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Introduction

The space shuttle may seem ungainly – what do you expect from a craft that traces its lineage back to a prototype nicknamed "the flying bathtub"? But since 1981 the shuttle has been the workhorse of the American space program.

Click on the chapter headings at left for a look at the shuttle's history, and details on each mission.



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1981-1984 A flood of firsts

Columbia's flight in April 1981 kicks off a testing period that notches one milestone after another.

STS-1 - Columbia: April 12-14, 1981. First shuttle flight. **Crew:** Young, Crippen.

STS-2 - Columbia: Nov. 12-14, 1981. First tests of robot arm. **Crew:** Engle, Truly.

STS-3 - Columbia: March 22-30, 1982. Only landing in New Mexico. **Crew:** Lousma, Fullerton.

STS-4 - Columbia: June 27-July 4, 1982. First classified payload. **Crew:** Mattingly, Hartsfield.

STS-5 - Columbia: Nov. 11-16, 1982. First commercial satellite deployment. **Crew:** Brand, Overmyer, Allen, Lenoir.

STS-6 - Challenger: April 4-9, 1983. First shuttle spacewalk. **Crew:** Weitz, Bobko, Peterson, Musgrave.

STS-7 - Challenger: June 18-24, 1983. First U.S. woman astronaut (Ride). **Crew:** Crippen, Hauck, Ride, Fabian, Thagard.

STS-8 - Challenger: Aug. 30-Sept. 5, 1983. First night launch and landing, first black astronaut (Bluford). **Crew:** Truly, Brandenstein, Bluford, Gardner, Thornton.

STS-9 - Columbia: Nov. 28-Dec. 8, 1983. First Spacelab research mission, first European Space Agency astronaut (Merbold). **Crew:** Young, Shaw, Parker, Garriott

Lichtenberg, Merbold.

41-B - Challenger: Feb. 3-11, 1984. First untethered spacewalk, first Florida landing. **Crew:** Brand, Gibson, McCandless, Steward, McNair.

41-C (STS-13) - Challenger: April 6-13, 1984. First in-orbit satellite repair. **Crew:** Crippen, Scobee, Hart, van Hoften, Nelson.

41-D (STS-14) - Discovery: Aug. 30-Sept. 5, 1984. Three satellites deployed. **Crew:** Hartsfield, Coats, Mullane, Hawley, Resnik, Walker.

41-G (STS-17) - Challenger: Oct. 5-13, 1984. First U.S. woman to walk in space (Sullivan). **Crew:** Crippen, McBride, Leestma, Ride, Sullivan, Scully-Power, Garneau.

51-A - Discovery: Nov. 8-16, 1984. First retrieval of two satellites for return to Earth. **Crew:** Hauck, Walker, Allen, Fisher, Gardner.



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1985-1986 Path to tragedy

Shuttle flights become routine until the shock of the Challenger explosion in January 1986.

51-C – Discovery: Jan. 24-27, 1985. Pentagon mission. **Crew:** Mattingly, Shriver, Onizuka, Buchli, Payton.

51-D – Discovery: April 12-19, 1985. First sitting senator to fly in space (Garn). **Crew:** Bobko, Williams, Hoffman, Griggs, Seddon, Walker, Garn.

51-B – Challenger: April 29-May 6, 1985. Spacelab research mission. **Crew:** Overmyer, Gregory, Lind, Thagard, Thornton, Wang, van den Berg.

51-G – Discovery: June 17-24, 1985. Three communications satellites deployed. **Crew:** Brandenstein, Creighton, Fabian, Nagel, Lucid, Baudry, Al-Sa'ud.

51-F – Challenger: July 29-Aug. 6, 1985. Premature shutdown of one engine required change in orbit. **Crew:** Fullerton, Bridges, Musgrave, England, Henize, Acton, Bartoe.

51-I – Discovery: Aug. 27-Sept. 3, 1985. Satellite retrieved, repaired and redeployed in orbit. **Crew:** Engle, Covey, van Hoften, Fisher, Lounge.

