MARCH 2020

The U.S Military in Outer Space

AN ORIGIN STORY

A 1983 Military artist's concept of an anti-satellite missile, after being launched from an F-15 Eagle aircraft.

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Abstract

The United States Military gains a disproportionate advantage over its adversaries by exploiting space-based technologies. The ability to Observe, Orient, Detect, and Act (OODA) swiftly, efficiently, and effectively than an adversary, heavily depends upon these space-based capabilities. There are around 189 mature military satellites orbiting the earth every day, and they are all owned and operated by the United States Department of Defense (DoD). These DoD satellites perform a wide variety of missions to support and safeguard U.S. National Security interests and additionally pursue advances in Research and Development, Technology Controls, Communications, Meteorology, Navigation, Tactical Warning, and Attack Assessments, Defense, and Strategic Doctrine. By doing so, these space-based military capabilities greatly enhance our ability to bomb targets, launch missiles with high accuracy, lower the cost of navigation for ships, and elevate many other surveillance-based capabilities.

Introduction

The militarization of space began in late 1945 immediately after World War II. The United States endeavored to accomplish many objectives in space; it primarily desired to achieve space superiority by the advancement of its strategic reconnaissance capabilities, but much of the progress hindered due to political indifference, military conservatism, bureaucratic rivalry and the severity of the post-war national defense budgets. However, after the successful launch of Sputnik I by the Soviet Union, the geopolitical climate changed for better or worse. It appeared as though that the Russians had not only launched the Sputnik I four months early but had also attained military superiority in space. That was, however, not the case because the Sputnik launch was more of a civilian endeavor and less of any Soviet military significance. This episode became of paramount importance to the United States and hailed as the sour beginning of the Space Race. From here on, much of all the scientific and technological advancements in the United States space-based programs were done not only for its own scientific or engineering merits but, even more, significantly as a matter of international prestige, pride, and public posturing.

Due Credit

In the years before the war, a U.S. Army Air Forces Commander, General Henry H. "Hap" Arnold, played a critical role in getting space on the Airforce's agenda. He maintained working relationships with the scientific community and academic universities like the California Institute of Technology (Caltech) because he felt that it was not enough to have close ties with the aviation industry alone. The Air Force Scientific Advisory Board (SAB) was formed in the year 1944 and is still operational to this day. The SAB is a Federal Advisory Committee that provides independent advice on matters of science and technology programs that are critical to the Air Force's mission and recommends applications of technologies that can improve and enhance their capabilities.

The technological breakthroughs in World War II, such as rockets, jet engines, nuclear weapons of mass destruction, and electronics, placed the United States at a paramount risk from long-range foreign attacks, and the country needed strategic intelligence capabilities before an outbreak of hostilities. General Arnold, with the help of Dr. Theodore von Karman and RAND Corporation, started the Project RAND in 1946 and made strategic reconnaissance a high priority in accomplishing the development of a Strategic Reconnaissance Satellite or an Earth Satellite for short. Around the same time, a leading scientist named Louis Ridenour had done tremendous work in electronics and radar areas, and all of the military space missions that we have in place today are because of Ridenour's contributions.

Project RAND

Project RAND conducted space studies between 1946 – 1950 and continued its R&D activities for several more years, and in 1954 RAND recommended the official development of a strategic reconnaissance satellite. In 1953 a major technical breakthrough was reported by SAB on the build of a thermonuclear warhead that passed testing in the Pacific. SAB also promised to deliver a dry thermonuclear weapon by 1960 that would weigh 1,500 pounds with an energy output of one megaton. This thermonuclear breakthrough led to the development of the Intercontinental Ballistic Missile (ICBM) program, which in the year 1954, during the height of the Cold War, received the highest national priority amongst all other military projects. All of the leading physicists who were involved with the thermonuclear program now served on the ICBM committee. The reason the ICBM program received the highest priority is that these Intercontinental Ballistic Missiles, as the name goes, could travel from one continent to another and had very long-range capabilities. Even today, there is much concern over these ICBMs, because they are not only capable of transporting nuclear warheads or punishing payloads but can target any assets past the Stratosphere, like the Exosphere (>700 – 190,000 Km from Earth's surface). The Exosphere is where outer space-based assets or orbital stations reside, such as C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance) satellites.

