

The Navy in Space

Sailors have long studied the sky and have used the movements of celestial bodies to guide them across the trackless seas. Realizing the need to observe the movements of the stars and planets, the U.S. Navy established the Depot of Charts and Instruments on 6 December 1830. This is the Navy's oldest scientific institution. The Depot later became the U.S. Naval Observatory. Today it continues to provide the astronomical data necessary for navigation at sea, on land as well as in space.

In 1923 the Naval Research Laboratory (NRL) began operation. The idea for a U.S. Government-supported research laboratory was suggested by the American inventor Thomas Alva Edison during World War I. Secretary of the Navy Josephus Daniels seized the opportunity and invited Edison to become head of the Naval Consulting Board. The Board made plans to create a modern scientific research facility, which became the Naval Research Laboratory. Robert Morris Page who was at NRL from the late 1920s to the mid-1960s invented the technology for pulse radar. During World War II his invention assisted the Allies in detecting enemy planes and ships. Without radar, today's space program would be impossible.

In 1911 the Navy bought its first aircraft—the A-1 Triad. Advances were made in aviation; and aircraft were flying higher and higher. On 8 May 1929 Lieutenant Apollo Soucek set the world altitude record for landplanes by flying a Wright Apache to the height of 39,140 feet. On 4 June 1929, the same Lieutenant Soucek set the altitude record for seaplanes, also in an Apache, reaching the height of 38,560.

Altitude records were now approaching the 40,000-foot range. At these heights, the thin air and decreased pressure made it difficult for human beings to function and survive. The airplane was a poor vehicle in which to study the upper reaches of the atmosphere. The balloon proved to be more suitable.

On 4 August 1933 Lieutenant Commander Thomas "Tex" Settle ascended aloft in the sealed life-support gondola of a balloon, but the attempt failed. A similar attempt in a balloon by Soviet aeronauts the following September, achieved the height of 62,230 feet. The space race between the United States and the Soviet Union had begun.

On 20 November 1933, Lieutenant Commander Thomas "Tex" Settle and Major Chester L. Fordney, USMC, flying a 600,000 cubic-foot free balloon, set the world's altitude record of 61,237 feet. It was an official world's record, but 1,000 feet shy of the actual Soviet achievement.

In December 1941, the United States entered World War II with no rocket weapons. Germany was putting a great deal of its effort into the development of rockets, basing much of its technology on the research of the American scientist Robert H. Goddard.

At the end of the war, the U.S. rocket budget was 1.3 million. Research in the use of rockets in jet-assisted take off (JATO) had been carried out by U.S. rocket pioneer Robert Goddard, assisted by the Navy's Robert Truax. In May 1943 a JATO-equipped Catalina (PBY) made its first successful flight. JATO could reduce the takeoff run by 33 to 60 percent, or permit greater payloads. The JATO program laid the groundwork for the use of rocket power in Navy guided missiles.

After World War II, U.S. interest in high altitude research experiments resumed. The Office of Naval Research (ONR) made plans for a manned balloon flight into the upper atmosphere. Project Helios called for the construction of plastic balloons with a gondola equipped with scientific observation instruments. This ambitious plan was replaced in 1947 by Project Skyhook, which used polyethylene balloons to carry instrument packages to extreme altitudes. Thousands of these balloons were sent into the stratosphere for basic research.

In 1952 a new technique was developed in which Deacon rockets were lifted above 70,000 feet by Skyhook balloons and then fired into space. The Skyhook experiments proved to be so successful that in 1954 plans were made to entrust the lives of men to the Skyhook balloons.

Project Stratolab, a laboratory in the stratosphere, began in 1955. On 8 November 1956, Stratolab I, manned by Lieutenant Commanders Malcolm D. Ross and Morton Lee Lewis reached a record altitude of 76,000 feet. It would not, however, be with the balloon that man would reach space. It would be with the rocket.

Naval Research Laboratory scientists had been conducting experiments on the Aerobee and Viking

sounding rockets during the early 1950s. An NRL study in 1954 indicated the feasibility of successfully placing a satellite in orbit, using a vehicle based on the Viking as a first stage and the Aerobee as the second.

In 1955 President Eisenhower announced that the United States would launch “small, unmanned, earth-circling satellites” as a part of the U.S. contributions to the International Geophysical Year 1957–58. The Naval Research Laboratory proposed that the Vanguard rocket, based on Viking technology, be used to launch the satellite. The NRL proposal was accepted. Project Vanguard was to have three missions: place at least one satellite in orbit during 1957–58; accomplish a scientific experiment in space; and track the flight to demonstrate that the satellite had actually attained orbit.

Before Vanguard could launch a satellite into space, however, the Soviets announced that they had put *Sputnik* into orbit on 4 October 1957. *Sputnik*, the Russian word for travelling companion, was the earth’s first artificial satellite. The perception by the United States that it was the leader in space technology was shattered, and the capability of Soviet rockets to fire weapons from space became apparent.

