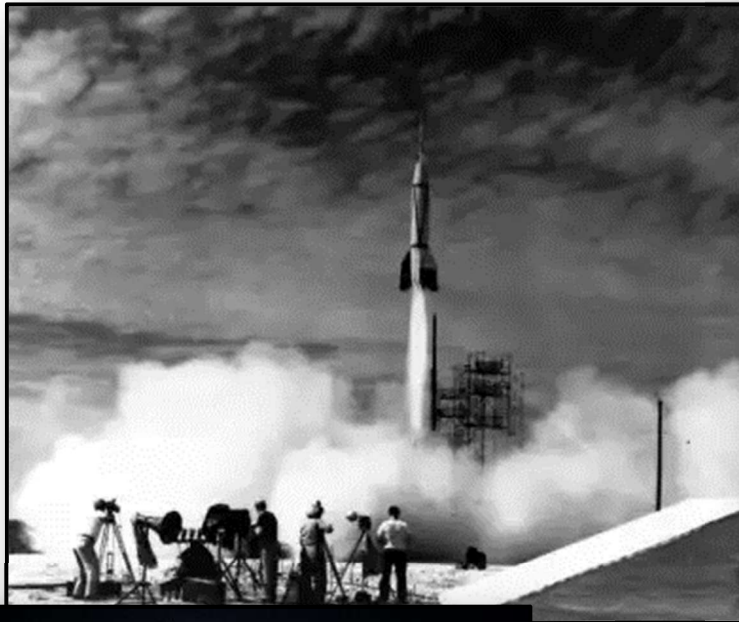


ASSURED ACCESS TO SPACE:

The Heritage of the Eastern Range from World War II to the Present

Space Launch Delta 45 History Office



Cover Photos

- Upper Left: The first launch lifts off from the Cape: BUMPER 8 rises from Pad 3 on 24 July 1950
- Upper Right: Oblique aerial view of Patrick Space Force Base, circa 1980, looking South
- Bottom Left: NASA's Mega Moon Rocket, ARTEMIS I on the pad at night after completing its first roll out at Kennedy Space Center (KSC)
- Bottom Right: ICBM Row, Cape Canaveral Space Force Station circa 1962



Proposed Emblem of Space Launch Delta 45

Patrick/Cape Overview

Patrick Space Force Base, Florida is located on a barrier island separating the Atlantic Ocean from the Banana River. The base occupies approximately 2,000 acres of government-owned land just north of Satellite Beach in Brevard County. It is the home of Space Launch Delta 45, which was re-designated from the 45th Space Wing in 2021. The Delta is comprised of ten squadrons, two detachments, and a medical group (which has two squadrons). Patrick SFB supports tenant organizations representing the Army, Navy, Defense Department, State Department, and NASA. The combination of Space Launch Delta 45 operations and tenant unit activities adds considerable color to Patrick's runways, hangars, office buildings, and people-oriented facilities, but support of the Delta's mission remains Patrick's most important task:



Patrick SFB photo from the International Space Station

Assure the United States has access to space...ALWAYS

Cape Canaveral Space Force Station (CCSFS) is located about 20 miles north of Patrick, east of the Kennedy Space Center, and just north of Port Canaveral. It consists of 15,375 acres of government-owned land plus about 430 acres in easements, licensed or leased land. The Cape is the principal location for Eastern Range launch complexes, vehicle assembly buildings, fuel storage areas, testing laboratories, machine shops, offices, hangars, and warehouses. It is the home of the 1st Range Operations Squadron, the 5th Space Launch Squadron, and Detachment 1, Space Launch Delta 45.

Launch operations at Cape Canaveral are conducted on the Eastern Range, a 15-million-square-mile area extending from the Cape to the Delta's range station on Ascension Island and beyond. The history of Patrick and the Cape has been tied to the range since 1950, beginning with the first Cape launch, BUMPER 8 (a German V-2 rocket derivative), on 24 July 1950. There have been more than 3,600 major launches on the range since that time.¹

This booklet provides a brief conspectus of our heritage and history.

¹ Additionally, one can add another 8,000 launches to the number when one includes air launch rockets, small sounding and weather rockets, and miscellaneous other rocket launches from the Kennedy Space Center (KSC).

The Joint Long Range Proving Ground

In October 1946, the Joint Chiefs of Staff (JCS) Research and Development Board established the Committee on the Long Range Proving Ground. The committee's charter was to study possible locations for the Joint Long Range Proving Ground, whose mission was to develop, operate and maintain a range for flight-testing long-range guided missiles. The range was to be operated jointly by the Army, the Navy, and the Air Force under the executive supervision of the Air Force. The committee members considered northern Washington as a potential hub for launches into the Aleutians Islands, but they soon rejected that option as too cold, too remote, and too difficult to support. The committee preferred El Centro, California as a launch site, but that option had to be abandoned after Mexico's President Aleman refused to allow missile flights over Baja California. The Government of Great Britain, on the other hand, was willing to allow missile flights near the Bahamas, and it later agreed to lease land to the Americans for their downrange stations. As a potential hub for missile launching operations the Cape was remote from heavily populated areas and it was accessible by road, waterway, and railway transportation. Aside from bouts of wet weather and thunderstorms, the climate was generally sunny and warm. The Banana River Naval Air Station was only 20 miles from the Cape, and it would make an excellent support base for the Eastern Range.