Likewise, a few months later, in 1955, President Dwight D. Eisenhower expressed concern over the high potential for a nuclear attack on the United States by the Soviet Union. It was during that time that the upper echelons of the American government discovered that even with the oceans that served as a barrier to long-distance attacks, the United States was still at imminent risk of a foreign attack even over significant distances. It now needed the ability to collect information on hostile activities, mainly by high altitude aircraft. Given the Soviet Union's capabilities in fighter aircraft interception and anti-aircraft missile defense, the U.S. recognized that it was heavily dependent on the ability to gather intelligence via technical means, more significantly, with aerial photography.

At the beginning of January 1956, RAND Corporation and the United States Air Force conducted the 119L Weapons System program. The goal was to equip the Skyhook weather balloons, with radio beacons for and cameras. There were 516 of these vehicles dropped eastward across the Eurasian continent. These devices drifted along with prevailing winds so that the onboard radio beacons served as tracking devices, and the built-in cameras would capture images of Soviet territories. The devices that succeeded in crossing the Soviet boundaries would later be released mid-air in gondolas with parachutes and were to be recovered by C-119 cargo aircraft near Japan. Although this was a brilliant idea, it violated Soviet National sovereignty per international law. President Eisenhower quickly terminated the program to explore other meaningful avenues for gathering information.

The United States Air Force directed the RAND Corporation to conduct studies on the Military Earth Satellite. In April 1952, after another research study on strategic aerial surveillance, under the auspices of Project Lincoln at the Massachusetts Institute of Technology (MIT), conducted by the Beacon Hill Study Group, the United States formulated its defense strategy in outer space capabilities such as military earth satellite-based intelligence gathering and improving the Air Force's strategic Reconnaissance capabilities such as aerial intelligence processing, sensors, and vehicles.

Establishing the First American Space Policy

One year later, after the Soviet Union successfully launched Sputnik 1 (October 04, 1957) and Sputnik 2 (November 21, 1957), both these satellites had overflown international boundaries without provoking any diplomatic protests by any other states. President Eisenhower and Deputy Secretary of Defense Donald Quarles concluded that the Russians had done a good thing by unintentionally establishing the concept of freedom of international space. In 1958, it led to the same outcome after the United States launched the IGY Explorer and Vanguard satellites, which followed the Sputniks into orbit. Once again, not a single state objected to these overflights and so the civilian spacecraft made a straight way to their military counterparts.

President Eisenhower addressed the nation to reassure the public that the United States was scientifically reliable and able to compete in space, and within months the administration and Congress took the following actions:

On July 29, 1958, the National Aeronautics and Space Administration (NASA) was established through the National Aeronautics and Space Act.

On February 07, 1958, the Advanced Research Projects Agency was established within the Department of Defense through DOD Directive 5105.15. The agency was later named the Defense Advanced Research Projects Agency (DARPA)

On September 02, 1958, President Eisenhower signed the National Defense Education Act, that reformed elementary, secondary, and postsecondary science and mathematics education and also provided incentives for American students to pursue science, technology, engineering, and mathematics (STEM).

With the launch of these two military satellites and the establishment of vital institutions dedicated to the space exploration efforts, President Eisenhower amplified his First American Space Policy with the National Security Council directives three times in 1958. Once in June, then in August and once again in December.

The first directive called for a "political framework which would place the use of U.S. reconnaissance satellites in a political and psychological context most favorable to the United States."

The second directive judged these spacecrafts to be of "critical importance to U.S. national security," identifying them for peaceful uses of outer space and set an objective for "opening up" the alliance with the Soviet Union through improved intelligence and programs of scientific cooperation."

The third directive described the military support missions in space that fell within the rubric of peaceful uses, identified offensive space weapon systems for study, and it noted a positive political milestone for international law. The United Nations ad hoc committee accepted the "permissibility of the launching and flight of space vehicles regardless of what territory they passed over during their flight through outer space."

