NAWCWD Quick Facts
China Lake & Point Mugu, CA NAVAIR

Warhead Testing Facilities

Area R, Burro Canyon, Cactus Flats, and CT-6

Mission. Conducts warhead, arena, blast characterization, sympathetic detonation, and shaped charge jet testing.

Unique Features. Area R and Burro Canyon are unique arena test facilities that conduct blast and fragment lethality testing for weapons with large explosive capabilities. Cactus Flats is one of only a few areas in the country that is suitable for static testing large ordnance and magazine performance.

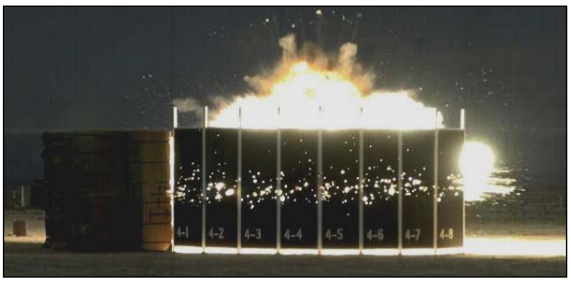
Combat Support. Area R and Burro Canyon support small- and large-scale testing of experimental and fleet use weapons to characterize blast and lethality properties. These areas test prototype warheads for performance and feasibility during the design phase. New weapons are tested for sympathetic detonation for Department of Transportation classification, storage classification, and reaction to shaped charge threats.

Cactus Flats supports many fast response threat tests for all U.S. Armed Forces, defense contractors, and foreign allies. It has supported testing for universities, Cal-Trans, U.S. Marshalls Service, Special Operations Groups, Department of Energy, and many other government and private industry agencies. Activities include battle damage assessment; mitigating and defeating IEDs; and countering threats to bridges, buildings, ordnance storage areas, military vehicles, and aircraft.

Cost / Time Savings. Extremely cost-effective because it combines many advantages of laboratory testing with dynamic free-flight testing and allows test article recovery.

RDT&E. Explosive tests of ordnance items are conducted to study fragment recovery; recovered fragments distribution and velocities; velocity and magnitude of shock and pressure waves measurement; shaped-charge jet performance evaluation; large- and small-scale sympathetic detonation, magazine survivability, hazard arc armor ballistics, confined explosives, and blast mitigation.

Size / Description / Location / Explosive Limits



- **Area R.** Facility covers approximately 400 acres of dry lake bed and comprises seven test areas, each is controlled via a fire-control barricade and used for up to 200 pounds of explosives.
- **Burro Canyon.** Approximately 15 miles north of Area R, it has three test pads and a drop tower that are all controlled from a central fire-control bunker. It is in a narrow, steep canyon range about 0.75 mile long and can be used for up to 20,000 pounds of explosives.
- **Cactus Flats.** Approximately 40 miles north of Main Site, it is comprised of two circular mountain valleys at 5,000 feet elevation, one approximately 210 acres of dry lake bed and one of approximately 2,205 acres, separated by a volcanic cinder cone and surrounded 360 degrees by mountains.
- **CT-6.** Located approximately 5 miles from the China Lake Propulsion Laboratory main gate, CT-6 has one 60- x 60-foot concrete test pad with a remote control room. CT-6 is much like a flat dry lake bed with an unobstructed 360-degree view, and the test area encompasses approximately one quarter of a square mile. It has a 200-pound explosive limit.

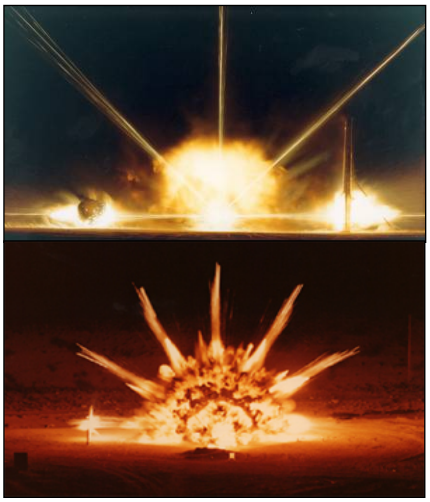
Main Facilities. Facilities are located in three areas: Area R for items up to 200 pounds of explosives, Burro Canyon for large warheads up to 2,000-pound explosives, and Cactus Flats for open air detonations up to 200,000-pound explosives.

- **Area R Test Range.** Tests warheads, ordnance, or energetic propellants and provides a complete capability for static T&E of conventional warheads and explosive devices. RDT&E work includes mechanical design and fabrication, and ultra- / high-speed photographic services are provided. Both small-scale multi-shot research and production testing is conducted. Area R includes a dry lake bed and is comprised of seven test areas, each controlled through a fire-control barricade. Facilities include open air detonation sites and equipment for measuring fragment velocities and blast pressures.

- **Large Warhead Research Test Facilities ("Burro Canyon").** Tests the effectiveness of large warheads, up to 2,000 pounds of explosives, against targets such as bridge structures, radar vans in revetments, large concrete blocks, and various steel structures. Test engineers measure shaped charge jet and fragment velocities and blast pressures, conduct safe separation tests involving warhead detonation while the missile motor is burning, and conduct fragment recovery tests. Burro Canyon consists of six developed test arenas in natural semi-amphitheaters of various sizes. The largest is 94 feet in diameter. A central fire-control barricade, from which all arenas are controlled, has digital camera circuits and a firing-circuit delay controllable to 100 milliseconds. This site is used to test warheads or explosives.

- **Cactus Flats Ordnance Test Range.** Testing includes weapon sympathetic deterioration, warhead function, large-scale insensitive munitions, improved magazine design, and underground safety. Conducts small- to large-scale explosive tests up to 200,000-pound NEW. The test area is about 15 square miles and is comprised of two separate facilities. Testing includes survivability of improved magazine designs and safety and IM tests. Lower Cactus Flats consists of multiple test areas used for various smaller test scenarios.

- **CT-6.** Conducts conventional explosive device testing. Historically, this area was used for fuel-air explosive (FAE) weapons testing. It is equipped with two 180-foot-high towers for photo instrumentation of the dispersion pattern. A bunkered control room allows visual observation of the test pad. Instrumentation includes fire control, photo instrumentation, control lines, and data-monitoring lines for measuring FAE cloud and blast effects.



Equipment. All test areas are equipped for synchronized photographic coverage to 32,000 frames per second. IRIG timing, tape recorders, transient recorders, complementary transducers, and signal conditioning equipment are available. Video formats include standard, shuttered, and high speed.

Unique or Historic Tests. The first MOAB bomb to be statically tested for blast characterization was detonated at Cactus Flats in 2009.

Interesting Facts. The local ranchers from Olancha were allowed to free-range cattle in Cactus Flats until about 2001, thus requiring test personnel to clear the range of cattle on test day by driving them to the other valley. The remains of a corral and a cabin are still in the area between the two valleys; the corral has a date from 1923 scratched in a piece of metal.

Historical Significance. Cactus Flats was opened as a firing range in 1968 to test projectiles and fuzes from 155-mm and 8-inch self-propelled howitzers.