In addition, the Cape was the site of a U.S. Coast Guard lighthouse. The lighthouse and surrounding land was U.S. Government property, facilitating land acquisition for the site of the Joint Long Range Proving Ground. The lighthouse is the oldest standing structure on the Cape. It was originally built in 1868 to replace a shorter, brick lighthouse. At the time, the 151-foot iron tower topped with a first-order Fresnel lens was state-of-the-art. In 1894, it was moved to its present location and the U.S. Coast Guard took ownership in 1939. In 2000, stewardship was transferred to the U.S. Air Force.

While negotiations with the British continued, Congress passed enabling legislation for the Joint Long Range Proving Ground, which President Truman signed on 11 May 1949. For their part, on 21 July 1950 the British signed the Bahamian Agreement, which allowed the construction of range stations in the Bahamas. Anticipating those developments, on 1 September 1948 the Navy transferred the Banana River Naval Air Station to the Air Force. The station remained in standby status, but it was renamed the Joint Long Range Proving Ground (JLRPG) Base on 10 June 1949. On 1 October 1949, the Advance Headquarters, JLRPG and the Air Force Division, JLRPG were established. The base was activated on the same date.

Patrick Space Force Base

In the spring of 1950, the Defense Department announced the redesignation of guided missile test centers from joint service commands to the separate service branches. As a result, the Air Force Division, JLRPG became the Long Range Proving Ground Division, and it assumed responsibility for the proving ground. Effective 1 August 1950, the base was renamed Patrick Air Force Base in honor of Major General Mason M. Patrick. General Patrick served as Chief of Air Service, American Expeditionary Force in the Great War. After the war, he became the most important Chief of the Air Service. A true airpower visionary, General Patrick opened a flight test center as well as promoted international goodwill flights. He was instrumental in the creation of the U.S Army Air Corps in 1926—the first new branch of the Armed Forces since the Revolutionary War. He served as Chief from 21 October 1921 until his retirement in December 1927.



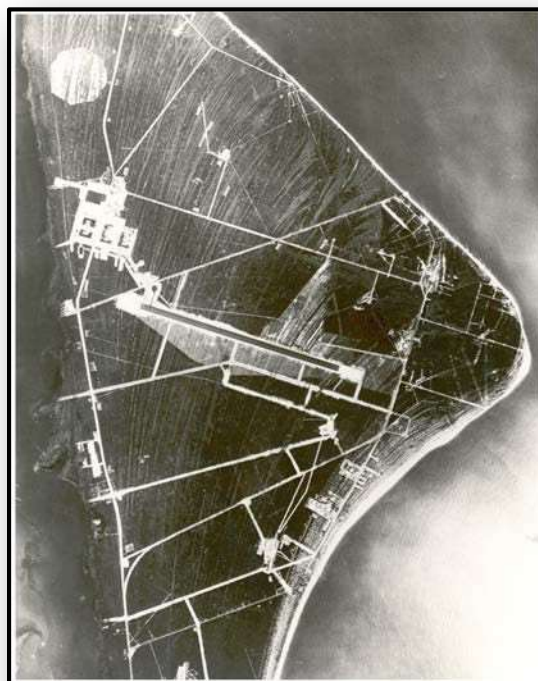
Major General Mason M. Patrick

More changes were in store for the base when in December 2019, the President of the United States created the U.S. Space Force (USSF) as the newest branch of the Armed Forces. On 9 December 2020, both major installations belonging to the 45th Space Wing were officially renamed as the first bases of the United States Space Force – Patrick Space Force Base and Cape Canaveral Space Force Station. It was most appropriate that the first base of the new Service should be named for the pioneer who was the first U.S. General Officer to form a new branch of the Armed Forces—Maj Gen Mason Patrick.

On 11 May 2021, the 45th Space Wing was redesignated as Space Launch Delta 45 (SLD 45).

Acquisition of Cape Canaveral

The Air Force's early acquisition of Cape Canaveral ensured public safety and provided a solid foundation for the timely and successful operation of the nation's first missile programs. Of the 12,000 acres it acquired in 1950, the federal government purchased 2,328 acres of the Cape outright, and the rest was awarded as a result of condemnation petitions filed in U.S. District Court. In 1956, the Air Force announced plans to expand the Cape Canaveral Missile Test Annex by about 3,000 acres. Over the next four years, the government acquired more land, and the reservation grew to approximately 14,600 acres by the end of 1959.



Cape Canaveral in 1955

Officials planned to expand the Cape Canaveral Missile Test Annex onto Merritt Island for America's manned lunar landing program in the early 1960s. Though the U.S. Army Corps of Engineers began negotiations in 1961 to acquire Merritt Island property for the APOLLO space program, the National Aeronautics and Space Administration (NASA), moved to the forefront of that effort in 1962. Ultimately, NASA acquired the area for itself. Initially, the area was known as the Merritt Island Launch Area (MILA), but officials renamed it the Kennedy Space Center (KSC) in honor of the late President John F. Kennedy in 1964. In addition, the Cape Canaveral Missile Test Annex was renamed Cape Kennedy Air Force Station in January 1964. NASA built several launch pads on the Cape, so the public naturally associated the station's new name with the Kennedy Space Center. Nevertheless, the station remained under Air Force jurisdiction. On 1 April 1974 it was renamed Cape Canaveral Air Force Station, and as previously mentioned it was renamed Cape Canaveral Space Force Station on 9 December 2020. The Space Force holdings on the Cape amount to roughly 15,804 acres.

