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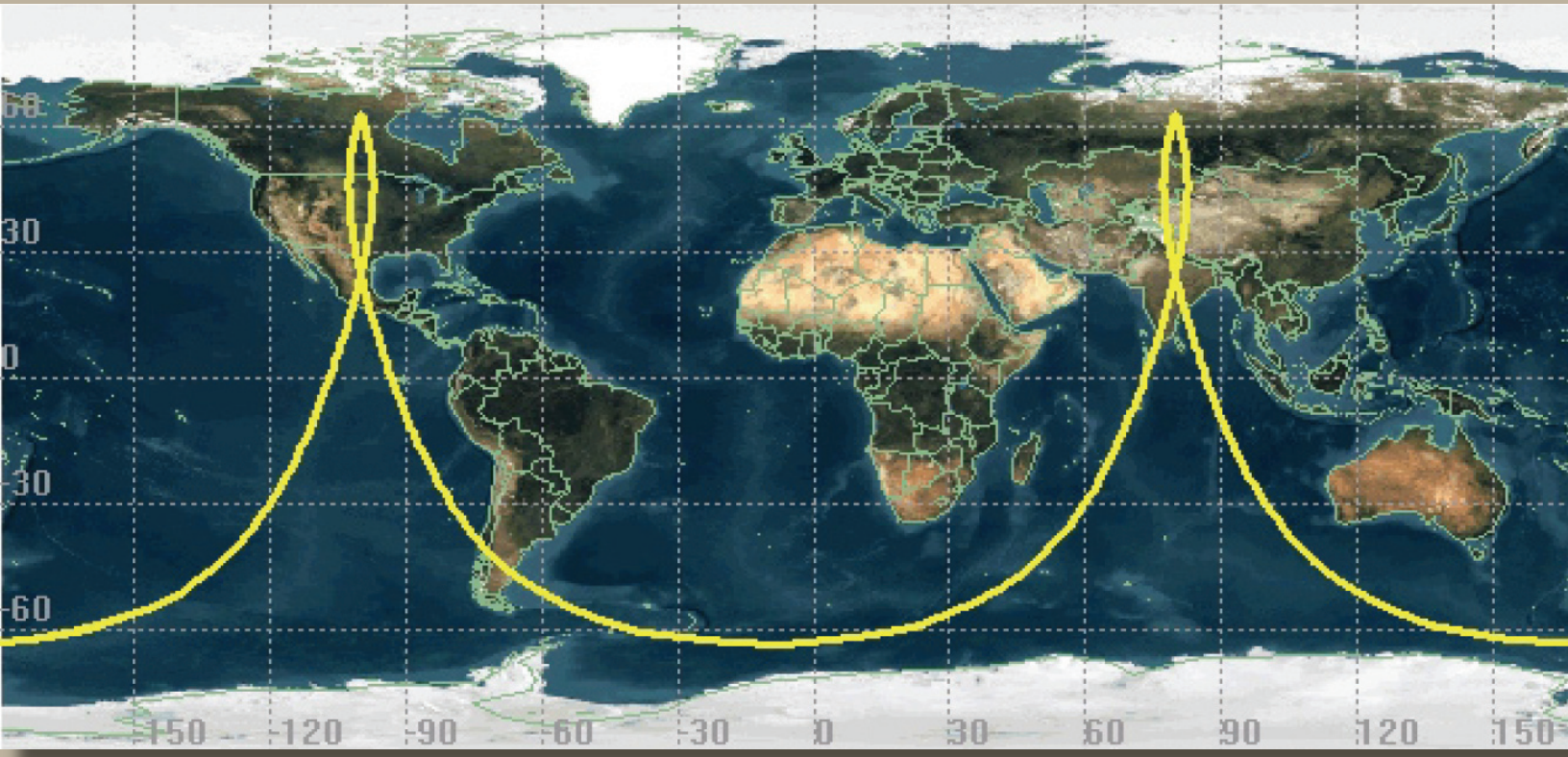
Theater Missile Warning

How it started ... Where it's going

Army Theater Missile Warning was given a jump start on February 25, 1991 when an Iraqi SCUD missile destroyed a barracks housing members of the 14th Quartermaster Detachment in Al Khobar, Saudi Arabia. In the single, most devastating attack on U.S. forces during Desert Storm, 29 Soldiers died and 99 were wounded. This very incident solidified for then Vice-Chief of Staff of the Army, GEN Dennis Reimer, the realization that satellite information on missile launches would be extremely valuable for both Missile Warning and Missile Defense if processed in the theater and communicated immediately. Subsequently, Reimer directed the quick development of the Joint Tactical Ground Station (JTAGS) as the important first step to achieving this goal. Amazingly, JTAGS cost only $30 million and was just four short years in development. Today, JTAGS continues to provide theater missile warning to commands around the globe and is a proven asset.

