Three in the Indian Ocean, which was comprised of over 6,000 personnel and 85 aircraft. Admiral Chambers is now retired.


1982 • Irene Duhart Long (1951- ) was initially hired in 1981 by the National Aeronautics and Space Administration (NASA) and in 1982, became the first African American woman to be appointed chief of Medical Operations and Human Research Branch of the Biomedical Office. Long was the first African American woman certified in aerospace medicine in 1991. She was named, recently, as director of the Kennedy Space Center Biomedical Operations and Research Office. For the past 16 shuttle missions, Long, the top-ranking African American woman at NASA's Kennedy Space Center, has been a member of the team staffing the Launch Control Center's biomedical console.


1983 • Guion S. Bluford (1942- ) was the first African American astronaut to fly in space when he served as flight engineer on the four-day space shuttle *Challenger* mission, which lifted off on August 30, 1983 and touched
down September 5, 1983. Bluford received a B.S. degree in aerospace engineering from Penn State University in 1964 and then earned both the M.S. degree (1974) and Ph.D. degree (1978) in aerospace engineering from the Air Force Institute of Technology. He was the space mission specialist on the 1983 Challenger launch and was responsible for the deployment of an Indian communications satellite, as well as collecting data for medical research. He flew two other space shuttle missions, one in 1985, when he spent a week aboard Challenger, and the third in 1991, when he went up in Discovery as part of the Strategic Defense Initiative. Bluford spent a total of 688 hours in space. He retired from NASA in 1993 to pursue a career in private industry.


**1983** • The _U.S.S Houston_, a nuclear submarine, was placed in 1983 under the command of Chancellor A. Tzomes (1944- ), the first African American to command such a vessel for the United States. Tzomes graduated from the U. S. Naval Academy in 1967. He attended a nuclear power training program, and in 1969, he was assigned to the _U.S.S. Will Rogers_ in order to complete his qualifications in submarines. He served on the _U.S.S. Pintado_ and was executive officer on board the _U.S.S. Cavalla_ for three years before becoming commander of the _U.S.S. Houston_ in 1983. Tzomes commanded the _U.S.S. Houston_ until 1986, when he became the Force Operations Officer on the staff of Commander Submarine Force for the U. S. Pacific Fleet.

_Ebony_ (December 1985), pp. 45-46, 48, 50; _Philadelphia Tribune_ (August 8, 1989), p. 5A

**1984** • Isaac Thomas Gillam, IV (1932- ) became the first assistant administrator of commercial programs at the National Aeronautics and Space Administration (NASA) headquarters in Washington, D.C. Gillam received a B.S. in mathematics from Howard University in 1952, at which time he was commissioned in the U.S. Air Force. Gillam left the Air Force's Strategic Air Command in 1963 when he joined NASA. During 1971-76, he was program manager of small launch vehicles and international projects, in which Delta and Scout launches put satellites in orbit for RCA, Comstat, Western Union, and several foreign companies. He was appointed the director of NASA's Dryden Flight Research Center at Edwards Air Force base in 1978 and remained in that position until 1981. While director there, the critical approach and landing tests of the space shuttle were carried out. He received NASA's highest award, its Distinguished Service Medal, for
his foreign satellite launch program directive efforts. Gillam also worked at
the White House in the Office of Science and Technology Policy. Since
1987, he has spent his time working in the private sector.

246-247; *Ebony*(April, 1977), pp. 124-126, 128-129

**1984** • Ida Van Smith (1917- ) was the first African American woman
inducted into the International Forest of Friendship in recognition of her
contributions to aviation. Smith took her first flying lesson at 50 years of age,
became a licensed pilot, instrument rated, and a ground instructor. She
founded, in 1967, the Ida Van Smith Flight Clubs to introduce children from
age three to careers in aviation and space. Some of the graduates of Smith’s
flight clubs have become U. S. Air Force and Navy pilots, officers, subma-
rine navigators, and airline and private pilots. She also has classes for adults.
Ida Van Smith Flight Clubs are in New York, Texas, and North Carolina.

