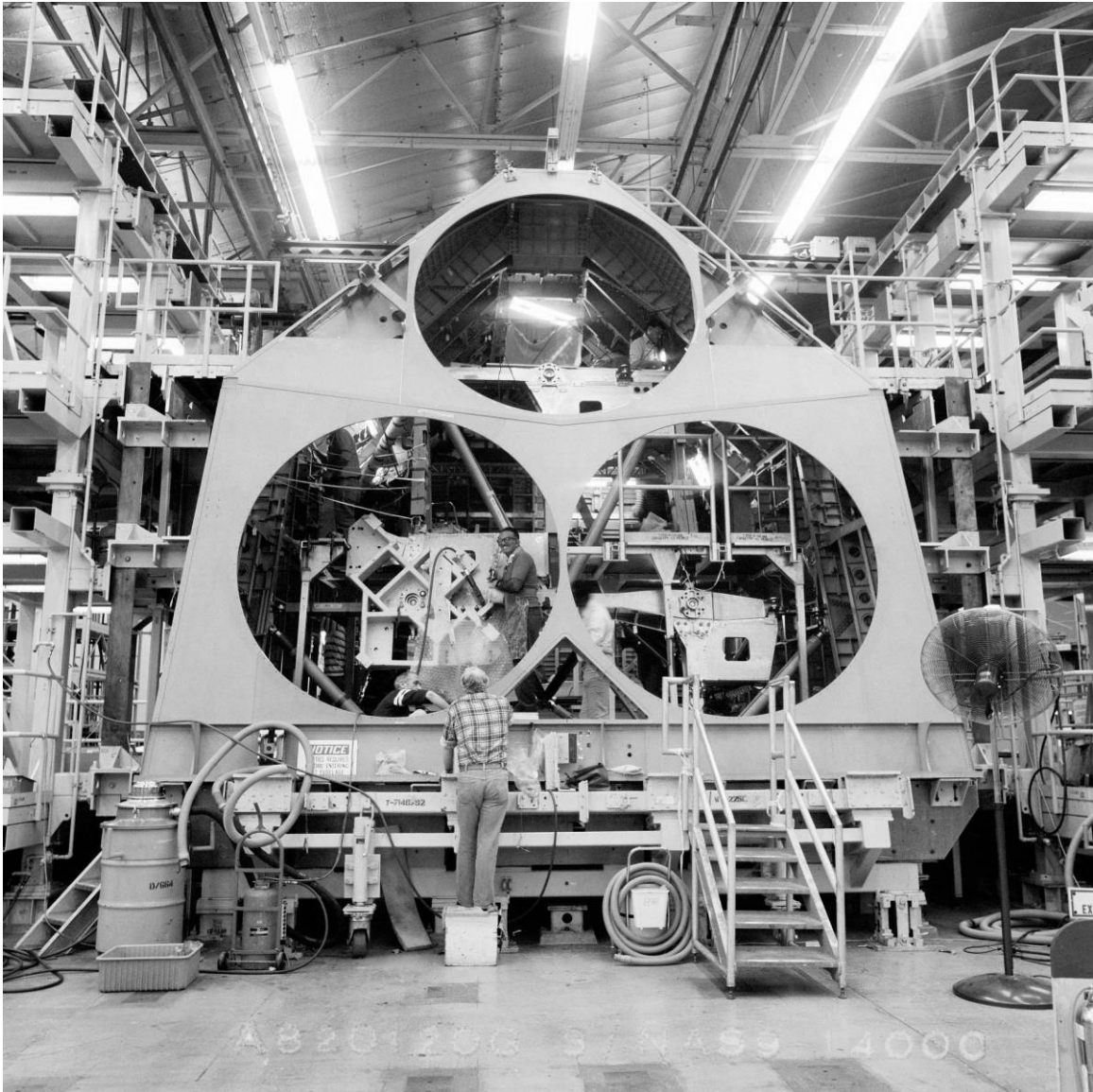


Figure B-18. Installation of aft heat shield to *Discovery's* aft fuselage, NAR Building 1, Downey, California, January 20, 1982.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03226.



Figure B-19. Arrival of *Discovery*'s midfuselage at AFP 42 for final assembly, March 16, 1982.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03249.

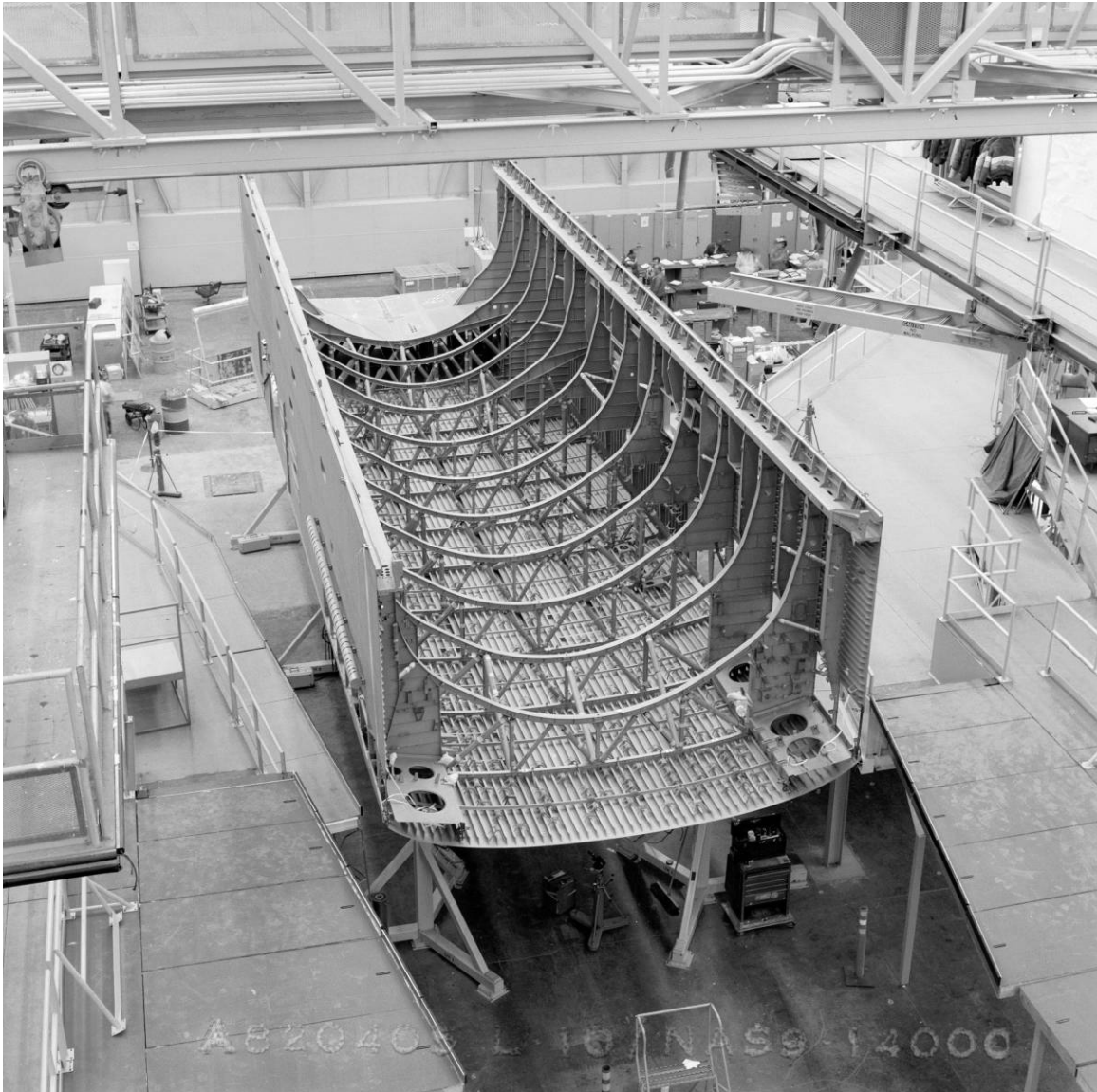


Figure B-20. *Discovery's* midfuselage in High Bay 2, AFP 42, April 5, 1982.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03253.



Figure B-21. *Discovery's* port wing being offloaded from ship at the Los Angeles Harbor for delivery to AFP 42, April 29, 1982.

Source: NASA, Johnson Space Center Image Repository, JSC2010-03265.



Figure B-22. *Discovery's* port wing being offloaded from transporter at AFP 42, May 2, 1982.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03283.



Figure B-23. *Discovery's* starboard wing being attached to the midfuselage in High Bay 2, AFP 42, May 8, 1982.

Source: NASA, Johnson Space Center Image Repository, JSC2010-03270.



Figure B-24. *Discovery's* lower forward fuselage being attached to the midfuselage in High Bay 2, AFP 42, May 15, 1982.

Source: NASA, Johnson Space Center Image Repository, JSC2010-03282.

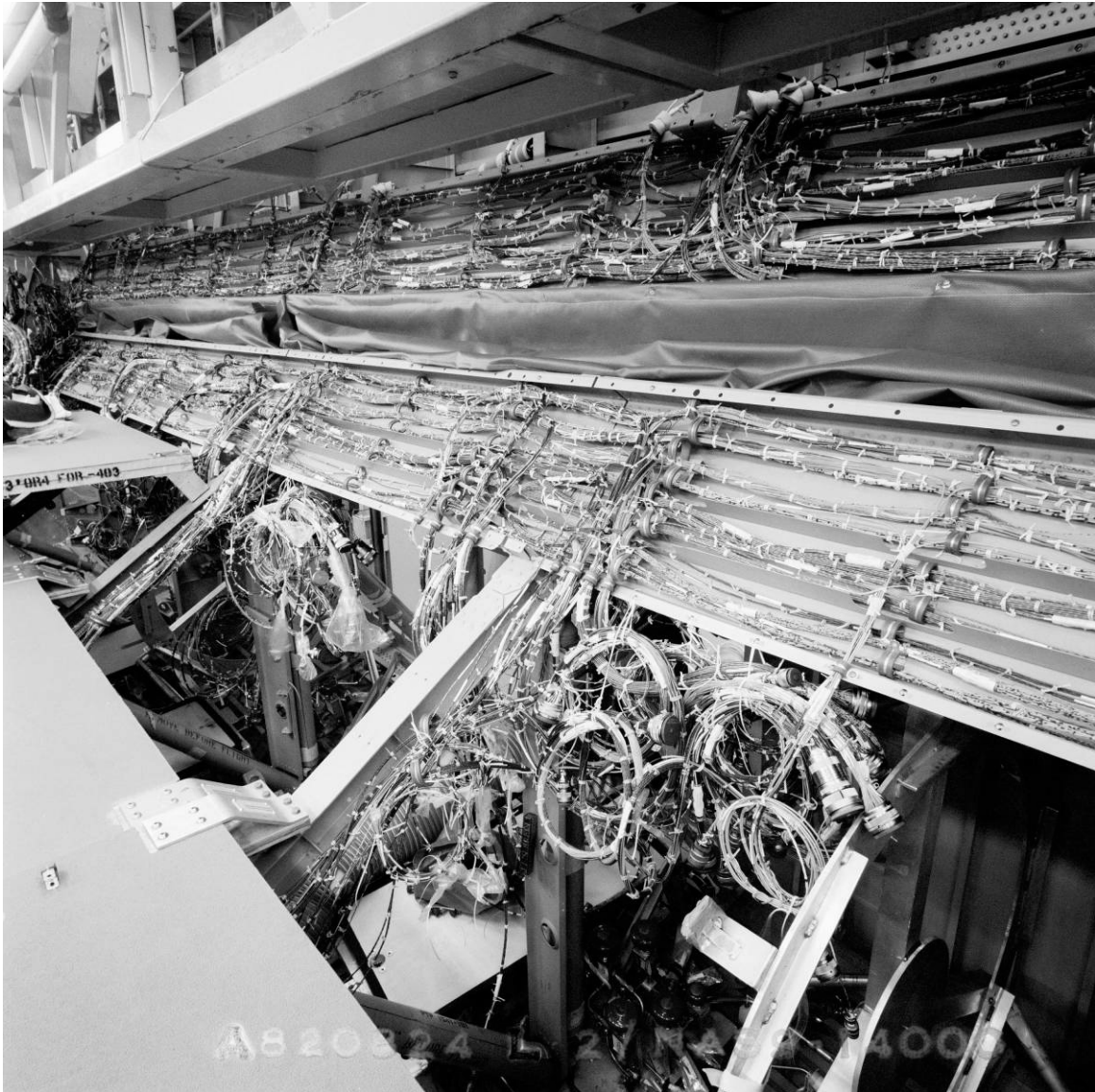


Figure B-25. Starboard wire harness being installed in *Discovery's* midfuselage in High Bay 2, AFP 42, August 24, 1982.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03330.

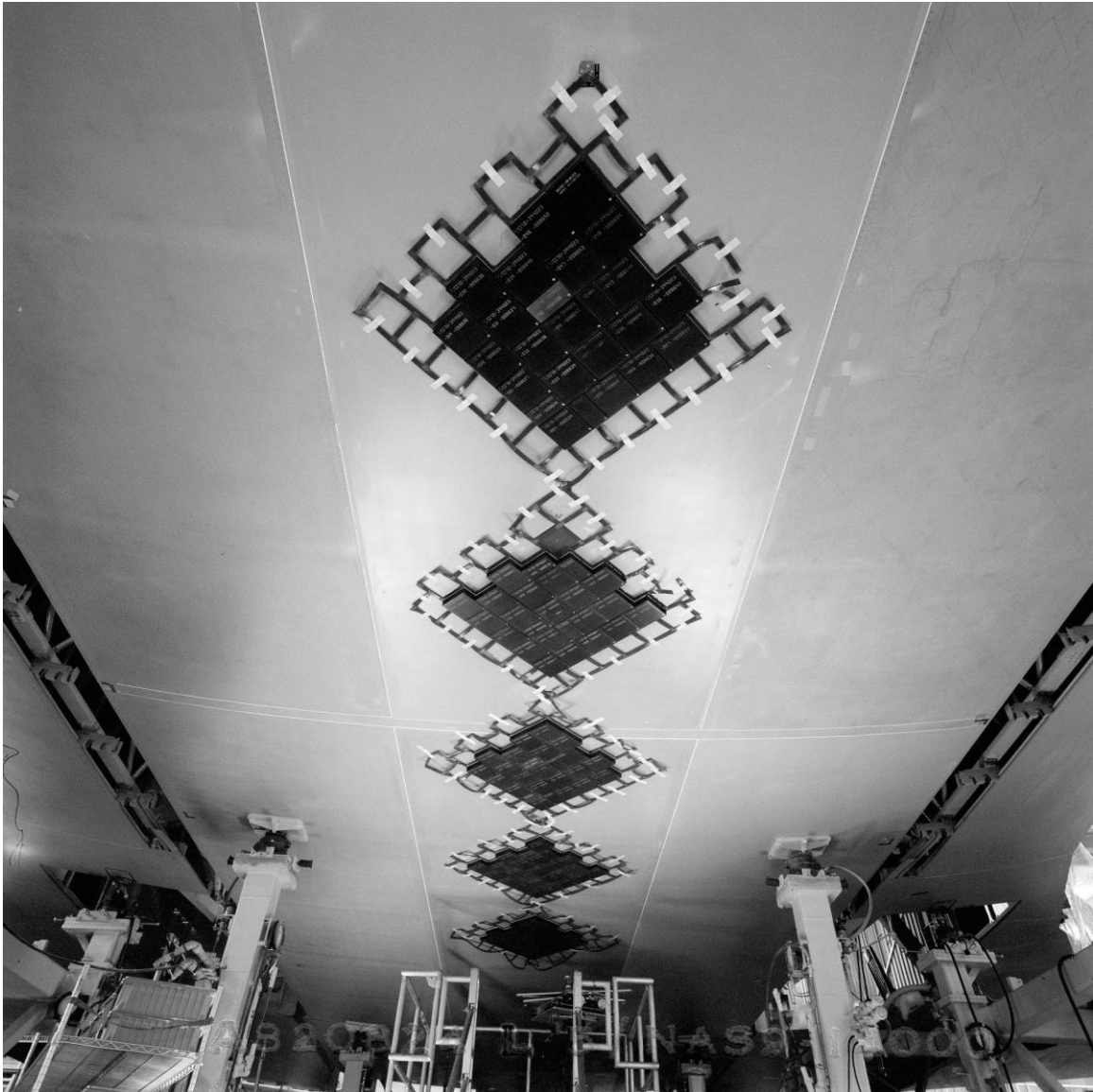


Figure B-26. HRSI tile being installed on the underside of *Discovery's* midfuselage in High Bay 2, AFP 42, August 24, 1982.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03331.



Figure B-27. Inspection of *Discovery's* elevons, High Bay 1, AFP 42,
September 14, 1982.

Source: NASA, Johnson Space Center/Boeing, Huntington Beach, California, A820914L-31C.

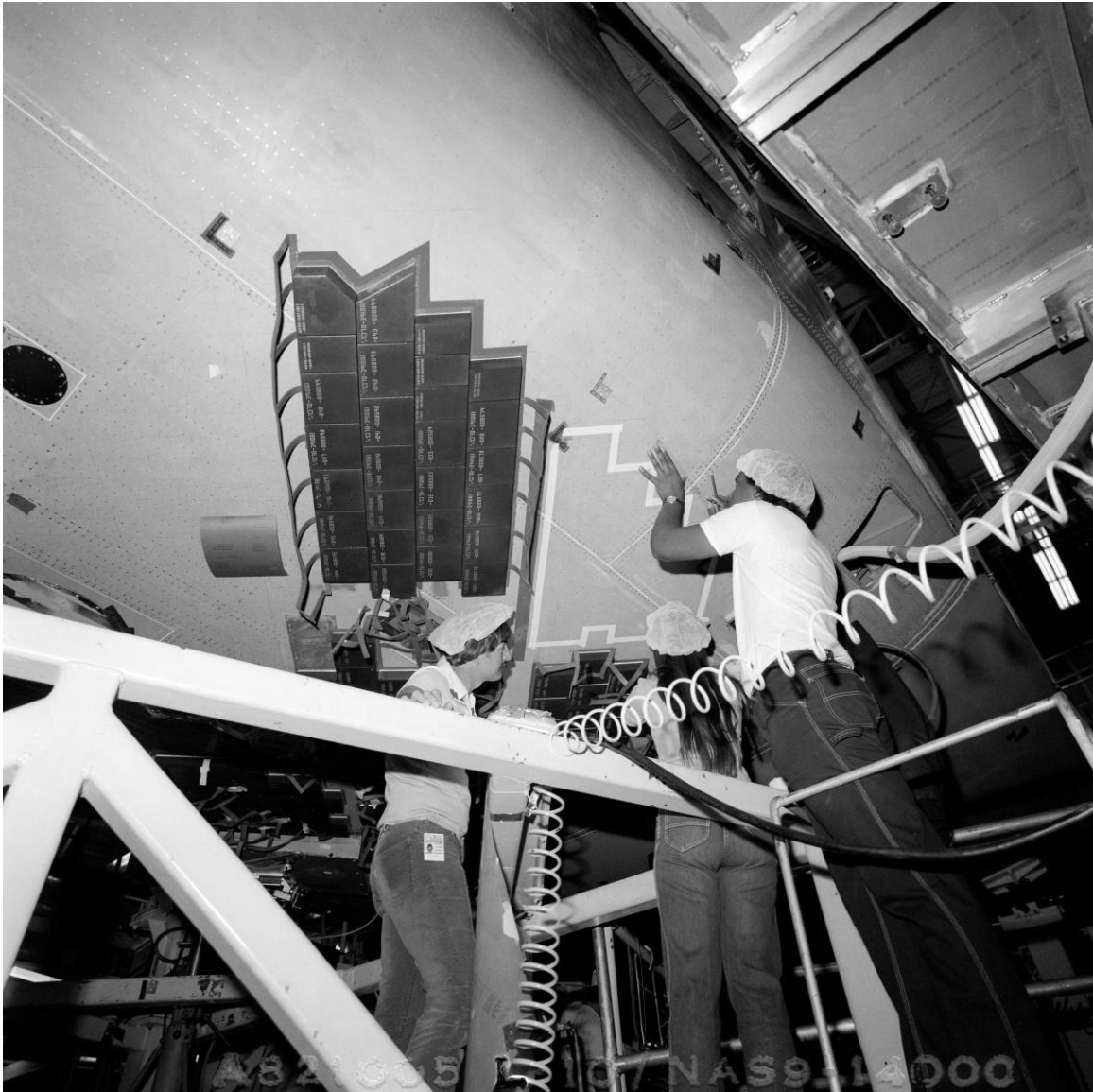


Figure B-28. HRSI installation on the underside of *Discovery's* lower forward fuselage in High Bay 2, AFP 42, October 5, 1982.

Source: NASA, Johnson Space Center Image Repository, JSC2010-03346.

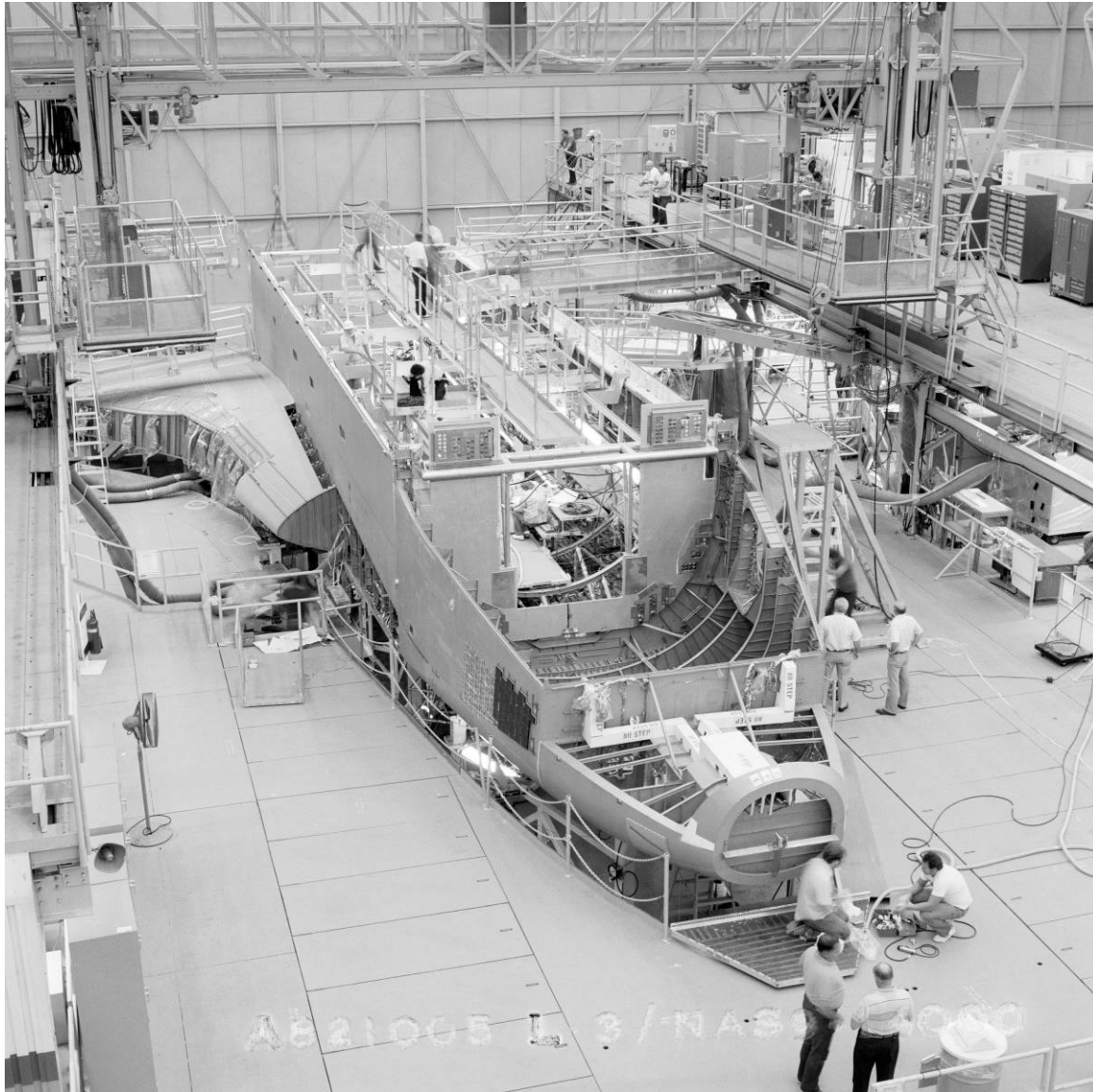


Figure B-29. *Discovery's* midfuselage DITMCO in High Bay 2, AFP 42, October 18, 1982.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03344.



Figure B-30. Installation of TPS on *Discovery's* vertical stabilizer, AFP 42, October 19, 1982.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03353.



Figure B-31. Installation of wing leading edge on *Discovery's* port wing in High Bay 2, AFP 42, October 26, 1982.

Source: NASA, Johnson Space Center Image Repository, JSC2010-03575.



Figure B-32. Assembly work on *Discovery's* body flap, AFP 42, November 23, 1982.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03371.



Figure B-33. Arrival of *Discovery's* crew module at AFP 42, December 28, 1982.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03388.

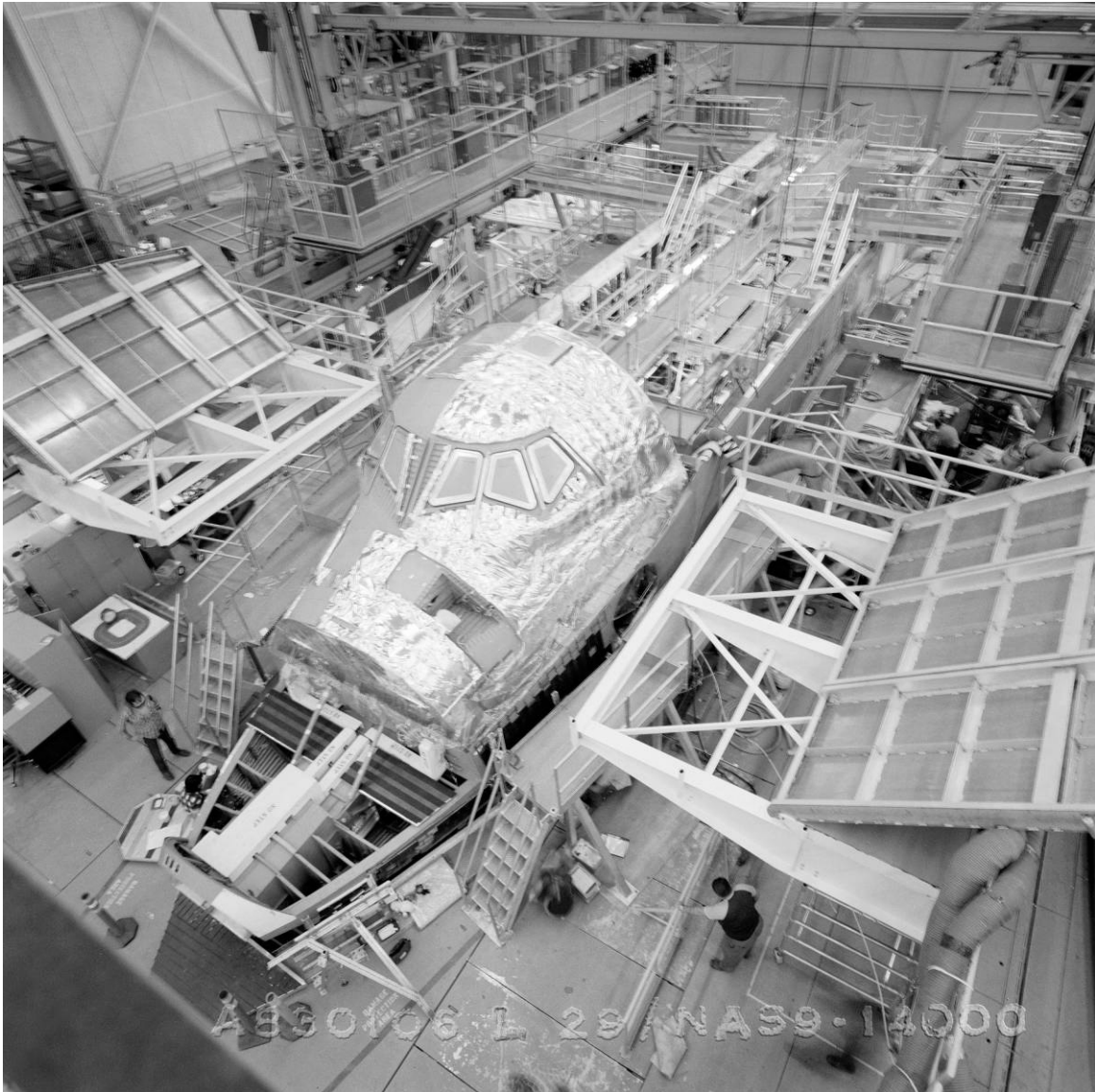


Figure B-34. General view of the progress on *Discovery's* final assembly in High Bay 2, AFP 42, January 6, 1983.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03391.



Figure B-35. Installation of *Discovery's* port side main landing gear in High Bay 2, AFP 42, January 8, 1983.

Source: NASA, Johnson Space Center Image Repository, JSC2010-03396.



Figure B-36. Preparing for the installation of *Discovery's* aft fuselage in High Bay 2, AFP 42, January 11, 1983.

Source: NASA, Johnson Space Center Image Repository, JSC2010-03401.



Figure B-37. Installation of *Discovery's* upper forward fuselage in High Bay 2, AFP 42, January 12, 1983.

Source: NASA, Johnson Space Center Image Repository, JSC2010-03404.



Figure B-38. *Discovery's* two OMS pods upon arrival at AFP 42, January 18, 1983.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03408.



Figure B-39. Manufacturing progress on *Discovery's* middeck in High Bay 2, AFP 42, January 25, 1983.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03590.



Figure B-40. Manufacturing progress on *Discovery's* flight deck in High Bay 2, AFP 42, January 25, 1983.

Source: NASA, Johnson Space Center Image Repository, JSC2010-03589.



Figure B-41. Installation of *Discovery's* FRCS module in High Bay 2, AFP 42, February 9, 1983.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03410.

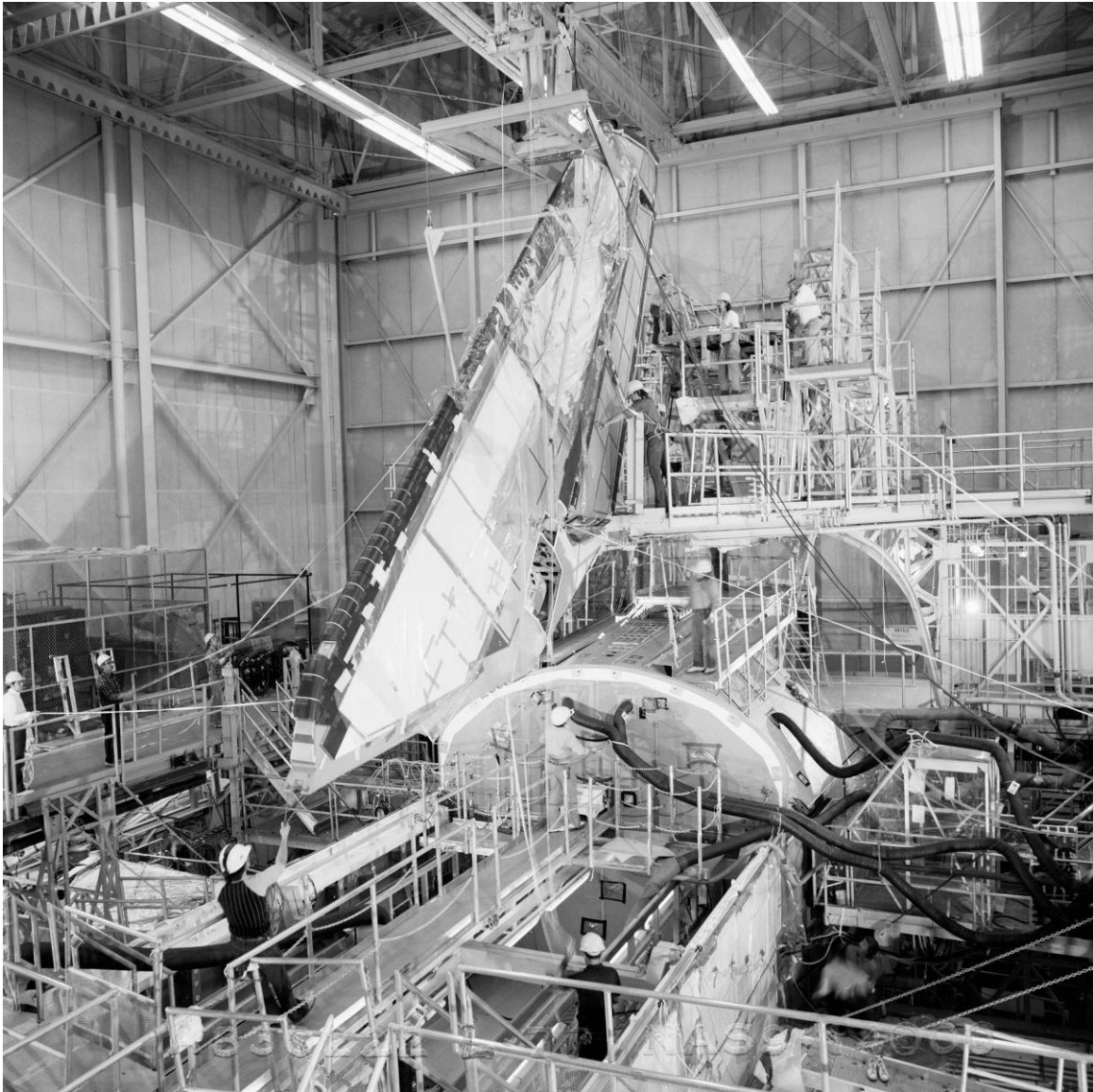


Figure B-42. Installation of *Discovery's* vertical stabilizer in High Bay 2, AFP 42, February 22, 1983.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03417.



Figure B-43. Installation of *Discovery's* nose cone in High Bay 2, AFP 42, March 8, 1983.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03441.

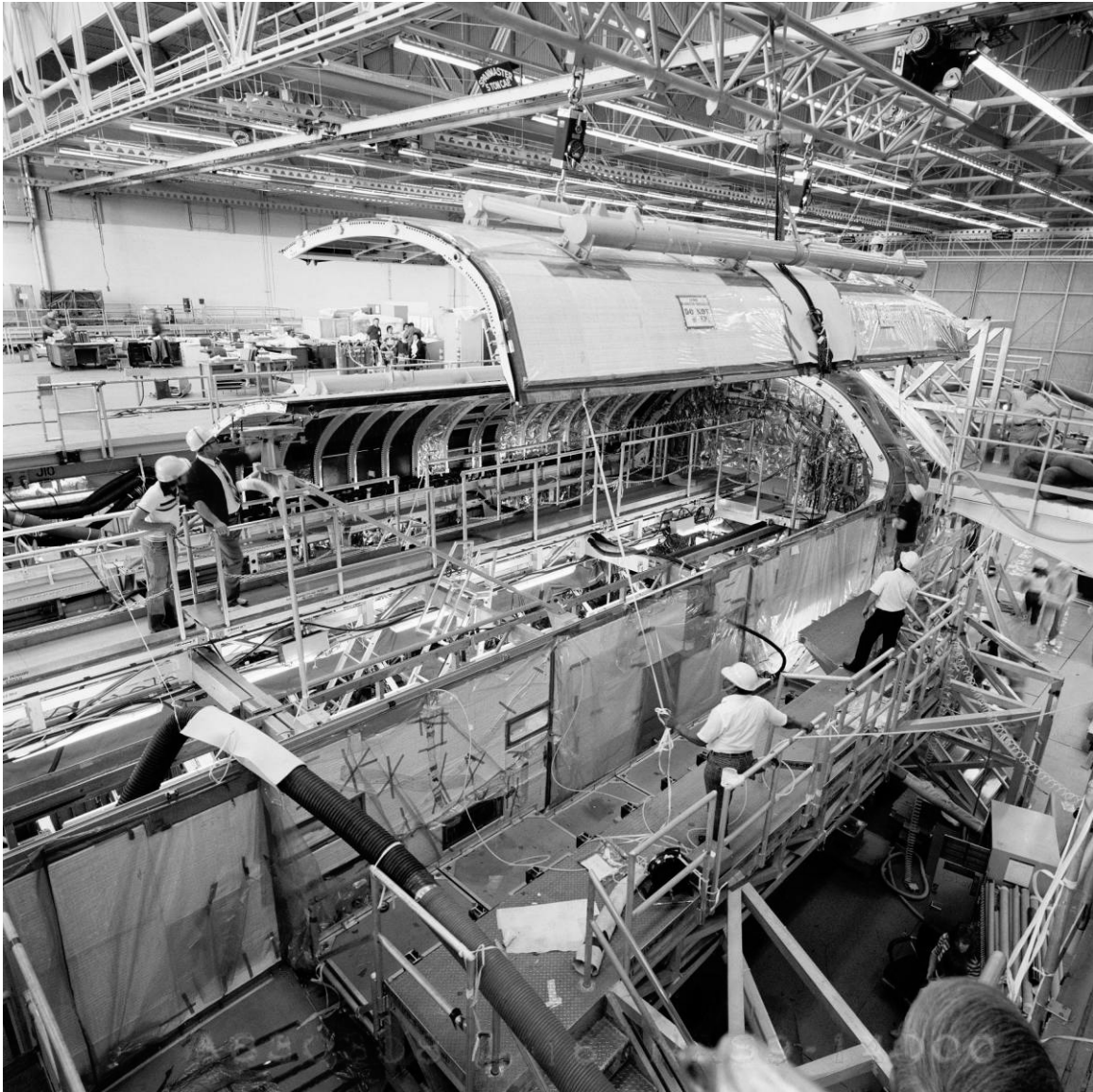


Figure B-44. Installation of the forward half of *Discovery's* starboard payload bay door in High Bay 2, AFP 42, March 8, 1983.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03426.

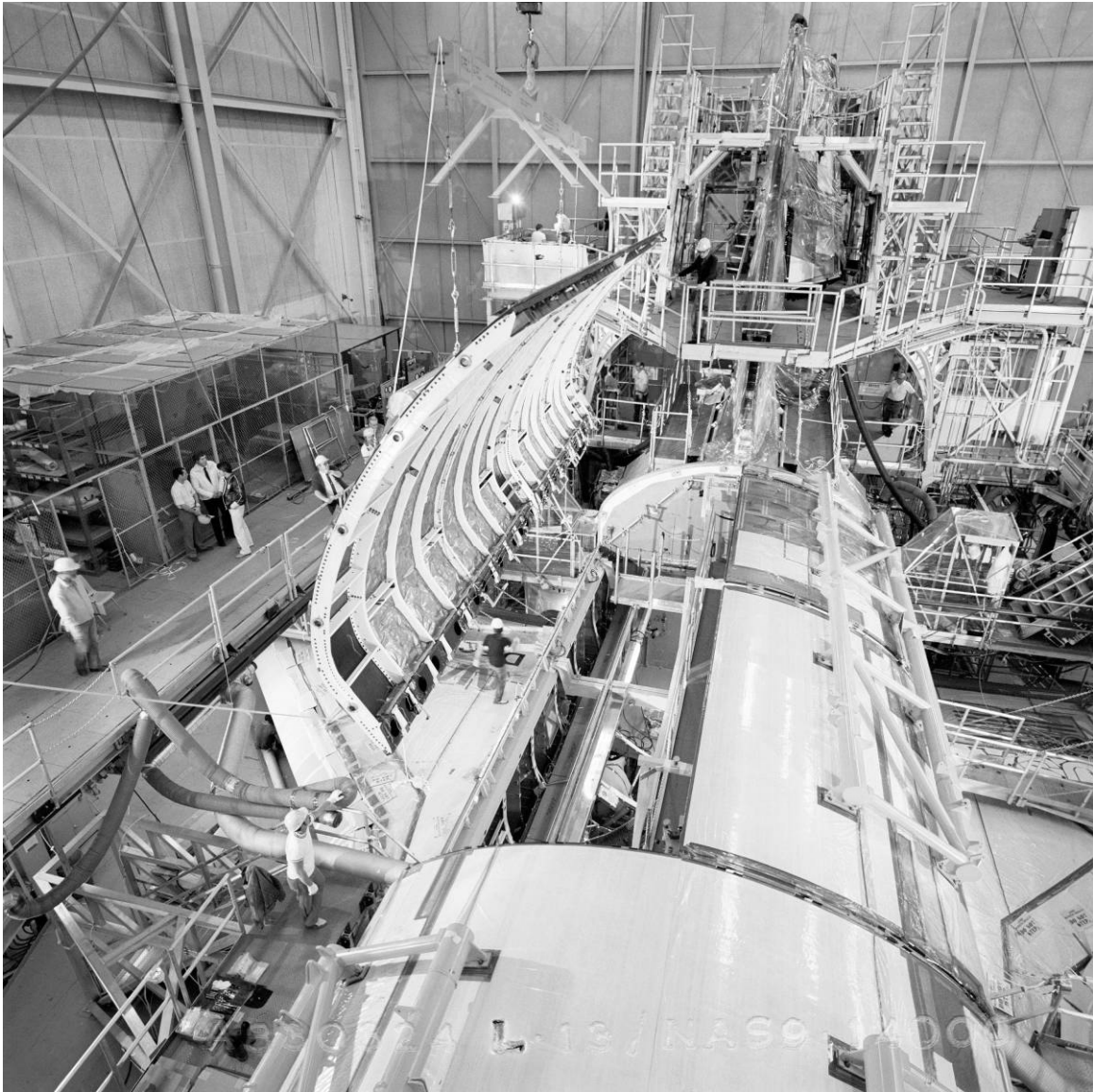


Figure B-45. Installation of the rear half of *Discovery's* starboard payload bay door in High Bay 2, AFP 42, March 8, 1983.

Source: NASA, Johnson Space Center Image Repository, JSC2010-03427.

