This chronology recalls key events in USAF's quest for strategic "high ground."

50 Years of Space and Missiles

Compiled by the staff of *Air Force* Magazine

USAF Delta II launch

Today's Air Force space and missile professionals view July 1, 1954, as the red-letter date of their business—the moment that USAF fully and formally jumped into the space and missile field. Lt. Gen. Thomas S. Power, commander of Air Research and Development Command, ordered the creation in Inglewood, Calif., of the Western Development Division, headed by the now-legendary Brig. Gen. Bernard A. Schriever. WDD's first job was to build strategic missiles for the Air Force, but such rockets could also launch Earth-circling satellites. Soon, WDD was building them, too, and forging the complex structure of modern military space power. In the 50 years that have elapsed, the Air Force has remained at the forefront of world strategic space systems, technologies, and operations.

Gen. Bernard A. Schriever

Data on these pages are drawn from several official and nonofficial studies. The principal source is Air Force Space Command.

July 1, 1954. Air Research and Development Command establishes the Western Development Division (WDD), in Inglewood, Calif., under command of Brig. Gen. Bernard A. Schriever. He is formally given full authority over the Atlas ICBM project.

Sept. 8, 1954. The Air Force approves the WDD's selection of the Ramo-Wooldridge Corp. to perform systems engineering and technical direction functions for Project Atlas.

Dec. 13, 1954. An Air Force procurement authorization sets aside $3.6 million in production funding for Atlas. This is the first production funding for an ICBM program.

Jan. 6, 1955. USAF awards a contract to the Convair Division of General Dynamics Corp., for development and fabrication of the Atlas airframe and control system, the integration and assembly of the various subsystems with the airframe and control system, and for checkout and testing.

Oct. 27, 1955. Glenn L. Martin Aircraft Co. is given a contract authorizing the design, development, and testing of the two-stage Titan ICBM.

Nov. 26, 1955. Secretary of Defense Charles E. Wilson assigns responsibility for development and operations of land-based ICBMs to the Air Force.

Feb. 15, 1956. Responsibility for the advanced satellite system WS 117L (later, Satellite and Missile Observation System, or SAMOS) is officially transferred to WDD.

Oct. 29, 1956. Lockheed is awarded the prime contract for the development of the Military Satellite System and its associated Hustler (later redesignated Agena) upper stage vehicle.

March 1957. WDD begins feasibility studies on a defense alarm system (MIDAS) satellite that would provide early warning of hostile missile launches.

June 1, 1957. WDD is redesignated Air Force Ballistic Missile Division (AFBMD).

September 1957. US and Canada create the North American Air Defense Command (NORAD) for defense of air and space over the US and Canada.

Oct. 4, 1957. Soviet Union stuns the world with the launch of Sputnik, world's first man-made satellite, aboard one of their new SS-6 ICBMs.

Nov. 13, 1957. Schriever directs Air Force planning for development of man-carrying vehicle systems for space operation.

Nov. 29, 1957. Air Force Chief of Staff Gen. Thomas D. White declares the Air Force "must win the capability to control space."

Dec. 17, 1957. The Air Force's HGM-16 Atlas ICBM makes its first successful launch and flight from Cape Canaveral.

Jan. 31, 1958. The Army's Explorer 1, the first US satellite successfully sent into space, is launched at Cape Canaveral.

Feb. 10, 1958. A1C Donald G. Farrell, in a mock moon voyage, enters a cramped, windowless space cabin simulator at Randolph AFB, Tex., where he spends a week under harsh physical and psychological conditions. He emerges in good shape, convincing space officials that humans are indeed psychologically suited to actual spaceflight.

Feb. 27, 1958. Secretary of Defense Neil H. McElroy authorizes the Air Force to start research and development on a new ICBM. This is the genesis of Minuteman.

March 31, 1958. Schriever directs planning for a full-scale manned military space systems program aimed at a lunar landing operation.

June 16, 1958. Boeing and Martin are named prime contractors to develop competitive designs for the Air Force's X-20 Dyna-Soar boost-glide space vehicle. This project, although later canceled, is the first step toward producing a workable space shuttle.