There are about 40 different Launch Complexes with Launch Pads, Launch Control Centers, and other facilities at CCSFS to support the launches. Many modifications have taken place over the years for system upgrades and for new rocket programs. The mission of the Range Operations Control Center/Morrell Operations Center (MOC) is to prepare the range for launch, forecast weather, track launch vehicles as well as command destruct. The center is responsible to ensure safety for all operations on the Eastern Range.

From the very beginning, the military units assigned to Cape Canaveral Space Force Station directly supported NASA operations and launches from KSC over the years through the Eastern Range infrastructure. NASA launch vehicles the unit has supported include the SATURN IB & SATURN V, SPACE SHUTTLE, FALCON 9, and FALCON HEAVY.

The Air Force Missile Test Center

The Long Range Proving Ground Division was assigned to the newly created Air Research and Development Command (ARDC) in May 1951, and it was redesignated the Air Force Missile Test Center (AFMTC) on 30 June 1951. By early September, AFMTC included a headquarters and six wing-level organizations, most notably the 6550th Air Base Wing, the 6541st Missile Test Wing, and the 6555th Guided Missile Wing. The 6550th Air Base Wing was discontinued in March 1953, but its resources were transferred to the 6550th Air Base Group. The 6550th was one of Patrick's longest-lived units. Apart from two short periods, the 6550th continued to provide engineering, security, base services and downrange oversight of contractor operations until 1 October 1990.

The 6541st Missile Test Wing was activated with nine squadrons under it. Those squadrons were created to operate tracking systems on the Eastern Range's mainland and downrange stations. Two of the squadrons were discontinued in November 1951, but the remaining seven squadrons were deployed between the Cape and Grand Turk Island by the end of 1952. Though Air Force personnel operated tracking systems through the end of December 1953, cost comparison studies pointed to the desirability of letting contractors operate the Cape and the downrange stations. Air Force officials agreed, and they

signed the first range contract with Pan American World Services on 31 December 1953. Once property and equipment were transferred to Pan American and its subcontractor, RCA, the 6541st and its squadrons were discontinued. Contractors have operated the range (with Air Force oversight) since that time.

Another AFMTC unit, the 6555th Guided Missile Wing, began supervising missile launch contractor operations at the Cape in 1951.

The 6555th also focused most of its efforts on assembling, testing, and launching MATADOR winged missiles and training the first two MATADOR squadrons for active service in Europe. Following the reassignment and deployment of the 1st and 69th Pilotless Bomber Squadrons in January 1954, the 6555th survived as a MATADOR Research and Development testing unit. On 21 December 1959, the 6555th was reassigned to the Air Force Ballistic Missile Division without change of station. For more than 30 years, the 6555th had a distinguished career launching and/ or managing ballistic missiles, space launch vehicles, and payloads at the Cape. The 6555th was transferred on 1 October 1979 to the Eastern Space & Missile Center (the then-45th Space Wing's immediate predecessor). Ultimately, the 6555th was inactivated on 1 July 1992, but its resources were transferred to other units, notably the 1st, 3rd, and 5th Space Launch Squadrons of the then-45th Space Wing. As a Wing or a Group, the 6555th earned ten Air Force Outstanding Unit Awards.

AFETR, ESMC, and the 45th Space Wing

The Air Force Missile Test Center continued to operate under ARDC and (later) Air Force Systems Command (AFSC) through 14 May 1964. The following day, AFMTC was redesignated the Headquarters, Air Force Eastern Test Range (AFETR), and it continued to serve under Air Force Systems Command until 1 February 1977. The Air Force Eastern Test Range supported a wide variety of missile and space programs in the 1960s and early 1970s, but the demise of the APOLLO space program and the end of land-based ballistic missile development at the Cape signaled a downturn in AFETR's fortunes. Following AFETR's inactivation on the first of February 1977, the 6555th Air Base Group became the 6555th Air Base Wing and assumed host responsibilities for Patrick Air Force Base. Other AFETR resources were consolidated as Detachment 1, Space and

Missile Test Center (SAMTEC). Detachment 1 became a tenant unit at Patrick, and it reported to SAMTEC at Vandenberg Air Force Base, California.

Detachment 1 took no part in the Space Launch Delta 45's heritage or heraldry, and it may be viewed as a short-term experiment in an era of budget austerity. The Eastern Space & Missile Center (ESMC) succeeded Detachment 1 on 1 October 1979. Officials formed the new center by gathering AFETR's splintered resources and adding the 6555th Aerospace Test Group as a subordinate organization. To emphasize the connection between old and new, ESMC received the old AFETR heraldic shield. Under ESMC, the 6555th Air Base Wing's resources were reconstituted as the 6550th Air Base Group, and Detachment 1's resources were added to the Center as a new group-level organization.

On 1 October 1990, officials transferred ESMC from Air Force Systems Command to Air Force Space Command in a ceremony at the then-Cape Canaveral Air Force Station. During 1991, ESMC, Space Command, and Headquarters USAF worked out the details of ESMC's transformation into the 45th Space Wing. Following final resolution of any loose ends, the Wing was activated on 12 November 1991.