51-J - Atlantis: Oct. 3-7, 1985. Classified Pentagon mission. **Crew:** Bobko, Grabe, Hilmers, Stewart, Pailles.

61-A - Challenger: Oct. 30-Nov. 6, 1985. Spacelab research mission. **Crew:** Hartsfield, Nagel, Buchli, Bluford, Dunbar, Furrer, Ockels, Messerschmid.

61-B - Atlantis: Nov. 26-Dec. 3, 1985. Three satellites deployed, space construction techniques tested. **Crew:** Shaw, O'Conner, Spring, Cleave, Ross, Walker, Neri Vela.

61-C - Columbia: Jan. 12-18, 1986. First U.S. House member in space (Nelson). **Crew:** Gibson, Bolden, Nelson, Hawley, Chang-Diaz, Cenker, Nelson.

51-L - Challenger: Jan. 28, 1986. Shuttle explodes during ascent, killing all aboard, including schoolteacher McAuliffe. **Crew:** Scobee, Smith, Onizuka, Resnik, McNair.

Jarvis, McAuliffe.



NASA

1988-1990 Back in orbit

Two years after Challenger, the shuttles return to work, deploying the Hubble Space Telescope and other probes.

STS-26 - Discovery: Sept. 29-Oct. 3, 1988. Tracking satellite deployed. **Crew:** Hauck, Covey, Lounge, Nelson, Hilmers.

STS-27 - Atlantis: Dec. 2-6, 1988. Classified Pentagon mission. **Crew:** Gibson, Gardner, Mullane, Ross, Shepherd.

STS-29 - Discovery: March 13-18, 1989. Tracking satellite deployed. **Crew:** Coats, Blaha, Buchli, Springer, Bagian.

STS-30 - Atlantis: May 4-8, 1989. Magellan probe to Venus. **Crew:** Walker, Grabe, Thagard, Cleave, Lee.

STS-28 - Columbia: Aug. 8-13, 1989. Classified Pentagon mission. **Crew:** Shaw, Richards, Leestma, Adamson, Brown.

STS-34 - Atlantis: Oct. 18-23, 1989. Galileo probe to Jupiter. **Crew:** Williams, McCulley, Lucid, Baker, Chang-Diaz.

STS-33 - Discovery: Nov. 22-27, 1989. Classified Pentagon mission. **Crew:** Gregory, Blaha, Musgrave, Thornton, Carter.

STS-32 - Columbia: Jan. 9-20, 1990. One satellite deployed, another retrieved. **Crew:** Brandenstein, Wetherbee, Dunbar, Low, Ivins.

STS-36 - Atlantis: Feb. 28-March 4, 1990. Classified Pentagon mission. **Crew:** Creighton, Casper, Hilmers, Mullane, Thuot.

STS-31 - Discovery: April 24-29, 1990. Hubble Space Telescope deployed. **Crew:** Shriver, Bolden, Hawley, McCandless, Sullivan.

STS-41 - Discovery: Oct. 6-10, 1990. Ulysses probe to study sun. **Crew:** Richards, Cabana, Melnick, Shepherd, Akers.

STS-38 - Atlantis: Nov. 15-20, 1990. Classified Pentagon mission. **Crew:** Covey, Culbertson, Springer, Meade, Gemar.

STS-35 - Columbia: Dec. 2-10, 1990. Ultraviolet and X-ray observations from cargo bay. **Crew:** Brand, Gardner, Hoffman, Lounge, Parker, Durrance, Parise.

1991-1992 Science in space

Amid a period of intense research activity, three spacewalkers team up in 1992 to capture a satellite.

STS-37 - Atlantis: April 5-11, 1991. Compton Gamma-Ray Observatory deployed. **Crew:** Nagel,



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Cameron, Ross, Apt, Godwin.

STS-39 - Discovery: April 28-May 6, 1991. Pentagon experiments conducted. **Crew:** Coats, Hammond, Harbaugh, McMonagle, Bluford, Veach, Hieb.