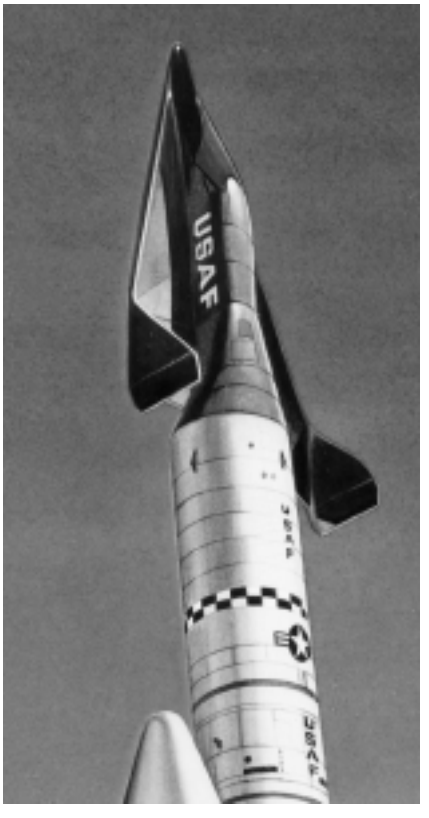
June 30, 1958. Pentagon notifies AFBMD that it has transferred to the Advanced Research Projects Agency (ARPA) authority to develop the Military Satellite System, WS 117L.

July 29, 1958. President Dwight D. Eisenhower signs the National Aeronautics and Space Act.

Sept. 4, 1958. The Transit and TIROS satellite programs are initiated with booster responsibilities assigned to AFBMD. Transit is a navigation satellite, while TIROS (Television Infrared Observation Satellite) is to take television pictures of cloud cover and transmit meteorological information for relay to ground stations.

Nov. 25, 1958. AFBMD receives its first specific NASA request to support research leading to manned spaceflight. An Atlas C booster is to be the first of 13 ballistic missile boosters to be procured for NASA.

December 1958. ARDC assumes space track mission for the Air Force.



USAF's X-20 Dyna-Soar boost-glide space vehicle. This was the first step toward a usable space shuttle.

Dec. 18, 1958. Project Score, a communications repeater satellite, is launched by an Atlas booster into Earth orbit. The satellite on Dec. 19 broadcasts a Christmas message from President Eisenhower to Earth, the first time a human voice has been relayed from space.

Jan. 4, 1959. Vandenberg AFB, Calif., and Pacific Missile Range are declared operational for missile launchings.

Feb. 6, 1959. Air Force crew launches the first XSM-68A (later redesignated HGM-25A) Titan ICBM from Cape Canaveral.

Feb. 28, 1959. In test, USAF successfully launches the Discoverer 1, the world's first polar-orbiting satellite, from Vandenberg. It is part of the secret Corona program.

April 2, 1959. NASA announces the identities of seven Project Mercury astronauts: USAF Capts. L. Gordon Cooper Jr., Virgil I. "Gus" Grissom, and Donald K. "Deke" Slayton, Navy Lt. Cmdrs. Walter M. Schirra Jr. and Alan B. Shepard Jr., Navy Lt. M. Scott Carpenter, and Marine Lt. Col. John H. Glenn Jr.

April 6, 1959. The first military unit to be charged with conducting military satellite operations, USAF's 6594th Test Wing, is established at Palo Alto, Calif.

April 13, 1959. Air Force Thor/Agena A boosts into orbit the Discoverer 2 satellite, the first satellite to be stabilized in orbit in all three axes, to be maneuvered on command from Earth, to separate a re-entry vehicle on command, and to send its re-entry vehicle back to Earth.

Aug. 7, 1959. US carries out first satellite intercontinental relay of a voice message.

Aug. 7, 1959. Explorer 6 spacecraft transmits first television pictures from space.

Aug. 31, 1959. Strategic Air Command (SAC) takes command of Vandenberg's Complex 576A, USAF's first fully operational ICBM complex.

Sept. 9, 1959. SAC crew at Vandenberg conducts first West Coast launch of an operational Atlas missile, which lands near Wake Island.

Sept. 18, 1959. USAF states that the Pentagon has approved the transfer of MIDAS and SAMOS back to the Air Force.

Sept. 23, 1959. DOD states that primary responsibility for military space programs belongs to the Air Force.

An Atlas booster fitted with a communications repeater satellite waits on the pad at Patrick AFB, Fla.

Oct. 6, 1959. AFBMD issues an abbreviated development plan for Vela Hotel system to detect and locate nuclear detonations in space.

April 1, 1960. US launches TIROS 1, world's first meteorological satellite, from Cape Canaveral.

April 13, 1960. Transit 1B becomes first US navigation satellite in space.

May 20, 1960. Air Force Atlas ICBM, launched from Cape Canaveral, boosts a 1.5-ton payload 9,040 miles to the Indian Ocean, the longest-ever flight for a US ICBM.

May 24, 1960. MIDAS 2 becomes the first early warning satellite in orbit.

