

Mission. Conduct environmental testing on all military weapons and components to ensure product reliability, performance, and fleet safety during the product's entire life cycle. Develop test methods and perform dynamic and climatic tests in accordance with applicable military standards (MIL-STDs).

Unique Features. One of only a few nationwide facilities that perform dynamic testing on live ordnance. Capability to dynamically test items from 5 to 2,000 Hz with a rating of 36K force pounds and a peak-to-peak displacement of 2 inches. Staff designs, evaluates, and fabricates test fixtures to meet the testing requirements of any weapon system or component.

Combat Support. Instrumental in the environmental qualification of many major weapon systems. Tests conducted save aircraft and pilots from weapon systems igniting on the aircraft while being loaded and in flight.



Shipboard Vibration Testing

Cost / Time Savings. Life cycle testing produces immense cost savings to the military. The entire life of a weapon or component can be simulated in a short period of time and can reveal structural problems, performance inadequacies, sensitivity shortcomings, and fleet safety issues. These problems can be identified and rectified early in the acquisition process through environmental testing; this leads to increased efficiency and cost savings.

RDT&E. Facilities at China Lake can test a weapon or component to any environment that the item might see during its life cycle. This may include a rough handling drop that a weapon might see from personnel handling the item, common carrier vibration from the manufacturing facility to storage or end user, sinusoidal vibration while the item is on the ship, temperature extremes while the item is on the tarmac or in flight, flight vibration while the item is carried on the wing of an aircraft, and power and free-flight phase while the weapon is heading toward its target. The climatic capability provides temperatures testing from -65 to 165°F.

Size / Description / Location / Scope. This facility is located approximately 3 miles from the China Lake Propulsion Laboratory main gate. The facility is approximately 36,000 SF. The dynamic test areas have explosive limits to 8,000 pounds of high explosive weapons and 30,000 pounds of less hazardous energetic material; and the climatic facilities have explosive limits from 30,000 to 100,000 pounds of low-energy high or low explosive materials, respectively. **Annual Test Events:** 150. **Plant Value:** \$35M+. **Year Opened:** Late 1940s.

Main Facilities

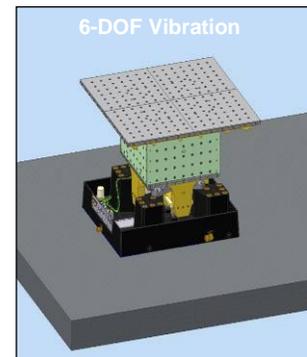
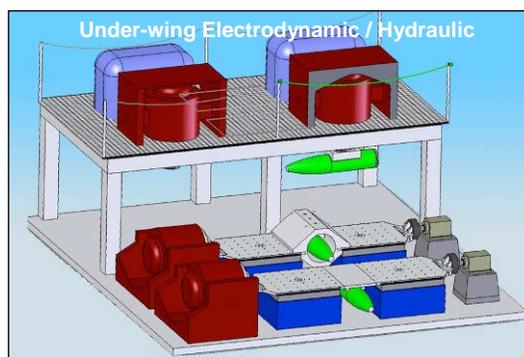
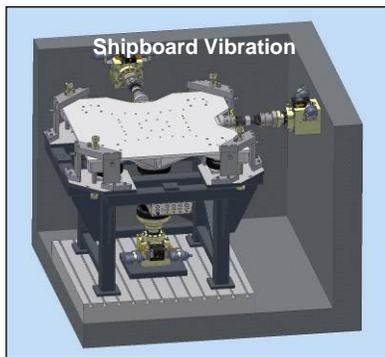
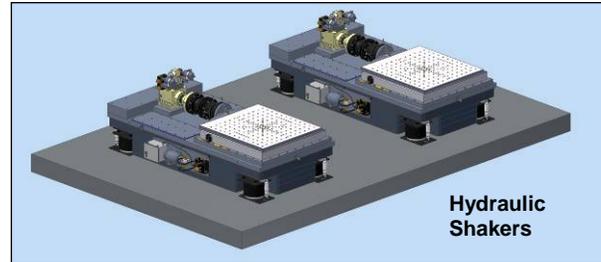
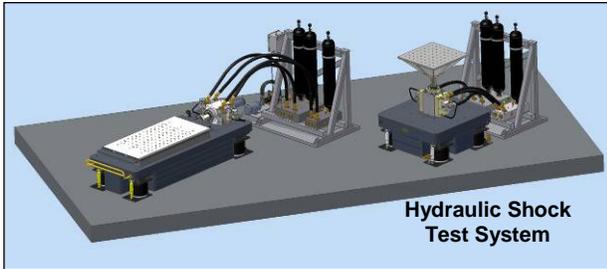


Live Ordnance Vibration and Shock Complex. The complex evaluates the responses of all-up live weapons and their components to vibration and shock encountered during transportation on common carriers, shipboard, combat aircraft, and during the power and free-flight phase. Shock facilities have barricaded remote controls for live ordnance testing with provisions for temperature conditioning. Test items are vibrated through all three mutually perpendicular axes. Sinusoidal sweep and dwell, random vibration profile, and short duration transients are conducted to measure response spectra up to 2,000 Hz.



Climatic. Temperature, Humidity, and Salt-Spray. Tests are conducted to subject live weapons and their components to simulate natural environments likely to be encountered during the weapon life cycle. Seven temperature controlled ovens are available, the largest being 8 x 12 x 20 feet. Temperatures can be maintained or cycled through any portion of a range of -65 to +180°F. All chambers are temperature and humidity controlled.

Weapons Dynamic RDT&E Center. This new \$4.5M 2011 unique, state-of-the-art building, including \$16M worth of advanced equipment, is the most capable dynamics test facility within the entire DoD. It provides full spectrum dynamic test environment capabilities for all naval weapon systems. The facility saves time and reduces Navy duplication of effort. It is comprised of six distinct equipment sets. Capabilities include three individual 6-degree of freedom (DOF) test sets up to 30K force pounds, three 50K force pound electrodynamic shakers, two 12K electrodynamic shakers, a single set of unique hydraulic ship shock machines capable of 10.5-inch stroke, two 50K force pound hydraulic shakers with 4-inch stroke, and a transportation vibration system composed of two 40K force pound vertical and horizontal hydraulic shakers.



Equipment. Dynamic test capability includes two 36,000-force-pounds, 2-inch-stroke electro-dynamic shakers, and a slip table capable of testing 18,000 pounds of explosives.

Instrumentation. Instrumentation for the dynamic test area includes two programmable vibration / shock controllers and special equipment for simulating catapult launch and arrested landing shocks (100-g, 50 ms). Two control buildings contain sine vibration control systems, an analog 80-channel random equalizer, closed circuit television (TV) systems, and a dynamic digital controller / analyzer. The climatic test instrumentation provides data recording of temperature variants. The system has an automatic recall for the duty engineer and technician to respond to temperature excursion incidents that would invalidate the test event.

Unique or Historic Tests. Full environmental qualification of fuel-air explosive (FAE) bombs for use in Vietnam was conducted. Full environmental qualification of the vertical launch antisubmarine rocket (ASROC) for deployment on Aegis cruisers was completed. The 2.75-inch illumination flare was fully qualified by working 24/7 to support the first Iraqi engagement.