Hewing to the policy of "freedom of space," this space policy endorsed by President Eisenhower's successor, John F. Kennedy, secured two other vital objectives simultaneously that permitted the launch and operations of military reconnaissance spacecraft. Firstly, it reinforced the "Sputnik precedent" as an accepted principle among the states, officially recognizing free access to and unimpeded passage through outer space for peaceful purposes. Second, by limiting military spacefaring to defense support functions, it avoided any confrontation with the Soviet Union over observation of the Earth from space and ensured at least an opportunity to achieve Open Skies at altitudes above the territorial airspace of nation-states (i.e., 0 - 50,000 feet or 0 - 15,000 meters above the ground level)

The set of the above fundamental factors give importance, urgency, and inevitability to the advancement of space technology. The above directives were a direct result of the Soviet Union's launch of the first two artificial satellites orbiting the earth, and even the current U.S. space policy is based upon the tenants of the first space policy set forth by the Eisenhower presidential committee. Over the years, the Space Policy has undergone many changes, but they are all derived from the tenants of the First American Space Policy.

The DoD Space Program (1998 – 2003)

The Department of Defense Space Program, an Executive Overview for F.Y. 1998 – 2003, dated March 1997, is an excellent brochure. It provides an overview of the DoD space priorities, planning, and objectives. The primary aspect of the DoD space policy is the focus on efforts to consolidate, integrate, and coordinate the Defense and Intelligence sector. An excerpt of the Executive Overview has been provided below for the three branches of the United States Military:

Air Force Space Policy Objectives

(1) Integrate space into all facets of joint operations
(2) Develop the best space lift and infrastructure
(3) Create an effective Theater Missile Defense (TMD), National Missile (4) Defense (NMD), and Ground-based Midcourse Defense (GMD) capabilities
(5) Pursue international space cooperation for the global missile warning system

Navy Space Policy Objectives

(1) Space is an essential medium for the conduct of maritime operations
(2) Department of Navy to integrate space into every facet of Naval operations
(3) Provide space-based support to the warfighter
(4) Emphasis on Naval tactical requirements and operations

Army Space Policy Objectives

(1) Recognize that the Army is dependent on space systems, capabilities and products
(2) Space products are a force multiplier
(3) Space to be embedded in Army doctrine, training scenarios, wargame exercises, and plans
(4) Develop, maintain, and enhance Army space expertise, to include provision for training of space-knowledgeable soldiers and civilians

The Race to Space: From a Military Perspective

The establishment of a civilian space agency, NASA, as part of the "NASA Act" in 1958, symbolized the entrance of the United States into the space age. The first U.S. satellite, Explorer 1, was developed and launched by the DoD in a joint mission with NASA. The Explorer 1 satellite reached orbit on January 31, 1958, after several failures of the Naval Research Laboratory's Vanguard rocket. President Eisenhower's desire to separate the two sectors, the DoD and NASA's space activities, led to the DoD retaining control over all military space programs.

Near the end of his second term in 1960, he created a third sector called the National Reconnaissance Office (NRO), which worked alongside the Central Intelligence Agency (CIA). He would have this NRO embrace surveillance and intelligence operations. The NRO and CIA partnership led to the development of the highly classified U2 high altitude spy plane as well as the development of the CORONA reconnaissance satellite. This way, he allowed all the sectors specific space agencies to follow their independent paths.

At the end of President Eisenhower's presidency, there came a frustrating time for the DoD in the wake of the developing Soviet Space threat. Much of the military space budget requests were denied at the beginning of the Kennedy administration, and emphasis was given to NASA's manned space program threatening the DoD's claims to its mission and also robbing the DoD of its military space activities.

The successful manned lunar missions by Soviet Union's cosmonauts Major Yuri Gagarin in his five-ton Vostok I spacecraft on April 12, 1961, followed by Major Titov in Vostok II on August 06, 1961, the Soviets announced that they would break the moratorium on nuclear testing using super powerful atomic bombs 20, 30, and 50 and 100 million tons of TNT. They remarked, "if we could bring the spaceships of Yuri Gagarin and Gherman Titov to land at a prearranged spot, we could, of course, send "other payloads" into space and "land" them wherever we wanted."

