



NANO  
SATELLITES

# SMDC-ONE

## Beyond line-of-Sight Communication

### What is it?

The U.S. Army Space and Missile Defense Command/Army Forces Strategic Command's SMDC-ONE technology demonstration is designing and testing nanosatellites weighing as little as four-kilograms. These nanosatellites can be placed into a low Earth orbit to receive data files from a ground command and control center. The ground station for the first SMDC-ONE demonstration will be at USASMDC/ARSTRAT on Redstone Arsenal, Ala. The primary objective will be to receive data from multiple ground transmitters and relay that data to a ground station. The intent of this technology demonstration is to build a number of identical satellites and deploy them together into low Earth orbit to simulate enhanced tactical communications capability and evaluate the nanosat performance.

### What has the Army done?

On Apr. 28, 2009, eight SMDC-ONE nanosatellites will be delivered to USASMDC/ARSTRAT after a one-year contract effort. The first SMDC-ONE nanosatellite will be placed into orbit in 2009 and the remaining seven will be placed at a later date.

### What continued efforts does the Army have planned for the future?

To better meet warfighter needs, USASMDC/ARSTRAT is considering mission enabling upgrade features for future nanosatellites to include onboard Global Positioning System capability for greater onboard autonomy, addition of an S-band communications link for increased data transmission, inclusion of a software defined radio for greater transceiver frequency flexibility, and modification of the communications element (radio) to increase available volume for payloads.

### Why is this important to the Army?

To achieve enhanced capabilities for the warfighter from Space, an approach that holds great promise is the deployment of constellations of nanosat-class satellites into low Earth orbit. Because the unit cost for a nanosat is lower (less than \$1 million), large numbers for each specific mission could be built and deployed. What a nanosat may lack in performance and reliability when compared on a per-unit basis to a large traditional military satellite, it makes up by its low cost and potential for persistent presence over given theaters of operations through constellation proliferation.

A nanosat constellation populated by inexpensive Spacecraft could be useful in humanitarian support, stability and support operations and nation building. If a satellite ceases to function, it could be rapidly reconstituted. Nanosats can provide coverage across specific regions, as well as globally. The use of nanosats in such a fashion will enable Unmanned Aerial Vehicle-like performance for communication from Space borne assets that can provide data directly into theaters of operation 

### Resources

#### USASMDC/ARSTRAT Web site

- SMDC-ONE Fact Sheet
- [www.smdc-armyforces.army.mil/ASJ](http://www.smdc-armyforces.army.mil/ASJ)