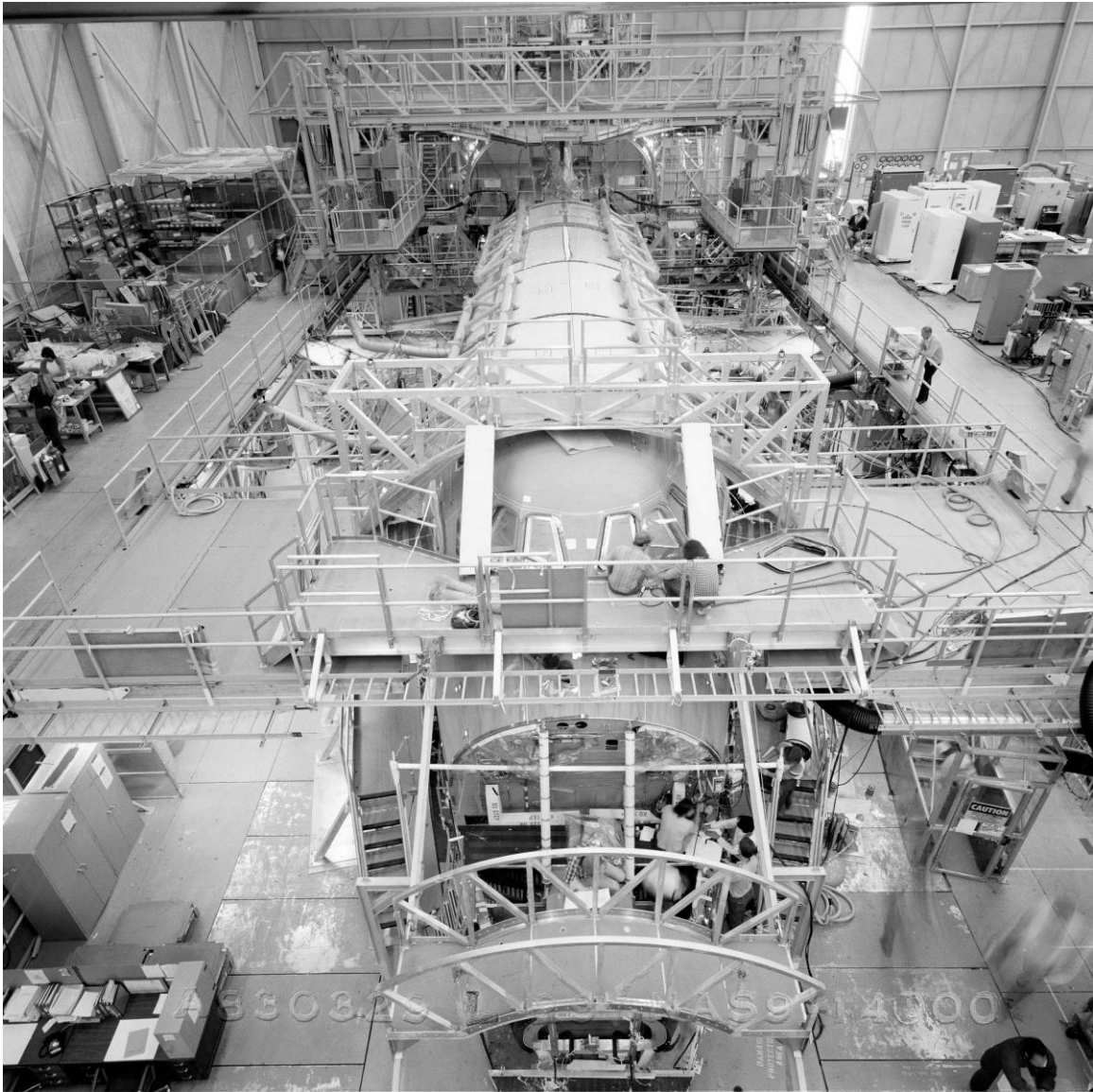


Figure B-46. General view of the progress on *Discovery's* final assembly in High Bay 2, AFP 42, March 29, 1983.

Source: NASA, Johnson Space Center Image Repository, JSC2010-03431.

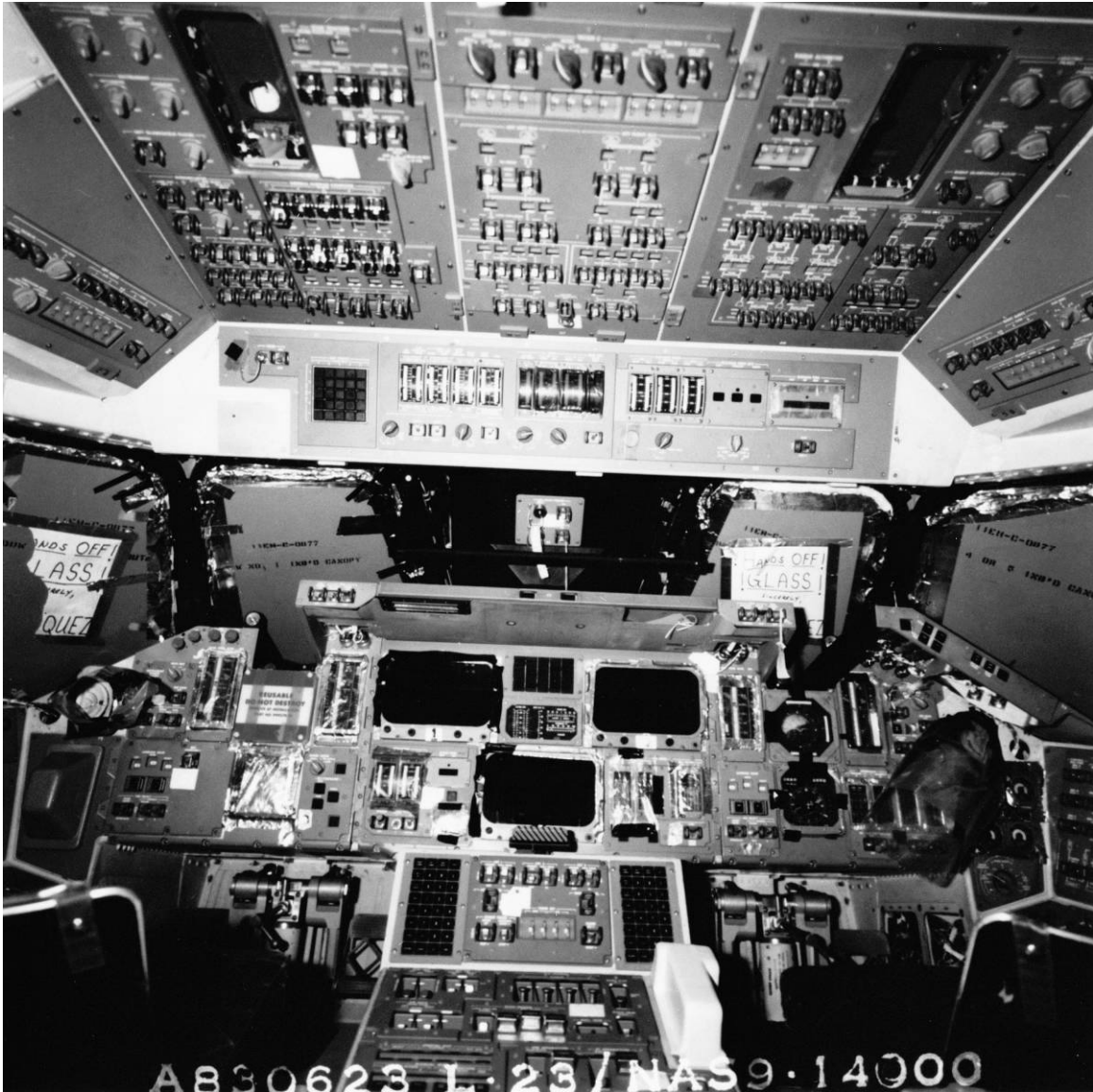


Figure B-47. Manufacturing operations on *Discovery's* flight deck in High Bay 2, AFP 42, April 19, 1983.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03469.



Figure B-48. Painting of *Discovery*'s midfuselage in High Bay 2, AFP 42, April 26, 1983.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03443.



Figure B-49. Installation of AFRSI on *Discovery's* FRCS module in High Bay 2, AFP 42, April 27, 1983.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03445.

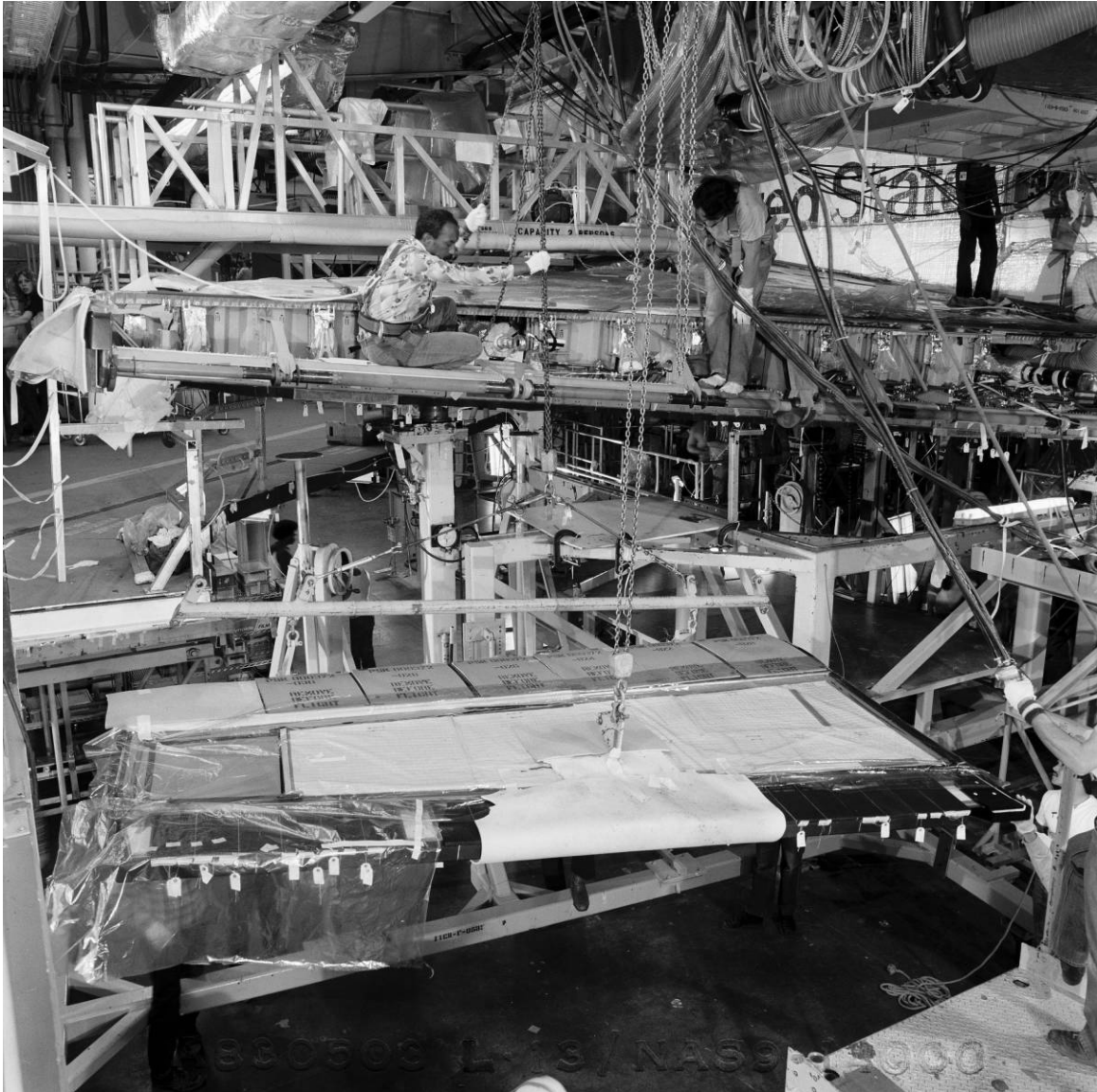


Figure B-50. Installation of outboard elevator to *Discovery's* port wing in High Bay 2, AFP 42, May 3, 1983.

Source: NASA, Johnson Space Center Image Repository, JSC2010-03446.

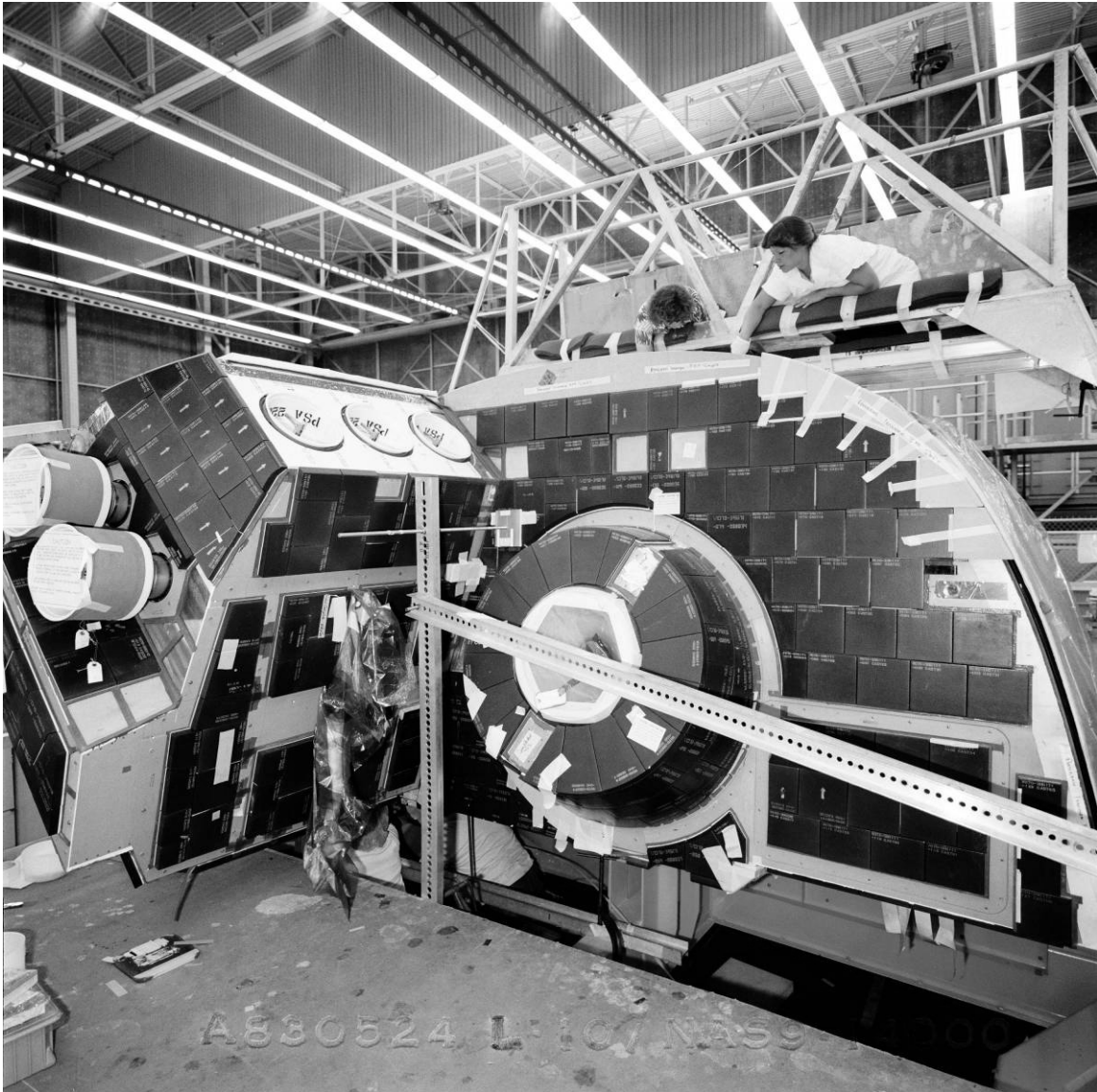


Figure B-51. Installation of HRSI on *Discovery's* port OMS pod, AFP 42, May 24, 1983.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03454.

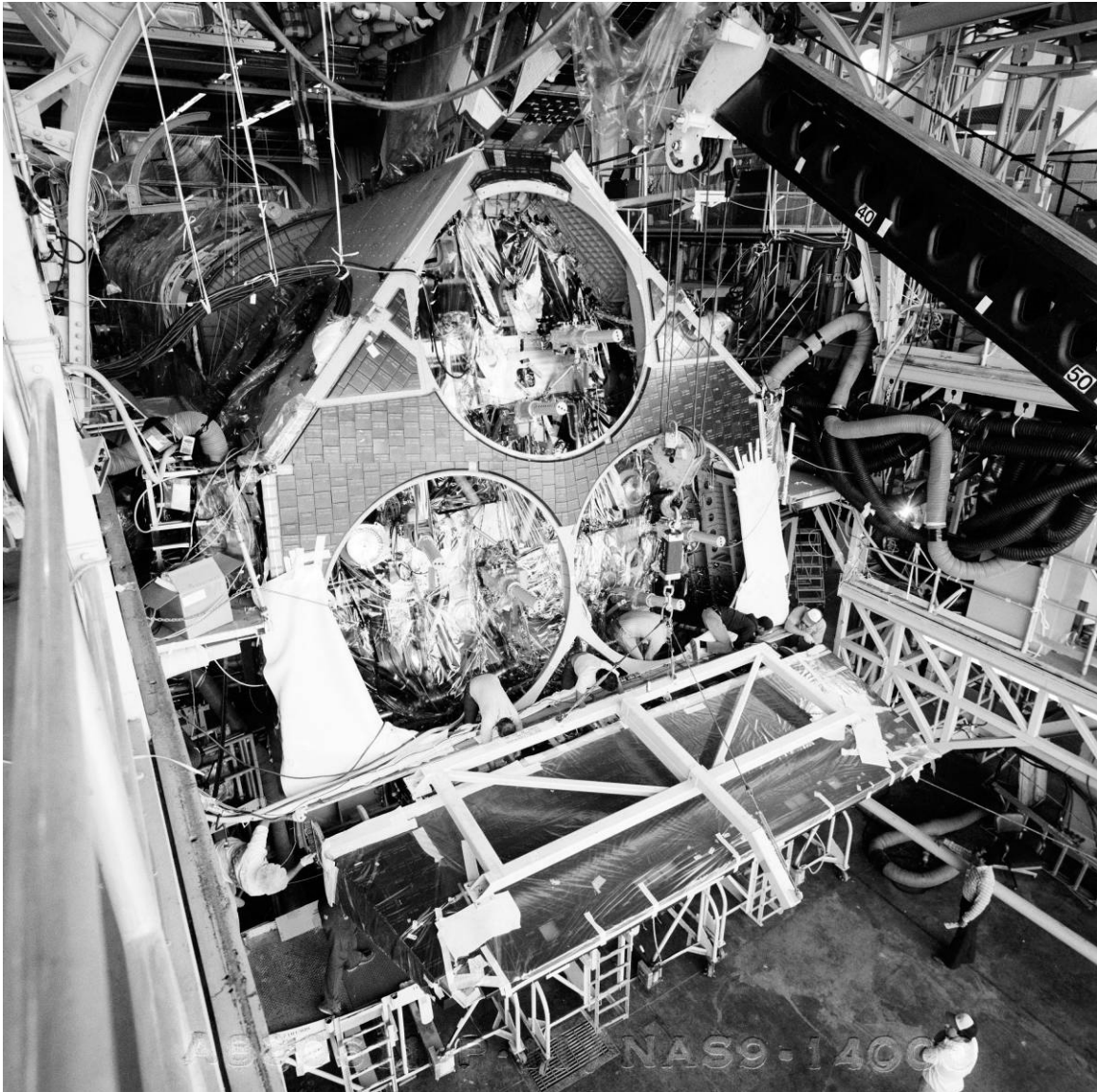


Figure B-52. Installation of body flap to *Discovery's* aft fuselage in High Bay 2, AFP 42, June 11, 1983.

Source: NASA, Johnson Space Center Image Repository, JSC2010-03463.

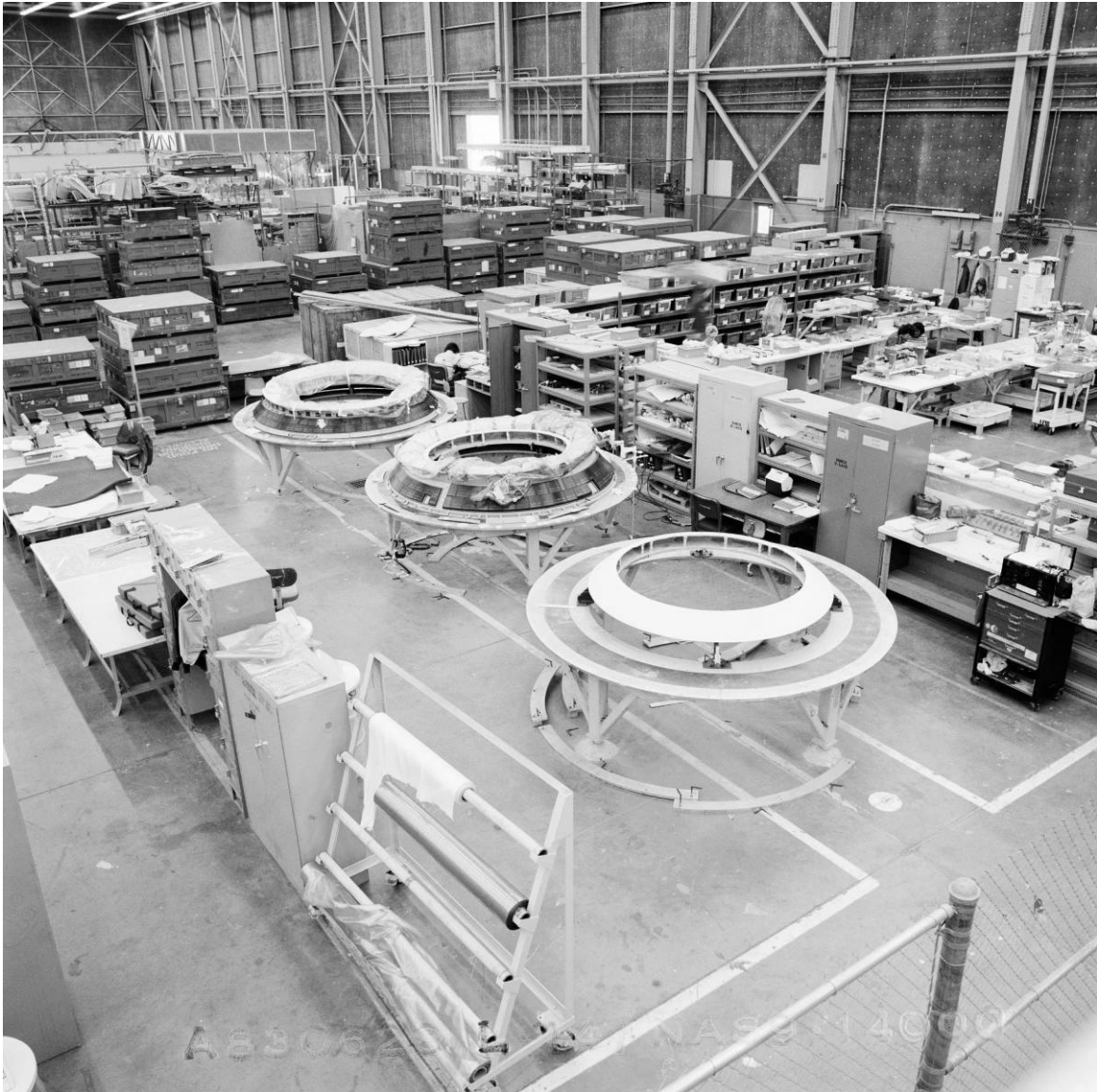


Figure B-53. *Discovery's* three SSME dome heat shields at AFP 42, June 28, 1983.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03473.

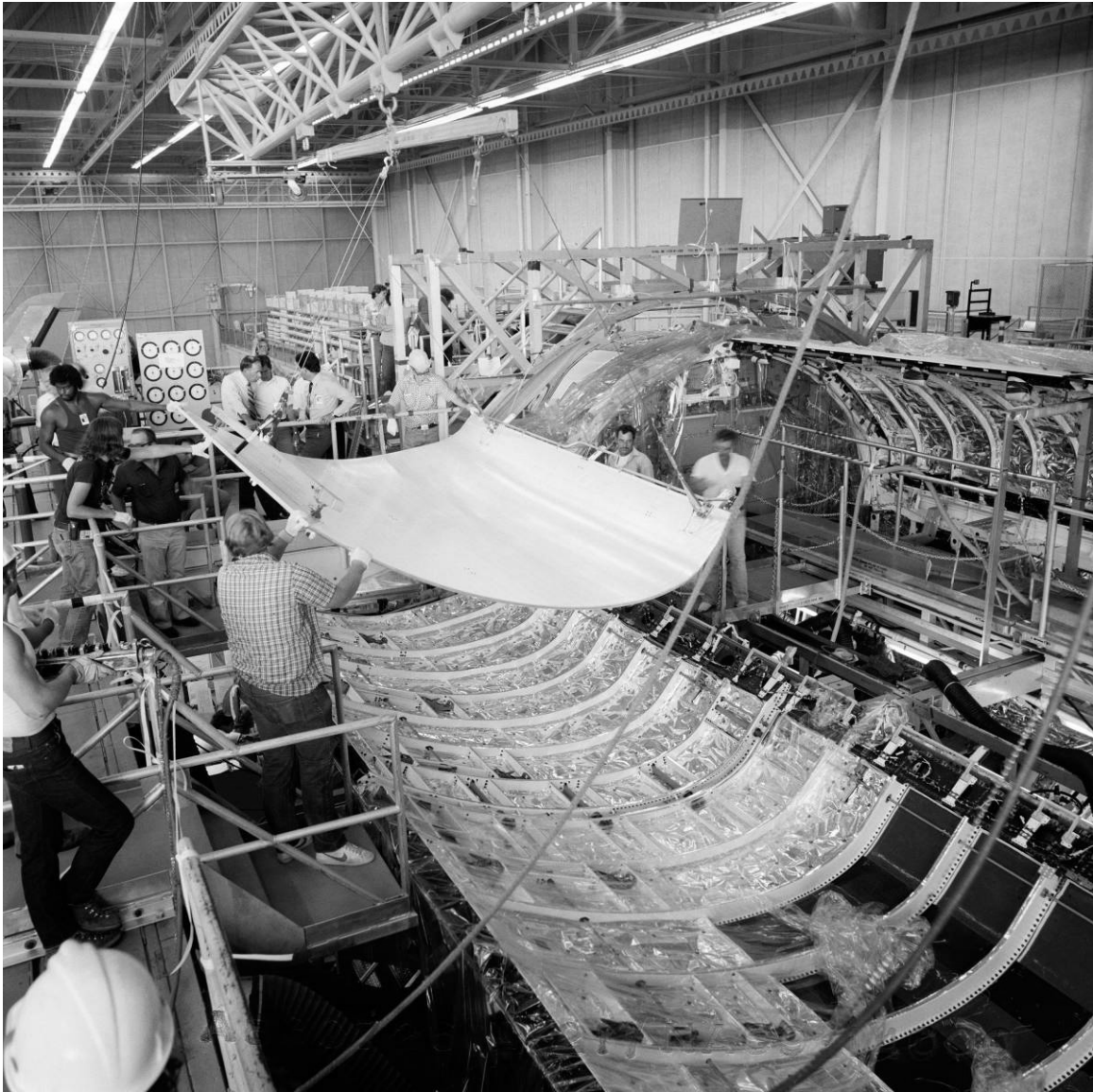


Figure B-54. Installation of the forward radiator panel on *Discovery's* port payload bay door in High Bay 2, AFP 42, July 26, 1983.
Source: NASA, Johnson Space Center Image Repository, JSC2010-03484.



Figure B-55. Installation of HRSI on one of *Discovery*'s SSME dome heat shields at AFP 42, August 9, 1983.

Source: NASA, Johnson Space Center Image Repository, JSC2010-03490.



Figure B-56. Technicians working on *Discovery's* flight deck in High Bay 2, AFP 42, September 16, 1983.

Source: NASA, Johnson Space Center Image Repository, JSC2010-03594.

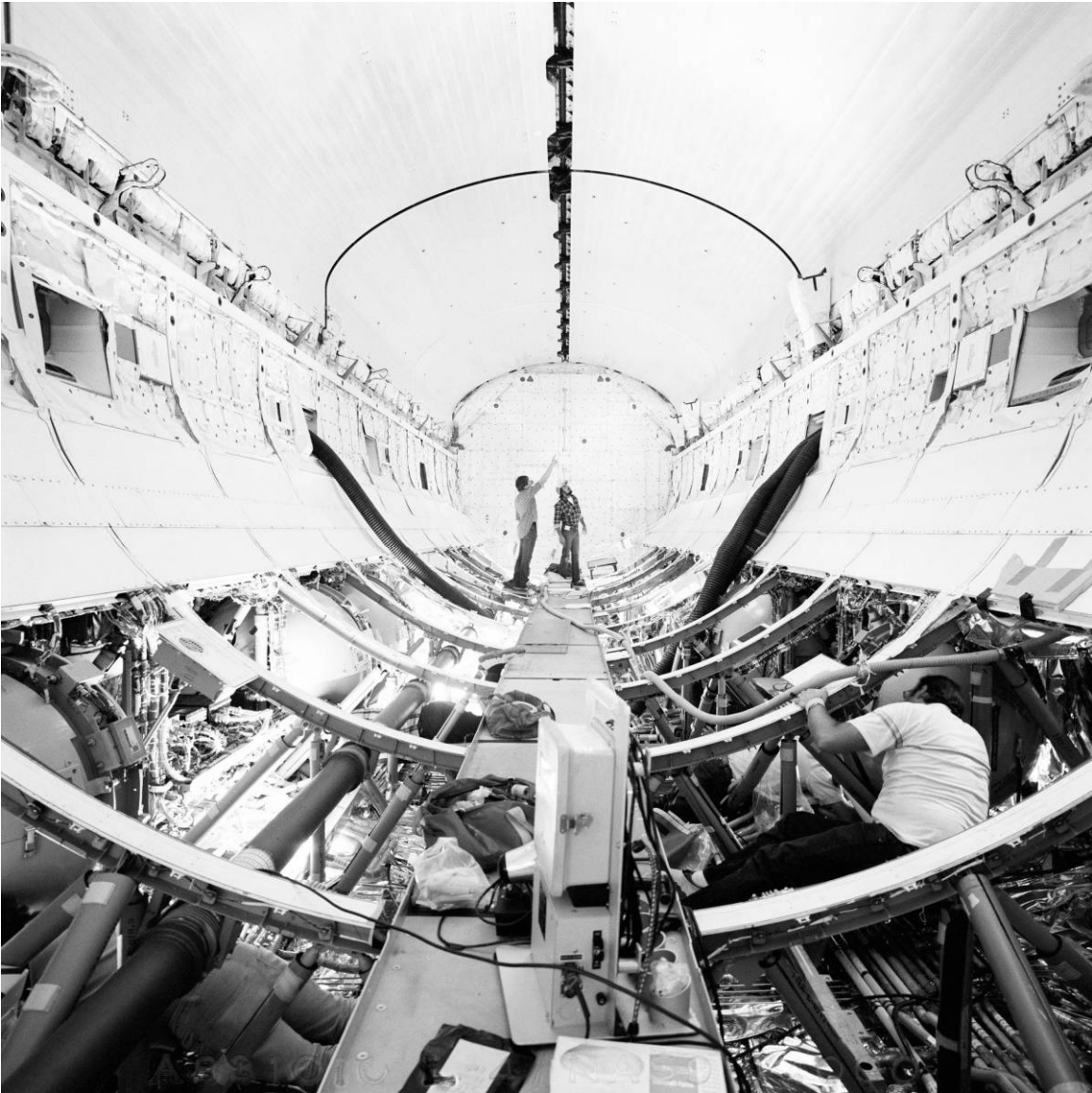


Figure B-57. Assembly work in *Discovery's* midfuselage in High Bay 2, AFP 42, October 10, 1983.

Source: NASA, Johnson Space Center Image Repository, JSC2010-03522.



Figure B-58. Installation of tail cone onto *Discovery* for transport to DFRC, High Bay 2, AFP 42, October 10, 1983.

Source: NASA, Johnson Space Center/Boeing, Huntington Beach, California, A831010L-10C.

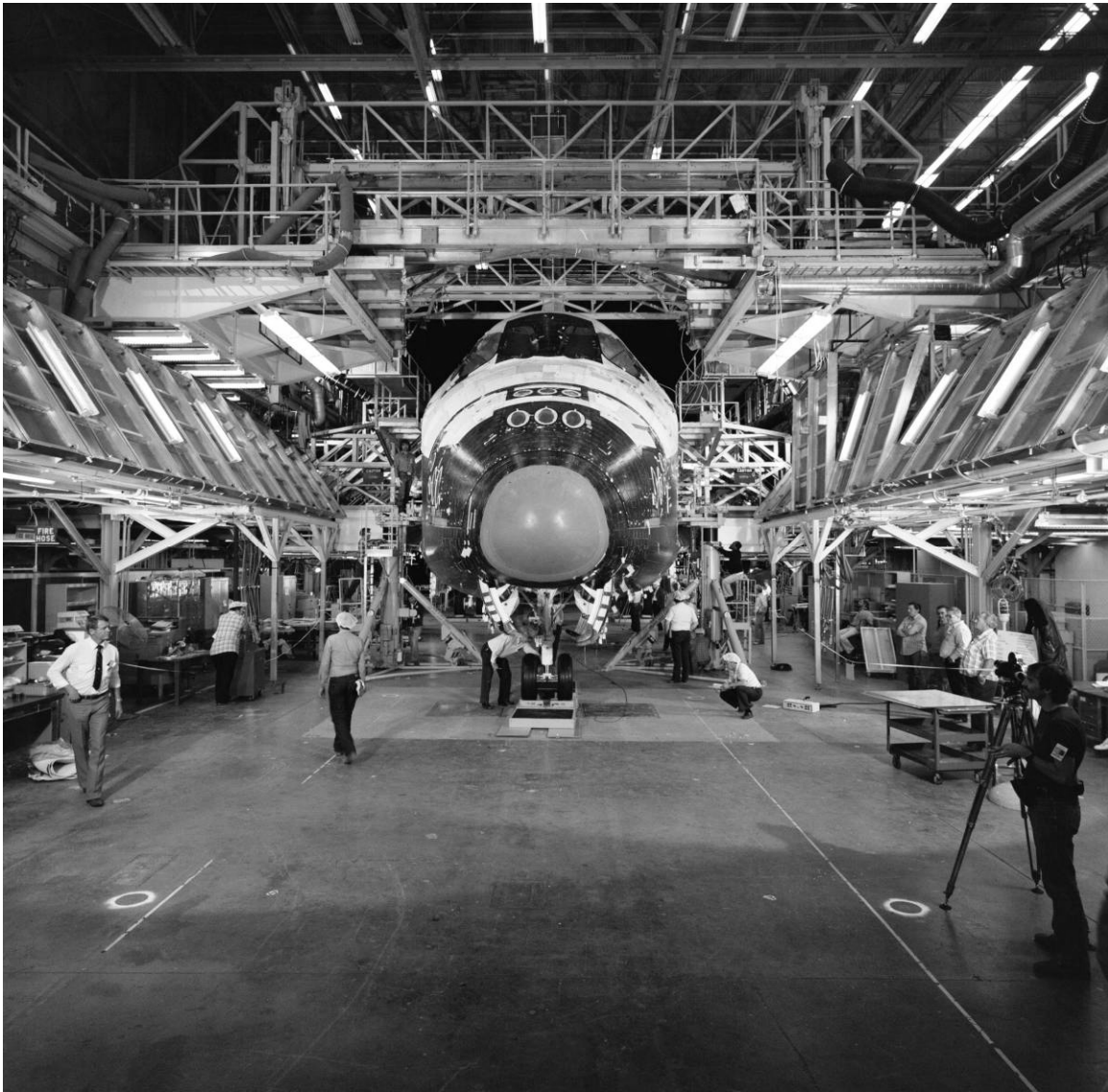


Figure B-59. Rollout of *Discovery* from High Bay 2, AFP 42, for transport to DFRC, October 11, 1983.

Source: NASA, Johnson Space Center/Boeing, Huntington Beach, California, A831012H-32C.



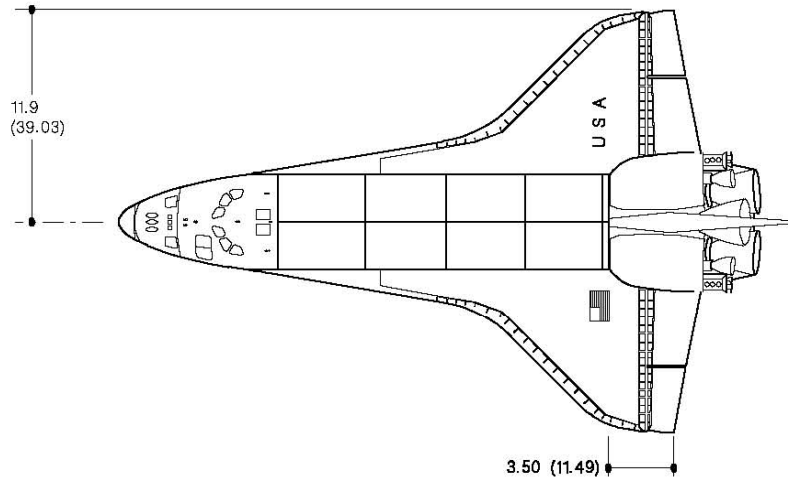
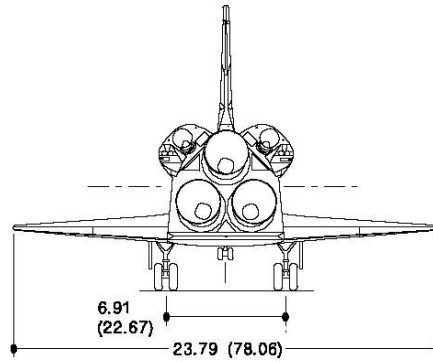
Figure B-60. *Discovery* ready to be positioned in the Mate-Demate Device at DFRC for attachment to the SCA for delivery to KSC, November 5, 1983.
Source: NASA, Johnson Space Center Image Repository, JSC2010-00016.

DIMENSIONS AND WEIGHT

WING SPAN	23.79 m	(78.06 ft)
LENGTH	37.24 m	(122.17 ft)
HEIGHT	17.25 m	(56.58 ft)
TREAD WIDTH	6.91 m	(22.67 ft)
GROSS TAKEOFF WEIGHT		VARIABLE
GROSS LANDING WEIGHT		VARIABLE
INERT WEIGHT (APPROX)	74 844 kg	(165 000 lb)

MINIMUM GROUND CLEARANCES

BODY FLAP (AFT END)	3.68 m	(12.07 ft)
MAIN GEAR (DOOR)	0.87 m	(2.85 ft)
NOSE GEAR (DOOR)	0.90 m	(2.95 ft)
WINGTIP	3.63 m	(11.92 ft)



OV102 COLUMBIA
 OV103 DISCOVERY
 OV104 ATLANTIS
 OV105 ENDEAVOUR

• DIMENSIONS
 IN METERS (FEET)

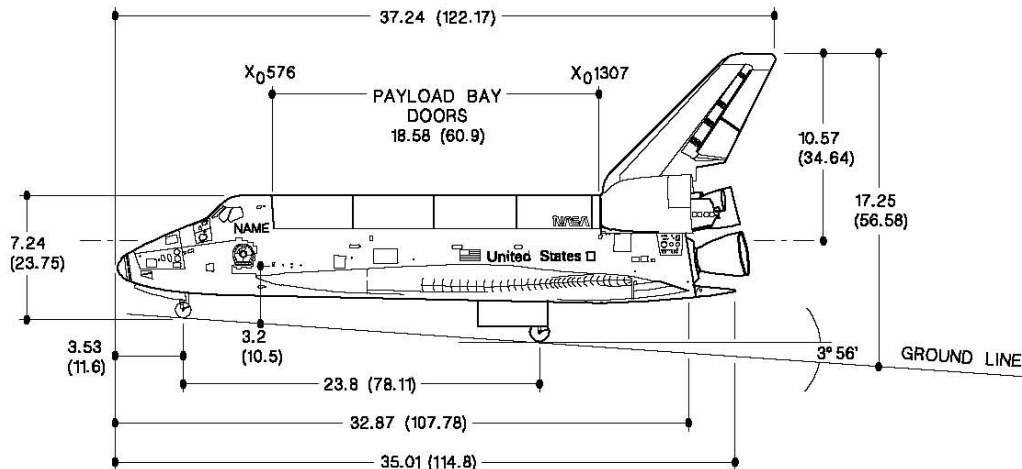


Figure B-61. General dimensions of the orbiter vehicle.
 Source: NASA, *Shuttle Operational Data Book*, Volume 4, Figure 1-1.