These accomplishments and statements from the Soviets posed a severe threat to the then-new Kennedy administration. In response to the Soviet's remarks, the U.S. administration decided to expand its military space program to meet the emerging threat from the Soviet Union. The administration proposed urgent requirements for satellite interception systems, space-based ballistic missile defenses, and fast-reaction space bombers that could re-enter the atmosphere. Above all, they wanted to demonstrate manned military capability in space. President John F. Kennedy motivated by a growing sense of determination to prevent communism from spreading further, made the following statements during his first state of the union speech:

"I believe this nation should commit itself to achieve the goal, before this decade is out, of landing a man on the Moon and returning him safely to Earth. No single space project in this period will be more impressive to mankind, or more important in the long-range exploration of space, and none will be so difficult or expensive to accomplish."

Although the manned orbital flights of U.S. astronauts Alan Shepard on May 02, 1961, followed by John Glenn on February 20, 1962, were a disaster. The tragic assassination of President John F. Kennedy in November 1963 only placed the United States years behind the Soviets in this space race, but all that changed after President Lyndon Johnson sworn as President worked toward Kennedy's proposed moon landing.

Eight years later, with a multitude of mission failures and the deaths of multiple astronauts, the U.S. finally succeeded the USSR in the space race on July 20, 1969. The Apollo 11 commander Neil Armstrong became the first human to step onto the Moon's surface. I think we can bet that the feeling in the Soviet Union was precisely similar to the U.S. sentiment when Yuri Gagarin became the first man in space.

By 1970, NASA was preparing for its post lunar mission objectives, such as the development of a space shuttle in partnership with the U.S. Air Force and also the development of a space station. The year 1975 marked the end of an era for all Apollo missions with Apollo 17 being the last manned flight to the Moon. The remaining of the Apollo missions curtailed due to budget cuts imposed by Congress and the Nixon administration.

The U.S. Department of Defense (DoD) partnered with NASA on the development of the space shuttle program. The DoD also agreed to partner with NASA on its military space operations such as the reconnaissance satellites and national security payloads in low earth orbit. Due to the bitter civil-military relations, NASA was warned of the withdrawal of political and financial support unless NASA modified its designs to support the U.S. Military Space Program. California's Vandenberg, Air Force base, became the primary launch facility for all military space programs.

U.S. Military Partnerships with Civilian Agencies

The partnership with the Department of Transportation (DOT) and the Department of Defense (DoD) led to the launch of the NAVSTAR-1 satellite on February 22, 1978, a Global Positioning System (GPS), orbits the earth at an altitude of 20,200 Km (12,551 miles) and completes two revolutions per day. This global positioning system acts as a backbone to various military, nautical, aeronautical, geospatial, weather, communication, and other civilian-based digital ecosystems.

The NAVSTAR satellite carries an Integrated Operational Nuclear Detection System that not only allows the warfighter with fast target acquisition but also promises effective nuclear payload delivery while ensuring accurate feedback from the battlefield. A few examples of GPS technology used for U.S. Military purpose:

(1) The 1991 Operation Desert Storm against Iraq to liberate Kuwait. Out of the 1,207 airstrikes, 4% were precision-guided by the GPS satellite technology.

(2) In 2003, Operation Iraqi Freedom, there were 772 airstrikes on the War against Terror, and 36% of the airstrikes were precision-guided by GPS Satellite technology.

Therefore, the U.S. Warfighting capabilities using precision-guided GPS satellite technology continues to remain superior and unmatched around the world.

The partnership with the National Oceanic and Atmospheric Administration (NOAA) in the Department of Commerce and the DoD led to the development of the Polar Orbiting Environmental Satellite (POES) system that merges capabilities with the DoD's Defense Meteorological Satellite Program (DMSP), now called the National Polar-Orbiting Operational Environmental Satellite System (NPOESS). In February 2010, the NPOESS program was terminated by the U.S. Government due to severe overrun of costs, and it became a joint endeavor of the DoD, NASA, and NOAA and was renamed to the Joint Polar Satellite System (JPSS).