On 31 January 1958 the Army’s Jupiter-C rocket, a further development of the Redstone rocket, put the first U.S. satellite, Explorer I into orbit. On 31 March 1958, a Vanguard rocket fired from Cape Canaveral, Fla., put a second earth satellite into orbit.

In response to the Soviet challenge in space, the United States established the National Aeronautics and Space Administration (NASA) in July 1958. Project Mercury would put a man into space. On 15 May 1961, President John F. Kennedy went even further and stated in an address to Congress that the United States would commit itself to landing a man on the moon by the end of the decade. This goal was named Project Apollo.

NASA lobbed a chimpanzee into space on 31 January 1961. After this experiment proved successful, it was then believed that it was possible to put a man into a similar sub-orbital trip. Commander Alan B. Shepard, Jr., USN, was chosen to be the first American sent into space.

On 5 May 1961, Commander Shepard left earth’s atmosphere in the Freedom 7 space capsule. It was a ballistic “cannon shot” with an Army Redstone rocket. The space capsule was recovered at sea by an HUS-1 helicopter from Marine Corps Squadron HMR(L)-262, which transported the capsule and Commander Shepard to the carrier *Lake Champlain*.

Subsequent Mercury missions put other men in space. On 20 February 1962, Lieutenant Colonel John

H. Glenn, Jr., USMC, and his spacecraft Friendship 7 made three orbits around the earth. Other men were sent singly into space. Then, during 1965 and 1966, Project Gemini sent up two men at a time. Many were Naval Aviators.

After having succeeded in putting men into space, NASA concentrated on putting a man on the moon. In December 1968 Lieutenant Commander James A. Lovell, Jr., USN, was on the Apollo 8 flight that flew to the moon and circled around it, viewing the side that is never seen from earth. On 20 July 1969 Neil A. Armstrong, a naval aviator, became the first man to walk on the moon during the Apollo 11 flight.

The next U.S. space goal was to explore space in Skylab, a space laboratory in which the astronauts could live a fairly normal life, work on scientific experiments, eat, sleep, and have regular periods of recreation. Three separate crews of Skylab astronauts were launched into space in 1973. Two of the three were all-Navy crews.

Meanwhile the Apollo space trips continued. The last Apollo mission was launched on 15 July 1975. Vance D. Brand, a former Navy pilot, was the command module pilot. On this space trip, Apollo docked with the Soviet Soyuz spacecraft. This was the first meeting between American astronauts and Soviet cosmonauts in space. The two crews then conducted scientific experiments in space. Apollo splashed down in the Pacific near Hawaii and was recovered by *New Orleans*. This was the last splash-down recovery by a Navy amphibious ship. The Space Shuttle would make splash-down recoveries unnecessary.

The Space Shuttle was launched by a rocket, but could land like an airplane, thus it could make multiple trips into space. *Columbia* was the first Space Shuttle and was launched on 12 April 1981 with an all Navy-aviator crew. Space Shuttle *Columbia* was followed by Space Shuttles *Challenger*, *Discovery*, *Atlantis*, and *Endeavour*. Subsequent Space Shuttle flights were able to take more and more astronauts on a single flight into space and stay in space for longer periods of time and continue to conduct scientific experiments. Limited cooperation with the Russian Republic, part of the former Soviet Union also continued. In 1995 Space Shuttle *Atlantis* transported two Russian cosmonauts to the Russian space station Mir where American astronaut Norman Thagard, a former naval aviator, had been living for three months. *Atlantis* docked with Mir and brought Norman Thagard back to earth.

Naval Aviation continues to play an important role in space. The following three sections provide statistical data on Naval Aviation’s contributions or involvement in the manned space program.

Naval Aviation Personnel Who Have Become Astronauts

(Names with an asterisk (*) are Naval Aviators or Naval Aviation personnel but were no longer on active duty when involved in the space program)

