13

Flying a desk

"When I landed [on STS-44], within a month
I had decided that I had flown enough,
I didn't need to do that anymore,
and that I was going to have to move into
something that was more normal."
Fred Gregory, NASA JSC Oral History

At the time of publication of this book, the 35-strong contingent of NASA's Group 8 astronauts had diminished by ten, most notably and sadly through the loss of crewmembers Dick Scobee, Ellison Onizuka, Ron McNair and Judy Resnik in the Shuttle *Challenger* tragedy of January 1986. The following are brief encapsulations of the space flights of the Thirty-Five New Guys (TFNG), and their lives subsequent to retiring from the active flight status.

HANGING UP THE SPACE SUIT

As difficult as it is to be selected as an astronaut, let alone achieve that first flight into space, it is equally difficult to give up the opportunity to experience the thrill of lift off, to witness first-hand the wonders of the universe and to explore in person the unique sensations of microgravity. For some, it was a challenge to find a new and rewarding career, having finally decided to forgo the hundreds of hours of training, the risks during each second of a mission, and putting their families and loved ones through stress and worry from the moment of lift off to final recovery (see sidebar: *All in the Family*). Not all space explorers found the transition from astronaut to more Earthbound occupations so difficult of course, having been fulfilled by what they had achieved in their NASA careers. Right from the early

D. J. Shayler, C. Burgess, *NASA's First Space Shuttle Astronaut Selection*,
Springer Praxis Books, https://doi.org/10.1007/978-3-030-45742-6_13

days of space flight, finding fulfillment in life after hanging up the spacesuit was another new experience, and one that NASA could not train their astronauts for, especially those who had participated in a trip to the Moon. After all, what could top the experience of standing on the dusty surface of another world and looking back at our own planet a quarter of a million miles away?

By the end of the 1980s, many of the original 73 astronauts chosen in NASA's first decade of recruitment had retired from the agency to seek new challenges and adventures away from the launch pad. When the time came for members of the first Shuttle era selection to decide to move on, the program and its opportunities had also evolved. As the first of the new generation of Space Shuttle astronauts, they helped to develop the roles of Shuttle Pilot (PLT) and Mission Specialist (MS) that continued with such success for the duration of the program. When they finally departed the Astronaut Office, they broke new ground again by taking on a variety of managerial roles within NASA, the wider space industry, or in other fields. With most aged in their mid-30s at selection, many were still young enough to forge a new career, this time well away from the media spotlight, before quietly slipping into a well-earned retirement with the families who had supported their careers for so many years.

ALL IN THE FAMILY

Being selected for space flight training, irrespective of the country or agency, means being put into the media spotlight at some point, which for most is not a natural or comfortable situation. From the obscurity of a 'normal' past, the space explorer is thrust into the unfamiliar world of the media and public attention. Some may be well prepared for the limelight, while others would prefer to remain in the background and simply get on with the job, even though they are fully aware that is no longer possible.

The focus on the first American spacefarers, who were all men, brought a level of attention that put a strain on their hopes for a 'normal' home life. The families of those astronauts also found themselves in the media spotlight, which was just as disconcerting for those used to the quieter and somewhat secluded military lifestyle. Over time, some marriages broke under the strain, with the pressures not only on the individual astronauts as they trained for and flew their missions, but also for their wives and children at home. The stories of those family upheavals, though mostly kept private, have recently been told in print and on film, in a far more honest and open way than they were originally portrayed in the 1960s, when the general reply given to the press was that the family back home was 'proud', 'thrilled' and 'happy'.

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For most of the astronauts during the 1960s and 1970s, the support of their family at home was crucial to the success of their achievements, and it continues to be so. It can be said that the most important back-up crew a space explorer can have are the "folks back home." When time came for the selection of a new group of astronauts in 1978, their families played an important role in supporting their efforts to get through the selection, complete the Ascan program, and prepare to fly. Alongside the success and fame came the setbacks and tragedies, and these, too, had to be absorbed by the families. Towards the end of the TFNG era, the upcoming long duration missions on the International Space Station (ISS), and the training required for them that took place around the globe, added to the potential stresses on home life. This became a key factor for many astronauts in the late 1990s, in deciding whether to commit to the long duration training, opt for shorter missions, or even find a new career path. Any story about the commitment and career of a space explorer should also include recognition for those who remain at home and are still there for them when they no longer don the spacesuit.

Briefly, the TFNG extended 'families' are detailed below, as of early 2020:

Guion Bluford has been married to the former Linda Tull of Philadelphia, Pennsylvania since April 7, 1964. They have two children; ***Dan Brandenstein*** married the former Jane A. Wade of Balsam Lake, Wisconsin, on January 2, 1966, and they have a daughter; ***Jim Buchli*** is married to the former Sandra Jean Oliver of Pensacola, Florida and the couple have two children; ***Mike Coats*** is married to the former Diane Eileen Carson of Oklahoma City, Oklahoma, and they have two children; ***Dick Covey*** is married to the former Kathleen Allbaugh of Emmetsburg, Iowa, and the couple have two daughters; ***John Creighton*** was single at selection, but subsequently married the former Terry Stanford of Little Rock, Arkansas; ***John Fabian*** married the former Donna Kay Buboltz of Spokane, Washington, on September 18, 1961, and together they have two children.

Anna Fisher (Tingle) was divorced from her first husband but was still using her former married name of Sims when progressing through the early stages of astronaut selection. On August 23, 1977 she married Dr. William ('Bill') Fisher, an unsuccessful candidate in 1978 who was later chosen as one of 19 Group 9 astronauts in 1980. He went on to fly one mission as an MS, STS-51I in 1985, and led a critical study of EVA tasks assigned to Space Station *Freedom* before leaving the space agency in 1992 to return to his medical career. In January 1989, the Fishers

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celebrated the birth of their second child, "There's a very small number of people whose parents have both been in space," Anna once stated when referring to their new baby daughter. She then took a rare leave of absence to raise her family, returning in January 1996. Drs. Bill and Anna Fisher were divorced in 2000.

Dale Gardner is survived by his wife Sherry and two step children. He was also the father of two children, (one of whom, his son, pre-deceased him), from his first marriage on February 19, 1977 to Sue Ticusan of Indianapolis, Indiana; ***Hoot Gibson***, divorced his first wife, the former Cathy Marie Von Epps of Santa Barbara, California, shortly after selection to the astronaut program. On May 30, 1981, he married fellow TFNG astronaut Dr. M. Rhea Seddon (the first serving astronauts to marry each other) and together they have four children; ***Fred Gregory*** was married to the former Barbara Ann Archer of Washington D.C. for 44 years until her death in May 2008. They had two children. He married a second time to the former Annette Becke and between them they have three children; ***Dave Griggs*** was survived by his wife, the former Karen Frances Kreeb of Lake Ronkonkoma, Long Island, New York, and their two children; ***Terry Hart*** married the former Wendy Eberhardt on December 20, 1975, and they went on to have two children. The couple separated in October 1996, and were divorced on May 12, 1999; ***Rick Hauck*** married the former Dolly Bowman of Washington D.C. on August 27, 1962, and they had two children. They subsequently divorced and Hauck is now married to the former Susan Cameron Bruce. Together they have five children.

Steve Hawley was single at the time of selection to the astronaut program but was married to fellow Group 8 astronaut Sally Ride from July 26, 1982 until their divorce in May 1987. He subsequently married the former Eileen M. Keegan of Redondo Beach, California, a former public-affairs officer at NASA JSC who has served as the spokeswoman for Kansas Governor Sam Brownback since 2013; ***Jeff Hoffman*** is married to the former Barbara Catherine Attridge of Greenwich, London, England, and they have two children; ***Shannon Lucid*** has been married to Michael F. Lucid of Indianapolis, Indiana since 1967, and they have three children; ***Jon McBride*** divorced his first wife, the former Brenda Lou Stewart of Mobile, Alabama, with whom he had three children. He is now married to the former Sharon Lynne White of Nacogdoches, Texas, and together they have four children.

Ron McNair married Cheryl Moore of Jamaica, New York, on June 27, 1976 and became the father of two children; ***Mike Mullane*** married Donna Marie Sei of Albuquerque, New Mexico a week after his graduation from

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West Point in 1967. The couple have three children; ***Steve Nagel*** is survived by his wife, former astronaut Linda Godwin, and two children from his previous marriage to the former Linda Diane Penney of Los Angeles, California; ***George 'Pinky' Nelson*** married the former Susan (Susie) Howard of Alhambra, California, on June 19, 1971 and together they have two children; ***Ellison Onizuka*** is survived by his wife, the former Lorna Leiko Yoshida of Pahala, Hawaii, whom he married on June 7, 1969, and their two children; ***Judy Resnik*** had married Michael D. Oldak on July 14, 1970, but the couple were divorced in December 1976. She remained single up to the time of her death in 1986; ***Sally Ride*** was married to astronaut Steve Hawley from 1982 until 1987, and is survived by Tam O'Shaughnessy, her partner of 27 years; ***Dick Scobee*** is survived by his wife, the former (Virginia) June Kent of San Antonio, Texas, and their two children. His son is a rank officer (Lt-General) in the USAF. June Scobee, a NASA consultant and educator, was the founding Chairperson of the Challenger Center for Space Science, created in 1986 by the families of the *Challenger* astronauts. Today, there are 39 centers in the United States as well as international branches in Canada, South Korea and the United Kingdom, continuing the education legacy of the *Challenger* crew; ***Rhea Seddon*** is married to fellow Group 8 astronaut Robert (Hoot) Gibson; ***Brewster Shaw***, a descendant of William Brewster of the *Mayflower*, was married to the former Kathleen Ann Mueller of Madison, Wisconsin, on May 24, 1969 and is the father of three children. Tragically their younger son was murdered, aged just 20, by carjackers in Austin, Texas, in July 1997.

Loren Shriver married the former Susan Diane Hane of Paton, Iowa. They have four children; ***Bob Stewart*** has been married to the former Mary Jane Murphy of La Grange, Georgia, since December 26, 1963, and they have two children; ***Kathy Sullivan*** remains single; ***Norm Thagard*** is married to Rex Kirby Johnson, formerly of Atlanta, Georgia. They have three children; ***Ox van Hoften*** married the former Vallarie Davis of Pasadena, California, on May 31, 1975, and they have three children: ***Dave Walker*** was survived by his wife Paige and two children from previous marriages to the former Patricia A. Shea of Washington D.C. and the former Stacy Randal Hall of Kilgore, Texas; ***Don Williams*** left behind his wife of just four years, Ann Small-Williams. They had married in 2012. He was also survived by his first wife, the former Linda Jo Grubaugh, (who he had married on September 4, 1965), two children of that marriage and their respective families.

Fig. 13.1: The support of family throughout their careers, selection, training, space flights, tragedies and retirements is always an important element in being a space explorer. (top left) Astronaut Guion Bluford with his wife Linda and two sons at home. The photo was taken in 1980 by NASA photographer Terry Slezak for a magazine article. (top right) Shuttle astronauts Rhea Seddon and Hoot Gibson appear on ABC's *Good Morning America* on August 18, 1982, together with their baby son who was born on July 26, 1982. (bottom left) Anna and William Fisher and the new addition to their family, in 1983. (bottom right) Dave Griggs enjoying a family BBQ at home in 1978.

