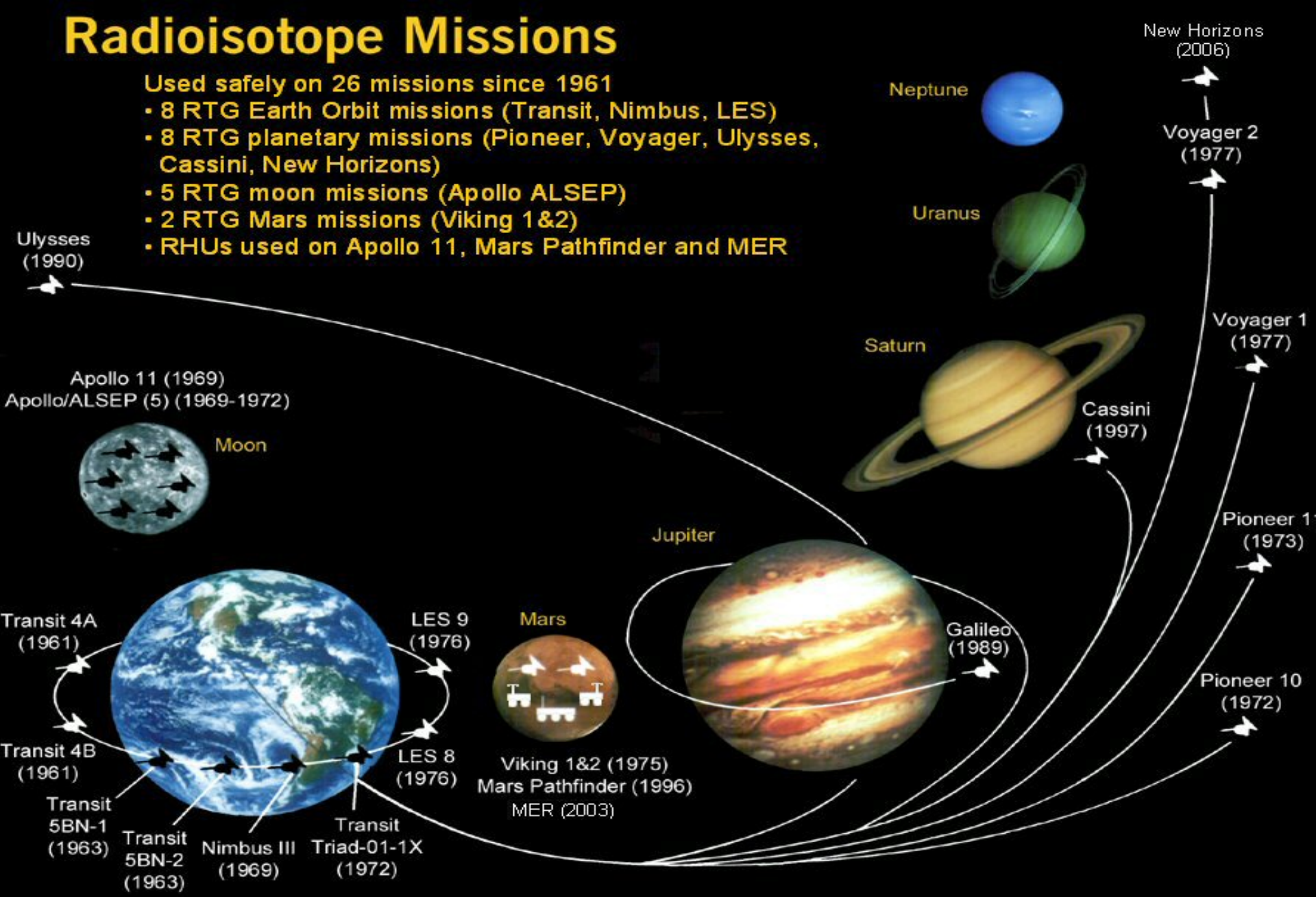
Radioisotope Missions

Used safely on 26 missions since 1961

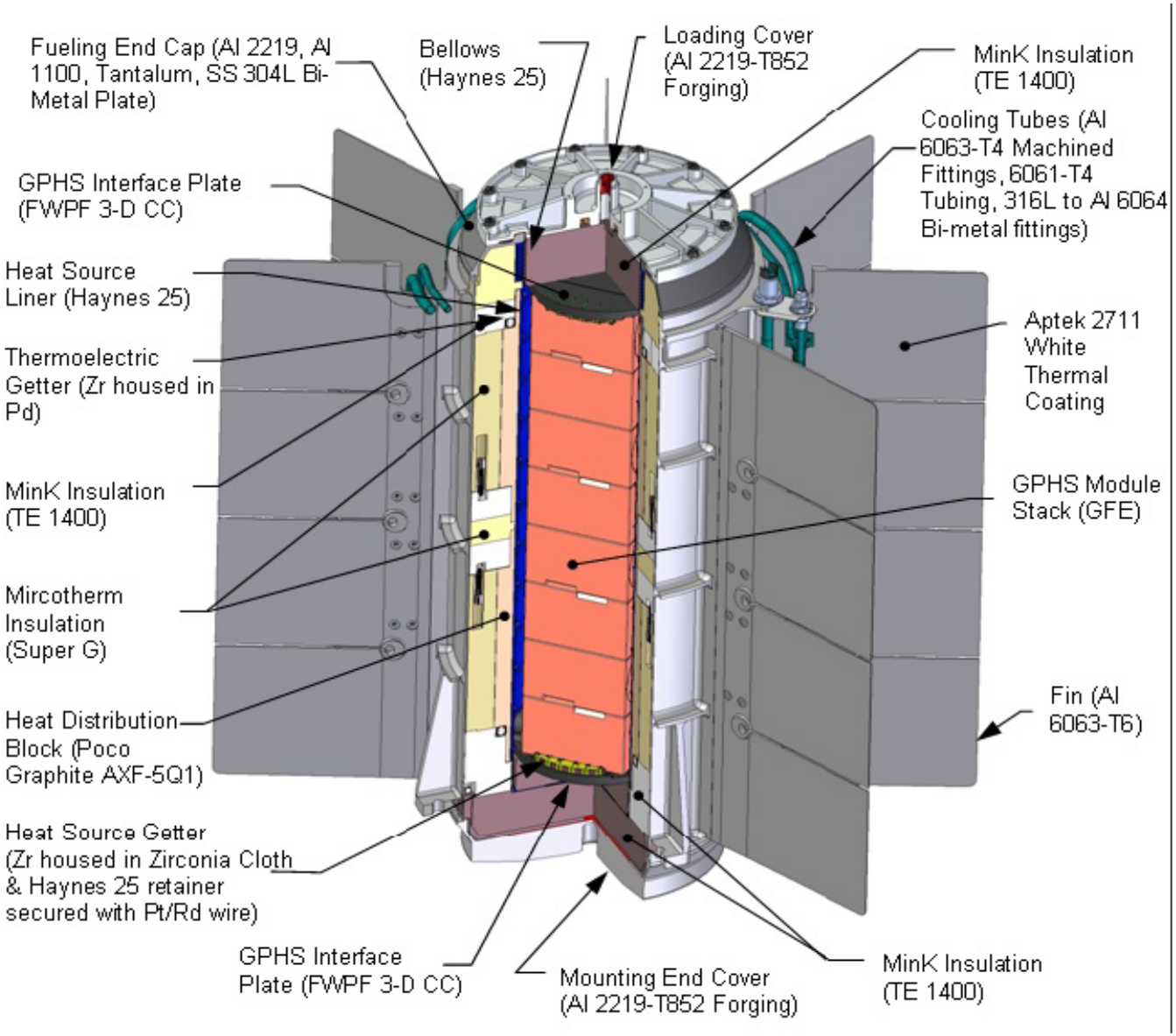
- 8 RTG Earth Orbit missions (Transit, Nimbus, LES)
- 8 RTG planetary missions (Pioneer, Voyager, Ulysses, Cassini, New Horizons)
- 5 RTG moon missions (Apollo ALSEP)
- 2 RTG Mars missions (Viking 1&2)
- RHUs used on Apollo 11, Mars Pathfinder and MER