Andrew M. Allen	Brent W. Jett
Scott Altman	Joseph P. Kerwin
Neil A. Armstrong*	Wendy B. Lawrence
Jeffery Ashby	David C. Leestma
Michael A. Baker	Don L. Lind
Alan L. Bean	Michael E. Lopez-Alegria
Charles F. Bolden, Jr.	John M. Lounge*
Kenneth D. Bowersox	John R. Lousma
Vance D. Brand*	James A. Lovell, Jr.
Daniel C. Brandenstein	Jon A. McBride
James F. Buchli	Bruce McCandless II
John S. Bull	Michael J. McCulley
Daniel W. Bursch	Thomas K. Mattingly II
Robert D. Cabana	Edgar D. Mitchell
Kenneth D. Cameron	Franklin Story Musgrave*
Malcolm Scott Carpenter	Carlos Noriega
Gerald P. Carr	Bryan D. O'Connor
Manley L. Carter, Jr.	Stephen S. Oswald
Eugene A. Cernan	Robert F. Overmyer
Roger B. Chaffee	William F. Readdy
Michael L. Coats	Kenneth S. Reightler, Jr.
Kenneth Cockrell	Richard N. Richards
Charles Conrad, Jr.	Kent V. Rominger
John O. Creighton	Walter M. Schirra, Jr.
Robert L. Crippen	Winston E. Scott
Frank L. Culbertson	Elliot M. See
R. Walter Cunningham*	Alan B. Shepard, Jr.
Robert Curbeam	Michael John Smith
Joe F. Edwards	Robert C. Springer
Ronald E. Evans	Susan L. Still
Dale A. Gardner	Frederick W. Stuckow
Jake E. Garn*	Norman E. Thagard
Robert L. Gibson	Stephen D. Thorne
John H. Glenn, Jr.	Pierre J. Thuot
Richard F. Gordon, Jr.	Richard H. Truly
Dominic L. Gorie	James D. van Hoften
S. David Griggs	David M. Walker
Fred W. Haise, Jr.*	Paul J. Weitz
Frederick H. Hauck	James D. Wetherbee
Kathryn Hire	Clifton C. Williams
David C. Hilmers	Donald E. Williams
	John W. Young

Naval Aviation Personnel Who Have Made Trips Into Space and the Number of Flights Made By Each as of 31 December 1995

(Names with an asterisk (*) are former Navy)

One Flight

Malcolm Scott Carpenter
 Gerald P. Carr
 Manley L. Carter, Jr.
 R. Walter Cunningham*
 Ronald E. Evans
 Jake E. Garn*
 John H. Glenn, Jr.
 S. David Griggs
 Fred W. Haise, Jr.*
 Joseph P. Kerwin
 Wendy B. Lawrence
 Don L. Lind
 Michael E. Lopez-Alegria
 Jon A. McBride
 Michael J. McCulley
 Edgar D. Mitchell
 Kent V. Rominger
 Michael John Smith

Two Flights

Andrew M. Allen
 Neil A. Armstrong*
 Alan L. Bean
 Daniel W. Bursch
 Kenneth Cockrell
 Frank L. Culbertson
 Dale A. Gardner
 Richard F. Gordon, Jr.
 Bruce McCandless II
 John R. Lousma
 Bryan D. O'Connor
 Robert F. Overmyer
 William F. Readdy
 Kenneth S. Reightler, Jr.
 Alan B. Shepard, Jr.
 Robert C. Springer
 Richard H. Truly
 James D. van Hoften

Paul J. Weitz
 Donald E. Williams

Three Flights

Michael A. Baker
 Kenneth D. Bowersox
 Robert D. Cabana
 Kenneth D. Cameron
 Eugene A. Cernan
 Michael L. Coats
 John O. Creighton
 Frederick H. Hauck
 David C. Leestma
 John M. Lounge*
 Thomas K. Mattingly II
 Stephen S. Oswald
 Walter M. Schirra, Jr.
 Pierre J. Thuot
 James D. Wetherbee

Four Flights

Charles F. Bolden, Jr.
 Vance D. Brand*
 Daniel C. Brandenstein
 James F. Buchli
 Charles Conrad, Jr.
 Robert L. Crippen
 David C. Hilmers
 James A. Lovell, Jr.
 Richard N. Richards
 David M. Walker

Five Flights

Robert L. Gibson
 Franklin Story Musgrave*
 Norman E. Thagard

Six Flights

John W. Young

List of U.S. Space Flights with Navy/Marine Corps Pilots/Astronauts Aboard

(As of 31 Dec 1995)

<i>Order</i>	<i>Date</i>	<i>Designation</i>	<i>Crew (see notes)</i>	<i>Duration</i>
1	5 May 61	Mercury Redstone 3 (Freedom 7) (1st U.S. man into space, sub-orbital)	Alan B. Shepard, Jr.	15 min 22 sec
3	20 Feb 62	Mercury Atlas 6 (Friendship 7) (1st American to orbit the earth)	John H. Glenn, Jr., USMC	4 hrs 55 min 23 sec
4	24 May 62	Mercury Atlas 7 (Aurora 7)	Malcolm Scott Carpenter	4 hr 56 min 5 sec
5	3 Oct 62	Mercury Atlas 8 (Sigma 7)	Walter M. Schirra, Jr.	9 hrs 13 min 11 sec
7	23 Mar 65	Gemini 3	Virgil I. Grissom, USAF John W. Young	4 hrs 53 min
9	21–29 Aug 65	Gemini 5	Leroy G. Cooper, Jr., USAF Charles Conrad, Jr.	190 hrs 56 min 1 sec
10	4–18 Dec 65	Gemini 7	Frank Borman, USAF James A. Lovell, Jr.	330 hrs 35 min 13 sec
11	15–16 Dec 65	Gemini 6	Walter M. Schirra, Jr. Thomas P. Stafford, USAF	25 hrs 51 min 24 sec
12	16 Mar 66	Gemini 8	Neil A. Armstrong* David R. Scott, USAF	10 hrs 42 min 6 sec
13	3–6 Jun 66	Gemini 9	Thomas P. Stafford, USAF Eugene A. Cernan	72 hrs 20 min 56 sec
14	18–21 Jul 66	Gemini 10	John W. Young Michael Collins, USAF	70 hrs 46 min 45 sec
15	12–15 Sep 66	Gemini 11	Richard F. Gordon, Jr. Charles Conrad, Jr.	71 hrs 17 min 8 sec
16	11–15 Nov 66	Gemini 12	James A. Lovell, Jr. Edwin E. Aldrin, Jr., USAF	94 hrs 34 min 31 sec