June 22, 1960. US launches Galactic Radiation and Background (GRAB) satellite, the nation's first successful reconnaissance spacecraft. It collects electronic intelligence (Elint) from Soviet air defense radars.

Aug. 11, 1960. Discoverer 13 satellite, launched on Aug. 10, ejects a capsule that is recovered in the Pacific Ocean, the first successful recovery of a man-made object ejected from an orbiting satellite.

Aug. 12, 1960. A Thor/Delta booster lifts NASA's Echo 1, the first passive communications satellite to be placed into orbit.

Aug. 18, 1960. Discoverer/Corona satellite takes first image of Soviet territory ever snapped from space.

Aug. 19, 1960. Crew of a modified C-119J uses two trailing wire hooks to snag a descending Discoverer 14 capsule over the Pacific. It is the first aerial recovery of an object returned from orbit.

Aug. 31, 1960. President Eisenhower shifts SAMOS program from Air Force into a small civilian-directed Pentagon office. This is the genesis of the National Reconnaissance Office (NRO).

Sept. 15, 1960. DOD shifts its defense communications satellite program to the Army and renames it Project Advent.

Sept. 23, 1960. ARDC recommends splitting USAF's Los Angeles R&D complex. Plan calls for keeping space activities in Los Angeles and moving missile activities to Norton AFB, Calif.

October 1960. NORAD assumes operational control of all space defense responsibilities with formation of the Space Detection and Tracking System.

Feb. 1, 1961. First LGM-30A Minuteman ICBM is test launched from

The first satellite reconnaissance photo of Soviet territory, taken in 1960 by Discoverer/Corona.

Cape Canaveral. It travels 4,600 miles downrange and hits the target area.

March 6, 1961. Secretary of Defense Robert S. McNamara formally assigns to USAF the responsibility for development of military space systems.

April 1, 1961. USAF forms Air Force Systems Command and assigns to the Space Systems Division the responsibility for military space systems and boosters. Ballistic Systems Division handles ICBMs.

April 12, 1961. USSR stages world's first successful manned spaceflight. Cosmonaut Yuri Gagarin, piloting Vostok 1, becomes not only history's first spaceman but also the first person to orbit the Earth.

May 5, 1961. Navy Cmdr. Alan B. Shepard Jr. becomes the first Project Mercury astronaut to cross the space frontier. His flight in Freedom 7 lasts 15 minutes, 28 seconds, reaches an altitude of 116.5 miles, and ends 303.8 miles downrange.

July 12, 1961. First Atlas D/Agena B booster lifts MIDAS 3 satellite, the heaviest US spacecraft to date, into a record 1,850-mile-high orbit.

July 21, 1961. Capt. Virgil I. "Gus" Grissom becomes the first Air Force astronaut in space, reaching an altitude of 118.3 miles on the second Mercury mission.

Sept. 6, 1961. Secretary McNamara establishes the National Reconnaissance Program, formally creating the classified National Reconnaissance Office.

Feb. 20, 1962. Marine Lt. Col. John H. Glenn Jr. becomes the first US astronaut to orbit the Earth. His Friendship 7 flight lasts nearly five hours and completes three orbits.

April 23, 1962. The 6555th Aerospace Test Wing launches an Atlas D/Agena B vehicle that carries NASA's Ranger 4 to the moon. This is the first US instrument package to reach the moon.

May 23, 1962. US deploys first Defense Meteorological Satellite Program (DMSP) spacecraft.

June 11, 1962. In reorganization of Advent program, DOD gives USAF responsibility for development, production, and launch. The Army retains responsibility for the ground system, and Defense Communications Agency is to handle integration activities.

Aug. 20, 1962. DOD announces plans to develop a Titan launch vehicle that will be operational by 1965.

Dec. 11, 1962. Minuteman ICBM reaches initial operational status with turnover of the first two 10-missile flights to SAC's 341st Strategic Missile Wing at Malmstrom AFB, Mont.

May 15, 1963. Maj. L. Gordon Cooper Jr., second Air Force astronaut in space, makes nearly 22 orbits in spacecraft Faith 7. He is the last American to go into space alone, first to spend a complete day in orbit, and first to perform an entirely manual re-entry.

Oct. 16, 1963. Space Systems Division, using first Atlas D/Agena D vehicle, boosts into orbit two new Vela Hotel nuclear radiation detection satellites, designed to provide information on nuclear detonations in the atmosphere or outer space.

Oct. 17, 1963. SAC crew carries out first LGM-30A Minuteman I operational test launch at Vandenberg. The re-entry vehicle overshoots the target.

Oct. 17, 1963. Vela Hotel satellite performs first space-based detection of nuclear explosion.