*Black Women in America*(1993), pp. 1079-1080

**1984** • John S. Brooks (1951- ) patented an internal combustion engine
spark timing control that included a peak combustion sensor in 1984.
Brooks earned a B.S. in 1992 at Indiana Wesleyan University and a M.B.A.
from Anderson University in 1996. He started working in 1969 as a produc-
tion worker for Delphi-E in Anderson, Indiana, became supervisor of engi-
neering laboratories in 1983, and in 1992, was promoted to manager of the
test facility.


**1985** • The U. S. Navy’s elite special flying squadron, the Blue Angels,
accepted its first African American pilot, Lieutenant Commander Donnie
Cochran (1954- ) in 1985 to fly with the squadron. Cochran has a B.S.
degree in civil engineering, which he earned in 1976 from Savannah State
College. He was a student aviator from 1976 to 1978 and then engaged in
advanced flight training on a variety of aircraft. Cochran became a mem-
ber of the Blue Angels in 1985, Blue Angels #3 in 1987, and Blue Angels #4
in 1988.


**1985** • Michael D. Griffin (1958- ) received a patent for a valve shaft end
float control in 1985. Airflow to conventional automotive spark ignition
internal combustion engines is controlled by a butterfly throttle valve
secured to a valve shaft, which is journaled for rotation in a throttle body.
Griffin's invention is a valve assembly constructed to limit the motion of the valve shaft, preventing substantial wear of the valve on its bore.

*Index of Patents*(1985), p. 702

1986 • Ronald E. McNair (1950-1986) became the first African American to die during a space mission on January 28, 1986. McNair was a member of the crew aboard the shuttle *Challenger*, which exploded shortly after lift-off and killed all its crew members. McNair earned a B.S. degree in physics from North Carolina A&T in 1971 and a Ph.D. in physics from Massachusetts Institute of Technology (MIT) in 1976. He was a specialist in laser physics and had presented papers on lasers and molecular spectroscopy in both the United States and Europe. He had also been employed, from 1976 to 1978, at Hughes Research Laboratories as a research scientist prior to his entry into the astronaut-training program. McNair was the second African American astronaut to travel in space when he successfully completed a *Challenger* mission in February 1984. On the 1984 flight, he conducted microgravity experiments, monitored space gases, tested solar cells, operated the shuttle's 50-foot mechanical arm, and was responsible for launching a German communications satellite.


1987 • The first African American woman pilot hired by United Airlines was Shirley Tyus (1950- ), who was a former flight attendant for United. Tyus enrolled in Professional Flight School in Friendly, Maryland, in 1977 and earned a pilot’s license in 1979. She accumulated more than 2,000 hours flight time as a part-time pilot for the African-American owned Wheeler Airlines, based in Raleigh, North Carolina. Tyus applied for a pilot position with United Airlines in 1986 and was hired in 1987, making her the first African American woman pilot in United Airlines history.


1987 • The flight of the space shuttle *Discovery* on November 22, 1987 was the first space shuttle under the command of an African American astronaut, Frederick D. Gregory (1941- ). The seven-member *Discovery* crew had a seven-day space mission. Gregory graduated from the United States Air Force Academy in 1964 with a B.S. degree, and in 1977 received a M.S.A. in information systems from George Washington University. Military service for Gregory included five years as a helicopter and fighter pilot, including two years in Vietnam on rescue missions. He has flown more than 40 different types of military and commercial aircraft. He grad-
uated from Naval Test Pilot School in 1971, becoming a research and engineering test pilot until he was selected as a NASA test pilot in 1974. Gregory was then selected as an astronaut candidate in 1978 and completed his training in August 1979. His first space flight was in 1985 as pilot on the Spacelab 3 Challenger space shuttle. With that flight, he became the first African American to pilot a space shuttle. Gregory was also responsible for the redesign of the space vehicle cockpit displays and controls layout, making it more efficient and easier to fly. He has also designed other spacecraft pilot controls and flight systems, including a landing system that used microwave instrumentation.


**1987** • William Harwell (1953- ) was an African American mechanical engineer employed at the National Aeronautical and Space Administration’s Johnson Space Center, Crew Systems Division. In 1994, he patented an apparatus for capturing an orbiting spacecraft. Harwell also acquired patents for a magnetic attachment apparatus for a remote manipulator system and a regulator for condensation tubes in a subcooling system. He has designed special power packs worn by astronauts during space walks.