List of U.S. Space Flights with Navy/Marine Corps Pilots/Astronauts Aboard—Continued

<i>Order</i>	<i>Date</i>	<i>Designation</i>	<i>Crew (see notes)</i>	<i>Duration</i>
17	11–22 Oct 68	Apollo 7	Walter M. Schirra, Jr. Donn F. Eisele, USAF R. Walter Cunningham*	206 hrs 9 min
18	21–27 Dec 68	Apollo 8 (1st flight to the moon)	Frank Borman, USAF James A. Lovell, Jr. William A. Anders, USAF	147 hrs 0 min 42 sec
20	18–26 May 69	Apollo 10	Thomas P. Stafford, USAF John W. Young Eugene A. Cernan	192 hrs 3 min 23 sec
21	16–24 Jul 69	Apollo 11 (first moon walk)	Neil A. Armstrong* Michael Collins, USAF Edwin E. Aldrin, Jr., USAF	195 hrs 18 min 35 sec
22	14–24 Nov 69	Apollo 12 (all Navy crew)	Charles Conrad, Jr. Richard F. Gordon, Jr. Alan L. Bean	244 hrs 36 min 25 sec
23	11–17 Apr 70	Apollo 13	James A. Lovell, Jr. John L. Swigert, Jr.(civ) Fred W. Haise, Jr.*	142 hrs 54 min 41 sec
24	31 Jan–9 Feb 71	Apollo 14	Alan B. Shepard, Jr. Stuart A. Roosa, USAF Edgar D. Mitchell	216 hrs 1 min 57 sec
26	16–27 Apr 72	Apollo 16	John W. Young Thomas K. Mattingly II Charles M. Duke, Jr., USAF	265 hrs 1 min 5 sec
27	7–19 Dec 72	Apollo 17	Eugene A. Cernan Ronald E. Evans Harrison H. Schmitt (civ)	301 hrs 51 min 59 sec
28	25 May–22 Jun 73	Skylab 2 (1st U.S. manned orbiting space station; all-Navy crew)	Charles Conrad, Jr. Joseph P. Kerwin Paul J. Weitz	672 hrs 49 min 49 sec
29	28 Jul–25 Sep 73	Skylab 3	Alan L. Bean Owen K. Garriott** John R. Lousma, USMC	1427 hrs 9 min 4 sec
30	16 Nov 73–8 Feb 74	Skylab 4	Gerald P. Carr, USMC Edward G. Gibson (civ) William R. Pogue, USAF	2017 hrs 15 min 32 sec
31	15–24 Jul 75	Apollo-Soyuz test project	Thomas P. Stafford, USAF Vance D. Brand* Donald K. Slayton, USAF	217 hrs 28 min 24 sec

List of U.S. Space Flights with Navy/Marine Corps Pilots/Astronauts Aboard—Continued