Dec. 10, 1963. DOD announces cancellation of Dyna-Soar program.

July 15, 1964. Secretary McNamara directs DOD to begin full development of Initial Defense Communications Satellite Program.

Launch of Friendship 7. There was great synergy between US military and civil space efforts.

The first Minuteman LGM-30A is test launched at Patrick AFB, Fla. The test is successful.

Aug. 19, 1964. Thor/Delta vehicle boosts into orbit NASA's Syncom 2 communications spacecraft, the world's first geosynchronous satellite, which then carries communications between Clark AB, the Philippines, and Camp Roberts, Calif.

September 1964. DOD begins military communications experiments between South Vietnam and Hawaii using the Syncom 2 synchronous communications satellite.

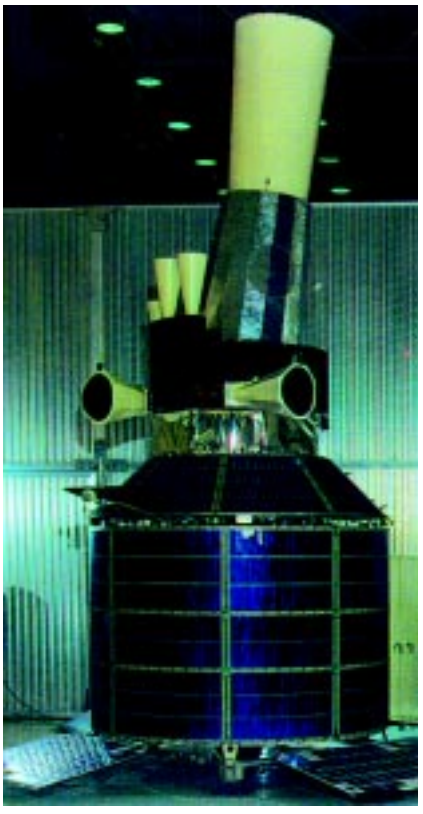
Nov. 20, 1964. DOD directs build-up of Minuteman ICBM force to 1,000 launchers by the end of 1967.

April 3, 1965. Atlas/Agena successfully boosts a SNAPSHOT spacecraft carrying Snap10A nuclear reactor. The on-board reactor provides electrical power for a 2.2-pound ion engine, marking the first attempt to test a reactor-ion system in orbit.

June 4, 1965. Air Force astronaut Maj. Edward White makes a 22-minute spacewalk, first by an American astronaut.

June 18, 1965. Air Force accepts Titan III, first Air Force vehicle specifically designed and developed as a military space booster.

Dec. 4-18, 1965. An Air Force Titan II launch vehicle lifts Gemini 7



A DSP satellite, with infrared sensors that provided space-based early warning of missile launches.

into orbit. Astronauts Frank Borman and James A. Lovell complete 206 orbits.

Dec. 8, 1965. Secretary McNamara approves development of the Minuteman III ICBM.

Dec. 15, 1965. In a first for the US space program, crews of Gemini 6 and Gemini 7 rendezvous in space. Gemini 6 crew of USAF Maj. Thomas P. Stafford and Navy Capt. Walter M. Schirra Jr. maneuver to within a foot of Gemini 7.

Dec. 16, 1965. Astronauts Stafford and Shirra conduct the first controlled re-entry of a manned spacecraft to a predetermined landing point on Earth.

June 16, 1966. In a record-setting mission, a Titan IIIC puts eight satellites into near-synchronous orbits 18,200 miles above the equator as part of Initial Defense Satellite Communications System.

Aug. 31, 1966. Gen. Bernard A. Schriever, commander of Air Force Systems Command, retires after 32 years of active service.

Jan. 25, 1967. Soviet Kosmos 139 antisatellite (ASAT) weapon carries out first test of a fractional orbital bombardment system.

May 3, 1967. Ballistic Systems Division announces completion of the deployment of 1,000 Minuteman missiles.

July 1, 1967. Within Air Force Systems Command, Space Systems Division and Ballistic Systems Division are combined to form the new Space and Missile Systems Organization (SAMSO).

July 3-4, 1967. Air Force, Army, and Navy conduct first satellite-based tactical communications.

Aug. 16, 1968. In the first test of the system, a Minuteman III launched at Cape Canaveral completes a successful 5,000-mile flight downrange.

Oct. 20, 1968. Soviet Kosmos 248 and Kosmos 249 spacecraft carry out first co-orbital antisatellite test.