New opportunities

By the mid-1980s, the space industry had undergone a far greater expansion than in the previous decade. Leaving the Astronaut Office presented a number of choices to the retiring TFNG. Firstly, there was the option to remain with NASA, either at the Johnson Space Center (JSC) in Houston, Texas, in an administrative role, or at one of the other field centers. The military personnel had the option to retire from service to become a civilian employee at the space agency, or to resume their military career path and finish their term of service before finally hanging up their uniform. In addition, there were opportunities in the growing space industry as an executive or as a consultant, in the academic world as a professor in a university, or perhaps in a political career in their home state.

Another avenue afforded the TFNG, and one which they helped to expand, was in senior managerial positions, either while still formally detailed to the Astronaut

Office or after leaving it. A few astronauts from the earlier selections had been able to fulfill similar roles, but not in the numbers available to the TFNG. This transition from flying in space to 'flying a desk' has evolved into the 'Management Astronaut' role, where an individual is still classed as an 'astronaut' at NASA, but is out of active flight training or major support roles and works in senior administration at JSC, Headquarters, or other NASA field centers.

When the members of the earlier selections left the program, the opportunities they were offered within the space industry or the emerging commercial space program were far fewer, often based upon their experience and achievements, and the kudos of having a 'Former NASA Astronaut' on the books. For a very few, their career after NASA was more lucrative than for some of their colleagues, but most eventually found their place in the world after space flight.

Despite eventually leaving the Astronaut Office, and in time NASA itself, an astronaut's link with the agency never completely ceases, as all former astronauts are recalled to JSC at least once a year for their annual physical as they age, adding to the growing database of medical information on the effects of space flight.

Reaching out to the public

Recent years have seen NASA increase its public outreach activities, most notably on the various social media platforms. In the *Astronaut Encounter: Meet an Astronaut* program at the Kennedy Space Center (KSC) in Florida, the public have the opportunity to meet veteran NASA astronauts and Payload Specialists (PS) at a live presentation, followed by a question and answer session and a photo opportunity. Since leaving NASA, Group 8 astronauts have participated both in this program and on the international speaker circuit as astronaut guest-speakers at various functions, sharing their experiences with the audience, hoping to inspire a new generation to continue on the journey they embarked upon as a group back in 1978.

This dedication by all space explorers, not just the members of the TFNG, to inspire others was demonstrated on January 10, 2020 by Jon McBride, who retired after 20 years of service as a 'space ambassador' overseeing the Astronaut Encounter team at the KSC Visitor Complex in Florida, over 30 years after leaving the Astronaut Office to pursue a career in business. During his time at the Visitor Complex, McBride had been instrumental in creating the *Dine with an Astronaut* program and the subsequent *Fly with an Astronaut* program. On leaving the position, McBride stated that he had been inspired by the early astronauts such as Neil Armstrong who preceded him, and that his hope was that he had "played a role in inspiring the next generation of space explorers. It's been a joyous journey."

The decision to enter this new phase in their lives had to be made by each of the surviving Group 8 astronauts, as they finally elected to "hang up their space suit" and seek new goals. To paraphrase the famous TV space series that was linked to the selection drive to recruit them in the 1970s, it was time "to boldly go where no TFNG had gone before."

WHERE ARE THEY NOW?

Six years after his selection to the NASA astronaut program, Terry Hart became the first of the 1978 group to step down from active flight status and leave the program, in June 1984. Of his remaining 34 colleagues, four (Ron McNair, Ellison Onizuka, Judy Resnik, and Dick Scobee) were lost in the 1986 *Challenger* tragedy, and a fifth (Dave Griggs) was killed in a flying accident in 1989. Over the subsequent 28 years after Hart departed, each of the remaining 29 members of the 1978 selection followed him out of the Astronaut Office for pastures new (see Table 13.1). Below, we summarize the attainments of each after stepping down from the active flight list.

Table 13.1: NASA GROUP 8 ATTRITION FROM THE ASTRONAUT OFFICE (CB) 1978–2012

Year	Leave CB	Deceased	Names	Still Active	Pilots	Mission Specialists
1978	Group 8 Ascans enter Astronaut Office at JSC			35	15	20
1984	-1		Hart	34	15	19
1986	-4		Fabian, Gardner, Stewart, van Hoften	26	14	12
		-4	McNair, Onizuka, Scobee, Resnik			
1987	-1		Ride	25	14	11
1989	-4		Hauck, McBride, Nelson, Shaw	20	10	10
		-1	Griggs			
1990	-3		Hawley [1st time], Mullane, Williams	17	9	8
1991	-1		Coats	16	8	8
1992	-4		Brandenstein , Buchli, Gregory , Creighton	12	5	7
1993	-3		Bluford, Shriver, Sullivan,	9	4	5
1994	-1		Covey	8	3	5
1995	-3		Nagel , Seddon, Walker	5	1	4
1996	-2		Gibson, Thagard	4	0	4
	[+1]		[Hawley returns]			
1997	-1		Hoffman	3	0	3
1999	-1		Hawley [2nd time]	2	0	2
2006	-1		Fisher	1	0	1
2012	-1		Lucid	0	0	0

Guion (Guy) Bluford, Jr.

MS STS-8 (1983); MS STS-61A (1985); MS STS-39 (1991); MS STS-53 (1992).

As a crewmember of STS-8, Guion Bluford had the honor of being the first African-American to fly in space. By the completion of his fourth mission, he had logged over 688 hours in space. After flying STS-53, Bluford requested a break from flight assignments to allow him time to decide his future, either within NASA or outside of it.

Col. Bluford left NASA in July 1993 and retired from the U.S. Air Force (USAF) to take on the post of Vice President/General Manager, Engineering Services Division, NYMA Inc., Greenbelt, Maryland, and as Program Manager of

the SETAR (Scientific, Engineering, Technical and Administrative Related service) contract at NASA's Langley Research Center. In May 1997, he became Vice President of the Aerospace Sector of Federal Data Corporation and in October 2000, he was appointed Vice President of Microgravity R&D and Operations for the Northrop Grumman Corporation. In September 2002, he became President of the Aerospace Technology Group, an engineering consulting organization based in Cleveland, Ohio. In 2003, Bluford was asked by Admiral Harold W. 'Hal' Geham to support the work of the Columbia Accident Investigation Board (CAIB). Col. Bluford was inducted into the International Space Hall of Fame in 1997, and into the U.S. Astronaut Hall of Fame in 2010.

Daniel Brandenstein
PLT STS-8 (1983); CDR STS-51G (1985); CDR STS-32 (1990); CDR STS-49 (1992); 6th Chief of the Astronaut Office (1987–1992).

After four space flights in 14 years at NASA and a 27-year career in the Navy, Dan Brandenstein realized that he was "reaching an age where if I was going to start a third career, I'd better get on with it." **[1]**. In October 1992, Brandenstein retired from NASA and as a captain with the U.S. Navy (USN).

Following his retirement, Brandenstein spent the next 20 years as an aerospace executive. From January 1994 to March 1996, he was appointed Director of Program Development at Loral Space Information Systems Company, later becoming their Director of Quality Assurance. Then, from March 1996 to April 1999, he became Executive Vice President, and later Program Manager, at Kistler Aerospace Corporation. In April 1999, he became Vice President (and later Program Manager) with Lockheed Martin Space Operations. At Lockheed, he was responsible for developing, and sustaining the engineering, operations and maintenance of, the Mission Control Centers and Integrated Planning System at JSC, supporting human space flight programs. He resigned from the company in September 2007 to join IBM Federal Systems Company, leading their data management system redesign team for the Space Station redesign effort. More recently, he served as Executive Vice President and Chief Operating Officer for the United Space Alliance (USA) Limited Liability Company (LLC).

Capt. Brandenstein was the 1992 winner of the Society of Experimental Test Pilots' (SETP) Iven Kincheloe Award. That same year he was inducted into the Wisconsin Aviation Hall of Fame, and in 2003 he was inducted into the U.S. Astronaut Hall of Fame. He has received numerous other medals and awards throughout his career, including the American Institute of Aeronautics and Astronautics (AIAA) Haley Space Flight Award, the Federation Aéronautique Internationale (FAI) Yuri Gagarin Gold Medal, and the American Astronautical Society (AAS) Flight Achievement Award. In 2012, he retired to a small ranch in the Texas Hill Country but continued to serve as the Chairman of the Astronaut Scholarship Foundation.

James Buchli
MS STS-51C (1985); MS STS-61A (1985); MS STS-29 (1989); MS STS-48 (1991).

James Buchli logged over 490 hours in space and, from March 1989 until May 1992, also served as Deputy Chief of the Astronaut Office.

On September 1, 1992, Buchli retired from the U.S. Marine Corps (USMC) with the rank of colonel after 25 years' service. He also resigned from NASA after 13 years in the Astronaut Office to accept a position as Manager of Space Station Systems Operations and Requirements with the Boeing Defense and Space Group, Huntsville, Alabama. In April 1993, he was reassigned as Boeing's Deputy for Payload Operations, Space Station *Freedom* Program. He then served as Operations and Utilization Manager for Space Station at the Boeing Defense and Space Group in Houston, Texas. He spent the next 15 years at the Boeing Company and USA, before joining Oceaneering International, Inc., Houston, in 2007. The following year, he received a promotion to Vice President and Program Manager. In this capacity, Buchli has led the company's efforts to design and build America's next generation space suit, the Constellation Space Suit System (CSSS), for NASA.

He is a recipient of the Defense Superior Service Medal, Legion of Merit, Purple Heart, Defense Meritorious Service Medal, Navy & Marine Corps Commendation Medal and Vietnam Gallantry Cross with Silver Star.

Michael Coats
PLT STS-41D (1984); CDR STS-29 (1989); CDR STS-39 (1991); 10th JSC Director (2005–2012)

Michael Coats logged more than 463 hours in space over his three Shuttle missions and served as Acting Chief of the Astronaut Office between May 1989 and March 1990.

Capt. Coats retired from the USN and the Astronaut Office in August 1991 and entered the corporate arena. From 1991 to 1996, he was Vice President of Avionics and Communications Operations for Loral Space Information Systems. From 1996 to 1998, he was Vice President of Civil Space Programs for Lockheed Martin Missiles and Space in Sunnyvale, California, and from 1998 to 2005, he served as Vice President of Advanced Space Transportation for Lockheed Martin Space Systems Company in Denver, Colorado. He returned to NASA in November 2005 as the tenth director of JSC in Houston, Texas. He would remain in this position until his retirement in December 2012, concluding a 44-year career that spanned 20 years with NASA, including seven as center director. At his retirement party on January 11, 2013, NASA Administrator and former astronaut Charles Bolden presented Coats with NASA's Distinguished Service Medal, calling him "an absolutely outstanding center director – an incredible gentleman."

Coats was inducted into the U.S. Astronaut Hall of Fame on May 5, 2007. He has also been recognized as a Fellow of the AIAA, and been awarded the FAI Gold Space Medal and three Distinguished Flying Crosses (DFC), in addition to a number of other honors.

Fig. 13.2: TFNG managerial roles (top) The 10th Johnson Space Center Director Mike Coats (left) and Robert Winkler of Boeing are pictured on the forward flight deck of OV-095 during final tests in the Shuttle Avionics Integration Laboratory (SAIL) at JSC in Houston, July 21, 2011, the day *Atlantis* completed the STS-135 mission and ended the Shuttle flight program. (bottom) Steve Hawley's official portrait as Director, Flight Crew Operations Directorate (FCOD) at JSC (Image from the collection of Steve Hawley, used with permission).

Richard (Dick) Covey
PLT STS-51I (1985); PLT STS-26 (1988); CDR STS-38 (1990); CDR STS-61 (1993).