Space Launch Delta 45

In December 2019, the President of the United States created the U.S. Space Force (USSF) as the newest branch of the Armed Forces. The following year on 9 December 2020, both major installations of the 45th Space Wing were officially renamed as Patrick Space Force Base (SFB) and Cape Canaveral Space Force Station (CCSFS).

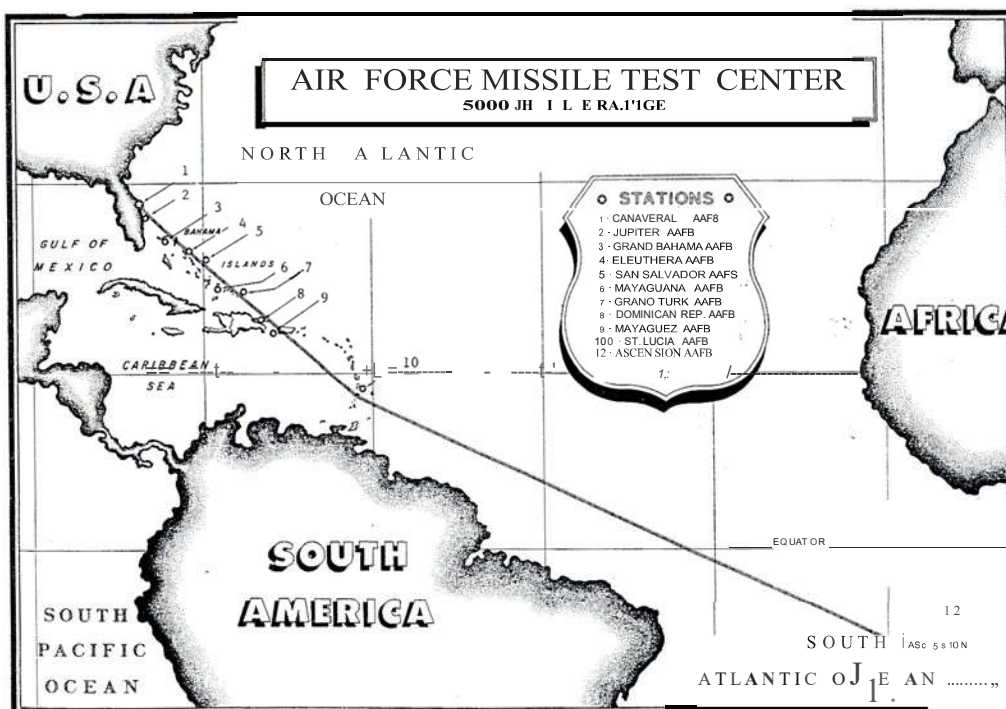
On 11 May 2021, the 45th Space Wing was redesignated as Space Launch Delta 45 (SLD 45) and it reported to Space Operations Command (SpOC) in Colorado Springs, Colorado. Under the new launch delta construct, both the 45th Mission Support Group and the 45th Operations Group inactivated and each squadron reported directly to the SLD 45 Commander. Also, Detachment 1 at CCSFS, Detachment 2 at Ascension Island, and Detachment 3 (DET 3) at Patrick SFB also reported directly to the SLD 45 Commander. In July, DET 3 left Space Launch Delta 45 when it was redesignated under the First Air Force (1 AF) of Air Combat Command (ACC). In addition, several squadrons assigned to SLD 45 changed from units of the United States Air Force armed force to units of the United States

Space Force armed force, with concurrent reassignments. The squadrons included the 1st Range Operations Squadron (formerly 45th Range Squadron), the 5th Space Launch Squadron, the 45th Space Communications Squadron, and the 45th Weather Squadron. Both Detachments 1 and 2 also later became USSF units.

Then on 13 August 2021, the USSF Space and Missile Center (SMC) in Los Angeles, California, was redesignated Headquarters Space Systems Command (SSC). SSC became the newest Field Command (FLDCOM) of the U.S. Space Force, and Space Launch Delta 45 and its subordinate units were reassigned to SSC.

Eastern Range Stations

By the end of 1954, Cape Canaveral was the hub of a range network extending southeast to an instrumentation site on Grand Bahama Island. This achievement represented only the initial "500-mile" range, but construction was underway on six range stations in Puerto Rico and the Dominican Republic as well as the islands of Eleuthera, San Salvador, Mayaguana, and Grand Turk to complete the first 1,000 miles of a vastly extended (5000-mile) range. The four island stations became operational in July and August 1955, and the stations in the Dominican Republic and Puerto Rico were operational on 5 December 1956.



Following negotiations with Britain, Brazil, St. Lucia, and Ascension, additional stations were built on St. Lucia, Antigua, Fernando de Noronha and Ascension. The Eastern Range supported its first 5,000-mile-long missile flight (a SNARK mission) on 31 October 1957. By January 1960, the Eastern Range included 13 major stations, approximately 91 outlying sites, a small fleet of telemetry ships and three marine support stations. By September 1963, the Eastern Range extended around the tip of South Africa to the island of Mahe in the Indian Ocean.