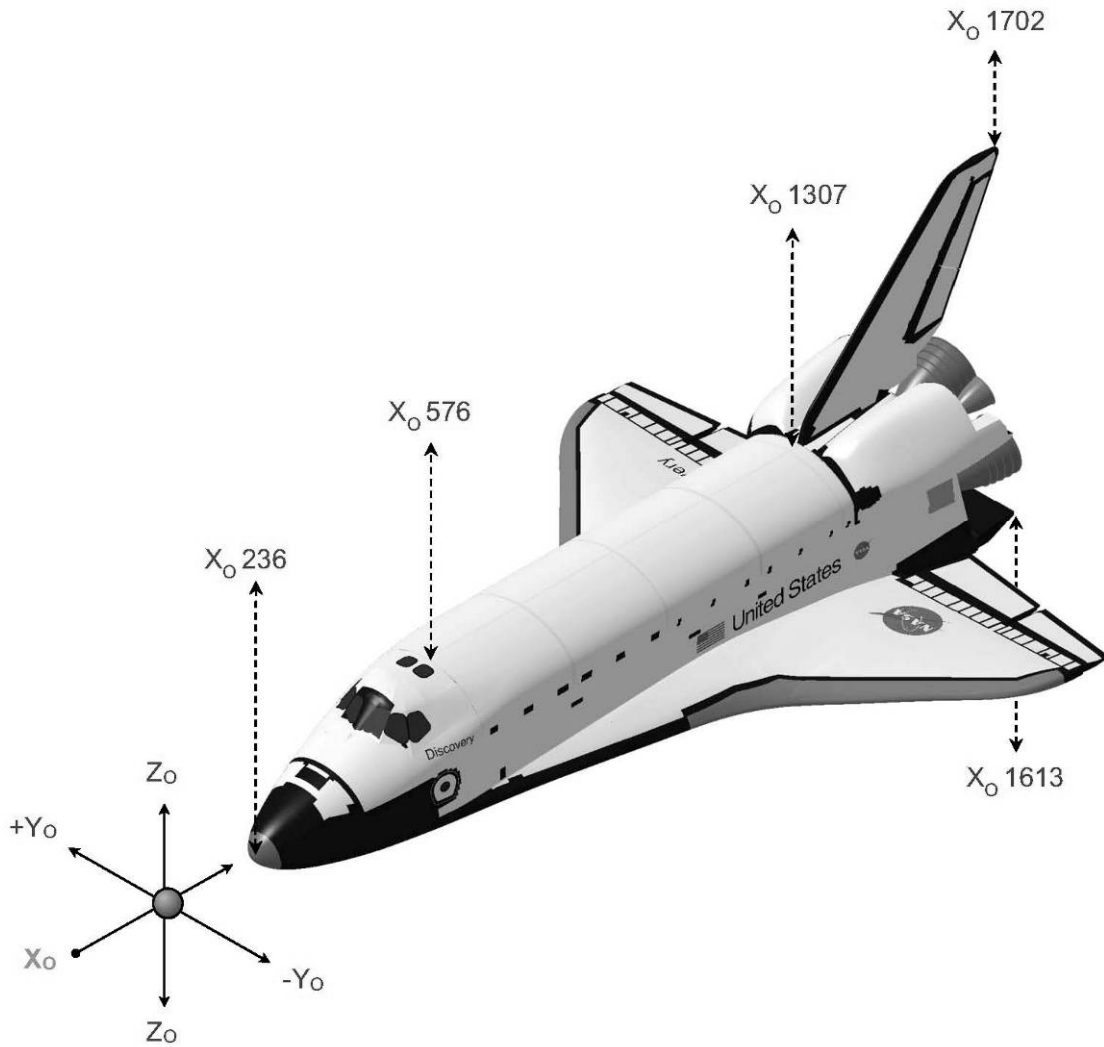


Figure B-62. Orbiter vehicle coordinate system.

Source: Boeing, *Orbiter Vehicle Data Pack Document: Orbiter Vehicle Discovery (OV-103), Volume I*, 71.

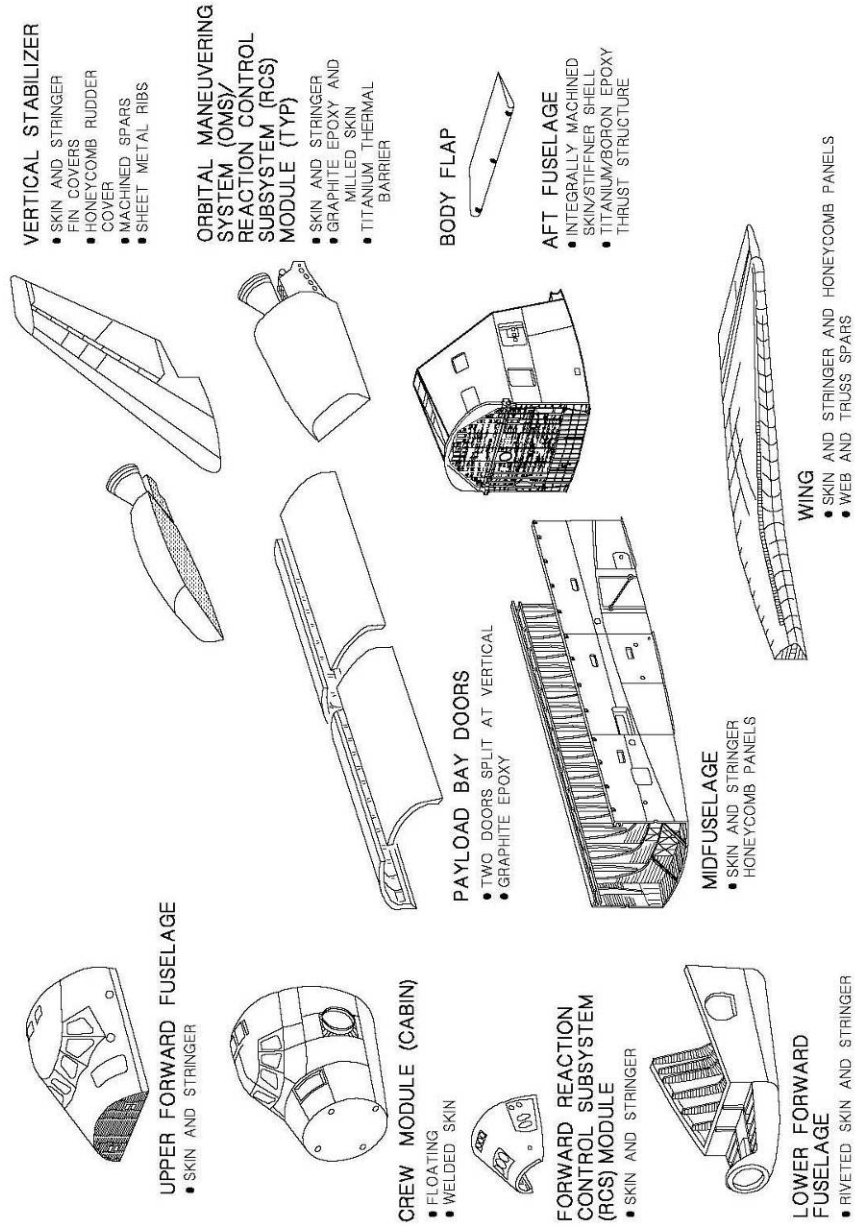


Figure B-63. Major components of the orbiter vehicle.
 Source: NASA, *Shuttle Operational Data Book*, Volume 4, Figure 1-3.

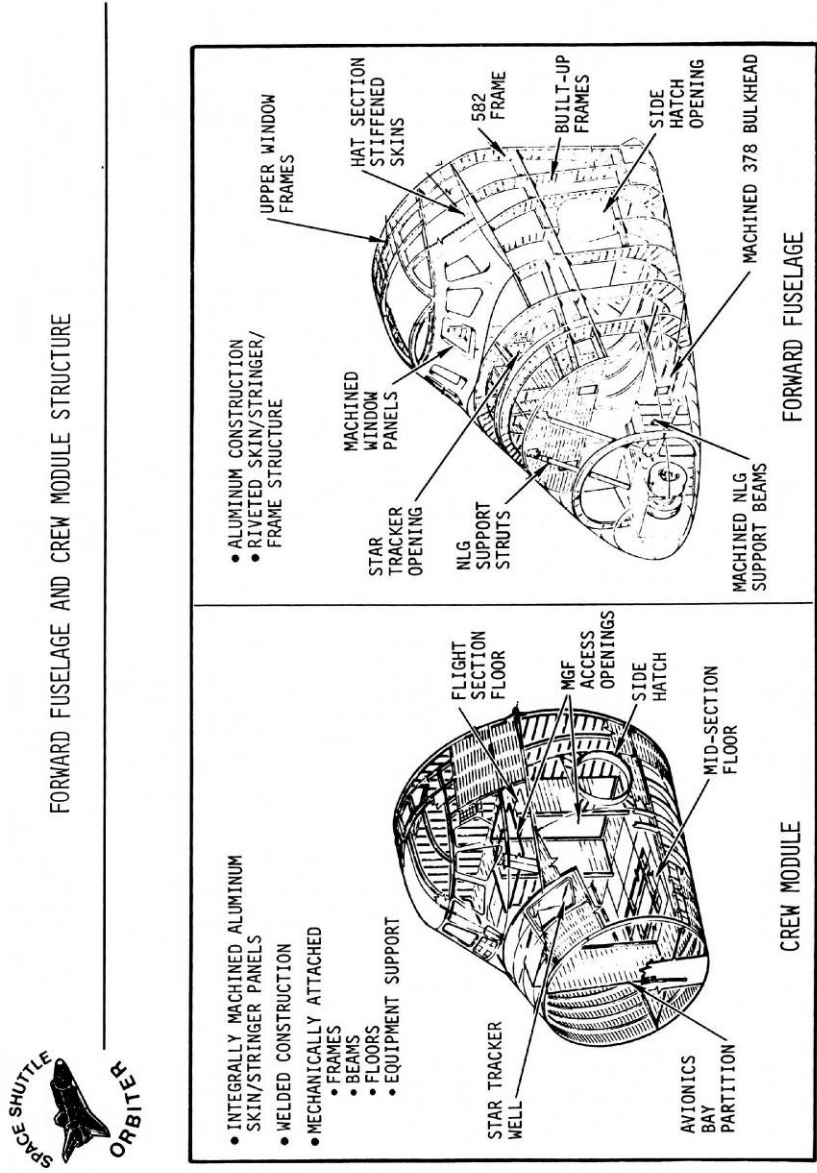


Figure B-64. Diagram of orbiter crew module and forward fuselage.
 Source: NASA Johnson Space Center, Image Repository, S78-23424.

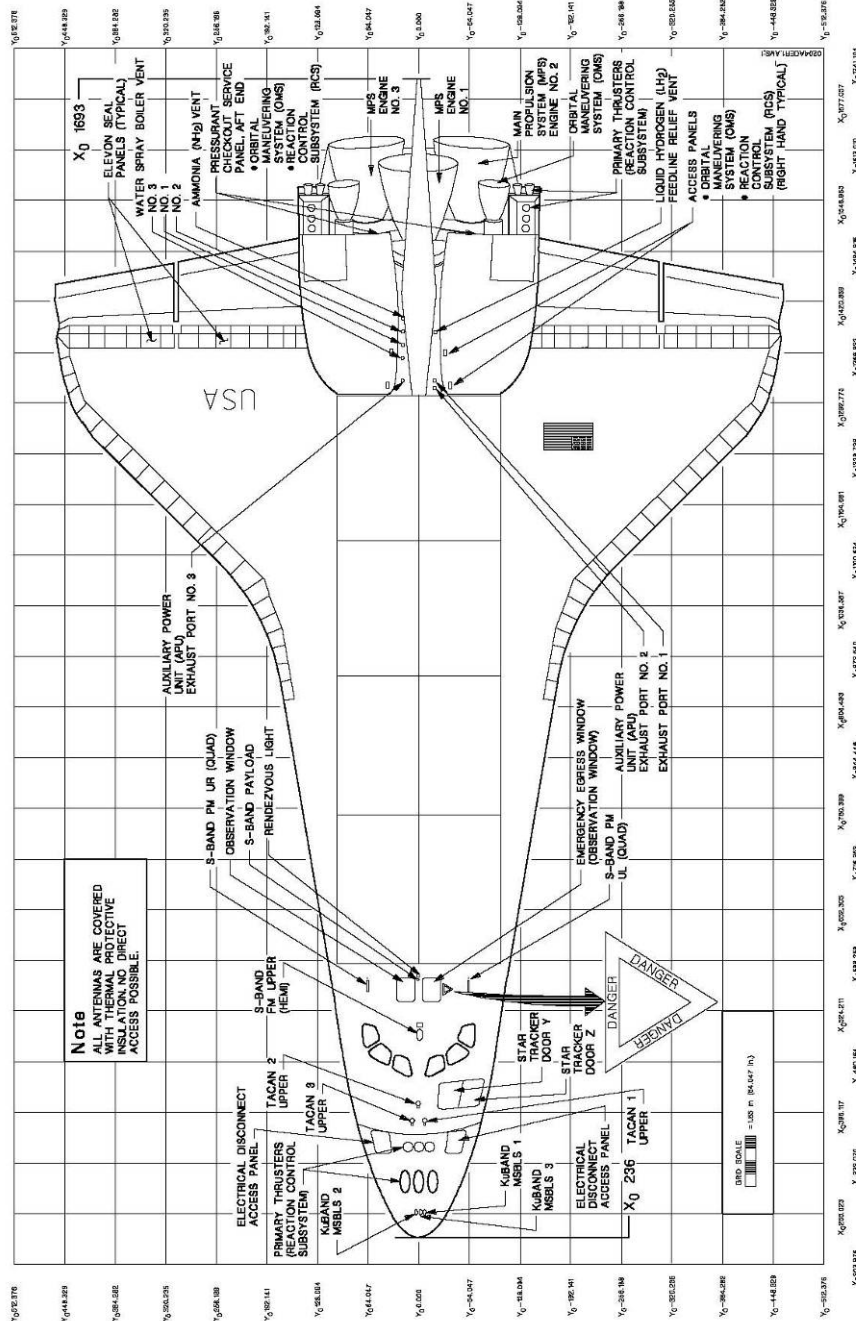


Figure B-65. Diagram of the top view of the orbiter vehicle.
 Source: NASA, *Shuttle Operational Data Book*, Volume 4, part 1, Figure 2-4a.

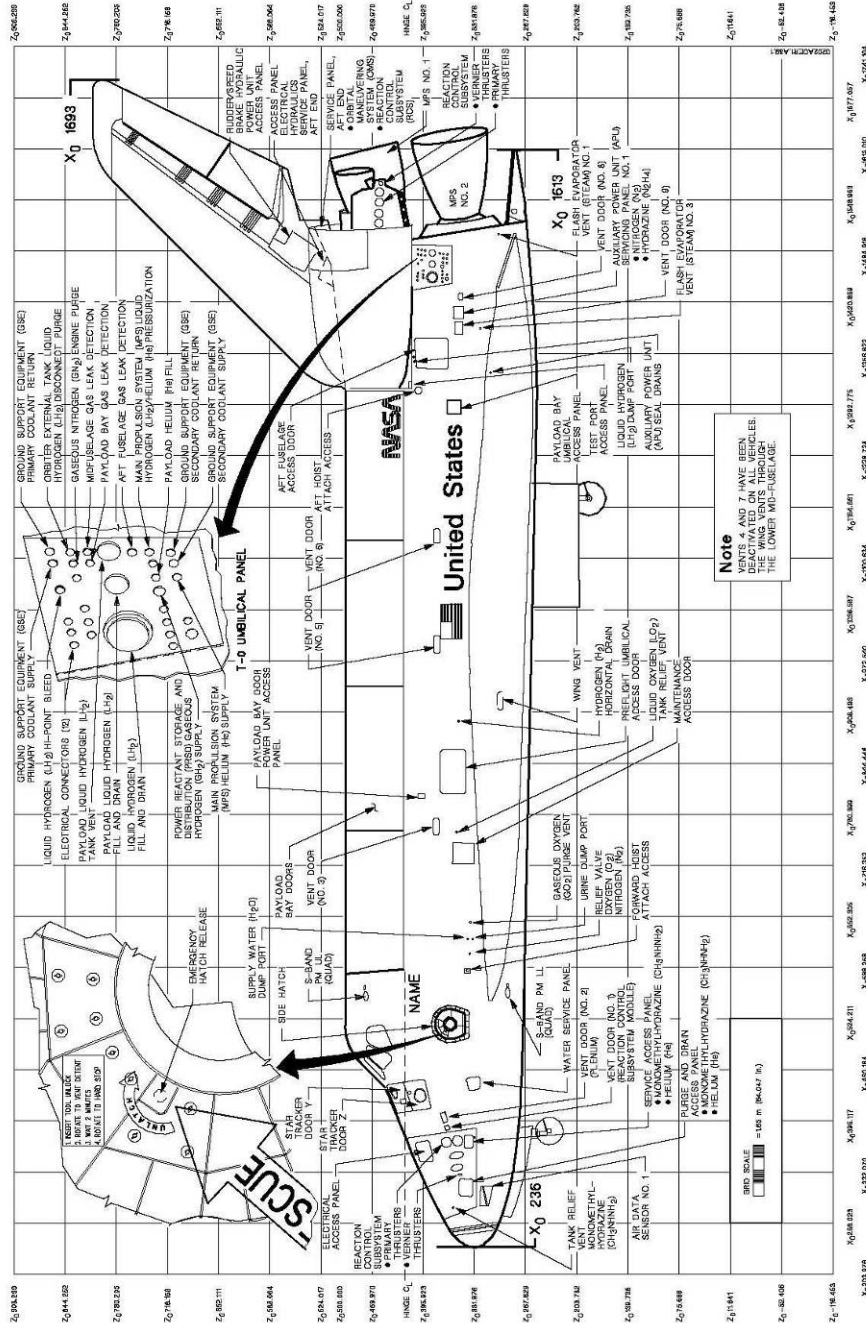


Figure B-66. Diagram of the port view of the orbiter vehicle.
 Source: NASA, Shuttle Operational Data Book, Volume 4, pare 1, Figure 2-2a.

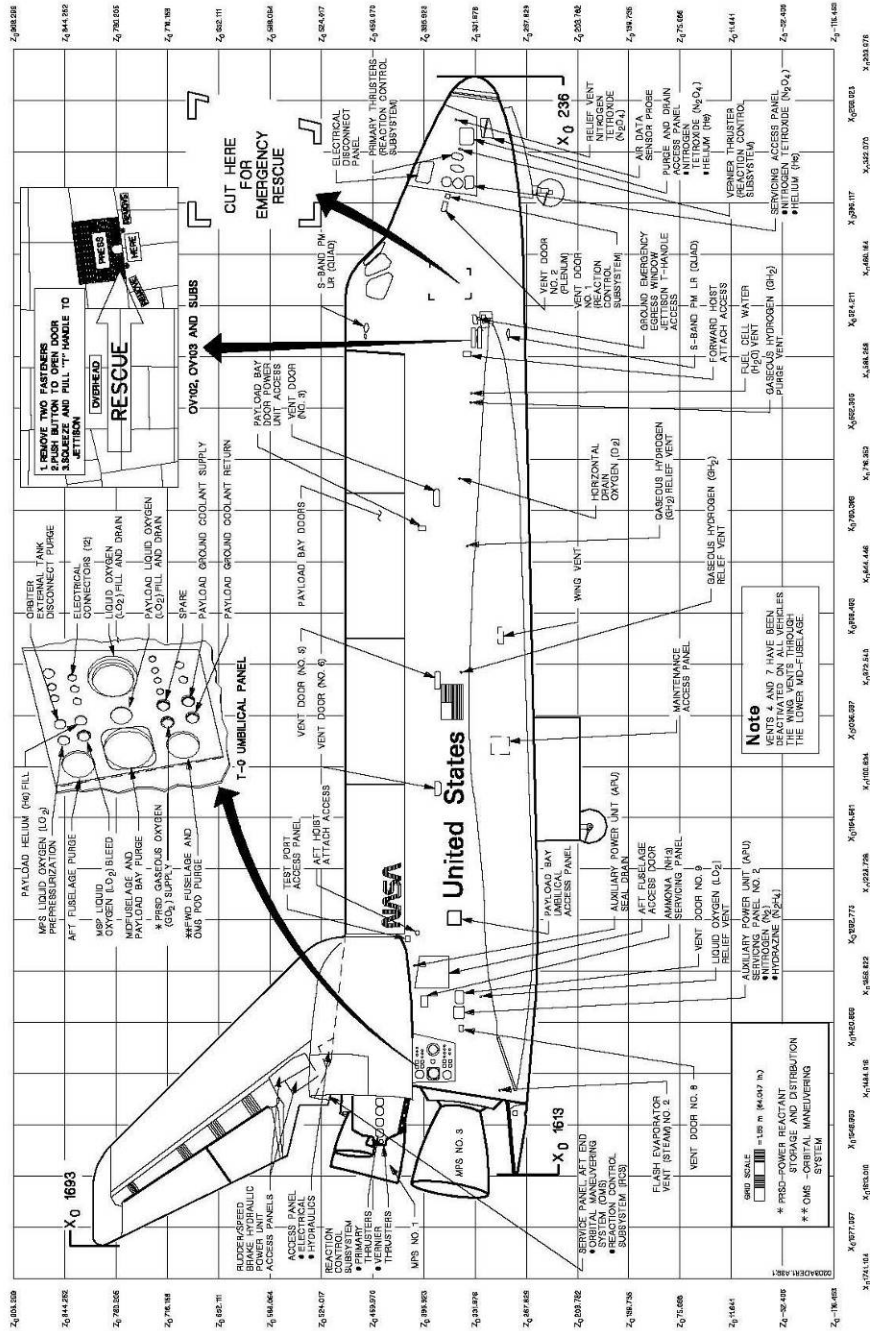


Figure B-67. Diagram of the starboard view of the orbiter vehicle.
 Source: NASA, *Shuttle Operational Data Book*, Volume 4, part 1, Figure 2-3a.

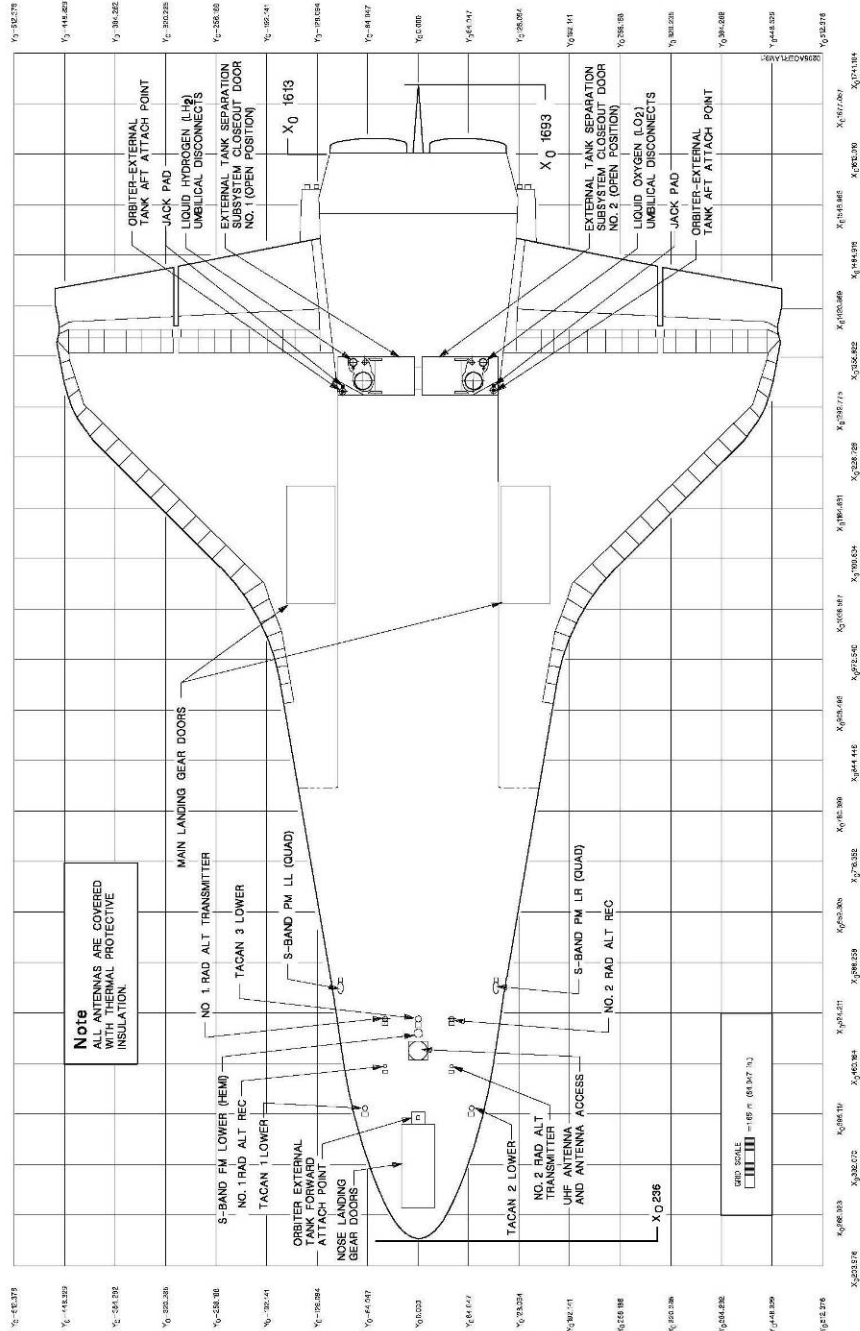


Figure B-68. Diagram of the bottom view of the orbiter vehicle.
 Source: NASA, *Shuttle Operational Data Book*, Volume 4, part 1, Figure 2-5a.

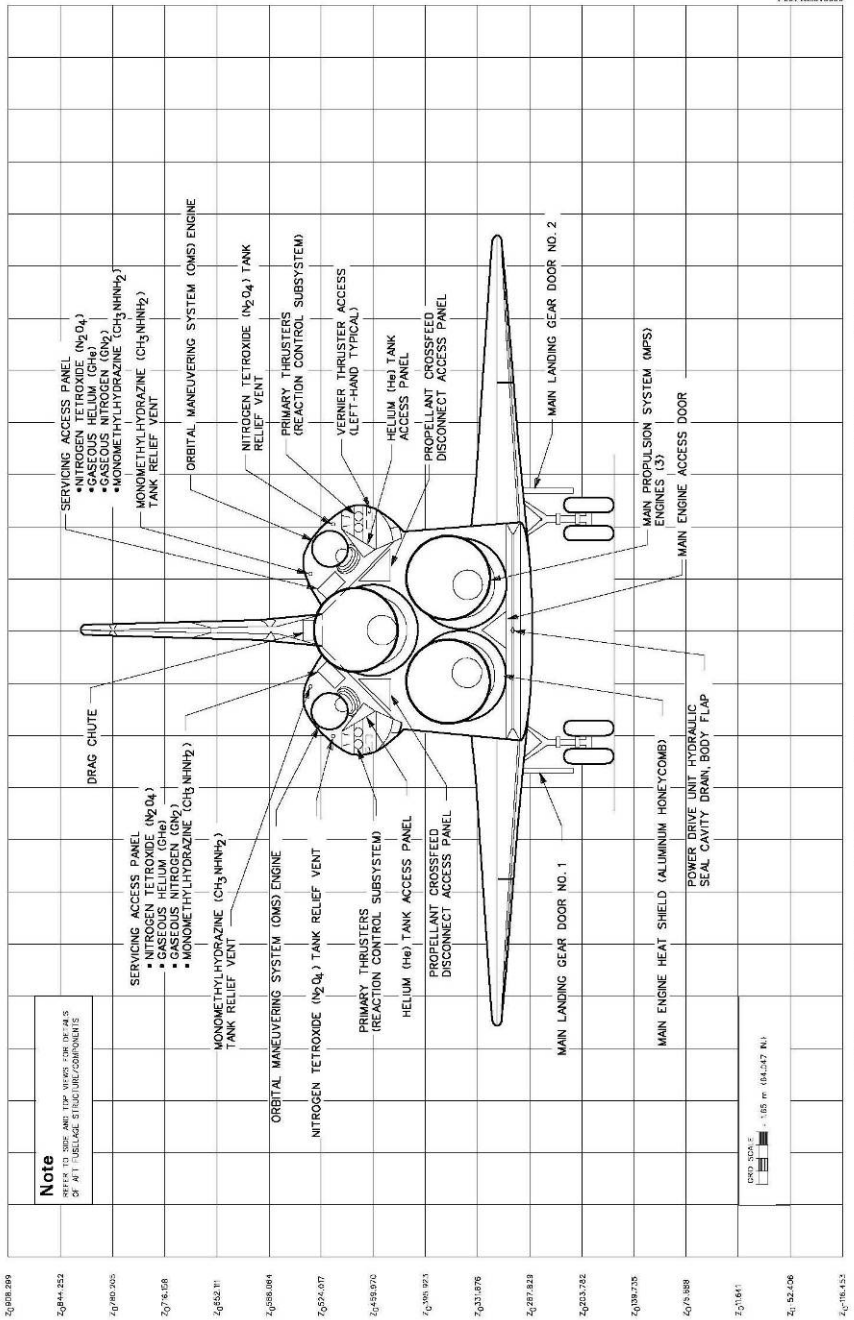


Figure B-69. Diagram of the aft view of the orbiter vehicle.
Source: NASA, *Shuttle Operational Data Book*, Volume 4, part 1, Figure 2-6a.

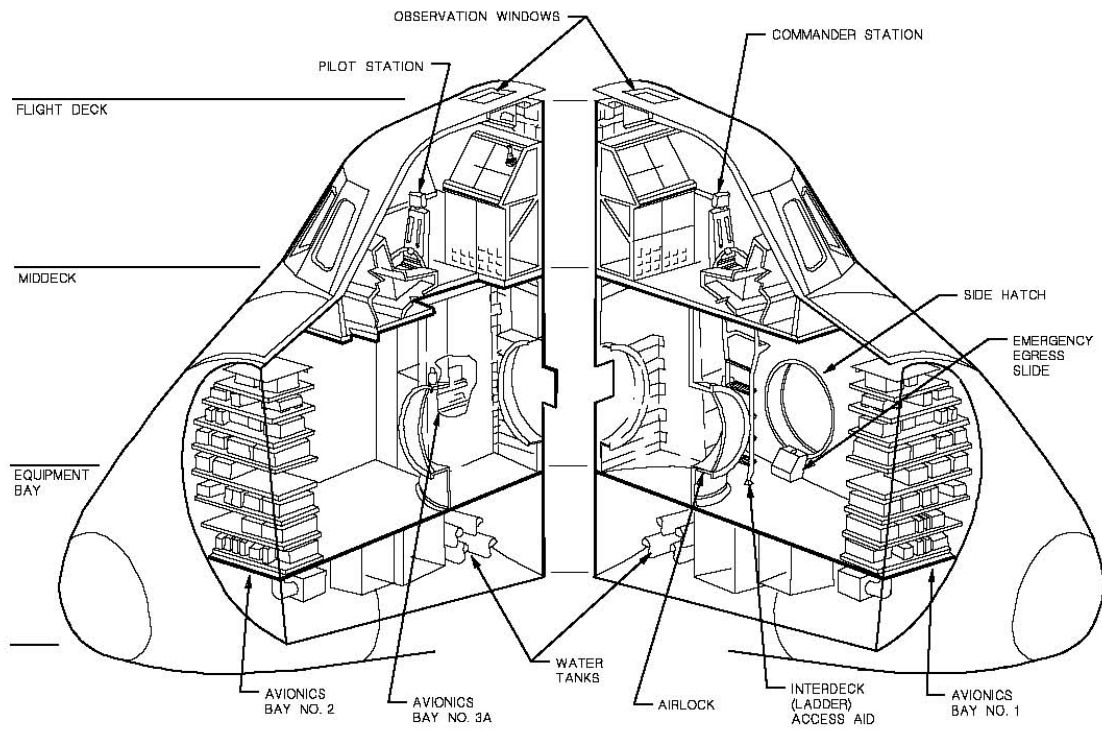


Figure B-70. Diagram of the orbiter crew cabin.
Source: NASA, *Shuttle Operational Data Book*, Volume 4, part 1, Figure 3-1.

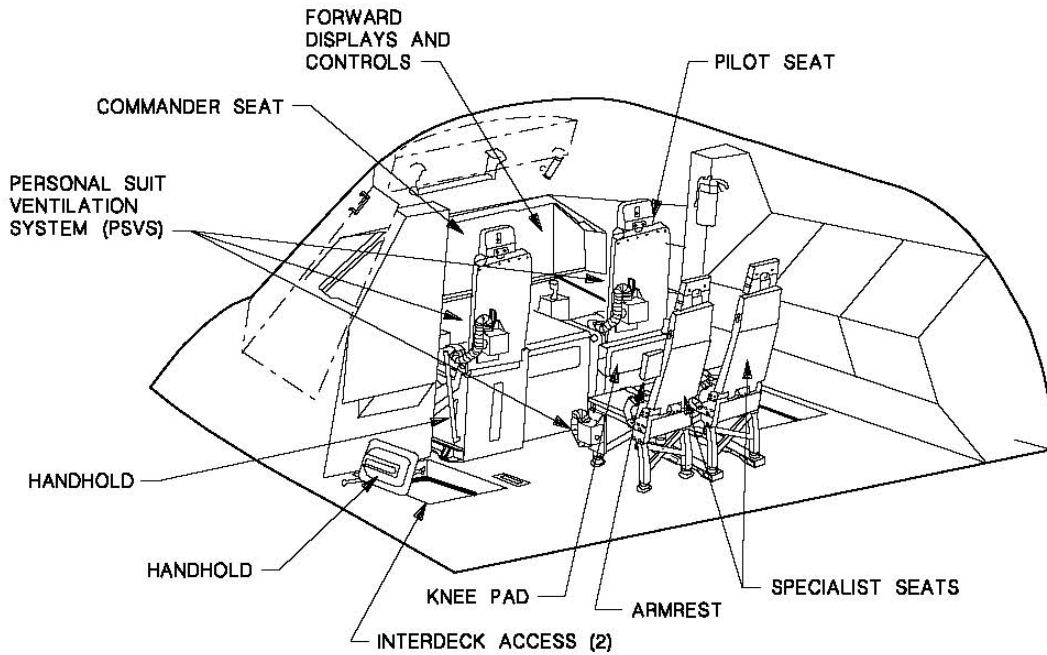


Figure B-71. Diagram of the forward flight deck.
Source: NASA, *Shuttle Operational Data Book*, Volume 4, part 1, Figure 3-2.

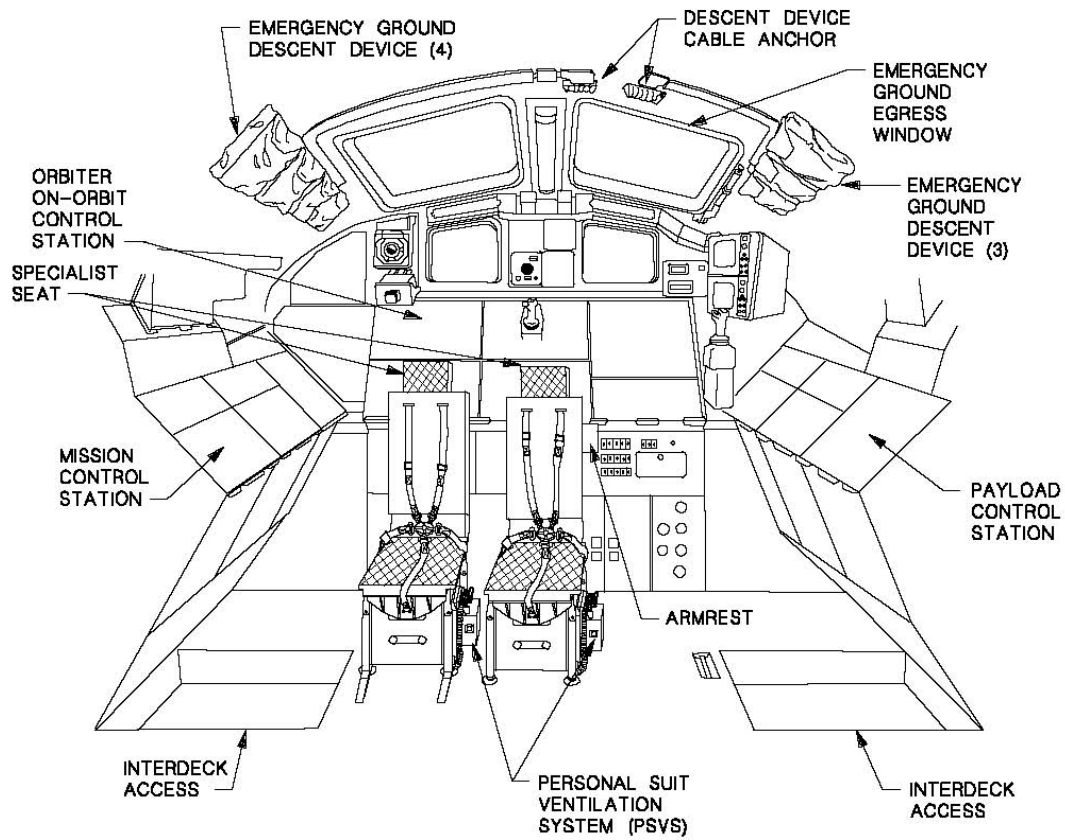


Figure B-72. Diagram of the aft flight deck.
Source: NASA, *Shuttle Operational Data Book*, Volume 4, part 1, Figure 3-3a.

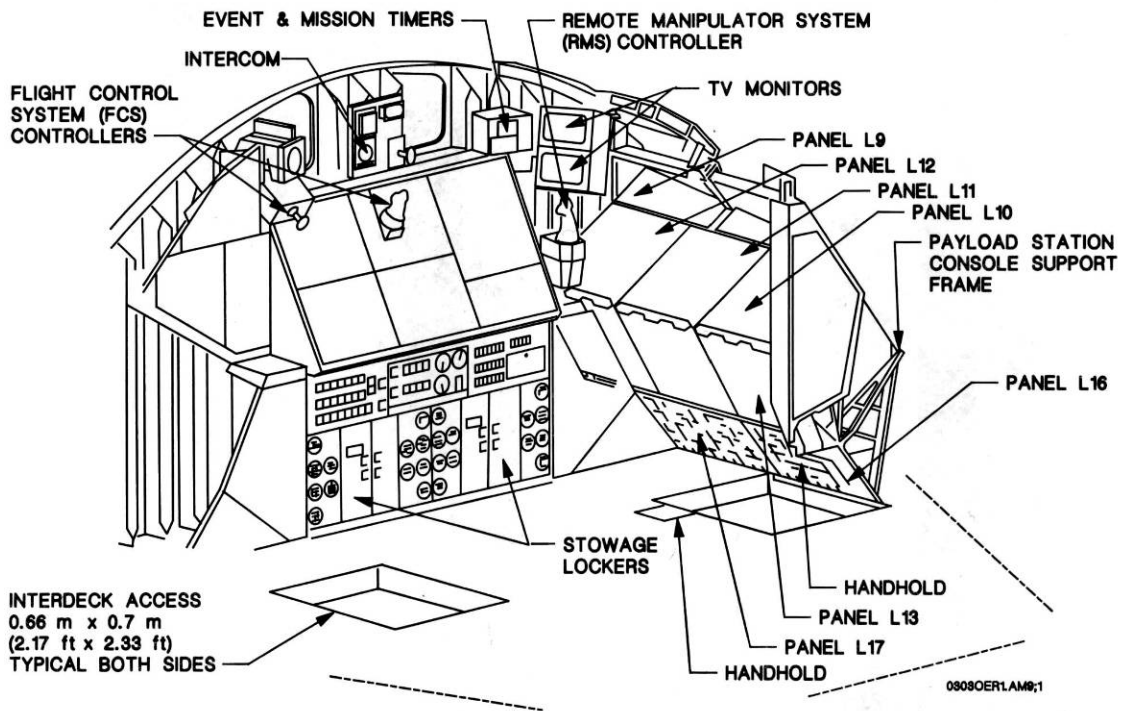


Figure B-73. Diagram of the port side of the aft flight deck.
Source: NASA, *Shuttle Operational Data Book*, Volume 4, part 1, Figure 3-3c.

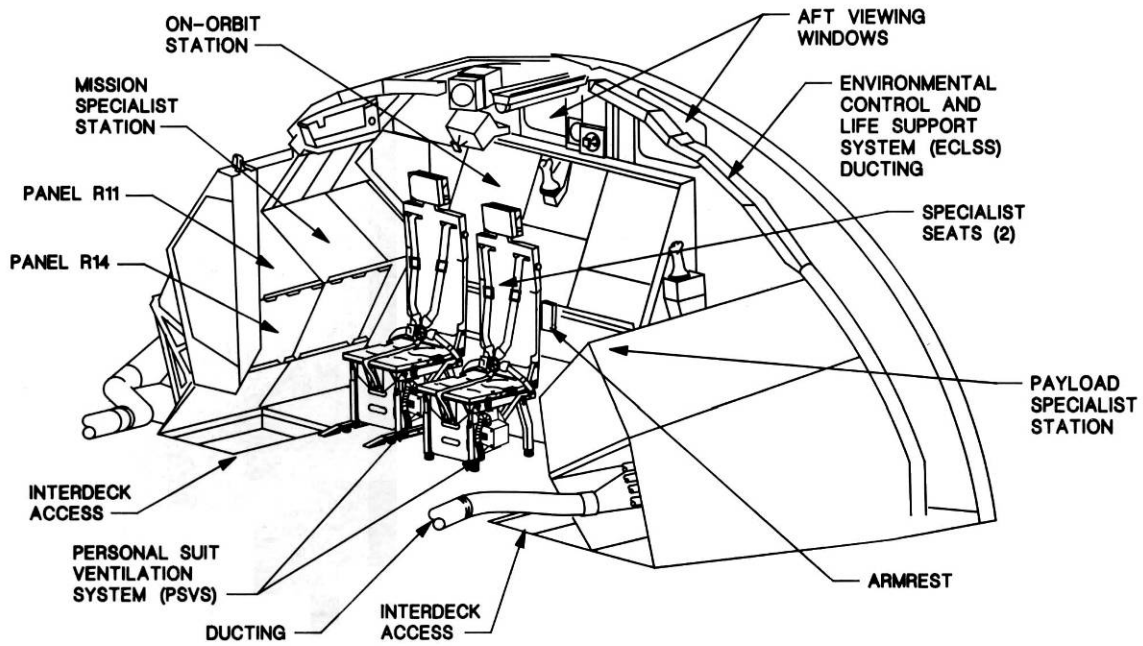


Figure B-74. Diagram of the starboard side of the aft flight deck.
Source: NASA, *Shuttle Operational Data Book*, Volume 4, part 1, Figure 3-3b.