<i>Shuttle Flights</i>	<i>Date</i>	<i>Designation</i>	<i>Crew (see notes)</i>
STS-1	12–14 Apr 81	Space Shuttle <i>Columbia</i> (1st mission into space, all-Navy crew)	John W. Young* Robert L. Crippen
STS-2	12–14 Nov 81	Space Shuttle <i>Columbia</i>	Richard H. Truly Joseph H. Engle, USAF
STS-3	22–30 Mar 82	Space Shuttle <i>Columbia</i>	John R. Lousma, USMC Charles G. Fullerton, USAF
STS-4	27 Jun–4 Jul 82	Space Shuttle <i>Columbia</i>	Thomas K. Mattingly II Henry W. Hartsfield, USAF
STS-5	11–16 Nov 82	Space Shuttle <i>Columbia</i>	Vance D. Brand* Robert F. Overmyer, USMC William B. Lenoir (civ) Joseph P. Allan (civ)
STS-6	4–9 Apr 83	Space Shuttle <i>Challenger</i>	Paul J. Weitz* Karol J. Bobko, USAF Donald H. Peterson, USAF Franklin Story Musgrave*
STS-7	18–24 Jun 83	Space Shuttle <i>Challenger</i>	Robert L. Crippen Frederick H. Hauck John M. Fabian, USAF Sally K. Ride (civ) Norman E. Thagard*
STS-8	30 Aug–5 Sep 83	Space Shuttle <i>Challenger</i>	Richard H. Truly Daniel C. Brandenstein Dale A. Gardner Guion S. Bluford, Jr., USAF William E. Thornton (civ)
STS-9	28 Nov–8 Dec 83	Space Shuttle <i>Columbia</i>	John W. Young* Brewster H. Shaw, Jr., USAF Owen K. Garriott** Robert A. R. Parker (civ) Ulf Merbold (civ)+ Byron K. Lichtenberg(civ)+
STS-41-B	3–11 Feb 84	Space Shuttle <i>Challenger</i> (1st untethered walk in space)	Vance D. Brand* Bruce McCandless II Robert L. Gibson Robert L. Steward, USA Ronald E. McNair (civ)

List of U.S. Space Flights with Navy/Marine Corps Pilots/Astronauts Aboard—Continued

<i>Shuttle Flights</i>	<i>Date</i>	<i>Designation</i>	<i>Crew (see notes)</i>
STS-41-C	6–13 Apr 84	Space Shuttle <i>Challenger</i>	Robert L. Crippen Francis R. Scobee, USAF George D. Nelson (civ) Terry J. Hart, USAF James D. van Hoften
STS-41-D	30 Aug–5 Sep 84	Space Shuttle <i>Discovery</i>	Henry W. Hartsfield, USAF Michael L. Coats Judith A. Resnick (civ) Steven A. Hawley (civ) Richard M. Mullane, USAF Charles D. Walker (civ) ⁺
STS-41-G	5–13 Oct 84	Space Shuttle <i>Challenger</i>	Robert L. Crippen Jon A. McBride Kathryn D. Sullivan (civ) Sally K. Ride (civ) David C. Leestma Marc Garneau (civ) ⁺ Paul D. Scully-Power(civ) ⁺
STS-51-A	8–15 Nov 84	Space Shuttle <i>Discovery</i>	Frederick H. Hauck David M. Walker Anna L. Fisher (civ) Joseph P. Allen (civ) Dale A. Gardner
STS-51-C	24–27 Jan 85	Space Shuttle <i>Discovery</i>	Thomas K. Mattingly II Loren J. Shriver, USAF Ellison S. Onizuka, USAF James F. Buchli, USMC Gary E. Payton, USAF ⁺
STS-51-D	12–19 Apr 85	Space Shuttle <i>Discovery</i>	Karol J. Bobko, USAF Donald E. Williams Margaret Rhea Seddon (civ) Jeffrey A. Hoffman (civ) S. David Griggs Charles D. Walker (civ) ⁺ Jake E. Garn ^{*++}
STS-51-B	29 Apr–6 May 85	Space Shuttle <i>Challenger</i>	Robert F. Overmyer, USMC Frederick D. Gregory, USAF Don L. Lind Norman E. Thagard [*] William E. Thornton (civ) Lodewijk van den Berg(civ) ⁺ Taylor G. Wang (civ) ⁺

List of U.S. Space Flights with Navy/Marine Corps Pilots/Astronauts Aboard—Continued

<i>Shuttle Flights</i>	<i>Date</i>	<i>Designation</i>	<i>Crew (see notes)</i>
STS-51-G	17–24 Jun 85	Space Shuttle <i>Discovery</i>	Daniel C. Brandenstein John O. Creighton Shannon W. Lucid (civ) John M. Fabian, USAF Steven R. Nagel, USAF Patrick Baudry (civ) ⁺ Sultan Salman al-Saud (civ) ⁺⁺
STS-52-F	29 Jul–6 Aug 85	Space Shuttle <i>Challenger</i>	Anthony W. England (civ) Roy D. Bridges, USAF Franklin Story Musgrave* Karl G. Henize (civ) John David Bartoe (civ) Loren W. Acton (civ) Charles G. Fullerton, USAF
STS-51-I	27 Aug–3 Sep 85	Space Shuttle <i>Discovery</i>	John M. Lounge* Richard O. Covey, USAF William F. Fisher (civ) Joseph H. Engle, USAF James D. van Hoften
STS-51-J	3-7 Oct 85	Space Shuttle <i>Atlantis</i>	Karol J. Bobko, USAF Ronald J. Grabe, USAF Robert L. Steward, USA David C. Hilmers, USMC William A. Pailles, USAF ⁺
STS-61-A	30 Oct–6 Nov 85	Space Shuttle <i>Challenger</i>	Henry W. Hartsfield, USAF Steven R. Nagel, USAF James F. Buchli, USMC Bonnie J. Dunbar (civ) Guion S. Bluford, Jr., USAF Reinhard Furrer (civ) ⁺ Ernst Messerschmid (civ) ⁺ Wubbo Ockels (civ) ⁺
STS-61-B	26 Nov–3 Dec 85	Space Shuttle <i>Atlantis</i>	Brewster H. Shaw, Jr., USAF Bryan D. O'Connor, USMC Mary L. Cleave (civ) Sherwood C. Spring, USA Jerry L. Ross, USAF Rodolfo Neri Vela (civ) ⁺ Charles D. Walker (civ) ⁺
STS-61-C	12–18 Jan 86	Space Shuttle <i>Columbia</i>	Robert L. Gibson Charles F. Bolden, Jr., USMC Franklin R. Chang-Diaz(civ) Steven A. Hawley(civ) George D. Nelson (civ) Robert Cenker (civ) ⁺ Bill Nelson (civ) ⁺⁺

