

Rocket & Energetics Testing & Evaluation (T&E)



Experienced Staff - Proven T&E Systems - Schedule Responsiveness

Specializing in rocket and energetic testing, Exquadrum provides a complete spectrum of test and evaluation services from solid rocket motors to hypergolic bi-propellant engines. Exquadrum's FORGE test and development site is fully permitted and government approved. It is comprised of multiple test pads/cells, control rooms, data acquisition systems, storage areas, and energetic processing laboratories. Situated on over 33 acres, the quantity-distance (QD) arcs provide for a wide variety of test programs.

FORGE Test Pads & Laboratories

A-Pad (Component/Prototype Testing)

- Five reconfigurable test cells
- Thrust: 1,500 lbf
- NEW: 1,500 lbm 1.3c

B-Pad (Large Rocket & Hypergolic Testing)

- Two test cells, one subterranean
- Thrust: 50,000 (horiz) / 25,000 (vert)
- NEW: 10,000 lbm 1.3c

C-Pad (Hypergolic Testing)

- Atmospheric: 1,000 lbf mono/bi-prop
- Vacuum: 1,000 lbf
- Cryogenic (LN2) Hydrostat (3,560 psi)

Exquadrum's engineers and technicians have recent and relevant experience testing rocket and energetic components and systems. This experience includes:

- Facility design and construction
- Data acquisition programming
- Instrumentation engineering
- Process and fluid systems engineering
- Fluid system transient modeling
- Panel fabrication (gases/liquids)
- Test operations
- Post-test data reduction
- Classified testing

Laboratories & Specialty Facilities

- LN2/GN2 (3,560 psi) for vacuum testing
- Explosive Effects Containment Test Cell
- Solid propellant mixing & casting
- Solid propellant characterization
- Energetic Orbital Welding
- Chemistry & material characterization
 - Strand burner (Crawford & Ultrasonic)
 - Impact sensitivity
 - Gap testing (solid/liquid)
 - Kolsky bar dynamic material properties
 - TSA/DSC/TMA scientific equipment

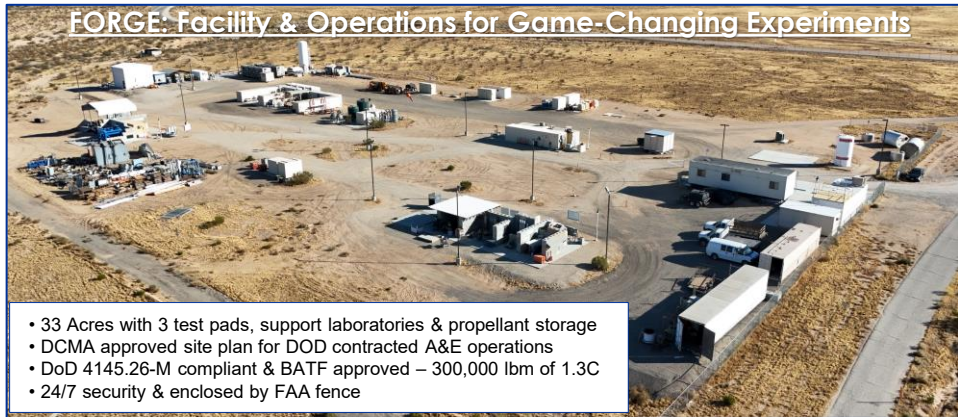
DAC/DAQ

- National Instruments & LabVIEW based systems
- Modular & adaptable DAQ
- >1,000 data channels
- Sample rate: up to 1Mhz
- Site-wide 40GB Fiber backbone
- Site-wide time (IRIG/PTP/TSN) sync

Hypergolics

- SCAPE Operations
- Panel design & build
- MON Mixing

FORGE: Facility & Operations for Game-Changing Experiments



- 33 Acres with 3 test pads, support laboratories & propellant storage
- DCMA approved site plan for DOD contracted A&E operations
- DoD 4145.26-M compliant & BATF approved – 300,000 lbm of 1.3C
- 24/7 security & enclosed by FAA fence

Testing & Evaluation Past Performance

- 5" Tactical air-to-air solid rocket motor
- 32" solid rocket motor vertical firing
- Lunar Lander (full scale) V&V
- Hydrazine/MON/NTO In-space thruster
- Mono-propellant DACS thruster
- Cryogenic Proof Testing
- Test Stand Design & Fabrication
- GH2/LOX modular aerospike thruster
- Nitrous Oxide/RP-1 rocket engine V&V
- Advanced air-breathing tactical missile
- Insensitive munition warhead
- Controllable SRM technologies
- Upperstage Flight Fluid System V&V
- Hydrogen Peroxide thruster/engine V&V

Our Customers

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|----------|--------------------|
| USAF | US SOCOM |
| MDA | Virgin Galactic |
| DTRA | Frontier Aerospace |
| DARPA | Blue Origin |
| NASA | General Atomics |
| US Army | Onyx Aerospace |
| US SOCOM | Astrobotic |

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