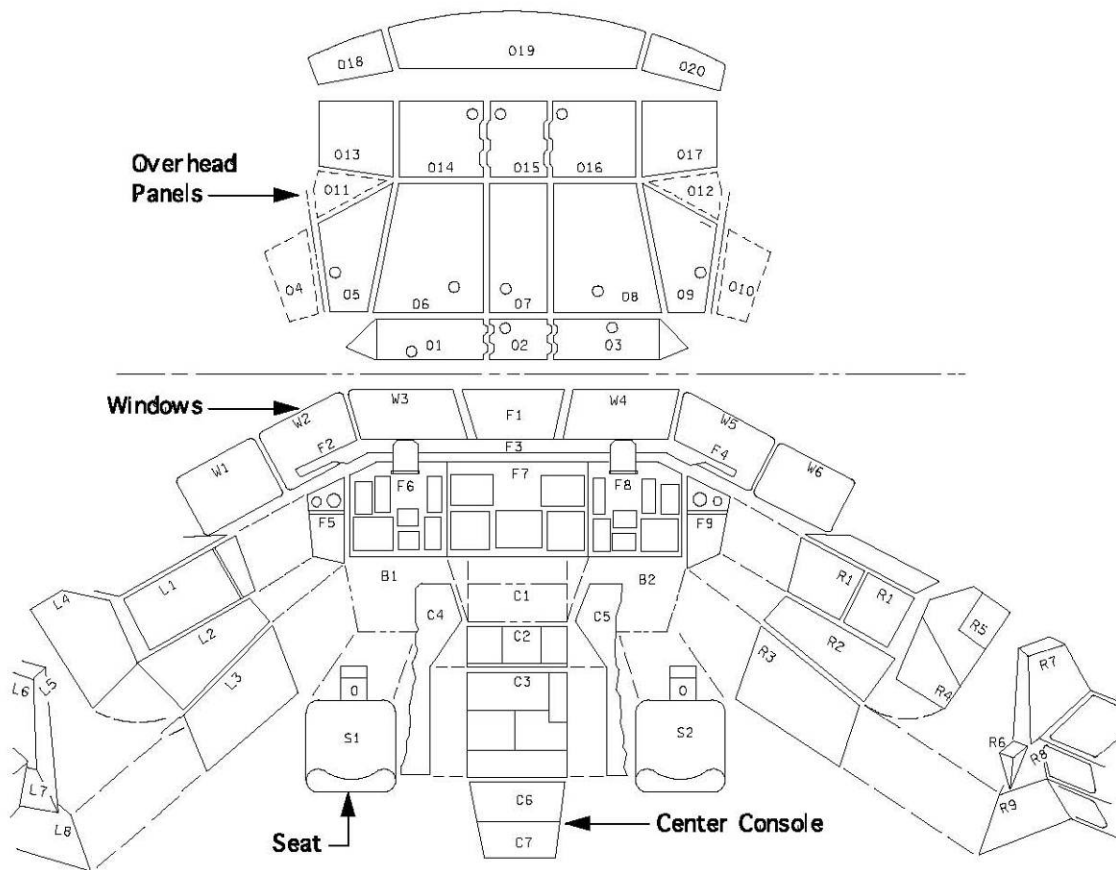


Figure B-75. Diagram of the forward flight deck control panels.
Source: USA, *Shuttle Crew Operation Manual*, 1.1-9.

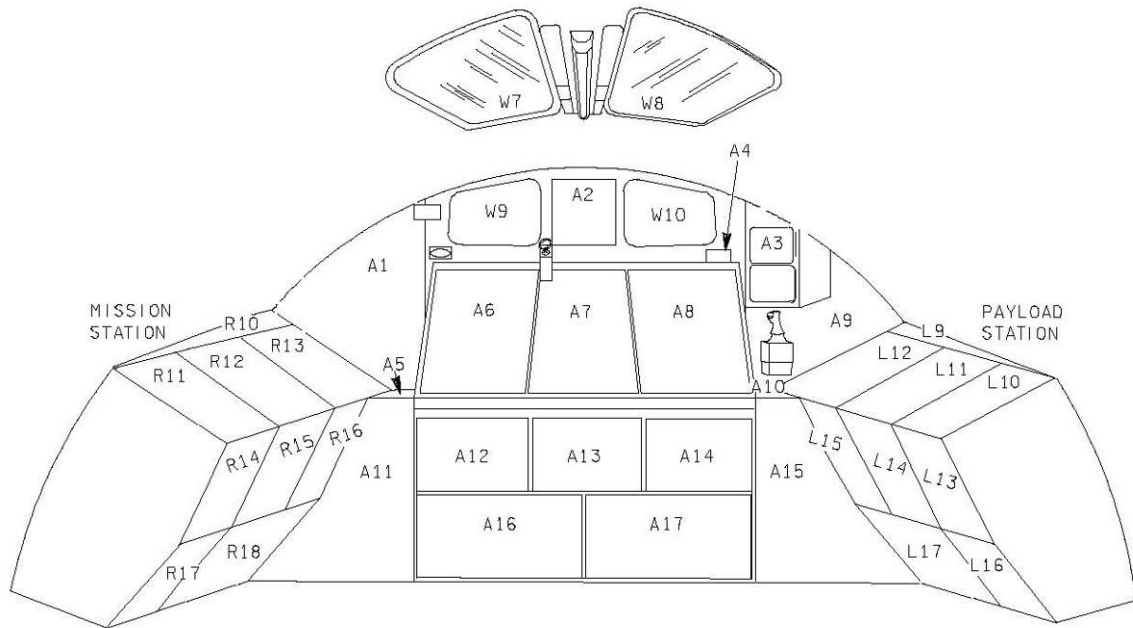


Figure B-76. Diagram of the aft flight deck control panels.
Source: USA, *Shuttle Crew Operation Manual*, 1.1-10.

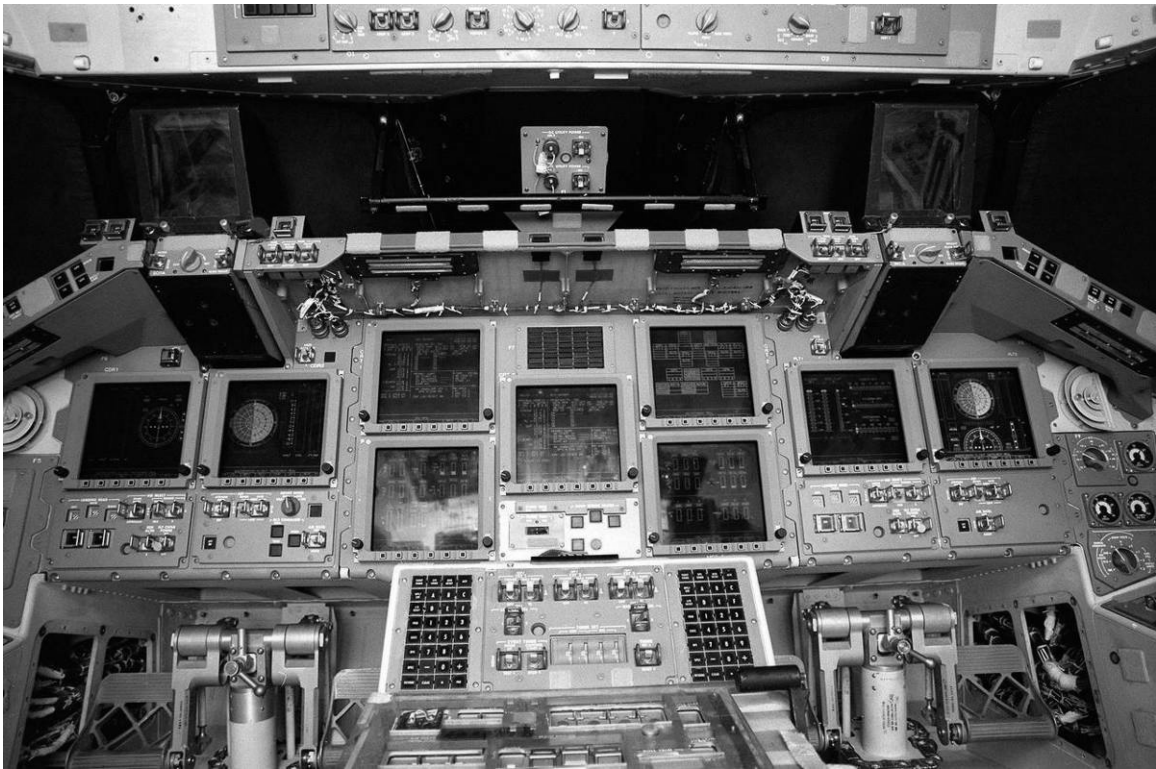


Figure B-77. Photograph of the MEDS after installation on Atlantis, March 1, 2000.
Source: NASA, Langley Research Center, EL-2000-00037, accessed at
<http://nix.ksc.nasa.gov/>.



Figure B-78. Photograph of the original orbiter flight deck, 1978.
Source: NASA Johnson Space Center, Image Repository, S78-23470.

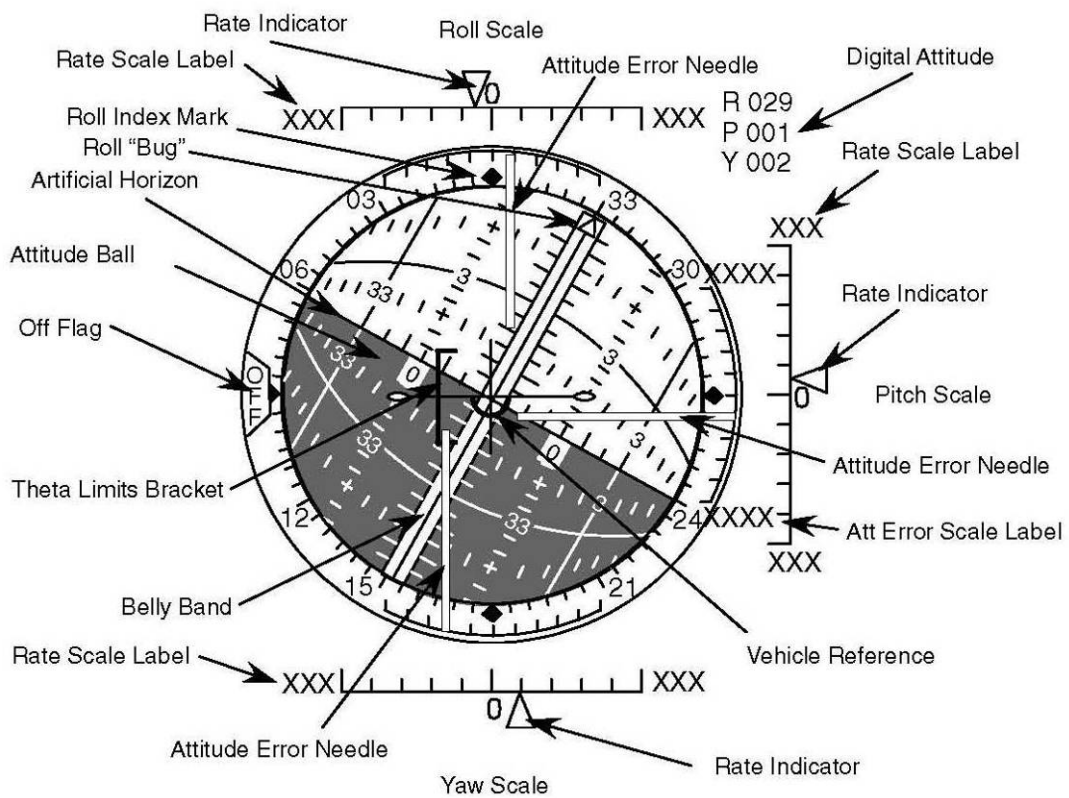


Figure B-79. Diagram of the altitude director indicator.
 Source: USA, *Shuttle Crew Operation Manual*, 2.7-4.

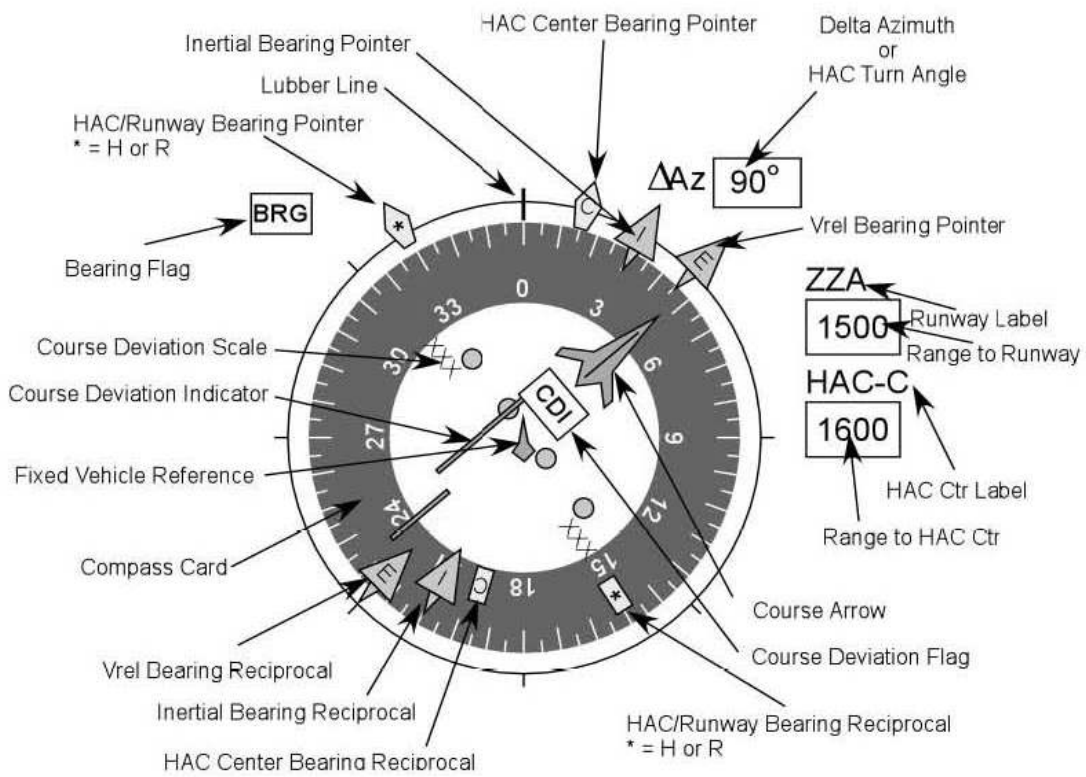


Figure B-80. Diagram of the horizontal situation indicator.
 Source: USA, *Shuttle Crew Operation Manual*, 2.7-8.

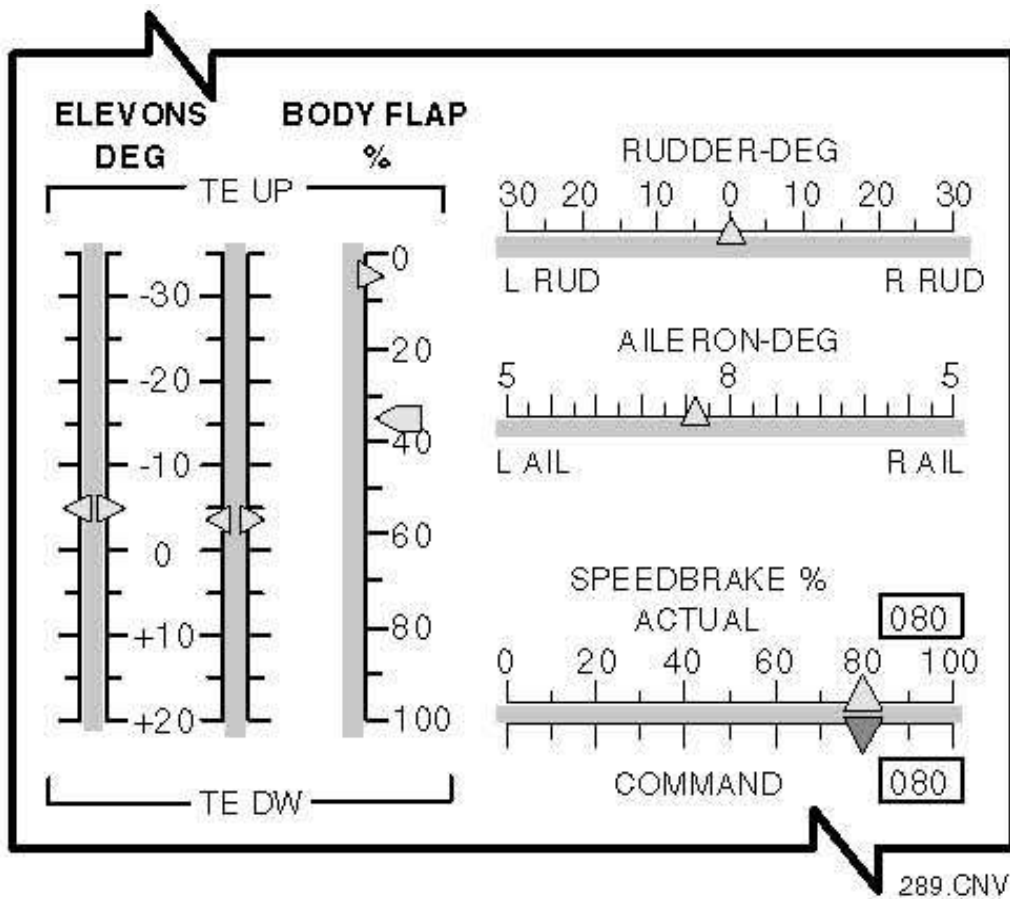


Figure B-81. Diagram of the surface position indicator.
Source: USA, *Shuttle Crew Operation Manual*, 2.7-17.

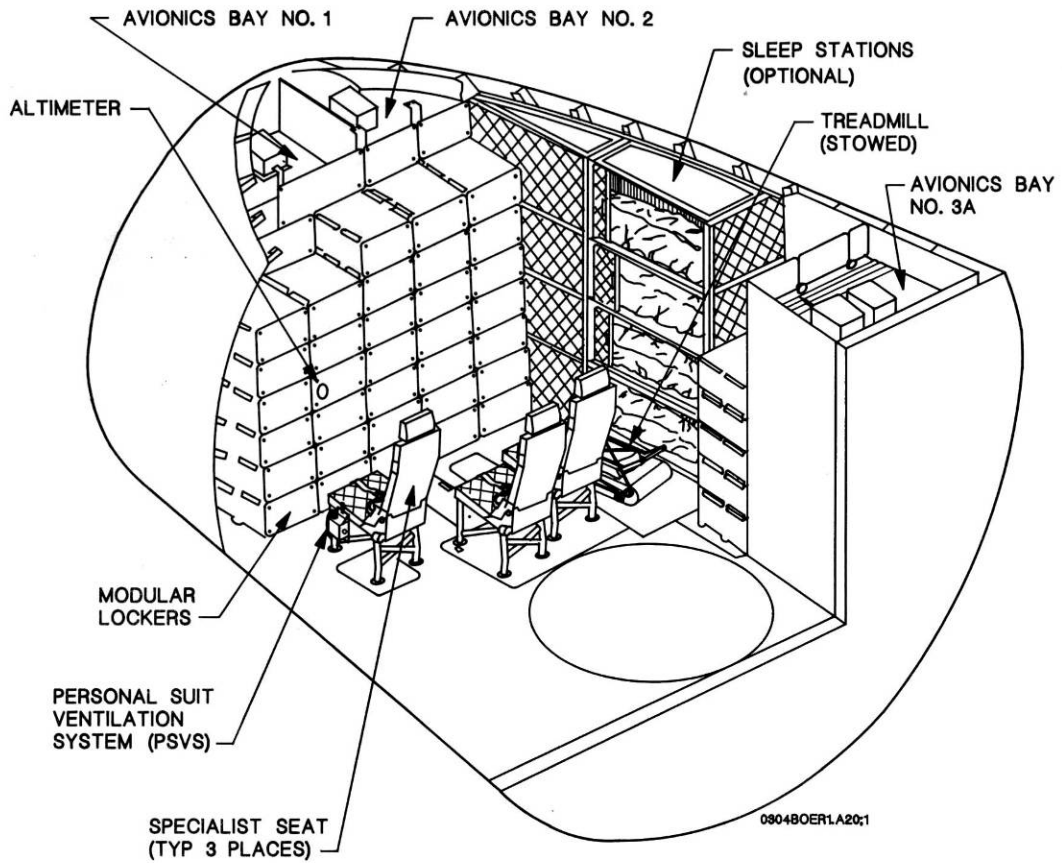


Figure B-82. Diagram of the forward/starboard area of the middeck.
Source: NASA, *Shuttle Operational Data Book*, Volume 4, part 1, Figure 3-4b.

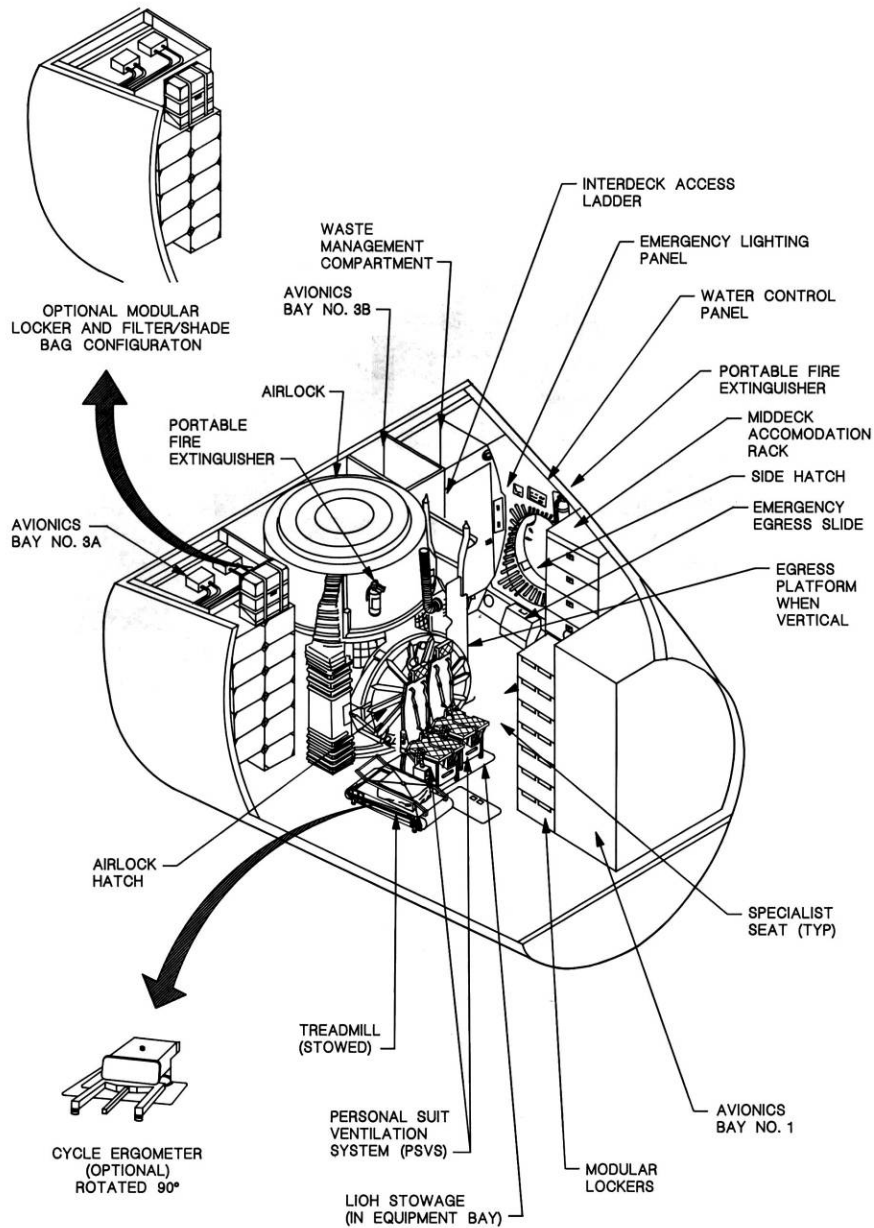


Figure B-83. Diagram of the port/aft area of the middeck, showing internal airlock.
Source: NASA, *Shuttle Operational Data Book*, Volume 4, part 1, Figure 3-4c.

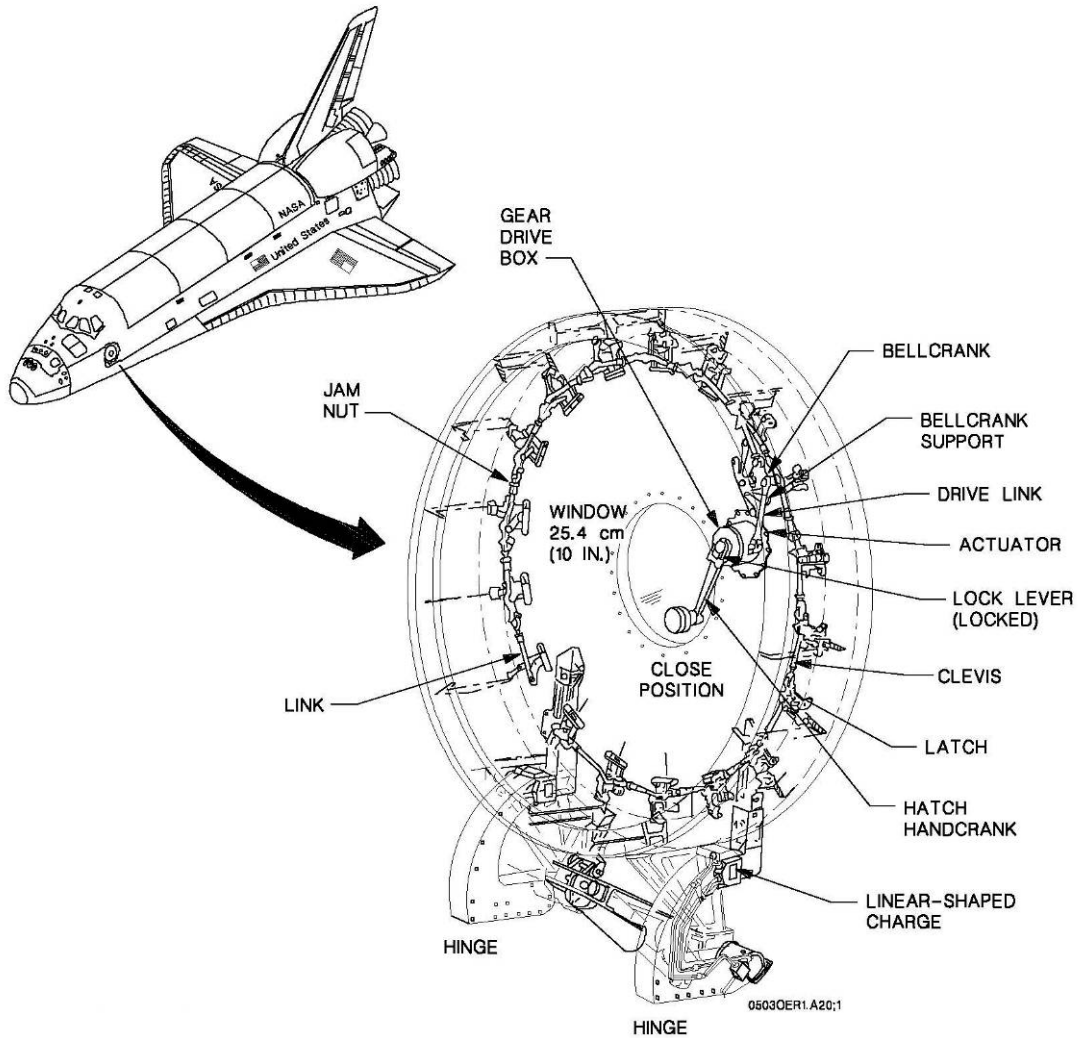


Figure B-84. Diagram of the internal side of the crew hatch.
Source: NASA, *Shuttle Operational Data Book*, Volume 4, part 1, Figure 5-3.

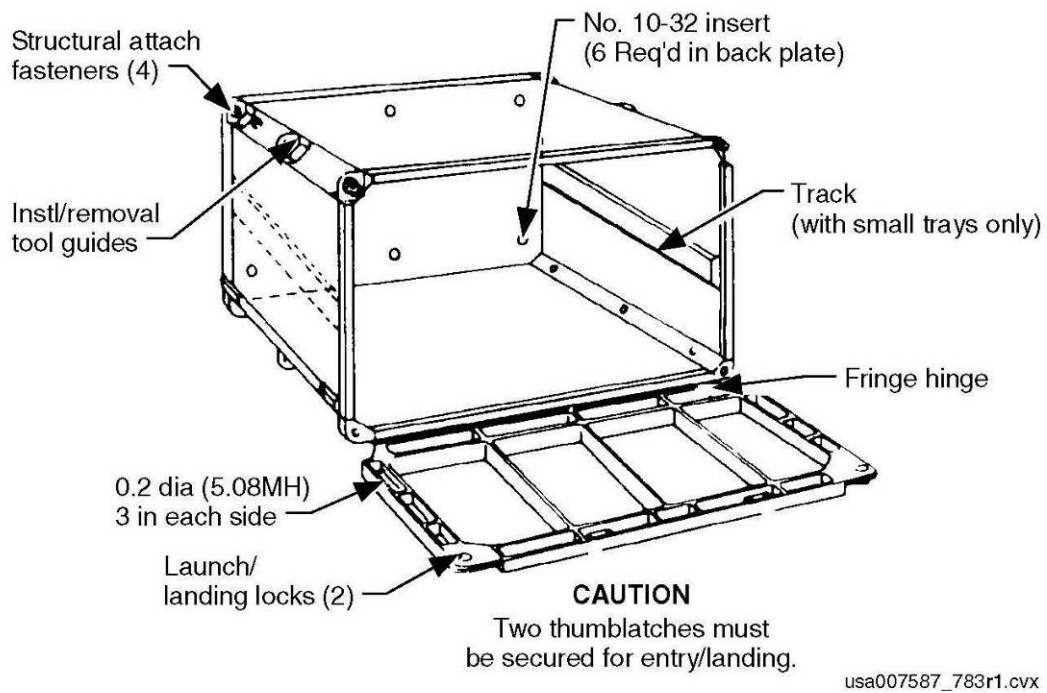
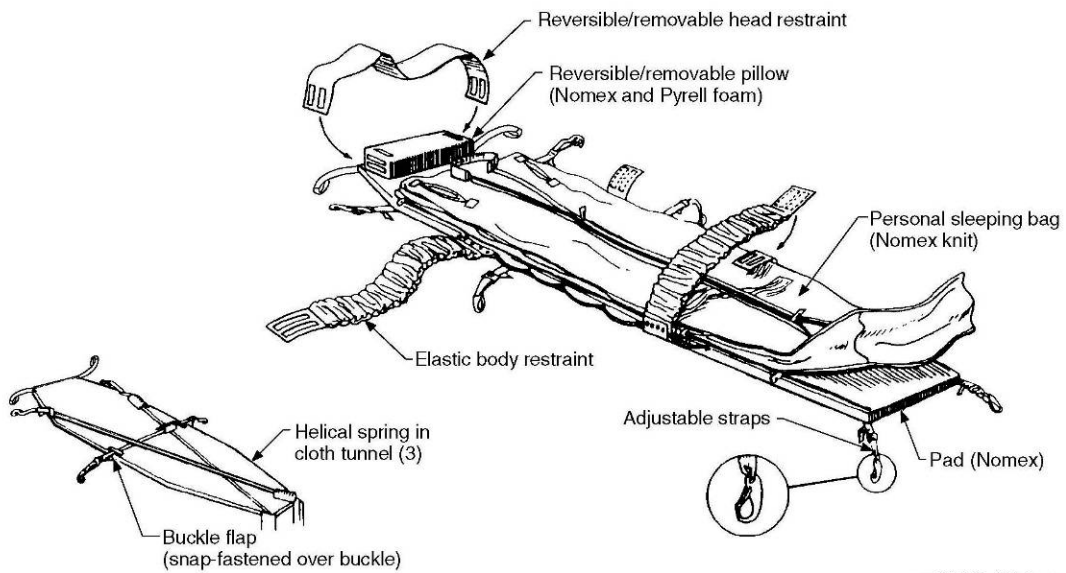


Figure B-85. Diagram of a modular storage locker.
Source: USA, *Shuttle Crew Operation Manual*, 2.24-3.



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Figure B-86. Diagram of a typical sleeping bag.
Source: USA, *Shuttle Crew Operation Manual*, 2.5-2.

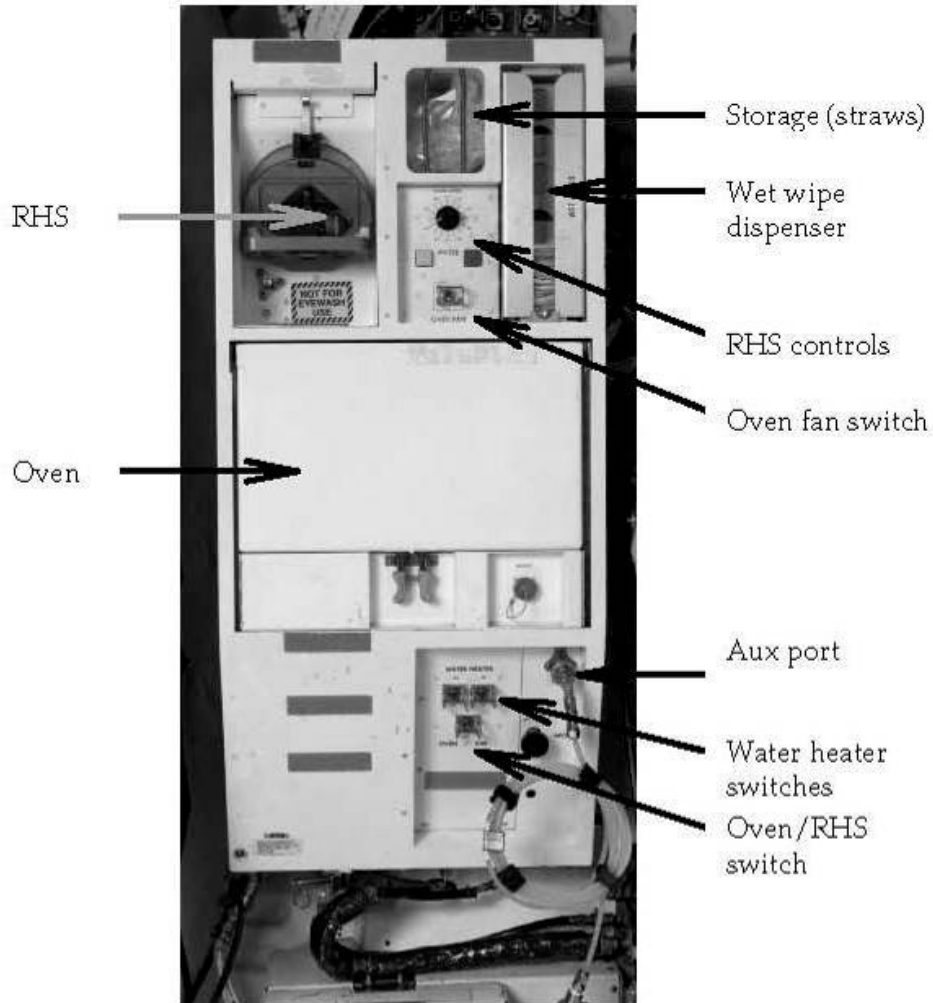


Figure B-87. Diagram of the shuttle galley.
Source: USA, *Shuttle Crew Operation Manual*, 2.12-2.

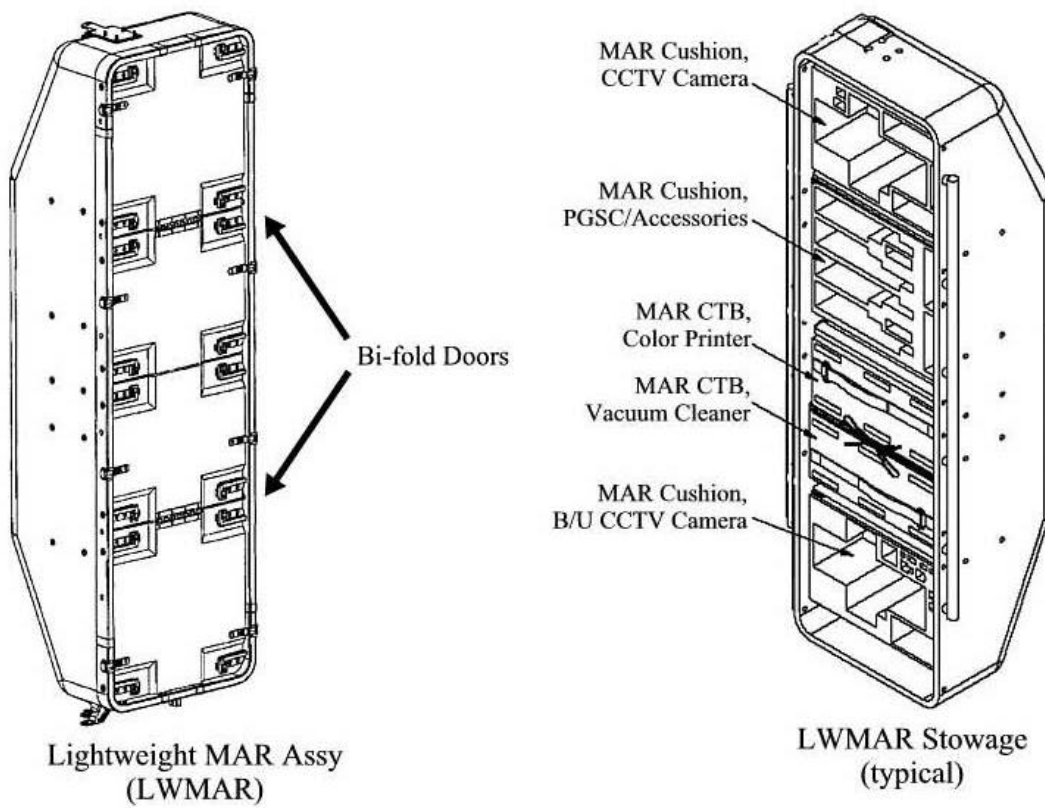
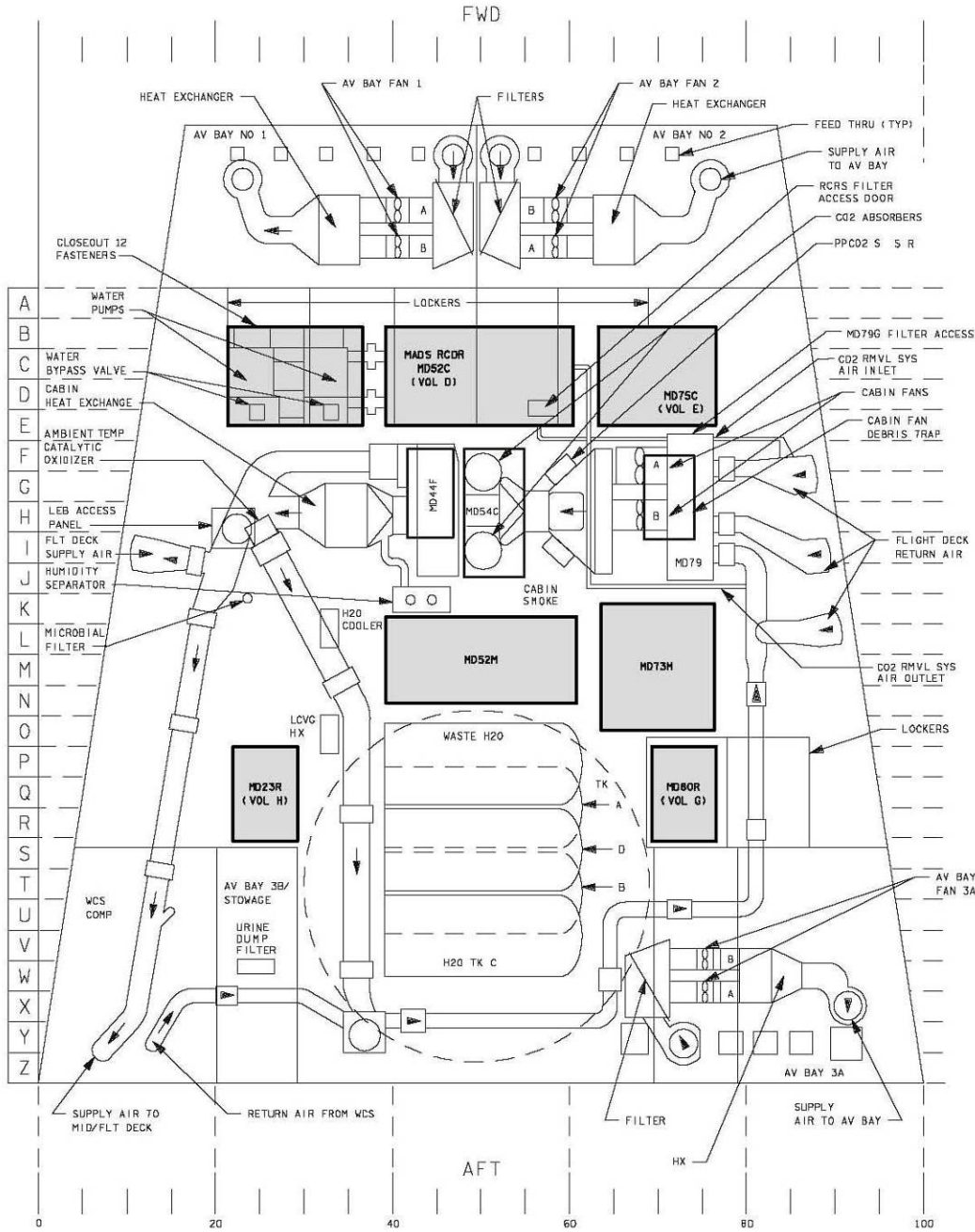


Figure B-88. Diagram of the lightweight middeck accommodation rack.
Source: USA, *Shuttle Crew Operation Manual*, 2.24-7.



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 td415b 003b.cnv

Figure B-89. Diagram of *Discovery's* equipment bay.
 Source: USA, *Environmental Control and Life Support System*, 3-4.