STS-40 - Columbia: June 5-14, 1991. Spacelab life sciences research.

Crew: O'Conner, Gutierrez, Seddon, Bagian, Jernigan, Gaffney, Hughes-Fulford.

STS-43 - Atlantis: Aug. 2-11, 1991. Tracking satellite deployed. **Crew:** Blaha, Baker, Lucid, Low, Adamson.

STS-48 - Discovery: Sept. 12-18, 1991. Upper Atmosphere Research Satellite deployed. **Crew:** Creighton, Reightler, Buchli, Brown, Gemar.

STS-44 - Atlantis: Nov. 24-Dec. 1, 1991. Pentagon experiments conducted. **Crew:** Gregory, Henricks, Musgrave, Runco, Voss, Hennen.

STS-42 - Discovery: Jan. 22-30, 1992. Microgravity research. **Crew:** Grabe, Oswald, Hilmers, Thagard, Readdy, Merbold, Bondar.

STS-45 - Atlantis: March 24-April 2, 1992. Atmospheric research. **Crew:** Bolden, Duffy, Sullivan, Leestma, Foale, Frimout, Lichtenberg.

STS-49 - Endeavour: May 7-16, 1992. First three-person spacewalk to capture stranded satellite. **Crew:** Brandenstein, Chilton, Thuot, Thornton, Hieb, Akers, Melnick.

STS-50 - Columbia: June 25-July 9, 1992. First extended-duration mission. **Crew:** Richards, Bowersox, Dunbar, Baker, Meade, DeLucas, Trinh.

STS-46 - Atlantis: July 31-Aug. 8, 1992. Tethered satellite deployed. **Crew:** Shriver, Allen, Hoffman, Chang-Diaz, Nicollier, Ivins, Malerbo.

STS-47 - Endeavour: Sept. 12-20, 1992. First black woman astronaut (Jemison), first married couple in space (Lee and Davis). **Crew:** Gibson, Brown, Lee, Apt, Davis, Jemison, Mohri.

STS-52 - Columbia: Oct. 22-Nov. 1, 1992. Research flight, including deployment of Laser Geodynamic Satellite 2. **Crew:** Wetherbee, Baker, Shepherd, Jernigan, Veach, MacLean.

STS-53 - Discovery: Dec. 2-9, 1992. Pentagon experiments conducted. **Crew:** Walker, Cabana, Bluford, Voss, Clifford.



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1993-1994

Tools of the trade

Astronauts hone new methods for tasks such as repairing the Hubble Space Telescope's vision in 1993.

STS-54 - Endeavour: Jan. 13-19, 1993. Tracking satellite. **Crew:** Casper, McMonagle, Runco, Harbaugh, Helms.

STS-56 - Discovery: April 8-17, 1993. Atmospheric

research. **Crew:** Cameron, Oswald, Foale, Cockrell, Ochoa.

STS-55 - Columbia: April 26-May 6, 1993. Spacelab research. **Crew:** Nagel, Henricks, Ross, Precourt, Harris, Walter, Schlegel.

STS-57 - Endeavour: June 21-July 1, 1993. First Spacehab research mission. **Crew:** Grabe, Duffy, Low, Sherlock, Wisoff, Voss.

STS-51 - Discovery: Sept. 12-22, 1993. First night landing in Florida. **Crew:** Culbertson, Readdy, Newman, Bursch, Walz.

STS-58 - Columbia: Oct. 18-Nov. 1, 1993. Spacelab life sciences research. **Crew:** Blaha, Searfoss, Seddon, Lucid, Wolf, McArthur, Fettman.

STS-61 - Endeavour: Dec. 2-13, 1993. First Hubble servicing mission, with five spacewalks. **Crew:** Covey, Bowersox, Musgrave, Akers, Hoffman, Thornton, Nicollier.

STS-60 - Discovery: Feb. 3-11, 1994. First Russian cosmonaut on shuttle (Krikalev). **Crew:** Bolden, Reightler, Chang-Diaz, Davis, Sega, Krikalev.

