

6594TH AEROSPACE TEST WING
United States Air Force
Satellite Control Facilities
Sunnyvale, California

The 6594th Aerospace Test Wing is an Air Force organization devoted solely to the support of flight test of satellites and space vehicles. With Headquarters near the Lockheed Missile and Space Company in Sunnyvale, California, the 6594th operates a far-flung network of command, control, tracking, data acquisition and space recovery activities. Taken collectively, these activities are performed by the Satellite Control Facilities and include the Satellite Test Center at Sunnyvale; tracking stations spread from California east to New Hampshire, north to Alaska and Greenland, and west to Hawaii; and a Recovery Control Group with Headquarters at Hickam Air Force Base, Hawaii. The parent organization of the Test Wing is the Space System Division, Air Force Systems Command.

Satellite Test Center

The Satellite Test Center, Sunnyvale, California, is the focal point of the Satellite Control Facilities complex, and provides the direction which coordinates and meshes the tracking, commanding, data acquisition, and recovery activities which occur during flight test activities. The heart of the Test Center is the Satellite Control Room. This room contains the eight consoles from which the Test Controllers and Test Conductors command the Satellite or space system test operation.

Each console contains a wide variety of communications, control and display equipment, ranging from closed-circuit television screens to a push-button communications panel. The two tiers of consoles face a row of eight large projection screens, which permit the controllers to call up visual presentations of maps, weather conditions, orbit traces, telemetry read-outs, and other data through remote control.

Four primary areas support the control room during operations: The Operational Support Area provides the plotting, display, and meteorological support; the Communications Center operates the various communications links; the Computer/PICE area performs high speed computation and data reduction; and the Technical Director Rooms, manned by the prime space system contractor, provides consultative support. With the exception of the Technical Director Rooms, all areas of the STC are manned by Air Force personnel of the 6594th Aerospace Test Wing or Lockheed Missiles and Space Company personnel under a direct support contract.



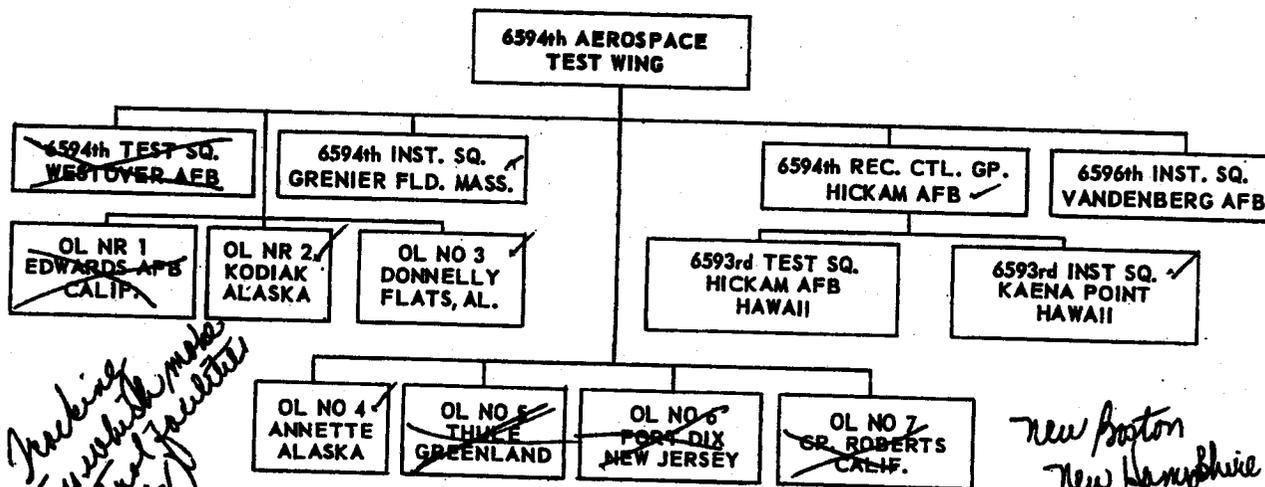
Space Capsule Recovery

Some satellite systems, such as Discoverer, carry a recoverable space capsule. These capsules are ejected from orbit in the Hawaiian area on command from the Satellite Test Center. The 6594th Recovery Control Group, Hickam Air Force Base, operates the Recovery Control Center and is the parent organization of the 6593rd Test Sqdn. and the 6593rd Inst. Sqdn. The 6593rd Test Sqdn. flies specially equipped C-130 aircraft, designed to "air-snatch" the parachute on the descending capsule. The 6593rd Instrumentation Sqdn. operates the Hawaiian Tracking Station which tracks the descending space capsules and reports their position to the Recovery Control Center. Various Navy and Air and Sea Rescue units operate in conjunction with the Test Wing Forces, and are joined into a unified recovery operation by the Recovery Control Center at Hickam AFB. The first capsule ever recovered from space was recovered by these forces on August 11, 1960, and has been followed by many such successful recoveries since.



Operating Locations

A particular space system test may require the participation of any or all of the operating locations within the Satellite Control Facilities. The organizations and numbered operating locations of the 6594th are shown in the organizational chart below. These are supplemented on special purpose flights by tracking stations belonging to the National Ranges (AMR and PMR) and by telemetry-recording ships at sea of the U.S. Navy. All participating elements are welded together through communications and data transmission links with the Satellite Test Center. Depending on the geographical area of the ground track of a space vehicle, and its own peculiar operating requirements, a combination of the capabilities of the different operating locations enables the acquisition and tracking of its radio signals, the recording of telemetry data, the sending of radio/radar commands to the vehicle, the transmission of received data in both raw and reduced form to the STC, and the high speed analysis and presentation of this data to the appropriate console within the Satellite Control Room.



Tracking stations with mobile control facilities

*New Boston
New Hampshire
Vandenberg AFB, Calif*

ORGANIZATIONAL CHART ONLY

80°

Longitude

00°

20°

EQUATOR

Latitude

20°

40°

★ AFMTC

● GRAND BAHAMA

● FLEETCOM

● SAN SALVADOR

● GRAND TURK

■ SABANA DEL MAR

★ GUAYAMA

● SANTIAGO

MAP OF AIR FORCE MISSILE TEST RANGE

LEGEND

..... United States



..... Great Britain



..... Dominican Republic



South America

Africa



★ ASSISI

MAP 117-1

The Air Force Missile Test Center was established in 1948 to provide a long-range proving ground where guided missiles could be flight tested during their development.

The AFMTC is under the jurisdiction of the Air Research and Development Command. The Center's assigned mission is to establish, maintain, and operate the AIR FORCE MISSILE TEST RANGE and its supporting facilities and to conduct tests and collect test data on guided missiles.

The AFMTC consists of the headquarters at Patrick Air Force Base, the launching area at Cape Canaveral Auxiliary Air Force Base, and nine auxiliary down-range instrumentation stations stretching 5067 miles across the Caribbean and South Atlantic to Ascension Island.

The nine auxiliary range instrumentation stations contain facilities for radio communications, range clearance, in-flight safety, weather reporting, telemetry reception from the missiles in flight, and radar and optical tracking. Most of the stations have a landing strip for necessary aircraft support operations.

Map of AIR FORCE MISSILE TEST RANGE

