



Los Angeles Air Force Base Media Release

SPACE & MISSILE SYSTEMS CENTER (AFSPC)
Office of Public Affairs
483 N. Aviation Blvd.
El Segundo, CA 90245-4659

Release no: 10-11-02
Date: November 12, 2010
Contact: Media Relations Division
Telephone: (310) 653-2369/2368/2479/2370

AEHF-1 Successfully Enters Current Thruster Orbit Raising Operations

LOS ANGELES AIR FORCE BASE, EL SEGUNDO, Calif. – Space and Missile Systems Center recently outlined a plan to allow the Advanced Extremely High Frequency SV-1 spacecraft to successfully reach its operational mission orbit despite a propulsion system anomaly. The anomaly prevented the planned series of three liquid apogee engine burns that were a significant aspect of the orbit raising strategy.

The new plan involves four major stages. The first stage, known as “Parking Burns” stage was designed to use three of the six 5 pound reaction engine assemblies, or REAs, to quickly raise the perigee altitude to reduce drag and attitude disturbances. The second stage, was a series of six REA Apogee Burns where all six of the 5 pound thrusters were fired together to more efficiently raise the perigee path and lower inclination. The third stage involves firing two high-efficiency hall current thrusters, or HCTs, for as long as 12 hours around the apogee altitude. This stage is planned to last between seven and nine months.

The final stage will require a near-continuous firing of the HCTs to adjust to the final mission orbit and last approximately three months.

Sept. 7, 2010, marked the completion of the first phase. AEHF-1 successfully completed the final burn in a series of five burns using three of the six 5 pound thrusters to bring the orbit to a perigee altitude of 1156km, an inclination of 19.9 degrees, and apogee altitude remained at 50,000km per plan. The 5 pound thrusters performed as-designed and as the engineers planned.

Sept. 22, 2010, marked the completion of the second phase. AEHF-1 successfully completed the final burn in the series of six burns using the six 5 pound thrusters to bring the AEHF-1 orbit to a

perigee altitude of 4712 km, at an inclination of 15 degrees. An apogee altitude remained at 50,000 km per plan. The 5 pound thrusters performed as designed and as the engineers planned.

Since then, the mission operations team has successfully deployed the AEHF-1 solar arrays and completed a series of operational readiness checkouts, followed by the characterization and conditioning of the HCT system. On Oct. 20 2010, during the 100th apogee of the AEHF-1 transfer mission, two HCTs fired for approximately nine hours marking the start of stage 3, the HCT Apogee stage. These burns will continue every orbit, centered on apogee to raise the perigee and lower the inclination on the path to our intended mission orbit. The HCT system is performing as designed and as the engineers planned.

Throughout the anomaly recovery, re-planning and orbit raising operations, a government and contractor team has worked tirelessly to ensure the mission success of this crucial national asset. Upon reaching orbit, AEHF will provide a significant enhancement to our Nation's survivable satellite communications by allowing us to communicate through a variety of scenarios--adverse weather, nuclear scintillation or contested electromagnetic environments. AEHF will provide tactical and strategic satellite communications to Army, Navy, Air Force and Marine users, as well as a host of other DoD agencies. AEHF will extend the capabilities of the operational Milstar satellite constellation with an order of magnitude increase in protected communications capability.

AEHF is developed by the MILSATCOM Systems Wing at Los Angeles AFB, CA. The MILSATCOM Systems Wing executes an annual budget of over \$2.4B as it plans for, acquires and sustains space-based global communications in support of the President, Secretary of Defense and combat forces. The \$40B MILSATCOM enterprise consists of satellites, terminals and control stations and provides communications for over 16,000 air, land and sea platforms.

Media representatives who would like to interview a subject matter expert or learn more about the MILSATCOM Programs should send an e-mail to: smcpa.media@losangeles.af.mil

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