A veteran of four space flights, USAF Capt. Dick Covey enjoyed a distinguished 16-year career with NASA, logging over 646 hours in space, but it was career filled with a number of highs and lows. On January 28, 1986, he was serving as Capcom during the launch of Shuttle *Challenger*, and as such became the last person to communicate with the crew when he radioed: "*Challenger*, go at throttle up," a few seconds before the Orbiter was lost in a massive fireball. In contrast, in December 1993, he was CDR for the highly successful flight of STS-61 to service and repair the Hubble Space Telescope (HST).

Throughout his astronaut career, Covey held additional technical assignments within the Astronaut Office, also serving as Acting Deputy Chief of the Astronaut Office and Acting Deputy Director of Flight Crew Operations. During 1989, he served as Chairman of NASA's Space Flight Safety Panel. Covey stated in his Oral History that he had considered whether or not he was going to remain at NASA after completing his third space flight. The offer of a number of managerial roles and the prospect of a fourth flight convinced him to stay, but he decided, after taking the management roles, that STS-61 would be his last trip into space and he would leave shortly afterwards. Reportedly, when his wife was asked whether her husband would fly again after that, she underlined that decision by saying "Not with this wife."

On August 1, 1994, Col. Richard Covey officially retired from NASA and the USAF. Between 1994 and 1996, he was a Unisys Deputy Program Manager for Space Operations in Houston. In 1996, he joined the Boeing Company as Division Director for McDonnell Douglas's Houston Operations, then later served as President of the Boeing Service Company in Colorado Springs. From 2003 to 2005, he also provided critical leadership during the exhaustive independent assessment of NASA's actions in response to the CAIB recommendations, as co-chairman of the Return-to-Flight Task Group. For this duty, he was awarded the NASA Distinguished Public Service Medal. In February 2006, he joined USA and was selected as their President and Chief Executive Officer (CEO) on September 28, 2007, becoming responsible for the direction, development and operations of the company. USA served as NASA's prime contractor for Shuttle and Space Station operations, including launch and recovery, mission planning and support, and astronaut training. He retired from USA in 2010.

Among other awards Col. Covey has received are five USAF DFCs, 16 Air Medals, the NASA Exceptional Service Medal, the AIAA Haley Space Flight Award for 1988, and the AAS Flight Achievement Award for 1988. He is a Distinguished Graduate of the USAF Academy, received the Liethen-Tittle Award as the Outstanding Graduate of USAF Test Pilot School Class 74B, and is a

Distinguished Astronaut Engineering Alumnus of Purdue University. The Arkansas Aviation Historical Society inducted Covey into the Arkansas Aviation Hall of Fame in 1995, and he was also inducted into the Astronaut Hall of Fame in May 2004.

John Creighton
PLT STS-51G (1985); CDR STS-36 (1990); CDR STS-48 (1991).

Capt. Creighton left NASA and retired from the USN in July 1992, having logged over 403 hours in space across his three missions. In his 2004 Oral History, he said that if he had wanted to, he could have remained in Houston and probably flown a couple more times. However, he and his family wanted to move back to the northwest of America, and since his wife was completing her residency program in her medical training, the timing seemed right and he reluctantly left NASA. He then became a test pilot on the 737 jetliner with Boeing, later becoming Chief Technical Pilot for Boeing Commercial Airplanes until his retirement from the company in 2007. "It wasn't space anymore, but it was still flying airplanes," he said. "I continued my flying career. [I] started out flying fighter airplanes [and] with that experience was able to fly the Space Shuttle. Then after that, [I] continued flying big commercial airplanes." **[2]**. In 1997, he ran as a Republican candidate for the Washington State Senate but was unsuccessful.

He is a member of the SETP and the Association of Space Explorers (ASE). Among other honors, he was awarded the Defense Superior Service Medal, Legion of Merit, DFC, 10 Air Medals, the Armed Forces Expeditionary Medal, the Vietnam Cross of Gallantry, the NASA Distinguished Service Medal, NASA Leadership Medal, three NASA Space Flight Medals, the French Legion of Honor and the Saudi Arabia King Fahd Medal.

John Fabian
MS STS-7 (1983); MS STS-51G (1985).

When John Fabian was assigned to his third Shuttle mission, he was delighted. His new assignment, STS-61G, was scheduled to fly on May 20, 1986, and placed him on the crew of the first Space Shuttle to carry a cargo destined for another planet. The main objective of this mission was to launch the Galileo spacecraft toward Jupiter, using the Centaur-G upper stage. The flight became one of several deferred by NASA in the wake of the *Challenger* tragedy, with the Centaur upper stage later removed from the Shuttle manifest.

In his Oral History, Fabian said that delays to the missions had pushed them into 1986, so in 1985 he began looking at opportunities outside of NASA. "My wife told me that my marriage had a two-flight limit, and I believed her, and so I was in the process of looking for a job." **[3]** Fabian subsequently left NASA on

January 1, 1986, to become Director of Space, Deputy Chief of Staff, Plans and Operations, Headquarters USAF. In June the following year, he retired from the USAF with the rank of colonel and joined Analytic Services Inc. (ANSER), a non-profit aerospace professional services firm in Arlington, Virginia, retiring as President and Chief Executive Officer in 1998. He continues to serve as an independent consultant and public speaker on the NASA space program and environmental stewardship.

Col. Fabian has been recognized as an Associate Fellow, AIAA; Fellow of the AAS; President of the ASE, and Corresponding Member of the International Academy of Astronautics. In 2010, he was named a Distinguished Member of the ASE – only the third astronaut or cosmonaut to receive the honor – joining cosmonaut Alexei Leonov and Apollo astronaut Rusty Schweickart, who were both founding members of the association. Fabian has long been involved with the association, serving for 14 years as International Co-president of the group, and for two years as President of the U.S. chapter, ASE-USA.

His many special honors include: Air Force Astronaut Wings; NASA Space Flight Medal with one Oak Leaf Cluster; FAI Komarov Diploma; Air Force Meritorious Service Medal; Defense Superior Service Medal; Legion of Merit; Defense Meritorious Service Medal; French Legion of Honor; Saudi Arabian King Abdul Aziz Medal; Air Medal with 2 Oak Leaf Clusters; Air Force Commendation Medal; Washington State University Sloan Engineering Award (1961); Air Training Command Academic Training Award (1966); Squadron Officer School Commandant's Trophy (1968); Squadron Officer School Chief of Staff Award (1968); Washington State University Distinguished Alumnus Award (1983); Washington State Service to Humanity Award (1983); Distinguished Alumnus Award (1985); Medallion of Merit (1987); Phi Sigma Kappa.

Anna Fisher
MS STS-51A (1984)

When Anna Fisher was assigned to the STS-51A crew in November 1984, it was just two weeks before giving birth to her first daughter. The mission was launched 14 months later, making her the first mother to fly in space.

Dr. Fisher was later assigned to her second mission, joining the STS-61H crew preparing to fly aboard Shuttle *Columbia* in June 1986. However, that mission was cancelled following the loss of *Challenger* in January of that year. Instead, she resumed technical roles within the Astronaut Office and served on the selection board for the 1987 class of astronauts (see sidebar: *Serving on an Astronaut Selection Board*). She then joined the Space Station Support Office, where she worked for the Operations Branch. Dr. Fisher was also the crew representative supporting space station development in the areas of training, operations concepts and the health maintenance facility.

During the early phase of building the International Space Station (ISS), through 2002, she served as Chief of the Space Station Branch, coordinating inputs to the operations of the burgeoning outpost, working closely with NASA's international partners, and supervising the assigned astronauts and engineers.

Later, from early 2011 through mid-2013, Fisher served as a space station Capcom, working in Mission Control, and was the lead Capcom for Expedition 33. In one of her final assignments at NASA, she contributed to developing the crew displays for NASA's new Orion spacecraft.

On April 28, 2017, Dr. Anna Fisher, the last member of NASA's 1978 Group 8 Shuttle astronauts still working for the space agency, retired after more than three decades of service to spend more time with her family. Among her many awards and distinctions, Dr. Fisher received the NASA Space Flight Medal; Lloyds of London Silver Medal for Meritorious Salvage Operations; University of California Los Angeles (UCLA) Professional Achievement Award; UCLA Medical Professional Achievement Award; NASA Exceptional Service Medal 1999; California Science Center Woman of the year 1986; and UCLA Alumni of the Year Award 2012. In November 2017, the UCLA presented Dr. Fisher with its first Science and Education Pioneer award.

SERVING ON AN ASTRONAUT SELECTION BOARD

At least sixteen members of the TFNG (seven pilots and nine MS) have served on the selection board for a new Astronaut group at some point in their astronaut careers. From 1984 until 2009, with the exception of the 1996 and 2004 selections, at least one member from the TFNG was appointed to the selection board.

As Steve Hawley explained in his 2002 Oral History, there are two parts to the selection process. "There's something that's called a ratings panel, and that is the group that has to go through all of the applicants' folders and make some preliminary decisions about who are the most qualified, because from the most qualified you select the ones that actually come down to Houston and go through the medical tests and actually get interviewed. And some subset of the ratings panel ends up being on the selection board itself that actually does those interviews. So fundamentally, the selection board's job is to have looked at the folders, to have reviewed the contents, to have looked at the recommendations, to have sat through the interviews, and ultimately to make some judgments as to who are the best candidates to recommend to the center director, who is the selecting official.

"I always enjoyed being on the selection board. It was kind of a humbling experience, because I thought over time we seemed to always get a more and

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more qualified bunch of people wanting to come work for us… I always thought it was kind of an honor that all of these really capable people wanted to come work in your program. Several of us used to joke that we probably wouldn't even be competitive if we were trying to get selected now. But it was also, I thought, very important to select the right kind of people to come into the program, and so being on the board was also, I thought, a great responsibility. So I was always proud to be entrusted with that responsibility. It's a real burden, because it takes a lot of time. The interviews themselves take basically six solid weeks if you interview 100, 120 individuals, which is typically what we would do, plus the time beforehand to go through hundreds or thousands of folders and try to make a determination who are the most qualified applicants. But, like I say, it's a real honor to be asked to do that, and I always enjoyed it."

Hawley did not think that the process had changed that much from when he went through it himself in 1977. "I think the quality of the people that apply has gotten better, in part, frankly, because it's a little easier now to prepare if you want… When I was a kid, people like me didn't get to be astronauts, because I didn't want to be a military test pilot, plus in those days… before my class, NASA hadn't actually picked astronauts for ten or eleven years. So the chance of actually even getting a chance to apply was very remote. Now, today, that's not true. We select more or less regularly every couple or three years, and you sort of know what the job is, and so you have a chance to tailor your development in that direction if you want to, and I think that does tend to give you more qualified applicants. I think they have a better idea what the job's like. They kind of know what the skills are that we're looking for. And we've had a number of astronauts come into the program and be successful, and if they want to, they can pattern themselves after the people that have done that.

"You still get that today. It's a little bit humbling and a little bit different now. When I first started on the selection board, people would say, 'Oh, yeah, you know, I always wanted to be an astronaut ever since I watched Apollo 11 land on the Moon', and now in later years it's been, 'Yeah, I really wanted to be an astronaut ever since I was a little kid and I watched the first Shuttles launch'. And you think, nobody ever says, 'When I watched Steve Hawley launch', but they will say, 'Hey, when I saw Sally Ride launch, then I really wanted to be an astronaut', or, 'I thought I could do that, too'." **[4]**

Recently, Steve Hawley explained to the authors that he had been a part of most of the Astronaut Selection process from 1984 through 2000, "except if there was a selection while I was at Ames (1990-1992). There was a

(continued)

selection in 1990 but I was part of that. So was Charlie Bolden, because I recall trying to schedule interviews around our training for STS-31." Hawley therefore served on the Astronaut Selection Boards for Groups 10 (1984), 11 (1985), 12 (1987), 13 (1990), 15 (1994), 16 (1996), 17 (1998) and 18 (2000).