Other agencies, such as the National Geospatial-Intelligence Agency and the National Security Agency, benefit from the intelligence collection satellites owned by the National Reconnaissance Office (NRO) and DoD under the oversight of the Director of the National Intelligence (DNI). The DoD and the intelligence community partner in a broad array of space activities such as launch vehicle development, communication satellites, navigation satellites, and early warning satellites to warn the United States of any adversities including foreign missile launches, natural disasters, etc., and deny adversaries from space-control and their use of counter-space systems in space.

U.S. Military Satellite Launches (1984 – 2019)

Table 1. U.S. Military Satellite Launches 1984 – 2019

Satellite Name	*Launch Date*	*Capability*
GPS-9 / Navstar-9	June 13, 1984	Navigation
KH9-19	June 25, 1984	Reconnaissance
SDS-5 / Quasar-5	August 28, 1984	Military Communications
GPS-10 / Navstar-10	September 8, 1984	Navigation
KH11-6	December 4, 1984	Reconnaissance
DSP-12	December 22, 1984	Missile Detection
Magnum-1 / Orion-1	January 24, 1985	Reconnaissance
SDS-6 / Quasar-6	February 8, 1985	Military Communications
GPS-11 / Navstar-11	October 9, 1985	Navigation
DSCS-3-B4/B5	October 3, 1985	Military Communications
VSM / DM-43 / SDI-1	September 5, 1986	Strategic Defense Initiative (SDI)
FltSatCom-7	December 5, 1986	US Navy Communications
SDS-7 / Quasar-7	February 12, 1987	Military Communications
DMSP-5D2-F8	June 20, 1987	Polar-Orbiting Weather
KH11-8	October 26, 1987	Reconnaissance
DSP-13	November 29, 1987	Missile Detection
DMSP-5D2-F9	February 3, 1988	Polar-Orbiting Weather
KH11-9	June 11, 1988	Reconnaissance
Lacrosse-1 / Onyx-1	December 2, 1988	Reconnaissance
GPS-2-1	February 14, 1989	GPS
Delta-Star	March 24, 1989	Strategic Defense Initiative (SDI)
GPS-2-2	June 11, 1989	GPS
DSP-14	June 14, 1989	Missile Detection
SDS-2-1 / Quasar-8	August 8, 1989	Military Communications
GLOMR? / SSF	August 8, 1989	Military Communications
GPS-2-3	August 18, 1989	GPS
DSCS-2-E15	September 4, 1989	Military Communications
DSCS-3-A2	September 4, 1989	Military Communications
FltSatCom-8	September 25, 1989	US Navy Communications
GPS-2-4	October 21, 1989	GPS
Magnum-2 / Orion-2	November 23, 1989	Reconnaissance
Misty-1	February 28, 1990	Reconnaissance
GPS-2-7	March 26, 1990	GPS
Stacksat-1/2/3	April 11, 1990	Military Technology
SLDCOM-1	June 8, 1990	Reconnaissance
Intruder-1A/1B/1C	June 8, 1990	Reconnaissance
DSP-15	November 13, 1990	Missile Detection
GPS-2A-1	November 26, 1990	GPS
SDS-2-2 / Quasar-9	November 16, 1990	Military Communications
DMSP-5D2-F10	December 1, 1990	Polar-Orbiting Weather
GLOMR? / MPEC	April 28, 1991	Military Communications
DMSP-5D2-F11	November 28, 1991	Polar-Orbiting Weather