Though SNARK and NAVAHO "air-breathing" missile flights prompted officials to extend the range down to Ascension initially, ballistic missile and space launch vehicle programs became the principal users of the range by the early 1960s. The most significant missiles and space launch vehicles launched from the Cape from the 1960s onward were the THOR, ATLAS, TITAN I & II, MINUTEMAN, PERSHING, POLARIS, POSEIDON, and TRIDENT missiles. The Range also saw the employment of an array of space launch vehicles, including ATLAS I through ATLAS V/CENTAUR, the TITAN IIIC through TITAN IV/CENTAUR, DELTA II through DELTA IV and FALCON 9 space launch vehicles. In February 2022, the ASTRA 3.3 booster made its first launch from Pad 46, heralding a series of new space launch vehicles at the Cape (See "Launch Firsts & Launch Totals," later in this book.).

The Eastern Range employed a small fleet of telemetry ships to plug gaps in its land-based network, but those ships were replaced with more capable instrumentation ships in the 1960s. Two Advanced Range Instrumentation Ships (ARIS) became operational in 1964. They were the

USNS



USNS Redstone

General H. H. Arnold and the USNS *General Hoyt S. Vandenberg*. In addition to those major instrumentation platforms, the Eastern Range added the USNS *Redstone* to its inventory at the end of 1969. Following the last SNARK launch in December 1960 and the last MERCURY mission in May 1963, half a dozen range stations were retired. Officials deactivated the Mayaguez station in August 1961, and they returned annexes in the Dominican Republic to the Dominican Government on 6 November 1962. The range station on San Salvador went into "caretaker" status in March 1965, and range authorities closed it on 31 January 1970. Officials either eliminated or transferred all range property on St. Lucia to the Government of St. Lucia in December 1967. Apart from its airfield, the Mayaguana station was abandoned on 16 June 1970. The Missile Guidance Annex on Fernando de Noronha was returned to Brazil on 14 January 1969.

The next major reduction in range assets occurred in the 1980s. The USNS *Arnold* was decommissioned, and the USNS *Vandenberg* was mothballed. Officials deactivated the range station on Grand Turk, and they turned over the keys to the station on Grand Bahama Island to the Government of the Bahamas on 30 January 1988. Though the USNS *Redstone* was deactivated in August 1993, a new range site was completed in Argentia, Newfoundland in June 1993 to support northbound space flights from Cape Canaveral. The range stations on Antigua and Ascension were retained throughout this period, and they were modernized along with the Cape's instrumentation systems. They covered space flights from the Cape and TRIDENT II missile tests in the Atlantic Ocean for many years. In 2015, the Air Force determined the mandatory tracking and command functions assigned to Antigua Air Station (AAS) could be achieved using data from other existing Air Force assets and thus save roughly \$10 million in annual operating costs. On 7 July 2015, The 45 SW held an inactivation ceremony. On 22 July 2015, the 45 SW commander signed a Certificate of Release, which officially returned the range station to the Government of Antigua. The return of AAS ended the wing's 50-year presence on the island.

Emblem History

Long Range Proving Ground Division: On 16 March 1951, the Long Range Proving Ground Division received official approval for the use of its emblem (shown below left). A shield of azure blue was emblazoned with a long-range guided missile of argent (silver), spouting a flaming tail of red and yellow hue. The blue represented the stratosphere, and the guided missile, traveling with great speed and accuracy, denoted the mission of the Long Range Proving Ground Division. On 30 June 1951 the Division was redesignated the Air Force Missile Test Center. No official action was taken to change the emblem, and several unofficial versions of the original continued in use until officials approved a new emblem for the Air Force Eastern Test Range on 19 July 1967.



Air Force Eastern Test Range: Symbolizing the changes that had occurred on the Eastern Range since 1951, the new Air Force Eastern Test Range emblem was a shield bordered in gold and divided into ultramarine blue and gold quadrants. Blue was used to symbolize the sky and space, and gold was used to symbolize the excellence required to conduct successful range operations. Dividing the shield horizontally (across its right half) was a line of "Ts" representing continuous testing of space vehicles. In the center of the shield was a large aquamarine and light blue globe representing Earth. A smaller globe, in the same colors,



symbolized the moon and other planets. Nine pimento red flight arrows indicated the normal equatorial departure routes for missiles and space vehicles on the Eastern Range. They also symbolized travel to other

planets, as depicted by the smaller globe. Red was chosen for the flight arrows to indicate the stresses of launch and space flight and the heat of reentry into Earth's atmosphere. A string of white "clouds" across the center of the large globe represented abnormal flight conditions, weather and radiation, with which range personnel had to contend. The cloud symbol was also interpreted as a string of radomes and theodolites located throughout the Eastern Range.

45th Space Wing: Though there were discussions about changing the emblem for the 45th Space Wing, the old AFETR shield continued as the Wing's emblem with the "45th Space Wing" blazon attached to the scroll. A new flag drawing, reflecting the revised blazon, was forwarded to the Wing on 1 October 1992.



Space Launch Delta 45: When the Delta was designated on 11 May 2021, its leadership received authorization to change its emblem design. Instead, they based the new Delta emblem upon the unit's legacy emblem, using the authorized Space Force "delta" shape and colors.