The known Astronaut Rating and Selection Board Members from the Class of 1978 are: BRANDENSTEIN: Groups 11 (1985), 12 (1987) and 13 (1990); BUCHLI Group 13 (1990); COATS: Groups 11 (1985) and 13 (1990); COVEY Groups 13 (1990) and 14 (1992); FISHER Groups 11 (1985), 12 (1987) and 20 (2009); GIBSON: Groups 12 (1987), 14 (1992) and 15 (1994); Gregory: Group 15 (1994); HOFFMAN: Groups 13 (1990) and 14 (1992); NAGEL: Group 15 (1994); NELSON: Groups 11 (1985) and 12 (1987); ONIZUKA: Group 11 (1985); RIDE: Group 11 (1985); SEDDON: Groups 13 (1990) and 14 (1992); SHRIVER: Groups 11 (1985), 12 (1987), 14 (1992), 17 (1998) and 18 (2000); SULLIVAN: Group 14 (1992); WILLIAMS: Group 11 (1985).

Dale Gardner (1948–2014)
MS STS-8 (1983); MS STS-51A (1984).

Altogether, Dale Gardner logged a total of 337 hours in space on his two missions. He was then assigned as an MS on the STS-62A mission, scheduled as the first Shuttle launch from Vandenberg Air Force Base (AFB) in July 1986, but this flight was another of those cancelled following the loss of Shuttle *Challenger* that January. Gardner subsequently resigned from NASA and returned to duties with the USN, serving for over two years as the Deputy Chief of Space Control Operations Division at Cheyenne Mountain AFB, Colorado Springs. Following his promotion to the rank of captain, he became the command's Deputy Director for Space Control at Peterson AFB, also in Colorado Springs. In 1990, he retired from the USN and became Program Manager in the Engineering Operations of TRW Inc., before becoming manager of Northrup Grumman's Colorado Springs operations. He later joined the National Renewable Energy Laboratory (NREL) in Golden, Colorado, as the Associate Director for Renewable Fuels Science and Technology, retiring in January 2013.

On February 19, 2014, aged 65, Dale Gardner passed away from a brain aneurysm, and was buried at Evergreen Cemetery, Colorado Springs. Among many other honors and awards, Gardner was the recipient of the NASA Space Flight Medal, the Defense Superior Service Medal, and the DFC.

Robert (Hoot) Gibson
PLT STS-41B (1984); CDR STS-61C (1986); CDR STS-27 (1988): CDR STS-47 (1992); CDR STS-71 (1995); 7th Chief of the Astronaut Office[1].

In June 1996, Hoot Gibson retired from the USN with over 27 years' service. After 18 years with NASA, Hoot Gibson left the space agency in November 1996 and opened yet another chapter in his aviation life, flying as a captain with Southwest Airlines for the next ten years. In 2006, he was forced into mandatory retirement as a commercial pilot due to the Federal Aviation Administration's (FAA) "Age 60" rule. He made national headlines when he spoke out against the FAA rule, but there was no going back. Upon retirement from Southwest, he joined the Benson Space Company as Chief Operating Officer and Chief Test Pilot. By 2009, he was a demonstration pilot for the Hawker Beechcraft Corporation.

Capt. Gibson was inducted into the U.S. Astronaut Hall of Fame on June 21, 2003, the National Aviation Hall of Fame in October 2013, and the Tennessee Aviation Hall of Fame on November 7, 2015. He currently serves on the Astronaut Scholarship Foundation's Board of Trustees. Among his many honors and awards, he has received the FAI "Louis Bleriot Medal" (1992), and the Experimental Aircraft Association (EAA) "Freedom of Flight" Award (1989). He established world records for "Altitude in Horizontal Flight," Airplane Class C1A in 1991, and "Time to Climb to 9000 Meters" in 1994. His military awards include: the Defense Superior Service Medal; the DFC; three Air Medals; the Navy Commendation Medal with Combat "V"; a Navy Unit Commendation; Meritorious Unit Commendation; Armed Forces Expeditionary Medal; Humanitarian Service Medal; and Vietnam Campaign Medal.

Frederick (Fred) Gregory
PLT STS-51B (1985); CDR STS-33 (1989); CDR STS-44 (1991). NASA Deputy Administrator (2002–2005)

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[1] Officially, two Group 8 astronauts (Dan Brandenstein and Hoot Gibson) have held the position of Chief of the Astronaut Office. The position was first held, unofficially, by Deke Slayton between September 1962 and November 1963. He was replaced by Alan Shepard, who took over as the first *official* Chief of the Office until 1969, with Tom Stafford temporarily replacing him while Shepard trained for Apollo 14. After his lunar mission, Shepard served a second term until he retired in 1974. He was replaced by John Young, who became the 5th Chief of the Office (4th person to hold the position). In 1987, Dan Brandenstein assumed the role as the 6th Chief (5th person), with Mike Coats serving as Acting Chief (May 1989–March 1990) and Steve Hawley serving as Deputy Chief between 1987 and 1990. When Brandenstein left NASA in October 1990, Hoot Gibson became the 7th Chief (6th person) to take on the role. He relinquished the position to Robert Cabana in September 1994 to begin training for STS-71.

In addition to his regular astronaut duties, Fred Gregory garnered extensive experience as a manager of flight safety programs and launch support operations. In his years as an active NASA pilot astronaut, he logged 455 hours in space. Gregory also served in several key positions during his years as an astronaut, including Chief of Operational Safety at NASA Headquarters, Washington, D.C., and Chief of Astronaut Training. Additionally, he served on the Orbiter Configuration Control Board and Space Shuttle Program Control Board, all of which were valuable assignments in his path to a senior NASA managerial position.

From June 1992 to December 2001, Gregory held the position of Associate Administrator, Office of Safety and Mission Assurance, at NASA Headquarters. During this period, he retired as a colonel in the USAF, in December 1993, after 29 years of service. As Associate Administrator for NASA, he was responsible for the safety, reliability, quality, and mission assurance of all NASA programs. In December 2001, he began serving – initially in an acting capacity – as Associate Administrator for the Office of Space Flight. This position became permanent in February 2002. He was now responsible for overseeing the management of the ISS; Space Shuttle operations; Space Access using Expendable Launch Vehicles (ELV) for commercial launch services; Space Communications; and Advanced Programs. On August 1, 2002, the U.S. Senate confirmed Gregory's appointment as NASA's Deputy Administrator and he was sworn in on August 12. Not only was he the first person to fill the position in ten years, he was also NASA's first African-American Deputy Administrator. He continued in this role until his retirement from NASA in 2005.

Col. Gregory is a member or past member of numerous societies, including the SETP, American Helicopter Society, Air Force Academy Association of Graduates, the National Technical Association, the Tuskegee Airmen, and the Order of the Daedalians. He is on the Board of Directors for the Young Astronaut Council, Kaiser-Permanente, the Photonics Laboratory at Fisk University, and the Engineering College at Howard University. He is also on the Board of Trustees at the Maryland Science Center, and is a member of the Executive Committee of the ASE.

His many awards and honors include the Defense Superior Service Medal; the Legion of Merit; the National Intelligence Medal of Achievement; 2 DFCs; 16 Air Medals; the NASA Distinguished Service Medal; 2 NASA Outstanding Leadership Medals; National Society of Black Engineers Distinguished National Scientist Award; the George Washington University Distinguished Alumni Award; and President's Medal, Charles R. Drew University of Medicine and Science. He holds Honorary Doctor of Science degrees from the College of Aeronautics and the University of the District of Columbia. He was also awarded the Air Force Association Ira Eaker Award in addition to numerous civic and community honors. On May 1, 2004, Col. Gregory was inducted into the U.S. Astronaut Hall of Fame.

S. David (Dave) Griggs (1939–1989)
MS STS-51D (1985).

On his follow-up assignment to STS-51D, Dave Griggs began training for the dedicated Department of Defense (DOD) mission STS-33 – this time as Pilot (PLT) – then scheduled for launch in August 1989.

On June 17, 1989, aged 49, Naval Reserve Rear Adm. Griggs was killed when his stunt plane slammed into a field 20 miles west of Memphis, while practicing solo aerobatic maneuvers for an air show later that day in Clarkville, Arkansas. He was flying a 1944 vintage two-seat AT-6D propeller airplane.

His many awards and honors include the DFC; Meritorious Service Medal; 15 Air Medals; Vietnamese Cross of Gallantry; the NASA Space Flight Medal; NASA Achievement Award; and NASA Sustained Superior Performance Award.

Terry (T.J.) Hart
MS STS-41C (1984).

Terry Hart's only mission in space logged a total of 168 hours. According to his Oral History, Hart was on leave of absence from Bell Telephone Laboratories (which later became AT&T) while he was at NASA. He had expected this to last for six years: "In '78, we thought we were one year from the first [Shuttle flight], and our class would start flying around the sixth mission. So I figured I'll get maybe two, maybe three [flights] and then go back. And here it was, at four years, I was put on a crew, but I wasn't going to fly until two years later, so I was gone six years." This proved to be at a difficult time at AT&T in 1984, as they were breaking up the Bell telephone system, and Hart was asked to come back after his flight to resume his career. "That all happened maybe six or eight months before I flew my mission," he explained. "George Abbey had called me in and offered me a second flight. It was a good flight. It was a science mission with the Germans [Spacelab D], and would have been interesting, but it was a three-year preparation to get ready for it. So I went back and I talked to my executive management team at Bell Labs, and was torn for a while, but then I decided I probably should settle down into a real career, because I was always an engineer at heart. I wanted to get back to that. So I felt a little bit bad not flying a couple more missions, but it would have been quite a bit longer away from my main career." **[5]**

Hart retired as an astronaut in 1984 and returned to a career in the telecommunications industry, holding several engineering management positions in the Government Data Systems Division with AT&T, and then as the Director of Engineering and Operations for the company's satellite network. During this time, he also achieved the rank of lieutenant colonel in the New Jersey Air National Guard, which he had joined in 1973. He continued flying with the Guard

until 1985 and finally left that service in 1990. In 2004, he retired as President of Loral Skynet, a satellite communications company, in order to join the engineering faculty at his old alma mater, Lehigh University, teaching aerospace engineering.

Professor Hart is a member of the AIAA, the Institute of Electrical and Electronic Engineers, Tau Beta Pi, Sigma Xi, and Delta Upsilon. He has been awarded the National Defense Medal, the NASA Space Flight Medal, and was named Outstanding Officer of Undergraduate Pilot Training Class in 1970. He has also received the Rutgers Distinguished Alumnus Award, the Pride of Pennsylvania Award, and the New Jersey Distinguished Service Medal.

Frederick (Rick) Hauck
PLT STS-7 (1983); CDR STS-51A (1984); CDR STS-26 (1988).