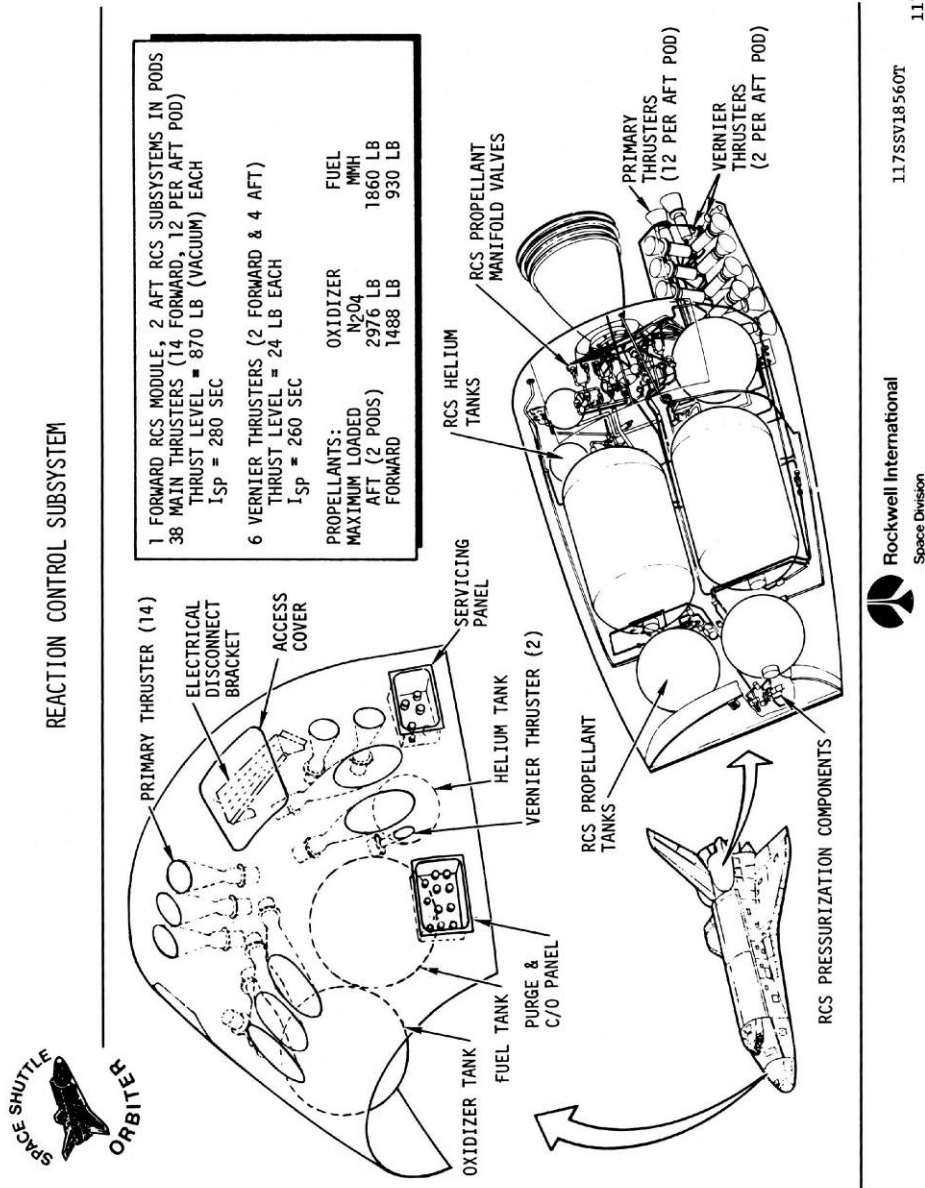


Figure B-90. Diagram of the forward and aft RCS modules, 1978.
 Source: NASA Johnson Space Center, Image Repository, S78-23440.

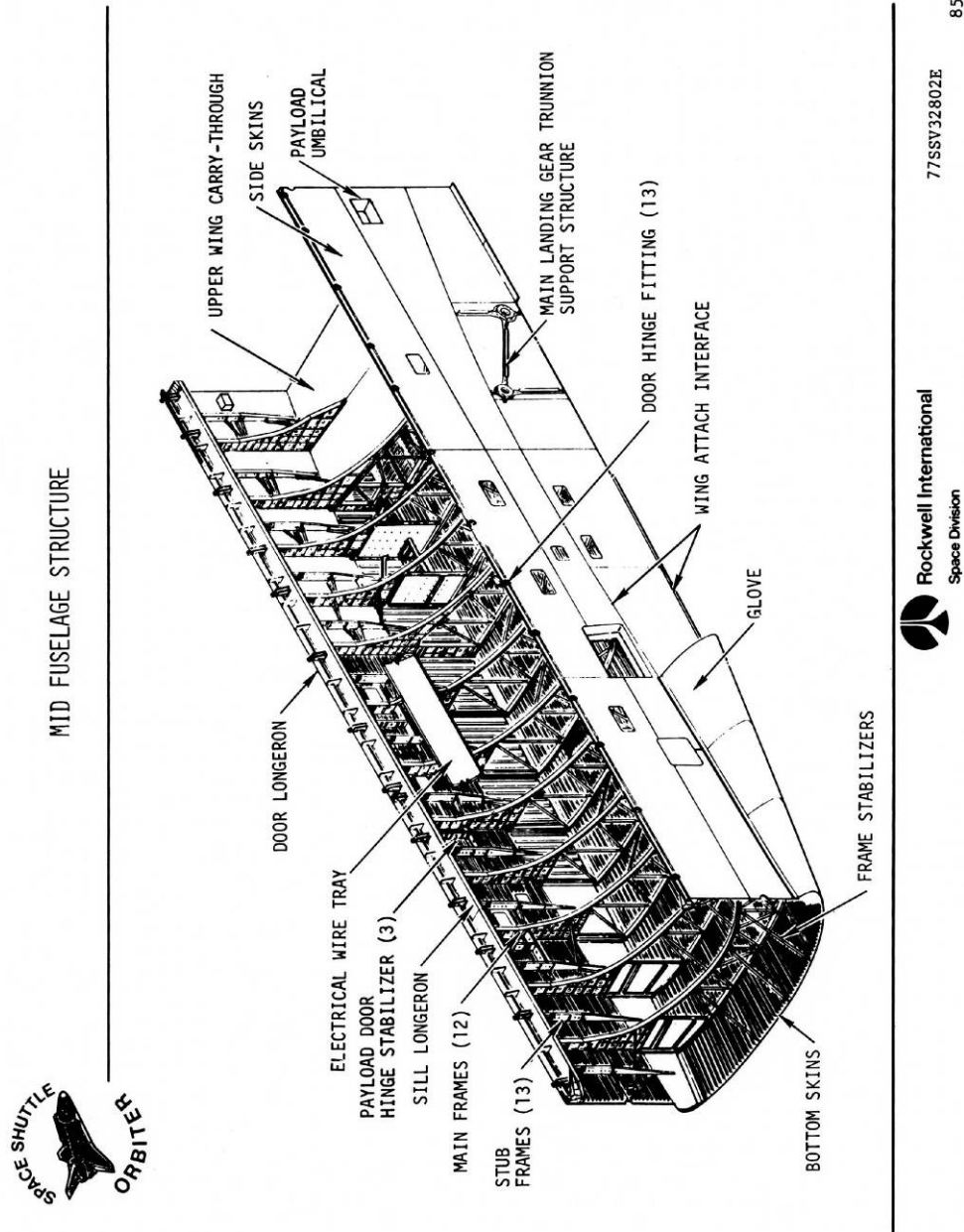


Figure B-91. Diagram of the midfuselage, 1978.
Source: NASA Johnson Space Center, Image Repository, S78-23425.

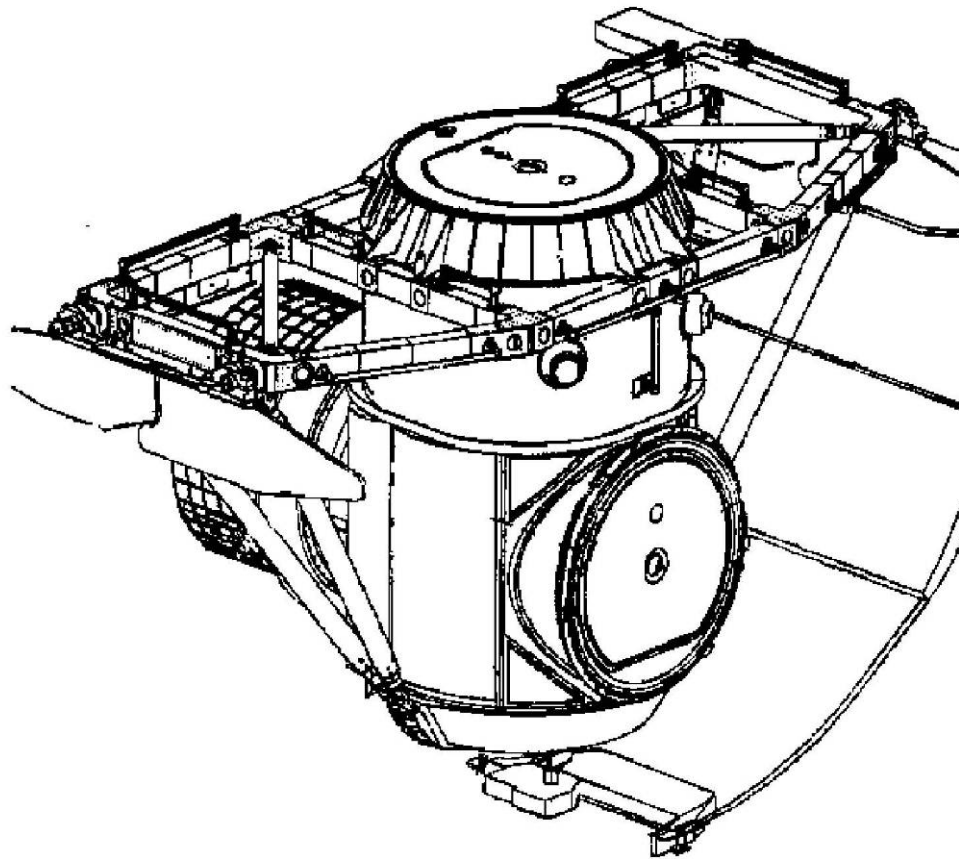
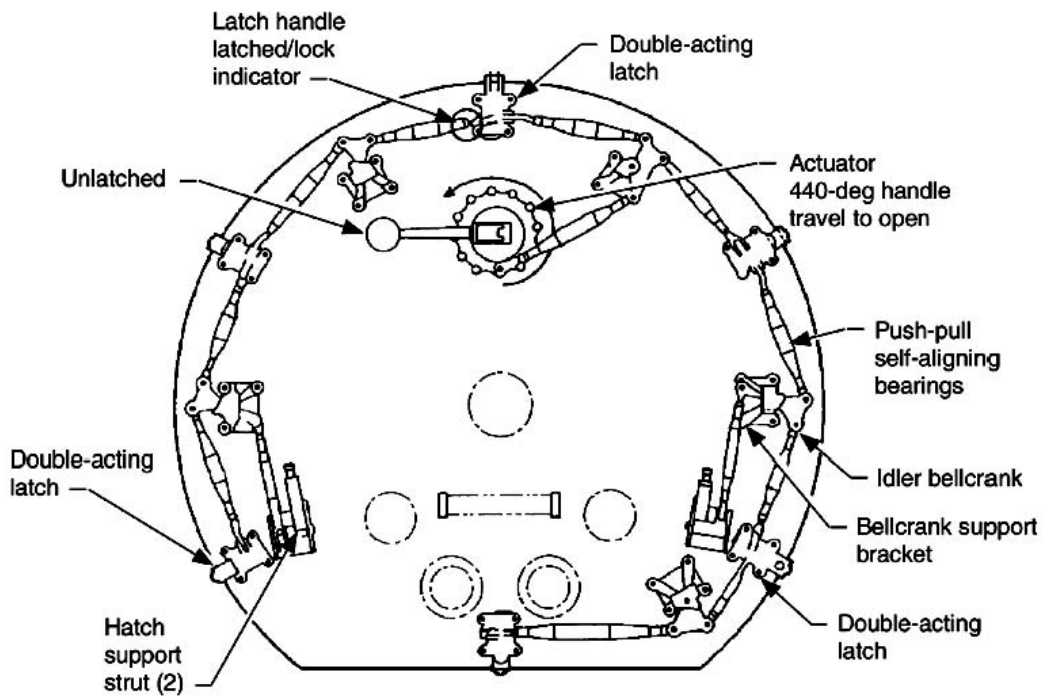


Figure B-92. Illustration of the external airlock.
Source: USA, *Shuttle Crew Operation Manual*, 2.11-12.



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Figure B-93. Diagram of an external airlock hatch.
Source: USA, *Shuttle Crew Operation Manual*, 2.11-13.

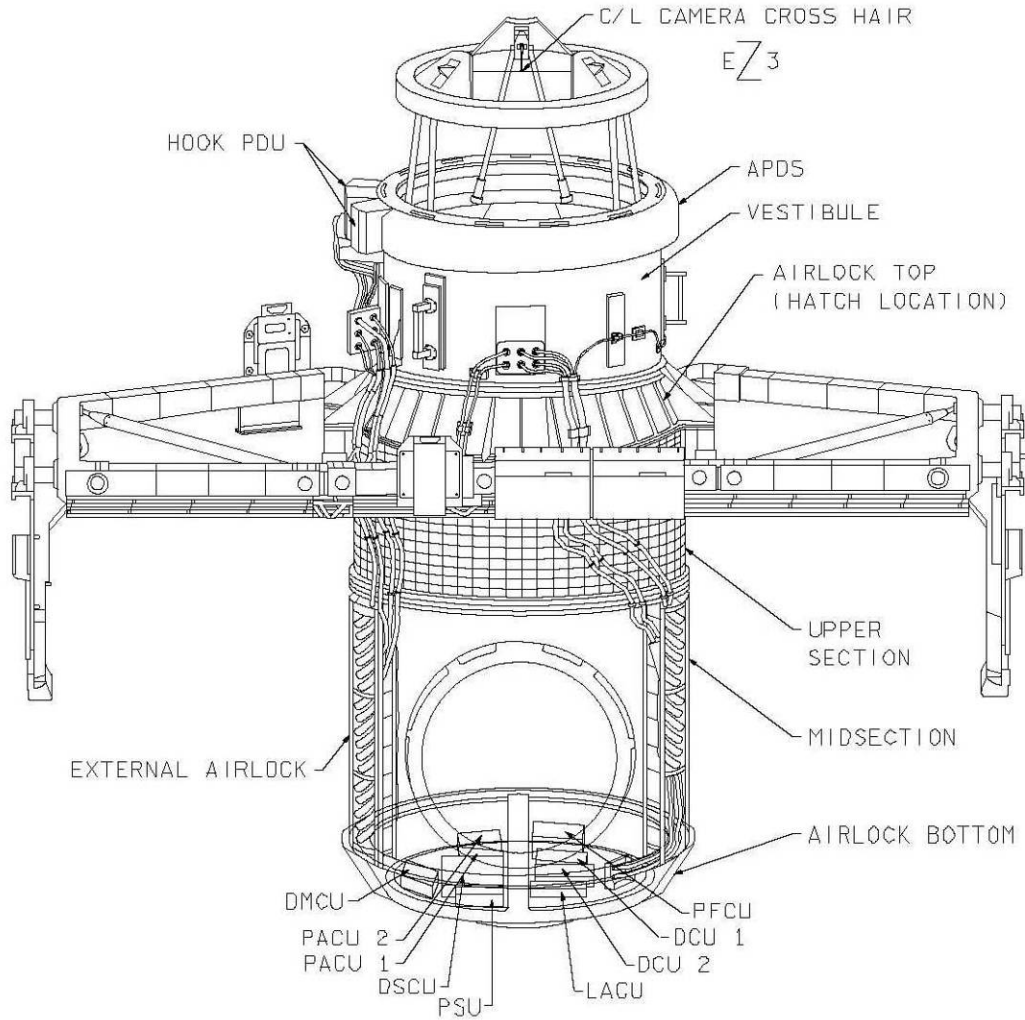
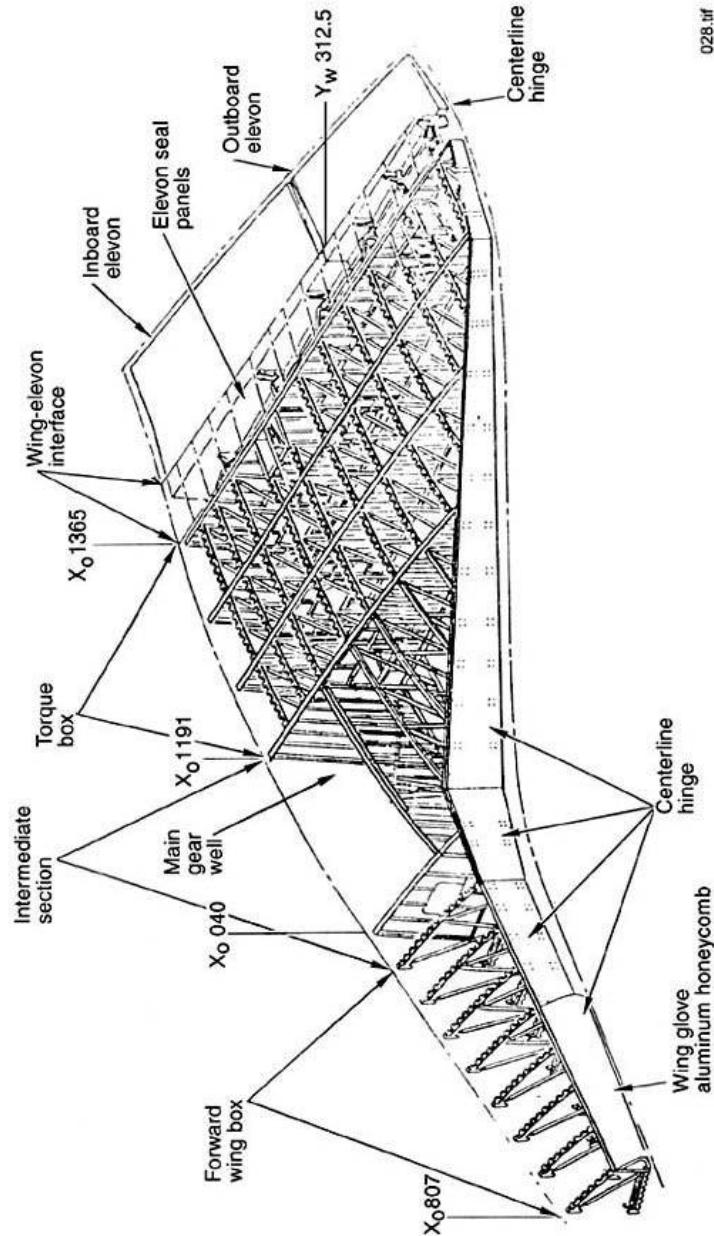


Figure B-94. Diagram of the external airlock/orbiter docking system.
Source: USA, *Shuttle Crew Operation Manual*, 2.19-1.



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Figure B-96. Diagram of the wing structure.
Source: USA, *Shuttle Crew Operation Manual*, 1.2-8.

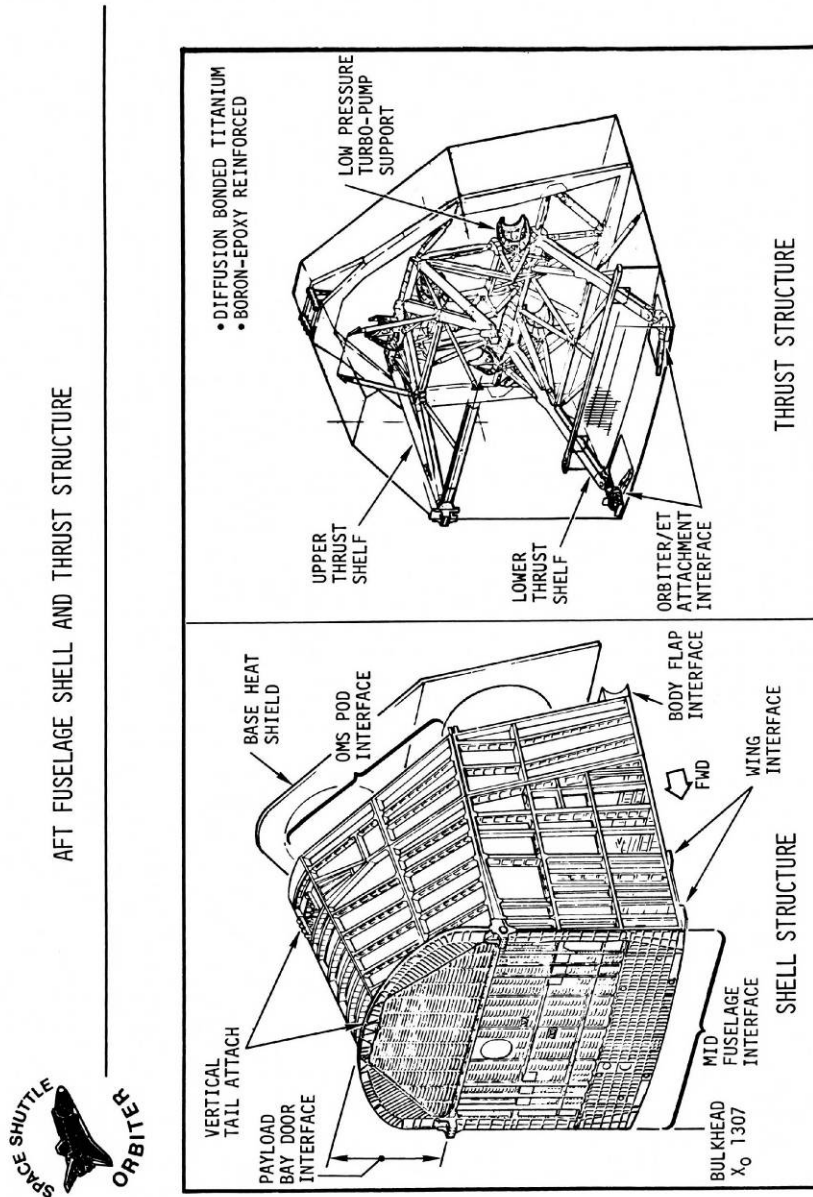


Figure B-97. Diagram of the aft fuselage, 1978.
 Source: NASA Johnson Space Center, Image Repository, S78-23427.

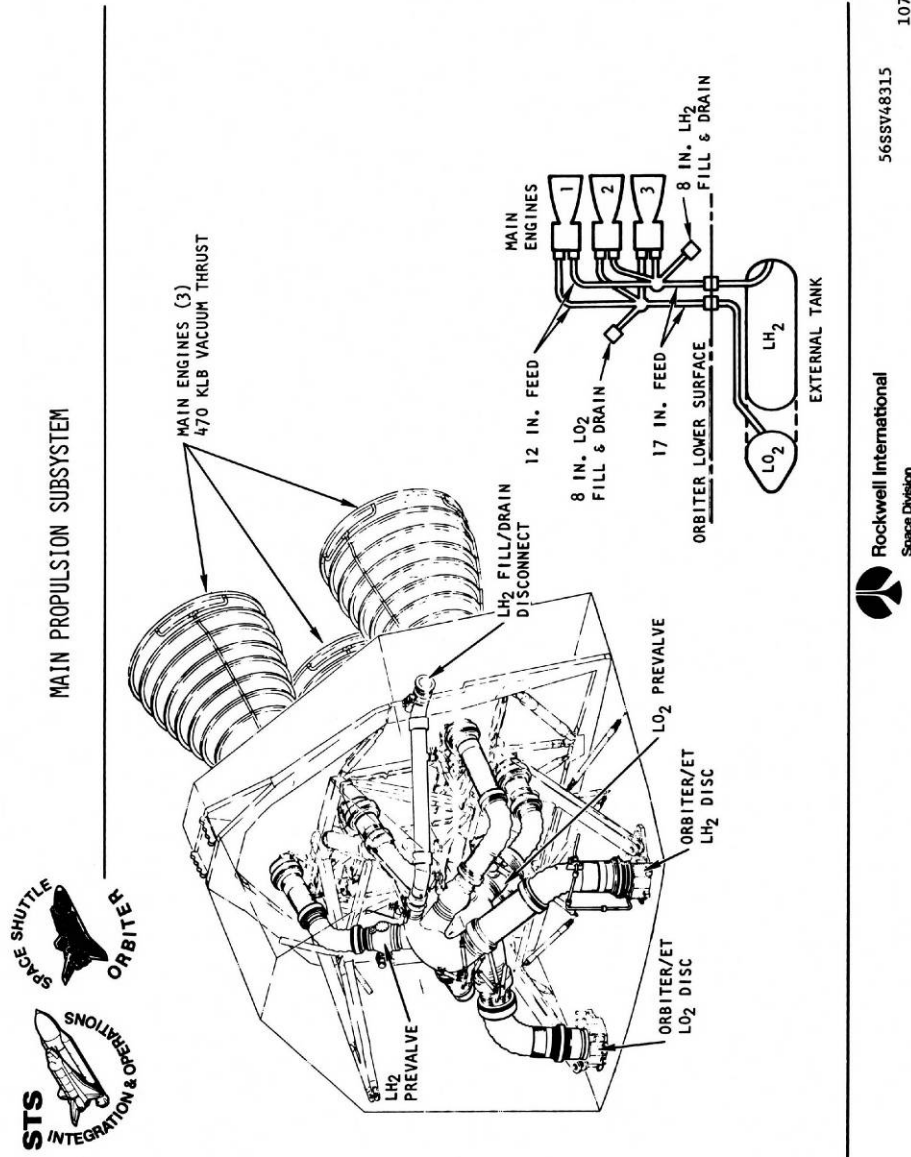


Figure B-98. Diagram of the main propulsion system, 1978.
 Source: NASA Johnson Space Center, Image Repository, S78-23436.

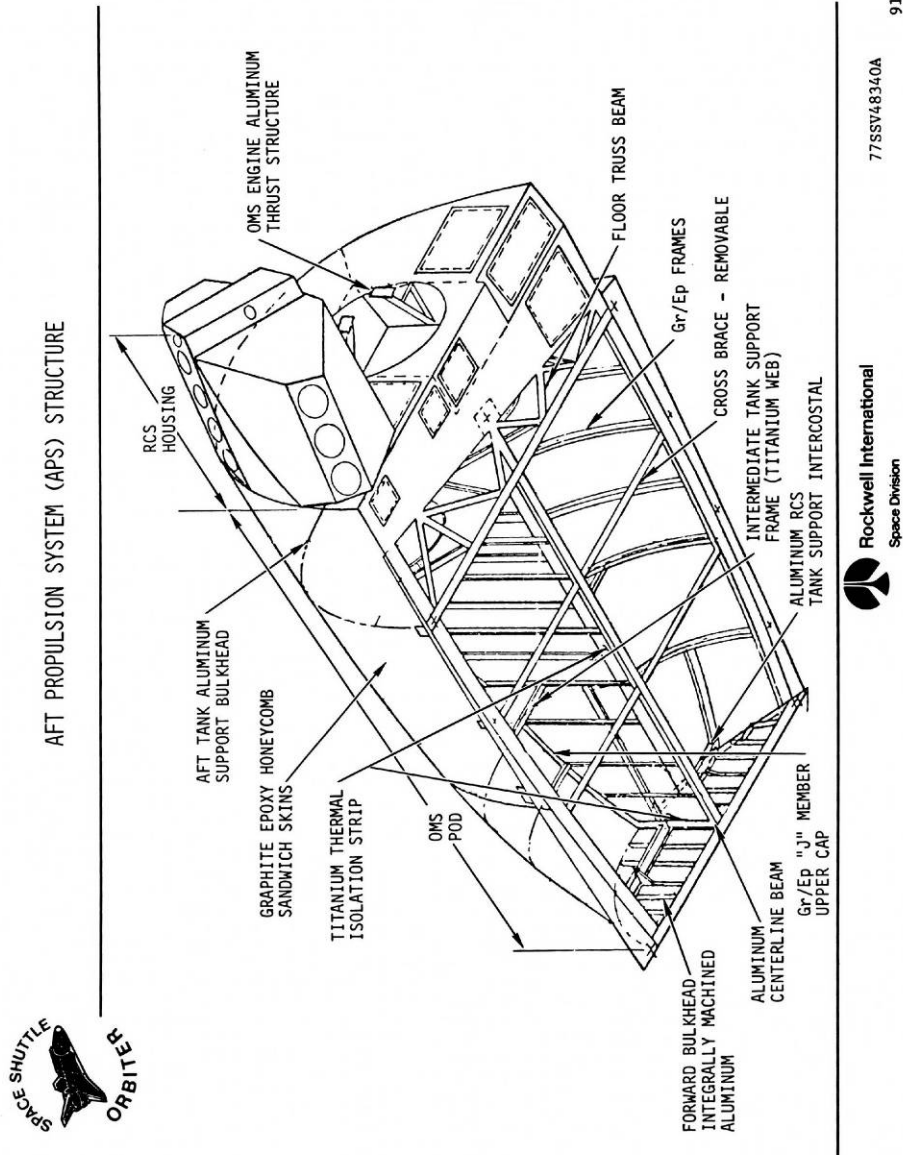


Figure B-99. Diagram of an OMS/RCS pod structure, 1978.
 Source: NASA Johnson Space Center, Image Repository, S78-23428.

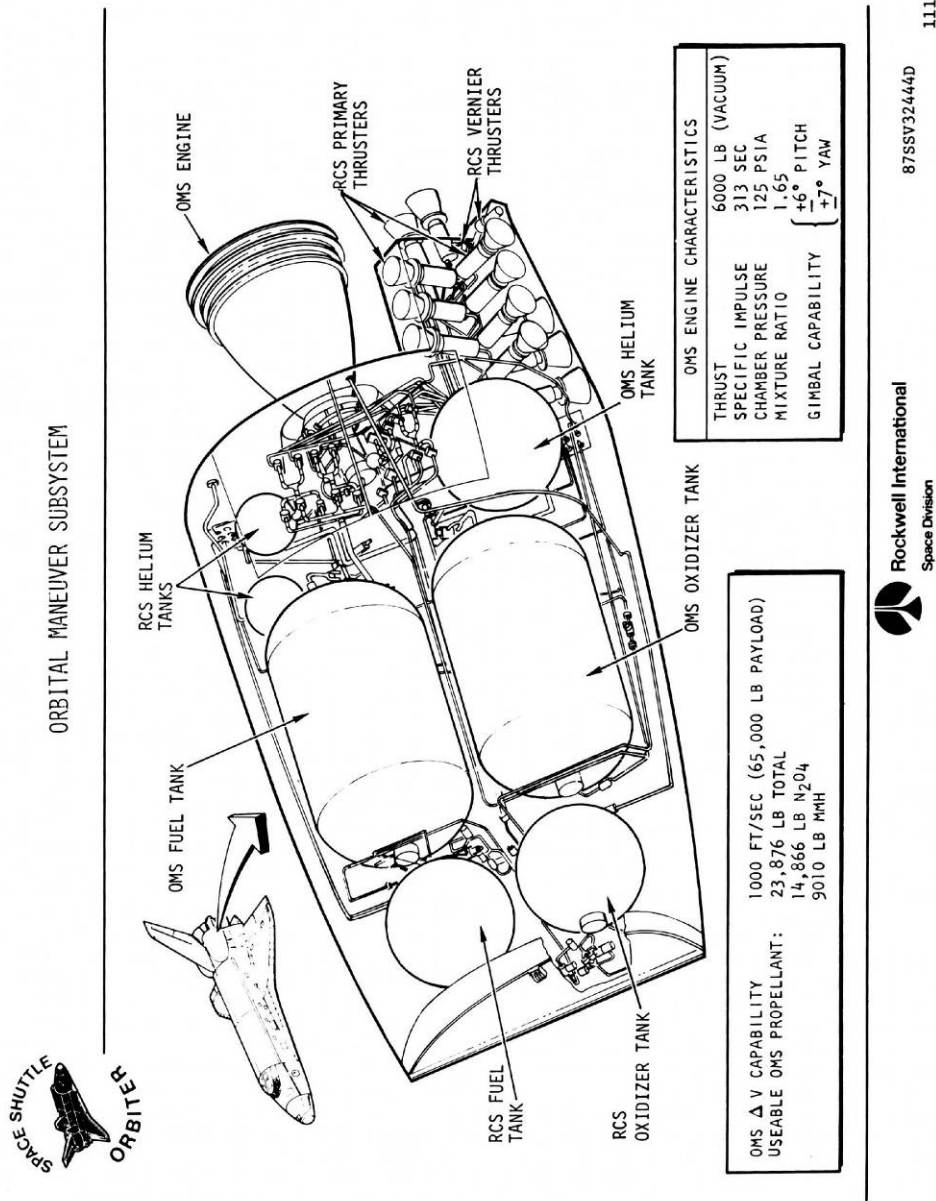


Figure B-100. Diagram of the OMS/RCS pod interior, 1978.
 Source: NASA Johnson Space Center, Image Repository, S78-23438.

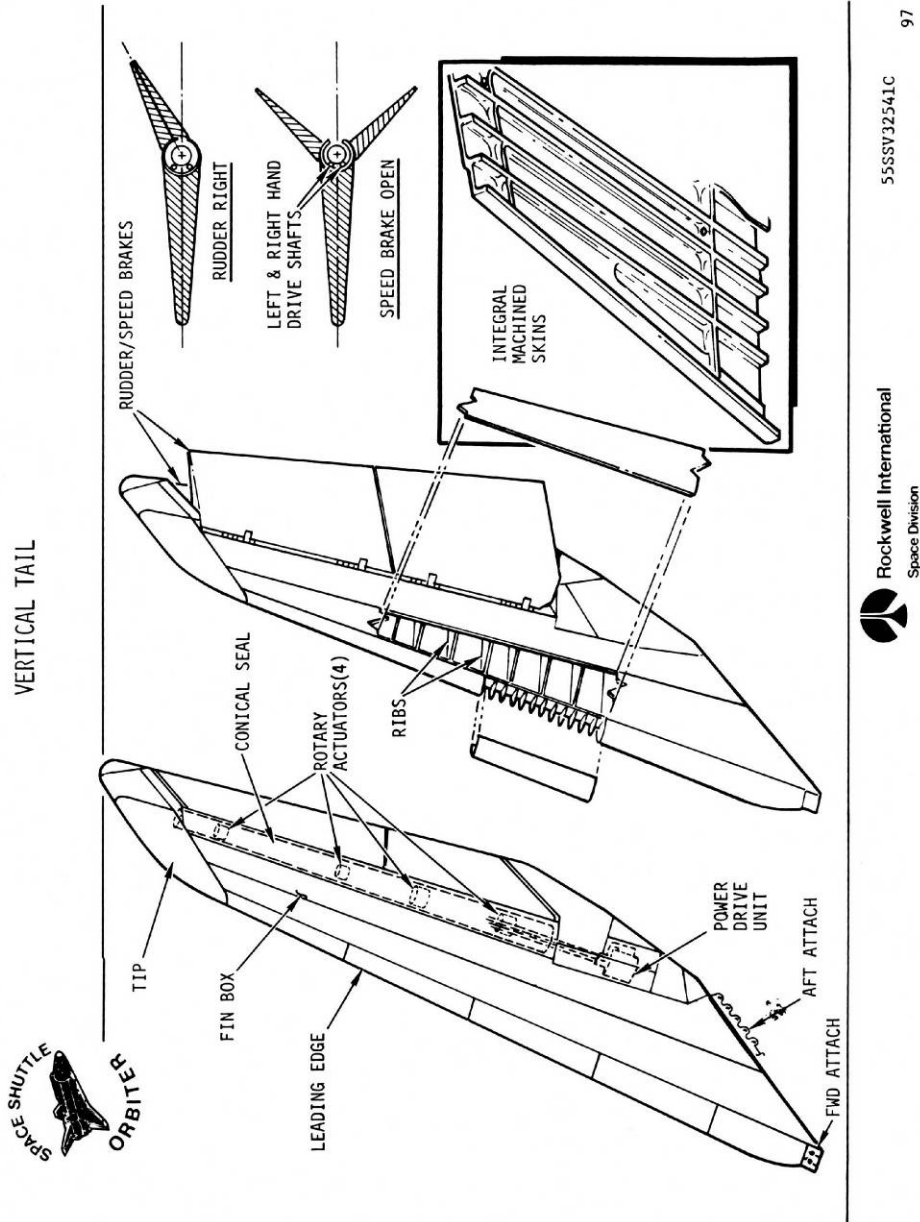


Figure B-101. Diagram of the vertical stabilizer, 1978.
Source: NASA Johnson Space Center, Image Repository, S78-23431.

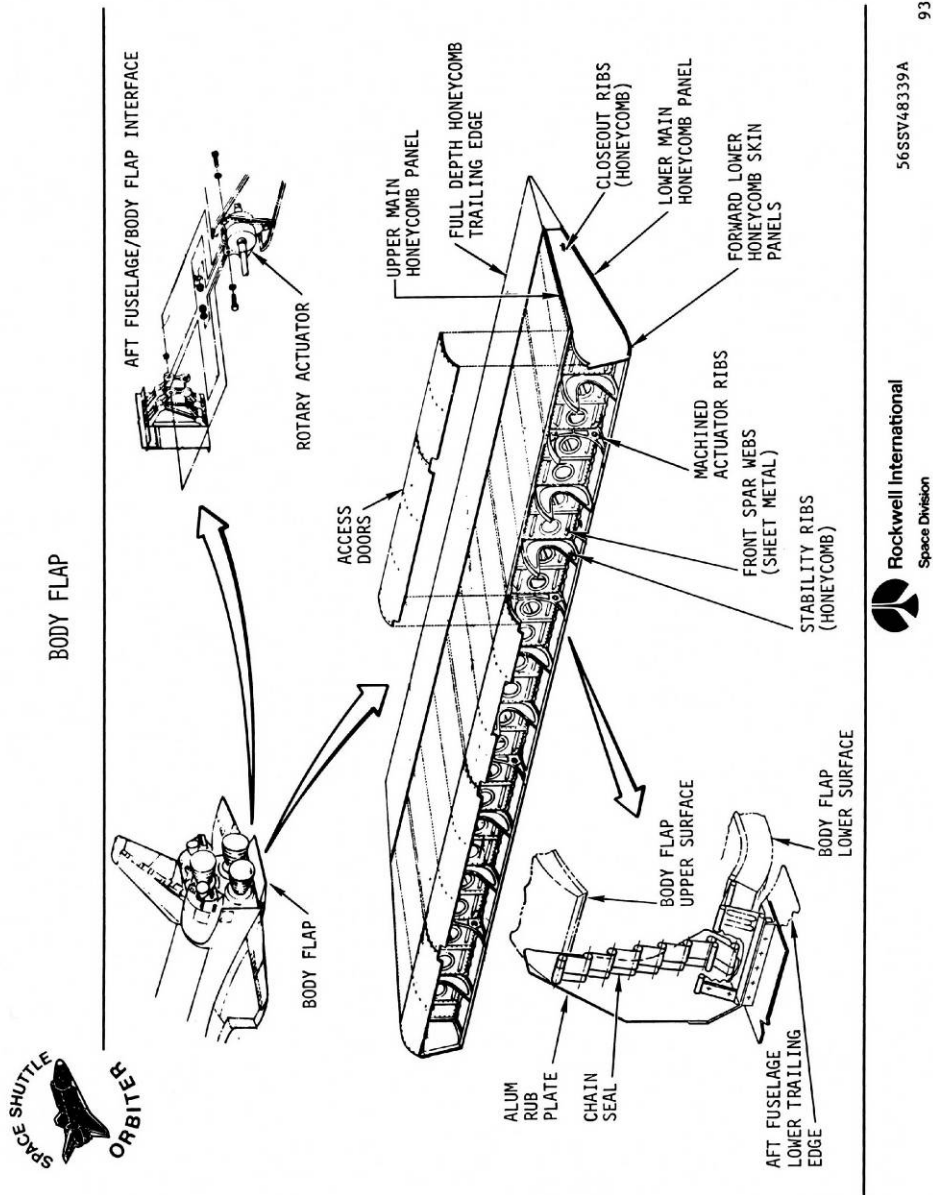


Figure B-102. Diagram of the body flap, 1978.
 Source: NASA Johnson Space Center, Image Repository, S78-23429.

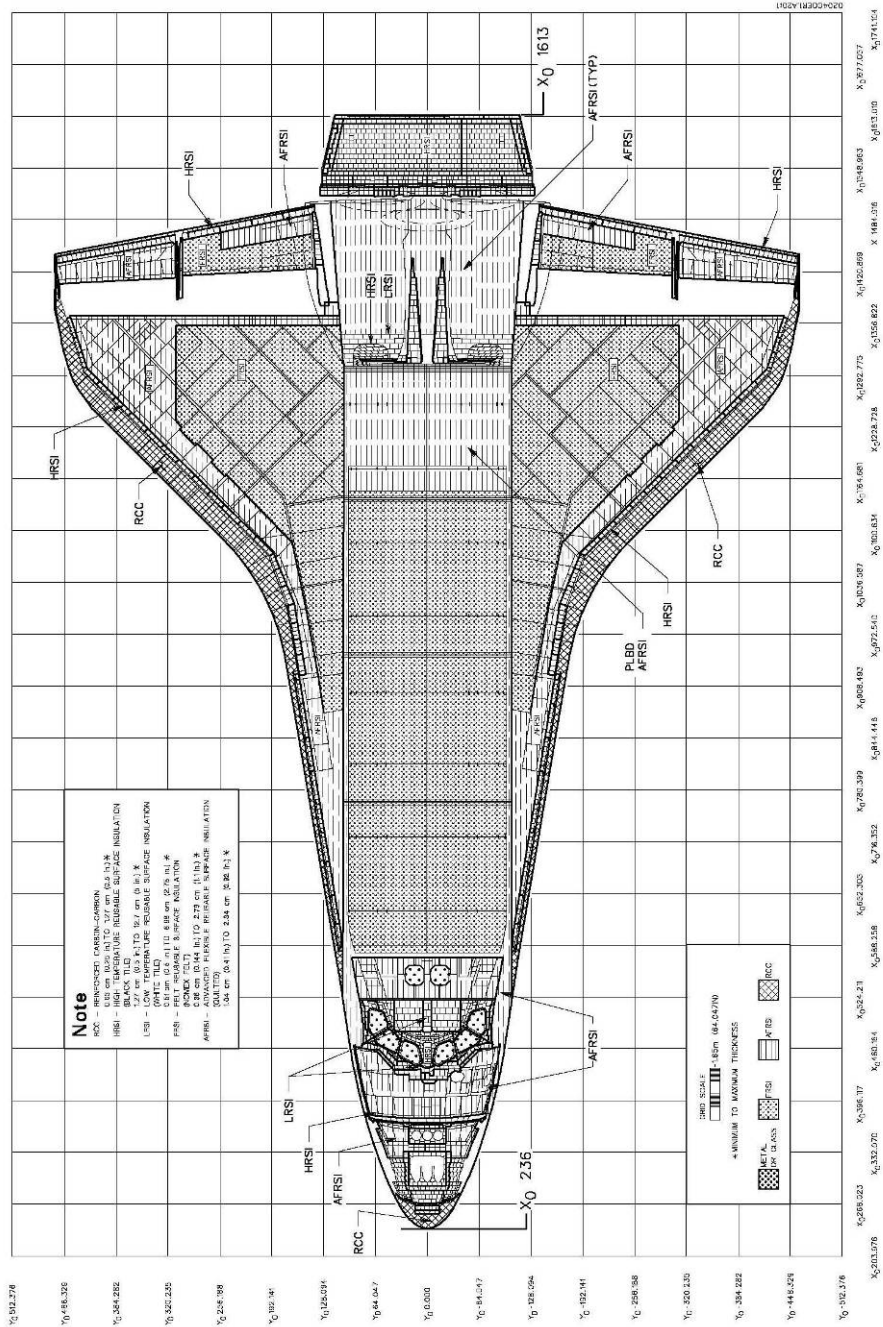


Figure B-103. Diagram of the TPS on the top of *Discovery*.
 Source: NASA, *Shuttle Operational Data Book*, Volume 4, part 2, Figure 2-4c.