Dec. 21-27, 1968. Apollo 8 astronauts—USAF Maj. William A. Anders, Col. Frank Borman, and Navy Cmdr. James A. Lovell Jr.—become the first humans to orbit the moon.

Feb. 9, 1969. Air Force Titan IIIC places experimental, 1,600-pound Tactical Communications Satellite (TACSAT I) into orbit 22,195 miles above equator—the largest communications satellite yet orbited by the US.

June 16, 1969. SAMSO contracts with North American Rockwell, McDonnell Douglas, General Dynamics, and Lockheed to study Space Transportation System (STS) design concepts and technical objectives.

July 20, 1969. At 10:56 p.m. EDT, Apollo 11 astronaut Neil A. Armstrong puts his foot on the surface of the moon, becoming the first human to do so. He and lunar module pilot, Air Force Col. Edwin E. "Buzz" Aldrin Jr., spend just under three hours walking on the moon, while the command module pilot, Air Force Lt. Col. Michael Collins, orbits overhead.

October 1969. USAF and NASA agree to develop a reusable space vehicle that meets civilian and military space requirements. NASA proposes a two-stage shuttle with a huge cargo area.

March 19, 1970. First successful powered flight of X-24A lifting-body research aircraft takes place at Edwards.

November 1970. Air Force launches first classified Defense Support Program satellite, whose infrared sensors provide space-based early warning of missile launches.

May 15, 1971. USAF and Navy reach agreement that Navy's Fleet Satellite Communications (FLTSATCOM) system will be developed with some channels set aside for Air Force use.

June 15, 1971. First launch from Vandenberg of a Titan IIID space booster.

Jan. 5, 1972. President Richard M. Nixon announces a $5.5 billion NASA program to develop a space shuttle to supplant all present launch vehicles except the smallest and largest.

Dec. 7-19, 1972. Apollo 17 mission, the last of the 20th century moon landings, unfolds successfully.

Jan. 10, 1973. Air Force awards contracts for development of Air Force Satellite Communications (AFSATCOM) system.

Dec. 22, 1973. Deputy Secretary of Defense William P. Clements Jr. authorizes Air Force development of the Global Positioning System.

March 8, 1974. Air Force completes a revised program memorandum that is to become the basis of USAF planning for the space shuttle.

March 1, 1975. CMSgt. James M. McCoy becomes the first senior enlisted advisor for Strategic Air Command, the focus of Air Force strategic missile forces. He serves until Aug. 1, 1979, when he becomes the sixth Chief Master Sergeant of the Air Force.

March 9, 1976. Defense System Acquisition Review Council approves conceptual work on Missile X ICBM system.

Sept. 17, 1976. US rolls out *Enterprise*, the first space shuttle vehicle, at the Rockwell plant in Palmdale, Calif.

Aug. 12, 1977. *Enterprise* makes first space shuttle free flight. After being carried aloft on a Boeing 747, it is released and makes an unassisted landing at Edwards.

Feb. 9, 1978. Atlas booster launched at Cape Canaveral carries the first FLTSATCOM satellite into orbit.

Feb. 22, 1978. Atlas booster launches into orbit the first test vehicle of the Navstar GPS constellation.

April 15, 1978. AFSATCOM space segment is declared operational.

Dec. 13, 1978. Launch of two Defense Satellite Communications System II (DSCS) (follow-on to IDSCS) satellites puts full four-satellite constellation in place for the first time.

Oct. 1, 1979. SAMSO splits into two organizations—the Space Division and the Ballistic Missile Office.

Jan. 28, 1980. USAF and Vought

The launch of the first flight of space shuttle **Columbia** *lifts off from Cape Canaveral, Fla.*

enter new phase of program to develop a workable ASAT weapon. A two-stage ASAT missile, launched from an F-15, would send a miniature kill vehicle smashing into a satellite target.

June 19, 1980. USAF authorizes Vought and Boeing to begin fabrication and flight test of a prototype ASAT system.

Aug. 29, 1980. Space Division is directed to begin development of a near-term space-based radar system.

April 12, 1981. NASA conducts first flight of shuttle *Columbia*, the first shuttle to orbit the Earth and the world's first reusable manned space vehicle. The shuttle spends 54 hours on orbit.

April 14, 1981. *Columbia* lands on Rogers Dry Lake, Edwards AFB, Calif., after its first orbital mission.

July 1981. Drop test of ASAT program's miniature vehicle shows it can acquire and track an orbiting spacecraft.

April 30, 1982. USAF directs deactivation of Titan II ICBMs, with all 55 operational missiles to be removed from silos and stored for possible use as space launch vehicles.

