

NTS Market Spotlight: Defense

Specialists in Engineering | Testing | Analysis



Test Specification Capabilities

- ▶ MIL-SPEC-2105
(Insensitive munitions)
- ▶ MIL-STD-810
(Environmental)
- ▶ MIL-STD-331
(Fuzing, components)
- ▶ MIL-STD-167
(Mechanical vibration)
- ▶ TB 700-2/NAVSEAINST 8020.8B
(Hazard classification)
- ▶ FM 101-51-3 JMEM/IITOP 4-2-814
(Arena)
- ▶ MIL-STD-662
(Ballistic test for armor)
- ▶ MIL-STD-202
(Electronic parts)
- ▶ MIL-STD-883
(Micro-electronic devices)
- ▶ MIL-PRF-85045
(Electronic components)
- ▶ MIL-S-901D
(Shipboard shock)
- ▶ EMI/EMC/ESD
 - MIL-STD-461/462
 - MIL-STD-704
 - MIL-STD-1399

Expert Support Services

For over 50 years NTS has provided engineering and technical resources to the aerospace/defense industry. Making our technical expertise and experience available to our clients, when and where you need it, is our differentiator. From managing and operating government test labs to providing on-site engineers and testing at U.S. Military bases, NTS can be your single source for engineering and managed services.

Defense Facilities Highlights

NTS consists of 18 facilities in North America. Each facility provides unique test capabilities including EMI/EMC, dynamics, fiber optics, environmental, fluids/fuels, cryogenics and mechanical. NTS is a source for a full range of integrated engineering solutions, product testing, standards compliance, project management and managed services for the Defense Market.

National Ordnance and Ballistics Center (Camden, Arkansas)

This multidisciplinary test facility offers safe, cost-effective, and error-free testing of ordnance, munitions, and hazardous materials including climatic and dynamic testing, functional trials, and live firings. The Center features a 3,000-meter firing range, a rocket range, multiple warhead arena test areas, multiple indoor and outdoor medium caliber test ranges, a drop tower facility, a large dynamics test facility, and numerous large concrete magazines for storage.

Engineering Materials Research (Littleton, Colorado)

NTS Engineers have demonstrated expertise in energetic material research, breeching studies for both military and civilian organizations, and human injury studies.

Body and Vehicle Armor Testing (Wichita, Kansas)

NTS provides a complete solution for Personal Protective Equipment (PPE) and minor armor materials testing. We offer multiple indoor range facilities for terminal ballistics testing of body armor, helmets, equipment, small caliber weapons, and armor materials. Ammunition and targets are environmentally conditioned and state-of-the-art data acquisition and high speed digital video imaging are utilized.

Heavyweight Shock Test and Engineering (Rustburg, Virginia)

NTS is a full-spectrum test and research facility capable of managing the toughest environmental test requirements. NTS engineers are recognized experts in the shock and vibration field, with extensive ship-design experience coupled with years of experience in dynamic structural analysis using an array of finite element analytical tools.

Ordnance Science Engineering (Dana Point, California)

NTS Scientists in Dana Point have demonstrated expertise across the NTS Defense Group in the development of detailed test plans and procedures to high level program requirements, failure investigation and analysis, ordnance product design, reverse engineering, and the design and development of custom test apparatus.



Arena Characterization Testing

- ▶ FM 101-51-3 JMEM
- ▶ IITOP 4-2-814
- ▶ Custom Specifications and Design for Lethality, Vulnerability



Hazard Classification Testing

- ▶ TB 700-2/NAVSEAINST 8020.8B
- ▶ United Nations Recommendations on the Transportation of Dangerous Goods, Rev 13
- ▶ DOT certified PoP Testing

Safety and Insensitive Munitions (IM) Testing

TB700-02, MIL-STD-2105 and NATO STANAG tests for component and system level test articles:

- ▶ 4-day and 28-day Temperature and Humidity
- ▶ Transportation Vibration
- ▶ 12 meter Drop Test
- ▶ Fast Cook-Off | Slow Cook-Off
- ▶ Bullet Impact (7.62mm, .30 caliber, .50 caliber)
- ▶ Fragment Impact—Single or dual fragment (4000 ft/s, 6000 ft/s, 8300 ft/s)
- ▶ Sympathetic Detonation | Shaped Charge Jet Impact
- ▶ Spall Impact



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Supplementary Ammunition, Weapons, and Munitions Testing

Environmental and Dynamics Testing

- ▶ MIL-STD-810: All revisions
- ▶ MIL-STD-461/462: EMI/EMSR, ESD
- ▶ MIL-STD-331: Fuzing, Components
- ▶ MIL-STD-167-1: (Ships) - Mechanical Vibrations of Shipboard Equipment
- ▶ MIL-S-901: Shipboard Shock (High Impact) Lightweight, Medium Weight, Heavyweight
- ▶ Simulation of environments for hazardous articles up to 20 feet long
- ▶ Vibration: to 34,000 force lbs. and up to 6-inches of displacement
- ▶ Temperature & Humidity: +300 F to -150F, 99% RH
- ▶ Altitude: to 90,000 ft with Temperature and Humidity
- ▶ Shock and Acceleration: Shock Machine, Pendulum, Pyroshock, 40 ft Drop
- ▶ Combined Environments

Ammunition, Weapons, and Munitions Performance Characterization

Small, Medium, and Large Caliber Gun, Mortar and Rocket firing

- ▶ Multiple indoor and outdoor ballistics ranges
- ▶ Calibers to 155mm and 3000 meters range
- ▶ Interior Ballistics—Pressure, Recoil, Downbore Imaging, Muzzle Exit/Sabot Function
- ▶ Exterior Ballistics—Velocity, Trajectory, Stability, Sabot Function, TID
- ▶ Terminal Ballistics
- ▶ Hard, Soft, Structural, Vehicle Targets
- ▶ Accuracy, Airburst, Penetration, Fragmentation, Residual Effects
- ▶ Range contraction and segmentation as required for less than 3000 meters
- ▶ Ballistics range, equipment, and procedures are DCMA audited and certified

Static Firing of Ammunition and Munitions for Assessment of:

- ▶ Blast—Incident, Reflected
- ▶ Fragmentation—Recovery, Mapping
- ▶ Penetration—Armor, Soil, Vehicles, Structural
- ▶ Sympathetic Response
- ▶ Fire Start
- ▶ Lethality/Vulnerability/Survivability
- ▶ Fuzing, Sensor, C3I
- ▶ Testing, Timing, Function, Performance
- ▶ EMI/EMC—200 volt/meter, 10kHz to 40kHz test capacity
- ▶ HERO & ESD

Ammunition, Weapons and Munitions Handling and Storage

- ▶ Handling, firing, and render safe operations of AA&E including Category I at ambient and temperature extremes
- ▶ Class 1.1 Material Storage
- ▶ BATF and FFL licensing for purchasing, receipt, storage, and handling
- ▶ Component and System Level Test Articles
- ▶ Digital and Film Radiographic Inspection

Test Instrumentation and Documentation

- ▶ Pressure, Load, Strain, Acceleration
- ▶ Color and Black/White Digital High-Speed Video (Phantom V7, Phantom V9.0; Hadland Ballistic Range)
- ▶ Custom Test Sets and Software Design and Development
- ▶ LABVIEW Modules