**1989** • Gilbert Allen Cargill (1916- ) was the first African American enshrined in the Michigan Aviation Hall of Fame in 1989. Cargill earned an A.B. from Oberlin College in 1937. He attended the Case School of Science from 1959 to 1960 and Wayne State University from 1970 to 1972. Cargill was a flight instructor for the U. S. Army from 1945 to 1946 and then taught for the Detroit Board of Education from 1946 to 1966. He became employed by Berz Aviation as a charter pilot/flight instructor, where he worked until 1985. Cargill was also a Federal Aviation Administration designated pilot examiner and safety counselor from 1972 to 1989. He has received many honors and awards, and the Federal Aviation Administration named the Aviation Radio Station “CARGL” after him in 1981.


**1990** • Gary Holloway, a design engineer with the General Electric Aircraft Engine Group since 1969, led a group of engineers that developed a new film-cooled, high-pressure turbine shroud for aircraft engines in 1990. This shroud is a ceramic or metal material built into the engine’s outer casing that prevents the aircraft blade from touching the turbine casing. Holloway currently leads a team of 12 engineers whose goal is to replace the
current metal-based turbine shroud system with composites that will increase the overall aero-thermodynamic efficiency of the aircraft engines by using less fuel while maintaining greater thrust. Holloway joined General Electric after earning a B.S. in mechanical engineering from North Carolina A&T State University. Holloway and his group have received three patents for their technical achievements.

Black Enterprise(February 1990), p. 92

1991 • The first African American woman to hold a Missouri Air National Guard squadron command was Colonel Edith P. Mitchell, when she was appointed commander of the Air Guard’s 131st Medical Squadron. Mitchell held that position until she was promoted, in 1995, to the position of the Guard’s state air surgeon.

Philadelphia Tribune(May 24, 1996), p. 5-B

1992 • Southwest Airlines chose Louis Freeman as chief pilot in August 1992, which made him the first African American chosen as chief pilot for a major United States airline. Freeman was hired by Southwest as a pilot in 1980, the first African American pilot to fly for that airline. Freeman earned his bachelor’s degree at East Texas State University in 1974. He also earned his private pilot’s license while in college. Freeman joined the U. S. Air Force, where he served until 1980. While in the Air Force, he continued his pilot training and was eventually assigned to piloting 737s. His major Southwest Airlines responsibility was overseeing all flight operations of Southwest’s 350-pilot base and ensuring that all flight procedures exceeded F.A.A. requirements.


1992 • Woodrow W. Crockett was the first African American to be inducted into the Arkansas Aviation Hall of Fame when he entered the Hall in 1992. He was a member of the renowned Tuskegee Airmen, who broke the color barrier by flying in World War II. Crockett retired from the U. S. Air Force as a Lieutenant Colonel in 1970 and was then employed by the National Guard Bureau at the Pentagon.


1992 • The crew aboard the space shuttle Endeavor, launched on December 12, 1992, included mission specialist Mae C. Jemison (1956-), the first African American woman in space. This particular flight was a cooperative effort between the United States and Japan and was a seven-
day endeavor, the purpose of which was to study the varied effects of zero gravity on human and animals. Jemison earned a B.S. in chemical engineering and a B.A. in African and Afro-American Studies in 1977 at Stanford University and then received the M.D. degree from Cornell University in 1981. She was the first African American woman admitted into astronaut training when she was selected in June 1987. She completed training in August 1988. Prior to her flight, Jemison’s duties included processing space shuttles for launch and working in the Shuttle Aeronautics Integration Laboratory (SAIL) verifying shuttle computer software. During the Endeavor flight she conducted experiments on weightlessness and motion sickness on the crew members. Jemison resigned from NASA in 1993 to teach at Dartmouth University and start her own technology company. She also conducted the first International Space Camp in 1994.


1993 • The current head pilot for the General Motors’ corporate fleet is William Avery Henderson (1943- ), the first African American pilot to head the fleet when promoted to the position in 1993. Henderson was also the first African American promoted to the rank of brigadier general in the Michigan Air National Guard in 1993. He received a B.S. in sociology and

MAE JEMISON ABOARD THE SPACE SHUTTLE ATLANTIS.