Rick Hauck had the honor of being the first pilot from his group to fly in space, as a member of the five-person crew of STS-7. By the end of his third and final mission, Hauck had logged 436 hours in space. Like several of his colleagues, Hauck was conscious of turning 50 before he took the next step in developing his career. He had decided to leave NASA before flying STS-26, but did not announce it immediately. When he was asked at the pre-flight press conference if he was hoping for a fourth mission, he replied "No," and confirmed he had decided to retire from the Astronaut Office on one of America's morning TV shows the following day. "So I think I'm probably one of the few people who was able to announce on national television that I was on the job market. You can't buy that kind of publicity," he stated in 2004. **[6]**

In May 1989, Capt. Hauck became Director of the Navy Space Systems Division, in the Office of the Chief of Naval Operations. In this capacity, he held budgeting responsibility for the Navy's space programs. He concluded his military active duty on June 1, 1990. That October, he was appointed President and CEO of AXA Space, (formerly INTEC), a subsidiary of the international AXA insurance group, specializing in underwriting insurance for the risk of launching and operating satellites. He assumed responsibilities as CEO on January 1, 1993, and retired from this position on March 31, 2005. In May 2010, he was appointed to the board of Cianbro, a Maine-based construction company.

Capt. Hauck is a Fellow of the SETP, the AIAA, and the AAS. He was inducted into the Astronaut Hall of Fame on November 11, 2001, and serves on the boards of the Astronaut Scholarship Foundation and the U.S. Space Foundation. He is also a member of the Advisory Council of the Institute of Nuclear Power Operations. In the wake of the Space Shuttle *Columbia* tragedy and the subsequent return to flight of *Discovery* (STS-114), he featured as a news analyst on NBC and National Public Radio.

Steven Hawley
MS STS-41D (1984); MS STS-61C (1986): MS STS-31 (1990); MS STS-82 (1997); MS STS-93 (1999).

Astronomer Steven Hawley left the Astronaut Office in June 1990 in order to take up the post of Associate Director of NASA's Ames Research Center in California, before returning to JSC in August 1992 as Deputy Director of Flight Crew Operations. He resumed his astronaut flight status and training in February 1996 and went on to complete two further space flights. In completing the STS-93 mission, Hawley became the final member of the 1978 group to make a space flight, ending a remarkable series of 103 missions over a period of 15 years in which members of the 1978 group participated.

Dr. Hawley then returned to his former duties as Deputy Director of Flight Crew Operations. From October 2001 to November 2002, he was Director of Flight Crew Operations, and from 2003 to 2004, he served as the first Chief Astronaut for the NASA Engineering and Safety Center. From 2002 to 2008, he also worked as Director, Astromaterials Research and Exploration Science Directorate (ARES). In this role, he was responsible for directing a scientific organization conducting research in planetary and space science. Having logged around 32 days in space on his five space flights, Dr. Hawley retired from NASA in May 2008 to become Professor of Physics and Astronomy at the University of Kansas. In 2010, he was appointed the university's Director of Engineering Physics, and in 2012 he became their Adjunct Professor of Aerospace Engineering.

He is a member of the AAS, the Astronomical Society of the Pacific, the AIAA, Sigma Pi Sigma, and Phi Beta Kappa. Among his numerous awards and honors, he has received the Group Achievement Award for software testing at the Shuttle Avionics Integration Laboratory (SAIL), 1981; NASA Outstanding Performance Award, 1981; NASA Superior Performance Award, 1981; NASA Space Flight Medal (1984, 1986, 1990, 1997, 1999); NASA Exceptional Service Medal (1988, 1991); Exceptional Service Medal for Return to Flight, 1988; University of Kansas Distinguished Service Citation, 1998; NASA Distinguished Service Medal (1998, 2000); and the V.M. Komarov Diploma from the FAI, 1998 and 2000. He was inducted into the Kansas Aviation Hall of Fame in 1997, and the U.S. Astronaut Hall of Fame in 2007. He currently works and resides in Lawrence, Kansas.

Jeffrey Hoffman
MS STS-51D (1985); MS STS-35 (1990); MS/PC STS-46 (1992); MS STS-61 (1993); MS STS-75 (1996).

Dr. Hoffman became the first astronaut to log 1,000 hours aboard the Space Shuttle, during STS-75. At the completion of his fifth space mission, he had logged more than 1,211 hours and flown 21.5 million miles in space.

Later in 1996, Hoffman led the Payload and Habitability Branch of the Astronaut Office, but he left the astronaut program in July 1997 to become NASA's European Representative in Paris, where he served until August 2001. His principal duties were to keep NASA and its European partners informed about each other's activities, to try to resolve problems in U.S.-European cooperative space projects, to search for new areas of U.S.-European space cooperation, and to represent NASA in the European media. In August 2001, he was seconded by NASA to the Massachusetts Institute of Technology (MIT) where he became a Professor in the Department of Aeronautics and Astronautics, engaged in several research projects using the ISS and teaching courses on space operations and design. His research at MIT also focused on improving the technology of spacesuits and designing innovative space systems for human and robotic space exploration. Since 2008, he has been a Visiting Professor at the Department of Physics and Astronomy at the University of Leicester in England. He is also the director of the Massachusetts Space Grant Consortium and Deputy Principal Investigator of an experiment on NASA's Mars 2020 mission. In June 1986, his book *An Astronaut's Diary* (accompanied by a cassette tape) was released. The cassette contained excerpts of the original recordings he made with a pocket tape recorder.

Dr. Hoffman is a member of the International Academy of Astronautics, the Spanish Academy of Engineering, the AIAA, the AAS, the International Astronomical Union, Phi Beta Kappa and Sigma Xi. Among other awards, he has received five NASA Space Flight Medals, two NASA Exceptional Service Medals, two NASA Distinguished Service Medals, and the V. M. Komarov and Sergei P. Korolev Diplomas from the FAI in 1991 and 1994. In 2007, he was inducted into the Astronaut Hall of Fame.

Shannon Lucid
MS STS-51G (1985); MS STS-34 (1989); MS STS-43 (1991); MS STS-58 (1993); MS STS-76/Mir 21 & 22 NASA Board Engineer 2/MS STS-79 (1996).

Dr. Lucid became the first woman to hold an international record for the most flight hours in orbit by any non-Russian, and, until June 2007, also held the record for the most flight hours in orbit by any female astronaut. At the end of her fifth mission, Shannon Lucid had logged more than 223 days in space.

In 1993, Dr. Lucid was inducted into the Oklahoma Women's Hall of Fame, and in December 1996 she became the first woman to receive the Congressional Space Medal of Honor for her record-breaking service aboard the Mir station. She was also presented with the Order of Friendship Medal by Russian President Boris Yeltsin for that mission. This is one of the highest Russian civilian awards and the most distinguished that can be presented to a non-Russian. From February 2002 until September 2003, Dr. Lucid served as NASA's Chief Scientist, stationed at NASA Headquarters in Washington D.C., with responsibility for developing and

communicating the agency's science and research objectives to the outside world. She then returned to her duties at JSC in Houston, including acting as Capcom for at least 14 Shuttle missions, starting with STS-114 in 2005 and ending with the final mission, STS-135, in 2011. On January 31, 2012, after 34 years of service with the space agency, Shannon Lucid retired from NASA.

In May 2014, during ceremonies conducted at KSC, Dr. Lucid was inducted into the United States Astronaut Hall of Fame.

Jon McBride
PLT STS-41G (1984).

Following his first flight as PLT aboard STS-41G in 1984, Jon McBride was next scheduled to fly as Commander (CDR) of STS-61E in March 1986. It had been planned for this mission to carry the ASTRO-1 observatory, which would be used to make astronomical observations including observations of Comet Halley. ASTRO-1 consisted of three ultraviolet telescopes mounted on two Spacelab pallets. However, the flight was one of those deferred by NASA in the wake of the *Challenger* accident in January 1986.

On July 30, 1987, McBride was assigned to NASA Headquarters in Washington, D.C., to serve as Assistant Administrator for Congressional Relations, with responsibility for NASA's relationship with Congress, and for providing coordination and direction to all Headquarters and Field Center communications with Congressional support organizations. He held this post from September 1987 until March 1989. On November 30, 1988, he was named to command the crew of the delayed ASTRO-1 mission, now re-designated STS-35 and scheduled for launch in March 1990. "Two or three months after that, rumors [were] floating around the halls [in Washington] that ASTRO was not going to fly, it was such a low priority," he recalled. McBride was told he could return to JSC and train for a couple of years but with no guarantee of the mission flying. He had already bought a vacation home in West Virginia, and was commuting three hours every weekend back and forth between there and Washington D.C., but the thought of commuting to and from Houston was just too much and so he decided to resign from NASA and return permanently to West Virginia. **[7]**

On May 12, 1989, NASA announced that Capt. McBride had officially retired from the agency and the USN in order to pursue a business career, and been replaced on the STS-35/ASTRO-1 mission by Vance Brand. Eighteen months later, Brand commanded *Columbia* on that mission. "I'm sure sorry I didn't get to fly as a commander once or twice aboard the Shuttle," McBride reflected in 2012, "but the things I got to do were just as remarkable in many ways."

He retired with an enviable record of more than 8,800 hours in over 40 different types of military and civilian aircraft. McBride subsequently became President

and Chief Executive Officer of the Flying Eagle Corporation in Lewisburg, West Virginia, and President of the Constructors' Labor Council of West Virginia. In 1996, he unsuccessfully ran for the Republican nomination for Governor of West Virginia, losing to Cecil Underwood. He later left West Virginia to pursue business opportunities in Arizona, and following his retirement from business interests in 2008, moved near to Cocoa, Florida. Until January 2020, he worked at the KSC Visitor Complex as a member of the Astronaut Encounter team. In addition to being a liaison between the visiting astronauts and the Visitor Complex, he also gave motivational lectures and presentations.

His many awards and honors include the Legion of Merit; Defense Superior Service Medal; three Air Medals; Navy Commendation Medal with Combat "V"; National Defense Service Medal; Vietnam Service Medal; and the NASA Space Flight Medal. He was inducted into the West Virginia Hall of Fame in 2014.

Ronald McNair (1950–1986)
MS STS-41B (1984); MS STS-51L (1986).

While orbiting the Earth, Dr. Ronald McNair, an accomplished saxophonist, also fulfilled an ambition by becoming the first person to play the saxophone in space. He had brought his own instrument on the mission and managed to play a few numbers while circling the globe during his 191 hours in space.

In January 1985, McNair was assigned to the STS-51L mission of Shuttle *Challenger*. The mission would never be completed as *Challenger* and her crew of seven, including Ron McNair, were lost 73 seconds after lift-off from KSC on January 28, 1986, following a massive explosion in the external fuel tank.

Dr. McNair exemplified excellence and was the recipient of several honorary doctorates, fellowships and commendations. He was a member of the American Association for the Advancement of Science, the American Optical Society, the American Physical Society (APS), the APS Committee on Minorities in Physics, the North Carolina School of Science and Mathematics Board of Trustees, the MIT Corporation Visiting Committee, and Omega Psi Phi. He was a visiting lecturer in Physics at Texas Southern University. Dr. McNair was posthumously awarded the Congressional Space Medal of Honor, while a vast number of public places, institutions and programs have been renamed in his honor, including a crater on the Moon. He is now buried in his hometown at the Ronald E. McNair Memorial Park, which sits next to the old library building (now renamed the Dr. Ronald E. McNair Life History Center) in Lake City, South Carolina. Work on the Ronald E. McNair Memorial Park was begun in 2009, and when completed McNair's remains were moved from the Rest Lawn Memorial Cemetery and entombed in the new memorial park named after him.

Richard (Mike) Mullane
MS STS-41D (1984); MS STS-27 (1988); MS STS-36 (1990).

