Supersonic Naval Ordnance Research Tracks

The SNORT complex is a heavily instrumented facility with high-speed tracks and special purpose areas. Track testing combines many advantages of laboratory testing with dynamic free-flight testing and can also add the important feature of test article recovery for post-test examination and potential asset reutilization. Facilities are designed to support testing that requires low- or high-speed runs, long-duration runs, controlled deceleration, heavy sleds, explosive handling, photographic instrumentation, specialized construction, instrumentation, data collection and data analysis.

SNORT MAIN TRACK

The main track is approximately 21,600 feet long and has dual 171-pound-per-yard crane rails spaced 60.625 inches apart (centerline) on an H-beam concrete foundation. The rails are precisely aligned.

Sled velocity is monitored at 100-foot intervals and with portable systems over shorter intervals. A recirculating water brake system with adjustable water dams is used to decelerate reusable sleds after high-speed tests.

Landline communications, firing lines and fiber optic cables are installed along the entire track. Power is available at primary test sections and mobile generators provide power to additional locations. Trackside facilities include a simulated rain field for erosion testing and a series of poles/towers for suspending test hardware up to 180 feet above the rails.

A 136,000 pound, Titan 111-C second stage rocket motor has been the maximum load fired down the track at a velocity of 640 feet-per-second. Sled speeds from subsonic to supersonic are achieved at up to 5,000 feet-per-second.

The track is regularly used to test aircrew ejection systems; for target recognition; and warhead impact and penetration testing. Suspended explosive testing (reverse ballistics), where the target impacts a stationary test item, can be conducted over a hardened track section. Complex multiple target penetration tests using live, high explosive-filled warheads, live fuzes, or both, are routinely supported. Testing bombs, including live missiles, rockets, guidance and fuzing (live, inert, recorder) systems; free-flight terminal ballistics; electronic warfare and countermeasures; vehicle and barrier testing; and movie production special effects have also been supported.

Stationary ejection test sequence

FOR MORE INFORMATION

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G-4 TRACK

The G-4 track is 3,000 feet long with dual 171-pound-per-yard crane rails spaced 38 inches apart (centerline) on an H-shaped concrete foundation. The rails are continuously welded and precisely aligned.

Sled velocity is monitored at 50-foot intervals and with a portable system over shorter intervals. Arrestor gear is available for sled recovery on lower speed runs, although most tests involve launching the test article.

The track muzzle overlooks a dry lakebed approximately 500 feet below, which facilitates free-flight ballistic launch trajectories for assessment of tests under controlled, observable conditions. The track's location is far enough inside the secure range perimeter to ensure safe, secure launches. Extensive photographic coverage, including Time, Space, Position Information (TSPI) of customer-designated test events, can be provided.

INSTRUMENTATION

A variety of instrumentation is available to record test events along the tracks and at target impact. The high-speed, synchro-ballistic, or Streak camera is a fixed-camera system capable of capturing a high-resolution still image in 35 or 70 mm format. The film passes through the camera in the opposite direction from the rocket sled, resulting in a clear picture of the sled against a blurred background.

Digital High Speed Video (DHSV) cameras are replacing film cameras and can provide higher frame rates. Fixed, high-speed motion picture cameras can be positioned along the track or at the end of the track for capturing images of weapons impact tests at up to 8,000 frames-per-second using 16 mm film. Weapon yaw and pitch at impact, perforation of the target and fragmentation patterns can also be provided.

The Velocity Measurement System is a series of 218 electric coils set 100 feet apart along the length of the SNORT track. The coils detect magnets mounted on the rocket sled to provide velocity and acceleration data for post-test analysis.

Accellerometers can be located on the rocket sled to measure tri-axis vibration levels as the sled moves down the track. Three meteorology stations measure air density, temperature and atmospheric conditions.

SNORT CAPABILITIES

- Live, high-explosive ordnance testing
- Live-fill bombs/warheads
- Live fuzes
- Complete live system testing

SPECIAL PURPOSE AREAS

Rain Erosion Facility

A rain field can be simulated along a 5,000-foot section of the main track to determine the effects of rain erosion on radomes or other sled-borne test articles.

Test Article Capture Facility

A static test stand is available to capture ejectable articles in a net. Typical use is to capture aircrew ejection seats, allowing the soft recovery, which helps limit collateral damage and allows potential reuse of the test asset.

Aerial Launch Facility

A 50-foot-long monorail facility provides 45-degree free flight launch capability for specially designed sleds.

Accidental Release Track

Used for testing the effects of ordnance accidentally released from an aircraft landing on a ship, sleds carrying items representative of air-fired/released weaponry are propelled down a short track. The sled is rapidly stopped and the test article is allowed to tumble over a simulated ship deck.

Vehicle Barrier Track

A 100-foot-long monorail facility is available 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 mph and impacting it against a barricade.

SNORT main track