**Air Force Satellite Control Network**

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The **Air Force Satellite Control Network** (**AFSCN**) provides support for the operation, control, and maintenance of a variety of United States Department of Defense and some non-DoD satellites. This involves continual execution of the tasks involved in Tracking, Telemetry, and Command (TT&C). In addition, the AFSCN provides prelaunch simulation, launch support, and early orbit support while satellites are in initial or transfer orbits and require maneuvering to their final orbit. The AFSCN provides tracking data to help maintain the catalog of space objects and distributes various data such as satellite ephemeris, almanacs, and other information.

**Overview**

The AFSCN consists of satellite control centers, tracking stations, and test facilities located around the world. Mission Control Centers are located at the Consolidated Space Operations Center (CSOC) at Schriever Air Force Base near Colorado Springs, Colorado, and Onizuka Air Force Station, Sunnyvale, California. These centers are manned around the clock and are responsible for the command and control of their assigned satellite systems. The control centers are linked to remote tracking stations (RTS) around the world. Space vehicle checkout facilities are used to test launch vehicles and satellite platforms to ensure that the onboard systems operate within specifications. The remote tracking stations provide the link between the satellite being controlled and the control center. A similar relationship exists for dedicated networks. Remote tracking stations around the world are needed to maintain frequent communications with the satellite. Without RTSs, the control centers would only be able to contact a satellite when it came into the control center's view. Some satellites, especially those in geostationary orbit, never come within view of their control center. Each antenna at an RTS is referred to as a "side". Side A is normally a 60-foot diameter antenna which is best for TT&C of a geosynchronous satellite because of the distance to the satellite and the fact that the large antenna does not need to move quickly to maintain contact with the satellite. Side B is either a 46-foot or 33-foot diameter antenna. These are commonly used for TT&C of low earth orbit satellites which can move more quickly across the sky. These smaller antennas are more responsive and require less energy to control.

**History**

AFSCN was originally activated to support the CORONA/Discoverer program in 1959. An interim satellite control center was initially established in Palo Alto, California, and by June, 1960, a permanent control center had been established Sunnyvale AFS, later renamed Onizuka AFS, Sunnyvale, California. The main operations control center, now at Schriever Air Force Base, Colorado Springs, CO, functions as a central command and control node for the remote tracking stations established at several different locations.

**Dedicated Control Networks**

There are also some dedicated satellite control networks to control specific satellite systems. The Defense Meteorological Satellite Program (DMSP) has a dedicated network operated by the 1000th Satellite Operations Group with the Mission Control Center at Offutt Air Force Base, Nebraska. The Global Positioning System has a Mission Control Center at Schriever Air Force Base operated by the 2d Space Operations Squadron. There are also dedicated GPS monitoring stations around the world.

**Locations**

* Schriever AFB, Colorado - Primary C2 Node
* Onizuka AFS, California - Secondary C2 Node

The AFSCN maintains a number of tracking stations which are used to track, primarily, US government agencies/organizations & military satellites, as well as receive and process telemetry and send commands to these satellites. Said facilities are intended to support all Department of Defense satellites. Most tracking stations are operated by 22d Space Operations Squadron detachments. Many scientific and research satellites are supported, prior, during, and after established orbits/trajectories.