List of U.S. Space Flights with Navy/Marine Corps Pilots/Astronauts Aboard—Continued

<i>Shuttle Flights</i>	<i>Date</i>	<i>Designation</i>	<i>Crew (see notes)</i>
STS-51-L	28 Jan 86	Space Shuttle <i>Challenger</i>	Francis R. Scobee, USAF Michael John Smith Judith A. Resnik (civ) Ellison S. Onizuka, USAF Ronald E. McNair (civ) Gregory B. Jarvis (civ) ⁺ S. Christa McAuliffe(civ) ⁺⁺
STS-26	29 Sep–3 Oct 88	Space Shuttle <i>Discovery</i>	Frederick H. Hauck Richard O. Covey, USAF John M. Lounge* George D. Nelson (civ) David C. Hilmers, USMC
STS-27	2–6 Dec 88	Space Shuttle <i>Atlantis</i>	Robert L. Gibson Guy S. Gardner, USAF Richard M. Mullane, USAF Jerry L. Ross, USAF William M. Sheperd**
STS-29	13–18 Mar 89	Space Shuttle <i>Discovery</i>	Michael L. Coats John E. Blaha, USAF James P. Bagian (civ) James Buchli Robert Springer
STS-30	4–8 May 89	Space Shuttle <i>Atlantis</i>	David M. Walker Ronald J. Grabe, USAF Norman E. Thagard* Mary L. Cleave (civ) Mark C. Lee, USAF
STS-28	8–13 Aug 89	Space Shuttle <i>Columbia</i>	Brewster H. Shaw, USAF Richard N. Richards David C. Leestma James C. Adamson, USA Mark N. Brown, USAF
STS-34	18–23 Oct 89	Space Shuttle <i>Atlantis</i>	Donald E. Williams Michael J. McCulley Shannon W. Lucid (civ) Ellen S. Baker (civ) Franklin R. Chang-Diaz(civ)
STS-33	22–27 Nov 89	Space Shuttle <i>Discovery</i>	Frederick D. Gregory, USAF John E. Blaha, USAF Franklin Story Musgrave* Kathryn C. Thornton (civ) Manley L. Carter, Jr.

List of U.S. Space Flights with Navy/Marine Corps Pilots/Astronauts Aboard—Continued

<i>Shuttle Flights</i>	<i>Date</i>	<i>Designation</i>	<i>Crew (see notes)</i>
STS-32	9–20 Jan 90	Space Shuttle <i>Columbia</i>	Daniel C. Brandenstein James D. Wetherbee Marsha S. Ivins (civ) Bonnie J. Dunbar (civ) G. David Low (civ)
STS-36	28 Feb–4 Mar 90	Space Shuttle <i>Atlantis</i>	John O. Creighton John H. Casper, USAF David C. Hilmers, USMC Richard M. Mullane, USAF Pierre J. Thuot
STS-31	24–29 Apr 90	Space Shuttle <i>Discovery</i>	Loren J. Shriver, USAF Charles F. Bolden, Jr., USMC Bruce McCandless II Kathryn D. Sullivan Steven A. Hawley (civ)
STS-41	6–10 Oct 90	Space Shuttle <i>Discovery</i>	Richard N. Richards Robert D. Cabana, USMC William M. Sheperd** Bruce E. Melnick, USCG Thomas D. Akers, USAF
STS-38	15–20 Nov 90	Space Shuttle <i>Atlantis</i>	Richard O. Covey, USAF Frank L. Culbertson Carl J. Meade, USAF Robert C. Springer, USMC Charles D. Gemar, USA
STS-35	2–6 Dec 90	Space Shuttle <i>Columbia</i>	Vance D. Brand* Guy S. Gardner, USAF John M. Lounge* Robert A. R. Parker (civ) Jeffrey A. Hoffman (civ) Ronald A. Parise (civ)+ Samuel T. Durrance (civ)+
STS-37	5–11 Apr 91	Space Shuttle <i>Atlantis</i>	Jerry L. Ross, USAF Steven R. Nagel, USAF Kenneth D. Cameron, USMC Jay Apt (civ) Linda M. Goodwin (civ)
STS-39	28 Apr–6 May 91	Space Shuttle <i>Discovery</i>	Richard J. Hieb (civ) Guion S. Bluford, Jr., USAF Michael L. Coats Charles L. Veach, USAF Donald R. McMonagle, USAF L. Blaine Hammond, Jr., USAF Gregory J. Harbaugh (civ)