May 1982. First three Ground-based Electro-Optical Deep Space Surveillance (GEODSS) system sites open in Hawaii, New Mexico, and South Korea. In the late 1980s, USAF opens a fourth site on the Indian Ocean atoll of Diego Garcia.

Sept. 1, 1982. The Air Force establishes Space Command in Colorado Springs, Colo., under the command of Gen. James V. Hartinger. The command's mission is to centralize Air Force space operations and to forge a stronger link between space research and development and space operations.

Oct. 1, 1982. CMSgt. Charles P Zimkas Jr. becomes first senior enlisted advisor for USAF Space Command, the focus of Air Force space activities. He serves until Sept. 14, 1984.

Oct. 30, 1982. Air Force launches the first element of DSCS III.

April 22, 1983. Air Force designates Space Command as operator of new Milstar communications satellite system.

May 1, 1983. Enlisted satellite control specialists officially begin operations at Air Force Space Command, marking the first time in its history that noncommissioned Air Force personnel have been permitted to "fly" spacecraft on a regular basis.

CMSgt. Charles P. Zimkas Jr., the first senior enlisted advisor for USAF Space Command.

May 1, 1983. SAC transfers space and missile warning systems, bases, units, and upgrade projects to Space Command.

May 20, 1983. USAF signs a $1.2 billion contract for production of 28 Global Positioning System Block II satellites.

May 26, 1983. ASAT missile undergoes first in a series of 13 all-up captive flights aimed at assessing ability of the guidance system to navigate and of the F-15 carrier aircraft to take the missile to the launch point and perform the launch maneuver.

June 17, 1983. Air Force conducts first test launch of the new LGM-118A Peacekeeper ("MX") ICBM at Vandenberg.

June 18, 1983. Sally K. Ride, a *Challenger* crew member on the seventh shuttle mission, becomes the first American woman to go into space.

Aug. 30, 1983. Air Force Lt. Col. Guion S. Bluford Jr., on board *Challenger* for the eighth shuttle mission, becomes first African American astronaut to go into space.

Jan. 21, 1984. F-15 launches ASAT missile on its first free flight in test of the missile's ability to fly to a predetermined point in space and deploy its warhead.

August 1984. President Ronald W. Reagan approves a National Space Strategy which endorses an Air Force plan, developed by the undersecretary of the Air Force, Edward C. Aldridge, to keep a limited number of expendable launch vehicles.

Aug. 23, 1984. Pentagon directs modification of inactivated Titan II ICBMs into space launch vehicles.

Sept. 13, 1984. Space Division awards three contracts to start the Space Surveillance and Tracking System (SSTS) program, which Space Division manages for the Strategic Defense Initiative Organization.

Sept. 27, 1984. Pentagon turns off the last of the aging Vela satellites, which, since the 1960s, have monitored compliance with limited nuclear test ban treaty.

Jan. 24-27, 1985. On the 15th shuttle mission, the crew of *Discovery* carries out the first dedicated DOD flight. They deploy a classified payload, believed to be a signals intelligence satellite.

Sept. 13, 1985. In a test over Vandenberg, an F-15-launched ASM-135A ASAT missile destroys a target satel-

lite orbiting at a speed of 17,500 mph some 290 miles above Earth.

Sept. 23, 1985. DOD activates US Space Command at Peterson AFB, Colo.

Sept. 26, 1985. Consolidated Space Operations Center opens at Falcon AFS, Colo., and transfers from Air Force Systems Command to USAF's Space Command.

Oct. 3, 1985. Shuttle *Atlantis* launches first pair of DSCS III satellites using inertial upper stage.

Nov. 15, 1985. USAF's Space Command is redesignated Air Force Space Command (AFSPC).

Jan. 28, 1986. Space shuttle *Challenger* explodes 73 seconds after liftoff, killing seven astronauts.

May 5, 1987. The last Titan II comes off strategic alert at Little Rock AFB, Ark.

Sept. 5, 1988. Converted Titan II rocket is used for the first time as a launch vehicle.

Nov. 6, 1988. At Vandenberg, Air Force launches its last Titan 34D booster, which carries a classified payload.