STS-62 - Columbia: March 4-18, 1994. Microgravity research. **Crew:** Casper, Allen, Thuot, Gemar, Ivins.

STS-59 - Endeavour: April 9-20, 1994. Space Radar Laboratory. **Crew:** Gutierrez, Chilton, Godwin, Apt, Clifford, Jones.

STS-65 - Columbia: July 8-23, 1994. Microgravity research. **Crew:** Cabana, Halsell, Hieb, Walz, Chiao, Thomas, Mukai.

STS-64 - Discovery: Sept. 9-20, 1994. New spacewalk backpack tested. **Crew:** Richards, Hammond, Meade, Lee, Helms, Linenger.

STS-68 - Endeavour: Sept. 30-Oct. 11, 1994. Space Radar Laboratory. **Crew:** Baker, Wilcutt, Jones, Smith, Wisoff, Bursch.

STS-66 - Atlantis: Nov. 3-14, 1994. Atmospheric research. **Crew:** McMonagle, Brown, Ochoa, Parazynski, Tanner, Clervoy.



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1995-1996

A new partnership

Atlantis docks with the Russian space station Mir in 1995, opening a new chapter in space cooperation.

STS-63 - Discovery: Feb. 3-11, 1995. First woman pilot (Collins), first approach to Mir. **Crew:** Wetherbee, Collins, Foale, Voss, Harris, Titov.

STS-67 - Endeavour: March 2-18, 1995. Ultraviolet astronomical observations. **Crew:** Oswald, Gregory, Jernigan, Grunsfeld, Lawrence, Parise, Durrance.

STS-71 - Atlantis: June 27-July 5, 1995. First docking with Mir. **Crew:** Gibson, Precourt, Baker, Harbaugh, Dunbar; Solovyov, Budarin (up only); Dezhurov, Strekalov, Thagard (down only).

STS-70 - Discovery: July 13-22, 1995. Tracking satellite deployed. **Crew:** Henricks.

Kregel, Currie, Thomas, Weber.

STS-69 - Endeavour: Sept. 7-18, 1995. Testing techniques and tools for new space station. **Crew:** Walker, Cockrell, Voss, Newman, Gernhardt.

STS-73 - Columbia: Oct. 20-Nov. 5, 1995. Microgravity research. **Crew:** Bowersox, Rominger, Thornton, Coleman, Lopez-Alegria, Leslie, Sacco.

STS-74 - Atlantis: Nov. 12-20, 1995. Delivery to Mir. **Crew:** Cameron, Halsell, Hadfield, Ross, McArthur.

STS-72 - Endeavour: Jan. 11-20, 1996. Retrieval of satellite, test of space station tools. **Crew:** Duffy, Jett, Chiao, Scott, Wakata, Barry.

STS-75 - Columbia: Feb. 22-March 9, 1996. Tethered satellite lost during flight. **Crew:** Allen, Horowitz, Chang-Diaz, Hoffman, Cheli, Nicollier, Guidoni.

STS-76 - Atlantis: March 22-31, 1996. First U.S. woman sent to Mir (Lucid). **Crew:** Chilton, Searfoss, Godwin, Clifford, Sega, Lucid (up only).

STS-77 - Endeavour: May 19-29, 1996. Spacehab research, inflatable antenna tested. **Crew:** Casper, Brown, Bursch, Thomas, Garneau, Runco.

STS-78 - Columbia: June 20-July 7, 1996. Microgravity research. **Crew:** Henricks, Kregel, Helms, Linnehan, Brady, Favier, Thirsk.

STS-79 - Atlantis: Sept. 16-26, 1996. Lucid's 188-day Mir stay sets U.S. record. **Crew:** Readdy, Wilcutt, Akers, Apt, Walz, Blaha (up only), Lucid (down only).

STS-80 - Columbia: Nov. 19-Dec. 7, 1996. First 17-day-plus shuttle mission, airlock problems force cancellation of spacewalk. **Crew:** Cockrell, Rominger, Jernigan, Jones, Musgrave.



