A-P-T RESEARCH, INC.

MISSION/RANGE SAFETY

Assessing Launch Safety, Minimizing Risks, and Providing Protection

Missile flight testing requires the evaluation and acceptance of risks from a variety of hazards. These hazards may result from premature function of explosive components, flight deviations of malfunctioning vehicles, falling debris, or high energy impacts.

Range safety incorporates a multitude of disciplines to minimize the risks involved and provide protection from potential hazards.

APT conducts R&D and provides support services in advanced technologies, systems safety, space access, and public policy. APT has the ability and experience to assess all aspects of launch safety including ground operations, vehicle processing, flight operations, mission plans, and launch site issues. APT supports the vehicle life cycle of test range operations:

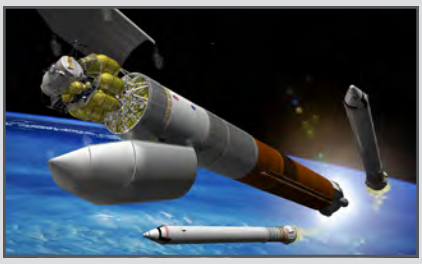
- Range Safety Data Package
- Vehicle Analysis
- Assembly and Ground Handling Procedure Validation
- FTS Installation Verification
- Launch Commit Criteria
- Debris Hazard Analysis
- Abort/Hang Fire Procedures

Example Analyses

- GMD Flight Test Scenario Feasibility Assessment
- Collision Avoidance – Space Asset Risk Assessment
- Intercept Control Volume Assessment
- LV-2 Launch Hazard Assessment
- Collision Debris
- GBI Silo Construction Risk
- GMD Deployment Site Construction Risk
- Flight Termination System Design and Assessment
- CMCM Test Scenario Feasibility
- Flight Test Scenario Development and Risk Assessment
- KLC RSTS Evaluation
- Israeli Test Range Safety System Adequacy
- Hera Flight Termination Module Design Evaluation
- Target Development Test Destruct Fragmentation
- Small Arms Range Hazards
- Flight Corridor for Spaceport Canada First Launch
- Nuclear Safety Analysis to Assist in Preventing Release of Radioactive Hazards

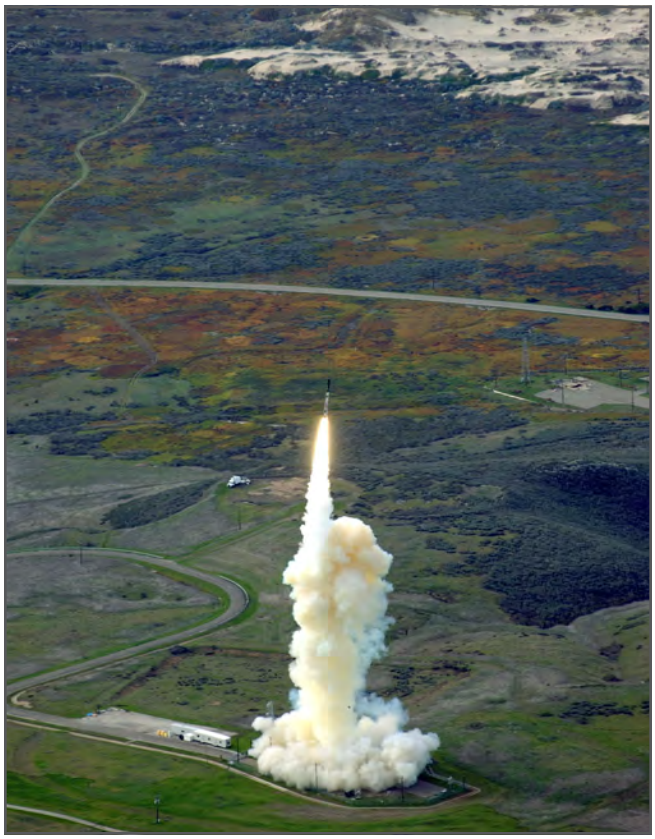
Capabilities

- Quantitative Risk Assessment (QRA) of Flight and Ground Safety Hazards
- Collision Avoidance & Spacecraft Debris Risks
- Range Safety System Evaluation
- User Flight Termination System Design/ Performance Assessment
- Independent Assessment of Range Safety Issues
- Vehicle Breakup Modeling for Destruct and Intercept Debris
- Hazardous Procedures Development & Validation
- Evaluate Safety Quality Procedures
- Vehicle Malfunction and Safety System Reliability Assessment
- Training for Analysts and Operators
- Geographic Information System (GIS) Customization
- Develop/Provide Decision Support Tools
- Launch Site Assessments both Federal and Commercial