Col. Mike Mullane retired from NASA and the USAF in September 1990, having logged a total of 356 hours in space on his three missions. He then became self-employed as a professional motivational speaker and writer. His first fiction novel, *Red Sky, A Novel of Love, Space and War*, was published in June 1993. Since then, he has written an award-winning children's book, *Liftoff! An Astronaut's Dream* and a popular space-fact book, *Do Your Ears Pop In Space?* His memoir, *Riding Rockets: The Outrageous Tales of a Space Shuttle Astronaut,* was published in 2006 and was favorably reviewed in the *New York Times.*

Mullane has been inducted into the International Space Hall of Fame and is the recipient of many awards, including six Air Medals, the Air Force DFC, Meritorious Service Medal, Vietnam Campaign Medal, National Defense Service Medal, Vietnam Service Medal, Air Force Commendation Medal, and NASA Space Flight Medal. He was named a Distinguished Graduate of the USAF Navigator Training School (and recipient of its Commander's Trophy), the USAF Institute of Technology, and the USAF Test Pilot School.

Steven Nagel (1946–2014)
MS STS-51G (1985); PLT STS-61A (1985); CDR STS-37 (1991); CDR STS-55 (1993).

Steve Nagel was unique among the 1978 group in having flown in all the primary positions on a Shuttle crew. Although selected as a future Shuttle pilot by NASA, Steve Nagel flew in space as an MS on his first mission. Just four months later, he flew as PLT on his second mission and then later flew as CDR on his third and fourth missions. Altogether, he logged a total of 723 hours in space. Nagel retired from the USAF as a colonel on February 28, 1995, and formally left the Astronaut Office the next day to join the Safety, Reliability, and Quality Assurance Office at JSC. In September 1996, he moved to the Aircraft Operations Division as a research pilot, Chief of Aviation Safety and Deputy Chief of the division.

After retiring from NASA on May 31, 2011, Nagel joined the University Of Missouri College of Engineering in Columbia, Missouri, where he served as an instructor in the University's Mechanical and Aerospace Engineering Department.

His numerous awards included the Air Force DFC and the Air Medal with seven Oak Leaf Cluster. For pilot training, he received the Commander's Trophy, the Flying Trophy, the Academic Trophy and the Orville Wright Achievement Award (Order of Daedalians). He also received the Air Force Meritorious Service Medal. He earned four NASA Space Flight Medals; two Exceptional Service Medals; an Outstanding Leadership Medal; the AAS Flight Achievement Award; the

Outstanding Alumni Award of the University of Illinois; a Distinguished Service Medal; the Distinguished Alumni Award, California State University Fresno; and the Lincoln Laureate of the State of Illinois.

Col. Nagel died on August 21, 2014, after a two-year battle with an aggressive form of melanoma. He was 67 years old.

George (Pinky) Nelson
MS STS-41C (1984); MS STS-61C (1986); MS STS-26 (1988).

George "Pinky" Nelson logged over 407 hours in space on his three missions. He left NASA in 1989 and became an Assistant Provost at the University of Washington. He now directs the Science, Mathematics and Technology Education program at Western Washington University in Bellingham, and is the principal investigator of the North Cascades and Olympic Science Partnership, a mathematics and science partnership grant from the National Science Foundation.

His many awards include the NASA Exceptional Engineering Achievement Medal; NASA Exceptional Service Medal; three NASA Space Flight Medals; the AIAA Haley Space Flight Award; the FAI V. M. Komarov Diploma; and the Western Washington University Faculty Outstanding Service Award. He is also an elected member of Washington State Academy of Science and an Elected Fellow of the American Association for the Advancement of Science. On May 2, 2009, Dr. Nelson was inducted into the U.S. Astronaut Hall of Fame.

Ellison (El) Onizuka (1946–1986)
MS STS-51C (1985); MS STS-51L (1986).

On his 1985 STS-51C flight aboard *Discovery*, and newly promoted to lieutenant colonel, Onizuka became the first American of Japanese ancestry (and the first Buddhist) to fly in space. When asked about his STS-51C flight and his role as an astronaut, Lt. Col. Onizuka said that he felt very fortunate to have been given an opportunity so few people would experience. "Being out in space, you really realize the potential and you start to understand what this new frontier is all about," he once told a reporter. "It was an opportunity for me to do something I had dreamed of doing for a lifetime. And it was also an opportunity to serve our country." **[8]**

Onizuka was then assigned to serve as an MS aboard STS-51L. Among his other duties during the six-day *Challenger* flight, he was scheduled to facilitate the deployment of TDRS-B and to film Halley's Comet with a hand-held camera. Lt. Col. Ellison Shoji Onizuka, USAF, was one of the seven crewmembers killed in the loss of Shuttle *Challenger* on January 28, 1986.

Following the accident, Onizuka was laid to rest at the National Memorial Cemetery of the Pacific in Honolulu, Hawaii. He was posthumously promoted to

the rank of colonel in the USAF and awarded the Congressional Space Medal of Honor. An asteroid, and a crater on the Moon, were also named after him, as well as Onizuka Air Force Station in Sunnyvale, California. The Onizuka Village family housing on Hickam AFB and the Astronaut Ellison S. Onizuka Space Center at Kona International Airport were also dedicated to him. In Hawaii, a visitor's center on Mauna Kea bears his name.

During his lifetime, Col. Onizuka became a member of the Society of Flight Test Engineers, the Air Force Association and the AIAA. Among other honors, he was presented with the Air Force Commendation Medal; Air Force Meritorious Service Medal; Air Force Outstanding Unit Award; Air Force Organizational Excellence Award; and National Defense Service Medal.

Judith (Judy) Resnik (1949–1986)
MS STS-41D (1984); MS STS-51L (1986).

In flying on STS-41D, Judy Resnik became the second American woman – following Sally Ride – to journey into space, and only the fourth since human space flight began. With the completion of that flight, Dr. Resnik had logged 144 hours and 57 minutes in space.

For her next mission, STS-51L (*Challenger*), Resnik was scheduled to operate the Canadian-built Remote Manipulator System (RMS) to deploy the SPARTAN, a network of scientific instruments which would have floated in space for several hours to study Halley's Comet. On January 28, 1986, only 73 seconds after lift-off during her second mission, Resnik died in the tragic loss of Shuttle *Challenger* nine miles above the Atlantic Ocean, along with her six colleagues, leaving a country shocked and in mourning. Judy Resnik was 36 years old.

Dr. Resnik was a member of the Institute of Electrical and Electronic Engineers (IEEE); American Association for the Advancement of Science; IEEE Committee on Professional Opportunities for Women; American Association of University Women; AIAA; Tau Beta Pi; Eta Kappa Nu; Mortarboard; and a Senior Member of the Society of Women Engineers. She had received the NASA Space Flight Medal in 1984, and was posthumously awarded the Congressional Space Medal of Honor.

Sally Ride (1951–2012)
MS STS-7 (1983); MS STS-41G (1984).

Group 8 MS Dr. Sally Ride would achieve lasting fame as the first American woman to fly in space. On June 18, 1983, Dr. Ride achieved her first (and history-making) flight on the STS-7 mission, which lifted off that morning from launch Complex 39A at KSC.

Following the loss of Shuttle *Challenger* and her crew of seven in January 1986, Dr. Ride served as a member of the Presidential Commission investigating the accident. Upon completion of the investigation, she was assigned to NASA Headquarters as Special Assistant to the Administrator for long-range and strategic planning. In 1987, she coauthored a report on the possible future options for the U.S. space program. She had always planned to retire after her third flight and return to academia in the summer of 1986, but the loss of *Challenger* and her involvement in the Commission and the report changed this. In August 1987, she resigned from NASA to take a position at the Center for International Security and Arms Control (CISAC) at Stanford University

In 1989, Dr. Ride joined the faculty at the University of California San Diego (UCSD) as a Professor of Physics and Director of the University's California Space Institute. During the 1990s, she led two public-outreach programs for NASA – the ISS EarthKAM and GRAIL MoonKAM cooperative programs with NASA's Jet Propulsion Laboratory (JPL) and UCSD – to enable middle school students to request images of the Earth and the Moon. In 2001, she founded her own company, Sally Ride Science, in order to pursue her long-time passion of motivating girls and young women to consider careers in science, math and technology. The company created entertaining science programs and publications for upper elementary and middle school students and their parents and teachers. A long-time advocate for improved science education, Dr. Ride wrote or co-wrote seven books, including five science books for children: *To Space and Back*; *Voyager: An Adventure to the End of the Solar System; The Third Planet*; *The Mystery of Mars*; and *Exploring Our Solar System*. She also initiated and directed education projects designed to fuel middle school students' fascination with science.

Sally Ride was a member of the President's Committee of Advisors on Science and Technology and the National Research Council's Space Studies Board. She also served on the boards of the Congressional Office of Technology Assessment, the Carnegie Institution of Washington and the National Collegiate Athletic Association (NCAA) Foundation. She was a Fellow of the American Physical Society, a member of the Pacific Council on International Policy and served on the boards of the Aerospace Corporation and the California Institute of Technology. She was the only person to have served on the commissions investigating both the *Challenger* and *Columbia* accidents.

The recipient of numerous honors and awards, Sally Ride was inducted into the National Women's Hall of Fame and the U.S. Astronaut Hall of Fame (2003) and received the Jefferson Award for Public Service, the von Braun Award, the Lindbergh Eagle and the NCAA's Theodore Roosevelt Award. She was twice awarded the NASA Space Flight Medal.

Until her death from pancreatic cancer on July 23, 2012, aged 61, Dr. Ride continued to help students and worked with science programs and festivals around the United States. She is survived by Tam O'Shaughnessy, her partner of 27 years, who also serves as Chief Operating Officer and Executive Vice President of Sally Ride Science, continuing the work begun by Sally.

Several books have been written about Dr. Sally Ride. The most definitive was *Sally Ride: America's First Woman in Space*, by Lynn Sherr, published two years after Ride's death.

Francis (Dick) Scobee (1939–1986)
PLT STS-41C (1984); CDR STS-51L (1986).

While waiting and training for his first assignment, and in addition to his astronaut duties, Dick Scobee served as an instructor pilot on the NASA/Boeing 747 Shuttle Carrier Aircraft (SCA), which transported the Shuttles between ground stations. His first space flight came as PLT on STS-41C in 1984 and by the end of it, Maj. Scobee had logged a total of 167 hours and 40 minutes in space.

Promoted to CDR, he was next assigned to STS-51L, a second mission for him aboard Shuttle *Challenger*. Following a number of launch delays, *Challenger* finally lifted off from KSC at 11:38:00 EST on January 28, 1986. The massive explosion in the fuel tank 73 seconds into the flight resulted in the loss of *Challenger* and her seven crewmembers. Lt. Col. Francis (Dick) Scobee was interred at Arlington National Cemetery on what would have been his 47th birthday.

Among his many special honors, Dick Scobee was awarded the Air Force DFC, the Air Medal, and two NASA Exceptional Service Medals. On July 9, 1994, the San Antonio College Planetarium was rededicated as The Scobee Planetarium. In 2004, he was posthumously awarded the Congressional Space Medal of Honor and was inducted into the Astronaut Hall of Fame. After the *Challenger* disaster, a number of schools, streets, and municipal facilities in the U.S. were renamed in his honor. North Auburn Elementary School in Auburn, Washington, was renamed Dick Scobee Elementary, and Auburn Municipal Airport became Dick Scobee Field. Dick Scobee Road in Myrtle Beach, South Carolina, also commemorates his name. In Houston's George Bush Park, there is a Radio Control Flying Field named in his honor. His many organizations included membership of the SETP, the Experimental Aircraft Association and the Air Force Association.

Margaret (Rhea) Seddon
MS STS-51D (1985); MS STS-40 (1991); MS/PC STS-58 (1993).