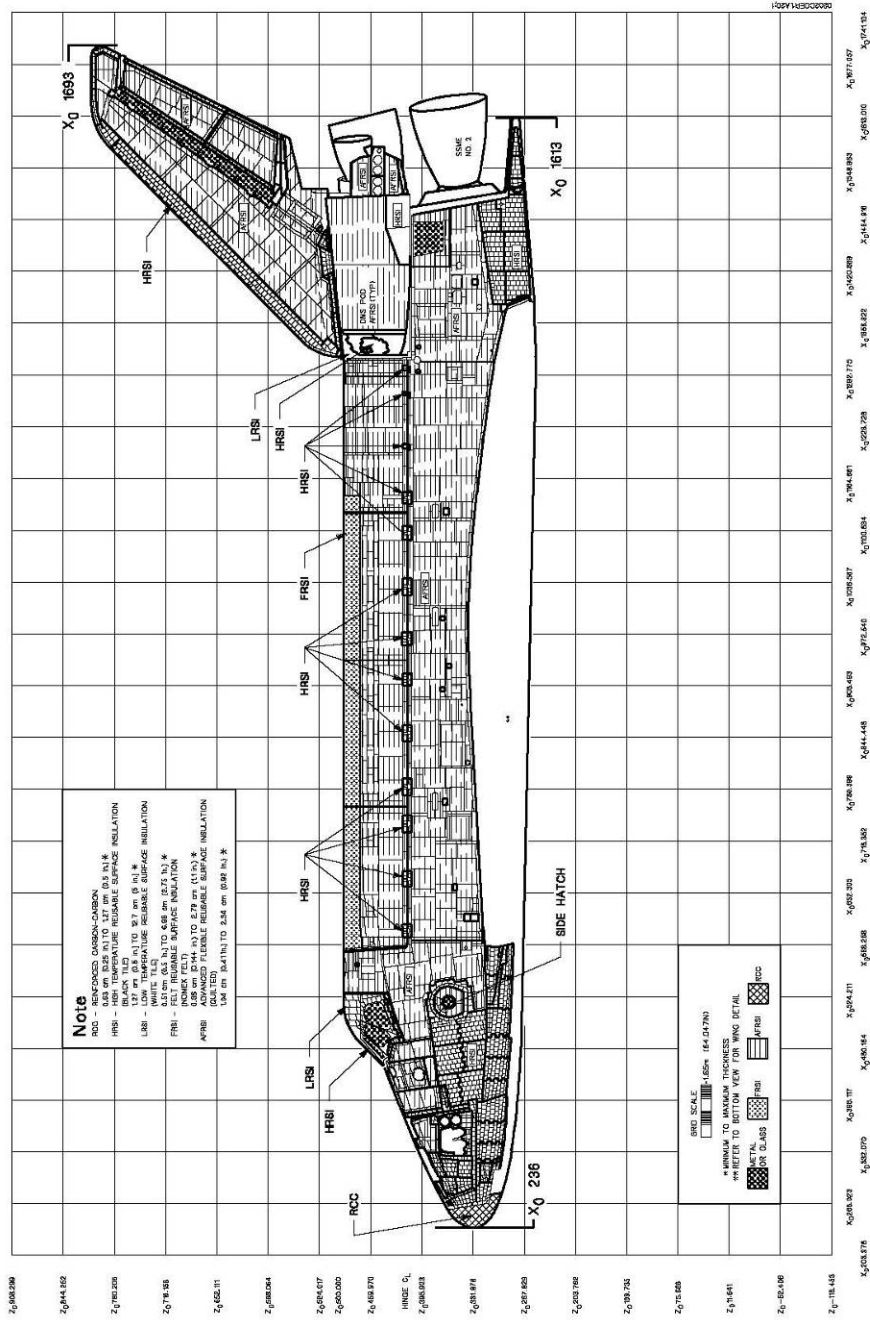


Figure B-104. Diagram of the TPS on the port side of *Discovery*.
 Source: NASA, *Shuttle Operational Data Book*, Volume 4, part 2, Figure 2-2c.

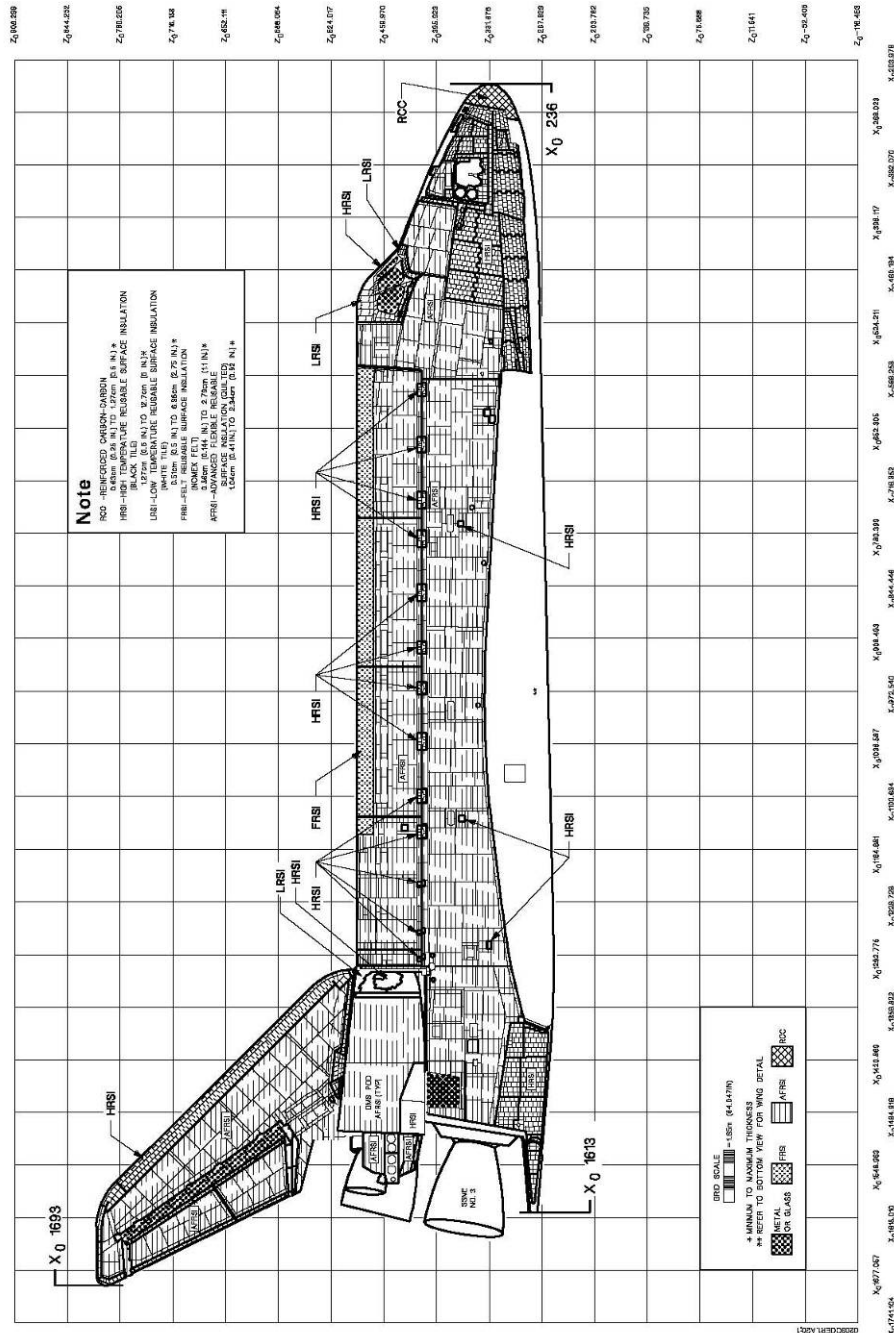


Figure B-105. Diagram of the TPS on the starboard side of *Discovery*.
 Source: NASA, *Shuttle Operational Data Book*, Volume 4, part 2, Figure 2-3c.

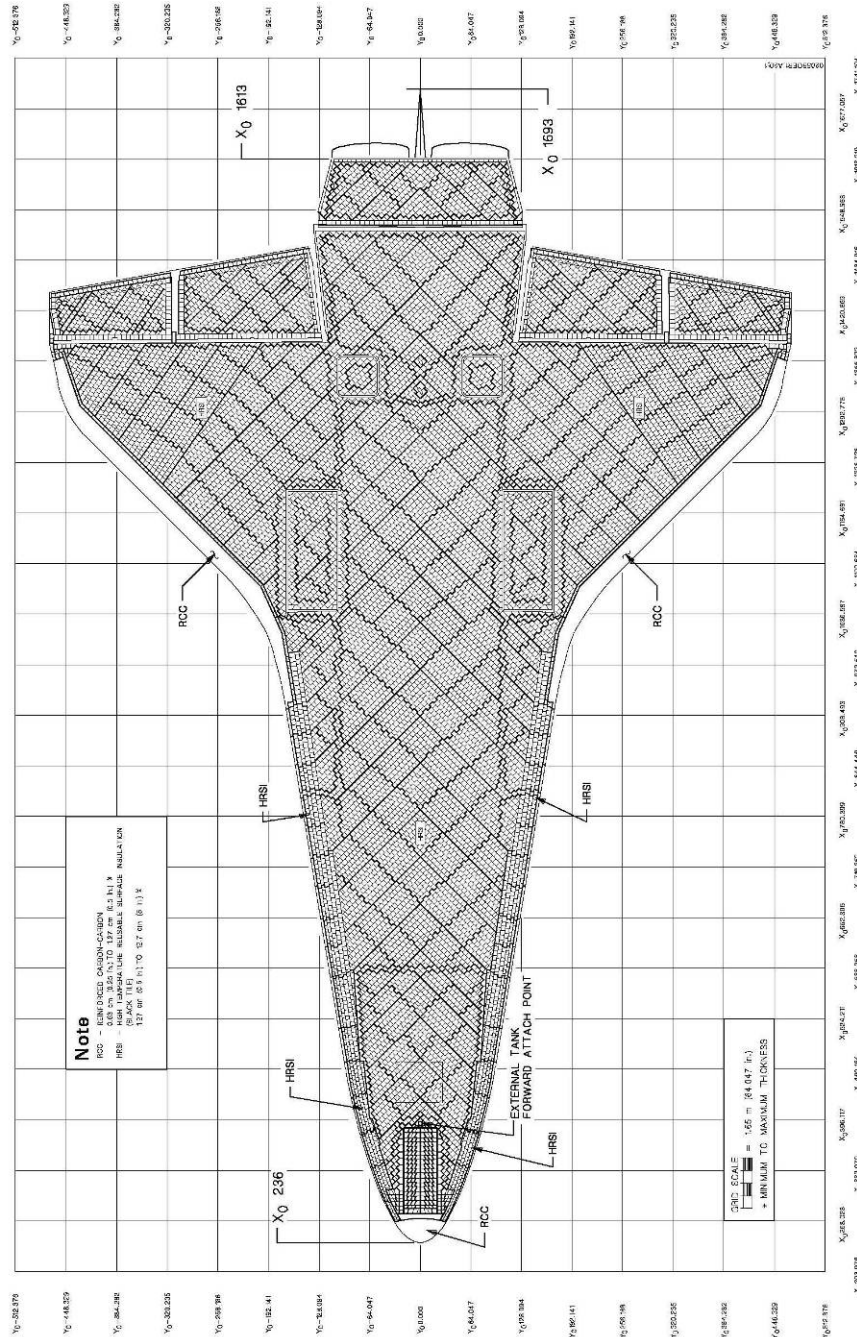


Figure B-106. Diagram of the TPS on the bottom of *Discovery*.
 Source: NASA, *Shuttle Operational Data Book*, Volume 4, part 2, Figure 2-5b.

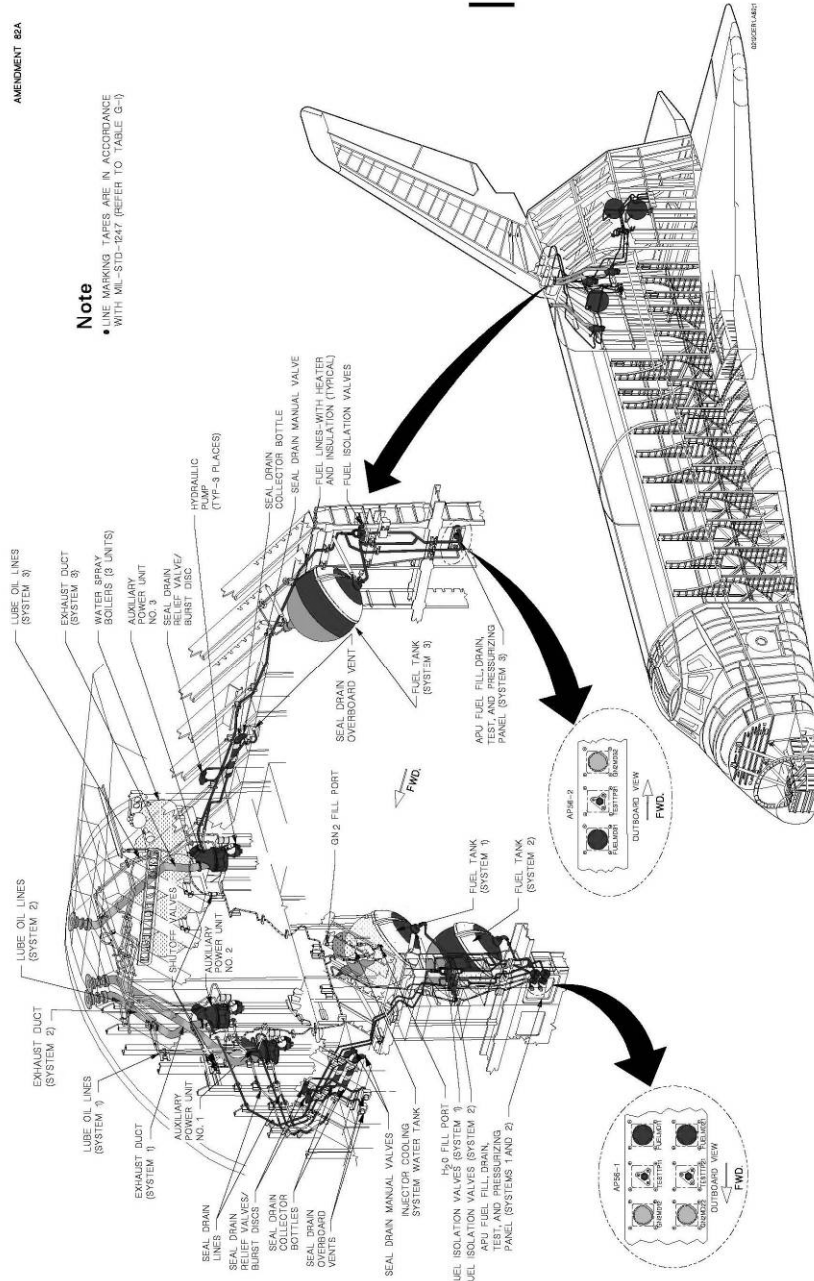


Figure B-108. Diagram of the APU system.
Source: NASA, *Shuttle Operational Data Book*, Volume 4, part 1, Figure 2-12.

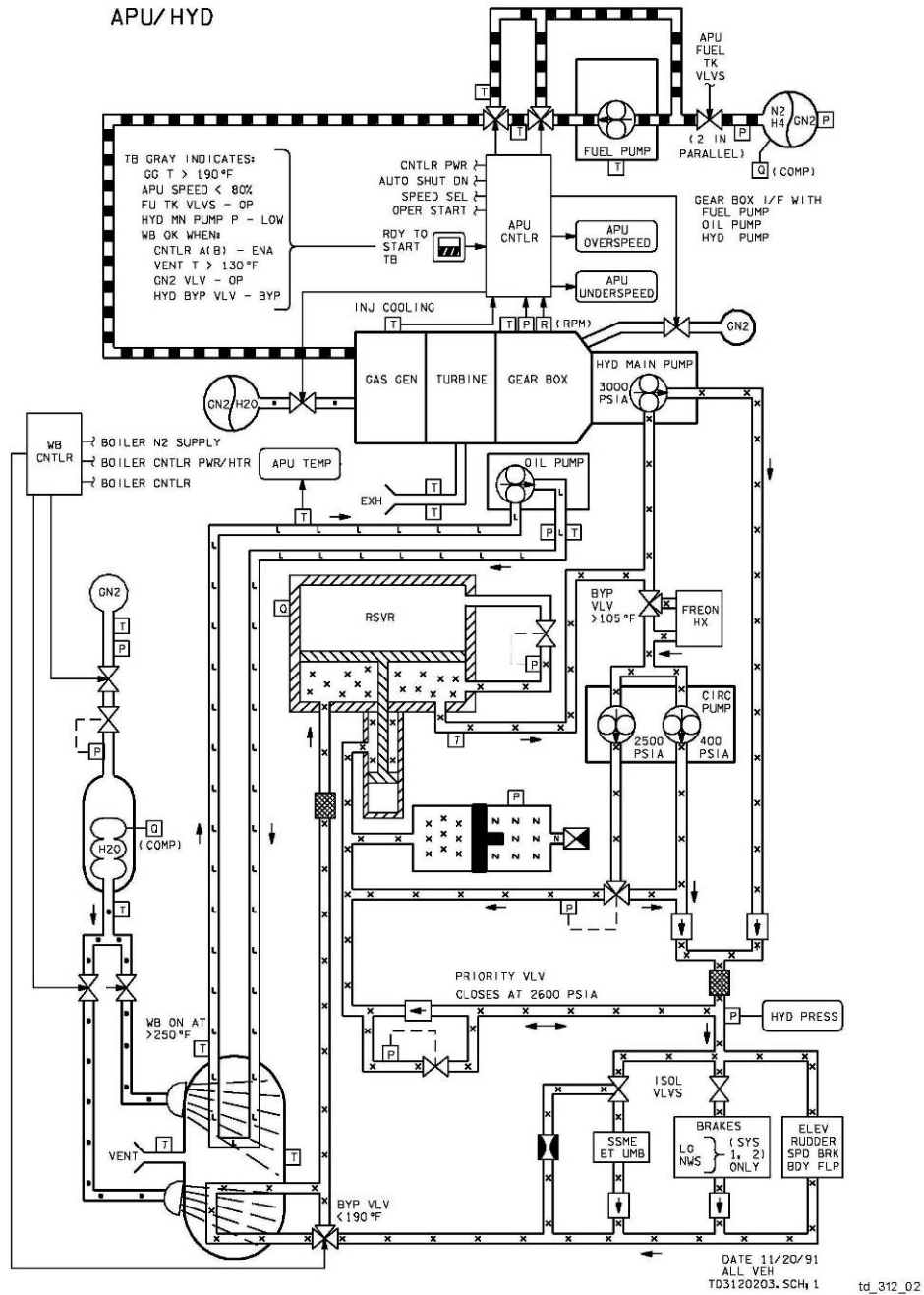
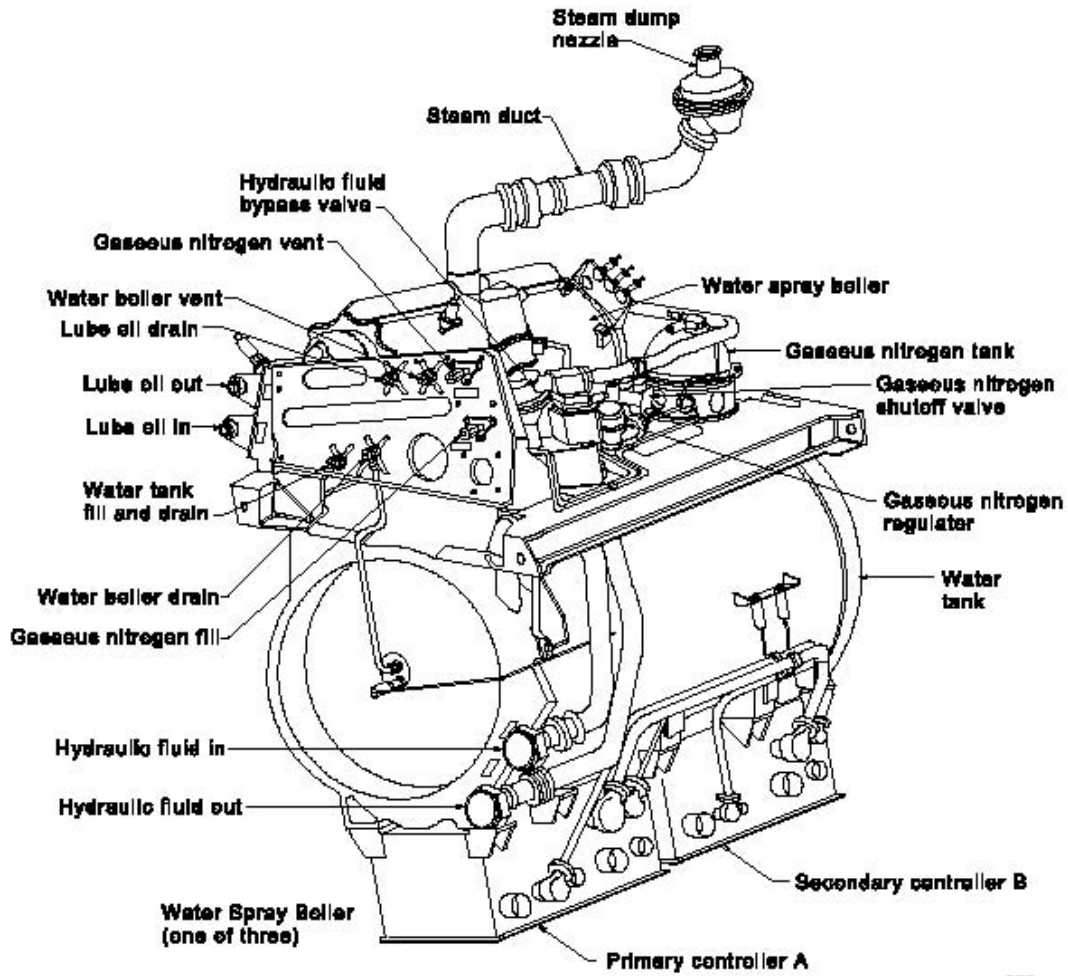


Figure B-110. Schematic of the APU/Hydraulics/Water Spray Boiler system.
 Source: USA. *APU/Hydraulic/Water Spray Boiler Systems Training Manual*, 2-4.



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Figure B-111. Diagram of a water spray boiler.
Source: USA. *APU/Hydraulic/Water Spray Boiler Systems Training Manual*, 1-2.

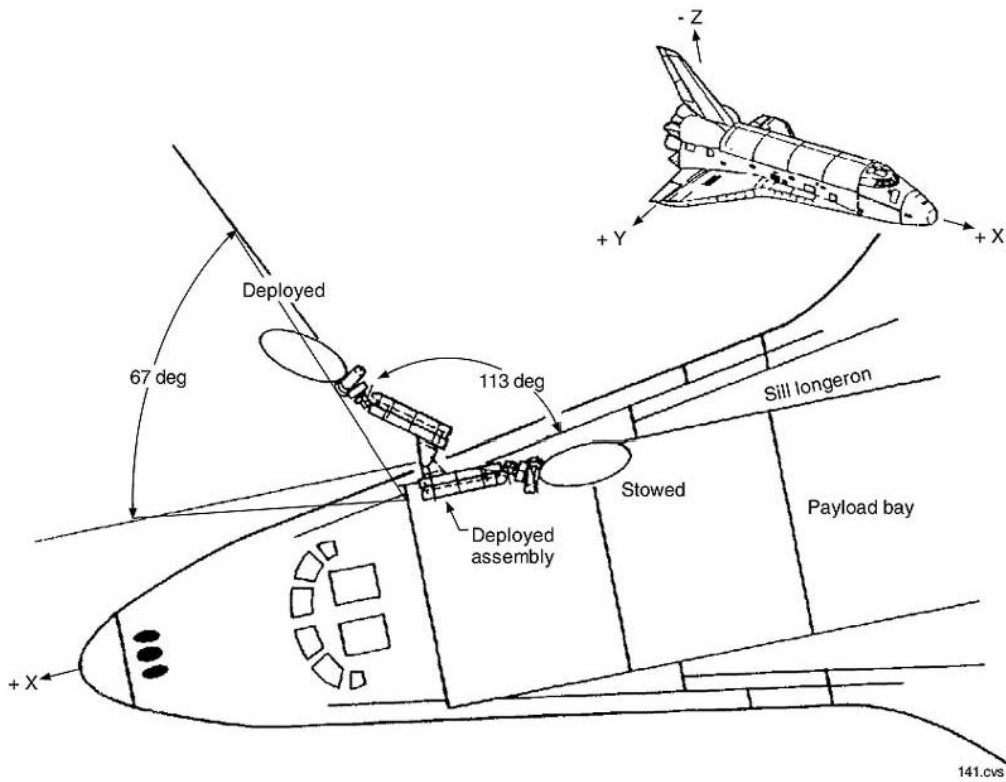
O ₂ PRESS	H ₂ PRESS	FUEL CELL REAC (R)	FUEL CELL STACK TEMP	FUEL CELL PUMP
CABIN ATM (R)	O ₂ HEATER TEMP	MAIN BUS UNDERVOLT	AC VOLTAGE	AC OVERLOAD
FREON LOOP	AV BAY/ CABIN AIR	IMU	FWD RCS	RCSJET
H ₂ O LOOP	RGA/ACCEL	AIR DATA (R)	LEFT RCS	RIGHT RCS (R)
—————	LEFT RHC (R)	RIGHT/AFT RHC	LEFT OMS (R)	RIGHT OMS
PAYLOAD WARNING (R)	GPC	FCS (R) SATURATION	OMS KIT	OMS TVC (R)
PAYLOAD CAUTION	PRIMARY CW	FCS CHANNEL	MPS (R)	—————
BACKUP C/W ALARM (R)	APU TEMP	APU OVERSPEED	APU UNDERSPEED	HYDPRESS

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Caution and Warning Annunciator Matrix on Panel F7

The 39 lights shown are dedicated to the primary C/W System. The BACKUP C/W ALARM light is dedicated to the entire backup C/W system. (R) signifies a red warning light.

Figure B-112. Diagram of the CWS forty-light array, flight deck.
 Source: USA, *Shuttle Crew Operation Manual*, 2.2-3.



Ku-Band Deployed Assembly Location

Figure B-113. Diagram of the Ku-band antenna location.
Source: USA, *Shuttle Crew Operation Manual*, 2.4-14.

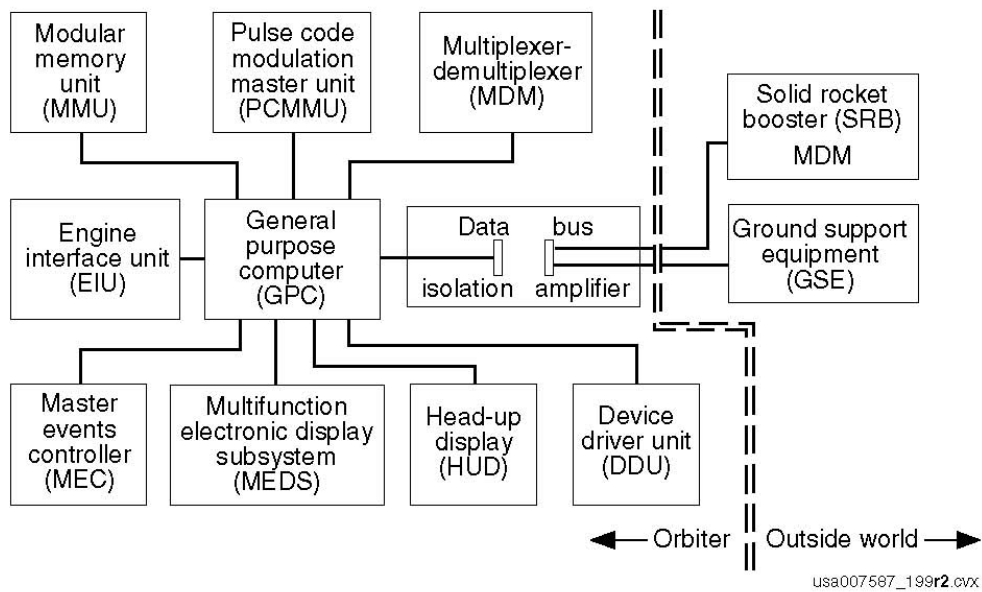


Figure B-114. Diagram of the DPS interfacing hardware.
Source: USA, *Shuttle Crew Operation Manual*, 2.6-1.

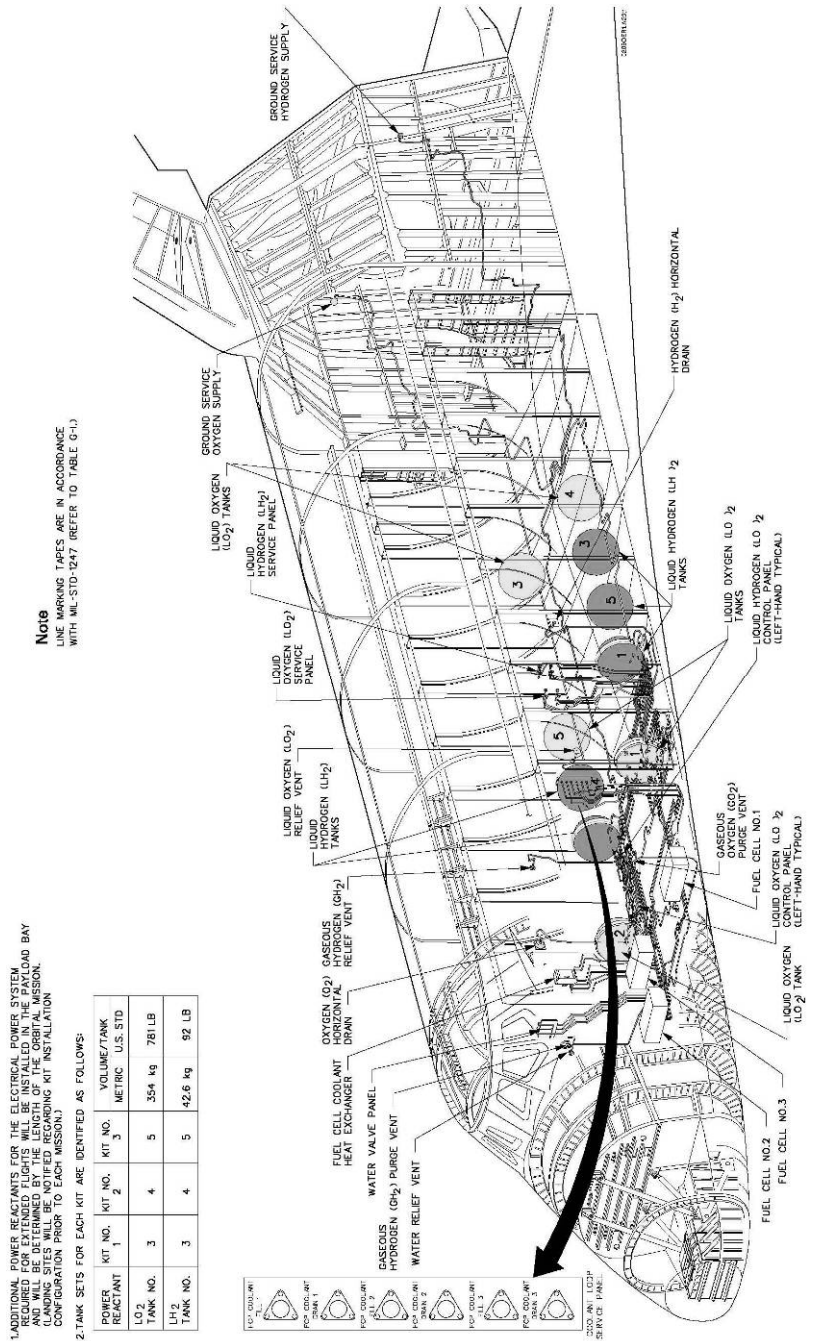


Figure B-115. Diagram of the electrical power system.
 Source: NASA, Shuttle Operational Data Book, Volume 4, part 1, Figure 2-9.

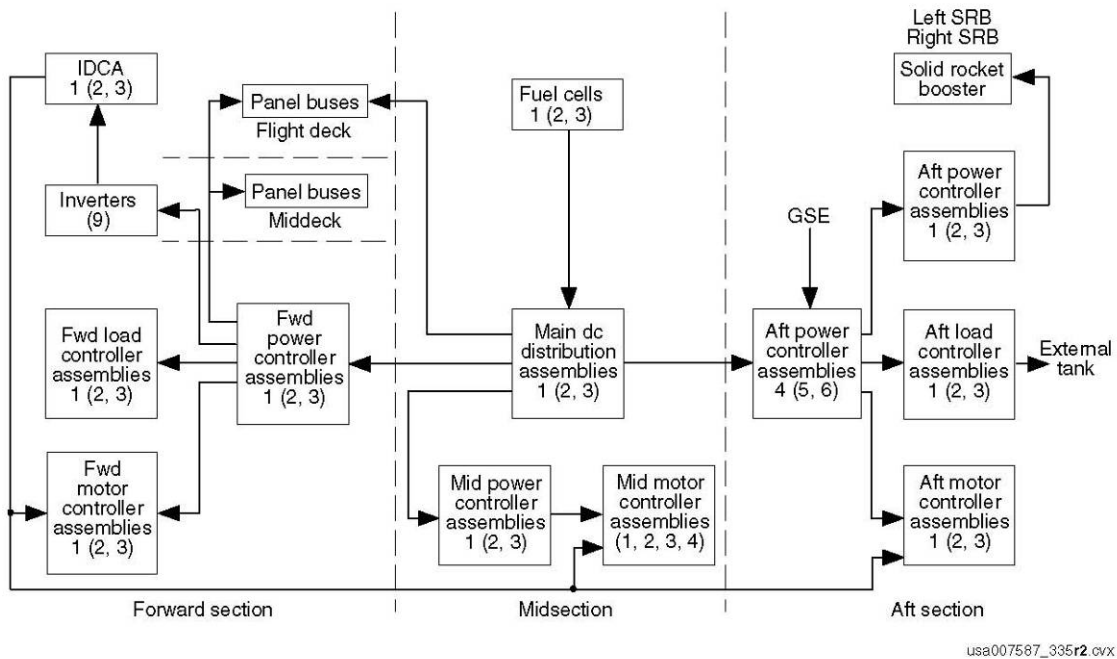


Figure B-116. Block diagram of the EPS power distribution system.
 Source: USA, *Shuttle Crew Operation Manual*, 2.8-22.

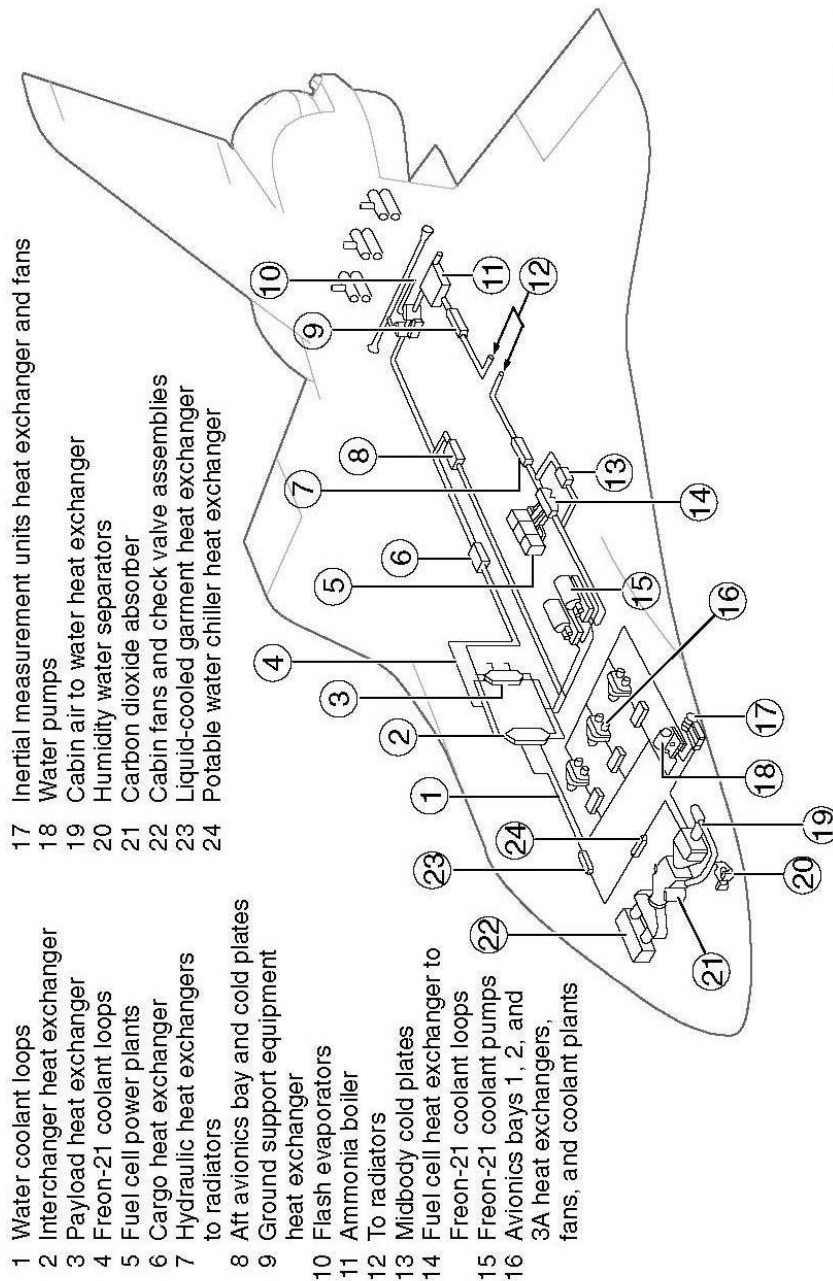
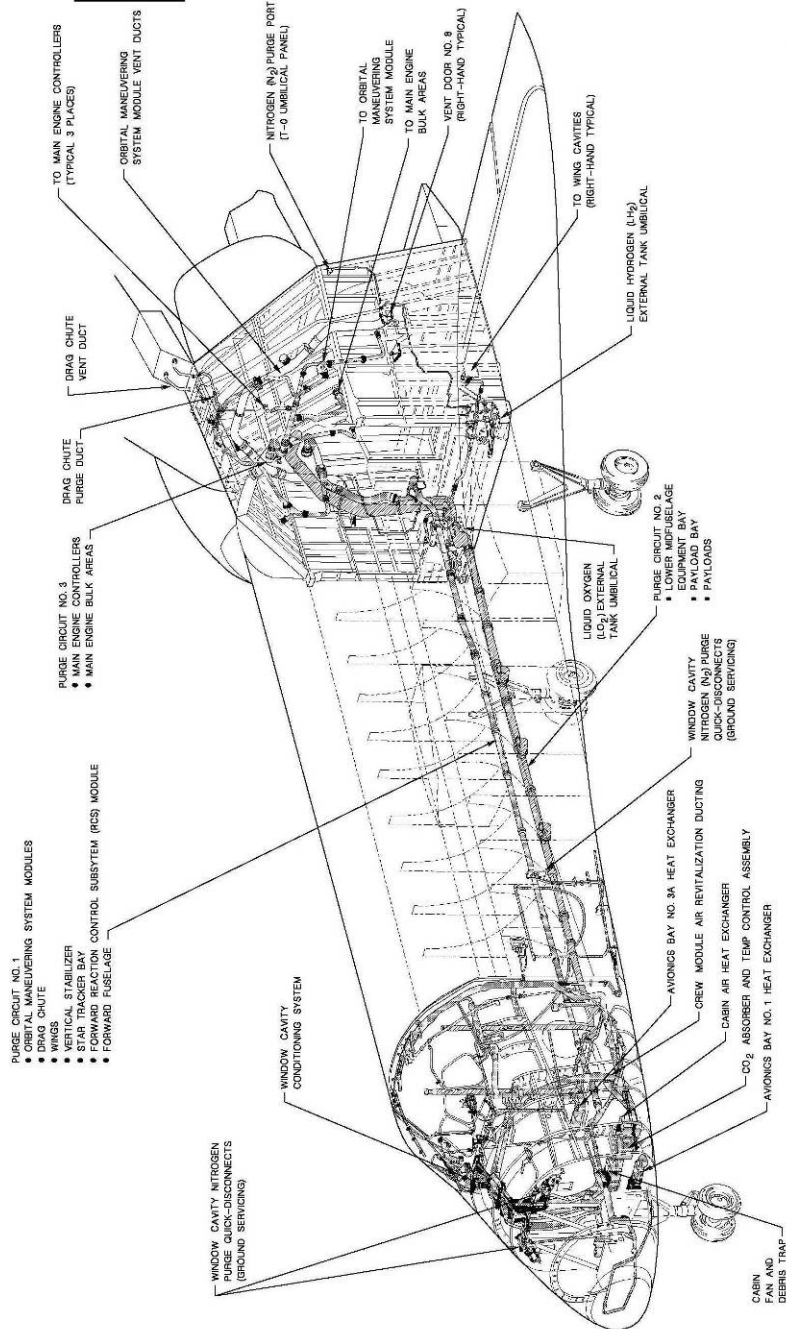


Figure B-117. Diagram of the ECLSS.
 Source: USA, *Shuttle Crew Operation Manual*, 2.9-1.



