

Junction Ranch Radar Cross-Section Facility

Quick Facts!

Mission. Provides radar cross-section, microwave measurement and supporting functions to the Warfighter.

Cost / Time Savings. This facility maintains a small efficient workforce who works closely with customers. Active testing participation is invited and encouraged. Multiple test capabilities are available in one location. Data turn-around is quick and the facility is capable of supporting competing contractors.

Unique Features. Junction Ranch is a one-of-a-kind radar cross section range because of its location, radar and expertise. Due to its remote, secure location there is a minimum level of spurious electromagnetic interference ensuring the highest data quality possible.



RDT&E. Surrounded by mountains, this facility provides precision outdoor RCS measurements of models and real targets, including air, ground, and sea vehicles; very low observables (VLO); ship models and components; missiles; tactical ballistic missiles; reentry vehicles; and ground vehicles. The facility is also used to measure antenna patterns and to develop state-of-the-art capabilities in radar, software, and VLO target supports. The isolated location allows low-frequency and bi-static testing in a highly secure and RF-interference-free environment. This facility can accommodate all levels of security classifications and environmental clearances are in place to meet customer needs.

Size / Description / Location. The 65-square-mile range offers excellent air and ground security because of its isolated location, rugged terrain, restricted airspace, and controlled borders and ground space. With surrounding mountains, this range provides a perfect veil for testing high-powered GPS jamming.

Main Facilities. Precision RCS measurements are performed at two adjacent facilities: the Bounce Strip Range and the Look-Down Range. Both ranges employ multi-frequency radars that produce a wide range of RF band, pulse-repetition frequency, and pulse-width combinations. **Bounce Strip Range** features a 40-foot, low-backscatter stationary pylon that can hold targets weighing up to 6,000 pounds. **Look-Down Range** features a radar that looks down on the target from a range of 17,000 feet at an angle of 10 degrees. Two special-purpose target test beds make this facility unique. **Wet Site** includes a 78- by 100-foot pond that creates a simulated sea environment used to investigate background clutter and target-to-surface interactions. **Tilt Deck** 80- by 140-foot hydraulically-controlled platform, enables target presentations of 5 to 32 degrees in elevation. The radar is located at a slant range of 17,000 feet. Ground ranges include four locations that support acoustic dust-suppression, laser radar (LADAR), IR, UV, millimeter-wave, air-to-ground, ground-to-air testing, and a 17 degree look down test area looking down from Parrot peak into the test area.

Equipment

- Elan multi-frequency radar
- 150 MHz to 18 GHz
- 1.5 - 18 GHz step chirp (2 Antennas/Band)
- Full polarization scatter matrix
- Paperless data reduction
- No background subtraction required (blue sky background)
- Range calibrations performed-pre & post test on known cal target
- 140 ton turntable
- Very Low background-clutter
- 5,000 foot treated dirt bounce range
- Target sites at 700, 900, 2,000, 4,000 & 5,000 feet
- 40 ft. Lockheed LO pylon
- 500, 2,500 & 6,000 lb. Lockheed Rotators
- 50,000 lb. SA Az positioner
- 30 ft. 60,000 pounds Turntable
- 10,000 pounds Orbit Az / El positioner
- Available bi-static range at various angles



Instrumentation. Test data can be supplied in multiple formats including medians, cumulative probability, and polar / rectilinear RCS.

For Further Information

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