It would be nearly seven years after her Group 8 selection before Rhea Seddon first ventured into space, as an MS on STS-51D in 1985. In her three space flights,

Dr. Seddon logged just over 722 hours in space. Seddon was not approached to fly a fourth mission, as she and husband Hoot Gibson were planning to add to their family and move to Tennessee once Gibson had completed his fifth flight, but as he became so busy after STS-71, their plans were delayed a year.

"So we wanted to go back in '96, and it was pointed out to me that I needed one more year with NASA to qualify for a pension. They were offering early outs, so I needed to be 50 and have 20 years with the government. Luckily, I had some time in the V.A. [Veterans Affairs] Hospital system when I was a resident, so I had a little extra time, but I needed to be 50, and that was in 1997. So I thought, 'How am I going to work this?' Luckily, the folks at NASA said, 'Well, you know, if you could work for NASA at a different place, like somewhere in Tennessee, then you could fulfill that last-year requirement.' Luckily, Vanderbilt had been working with the Neurolab people, and there was a Neurolab experiment coming out of Vanderbilt, so I negotiated a part-time job there, and came to Vanderbilt.

"Drew [F. Andrew] Gaffney, who had flown with me on SLS-1, was a professor at Vanderbilt at the time. I said to him, 'I'd really like to come back to Tennessee, and one of the places that I think I'd like to work would be Vanderbilt, the Medical Center. Can you make some introductions?' And luckily, he did, with the vice chancellor at the time and his deputy, and they sent me around to talk to a bunch of people. I also talked to people at other hospitals in Nashville and looked around there. I was going to be working part-time in one of the Vanderbilt research labs two days a week for NASA. I let the Vanderbilt Hospital people know I could work for them three days a week until my NASA commitment was up in a year." **[9]**

In September 1996, Rhea Seddon was detailed by NASA to Vanderbilt University Medical School in Nashville, Tennessee. There, she assisted in the preparation of cardiovascular experiments which flew aboard Space Shuttle *Columbia* on the Neurolab Spacelab flight in April 1998. She retired from NASA in November 1997 and is now the Assistant Chief Medical Officer of the Vanderbilt Medical Group in Nashville, Tennessee.

On May 30, 2015, Rhea Seddon became the eighth woman inducted into the U.S. Astronaut Hall of Fame during a public ceremony held at the KSC Visitor Complex. A week prior to her induction, Dr. Seddon released her first book, the memoir *Go For Orbit*. In October that year, she was also inducted into the Tennessee Women's Hall of Fame.

Brewster Shaw, Jr.
PLT STS-9 (1983); CDR STS-61B (1985); CDR STS-28 (1989).

Brewster Shaw logged over 533 hours in his three space flights. Following his third mission, he was advised that it would be at least three or four years before he would fly in space again, and in the interim was asked by Robert Crippen to take over the job he had been doing down at the Cape, which he accepted. But when he

asked if he could retain his T-38 flying status and still be eligible for space flight, the answer was a firm "No and No."

Brewster Shaw left JSC in October 1989 to assume the NASA Headquarters senior executive position of Deputy Director, Space Shuttle Operations, located at KSC. As operations manager, Shaw was responsible for all operational aspects of the Space Shuttle Program and had Level II authority over the Space Shuttle elements, from the time the Orbiters left the Orbiter Processing Facility (OPF) and were mated to the External Tank (ET) and Solid Rocket Boosters (SRB), through transport to the launch pad, launch and recovery, to their return to the OPF. He was the final authority for the launch decision, and chaired the Mission Management Team. Shaw then moved on to serve as the Deputy Program Manager, Space Shuttle, as a NASA Headquarters employee located at KSC. In addition to the duties he previously held, he also shared full authority and responsibility for the conduct of the Space Shuttle Program with the Space Shuttle Program Manager.

He was then appointed Director, Space Shuttle Operations, with responsibility for the development of all Space Shuttle elements, including the Orbiter, ET, SRB, Space Shuttle Main Engines (SSME), the facilities required to support mission operations and in the planning necessary to conduct Shuttle operations efficiently.

Post-NASA, Shaw joined Rockwell in 1996 after 27 years with the USAF and the space agency. The Boeing Company acquired Rockwell in December 1996. Initially, Shaw served as Director of Major Programs, Boeing Space and Defense Group. He then became Vice President and Program Manager of ISS Electrical Power Systems at Rocketdyne Propulsion and Power. The contract included the development, testing, evaluation and production of the electrical power system to be assembled in space during multiple Space Shuttle launches. Shaw's next role was to lead the consolidated Boeing teams at Huntsville, Alabama, and Canoga Park and Huntington Beach, California, in the design, development, testing, evaluation, production and flight preparation of ISS hardware and software. Boeing was NASA's prime contractor and supplier for the ISS.

In mid-2003, Brewster Shaw left Boeing and became the Chief Operating Officer of USA. In that position he had primary responsibility for the day-to-day operations and overall management of USA, the prime contractor for the Space Shuttle Program, and its 10,000 employees in Florida, Texas, Alabama and Russia. In January 2006, he returned to the Boeing Company's Houston campus, and was then acting as the Vice President and General Manager of the Space Exploration Division, which controlled Boeing's ISS and Space Shuttle programs.

Shaw has earned numerous honors and awards, including 28 medals in Vietnam. He received the Defense Superior Service Medal, the Air Force DFC with Seven Oak Leaf Cluster and the Defense Meritorious Service Medal. He was inducted into the U.S. Astronaut Hall of Fame on May 6, 2006.

Loren Shriver
PLT STS-51C (1985); CDR STS-31 (1990); CDR STS-46 (1992).

Loren Shriver, a veteran of three space flights and with more than 386 hours logged in space, was assigned as Deputy Chief of the Astronaut Office in October 1992. The following year, he accepted the position of Space Shuttle Program Manager for Launch Integration at KSC. Then, from 1997, he served as Deputy Director for Launch and Payload Processing, before resigning from NASA in March 2000 to take up the role of Deputy Program Manager for the Space Shuttle Program for USA. In 2006, he retired from this position, and also took his retirement from the USAF with the rank of colonel.

Shriver's accomplishments have earned him many notable awards. He has received the Air Force DFC; the Defense Superior Service Medal; the Defense Meritorious Service Medal; the Air Force Meritorious Service Medal; and the Air Force Commendation Medal. His NASA awards include the NASA Distinguished Service Medal, the NASA Outstanding Leadership Medal, and the NASA Space Flight Medal (three times). In 1990, he received the Flight Achievement Award from the AAS and the Haley Space Flight Award from the AIAA. He was inducted into the Astronaut Hall of Fame in 2008.

Now living in Estes Park, Colorado, he has stated that even though he has retired, he is becoming a regular on the "speaker's circuit," sharing his experiences at schools, businesses and organizations.

Robert (Bob) Stewart
MS STS-41B (1984); MS STS-51J (1985).

Bob Stewart logged a total of 289 hours in space including approximately 12 hours of Extra-Vehicular Activity (EVA) operations. Although astronauts who had served in the U.S. Army Air Force during World War II had flown previously (including Mercury astronauts Gus Grissom and Deke Slayton), Stewart was the first active-duty Army officer to fly into space.

While in training for his scheduled third flight (STS-61K, ultimately cancelled as a result of the *Challenger* disaster in January 1986), the U.S. Army promoted Stewart to brigadier general, the highest military rank attained by a member of the TFNG. Upon accepting this promotion, he was reassigned from NASA to be the Deputy Commanding General, U.S. Army Strategic Defense Command, in Huntsville, Alabama. In this capacity, he managed research efforts in developing ballistic missile defense technology. Three years later, he was reassigned as Director of Plans, U.S. Space Command, Colorado Springs, Colorado. He retired from the army in 1992 and now makes his home in Woodland Park, Colorado. He is presently employed as Director, Advanced Programs, Nichols Research Corporation in Colorado Springs.

Brig. Gen. Stewart is a member of the SETP, ASE, a past member of Phi Eta Sigma, and the Scabbard and Blade (military honor society). During his army and NASA careers, he has been awarded the Army Distinguished Service Medal; the Defense Superior Service Medal; two Legions of Merit; four DFC; a Bronze Star; a Meritorious Service Medal; 33 Air Medals; the Army Commendation Medal with Oak Leaf Cluster and "V" Device; two Purple Hearts; the National Defense Service Medal; the Armed Forces Expeditionary Medal; the U.S. and Vietnamese Vietnam Service Medals; and the Vietnamese Cross of Gallantry. He has also been the recipient of the Army Aviator of the Year 1984, AHS Feinberg Memorial Award, and AIAA Oberth Award, and was awarded the NASA Space Flight Medal (1984 and 1985). He was inducted into the U.S. Army Aviation Hall of Fame in Atlanta, Georgia, in 2007.

Kathryn (Kathy) Sullivan
MS STS-41G (1984); MS STS-31 (1990); MS/PC STS-45 (1992).

Dr. Kathy Sullivan's first space mission was on STS-41G, in 1984, during which she and fellow MS David Leestma successfully conducted a 3.5-hour spacewalk to demonstrate the feasibility of satellite refueling, making her the first U.S. woman to perform an EVA. At the completion of her third mission, Dr. Sullivan had logged more than 532 hours in space.

In the months prior to her final space flight, Sullivan had been pondering her future career after 15 years with NASA. At this time, a friend who had been serving as Chief Scientist at the National Oceanic and Atmospheric Administration (NOAA) was stepping down for personal reasons and asked if Sullivan would be interested in putting her name forward as a replacement. Sullivan had been considering whether to remain at NASA or pursue interests elsewhere, but when the NOAA offer came up it included many of the areas she was personally interested in. Shortly after the STS-45 mission, Sullivan decided this would be an interesting avenue to pursue and her name was put forward. As this was a Presidential appointment, it had to go through the nomination process and be confirmed by the Senate. In the interim, she moved to Washington D.C., as a NASA person on loan to NOAA, while awaiting the decision. Her nomination was originally under the George H.W. Bush administration, but after Bush lost his bid for a second term in the presidential election in November 1992, Sullivan had to be nominated again to the new William J. Clinton administration in early 1993. By March of that year, her appointment was finally confirmed by the Senate.

As Chief Scientist at the NOAA, she oversaw a wide array of research and technology programs, ranging from climate and global change to satellites and marine biodiversity. From 1996 to 2006, she served as President and CEO of the Center of Science & Industry (COSI) in Columbus, Ohio. Under her leadership,

COSI strengthened its impact on science teaching in the classroom and its national reputation as an innovator of hands-on, inquiry-based science learning resources. Dr. Sullivan then served as the inaugural Director of the Battelle Center for Mathematics and Science Education Policy in the John Glenn School of Public Affairs at Ohio State University.

On March 6, 2014, Dr. Sullivan was confirmed by the Senate as the Under Secretary of Commerce for Oceans and Atmosphere, and the tenth NOAA Administrator, having served as Acting NOAA Administrator since February 28, 2013. Prior to her appointment as Acting Administrator, Dr. Sullivan held the positions of Assistant Secretary of Commerce for Environmental Observation and Prediction, and Deputy Administrator. As Assistant Secretary, Dr. Sullivan played a central role in directing Administration and NOAA priority work in the areas of weather and water services, climate science and services, integrated mapping services and Earth-observation capabilities. She also provided agency-wide direction with regard to satellites, space weather, water, and ocean observations and forecasts, to best serve American communities and businesses. She is the United States co-chair of the Group on Earth Observations (GEO), an intergovernmental body that is building a Global Earth Observation System of Systems (GEOSS) to provide environmental intelligence relevant to societal needs. Her tenure as Director of NOAA ended on January 20, 2017, with the swearing in of President Donald Trump.

