

Satellite Systems - Nuclear Surveillance

In addition to reconnaissance and missile warning, SMC and its predecessors have developed satellites to serve a number of other purposes, among which are nuclear surveillance, weather observation, navigation, and communication. The first space system to accomplish nuclear surveillance was called Vela Hotel—later, simply Vela. Representatives of the Air Force Ballistic Missile Division (AFBMD), the Atomic Energy Commission, and NASA met on 15 December 1960 to initiate a joint program to develop a high-altitude satellite system that could detect nuclear explosions. Its primary purpose was to monitor compliance with the Nuclear Test Ban Treaty then being negotiated in Geneva. During 1961-1962, the Atomic Energy Commission developed detectors and flew experimental versions on Space Systems Division's Discoverer satellites.

SSD issued a contract for the spacecraft to Space Technology Laboratories (later part of TRW) on 24 November 1961. The first pair of satellites was launched using an Atlas Agena on 16 October 1963, a few days after the Limited Nuclear Test Ban Treaty went into effect, and two more pairs were launched on 16 July 1964 and 17 July 1965. Six Advanced Vela satellites, containing additional, more sophisticated detectors, were launched in pairs on Titan IIIC vehicles on 28 April 1967, 23 May 1969, and 8 April 1970.

The Vela satellites successfully monitored compliance with the Limited Nuclear Test Ban Treaty of 1963, but also with later treaties such as the Outer Space Treaty of 1967 and the Non-Proliferation Treaty of 1968. They also provided scientific data on natural sources of space radiation for many years. The least successful of the original satellites operated for ten times its design lifetime of six months. The last of the advanced Vela satellites was deliberately turned off on 27 September 1984, over fifteen years after it had been launched. However, their mission continued to be performed by payloads of the Nuclear Detection System hosted on DSP and GPS satellites.