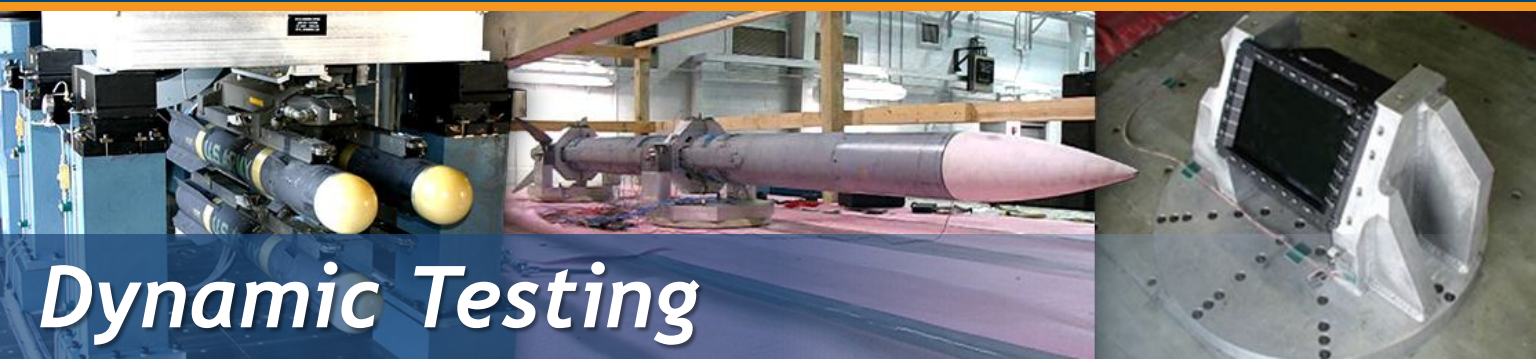
Redstone Test Center



Dynamic Testing

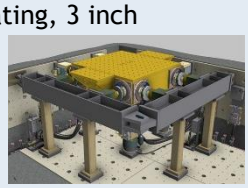
RTC provides world class expertise in dynamic testing for missile, aviation, and ground vehicle subsystems and components. Shock and vibration tests of hazardous items may be conducted at temperature extremes. RTC is developing new standards for multi-exciter/multi-axis excitation as an improved test methodology that provides 6 degree-of-freedom motion, supplementing current single axis excitation capabilities. Unique acoustics and vibro-acoustics facilities that include a large reverberation chamber containing a 6-DOF excitation system provide the ability to generate realistic 6-DOF motion combined with high intensity acoustic energy. Other laboratory test capabilities include: pyro-shock, acceleration (centrifuge), fuze/safe and arm device functional testing, loose cargo, pendulum impact, and drop tests. RTC conducts field testing of air and ground vehicles in various environments to characterize installed weapons/equipment dynamic exposure. A wide variety of specialized tests on various road courses exist for mobility of wheeled/tracked vehicles and comprehensive testing of Unmanned Ground Vehicles focused on challenging the system's sensor systems and artificial intelligence. Other field test capabilities include rail impact testing, mobile data acquisition, and signal analysis in support of laboratory vibration test schedule development. Analytical tools include finite element and modal analysis, rigid and flexible body vehicle dynamics, terrain induced vehicle vibration effects and vibration applications to elements in distributed LVC environments.

Core Competencies

- Aviation / Missile Dynamics
- Ground Vehicle Dynamics
- Vibration Testing
- Dynamic Analysis
  - Finite Element Analysis
  - Modal Analysis
- Shock Testing
- 6 DOF Motion Replication
- Pyro-shock Testing
- Road Course
- Rail Impact
- Impact and Drop Testing
- Acoustics and Vibro-acoustics

Large Capacity 6-DOF

RTC's Large Capacity 6-DOF system is servo-hydraulic based with a standard footprint of 8 ft x 8 ft, 200k lb vertical axis force rating, 120k lb horizontal force rating, 3 inch dynamic stroke, and ±6 degrees of angular motion.



Vibro-Acoustics

RTC's vibro-acoustics facility consists of an approximately 13,000 ft^2 reverberant acoustic chamber capable of obtaining 162dB SPL. Included within the chamber is a 6-DOF servo-hydraulic excitation system capable of 14k lb per DOF.

Actuator Force

Pounds	Exciters
80k	1
55k	2
50k	5
40k	6
20k-30k	8
<20k	5

Table Size

Inches	Tables
144x48	2
96x96	1
60x60	8
48x48	3
36x36	3
30x30	2
Custom	7

Displacement

Inches	Tables
6	2
5	1
3	7
2	12
<2	5

Degrees of Freedom

DOF	Tables
1	26
2	5
6	3

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