NASA

1997-1998 Back to the future

As NASA looks to the future with the international space station, John Glenn returns to orbit at age 77.

STS-81 - Atlantis: Jan. 12-22, 1997. Mir crew exchange. **Crew:** Baker, Jett, Grunsfeld, Ivins, Wisoff, Linenger (up only), Blaha (down only).

STS-82 - Discovery: Feb. 11-21, 1997. Second Hubble servicing mission. **Crew:** Bowersox, Horowitz, Lee, Harbaugh, Smith, Tanner, Hawley.

STS-83 - Columbia: April 4-8, 1997. Research mission cut short due to fuel cell problem. **Crew:** Halsell, Still, Voss, Thomas, Gernhardt, Crouch, Linteris.

STS-84 - Atlantis: May 15-24, 1997. Mir crew exchange after station's onboard fire. **Crew:** Precourt, Collins, Kondakova, Noriega, Lu, Clervoy, Linenger (down only), Foale (up only).

STS-94 - Columbia: July 1-17, 1997. Microgravity research. making up for STS-83

problems. **Crew:** Halsell, Still, Thomas, Voss, Gernhardt, Linteris, Crouch.

STS-85 - Discovery: Aug. 7-19, 1997. Infrared observations and other research. **Crew:** Brown, Rominger, Davis, Curbeam, Robinson, Tryggvason.

STS-86 - Atlantis: Sept. 25-Oct. 6, 1997. Mir crew exchange after station's collision. **Crew:** Wetherbee, Bloomfield, Parazynski, Titov, Chretien, Lawrence, Wolf (up only), Foale (down only).

STS-87 - Columbia: Nov. 19-Dec. 5, 1997. Spartan satellite rescue, space station tests. **Crew:** Kregel, Lindsey, Scott, Chawla, Doi, Kadenyuk.

STS-89 - Endeavour: Jan. 22-31, 1998. Mir crew exchange. **Crew:** Wilcutt, Edwards, Dunbar, Anderson, Reilly, Sharipov, Thomas (up only), Wolf (down only).

STS-90 - Columbia: April 17-May 3, 1998. Final Spacelab mission, focusing on nervous system. **Crew:** Searfoss, Altman, Hire, Linnehan, Williams, Buckey, Pawelczyk.

STS-91 - Discovery: June 2-June 12, 1998. Final shuttle-Mir docking. **Crew:** Precourt, Gorie, Chang-Diaz, Lawrence, Kavandi, Ryumin, Thomas (down only).

STS-95 - Discovery: Oct. 29-Nov. 7, 1998. John Glenn rides again. **Crew:** Brown, Lindsey, Parazynski, Robinson, Duque, Mukai, Glenn.

STS-88 - Endeavour: Dec. 4-15, 1998. First space station assembly mission. **Crew:** Cabana, Sturckow, Currie, Ross, Newman, Krikalev.



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1999-2001 Building a home

After a slow start and several delays, spacewalkers and moving crews add to the international space station.

STS-96 - Discovery: May 27-June 6, 1999. First shuttle docking with space station. **Crew:** Rominger, Husband, Jernigan, Ochoa, Barry, Payette, Tokarev.

STS-93 - Columbia: July 22-27, 1999. First female commander (Collins), X-ray telescope deployed. **Crew:** Collins, Ashby, Hawley, Tognini, Coleman.

STS-103 - Discovery: Dec. 19-27, 1999. Third Hubble servicing mission. **Crew:** Brown, Kelly, Smith, Foale, Grunsfeld, Nicollier, Clervoy.

STS-99 - Endeavour: Feb. 11-22, 2000. Radar mapping of Earth's surface. **Crew:** Kregel, Gorie, Thiele, Kavandi, Voss, Mohri.

STS-101 - Atlantis: May 19-29, 2000. Space station maintenance. **Crew:** Halsell, Horowitz, Helms, Usachev, Voss, Weber, Williams.