Table 1 continued

Satellite Name	*Launch Date*	*Capability*
DSP-16	November 21, 1991	Missile Detection
DSCS-3-B14	February 11, 1992	Military Communications
GPS-2A-6	September 9, 1992	GPS
KH11-10	November 28, 1992	Reconnaissance
SDS-2-3 / Quasar-10	December 2, 1992	Military Communications
NATO-4B	December 8, 1993	Military Communications
Milstar-1-1	February 7, 1994	Military Communications
TAOS	March 13, 1994	Space Technology
DARPASat	March 13, 1994	Space Technology
Trumpet-1	May 3, 1994	Reconnaissance
DMSP-5D2-F12	August 29, 1994	Polar-Orbiting Weather
DSP-17	December 22, 1994	Missile Detection
DMSP-5D2-F13	March 24, 1995	Polar-Orbiting Weather
Trumpet-2	July 10, 1995	Reconnaissance
KH11-11	December 5, 1995	Reconnaissance
SDS-2-4 / Quasar-11	July 3, 1996	Military Communications
KH11-12 / NROL-2	November 20, 1996	Reconnaissance
DSP-18	February 23, 1997	Missile Detection
DMSP-5D2-F14	April 4, 1997	Polar-Orbiting Weather
Trumpet-3	November 7, 1997	Reconnaissance
SDS-3-1 / Quasar-12	January 29, 1998	Military Communications
DSP-19 [failed]	April 9, 1999	Missile Detection
DMSP-5D3-F15	December 12, 1999	Polar-Orbiting Weather
DSP-20	May 8, 2000	Missile Detection
SDS-3-2 / Quasar-13	December 6, 2000	Military Communications
DSP-21	August 6, 2001	Missile Detection
KH11-13 / NROL-14	October 5, 2001	Reconnaissance
SDS-3-3 / Quasar-14	October 11, 2001	Military Communications
GPS-2R-8	January 29, 2003	GPS
Milstar-2-4	April 8, 2003	Military Communications
DMSP-5D3-F16	October 18, 2003	Polar-Orbiting Weather
DSP-22	February 14, 2004	Missile Detection
GPS-2R-12	June 23, 2004	GPS
SDS-3-4 / Quasar-15	August 31, 2004	Military Communications
NROL-23 / NOSS-3-3A/3B / Intruder-7A/7B	February 3, 2005	Reconnaissance
NROL-22 / SBIRS-Heo-1 / Trumpet-4	June 28, 2006	Reconnaissance
KH11-14 / NROL-20	October 19, 2005	Reconnaissance
MITEX-A	June 21, 2006	Technology
MITEX-B	June 21, 2006	Technology
MITEX-NUS	June 21, 2006	Technology
DMSP-5D3-F17	November 4, 2006	Polar-Orbiting Weather
NROL-30 / NOSS-3-4A/4B / Intruder-8A/8B [partial failure]	June 15, 2007	Reconnaissance
DSP-23	November 11, 2007	Missile Detection
SDS-3-5 / Quasar-16	December 10, 2007	Military Communications
NROL-28 / SBIRS-Heo-2 / Trumpet-5	March 13, 2008	Reconnaissance

Table 1 continued

Satellite Name	*Launch Date*	*Capability*
GPS-2RM-7	March 24, 2009	GPS
Nemesis-1 / PAN	September 8, 2009	Reconnaissance
DMSP-5D3-F18	October 18, 2009	Polar-Orbiting Weather
GPS-2F-1	May 27, 2010	GPS
AEHF-1	August 14, 2010	Communications
NROL-41 / Topaz-1	September 21, 2010	Reconnaissance
SBSS	October 26, 2010	Reconnaissance
STPSat-2	November 20, 2010	Space Technology
OSCAR-69 / FASTRAC-1	November 20, 2010	Amateur Radio
NROL-32 / Orion-7	November 21, 2010	Reconnaissance
KH11-15 / NROL-49	January 20, 2011	Reconnaissance
NROL-66 / RPP	February 6, 2011	Reconnaissance
NROL-27 / SDS-3-6 / Quasar-17	March 11, 2011	Military Communications
OSCAR-70 / FASTRAC-2	November 20, 2010	Amateur Radio
NROL-34 / NOSS-3-5A/5B / Intruder-9A/9B	April 15, 2011	Reconnaissance
SBIRS-Geo-1	May 7, 2011	Missile Detection
ORS-1	June 30, 2011	Reconnaissance
GPS-2F-2	July 16, 2011	GPS
NROL-25 / Topaz-2	April 3, 2012	Reconnaissance
AEHF-2	May 4, 2012	Communications
NROL-38 / SDS-3-7 / Quasar-18	June 20, 2012	Military Communications
NROL-15 / Orion-8	June 29, 2012	Reconnaissance
NROL-36 / NOSS-3-6A/6B / Intruder-10A/10B	September 13, 2012	Reconnaissance
SBIRS-Geo-2	March 19, 2013	Missile Detection
GPS-2F-4	May 15, 2013	GPS
KH11-16 / NROL-65	August 28, 2013	Reconnaissance
AEHF-3	September 18, 2013	Communications
NROL-39 / Topaz-3	December 6, 2013	Reconnaissance
DMSP-5D3-F19	April 3, 2014	Polar-Orbiting Weather
GPS-2F-6	May 16, 2014	GPS
NROL-33 / SDS-3-8 / Quasar-19	May 22, 2014	Military Communications
GSSAP-1	July 28, 2014	Reconnaissance
GSSAP-2	July 28, 2014	Reconnaissance
ANGELS	July 28, 2014	navigation
GPS-2F-7	August 1, 2014	GPS
Nemesis-2 / CLIO	September 17, 2014	Reconnaissance
NROL-35 / SBIRS-Heo-3 / Trumpet-6	December 13, 2014	Reconnaissance
GPS-2F-10	July 15, 2015	GPS
NROL-55 / NOSS-3-7A/7B / Intruder-11A/11B	October 8, 2015	Reconnaissance
NROL-45 / Topaz-4	February 10, 2016	Reconnaissance
NROL-37 / Orion-9	June 11, 2016	Reconnaissance
NROL-61 / SDS-4-1 / Quasar-20	July 28, 2016	Military Communications
GSSAP-3	August 19, 2016	Reconnaissance
GSSAP-4	August 19, 2016	Reconnaissance
SBIRS-Geo-3	January 12, 2017	Missile Detection

