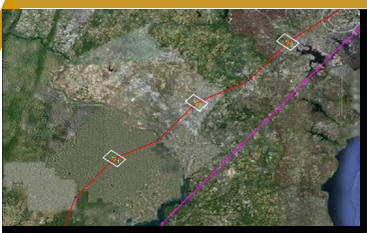
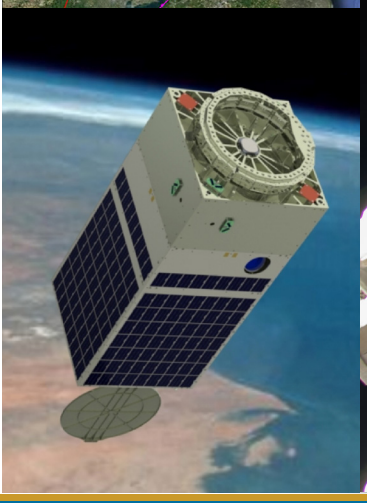
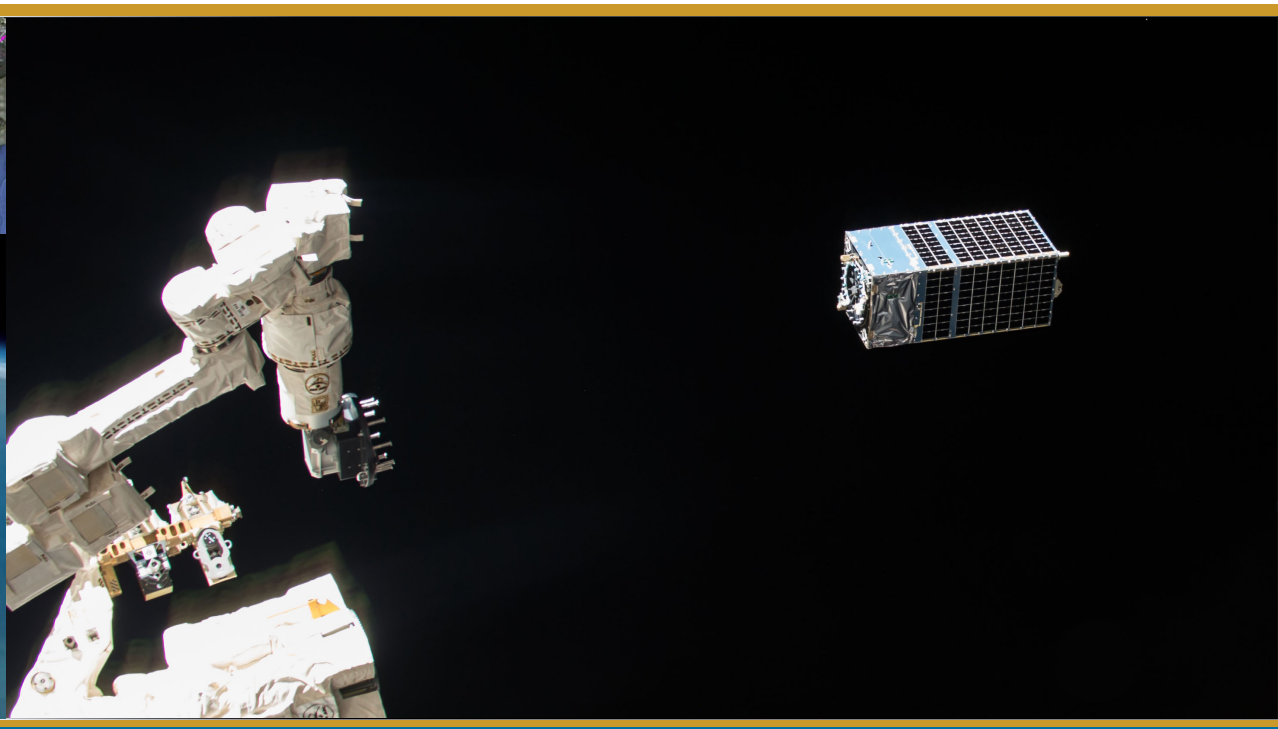
KESTREL EYE VISIBLE IMAGERY MICROSATELLITE JOINT CAPABILITIES TECHNOLOGY DEMONSTRATION (KESTREL EYE JCTD)