List of U.S. Space Flights with Navy/Marine Corps Pilots/Astronauts Aboard—Continued

<i>Shuttle Flights</i>	<i>Date</i>	<i>Designation</i>	<i>Crew (see notes)</i>
STS-40	5–14 Jun 91	Space Shuttle <i>Columbia</i>	Francis A. Gaffney (civ)+ Millie Hughes-Fulford(civ)+ Tamara E. Jernigan (civ) Sidney M. Gutierrez, USAF James P. Bagian (civ) Bryan D. O'Connor, USMC Margaret Rhea Seddon (civ)
STS-43	2–11 Aug 91	Space Shuttle <i>Atlantis</i>	John E. Blaha, USAF Michael A. Baker Shannon W. Lucid (civ) James C. Adamson, USA G. David Low (civ)
STS-48	12–18 Sep 91	Space Shuttle <i>Discovery</i>	James F. Buchli, USMC John O. Creighton Charles D. Gemar, USA Mark N. Brown, USAF Kenneth S. Reightler, Jr.
STS-44	24 Nov–1 Dec 91	Space Shuttle <i>Atlantis</i>	Frederick D. Gregory, USAF Terence Hendricks, USAF Franklin Story Musgrave* Thomas Hennen, USA Mario Runco, Jr. James Voss, USA
STS-42	22–30 Jan 92	Space Shuttle <i>Discovery</i>	Stephen S. Oswald William F. Readdy Roberta L. Bondar (civ)+ Ronald J. Grabe, USAF David C. Hilmers, USMC Ulf Merbold (civ)+ Norman E. Thagard*
STS-45	24 Mar–2 Apr 92	Space Shuttle <i>Atlantis</i>	Dirk D. Frimount (civ)+ Kathryn D. Sullivan Michael Foale (civ) Charles F. Bolden, Jr., USMC David C. Leestma Brian Duffy, USAF Byron K. Lichtenberg (civ)+
STS-49	7–16 May 92	Space Shuttle <i>Endeavour</i>	Kathryn C. Thornton (civ) Thomas D. Akers, USAF Kevin P. Chilton, USAF Richard J. Hieb (civ) Daniel C. Brandenstein Bruce E. Melnick, USCG Pierre J. Thuot

List of U.S. Space Flights with Navy/Marine Corps Pilots/Astronauts Aboard—Continued

<i>Shuttle Flights</i>	<i>Date</i>	<i>Designation</i>	<i>Crew (see notes)</i>
STS-50	25 Jun–9 Jul 92	Space Shuttle <i>Columbia</i>	Richard N. Richards Ellen S. Baker (civ) Bonnie J. Dunbar (civ) ⁺ Lawrence J. DeLucas (civ) Kenneth D. Bowersox Eugene H. Trinh (civ) ⁺ Carl J. Meade, USAF
STS-46	31 Jul–8 Aug 92	Space Shuttle <i>Atlantis</i>	Franco Malerba (civ) ⁺ Loren J. Shriver, USAF Claude Nicollier (civ) Jeffrey A. Hoffman (civ) Andrew M. Allen, USMC Marsha S. Ivins (civ) Franklin R. Chang-Diaz(civ)
STS-47	12–20 Sep 92	Space Shuttle <i>Endeavour</i>	Robert Gibson Curtis L. Brown, USAF Mark C. Lee, USAF Jan N. Davis (civ) Mae C. Jemison (civ) Jay Apt (civ) Mamoru Mohri (civ) ⁺
STS-52	22 Oct–1 Nov 92	Space Shuttle <i>Columbia</i>	James D. Wetherbee Michael A. Baker Charles L. Veach, USAF William M. Sheperd** Tamara E. Jernigan (civ) Steven MacLean (civ) ⁺
STS-53	2–9 Dec 92	Space Shuttle <i>Discovery</i>	David M. Walker Robert D. Cabana, USMC Guion S. Bluford, Jr., USAF ⁺ James Voss, USA Michael Clifford, USA
STS-54	13–19 Jan 93	Space Shuttle <i>Endeavour</i>	John H. Casper, USAF R. McMonagle, USAF Gregory J. Harbaugh (civ) Susan J. Helms, USAF Mario Runco, Jr.
STS-56	8–17 Apr 93	Space Shuttle <i>Discovery</i>	Kenneth D. Cameron, USMC Stephen S. Oswald Kenneth Cockrell Michael Foale (civ) Ellen Ochoa (civ)

