NAWCWD Quick Facts
China Lake & Point Mugu, CA NAVAIR

Supersonic Naval Ordnance Research Track (SNORT)

Mission. Four-mile long, dual-rail, precision-alignment track that tests rockets, guided missiles, model and full-scale aircraft, and components under free-flight conditions at velocities from subsonic through supersonic.

Unique Features. SNORT is the second longest and fastest supersonic sled track in the world. It is capable of reaching speeds up to 6,000 feet per second.

Combat Support. Hellfire PBXN-112 / MAC Advance Technology Demonstration program during Operation Iraqi Freedom.

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

RDT&E. Tests include long-duration runs, controlled deceleration, aircrew safety, terminal ballistics, rain erosion, vehicles and barriers, aeroballistics, damage and destruction, and soft recovery. Complex multiple target penetration tests using live, high-explosive-filled warheads are also conducted. Recently, the cleared target areas at the end and surrounding the track have been used for IED detection testing. The cleared areas offer a controlled, secure environment to test ground and airborne detection and disposal methods.

Size / Description / Scope. The SNORT Range encompasses 27 square miles of the southwest corner of China Lake on the North Ranges. This area includes the SNORT facility and the old Baker-4 track. SNORT itself is a 21,600-foot long dual-rail track. The rails are 171-pound per yard crane rail mounted on a concrete foundation. The spacing between the rails is standard railroad gauge. The track drops 107 feet from start to finish and has a recirculating water brake system with adjustable water dams.
Annual Test Events: 12. Since it first opened in 1953, SNORT has logged in more than 9,000 test runs. **Plant Value:** $36M+.

Sub-Facilities

- **Terminal and Ballistics Test Track ("G-4 Facility").** The G-4 track, a backup for SNORT, is 3,000 feet long and the rails are continuously welded and precisely aligned. Sled velocity is monitored at 50-foot intervals. Arrestor gear is available for sled recovery on lower speed runs, although most tests involve launching the test article. The G-4 track is inclined at a constant grade of +2.8% and overlooks a wide, deep valley allowing tests involving ballistic launch trajectories approximately 500 feet above the impact point. Velocities and accelerations are similar to SNORT.
- **Support Facilities.** Include electric and machine shops that design and construct sleds and test vehicles.
- **Rain Erosion Facility.** Simulates a rain field along a 5,000-foot section to determine the effects of rain erosion on radomes.
- **Test Article Capture Facility.** Uses a net to capture ejectables, such as aircrew ejection seats, which allow for soft recovery.
- **Aerial Launch Facility.** Includes a 50-foot-long monorail that provides 45-degree free-flight launch capability for specially designed sleds.
- **Accidental Release Track.** Tests the effects of ordnance accidentally being released from an aircraft landing on a ship. The sled is rapidly stopped, and the test article is allowed to tumble over a simulated ship deck.
- **Vehicle Barrier Track.** This is a 100-foot-long monorail used to evaluate the effectiveness of anti-terrorist vehicle barricades. A typical test involves accelerating a 10,000- to 20,000-pound test article to 50 miles per hour (mph) and then impacting it against a barricade.

Equipment. The track and surrounding areas are highly adaptable. Sleds include aircraft cockpits for seat ejection testing, various pusher sleds, and sleds designed to carry missiles, bombs, and drop tanks. Midway down the track are two 225-foot-tall towers designed to lift 25,000 pounds. The towers are used to suspend test hardware up to 180 feet above the rails.

Instrumentation. Includes velocity measurement, meteorology stations, accelerometers, and advanced photographic instrumentation. Cameras, energetics, and instrumentation onboard the sled can be triggered at any point along the track using trackside screenboxes.

Unique or Historic Tests. During 2000, SNORT supported NASA "fly-by" tests propelling a prototype, laser-based hazard avoidance system for use on future Mars smart-landers. Earlier testing included propelling a 136,000-pound Titan 111-C second stage rocket motor down the track at 640 feet per second. In another test for the FBI, more than 1,000 pounds of deadly explosives were packed inside an empty bus that detonated — replicating the Bali terrorist attack. In 2009, several track records were set on a single test. The first record was the successful simultaneous firing of 74 Mk 16 Zuni rocket motors. Those motors produced a record 500,000 pounds of thrust. In another test, 6,000 feet of water bags were filled with 11,000 gallons of water and laid down over the rails to provide additional deceleration for the sled.

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Interesting Facts. In 2007, the tracks were modernized and converted from an analog to digital network system. Solid copper control lines were converted to state-of-the-art digital controllers riding over more than 14 miles of dedicated fiber-optic cables. The rails were welded and then precision aligned to less than 0.060 inch. In addition to DoD applications, through special arrangements, the track has also been used to help create movie production special effects over the years. *Flight of the Intruder* filmed several scenes at SNORT.

Recognition / Awards. In 2006, SNORT received a DoD Warfighter award for outstanding contributions in direct support of Operation Iraqi Freedom through the Hellfire PBXN-112 / MAC Advance Technology Demonstration program. In 2007, SNORT received a letter of appreciation for support of the DDG-1000 Live Fire Test and Evaluation Rail Weapons Effect Test Series.

Historical Significance. Since the 1950s, China Lake has tested most of the Navy's aircraft ejection systems and has been significantly involved in aircrew safety RDT&E. Two of the first major projects involved the Rocket-Assisted Personal Ejection Catapult (RAPEC), which was widely fielded, and the Vertical-Seeking Subsystem. The newer Navy Aircrew Common Ejection Seat (NACES) is of incalculable value in increasing the survivability of military aircrew. Through the years, SNORT has been used for numerous NASA tests including the Mercury and Gemini spacecraft. **Why Originally Built.** SNORT was originally built to test the effect of gun and rocket blast on high-speed aircraft. The design was to be more capable and multi-purpose than any track built before it.

Year Opened: 1953. **Original Cost:** $4.5M.

Future Plans. SNORT expects to be a key facility in testing future supersonic weaponry. Tests should now be more reliable due to the welded track and upgraded instrumentation. Additionally, SNORT is developing a very slow-speed, reusable vehicle for UAS testing.