

TETHERED AEROSTAT RADAR SYSTEM



Tethered Aerostat

Frequently you will see a tethered aerostat (balloon) near the north end of the Huachuca Mountains. This aerostat is one of a series that was installed along the southern approaches to the United States to interdict the flow of illegal drugs into the U.S. by air. The military radar systems in effect in the 1980s were focused on high altitude high-speed incursions of our air space and were not effective against the tactics of the drug runners who were flying low and slow. The U.S. Customs Service established the requirement for the Tethered Aerostat Radar System in 1984 and the first aerostat went operational at High Rock Grand Bahama Island in 1985. The second site to go

operational was at Fort Huachuca in 1986. Fourteen sites were initially activated. By 2000, two of these sites had been deactivated. In July 2001, the Air Force announced that three more sites had become non-operational. As of 2003, only 8 sites were still operational. Some of the detection load has been picked up by P-3 and E-3 (AWACS) aircraft.

The aerostat consists of four major parts or assemblies: the hull, the windscreen and radar platform, the airborne power generator, and the rigging and tether assembly. The hull contains two parts separated by a gas tight fabric partition. The upper part is filled with helium and provides the lifting capability. The lower chamber is a pressurized air compartment that maintains the shape of the hull at all altitudes. The aerostat is deployed at altitudes of up to 15,000 feet and is tethered to the ground by a single cable with a breaking strength of 26,000 pounds.

The aerostat is launched from a large circular launch pad surrounded by a railroad track that carries a locomotive sized, diesel powered launch control vehicle. The vehicle contains a large winch with 25,000 feet of tether cable. During the launch sequence, the power winch releases the tether until the aerostat reaches altitude. When the aerostat reaches operational altitude, the radar is activated and begins transmitting. The radar data is transmitted to the ground station, digitized and fed to the various control centers. The aerostat sites are operated by detachments of the U.S. Air Force.

The aerostat program is dependent on weather conditions. Specific flying weather restrictions are established for each system to ensure safe flight. However, accidents have happened. On 30 March 2002, a sudden windstorm developed in the vicinity of the aerostat site near Rio Grande City Texas and the tether snapped before the crew was able to retrieve the aerostat. The aerostat drifted more than 300 miles before coming to rest near Burnet Texas. Along the way, the remains of its tether damaged power lines and caused power outages in several Texas counties.

Fort Huachuca Aerostat Accident – Another example of the aerostat’s vulnerability to high winds occurred on the afternoon of 9 May 2011 when the aerostat broke loose from its tether and disintegrated over the city of Sierra Vista. Components of the aerostat came down in the Canyon Del Flores neighborhood of Sierra Vista. The Fort Huachuca Garrison Commander indicated that aerostat debris was recovered from about ten different locations in the neighborhood. The accident resulted in no personnel injuries and only minor property damage. The aerostat was replaced in August 2011 and was returned to service in September.



Replacement Aerostat Being Checked Out & Returned to Service

Summary prepared by T. Johnson, September 2006. Article updated by T. Johnson in September 2011. Pictures by T. Johnson

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