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Figure B-118. Diagram of the ECLSS, purge, conditioning, air revitalization ducting.
 Source: NASA, *Shuttle Operational Data Book*, Volume 4, part 1, Figure 2-10a.

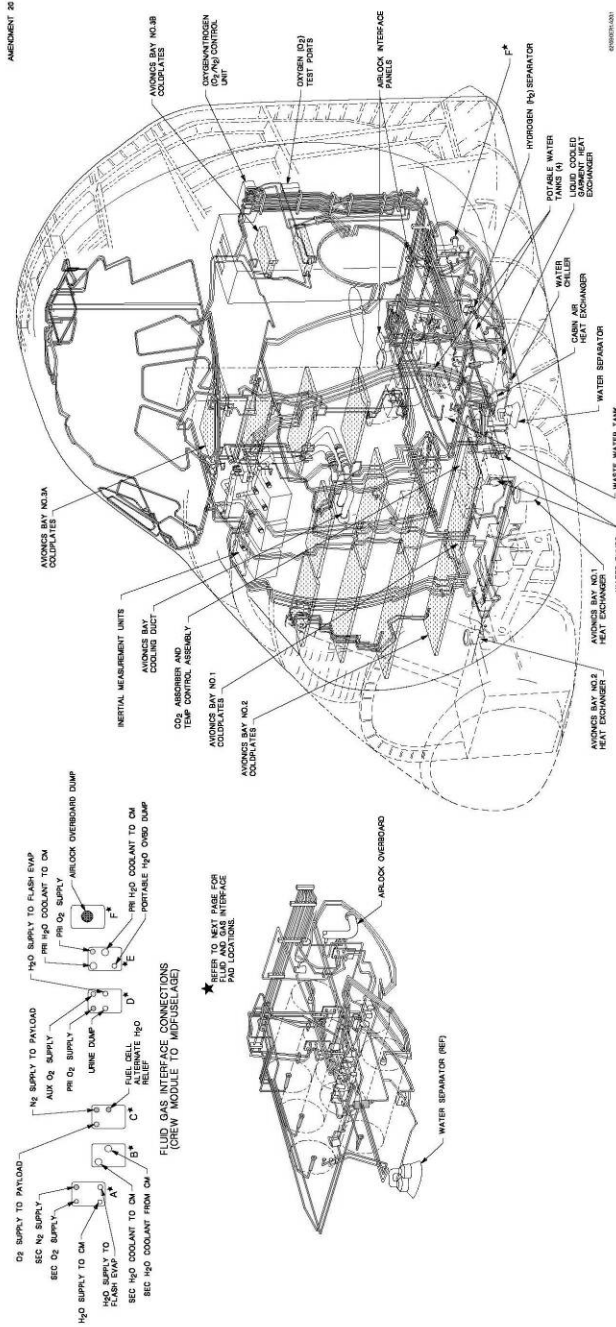
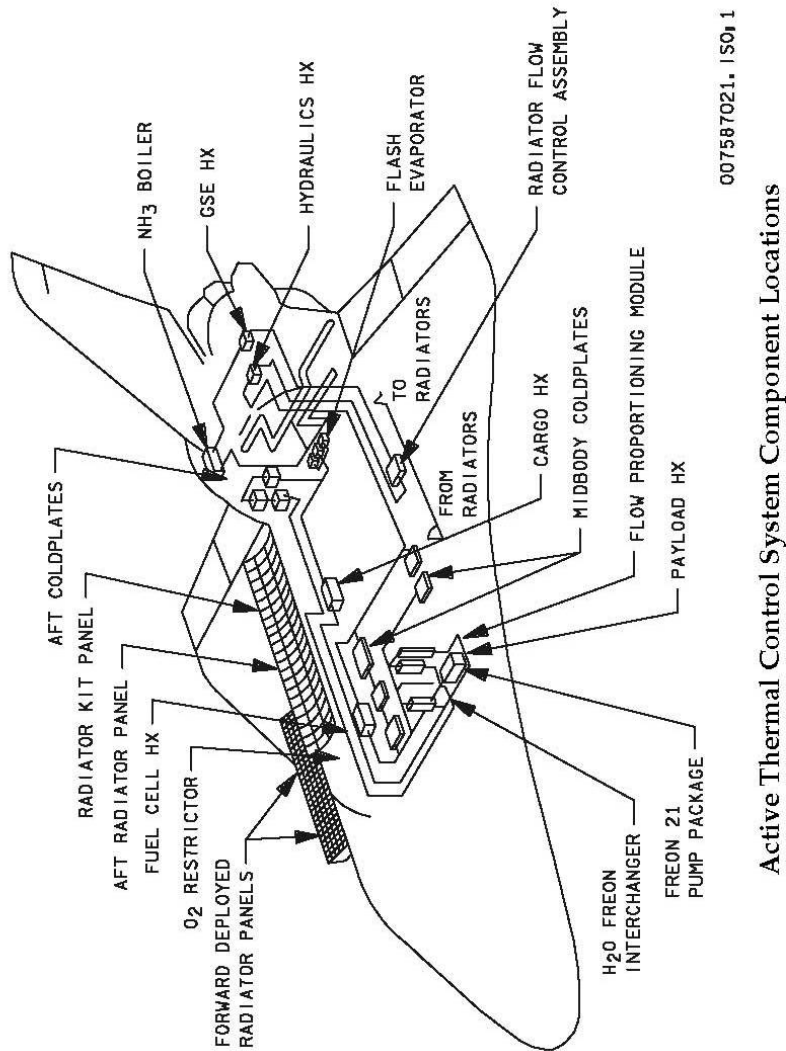


Figure B-119. Diagram of the ECLSS, forward fuselage, coolant and air revitalization components.

Source: NASA, *Shuttle Operational Data Book*, Volume 4, part 1, Figure 2-10b.



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Active Thermal Control System Component Locations

Figure B-121. Diagram of the ECLSS, active thermal control system.
 Source: USA, *Shuttle Crew Operation Manual*, 2.9-23.

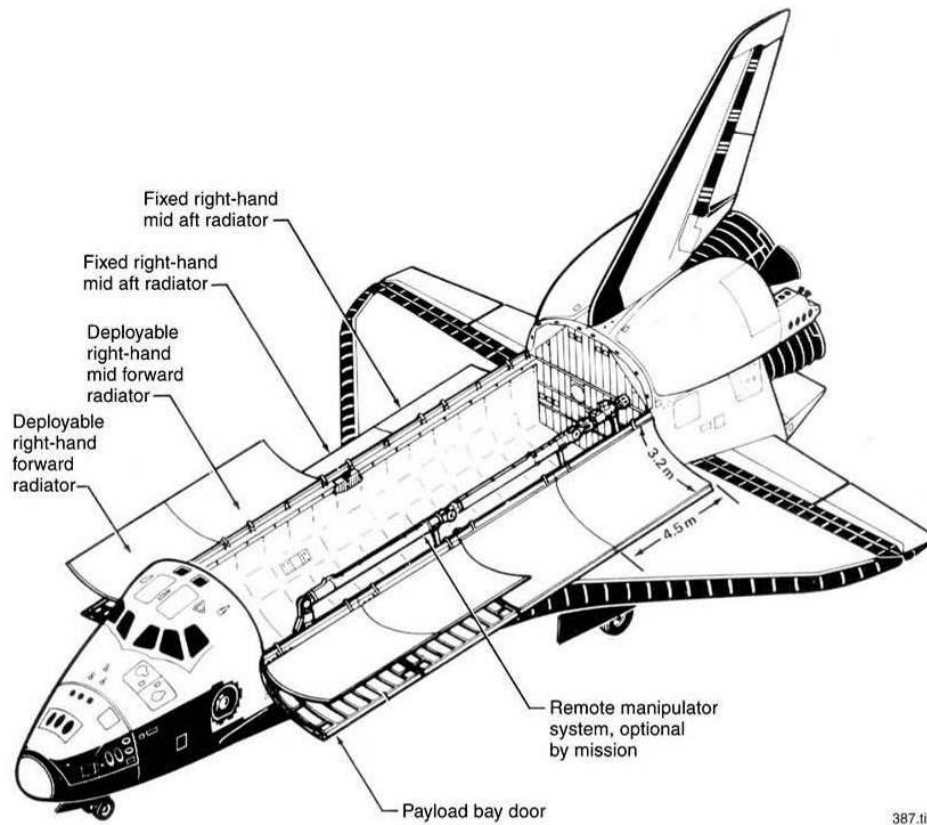


Figure B-122. Diagram of the ECLSS, active thermal control system radiators.
Source: USA, *Shuttle Crew Operation Manual*, 2.9-27.

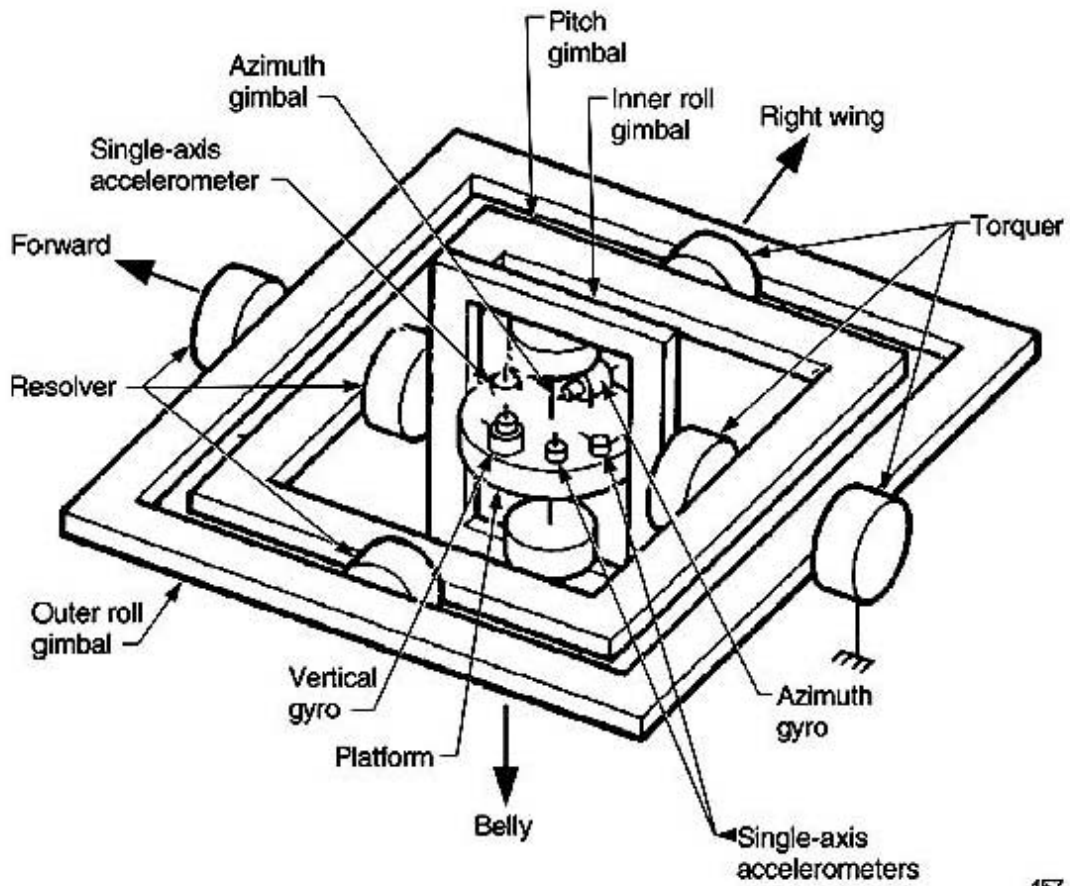


Figure B-123. Diagram of an inertial measurement unit.
Source: USA, *Shuttle Crew Operation Manual*, 2.13-7.

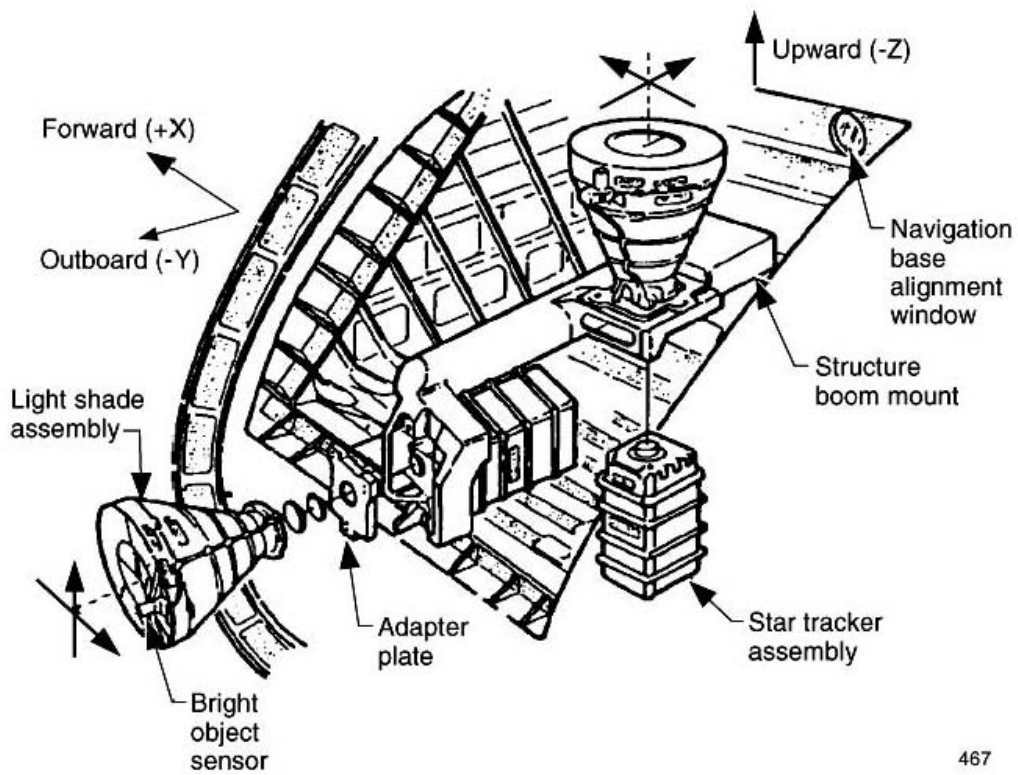


Figure B-124. Diagram of the star trackers.
Source: USA, *Shuttle Crew Operation Manual*, 2.13-14.

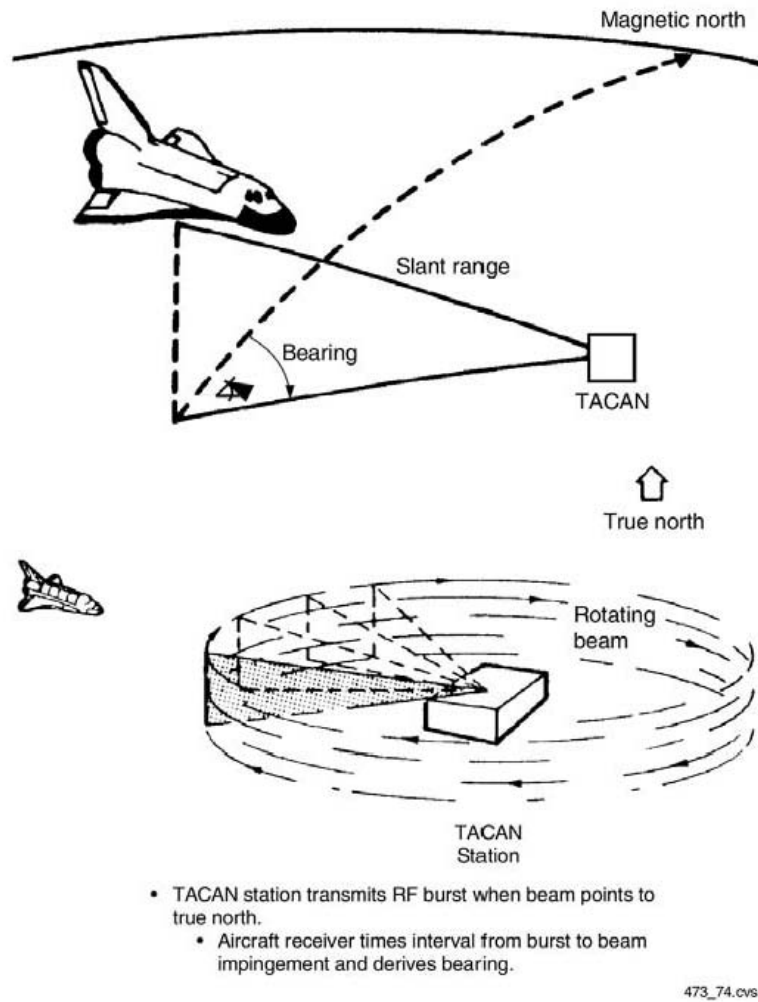


Figure B-125. Diagram of the TACAN system.
Source: USA, *Shuttle Crew Operation Manual*, 2.13-16.

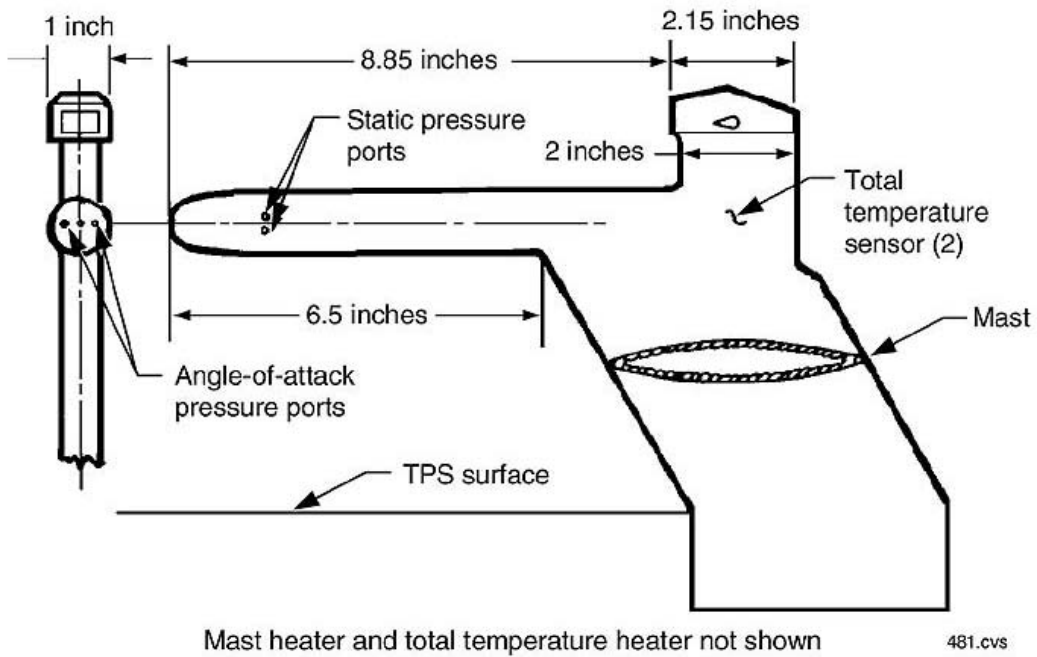


Figure B-126. Diagram of an air data probe.
Source: USA, *Shuttle Crew Operation Manual*, 2.13-23.

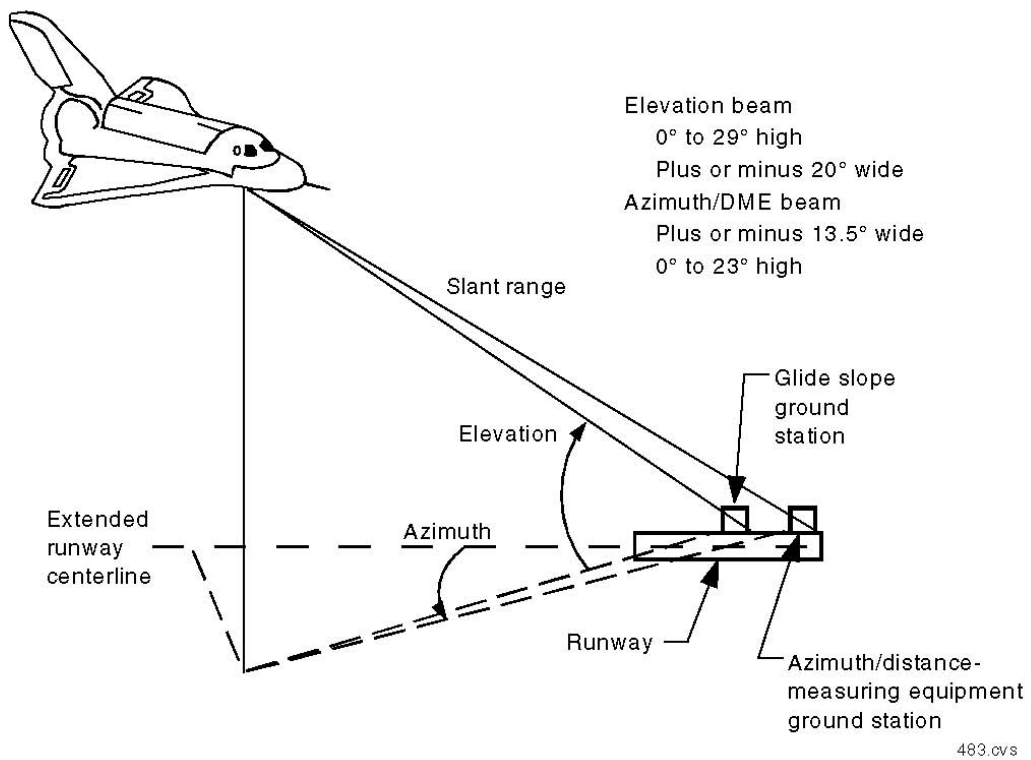


Figure B-127. Diagram of the microwave landing system.
Source: USA, *Shuttle Crew Operation Manual*, 2.13-25.

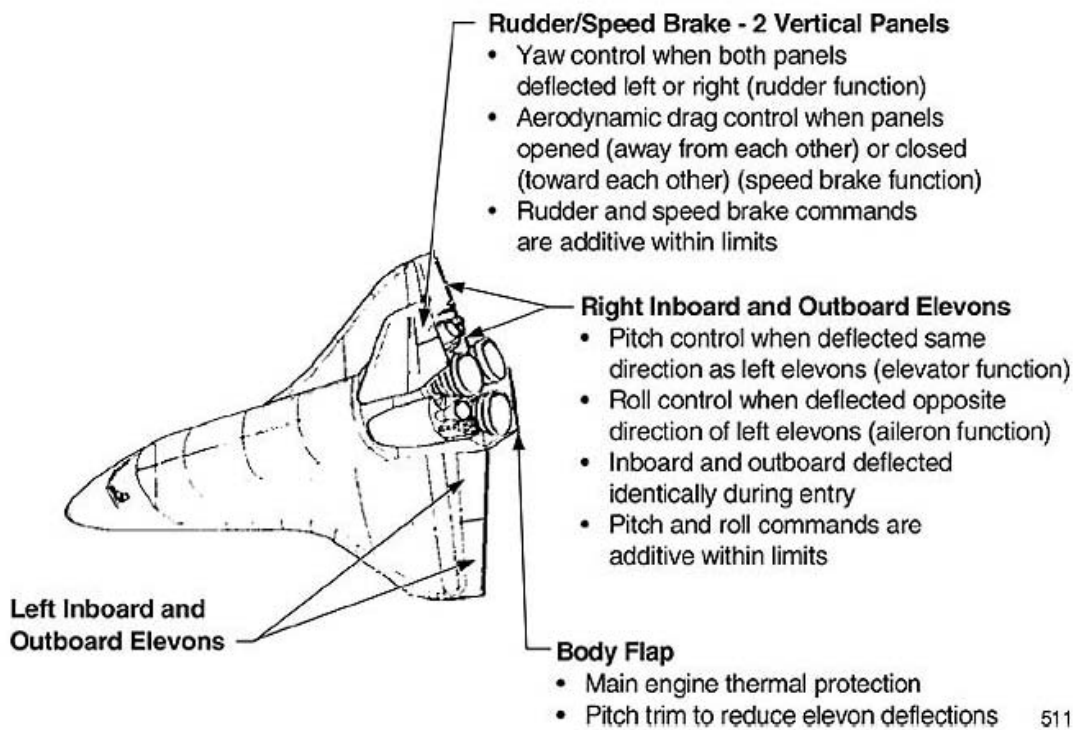
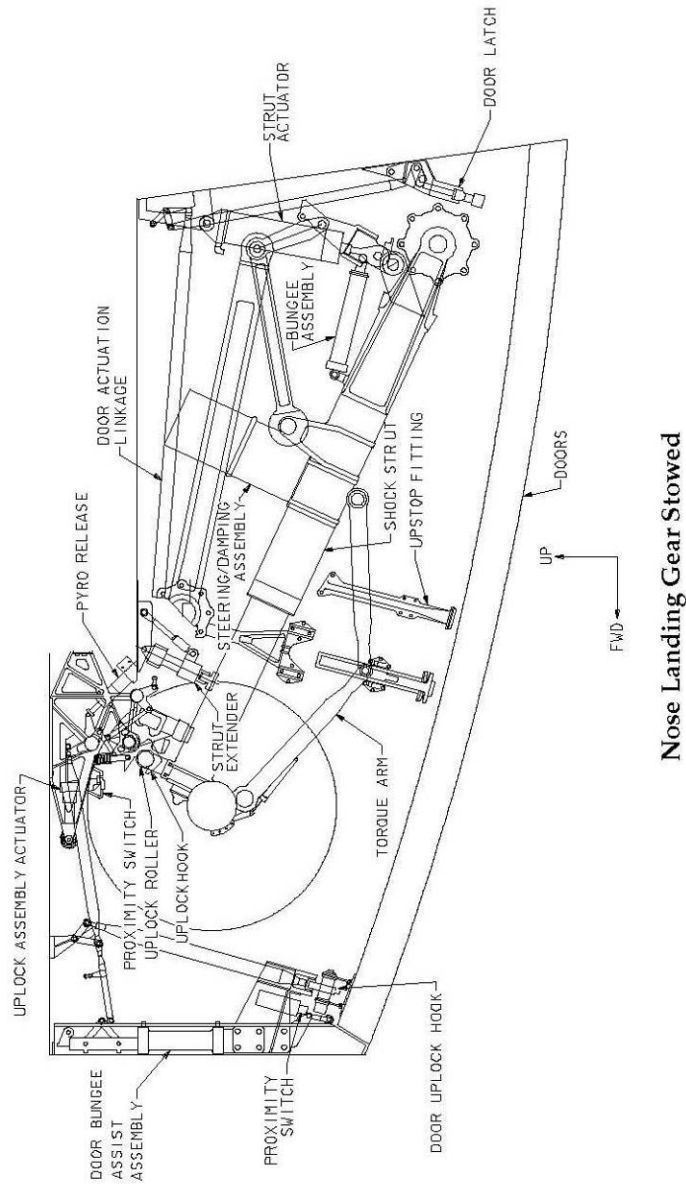
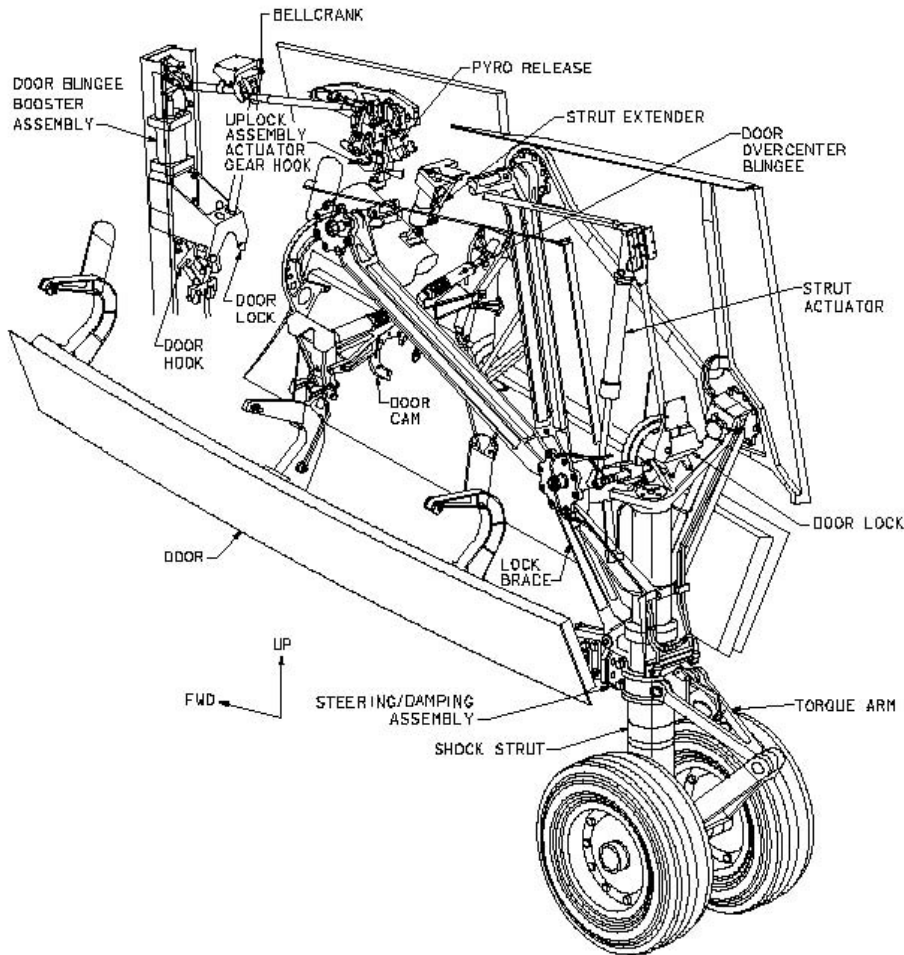


Figure B-128. Diagram of aerodynamic surfaces.
Source: USA, *Shuttle Crew Operation Manual*, 2.13-42.



Nose Landing Gear Stowed

Figure B-129. Illustration showing the Nose Landing Gear in its stowed position.
 Source: USA. *Shuttle Crew Operations Manual*, 2.14-3.



Nose Landing Gear Deployed

Figure B-130. Illustration showing the Nose Landing Gear in its deployed position.
Source: USA. *Shuttle Crew Operations Manual*, 2.14-2.

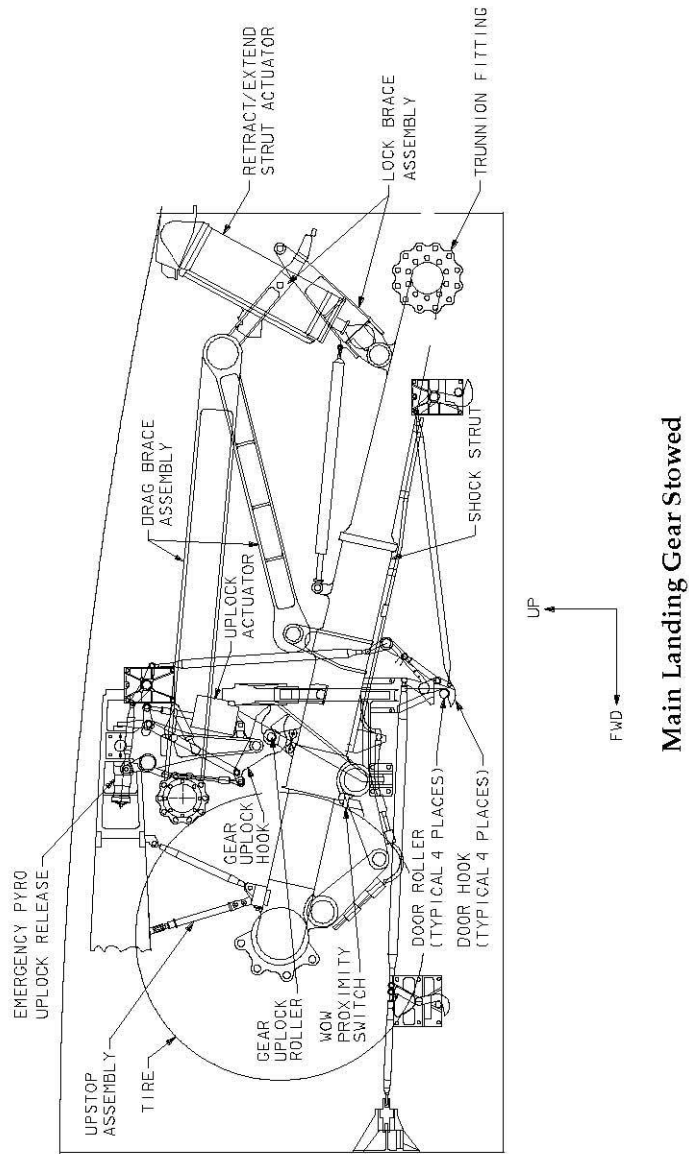
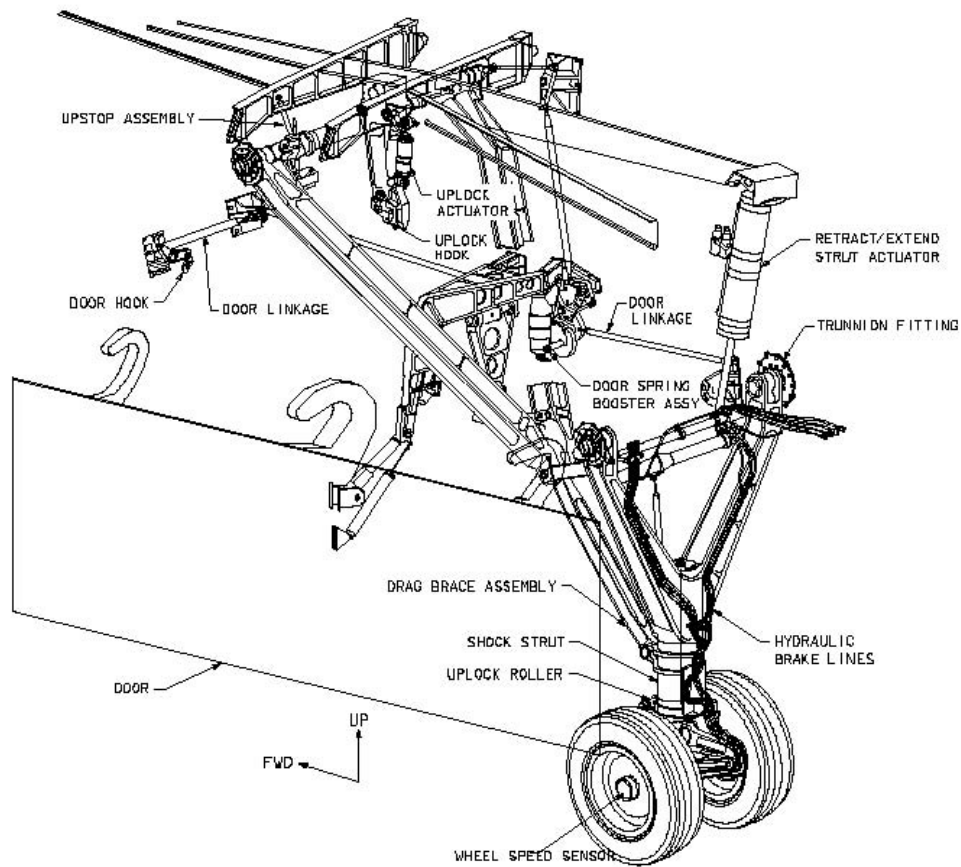
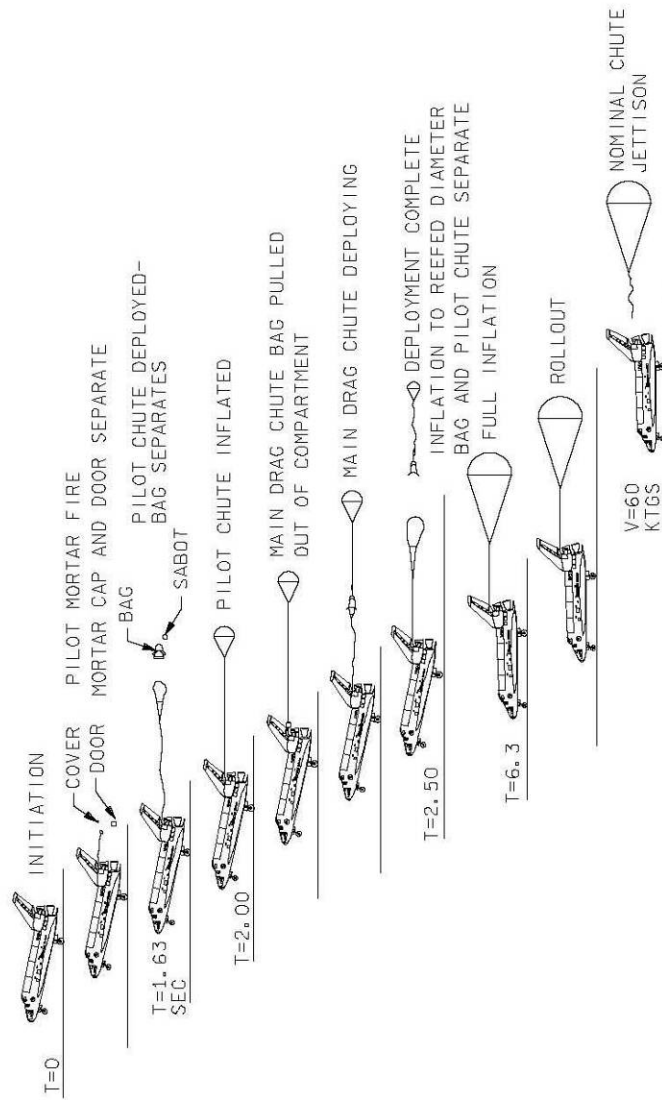


Figure B-131. Illustration showing the Main Landing Gear in its stowed position.
Source: USA. *Shuttle Crew Operations Manual*, 2.14-4.



Main Landing Gear Deployed

Figure B-132. Illustration showing the Main Landing Gear in its deployed position.
Source: USA. *Shuttle Crew Operations Manual*, 2.14-2.



Nominal Sequence of Drag Chute Deployment, Inflation, and Jettison

Figure B-133. Illustration showing the deployment of the Drag Chute.
 Source: USA. *Shuttle Crew Operations Manual*, 2.14-5.

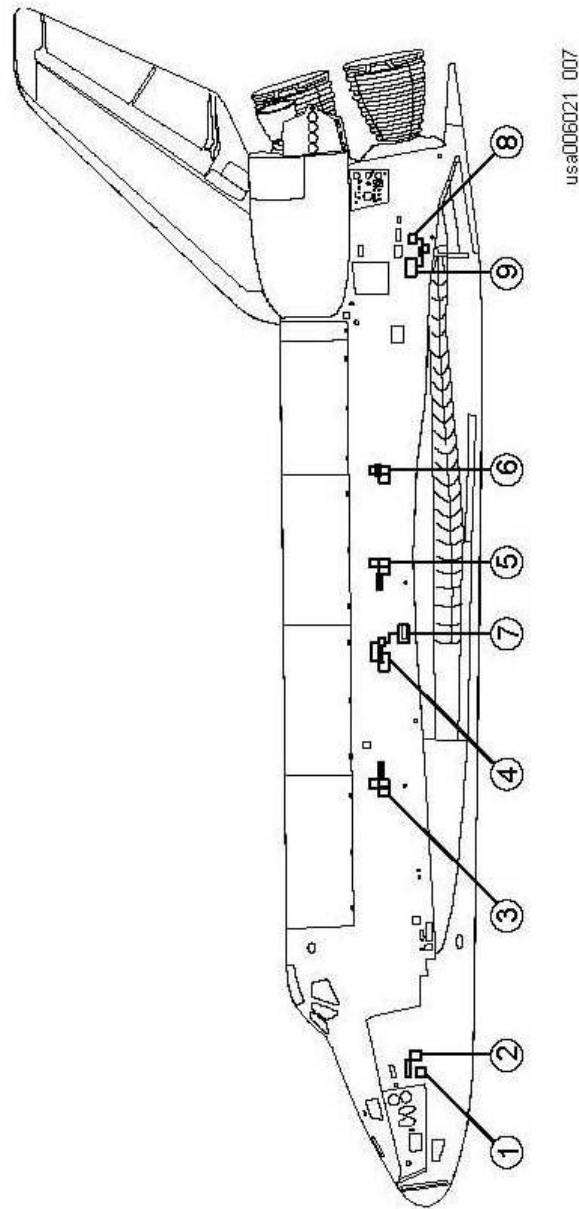
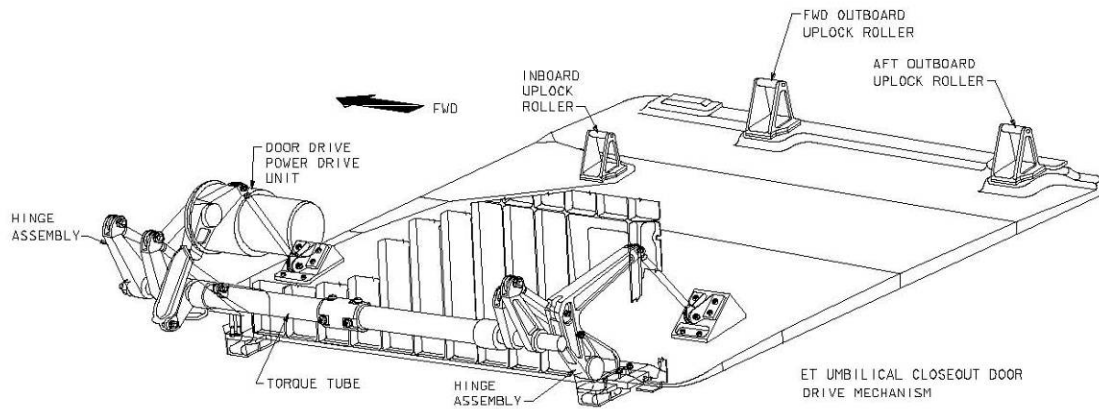
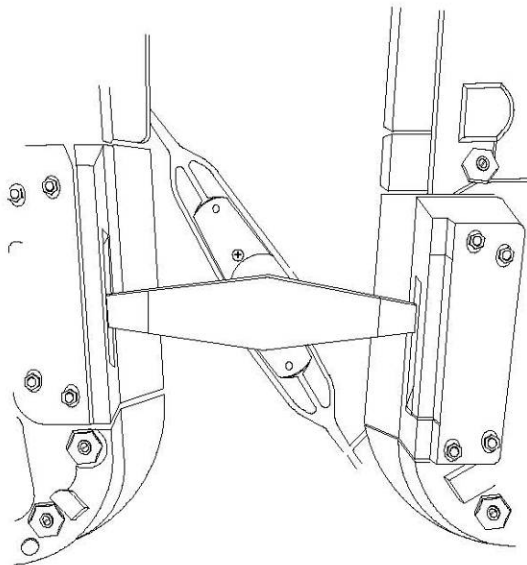


Figure B-134. Diagram of the active vent system.
Source: USA. *Mechanical Systems Training Manual*, 2-3.