**Current Remote Tracking Stations**

* Hawaii Tracking Station (HTS), Kaena Point Satellite Tracking Station, Hawaii; callsign HULA. The Hawaii Tracking Station is located on Oahu. It supports ballistic missile testing conducted from Vandenberg Air Force Base and other areas in the Pacific. It also provides on orbit support for low earth orbiting satellites and geosynchronous satellite over the eastern and central Pacific.
* Vandenberg Tracking Station (VTS), California; callsign COOK. The Vandenberg AFB Tracking Station is a dual station which can communicate simultaneously with two satellites. It supports ballistic missile test and space launches from the Western Test Range at Vandenberg Air Force Base.
* Diego Garcia Station (DGS), Diego Garcia, BIOT; callsign REEF. Diego Garcia Tracking Station The Diego Garcia Tracking Station provides enhanced tracking of low earth orbiting satellites over the Indian Ocean area since its antenna is smaller than the one at the Indian Ocean Tracking Station.
* Thule Tracking Station (TTS), Thule Air Base, Greenland; callsign POGO. The Thule Tracking Station is located in Greenland. This station is unique because of its three antennas. Thule is so far north that it can communicate with polar orbiting satellites on every revolution around the Earth but is not positioned to communicate with satellites in geostationary orbit. For this reason, "Side A" is only a 14foot diameter antenna.
* Guam Tracking Station (GTS), Guam; callsign GUAM. The Guam Tracking Station has two antennas. It can provide TT&C for on orbit support for low earth orbiting satellites and geosynchronous satellites over the western Pacific Ocean.
* Colorado Tracking Station (CTS), Schriever AFB, Colorado; callsign PIKE. It is used for support of various DoD satellites. Additional equipment has been installed to support the Global Positioning System satellites.
* Telemetry & Command Station (TCS), RAF Oakhanger, in England, ostensibly operated by the United Kingdom; callsign LION. Telemetry and Command Station at Oakhanger, Hampshire, England. The second "side" is an ARTS.
* New Hampshire Station (NHS), New Boston AFS, New Hampshire; callsign BOSS. The New Hampshire Tracking Station is located in New Boston, New Hampshire. It is also a dual antenna site and provides considerable support to the Eastern Test Range at Cape Kennedy, Florida.

**Automated Remote Tracking Stations**

The Remote Tracking Stations are being modernized with the addition of the Automated Remote Tracking Station (ARTS). ARTSs provide more responsive support and reduce manpower required at each site because the antennas and supporting systems can be controlled by the Mission Control Centers. There are four ARTS installed at the following locations:

* Colorado Tracking Station at Schriever Air Force Base, Colorado. It is used for support of various DoD satellites. Additional equipment has been installed to support the Global Positioning System satellites.
* Thule Tracking Station at Thule Air Force Base, Greenland. The third "side" at Thule is an ARTS.
* Oakhangar Telemetry and Command Station at Oakhangar, Hampshire, England. The second "side" is an ARTS.
* Eastern Vehicle Checkout Facility (EVCF), Cape Canaveral Air Force Station, Florida; callsign GATR (Gator)
* Test Vehicle Checkout Facility (TVCF), Onizuka Air Force Station, California; callsign YOGI (Bear). Camp Parks Communications Annex at Pleasanton, California. This ARTS is used to test and analyze signals from communications and navigation satellites.

**Closed Remote Tracking Stations**

* Indian Ocean Station (IOS), Mahe Island, Seychelles; callsign INDI (closed in August 1996, after the government of the Seychelles attempted to "raise the rent" to more than $10 million/year). The Indian Ocean Tracking Station was located on Mahe in the Seychelle Islands. It only had only one 60 foot antenna. Its location was ideal for communicating with geosynchronous satellites over the Indian Ocean. The station was also geographically suited for acquiring Realtime or near-Realtime data from passes over areas to the north. In 1980, due to political instabilities of the island, the main processing computers were removed and relocated to Sunnyvale. These computers communicated with the IOS downlink and tracking equipment via a wideband (DSCS) communications link. IOS has been supplanted by Diego Garcia RTS.
* Kodiak Tracking Station (KTS), Kodiak Island, Alaska; callsign KODI (closed on March 20, 1975)
* Sunnyvale Control Station, callsign CUBE. Not a true tracking station, in that it had no direct downlink antenna. Instead, CUBE supported operations at TCS/Oakhangar and IOS/Seychelles, where main processing computers could not be located. CUBE had two 'sides', and so could support two satellite passes simultaneously.

**See also**

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|  | [***United States Air Force portal***](http://en.wikipedia.org/wiki/Portal%3AUnited_States_Air_Force) |

* [50th Space Wing](http://en.wikipedia.org/wiki/50th_Space_Wing)

**External links**

* [Air Force Satellite Control Network](http://www.afscn.com)
* [Schriever AFB](http://www.schriever.af.mil)
* [Federation of American Scientists](http://www.fas.org/spp/military/docops/army/ref_text/chap07a.htm)

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