

6580th TEST SUPPORT WING



LINEAGE

STATIONS

Eglin AFB, FL

ASSIGNMENTS

COMMANDERS

Lt Col James J. Hogan

Lt. Col. Shane M. Connary

HONORS

Service Streamers

Campaign Streamers

Armed Forces Expeditionary Streamers

Decorations

EMBLEM

EMBLEM SIGNIFICANCE

MOTTO

NICKNAME

OPERATIONS

The squadron is a geographically separated unit of the 21st Space Wing, Peterson Air Force Base, Colo.

The 20th SPCS Tracks man-made objects in Earth's orbit, around the clock, in any weather. Supports the USSTRATCOM Commander in chief and theater warfighter's requirements through continuous surveillance of on-orbit satellites. Supports the USSTRATCOM Commander in chief and theater warfighter's requirements through continuous surveillance of on-orbit satellites. Operates and maintains the Air Force's phased-array space surveillance system dedicated to tracking space objects

The unit is located on Eglin Air Force Base, which rests on the Gulf of Mexico in Florida's Northwest Panhandle. A tenant organization, the 20th SPCS is some 35 miles east of the main portion of Eglin Air Force Base, which is referred to by locals as "Eglin Main." Surrounding cities include Fort Walton Beach, Shalimar, Valparaiso, Niceville, Villa Tasso, Choctaw Beach, Portland, Freeport, Crestview, DeFuniak Springs, Mary Esther, Panama City, and Pensacola. All are within a forty-five minute drive of Eglin Air Force Base.

The AN/FPS-85 building is composed of the receiver side which is 192 feet long, 143 feet deep, and 143 feet high. The transmitter side is 126 feet long, 95 feet deep, and 95 feet high. Total floor space is 250,000 square feet, with 1,250 tons of structural steel, 1,400 cubic yards of concrete, and a total of 2,500,000 cubic feet in the building.

The computer room houses five IBM computers used in mission performance, communication and software development and testing. Also, two radar interface control equipment cabinets provide a means to interface the mission computers to the radar.

Communications equipment includes two Message Distribution Terminals and one Mitron magnetic tape unit. Each MDT terminal has a 486 CPU and two medium speed printers. The Patch and Test Facility consists of the cryptographic equipment, patch panels, test equipment, secure voice equipment, Defense Information Agency Network equipment and the Node for the Space Digital Information Network.

Radar construction began October 1962, at test site C-6, about 35 miles east of Eglin Air Force Base, Fla. The testing was scheduled for May 1965, but four months before, the building and all the equipment were destroyed in a fire caused by arcing electrical equipment.

The Air Force took ownership of the site in September 1968 with the 20th Surveillance Squadron as the primary operator. Initially charged with tracking objects in Earth's orbit, new software installed in 1975 allowed tracking of submarine launched ballistic missiles. This became the unit's primary mission, while continuing to perform space tracking.

The AN/FPS-85 played an active role in America's space program. From 1971 to 1984, the 20th

SURS was the site of the Alternate Space Surveillance Center. It provided computational support to the Space Surveillance Center at Cheyenne Mountain AS, Colo. If the need arose, the squadron could assume command and control for worldwide space track sensors.

The 20th SURS was renamed the 20th Missile Warning Squadron in 1979; the 2159th Communications Squadron was added in the same year. In May 1983, the squadron joined Air Force Space Command and became a component of the U.S. Space Command. During this time, the AN/FPS-85 was the proving ground for the Air Force's phased array radars. The new technology was used in new radars specifically designed and located for early warning of SLBM attacks.

These PAVE-Phased Array Warning System radars assumed early warning responsibilities from the 20th MWS. Eventually, these sites included the current 6th Space Warning Squadron, Cape Cod AS, Mass., and the 7th Space Warning Squadron, Beale AFB, Calif.