Distances & Planets Are Not to Scale

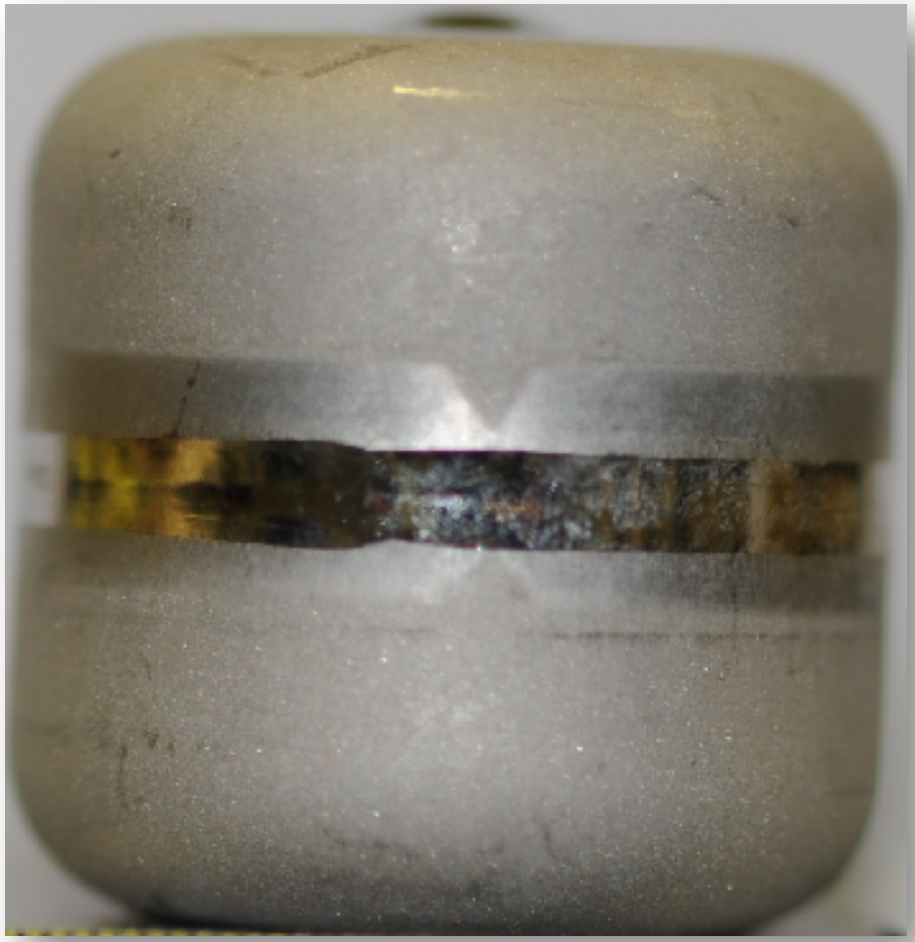
U.S. DEPARTMENT OF ENERGY
Nuclear Energy

Multi-Mission Radioisotope Thermoelectric Generator (MMRTG)