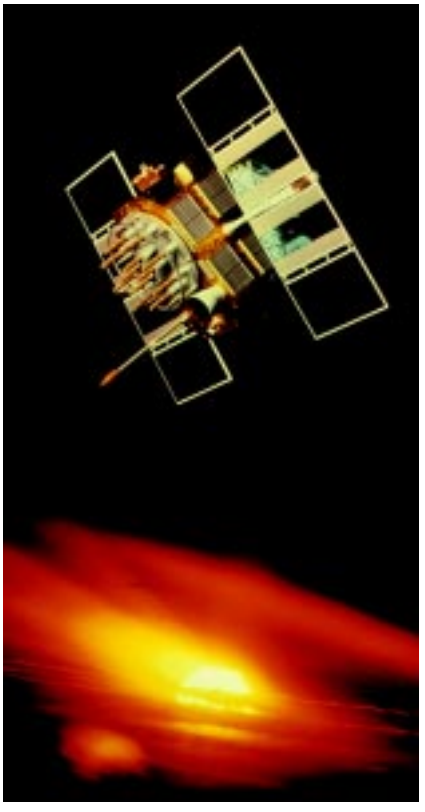
Feb. 14, 1989. A Delta II space booster, on its first launch, boosts first operational Block II GPS satellite into orbit.

June 14, 1989. First Titan IV heavy-lift space booster is successfully launched from Launch Complex 40 at Cape Canaveral. The booster, nearly 20 stories tall, carries a classified military payload.

Aug. 5, 1990. Over Edwards AFB, a B-52 carrier aircraft drops an air-launched Pegasus space booster on its first flight, which is a success.

Oct. 1, 1990. Air Force transfers control of all operational space lift systems to Air Force Space Command. Over the next four years, AFSPC assumes launch responsibility for Atlas E, Atlas II, Delta II, Titan II, and Titan IV missions from Cape Canaveral, and Vandenberg.

December 1990. In Gulf War I buildup, Air Force Space Command repositions a reserve Defense Satellite Communications System II satellite over Indian Ocean, offering better coverage. USAF also accelerates the launch of a third Defense Meteorological Satellite Program spacecraft to augment existing spacecraft. USAF deploys a third Defense Support Program satellite to improve coverage of Iraqi Scud launches. It also reconfigures antenna patterns on two DSCS satellites to increase signal strength, moves LES-9 satellite over the Atlantic, and launches three new GPS satellites while repositioning others.



A GPS satellite in orbit. There are 28 satellites in the full GPS constellation.

Jan. 17, 1991. What USAF calls "the first space war," Operation Desert Storm, opens with air attacks aided by space-derived data.

March 8, 1991. USAF launches first Titan IV heavy-lift space booster from Vandenberg. The booster carries a classified payload.

April 18, 1991. USAF stages first successful flight test of the MGM-134A Small ICBM. It flies 4,000 miles from Vandenberg to a target area in the Pacific Ocean.

Feb. 11, 1992. First military launch of an Atlas II/Centaur takes place at Cape Canaveral.

June 1, 1992. SAC transfers to Air Force Space Command all of the management of AFSATCOM systems.

June 19, 1992. Gen. Merrill A. McPeak, Chief of Staff, changes the Air Force mission to read: "Defend the United States through control and exploitation of air and space."

Jan. 13, 1993. USAF Maj. Susan J. Helms, aboard the space shuttle *Endeavour,* becomes the first US military woman in space.

July 1, 1993. Air Force Space Command assumes ICBM operational mission from Air Combat Command.

July 19, 1993. Launch of DSCS Phase III satellite provides first full five-satellite DSCS III constellation.

Nov. 1, 1993. At Falcon AFB, Colo., AFSPC activates the Space Warfare Center to foster space support to combat units.

Feb. 7, 1994. Air Force Space Command launches the first Milstar communications satellite.

March 9, 1994. Air Force completes the full constellation of 24 GPS satellites. Goes fully operational in April 1995.

May 5, 1994. President William J. Clinton directs the merger of civilian and military meteorological systems under the National Oceanic and Atmospheric Administration.

June 10, 1994. Air Force enlisted members become eligible for astronaut duty. Secretary of the Air Force revises Air Force Instruction 36-2205, "Applying for Flying and Astronaut Training Programs." This change, for the first time allows enlisted airmen to apply to become mission specialists aboard NASA space shuttle missions.

Feb. 6, 1995. USAF Lt. Col. Eileen M. Collins is first woman to pilot a US spaceship, doing so when *Discovery* and space station Mir perform the first US-Russian space rendevous. Later (July 23-27, 1999), she becomes the first woman to command a space shuttle.

April 27, 1995. Air Force Space Command declares the GPS satellite constellation to be fully operational.

Aug. 5, 1995. President Clinton signs the National Space Transportation Policy, endorsing plans to develop a more efficient space launcher, the evolved expendable launch vehicle.

Feb. 23, 1997. The first Titan IVB launch vehicle lifts off from Launch Complex 40 at Cape Canaveral using an inertial upper stage (IUS). It launches a Defense Support Program (DSP) payload.