In 1987, the site returned to its original mission—space surveillance. The 2159th Communications Squadron went through a number of transitions and eventually deactivated and incorporated into the 20th MWS. The squadron became the 20th Surveillance Squadron in May 1987.

The site underwent a major transition, allowing Defense Department civilians to staff the majority of support and maintenance functions, while military people staffed the command section, orderly room and operations functions. The unit moved to the 73rd Space Group and was renamed the 20th Space Surveillance Squadron in May 1992. When the 73rd SG inactivated in 1995, the unit was transferred to the 21st Space Wing. In February 2003, the unit was redesignated as the 20th Space Control Squadron.

The 20th SPCS executes a space control mission by performing all-weather, day-night location and tracking of man-made objects, and supports USCINCSpace and theater warfighters' requirements through continuous surveillance of orbiting satellites. The 20th SPCS operates and maintains the AN/FPS-85 Phased Array Radar, the only phased array radar dedicated to tracking over 8,300 near-earth and deep-space objects.

The 20th Space Control Squadron, Eglin Air Force Base, Fla., tracks more than 16,000 near-Earth and deep-space objects. The squadron is a geographically separated unit of the 21st Space Wing, Peterson Air Force Base, Colo.

Tracks man-made objects in Earth's orbit, around the clock, in any weather

Supports the U.S. Strategic Command, commander-in-chief and theater warfighter's requirements through continuous surveillance of on-orbit satellites

Operates and maintains the Air Force's phased-array space surveillance system dedicated to tracking space objects

The 20th SPCS executes a space control mission by performing all-weather, day-night location

and tracking of man-made objects, and supports the commander, Air Force Space Command, and theater warfighters' requirements through continuous surveillance of orbiting satellites. The 20th SPCS operates and maintains the AN/FPS-85 Phased Array Radar, the only phased array radar dedicated to tracking more than 16,000 near-earth and deep-space objects.

The AN/FPS-85 Phased Array Space Surveillance Radar provides space situational awareness for U.S. STRATCOM's space control mission area. It is one of 29 sensors that comprise the global Space Surveillance Network, or SSN, and is the only phased array radar dedicated to space surveillance. It collects more than 16 million observations of satellites per year, accounting for 30 percent of the SSN's total workload.

Data from the system is forwarded to U.S. STRATCOM's Joint Space Operations Center at Vandenberg Air Force Base, Calif., and the Alternate Space Control Center at Dahlgren, Va.

The unique aspect of this radar is the phased array antenna technology. Unlike a mechanical radar, which must be physically aimed at an object in space to track and observe it, the phased array antenna is steered electronically by controlling the timing, or phase, of incoming and outgoing signals. This increases capabilities and decreases response time which allows near simultaneous tracking of multiple targets throughout the system's area of coverage.

The AN/FPS-85 can detect, track and identify up to 200 satellites simultaneously. The maximum beam deflection is 60 degrees on either side of the antenna center line which provides 120 degrees azimuth of azimuth coverage. The antenna is inclined +45 degrees for scan coverage of +3 to +105 degrees elevation. Generating a combined output of 32 megawatts, the AN/FPS-85 is the most powerful radar in the world and is the only phased array radar capable of tracking satellites in deep space orbit. The radar can track an object the size of a basketball at a distance of more than 22,000 nm.

The AN/FPS-85 radar is employed by the 20th Space Control Squadron, or 20th SPCS, at site C-6 on Eglin Air Force Base, Fla. Located on the gulf coast in Florida's northwest panhandle, the squadron is a geographically separated unit of the 21st Space Wing, Peterson Air Force Base, Colo.

Radar construction began in October 1962 and testing was scheduled for May 1965; but four months prior, the building and all equipment were destroyed in a fire caused by arcing electrical equipment. The Air Force took ownership of the site in September 1968 with the 20th Surveillance Squadron, or 20th SURS, as the primary operator.