Like any critical technology, Theater Missile Warning systems must be continually upgraded to improve system performance, provide additional capability, and to address new threats. U.S. Army Space and Missile Defense Command/Army Forces Strategic Command, in coordination with the JTAGS program office, has developed plans to upgrade JTAGS as well as define and develop modernized Theater Missile Warning capabilities. When implemented, this plan will ensure the Army's contribution to Theater Missile Warning and Missile Defense is upgraded to yoke the synergies of net-centricity, improve Combatant Commander's situational awareness, provide enhanced force protection and integrate with new Space systems.

A key capability in JTAGS modernization is the inclusion of signals from the Space Based Infrared System - Highly Elliptical Orbit satellites. This modernization of Space-based missile warning satellite systems has begun and the first Highly Elliptical Orbit satellite is on orbit. This has prompted the first near-term modernization requirement: a modification of the JTAGS system to accept signals from the new satellites. Since these Highly Elliptical Orbit birds do not stay over one spot on Earth, a satellite dish receiver must lock onto and track the satellite to receive continuous download. This is called Auto Track Transfer functionality. This capability will be delivered by leveraging Missile Defense Agency funded Auto Track Transfer server development efforts. Space Based Infrared System - Highly Elliptical Orbit data will be provided to the fielded JTAGS from the continental United States via the current Tactical Dissemination and Reporting landlines. Furthermore, this effort will serve as a pathfinder for



ABOVE:
Figure 1. Highly Elliptical Orbit Ground Track

SBIRS Geostationary Direct Downlink processing given the Highly Elliptical Orbit sensor commonality with the Geostationary scanner. We can expect that operationally relevant Auto Track Transfer (not man-in-the-loop) Space Based Infrared System - Highly Elliptical Orbit track data will be available for JTAGS processing in the Fiscal Year 2008 time frame.

After Space Based Infrared System - Highly Elliptical Orbit data processing capabilities are established, Space Based Infrared System - Geostationary Direct Downlink will be incorporated in two phases. The initial capability will use only the scanning sensor data from the Space Based Infrared System - Geostationary satellite and is scheduled to be fielded circa Fiscal Year 2010. This augments the current Defense Support Program processing and provides an evolutionary increase in capability from the next generation satellites. The final capability will add the Geostationary starting sensor processing circa Fiscal Year 2012. This will provide a revolutionary increase in performance in all mission areas because of faster revisit rates and greater sensor sensitivity. This capability will greatly enhance documented theater requirements.

Concurrent with this growing capability will be an initiative to dismount the JTAGS from the current mobile shelters. JTAGS will be able to be converted from five deployable systems to four in-theater, relocatable systems at fixed sites and one training system. Four will remain operationally employed with one in strategic reserve that will also support Initial Qualification Training.

There is also a vision for the far-term modernization of theater missile warning. The vision end state is to have net-centric Theater Ballistic Missile Warning that is integrated with Theater Missile Defense, to include sensor cueing that will support the characterization of the operational environment. This is to be achieved with upgraded processors running advanced Overhead Non-imaging Infrared algorithms that process the new Space Based Infrared System scanning and staring data. The Army's goal is to improve the effectiveness of Theater Missile Waning using a combination of netted sensors and processors while simultaneously reducing manpower and operational costs. SMDC/ARSTRAT is working to define the requirements and technologies needed to build and employ this netted system.

The upgrades to JTAGS discussed here is just the visible portion of an iceberg as far as growing capabilities in Army Space. The Future Warfare Center is pursuing development of improved, as well as new, Space and Global missile defense capabilities, which could eventually include Operationally Responsive Space and High Altitude as well. New doctrine, new organizations, and new technologies are increasing the Army's need for Space capabilities and making it possible to meet those needs. JTAGS was just the beginning; SMDC/ARSTRAT will continue to bring enhanced warfighting capability to the ground warfighter through advanced Space and Ground-based Missile Defense applications.