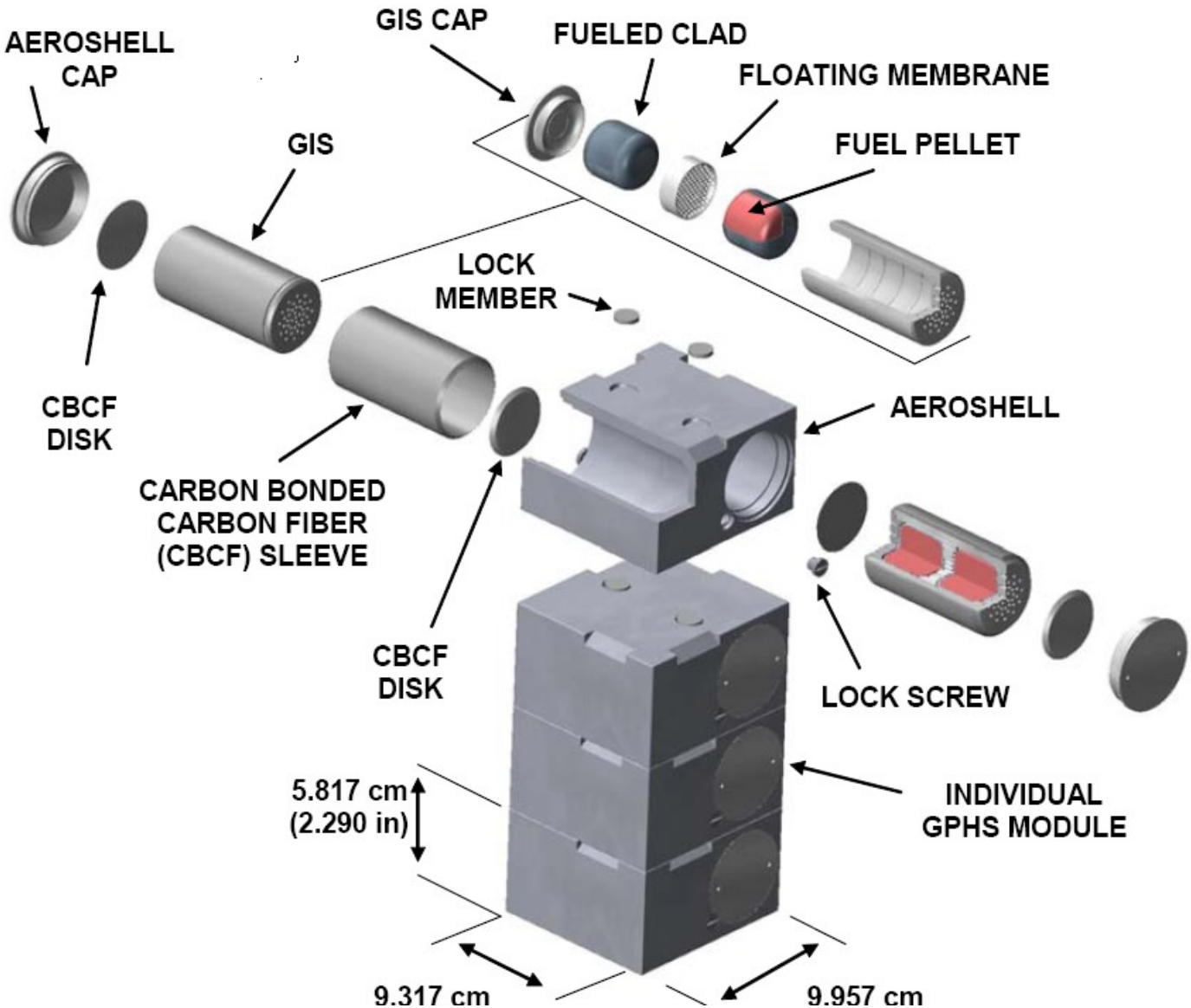


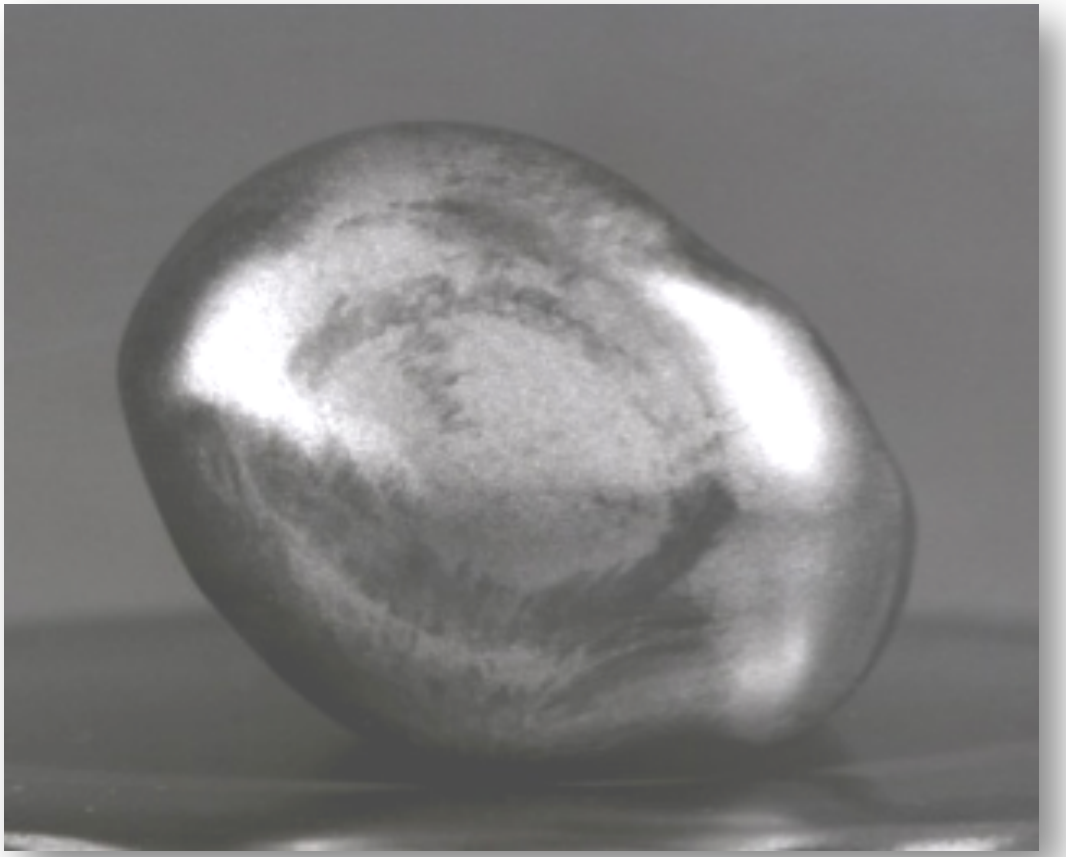
Key Safety Features of Radioisotope Power Systems

- Ceramic Fuel
  - Very Low Vaporization Rate
  - Generation of Respirable Fines Minimized
  - Highly Insoluble
- Iridium Clad
  - Fuel Containment
  - Impact Protection
  - Corrosion Resistant
  - Material Compatibility
  - High Melting Point (2400 °C)



Key Safety Features of Radioisotope Power Systems



RPS Safety Testing

- Explosive Over Pressure Test
- Fragment Projectile Test
- Drop Test
- Solid Propellant Fire Test
- Bare Clad Impact Test
- General Purpose Heat Source Impact Test
- Large Fragment Test
- Flyer Plate Test
- RTG End-on Impact Test
- Iridium Ductility Test
- Solid Propellant Fire Characterization test