



# TGS

Tactical Ground Station



### Summary

- Provides Theater Tactical Command, Control, and Communications Capability
- Tactical Ground Station Supporting the Joint Tactical Satellite (TacSat) Experiment
- Includes Tactical Ultra High Frequency (UHF) Radio Suite
- Utilize Commercial Off the Shelf/ Government Off the Shelf (COTS/ GOTS) Hardware and Software to Extend Internet Protocol (IP)-based Communications

**The Tactical Ground Station (TGS) is a prototype testbed developed to test and demonstrate the operational utility of Theater Command and Control with Tactical Low-Earth Orbit (LEO) and high altitude long endurance assets and with sensor data downlink and dissemination to the warfighter.**

The TGS capability prototype supports the Army's commitment to provide a tactical ground station in support of the Joint Tactical Satellite (TacSat) Experiment as directed by the Army TacSat Management Plan. This plan designates the U.S. Army Space and Missile Defense Command/ Army Forces Strategic Command (SMDC/ARSTRAT) Future Warfare Center (FWC) as the Army lead for TacSat experimentation and demonstration. Demonstrated TGS capabilities will transition to programs of record, such as the Future Combat System (FCS) and Defense Common Ground Station-Army (DCGS-A). TGS maximizes the use of existing Government Furnished Equipment (GFE) assets.

## Tactical Ground Station

**Experiment Objective**

TGS provides the Space and Missile Defense Battle Lab a demonstration testbed prototype to develop and refine space and high altitude long endurance material and information requirements and tactics, techniques and procedures (TTP) for theater combat commanders command and control (C2) of theater tactical space and high altitude long endurance assets.

- Direct theater tasking of space and high altitude long endurance sensors
- Direct theater downlink of sensor data
- Net Centric planning, tasking & data dissemination to tactical users

**Experiment Description and Functions**

United Kingdom Disaster Monitoring Constellation Satellite (UK-DMC):

- Demonstrated remote access by theater users to task a tactical satellite through TGS via Virtual Mission Operations Center (VMOC)
- Demonstrated TGS web-enabled publish and subscribe architecture for planning and tasking capability
  - Direct Telemetry Tasking & Command (TT&C) of operational UK-DMC environmental satellite
- Demonstrated TGS Tactical TT&C and direct downlink capability via trailer-mounted Air Force Space Command Space and Missile Systems Center (AFSPC/SMC) Phased Array TT&C S-Band antenna
- Demonstrated Web-enabled Internet Protocol (IP) routed with security controls and administration to access and operate a tactical LEO satellite

**TacSat3:**

- Demonstrate theater tasking and downlink of the Advanced Responsive Tactically Effective Military Imaging Spectrometer (ARTEMIS) payload hyperspectral imagery products.
- Utilize existing COTS/GOTS hardware and software for tactically relevant ground-to-space sensor tasking
- Receive and provide space-based Hyper Spectral Imagery tactical products directly to a Brigade Combat Team

**Technical Description**

- Direct theater Command and Control (C2) of Low Earth Orbit (LEO) and future high altitude long endurance assets
- Tactical Satellite (TacSat) telemetry, tracking and command (TT&C) using DoD Space Ground Link System (SGLS) via S-Band
- Mission downlink of on-board processed imagery products via UHF and S-Band
- Integrated commercial satellite communications suite for Ku-band reach back
- Internet Protocol Version 6 (IPv6) compliant
- Provides for future support to Operationally Responsive Space (ORS) assets, including TacSats in LEO
- Spiral development achieved through experimentation and demonstration user feedback as well as Doctrine, Organization, Training, Material, Leaderships, Personnel, Facilities (DOTMLPF) analysis will ensure a capability solution

**Benefit to the Warfighter**

- Dedicates timely and tactically relevant space and high altitude long endurance sensor information to the theater combat commander.
- Cooperative effort for Joint space capabilities between the FWC Army Space & Missile Defense Battle Lab, AF Space Command Space and Missile Systems Center (SMC), Air Force Research Lab (AFRL), Naval Research Lab (NRL), Joint Operationally Responsive Space Office, and NASA



For more information, please contact:  
 U.S. Army Space and Missile Defense Command/  
 Army Forces Strategic Command  
 Public Affairs Office  
 P.O. Box 1500  
 Huntsville, AL 35807-3801  
 Phone: 256-955-3887  
 Fax: 256-955-1214  
 Email: [webmaster@smdc.army.mil](mailto:webmaster@smdc.army.mil)  
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