April 4, 1997. A Defense Meteorological Satellite Program (DMSP) satellite is launched into polar orbit aboard a Titan IIG booster from Vandenberg.

May 29, 1998. First transfer of an operational military space system to a civilian agency occurs when USAF hands over primary control of the DMSP on-orbit assets to NOAA.

March 24, 1999. NATO launches what USAF calls the Air War Over Serbia, an operation in which space assets played a major support role.

May 1, 2000. President Clinton directs the Pentagon to cease injecting deliberate inaccuracies into the civil GPS signals, so that civilians can make better use of the system.

Sept. 27, 2000. USAF changes the standard space and missile operator uniform from blue, one-piece flight suit to the standard green flight suit.

Jan. 11, 2001. Congressionally mandated Space Commission issues report recommending significant organizational realignments of the military space program and increased responsibilities for the Air Force.

Jan. 22-26, 2001. Space Warfare Center conducts Schriever 2001, the first wargame to explore requirements for space control, counters to enemy space capabilities, and the ability of an enemy to deny the US and its allies the use of space assets.

May 8, 2001. The Secretary of the Air Force is designated as DOD executive agent for space.

Oct. 1, 2001. Control of the Space and Missile Systems Center, Los Angeles AFB, Calif., shifts from Air Force Materiel Command to Air Force Space Command, thereby placing cradle-to-grave oversight of acquisition and operation of space systems under a single command.

Lt. Col. Eileen Collins, first woman to pilot a US spaceship and first female to command a space shuttle.

A Delta IV rocket lifts off from Cape Canaveral, Fla., carrying a DSCS satellite.

Oct. 7, 2001. US launches Operation Enduring Freedom in Afghanistan, featuring employment of numerous space-directed Air Force combat assets.

April 19, 2002. Air Force Space Command becomes a four-star Air Force major command in its own right. Previously, the four-star commander of US Space Command and NORAD also commanded AFSPC.

Aug. 21, 2002. First Atlas V, the first of two new launch vehicles developed under USAF's EELV program, boosts a Eutelsat Hot Bird 6 communications satellite into orbit from Cape Canaveral.

Oct. 1, 2002. US Space Command, created in 1985, is disestablished. Its missions are transferred to US Strategic Command, Offutt AFB, Neb. STRATCOM gains the responsibility to define, plan, develop, and conduct space operations.

Nov. 20, 2002. Delta IV, second of the new EELVs partially funded by USAF, debuts by boosting a Eutelsat payload from Cape Canaveral.

Dec. 17, 2002. President George W. Bush announces plans to field, by 2004, an initial missile defense capability for the US. It is to comprise ground- and sea-based interceptors and sensors based on land, sea, and in space.

Feb. 1, 2003. The shuttle *Columbia* breaks up 200,000 feet above east Texas on its re-entry after a 16-day mission in space. Seven astronauts perish.

March 10, 2003. Delta IV boosts into orbit a DSCS III satellite, marking the first launch of a military payload aboard an EELV.

March 12, 2003. Peter B. Teets, undersecretary of the Air Force, and Gen. Lance W. Lord, commander of Air Force Space Command, tell Congress they have assigned high priority to developing a cadre of space professionals.

March 20 (Baghdad time), 2003. EGBU-27 bombs, guided to precise locations by GPS satellite signals, roll off F-117 stealth fighters in the opening blasts of Gulf War II.

March 25, 2003. US officials say Iraq has been using special devices to try to jam GPS signals but that coalition forces have destroyed all six of the devices.

April 22, 2003. Air Force Space Command's 14th Air Force activates first-of-its-kind space intelligence squadron. The mission of the 614th SIS is to identify and devise means to respond to threats to US space systems.

May 13, 2003. President Bush issues the US Commercial Remote Sensing Space Policy. It calls for federal agencies to rely "to the maximum practical extent" on commercial space imagery to fill imagery and geospatial needs for military, intelligence, foreign policy, homeland security, and civil users.

Oct. 15-16, 2003. AChinese astronaut, Lt. Col. Yang Liwei, is launched into space on Shenzhou V rocket and orbits the Earth 14 times. The 21-hour trip puts China into elite manned space flight club, occupied exclusively by US and Russia since 1961.

Jan. 16, 2004. The AFSPC's Space and Missile Systems Center requests proposals for a Space Based Radar program which will give theater commanders the ability to track moving targets.

Feb. 25, 2004. In a warning about dangers in space, Secretary Teets tells the House Armed Services Committee that "we have done a very serious vulnerability study ... of our national security space programs" and that "we do see ... a threat starting to evolve." ■