In the proposed design, Gold represents the gold standard of space acquisition, and the excellence and intelligence required to develop, acquire, and sustain space systems. Midnight Blue and Silver Grey of the Delta represent the edge of earth's atmosphere and outer space, the organization's primary mission area of operations. In the lower center of the Delta, a large globe represents Earth. A smaller globe

symbolizes the moon and other planets. They also symbolize space travel. The line of “Ts” and globes were adopted from previous emblems, and honor the history of Space Launch Delta 45 as a test center for missiles and space vehicles, from which the first humans traveled to and landed on the moon. The small Delta’s flight path is red to indicate the stresses of launch during space flight. The path is left to right to represent prograde departure routes of launch vehicles on the Eastern Range. The numeral “45” proudly signifies the organization’s number and the prominent Gold border represents the foundation and structure the United States Space Force provides to Space Launch Delta 45.

LINEAGE AND HONORS HISTORY

Space Launch Delta 45

Lineage. Established as Air Force Division, Joint Long Range Proving Ground, and organized, on 1 Oct 1949. Redesignated: Long Range Proving Ground Division on 16 May 1950; Air Force Missile Test Center on 30 Jun 1951; Air Force Eastern Test Range on 15 May 1964. Inactivated on 1 Feb 1977. Redesignated Eastern Space and Missile Center, and activated, on 1 Oct 1979. Redesignated 45 Space Wing on 12 Nov 1991. Redesignated Space Launch Delta 45 on 11 May 2021.

Assignments. Headquarters Command, USAF, 1 Oct 1949; United States Air Force, 16 May 1950; Air Research and Development (later, Air Force Systems) Command, 14 May 1951; National Range Division, 15 May 1964; Air Force Systems Command, 1 Feb 1972–1 Feb 1977. Space and Missile Test Organization, 1 Oct 1979; Space Systems Division, 1 Oct 1989; 9 Space Division, 1 Oct 1990; Air Force Space Command, 1 Oct 1991; Fourteenth Air Force, 20 Sep 1993; United States Space Force, 20 Dec 2019; Space Operations Command, 11 May 2021; Space Systems Command, 13 August 2021.

Operational Components. *Wings.* **4800** Guided Missile (later, 6555 Guided Missile Wing; 6555 Guided Missile Group): 30 Dec 1950–7 Sep 1954. **6541** Missile Test (later, 6541 Operations Group [Range]): 4 Sep 1951–7 Sep 1954. *Groups.* **45** Launch: 1 Dec 2003–. **45** Operations: 12 Nov 1991–. **6550** Test (Missile): 1 Jul–1 Oct 1955. **6555** Guided Missiles (Test and Evaluation) (later, 6555 Aerospace Test): 15 Aug–21 Dec 1959; 1 Oct 1979–1 Oct 1990. *Squadrons.* **1** Space Launch: 1 Oct 1990–12 Nov 1991. **6550** Operations: 7 Sep 1954–1 Jul 1955; 1 Oct 1955–1 Feb 1960. **1** Pilotless Bomber: 1 Oct 1951–1 Feb 1952 (detached). **6555** Guided Missile (later, 6555 Guided Missiles): 7 Sep 1954–1 Jul 1955; 1 Oct 1955–15 Aug 1959.

Stations. Long Range Proving Ground Base, FL, 1 Oct 1949–1 Aug 1950; Patrick AFB 1 Aug 1950 – 1 Feb 1977; Patrick AFB, FL, 1 Oct 1979–8 Dec 2020; Patrick SFB, FL 9 Dec 2020 –

Operations. Organized to maintain and operate the proving ground facilities in coordination and collaboration with other agencies of the national guided missile program. Provided static and flight testing to meet requirements of Army, Navy, and Air Force research and development programs, including operational experimentation and training. From May 1950 to May 1951 had separate operating agency status, assigned directly to the United States Air Force. Maintained and operated the Eastern Test Range and affiliated facilities in support of Department of Defense (DOD), National Air and Space Administration, US Air Force, and other test and evaluation agencies, 1951–1977 and 1979–. Operated “Down-Range” facilities at Antigua, Ascension Island, and Cape Canaveral, Florida, 1951–1977 and 1979–. After Oct 1979 launched DOD payloads into

orbit and collected flight data for evaluation of ballistic missile systems launched from Eastern Launch sites for DOD, NASA, and commercial customers. Gave support for DOD, NASA, and commercial manned and unmanned space programs while providing host-base responsibilities at Patrick SFB, FL.

Service Streamers. None.

Campaign Streamers. None.

Armed Forces Expeditionary Streamers. None...

AIR FORCE OUTSTANDING UNIT AWARDS

45th Space Wing:

1 Dec 79 – 30 Nov 81

1 Oct 91 - 30 Sep 92 1 Sep 93 - 30 Aug 95

1 Oct 95 - 30 Sep 96 1 Sep 97 - 31 Aug 98

1 Sep 98 - 31 Aug 2000 1 Oct 02 - 30 Sep 04 (for Meritorious Service)

1 Oct 03 - 30 Sep 04 (for Meritorious Achievement)

1 Oct 04 – 30 Sep 05 1 Jan 05 – 31 Dec 05

1 Oct 05 – 30 Sep 06 1 Oct 10 – 30 Sep 12

1 Oct 12 – 30 Sep 13 1 Jan 16 – 31 Dec 17

45th Communications Squadron:

1 Oct 61 - 30 Nov 62 31 Jan 77 - 31 Jan 78

1 Feb 78 - 31 Jan 80 1 Feb 80 - 30 Jun 80

45th Weather Squadron

12 Nov 91 – 30 Sep 92 1 Oct 04 – 30 Sep 05

1 Sep 93 – 30 Aug 95 1 Jan 05 – 31 Dec 05

1 Oct 95 – 30 Sep 96 1 Oct 05 – 30 Sep 06

1 Sep 97 – 31 Aug 98 1 Oct 08 – 30 Sep 10

1 Sep 98 – 31 Aug 00 1 Oct 10 – 30 Sep 12

1 Oct 02 – 30 Sep 04 1 Oct 12 – 30 Sep 13

1 Oct 03 – 30 Sep 04 1 Jan 16 – 31 Dec 17

1 Jan 04 – 31 Dec 04

Eastern Space & Missile Center 1 Dec 79 - 30 Nov 81

6550th Air Base Group

1 Apr 62 - 29 Feb 64 1 Jan 66 - 31 Dec 67

1 Dec 79 - 30 Nov 81 1 Jan 83 - 31 Dec 84

6555th Aerospace Test Group/Wing

21 Dec 59 - 31 May 62 1 Oct 62 - 30 Sep 64
1 Oct 64 - 31 Dec 65 1 Jan - 31 Dec 66
1 Jan 68 - 1 Jan 70 1 Apr 70 - 31 Mar 71
1 Apr 71 - 31 Mar 73
5 Jan 76 - 14 Jan 78 1 Dec 79 - 30 Nov 81
1 Nov 87 - 31 Oct 89

6550th Hospital and USAF Hospital Patrick

1 Apr 62 - 29 Feb 64 16 Aug 73 - 15 Aug 75 1 Jan 80 - 30 Nov 81

6549th Communications & Electronics Maintenance Squadron

1 Jan 66 - 31 Dec 67

AIR FORCE EXCELLENCE AWARDS

Eastern Space & Missile Center

1 Jan 86 - 31 Dec 87 1 Oct 88 - 30 Sep 90
1 Oct 90 - 30 Sep 91

Eastern Test Range Organization (under ESMC)

1 Jan 85 - 31 Dec 86 15 Jan 88 - 31 Dec 88
1 Jan 89 - 30 Sep 90 1 Oct 90 - 30 Sep 91

AFETR Directorates

(Operations): 1 Dec 68 - 31 Dec 72 1 Jan 73 - 31 Jul 75
(Support): 1 Jun 66 - 30 Apr 71 1 May 71 - 31 Dec 72
 1 Jan 73 - 31 Jul 75

MERITORIOUS UNIT COMMENDATION (U.S. NAVY)

Eastern Test Range

1 July 67 – 26 Jul 69

COMMANDERS

Joint Long Range Proving Ground, LRPG Division, AFMTC, AFETR, ESMC, 45th Space Wing, and Space Launch Delta 45 Commanders

Commander	Years
Col Harold R. Turner	1 Oct 1949 – 9 Apr 1950
Maj Gen William L. Richardson	10 Apr 1950 – 31 Jul 1954
Maj Gen Donald N. Yates	1 Aug 1954 – 30 May 1960
Maj Gen Leighton I. Davis	31 May 1960 – 1 Jan 1964
Brig Gen Harry J. Sands, Jr.	2 Jan 1964 – 16 Jul 1964
Col Elmer W. Richardson	17 Jul 1964 – 11 Aug 1964
Maj Gen Vincent G. Huston	12 Aug 1964 – 4 May 1967
Maj Gen David M. Jones	5 May 1967 – 31 May 1973
Maj Gen Kenneth R. Chapman	1 Jun 1973 – 24 Aug 1974
Brig Gen James H. Ahmann	25 Aug 1974 – 24 Feb 1975
Col Dan D. Oxley	25 Feb 1975 – 5 Apr 1975
Brig Gen Don M. Hartung	6 Apr 1975 – 1 Feb 1977
Col John S. Burkland	1 Oct 1979 – 30 Apr 1981
Col Marvin L. Jones	1 May 1981 – 13 Dec 1984
Brig Gen Nathan J. Lindsay	14 Dec 1984 – 24 Jun 1986
Col John W. Mansur	25 Jun 1986 – 12 Aug 1987
Col Lawrence L. Gooch	13 Aug 1987 -22 Mar 1989
Col Roy D. Bridges, Jr.	23 Mar 1989 – 26 Jan 1990
Col John R. Wormington	27 Jan 1990 – 22 Sep 1991
Brig Gen Jimmey R. Morrell	23 Sep 1991 – 29 Jun 1993
Maj Gen Robert S. Dickman	30 Jun 1993 – 23 Jan 1995
Brig Gen Donald G. Cook	24 Jan 1995 – 27 Aug 1995
Brig Gen Robert C. Hinson	28 Aug 1995 – 26 Mar 1997
Brig Gen F. Randall Starbuck	27 Mar 1997 – 19 Aug 1999

COMMANDERS

(Continued from previous page)