Right Side ET Umbilical Door



Centerline Latch Movement

Figure B-135. Diagram of the ET umbilical door.
Source: USA. *Shuttle Crew Operations Manual*, 2.17-6.

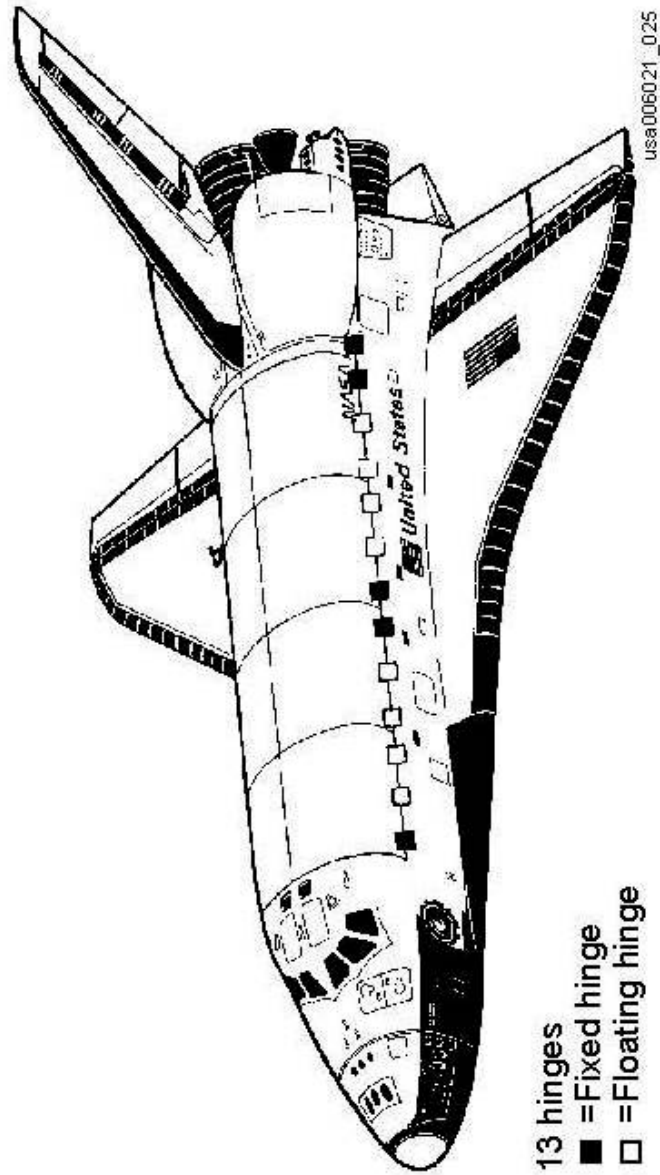


Figure B-136. Diagram showing the payload bay door hinges.
Source: USA. *Mechanical Systems Training Manual*, 4-2.

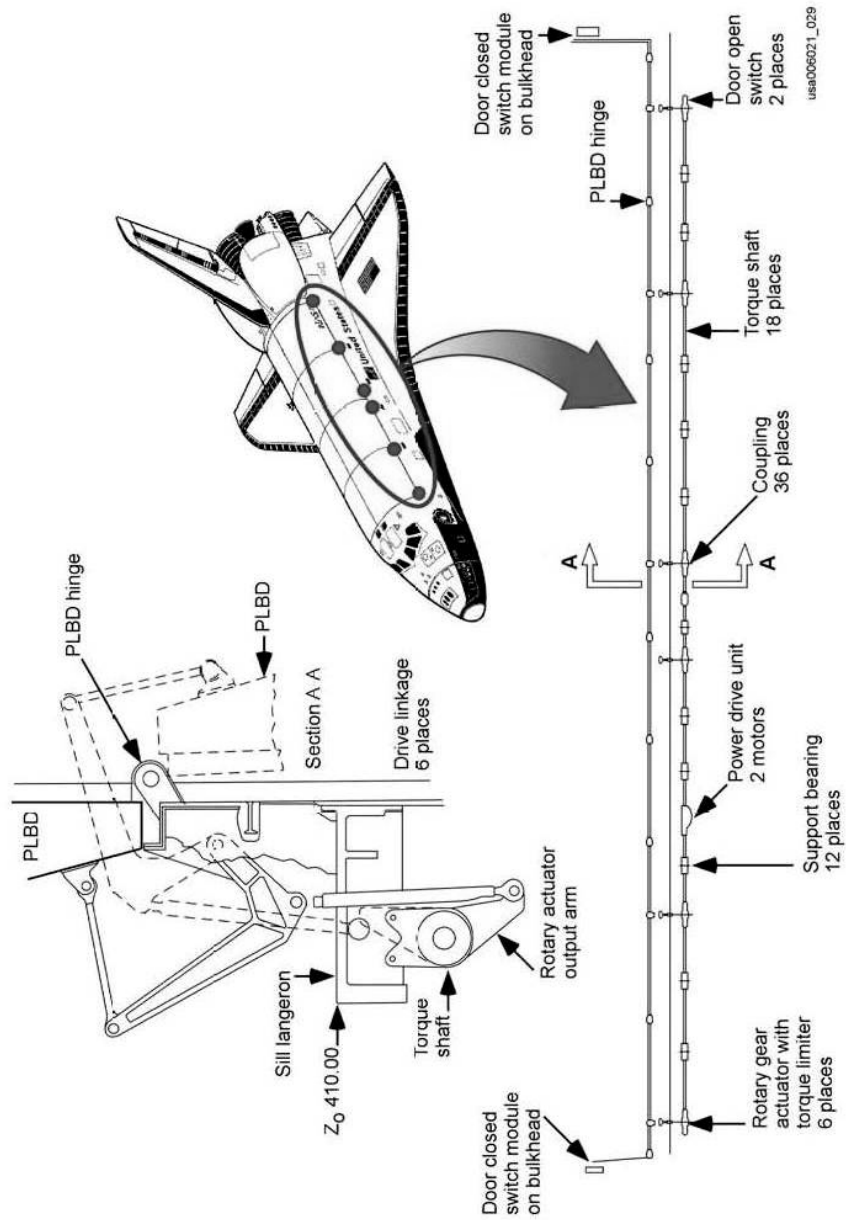


Figure B-137. Diagram showing the payload bay door drive system.
 Source: USA. *Mechanical Systems Training Manual*, 4-5.

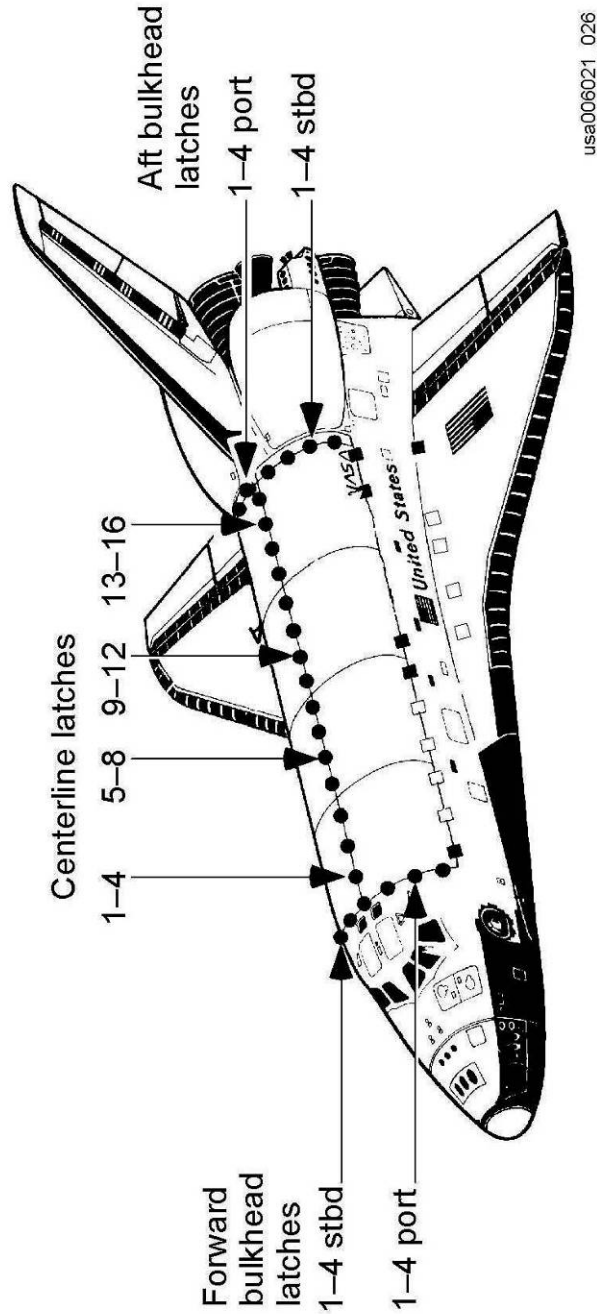


Figure B-138. Diagram showing the payload bay door latches.
Source: USA. *Mechanical Systems Training Manual*, 4-3.

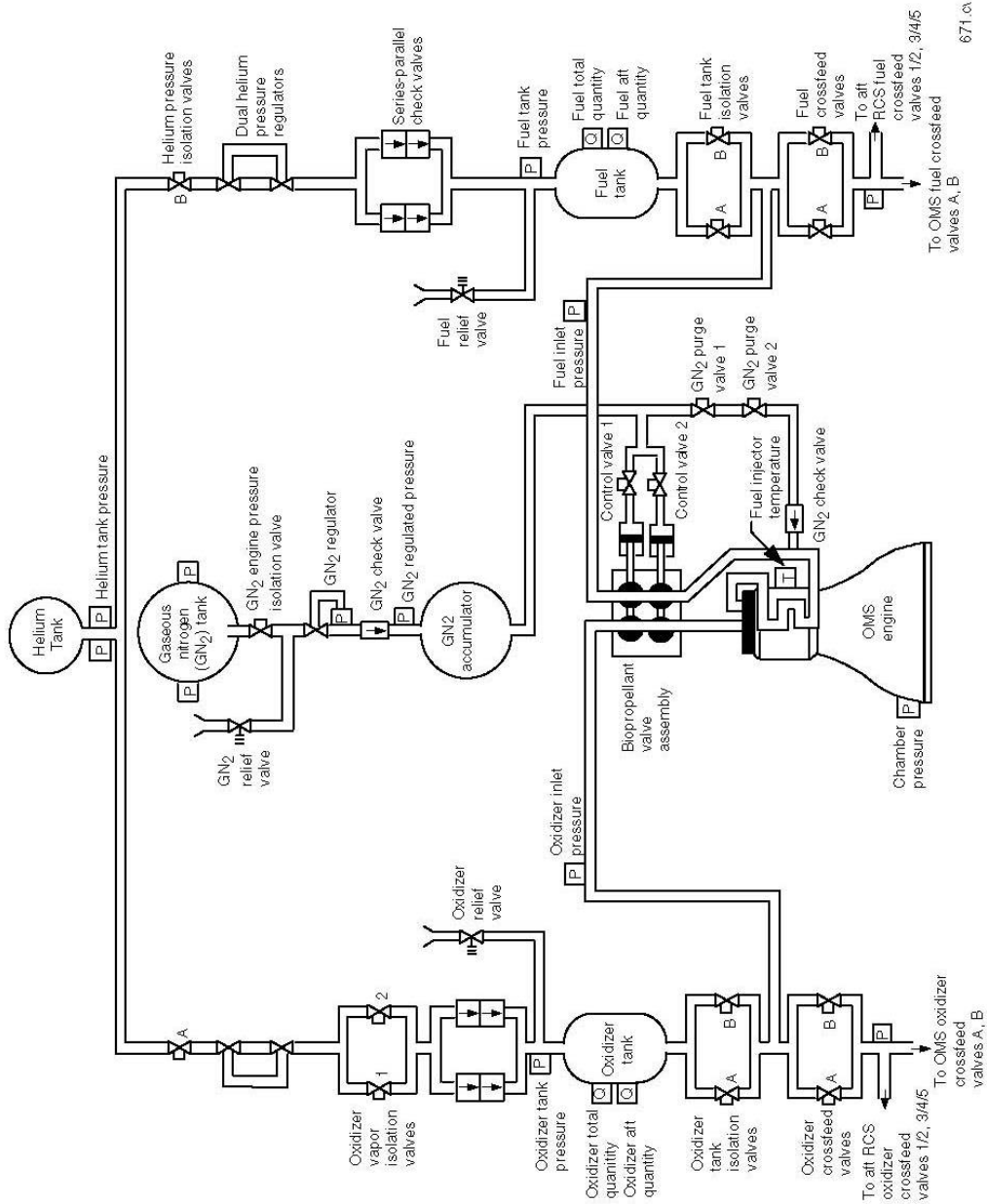
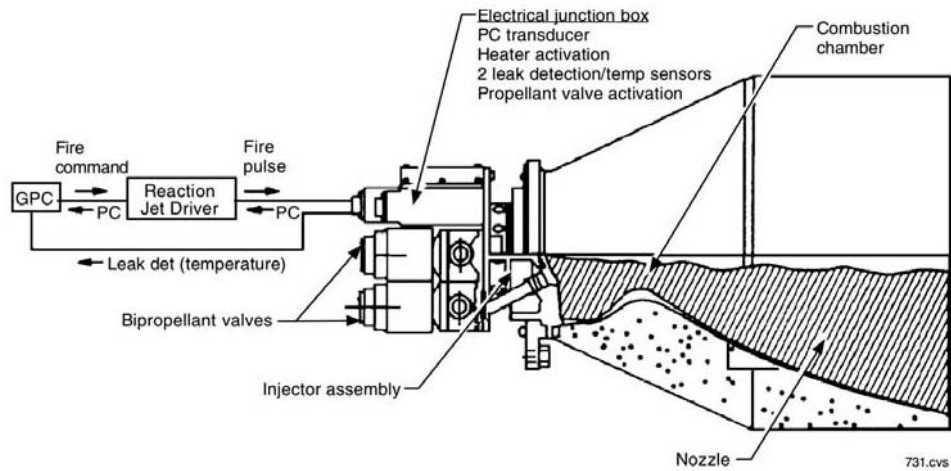
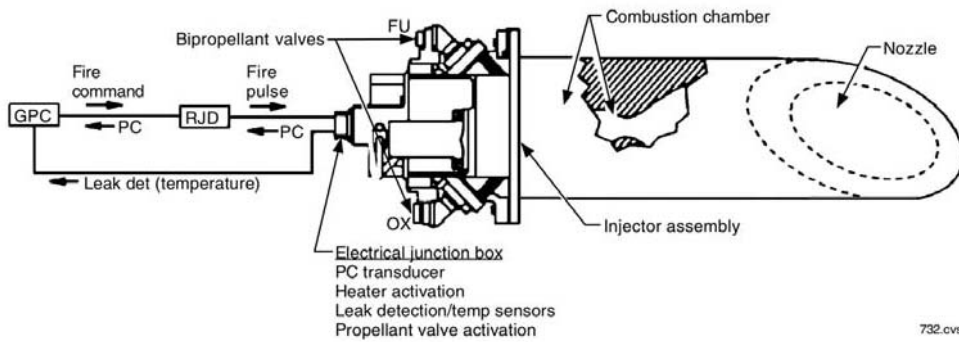


Figure B-139. Diagram of the pressurization and feed system for one OMS engine (the other is identical).

Source: USA. *Shuttle Crew Operations Manual*, 2.18-12.



Primary Jet



Vernier Jet

Figure B-140. Diagram of the RCS primary and vernier thrusters (also called jets).
 Source: USA. *Shuttle Crew Operations Manual*, 2.22-4.

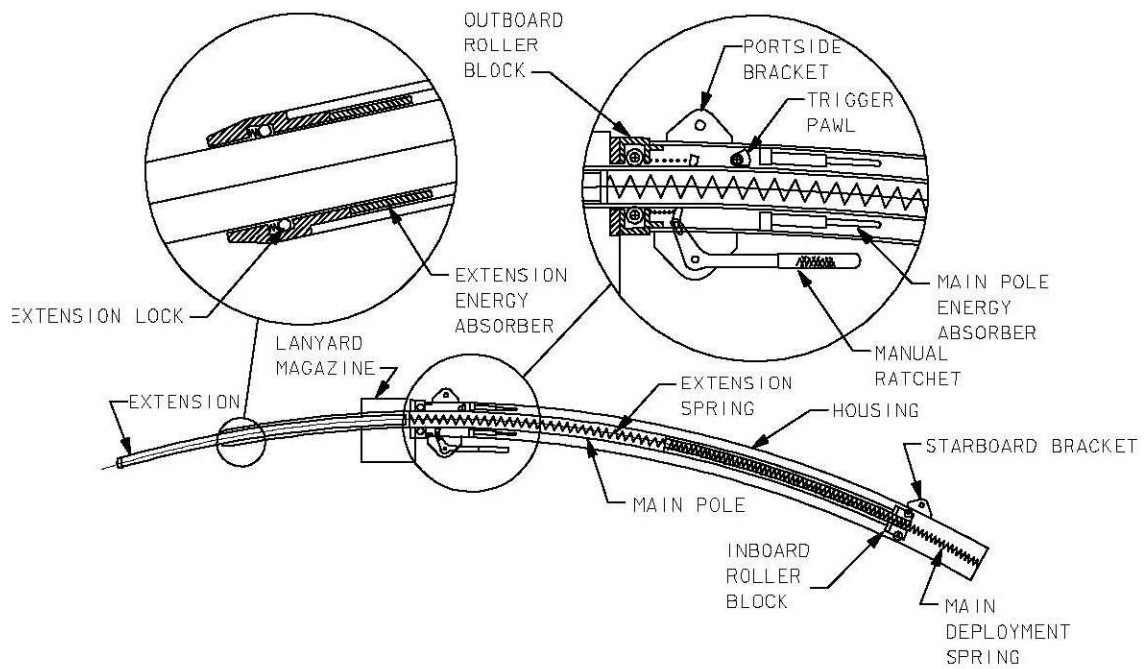


Figure B-141. Diagram of the crew escape pole.
Source: USA. *Shuttle Crew Operations Manual*, 2.10-15.

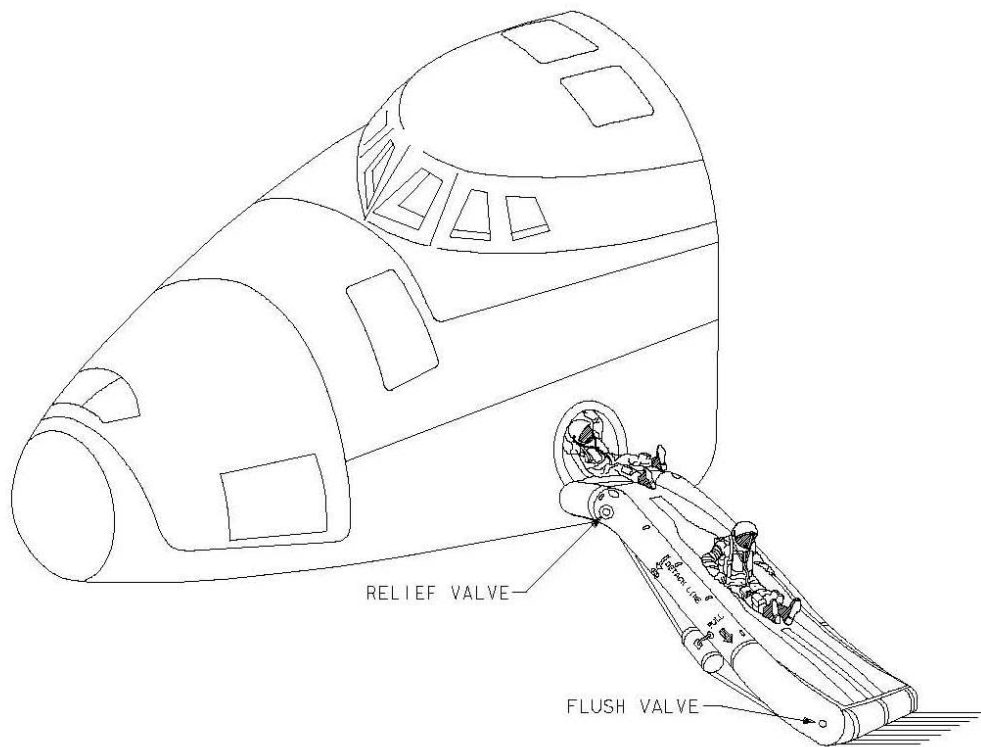


Figure B-142. Diagram of the emergency egress slide.
Source: USA. *Shuttle Crew Operations Manual*, 2.10-14.

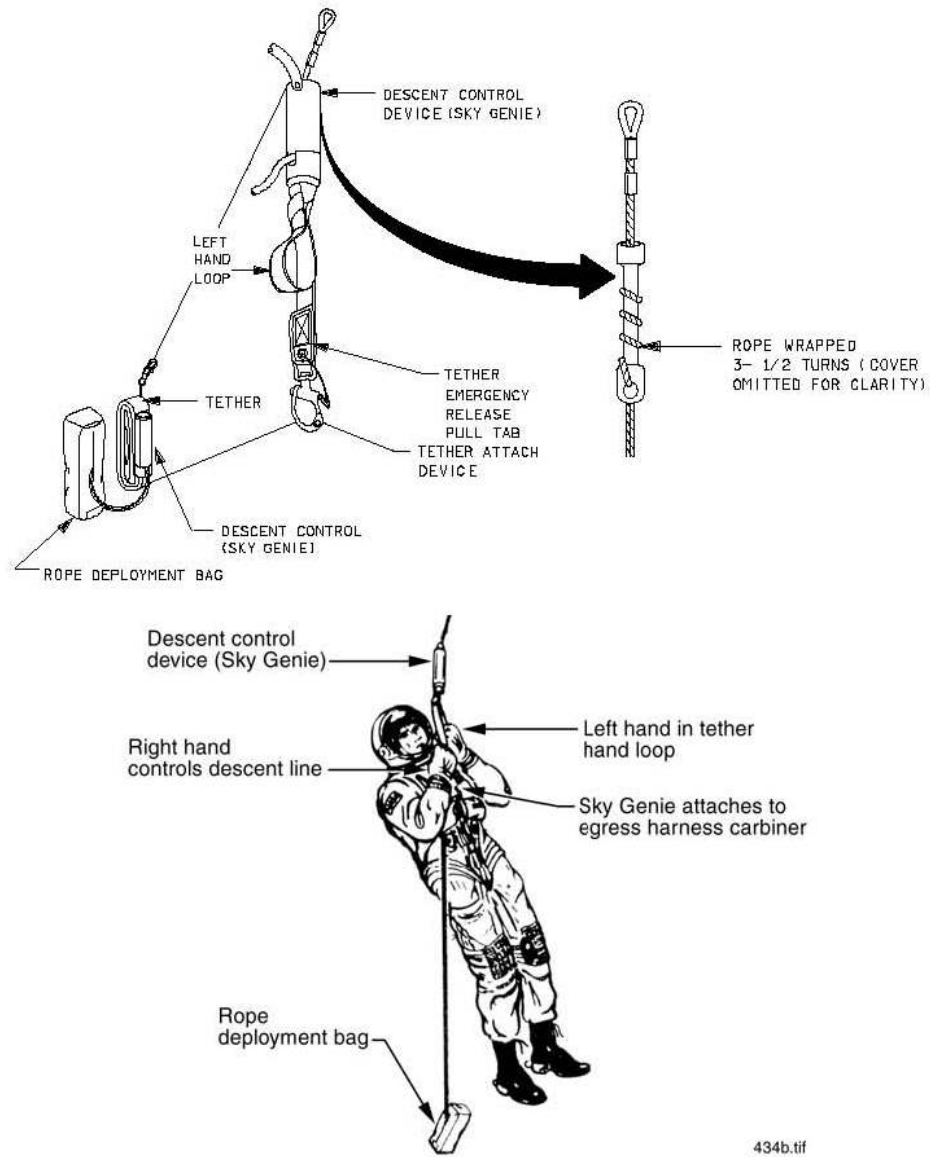
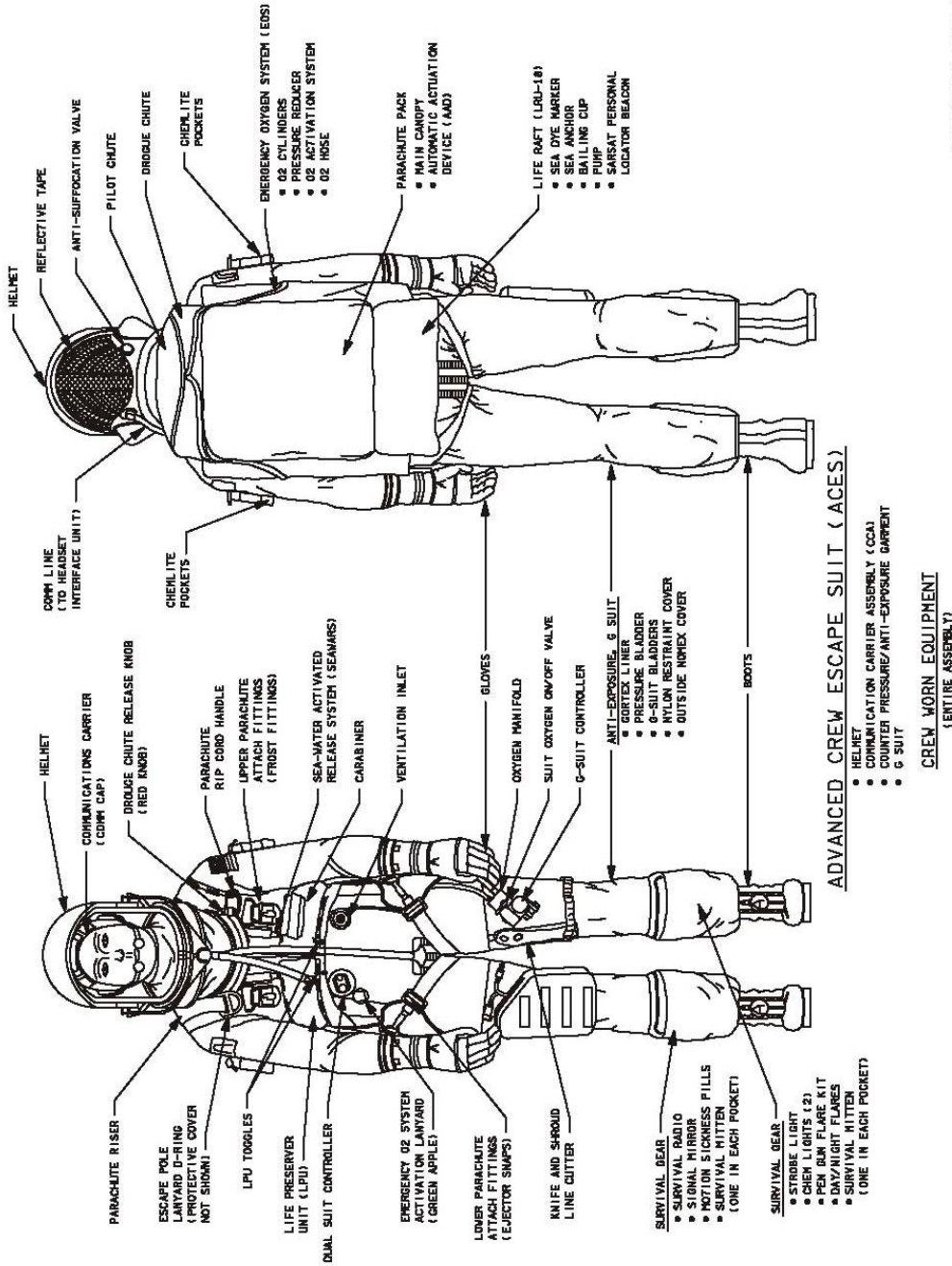


Figure B-143. Diagram of the Sky Genie.
Source: USA. *Shuttle Crew Operations Manual*, 2.10-17.



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Figure B-144. Diagram of the advanced crew escape suit.
 Source: USA. Shuttle Crew Operations Manual, 2.10-5.

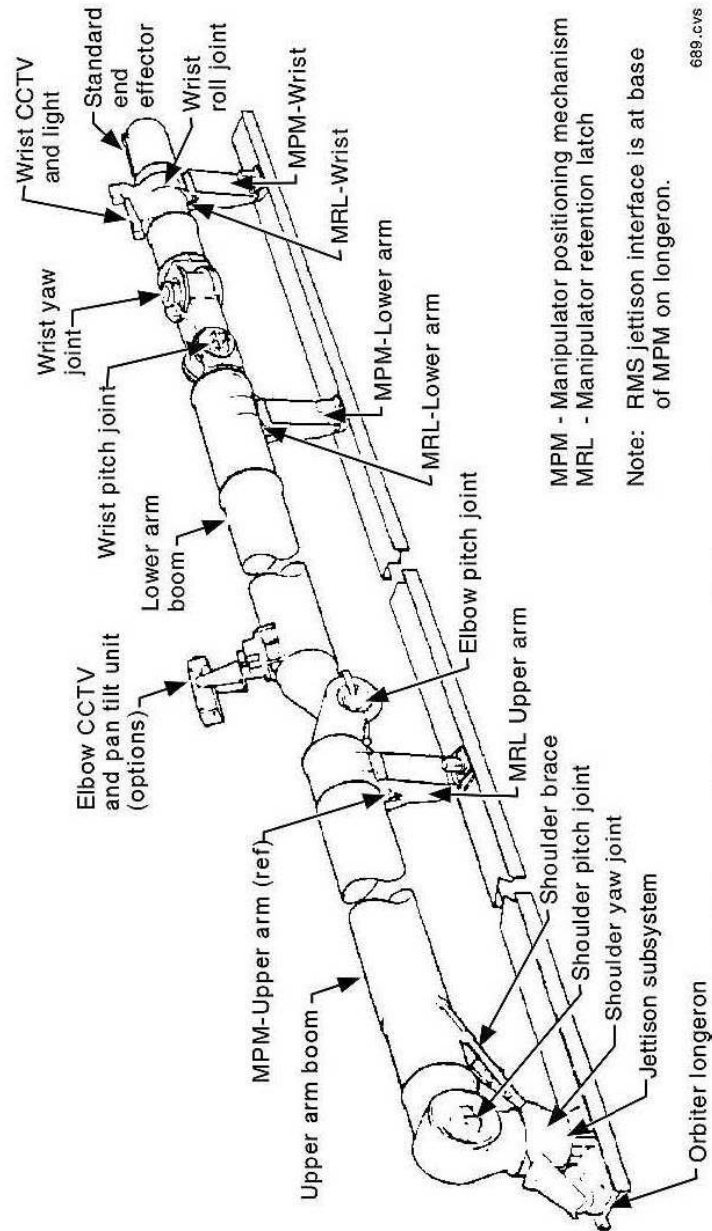


Figure B-145. Diagram of the RMS in its stowed position.
 Source: USA. *Shuttle Crew Operations Manual*, 2.21-1.

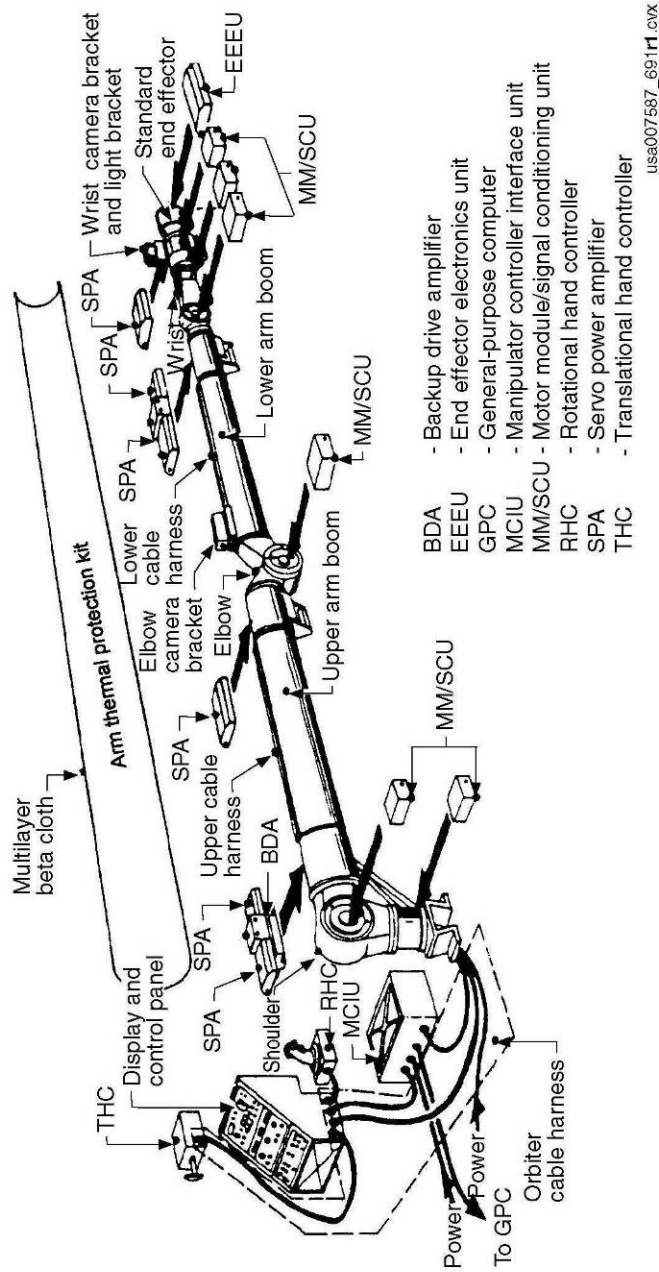


Figure B-146. Diagram showing the components of the RMS.
 Source: USA. *Shuttle Crew Operations Manual*, 2.21-3.

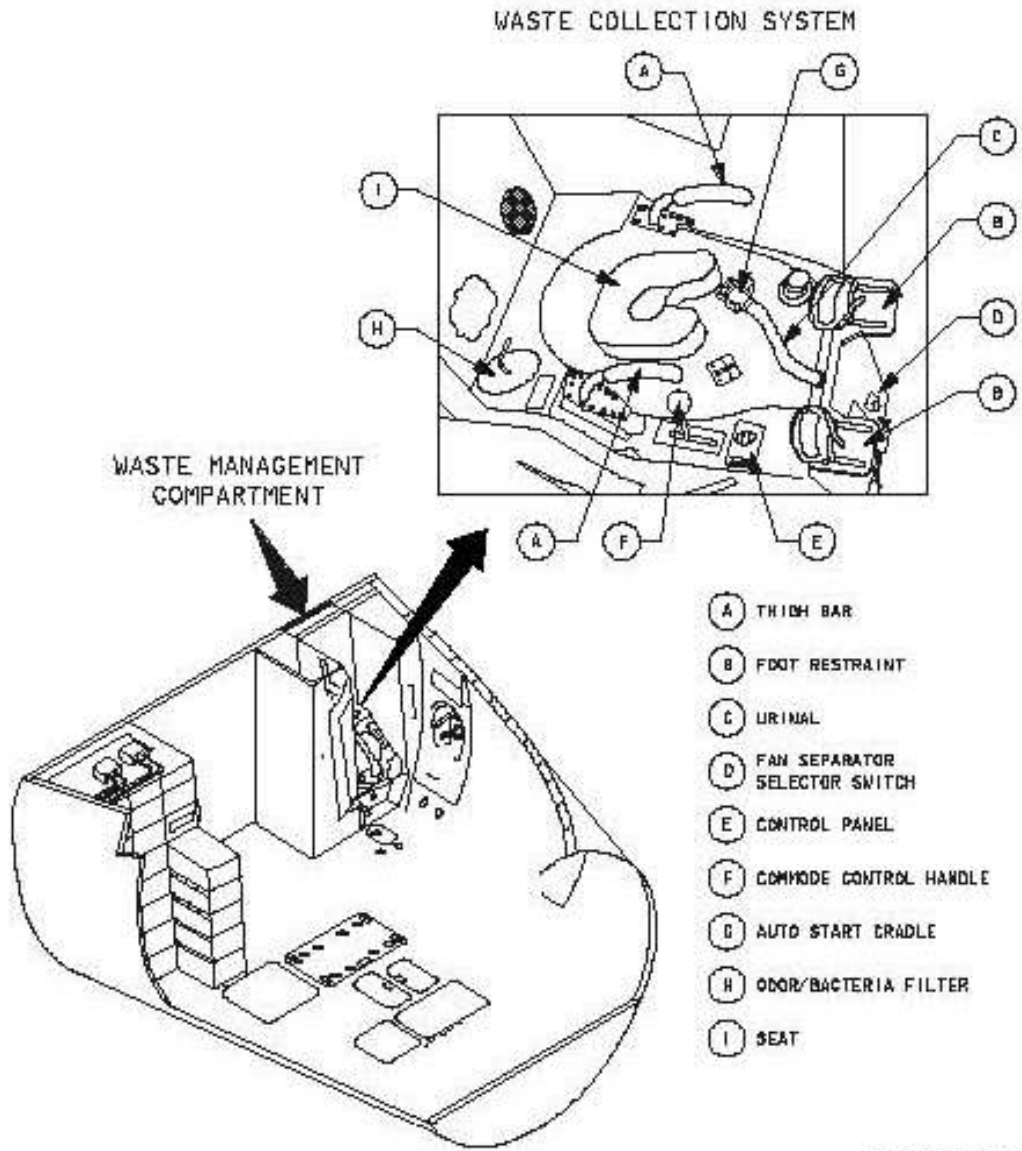


Figure B-147. Diagram of the waste management system.
 Source: USA. *Shuttle Crew Operations Manual*, 2.25-3.

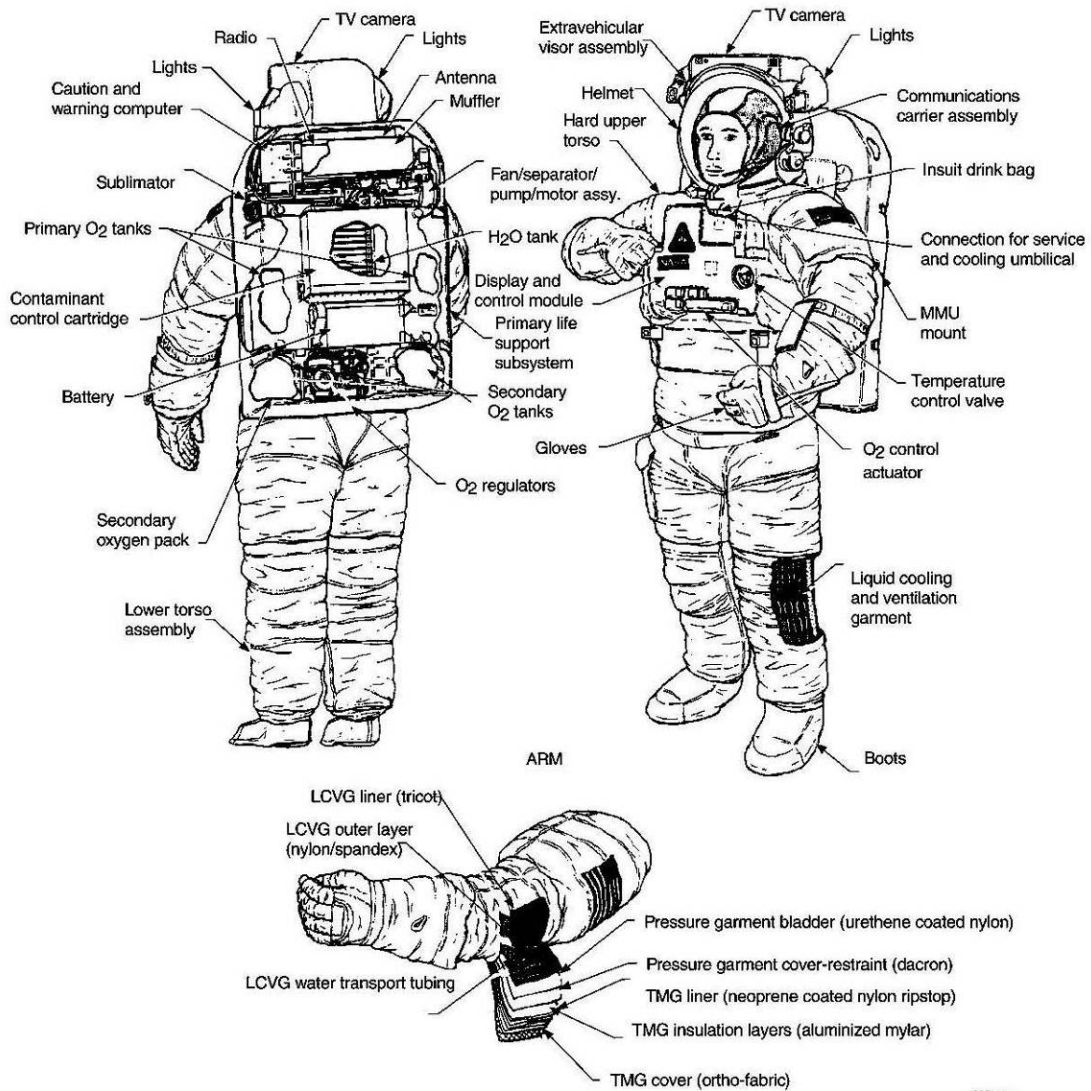


Figure B-148. Diagram of the extravehicular mobility unit.
 Source: USA. *Shuttle Crew Operations Manual*, 2.11-2.