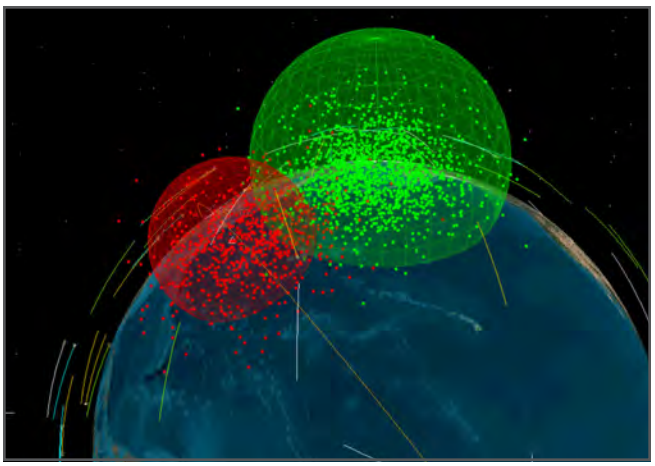


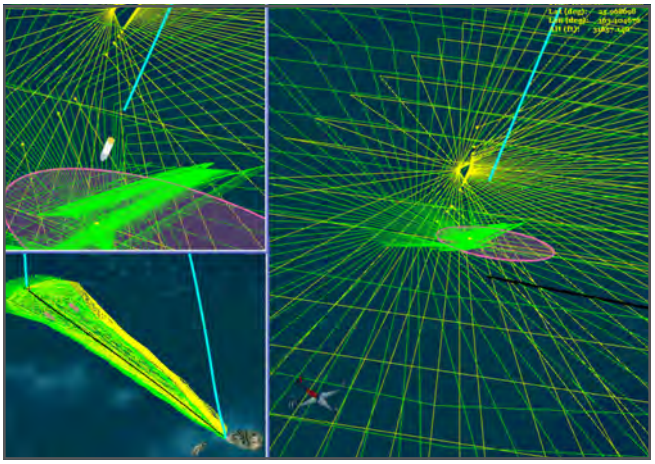
Customers

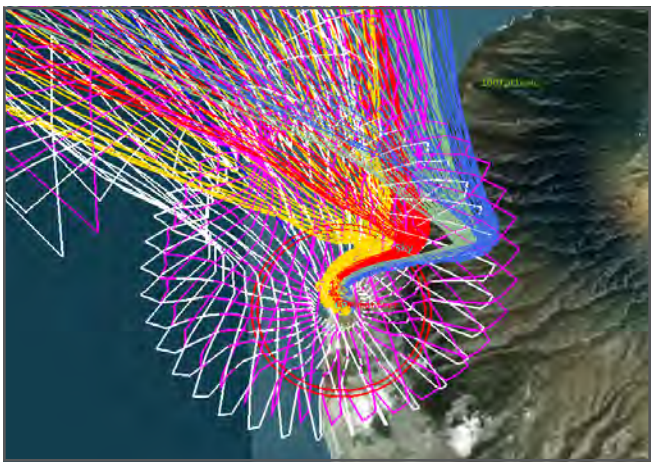
- Ground-based Midcourse Defense (GMD)
- Ground Based Interceptor (GBI)
- White Sands Missile Range
- Yuma Proving Ground
- Space & Missile Defense Command
- Missile Defense Agency
- Marshall Space Flight Center
- Arrow Interceptor
- PAC-3
- LV-2 Target System
- Hera Target System
- Critical Measurements Countermeasures (CMCM)
- THAAD
- Federal Aviation Administration's Office of Commercial Space Transportation (FAA/AST)
- Brazilian Government
- Transport Canada at Churchill, Canada
- U.S. Air Force



Analysis Examples







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M-09-00818