STS-106 - Atlantis: Sept. 8-20, 2000. Space station's living quarters prepared. **Crew:** Wilcutt, Altman, Burbank, Lu, Malenchenko, Mastracchio, Morukov.

STS-92 - Discovery: Oct. 11-24, 2000. Installation of truss structure, docking port. **Crew:** Duffy, Melroy, Wakata, Chiao, Wisoff, Lopez-Alegria, McArthur.

STS-97 - Endeavour: Nov. 30-Dec. 11, 2000. Installation of solar arrays: first shuttle

crew to visit space station residents. **Crew:** Jett, Bloomfield, Noriega, Tanner, Garneau.

STS-98 - Atlantis: Feb. 7-20, 2001. Installation of station's U.S.-built Destiny laboratory. **Crew:** Cockrell, Polansky, Curbeam, Jones, Ivins.

STS-102 - Discovery: March 8-21, 2001. Station's first crew exchange. **Crew:** Wetherbee, Kelly, Thomas, Richards. Arrival: Usachev, Voss, Helms. Departure: Shepherd, Gidzenko, Krikalev.

STS-100 - Endeavour: April 19-May 1, 2001. Station gets robot arm; most internationally diverse crew. **Crew:** Rominger, Ashby, Hadfield (Canada), Phillips, Parazynski, Guidoni (Italy), Lonchakov (Russia).

STS-104 - Atlantis: July 12-24, 2001. Quest air lock installed on station. **Crew:** Lindsey, Hobaugh, Gernhardt, Kavandi, Reilly.

STS-105 - Discovery: Aug. 10-22, 2001. Station crew exchange. **Crew:** Horowitz, Sturckow, Barry, Forrester. Arrival: Culbertson, Dezhurov, Tyurin. Departure: Usachev, Voss, Helms.

STS-108 - Endeavour: Dec. 5-17, 2001. Station crew exchange. **Crew:** Gorie, Kelly, Godwin, Tani. Arrival: Onufrienko, Walz, Bursch. Departure: Culbertson, Dezhurov, Tyurin.



Dr. Scott Lieberman / AP

2002-2003 Triumph and tragedy

Hubble and the space station are upgraded, but Columbia and its crew are lost.

STS-109 - Columbia: March 1-12, 2002. New camera and other upgrades installed on Hubble Space Telescope. **Crew:** Altman, Carey, Grunsfeld, Currie, Newman, Linnehan, Massimino.

STS-110 - Atlantis: April 8-19, 2002. At space station, astronauts work on 43-foot-long truss and space railroad. **Crew:** Bloomfield, Frick, Walheim, Ochoa, Morin, Ross, Smith.

STS-111 - Endeavour: June 5-19, 2002. Station crew exchange. **Crew:** Cockrell, Lockhart, Chang-Diaz, Perrin. Arrival: Korzun, Whitson, Treschev. Departure: Onufrienko, Walz, Bursch.

STS-112 - Atlantis: Oct. 7-16, 2002. First shuttle-cam launch; truss installation at station. **Crew:** Ashby, Melroy, Magnus, Sellers, Wolf, Yurchikhin.

STS-113 - Endeavour: Nov. 23-Dec. 7, 2002. Station crew exchange, truss delivery. **Crew:** Wetherbee, Lockhart, Lopez-Alegria, Herrington. Arrival: Bowersox, Budarin, Pettit. Departure: Korzun, Whitson, Treschev.

STS-107 - Columbia: Jan. 16-Feb. 1, 2003. Shuttle breaks up at end of science mission with first Israeli astronaut (Ramon). **Crew:** Husband, McCool, Chawla, Brown, Anderson, Clark, Ramon.

2005-2008 Return to flight

More than two years after Columbia, the shuttle fleet goes



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back into service – but NASA decides that the shuttle fleet's days are numbered.