She then became the 2017 Charles A. Lindbergh Chair of Aerospace History at the Smithsonian Institution's National Air and Space Museum. Her 2019 book *Handprints on Hubble* recounts her experiences as an astronaut and being part of the team which launched, rescued, repaired and maintained HST.

Among her many honors and awards, in 1991 Dr. Sullivan received the Haley Space Flight Award for "distinguished performance in the deployment of the Hubble Space Telescope on Mission STS-31 during April 1990." In 2004 she was inducted into the Astronaut Hall of Fame and received the Adler Planetarium Women in Space Science Award. In 2014, she was included in *Time* magazine's 100 Most Influential People list for that year.

Norman (Norm) Thagard
MS STS-7 (1983); MS STS-51B (1985); MS STS-30 (1989); MS/PC STS-42 (1992); NASA Cosmonaut Researcher Soyuz TM-21/Mir EO18 NASA Board Engineer 2/MS STS-71 (1995).

Dr. Norman Thagard's fifth space flight was different to any of his other missions. In 1995, he became the first American cosmonaut-researcher on a Russian Mir-resident space station crew. As a member of the Mir EO-18 crew, along with cosmonauts Vladimir Nikolayevich Dezhurov and Gennadi Mikhailovich Strekalov,

he became the first American astronaut to live and work on a space station since Skylab in 1974. Lift off from the Baikonur Cosmodrome in Kazakhstan occurred on March 14, 1995. Thagard was the first American to train on Russian soil, the first to enter space aboard a non-American craft, and the first American occupant of Mir. Thagard, Dezhurov and Strekalov landed at KSC aboard *Atlantis* on STS-71 on July 7, 1995. With the completion of his fifth mission, Dr. Thagard had logged over 140 days in space. Following this flight, Thagard resigned from NASA to become a tenured Professor of Electrical Engineering and Dean of Public Relations at Florida State University's FAMU-FSU College of Engineering, where he is currently an Associate Dean. He also serves as the Director of the Challenger Learning Center in Tallahassee, Florida, and is on the boards of various private corporations.

Among his many awards and honors, Dr. Thagard has earned 11 Air Medals; the Navy Commendation Medal with Combat "V" and the Marine Corps "E" Award; the Vietnam Service Medal; and the Vietnamese Cross of Gallantry with Palm. He was inducted into the U.S. Astronaut Hall of Fame on May 1, 2004. Dr. Thagard resigned from the USAF as a captain in 1971.

James ("Ox") van Hoften
MS STS-41C (1984); MS STS-51I (1985).

On his second space flight (STS-51I in 1985), James "Ox" van Hoften, PhD became the first human being to launch a satellite by hand, having spun and pushed a repaired communications satellite away from the orbiting Shuttle *Discovery* during an EVA. Over his two space missions, Dr. van Hoften logged a total 338 hours in space, including 22 hours of EVA flight time. In July 1985, he was assigned to a third Shuttle mission, STS-61G, scheduled for launch on May 22, 1986, but when the flight was cancelled due to the *Challenger* tragedy, he resigned from NASA and joined the Bechtel Corporation in 1986. He had already told his wife that he was going to retire and leave NASA after STS-61G, but the loss of *Challenger* and the down time after that tragedy changed his plans. "After the accident, everything just shut down, and everyone went off and started doing accident investigations and other things. I just knew that this was going to be a tough recovery, and I just said, 'I've got to go out and do something else'," he said in a 2007 interview. "I started interviewing and looking at lots of different options. At that time I felt I didn't want to [leave the Astronaut Office], but I just felt like it was the thing to do. I'm pretty good at making transitions, and I just figured 'this is another transition in life, and you've got to move on', and never looked back.

"I interviewed [for] all sorts of different things. I asked myself what I really wanted to do in life. I've been a college professor… but I didn't go to work

there, and then I looked at going into aerospace… [but] I didn't have any interest in doing that. I was a civil engineer, which is kind of unusual, so I looked for a company that was a civil engineering-type company that I had some interest in doing work in that area, and ended up going to work for Bechtel. It was great. I had a great career there and spent 20 years with them. I was a partner and worked on huge jobs all over the world. So I had four careers, basically, and enjoyed them all." **[10]**

Over the next six years, van Hoften managed the San Francisco-based company's engineering and construction business for the defense and space markets. He later became Senior Vice President and a partner in Bechtel, responsible for airport developments in the Middle East, Japan, and North and South America. In the early 1990s, he was the program manager of the $23 billion Hong Kong Airport Core Program, including the new Hong Kong Airport. He later acted as Director of Projects for the UK National Air Traffic Services. In 2009, he was appointed a non-executive director of Gatwick Airport Ltd. Four years later, in September 2013, he joined the board of directors with construction firm Cianbro Corporation.

During his extensive career in the USN Reserve and USAF Reserve (retiring as a lieutenant colonel in that service), and as an astronaut with NASA, van Hoften received a number of awards and honors. These included the Meritorious Service Medal; two Navy Air Medals; Vietnam Service Medal; National Defense Service Medal; and two NASA Space Flight Medals. He was installed as a Jimmy Doolittle Fellow of the Aerospace Education Foundation in 1990.

David Walker (1944–2001)
PLT STS-51A (1984); CDR STS-30 (1989); CDR STS-53 (1992); CDR STS-69 (1995).

Dave Walker flew four Shuttle missions for NASA, three of them as CDR. By the end of his fourth space flight, he had logged 724 hours in space. His last technical assignments were as Chief of the Station/Exploration Support Office in the Flight Operations Directorate and as Chairman of the JSC Safety Review Board.

Capt. Walker retired from the USN and resigned from NASA in 1996, taking up a sales and marketing position with NDC Voice Communications in San Diego, California. In 1999, he joined Ultrafast, Inc. of Malvern, Pennsylvania, as Vice President of Sales. On his retirement, he moved to Boise, Idaho, although he often worked as a consultant. Until he became seriously ill with cancer, he was active as President of the Idaho Aviation Foundation, a non-profit corporation promoting general aviation in the state of Idaho.

His honors and awards included the Defense Superior Service Medal; the DFC; the National Intelligence Medal of Achievement; the Legion of Merit; two Defense Meritorious Service Medals; six Navy Air Medals; the Battle Efficiency Ribbon; the Armed Forces Expeditionary Medal; the National Defense Service Medal; two NASA Distinguished Service Medals; the NASA Outstanding Leadership Medal; four NASA Space Flight Medals; the Vietnamese Cross of Gallantry; the Vietnam Service Medal; and the Republic of Vietnam Campaign Medal.

Capt. Walker passed away on April 23, 2001, at the age of 56, in the M.D. Anderson Cancer Center in Houston, Texas. He is interred at Arlington National Cemetery.

Donald Williams (1942–2016)
PLT STS-51D (1985); CDR STS-34 (1989).

Don Williams logged a total of 287 hours and 35 minutes in space on his two Shuttle missions. In March 1990, he retired from the USN with the rank of captain and also resigned from NASA. "The goal that I set for myself when I came [to NASA] … was to successfully command a mission. And then, what's next?" he explained in a 2002 interview. **[11]** "I distinctly thought about that some time before the [STS-34] mission and [asked myself] 'What am I going to do after this? This is a lot of fun. I'd love to stay here and fly for a long time'. But once you reach that goal, then what do you do?

"I had decided that I had four alternatives. I could stay and fly again, which was an option, and that was offered to me. I could go into a NASA management job as a civil servant, which was also a possibility. I could go back to the Navy as an officer, because I was still on active duty and military officers were detailed to NASA. Or I could go into private industry and see if I [could] make a living there. I explored all four of those over the next few months, and it turned out, just by a matter of timing I guess it was, I ran into Neil B. Hutchinson [who] had been a neighbor of mine and had been a Flight Director in Houston. [He] was looking for a person with the qualifications that I had, for a potential job that he had for the company he worked for then. It turned out it was a good fit mutually for both of us, and so it was time to move on and do something else. I did explore all three of the other options, though, and decided on that one and never looked back."

That appointment was as a Division Manager with Science Applications International Corporation (SAIC), working on several projects in the Houston area, nationally and internationally. He retired in 2007 and moved to Henderson, Nevada, where he served on the board of Sun City Anthem's Veterans Club and became its Vice President Emeritus.

Increasingly suffering from the effects of dementia in the last months of his life, Capt. Williams passed away on February 23, 2016, aged 74. His awards included the Legion of Merit; the DFC; the Defense Superior Service Medal; two Navy Commendation Medals with Combat "V"; two Navy Unit Commendations; a Meritorious Unit Commendation; the National Defense Medal; and an Armed Forces Expeditionary Medal. He also received the Vietnam Service Medal (with four stars), a Vietnamese Gallantry Cross (with gold star), and the Vietnam Campaign Medal. At NASA, he earned the NASA Outstanding Leadership Medal, the NASA Space Flight Medal and the NASA Exceptional Service Medal.

MOVING ON

In January 2018, the surviving members of the 1978 group marked the 40th anniversary of their selection. Those four decades had seen the whole Shuttle flight program completed, growth in human space flight international cooperation, Americans living on Mir and the creation of the ISS, commercial space flight, and the prospect, once again, of a return to the Moon.

There had been highs and lows, tragedy and triumph, success and disappointment along the way, but those 35 rookie Ascans who sat on the podium in the glare of media spotlights in 1978 all lived up to the reasons they were selected in the first place. They took on the challenge and delivered many times over, some giving their lives in the pursuit of the quest for an affordable, safe and reliable, regular service to access space, where they could perform useful work before returning to a runway near the launching site to begin the preparations for the next mission. While the Space Shuttle Program itself may not have fully delivered on expectations, these astronauts achieved and often surpassed their goals. The legacy of the TFNG is explored in the next chapter, but one thing became clear early on: Each of them proudly and confidently carried – and redefined – the mantle of the "*Right Stuff*" from the pioneering decade of American human space flight into the closing decades of the 20th century and on into the new millennium. Now, a new generation of American space explorers, with a new era of vehicles, is ready to take up the challenge and create new pages in space history.

While the current generation of astronauts attains new milestones in space exploration history with the first crewed flight of the Dragon reusable spacecraft to the ISS, the surviving members of the TFNG continue to attain their own new goals.

On June 7, 2020, over 35 years after making history as the first American female to walk in space, Kathy Sullivan became the first woman and eighth

person to dive to the lowest point on Earth, known as Challenger Deep. During a successful 12-hour expedition to the deepest point of the Pacific Ocean's Mariana Trench, over 35,000 feet (10,668 m) below the ocean surface, Sullivan accompanied Victor Vescovo, pilot of the Deep Submersible Vessel (DSV) *Limiting Factor* on an exploratory dive to almost seven miles (11 km).

Following her return to the mother ship, the DSSV *Pressure Drop*, Sullivan made contact with the crew on ISS orbiting 254 miles (408 km) above her, explaining that it had been "an extraordinary day, a once in a lifetime day, seeing the moonscape of the Challenger Deep, then comparing notes with my colleagues on ISS about our remarkable, reusable inner-space, outer-space craft."

A similar event occurred almost 55 years earlier, in August 1965, when Gemini 5 astronaut Gordon Cooper spoke from orbit with his fellow Mercury astronaut-turned-aquanaut colleague Scott Carpenter, who was 205 feet (62 m) beneath the surface of the Pacific off the coast of California, in the USN Sealab II.

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