374 • African American Firsts in Science and Technology
history in 1964 from Eastern Michigan University. Henderson joined General Motors in 1974 as a pilot and in 1993, was promoted to chief pilot. He was promoted in 1995 to the rank of major general in the Michigan Air National Guard.


1993 • Ellwood G. Ivey Jr. (1961- ) invented, in 1993, the driver bio-system sensitized steering wheel, which detects whether drivers are intoxicated. Ivey’s invention monitors the driver’s blood alcohol concentration, detecting whether the driver is intoxicated. Ivey was inspired to create the device after witnessing a fatal automobile accident involving his co-workers. The device disables the vehicle when the driver’s blood alcohol concentration exceeds the legal limit. Ivey has developed another device which monitors blood pressure, glucose, and cholesterol levels.

*Black Enterprise* (September, 1994), p. 22

1994 • United Parcel Service’s (UPS) contingent of pilots includes Patrice Clark-Washington, the first African American woman flight captain for an airline service. Clark-Washington commands UPS’s DC 8s. She started at the Embry-Riddle Aeronautical University in Florida in 1979, and in 1983, became the first African American woman to graduate from Embry-Riddle with a commercial pilot’s license. Clark-Washington joined UPS in 1988 as a flight engineer, then a first officer, before becoming captain for UPS.


1994 • On February 3, 1994, Charles Frank Bolden, Jr. (1946- ) commanded the first joint United States/Russian space shuttle mission as *Discovery* was launched into space. The shuttle crew included five American astronauts and one Russian cosmonaut. Bolden started his career as a second lieutenant in the U.S. Marine Corps, and in 1970 underwent flight training and became a naval aviator. He graduated from the U.S. Naval test Pilot School in 1979 and was assigned to the Naval Test Aircraft Directorates where he logged over 2,600 hours flying time. Previously, he had earned a B.S. from the United States Naval Academy in 1968, then he received the M.S. degree in systems management from the University of Southern California in 1977. Bolden was a veteran of four space flight, including piloting the space shuttle *Columbia* in 1986 and flying on the *Discovery* mission that deployed the Hubble Space Telescope in 1990. He

*Charles F. Bolden, Jr.*
1994 • Jim Edwards Sr. and Jim Edwards Jr. are the first African American father and son pair that are pilots for a major airline, both flying for United Airlines. Edwards Sr. joined United in 1978 and is a captain for the airline, while Edwards Jr. joined United in 1994 and is a first officer. Edwards Sr. earned his private pilot's license while in the Air Force and finished flight school in Detroit. Previously, he had resigned from the Air Force Officers Candidate School after receiving many racial threats. Edwards Jr. took private lessons to learn to fly and acquired the hours and certification to become a qualified pilot. He flew three years for American Eagle prior to joining United. Edwards Sr. flies the 747 aircraft, and Edwards Jr. flies the 767 and 757 aircrafts.

*Ebony*(June 1998), pp. 122, 124, 126

1995 • Bernard A. Harris, Jr. (1956–) astronaut and physician, was the first African American to walk in space. He accomplished that feat on February 9, 1995, when he was the mission specialist on space shuttle *Discovery* mission STS-63. Harris earned his B.S. in 1978 from the University of Houston and in 1982 received the M.D. degree from the Texas Tech University Health Science Center. He later earned a M.S. from the University of Texas Medical Branch in 1996. Harris had a private medical practice until he joined NASA's Johnson Space Center as a clinical scientist and flight surgeon in 1987. He was selected as an astronaut candidate in January 1990 and became an astronaut in July 1991. Harris's first space flight was in August 1991; his second flight was in 1993. His third flight, in February 1995, required him to perform Extra Vehicular Activity (EVA) with astronaut Michael Foals. During that five-hour span of time, the pair tested spacesuit thermal improvements and practiced lifting a 2,800-pound telescope.


1996 • The U. S. Navy promoted an African American officer to four-star rank for the first time when Vice-Admiral Adam J. Paul Reason (1941–) was nominated in 1996. With that rank, Reason became commander-in-chief of the U.S. Atlantic Fleet. Before this he was commander of the Atlantic Fleet surface forces. Reason graduated from the U. S. Naval Academy, completed the nuclear propulsion school of the Navy, and in 1970 earned a M.S. in