Table 1 continued

Satellite Name	*Launch Date*	*Capability*
NROL-79 / NOSS-3-8A/8B / Intruder-12A/12B	March 1, 2017	Reconnaissance
NROL-42 / SBIRS-Heo-4 / Trumpet-7	September 24, 2017	Reconnaissance
NROL-52 / SDS-4-2 / Quasar-21	October 15, 2017	Military Communications
Zuma [failed]	January 8, 2018	Reconnaissance
SBIRS-Geo-4	January 20, 2018	Missile Detection
AEHF-4	October 17, 2018	Communications
KH11-17 / NROL-71	January 19, 2019	Reconnaissance
AEHF-5	August 8, 2019	Communications

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Creation of U.S. Space Command

As previously stated in the previous sections, President Eisenhower established the First American Space Policy and created the 1958 National Aeronautical and Space act. According to that National Aeronautics and Space Act, Chapter 201 of Title 51, Congress declared that the general welfare and security of the United States require adequate provisions to be made for aeronautical and space activities. Congress further stated that such activities should be the responsibility of and under the direction of a civilian agency that would exercise control over aeronautical and space activities sponsored by the United States. However, the activities peculiar and primarily associated with the development of weapons systems, military operations, research, and development, or the defense of the United States, shall be the responsibility of and under the direction of the Department of Defense. The President shall determine as to which agency will be responsible for any required space activity. (1958, Title 51, National and Commercial Space Programs)

One must note the many technical, managerial, and budgetary challenges that the Department of Defense faced in managing its military space activities, but that is a discussion for another time. After a series of mishaps, lack of managerial expertise, and absolute disarray, the Department of Defense decided to perform a study to determine the best approach towards its military space activities. On June 21, 1982, the Department of Defense announced the results of its space study and gave the United States Air Force the jurisdiction to command, coordinate and operate the nation's military space activities. On September 1, 1982, the United States Air Force Space Command was formed in Colorado Springs, Colorado. General Hartinger became the first commander of the Space Command, while also retaining his responsibilities as a commander for Aerospace Defense Command (ADCOM) and North American Aerospace Defense Command (NORAD).

Conclusion

The United States Military has the responsibility for safeguarding the nation from all foreign and domestic adversaries. A force multiplier that adheres to U.S. policies, treaties and high standards. A few categories of the military instrument of power are its operations, technology, size and composition. As we can clearly see that the United States Military, is dependent on space-based technologies to support combat operations, it must continue to build its capabilities in satellite communications, intelligence, surveillance and reconnaissance, and navigation to have an asymmetrical advantage over its opponents. ✪

Notes

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