List of U.S. Space Flights with Navy/Marine Corps Pilots/Astronauts Aboard—Continued

<i>Shuttle Flights</i>	<i>Date</i>	<i>Designation</i>	<i>Crew (see notes)</i>
STS-51	12–22 Sep 93	Space Shuttle <i>Discovery</i>	Frank L. Culbertson William F. Readdy Daniel W. Bursch James Newman (civ) Carl E. Waltz, USAF
STS-61	2–13 Dec 93	Space Shuttle <i>Endeavour</i>	Richard O. Covey, USAF Kenneth D. Bowersox Thomas D. Akers, USAF Jeffrey A. Hoffman (civ) Franklin Story Musgrave* Claude Nicollier (civ) Kathryn C. Thornton (civ)
STS-60	3–11 Feb 94	Space Shuttle <i>Discovery</i>	Charles F. Bolden, Jr., USMC Kenneth S. Reightler, Jr. Franklin R. Chang-Diaz(civ) Jan N. Davis (civ) Ronald M. Sega (civ) Sergey K. Krikalev (Russian)
STS-62	4–18 Mar 94	Space Shuttle <i>Columbia</i>	John H. Casper, USAF Andrew M. Allen, USMC Pierre J. Thuot Charles D. Gemar, USAF Marsha S. Ivins (civ)
STS-65	8–23 Jul 94	Space Shuttle <i>Columbia</i>	Robert D. Cabana, USMC James D. Halsell, Jr., USAF Carl E. Waltz, USAF Leroy Chiao (civ) Richard J. Hieb (civ) Donald A. Thomas (civ) Chiaki Maito-Mukai (civ)+
STS-64	9–20 Sep 94	Space Shuttle <i>Discovery</i>	Richard N. Richards L. Blaine Hammond, Jr., USAF Carl J. Meade, USAF Mark C. Lee, USAF Susan J. Helms, USAF Jerry M. Linenger**
STS-68	30 Sep–11 Oct 94	Space Shuttle <i>Endeavour</i>	Michael A. Baker Terrence W. Willcutt, USMC Thomas D. Jones (civ) Steven L. Smith (civ) Peter J. K. Wisoff (civ) Daniel W. Bursch

List of U.S. Space Flights with Navy/Marine Corps Pilots/Astronauts Aboard—Continued

<i>Shuttle Flights</i>	<i>Date</i>	<i>Designation</i>	<i>Crew (see notes)</i>
STS-63	2–11 Feb 95	Space Shuttle <i>Discovery</i>	James Weatherbee Eileen Collins, USAF Bernard A. Harris, Jr., USAF Michael Foale (civ) Vladimir Titov (Russian) Janice Voss (civ)
STS-67	2–18 Mar 95	Space Shuttle <i>Endeavour</i>	Stephen S. Oswald William G. Gregory, USAF Wendy B. Lawrence John M. Grunsfield (civ) Tamara E. Jernigan (civ) Samuel T. Durrance (civ) ⁺ Ronald A. Parise (civ) ⁺
STS-71	27 Jun–7 Jul 95	Space Shuttle <i>Atlantis</i>	Robert L. Gibson Charles Precourt, USAF Ellen S. Baker (civ) Bonnie J. Dunbar (civ) ⁺ Gregory J. Harbaugh (civ) Anatoly Solovyev (Russian) Nikolay Budarin (Russian)
STS-69	7–18 Sep 95	Space Shuttle <i>Endeavour</i>	David M. Walker Kenneth Cockrell James Voss, USA James H. Newman (civ) Michael L. Gernhardt (civ)
STS-73	20 Oct–5 Nov 95	Space Shuttle <i>Columbia</i>	Kenneth D. Bowersox Kent V. Rominger Kathryn C. Thornton (civ) Catherine G. Coleman, USAF Michael E. Lopez-Alegria Fred Leslie (civ) ⁺ Albert Sacco, Jr. (civ)
STS-74	12–20 Nov 95	Space Shuttle <i>Atlantis</i>	Kenneth D. Cameron, USMC James D. Halsell, USAF Jerry L. Ross, USAF William S. McArthur, Jr., USA Chris Hadfield (civ)

Notes: All personnel in this flight list are Navy or former Naval personnel unless otherwise indicated. The following marks used along side an individual's name provides more amplifying information on that person:

* Naval Aviators, retired or separated from Navy or Marine Corps, assigned to the crew as civilians on space flights.

+ Payload Specialist

** Passenger

** Navy but not connected with Naval Aviation.



STS-42 lifts off on 22 January 1992, from the Kennedy Space Center, NASA-KSC-92PC-189.