Commander	Years
Brig Gen Donald P. Pettit	20 Aug 1999 – 6 Jun 2002
Brig Gen J. Gregory Pavlovich	7 Jun 2002 – 25 Aug 2004
Col Mark H. Owen	26 Aug 2004 – 20 Jun 2006
Brig Gen Susan J. Helms	21 Jun 2006 – 27 Oct 2008
Brig Gen Edward L. Bolton	28 Oct 2008 – 11 Feb 2010
Brig Gen B. Edwin Wilson	12 Feb 2010 – 29 Aug 2011
Brig Gen Anthony J. Cotton	30 Aug 2011 – 11 Jun 2013
Brig Gen Nina M. Armagno	12 Jun 2013 – 3 Aug 2015
Brig Gen Wayne R. Montieth	4 Aug 2015 – 22 Aug 2018
Brig Gen Douglas A. Schiess	23 Aug 2018 – 4 Jan 2021
Brig Gen Stephen G. Purdy, Jr. (45 SW)	5 Jan 2021 – 11 May 2021
(SLD 45)	11 May 2021 – Present

NOTE: From 1 February 1977 – 1 October 1979, the 6555th Air Base Wing assumed host responsibilities for Patrick Air Force Base so it is not part of SLD 45's Heritage and Heraldry. Other Eastern Range resources were consolidated as Detachment 1, Space and Missile Test Center (SAMTEC). The Detachment 1 SAMTEC Era Commander during that period was Col Oscar W. Payne.²

² SAMTEC Detachment 1 was a tenant unit at Patrick which reported to SAMTEC at Vandenberg Air Force Base, California. In fact, this unit is not part of Space Launch Delta 45's heritage or heraldry, and it may be viewed as a short-term experiment in an era of budget austerity. It is included here to provide continuity. See page 9 of this document.

Launch Vehicle or Missile	Cape's First Launch	Range Launch Total³
ASTRA 3.3	10 February 2022	1 (thru May 2022)
ATLAS missile (A thru F)	11 June 1957	105
ATLAS AGENA	23 August 1961	49
ATLAS CENTAUR	8 May 1962	68
ATLAS G/CENTAUR	9 June 1984	1
ATLAS I/CENTAUR	18 April 1991	10
ATLAS II/CENTAUR	7 December 1991	10
ATLAS IIA/CENTAUR	10 June 1992	23
ATLAS IIAS/CENTAUR	16 December 1993	27
ATLAS IIIA/CENTAUR	24 May 2000	2
ATLAS IIIB/CENTAUR	21 February 2002	4
ATLAS V/CENTAUR	21 August 2002	76 (thru May 2022)
BLUE SCOUT	21 September 1960	16 (all variants)
BOMARC	10 September 1952	70
BULL GOOSE/GOOSE	27 June 1957	15
BUMPER	24 July 1950	2
DELTA	13 May 1960	145
DELTA II	14 February 1989	110
DELTA III	27 August 1998	3
DELTA IV	20 November 2002	32 (thru Dec 2020)
FALCON 9	4 June 2010	130 (thru May 2022)
FALCON HEAVY	6 February 2018	3 (thru Jun 2019)
JUPITER	14 March 1956	75 (all variants)
LARK	25 October 1950	40
MACE A & B	29 October 1959	44
MATADOR	20 June 1951	286
MINOTAUR IV	26 August 2017	1 (thru May 2022)
MINUTEMAN I	1 February 1961	54
MINUTEMAN II	24 September 1964	21

³ The SpaceX FALCON 9 booster was designed as a reusable launch vehicle. The total number of launches does not mean this was the total number of FALCON 9 launch vehicles. Most were re-used for multiple launches.

Launch Vehicle or Missile	Cape's First Launch	Range Launch Total
MINUTEMAN III	16 August 1968	17
NAVAHO X-10	19 August 1955	15
NAVAHO XSM-64	6 November 1956	11
PERSHING I	25 February 1960	56
PERSHING IA	21 February 1973	100
PERSHING II	22 July 1982	49
POLARIS	13 April 1957	542 ⁴
POSEIDON	16 August 1968	266 ⁵
REDSTONE	20 August 1953	33
SATURN	27 October 1961	10
SATURN IB	26 February 1966	5 (Cape Launches)
SNARK	26 November 1952	98 ⁶
THOR	25 January 1957	83 (all variants)
TITAN I	6 February 1959	47
TITAN II	16 March 1962	35
TITAN IIIA	1 September 1964	4
TITAN IIIC	18 June 1965	36
TITAN III COMMERCIAL	1 January 1990	4
TITAN IIIE	11 February 1974	7
TITAN 34D	30 October 1982	8
TITAN IVA (CENTAUR, IUS, NUS)	14 June 1989	14
TITAN IVB (CENTAUR, IUS)	23 February 1997	13
TRIDENT I	18 January 1977	163 ⁷
TRIDENT II	15 January 1987	63 (thru Sep 2021) ⁸
VANGUARD	8 December 1956	14

⁴ Some 126 POLARIS missile launches occurred ashore: 60 were launched from Pad 25A, eight from Pad 25B, and 58 were launched from Pad 29A. The remainder were launched at sea.

⁵ There were 17 POSEIDON launches ashore: 16 were launched at Pad 25C and one at Pad 25D. The remainder were launched at sea.

⁶ This number includes three “dummy” launches. On a “dummy launch,” only the solid motors fire. The first of these launches occurred on 29 Aug 1952.

⁷ This includes 18 TRIDENT I launches from Pad 25C. The remainder were launched at sea.

⁸ There were a total of 19 TRIDENT II launches ashore. All were launched from Pad 46. The remainder were launched at sea.