STS-114 - Discovery: July 26-Aug. 9, 2005. Station repair, resupply and safety check. **Crew:** Collins, James Kelly, Robinson, Noguchi, Lawrence, Thomas, Camarda.

STS-121 - Discovery: July 4-17, 2006. Addition to space station crew, plus repair, resupply and safety check. Thomas Reiter is first European space station resident. **Crew:** Lindsey, Mark Kelly, Fossum, Sellers, Nowak, Wilson. Arrival: Reiter (Germany).

STS-115 - Atlantis: Sept. 9-21, 2006. Space station resupply and installation of power-generating truss. **Crew:** Jett, Ferguson, Tanner, Burbank, Stefanyshyn-Piper, MacLean.

STS-116 - Discovery: Dec. 9-21, 2006. Truss installation, power hookup and crew change at space station. **Crew:** Polanski, Oefelein, Higginbotham, Curbeam, Patrick, Fuglesang (Sweden), Williams (arrival), Reiter (departure).

STS-117 - Atlantis: June 8-22, 2007. Truss and solar arrays delivered; crew change at space station. **Crew:** Sturckow, Archambault, Reilly, Forrester, Swanson, Olivas, Anderson (arrival), Williams (departure).

STS-118 - Endeavour: Aug. 8-21, 2007. First Endeavour flight since 2002. Teacher (Morgan) flies in space; truss segment delivery; space station resupply. **Crew:** Kelly, Hobaugh, Mastracchio, Williams, Morgan, Caldwell, Drew.

STS-120 - Discovery: Oct. 23-Nov. 7, 2007. Harmony module added to space station. First shuttle-station linkup with two female commanders. **Crew:** Melroy, Zamka, Parazynski, Wilson, Wheelock, Nespoli, Tani (up), Anderson (down).

STS-122 - Atlantis: Feb. 7-20, 2008. Europe's Columbus lab added to space station. **Crew:** Frick, Poindexter, Schlegel (Germany), Love, Walheim, Melvin, Eyharts (up, France), Tani (down).

STS-123 - Endeavour: March 11-26, 2008. Canadian-built Dextre robotic hand and first element of Japanese Kibo laboratory delivered to space station. **Crew:** Gorie, Johnson, Linnehan, Behnken, Foreman, Doi (Japan), Reisman (up), Eyharts (down).

STS-124 - Discovery: May 31-June 14, 2008. Mission delivers main section of space station's largest lab, Japan's Kibo module. **Crew:** Kelly, Ham, Nyberg, Garan, Fossum, Hoshide (Japan), Chamitoff (up), Reisman (down).

STS-126 - Endeavour: Nov. 14-30, 2008. Mission delivers components for expanding space station crew capacity to six. **Crew:** Ferguson, Boe, Bowen, Pettit, Kimbrough, Stefanyshyn-Piper, Magnus (up), Chamitoff (down).



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2009-2010 Finishing up

The shuttle fleet reaches its home stretch, putting the finishing touches on the international space station and the Hubble Space Telescope.

STS-119 - Discovery: March 15-28, 2009. Installation of solar arrays on space station, plus crew exchange. **Crew:** Archambault, Antonelli, Acaba, Swanson, Arnold, Phillips, Wakata (Japan, going up), Magnus (down).

STS-125 - Atlantis: May 11-24, 2009. Final servicing mission to the Hubble Space Telescope. **Crew:** Altman, Johnson, Grunsfeld, Massimino, McArthur, Good, Feustel.

STS-127 - Endeavour: July 15-31, 2009. Completion of Japan's Kibo module on space station, plus crew exchange. **Crew:** Polansky, Hurley, Wolf, Cassidy, Payette (Canada), Marshburn, Kopra (going up to station), Wakata (Japan, returning to Earth).

STS-128 - Discovery: Launch set Aug. 25, 2009. Space station resupply, crew exchange, delivery of lab equipment and COLBERT treadmill. **Crew:** Sturckow, Ford, Forrester, Fuglesang (Sweden), Hernandez, Olivas, Stott (going up to station), Kopra (returning to Earth).

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