Space operations began in February 1969. Initially designed to track satellites, new software installed in 1975 enabled the unit to track submarine launched ballistic missiles, or SLBMs. This became the unit's primary mission, while space surveillance became secondary. From 1971 to 1984 the 20 SURS served as the Alternate Space Surveillance Center, providing computational support to the Space Surveillance Center at Cheyenne Mountain AS, Colorado. If the need arose, the squadron could assume command and control of worldwide SSN.

In 1979, the 20 SURS was renamed the 20th Missile Warning Squadron, or 20th MWS, and four

years later, with deactivation of Strategic Air Command, the squadron was transferred to Air Force Space Command. During this time, the AN/FPS-85 was the proving ground for development of phased array radars designed specifically for early warning of SLBM attacks. These PAVE Phased Array Warning System radars assumed missile warning responsibilities from the 20th MWS and in 1987, the unit returned to its original mission of space surveillance with a corresponding name change to the 20th Space Surveillance Squadron.

In February 2003, the unit was again re-designated, this time as the 20th SPCS. In October 2004, a detachment was activated under the 20th SPCS at Dahlgren, Va., and the unit assumed control of the U.S. Navy's AN/FPS-133 Space Surveillance Radar Fence and the Alternate Space Control Center. Nearly 40 years after operational acceptance, the unit's mission is more robust and critical than ever.

Primary Function: : Space surveillance and reconnaissance. All weather, day and night detection, tracking and identification of manmade objects in Earth orbit

Dimensions: Total Length - 318 feet, Total Height - 143 feet, Total Floor Space - 250,000 square feet, Volume of Radar Building - 2,500,000 cubic feet.

Weight: Structural steel - 1,250 tons, Concrete - 1,400 cubic yards.

Air Conditioning Equipment: Three 500-ton chillers with two cooling towers.

Electrical Power: Prime power generated from commercial sources. Two 250 KVA Uninterruptible Power Supplies and three emergency diesel generators - 500 KW and two 400 KW - provide backup facility power.

Transmitter Array: 5,928 transmitter antennas and 5,184 transmitter modules generating 32 megawatts of combined power.

Receiver Array: 19,500 receiver antennas and 4,660 receiver modules.

Computer Room: Two IBM ES-9000 mainframe computers, two RADAR and Interface Control Equipment cabinets, and two SunSparc workstations.

Communications Equipment: Two Message Distribution Terminals, four medium speed printers, one magnetic tape unit, cryptographic equipment, patch and test equipment, secure voice equipment and a satellite earth terminal.

Crew: Three military and three DoD civilians - crew commander (officer), crew chief (NCO), space console operator (airman, radar maintenance technician (DoD civilian), computer/communications center operator (DoD civilian), and motor control center operator (DoD civilian).

Date operational: January 1969; deep space capable 1988

Commander: Lt. Col. Shane M. Connary

The 20th Space Control Squadron, Eglin Air Force

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MISSION

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FACILITIES

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HISTORY

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20th Space Control Squadron

Forty Years and Counting: The AN/FPS-85 phased array radar operated by the 20th Space Control Squadron at Eglin AFB, Fla., has enabled the Air Force to track space objects for more than 40 years, passing that milestone on Jan. 16. Former and current airmen gathered at Eglin earlier this month to participate in a site rededication and other events. Lt. Col. Thomas Falzarano, 20th SPCS commander, said: "For more than four decades, thousands of individuals have contributed their talents and hard work to what many affectionately refer to as 'Site C-6'. From the brilliant minds who designed and constructed the radar to the men and women who navigated numerous mission changes, and now those who currently stand guard, the site is more than a location on a map. It is a family." According to a fact sheet on the 20th SPCS, which is part of the 21st Space Wing at Peterson AFB, Colo., the AN/FPS-85 radar can "detect, track, and identify up to 200 satellites simultaneously."

Air Force Order of Battle

Created: 23 Nov 2010

Updated:

Sources

Air Force Historical Research Agency. U.S. Air Force. Maxwell AFB, AL.