A small, low-cost, visible-imagery satellite providing images rapidly to the tactical-level ground Warfighter

The Technical Center developed the Kestrel Eye Joint Capabilities Technology Demonstration as an electro-optical microsatellite-class imagery satellite for tasking by the tactical ground component Warfighter. Capable of producing tactically useful imagery, Kestrel Eye's data could be downlinked directly to the same Warfighter via a data relay network that is also accessible by other Warfighters in theater without any continental United States relay. The goal of Kestrel Eye is to demonstrate a tactical space-based imagery microsatellite. A Kestrel Eye satellite constellation provides dramatically lower unit cost than typical space-based assets. With this low cost, large numbers of satellites can be procured enabling the system to be dedicated to the tactical Warfighter.

Key characteristics of Kestrel Eye JCTD include:

- Microsatellite technology demonstrator weighing about 50 kg
- Electro-optical imaging satellite with tactically useful resolution
- Low cost: <$2M per spacecraft in production mode
- Operational life of greater than one year in low earth orbit
- Tactically responsive: ability to task and receive data from the satellite during the same pass overhead
- As revolutionary as moving from the "film bucket return" era to digital transmission: persistent availability down to the Soldier

KESTREL EYE JCTD

The U.S. Army Space and Missile Defense Command Technical Center's Kestrel Eye program, originally begun in 2007 when it transferred from the Defense Advanced Research Projects Agency to USASMDC, will extend the Unmanned Aerial Vehicle paradigm into space: a dramatically lower unit cost and proliferated numbers of satellites enabling the system to be dedicated to and operated by warfighters who receive only parceled-out service today from more powerful, expensive and far less numerous assets.

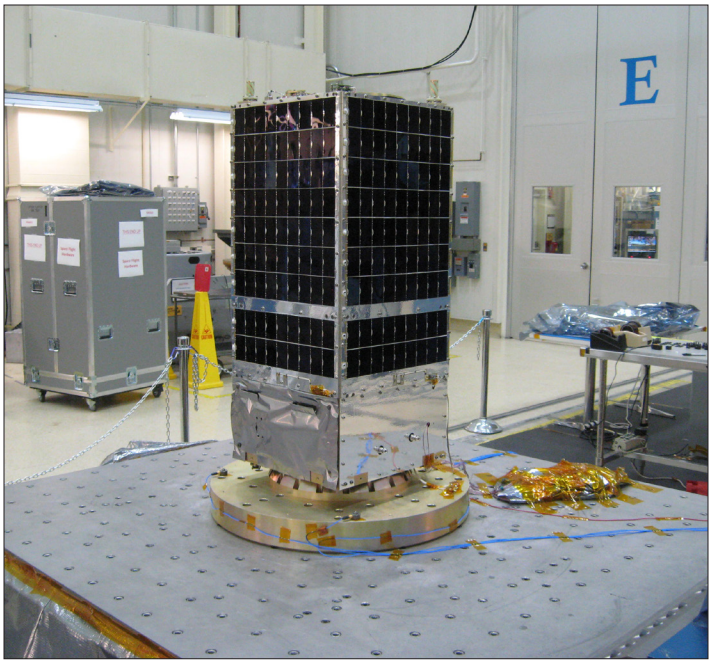
Kestrel Eye advantages include:

- Smaller size and greater number than traditional satellites; affordable, persistent presence
- Graceful degradation: no single launch failure or satellite failure causes complete loss of service

In 2012, the Army, in conjunction with the Office of the Secretary of Defense Joint Capabilities Technology Demonstration or JCTD, program, initiated the Kestrel Eye JCTD as an electro-optical microsatellite-class imagery satellite to support the tactical Warfighter. As a JCTD, the Kestrel Eye program teamed with the Office of the Secretary of Defense, the combatant command sponsor – U.S. Pacific Command, and transition agent – the Army Program Executive Office Missiles and Space.

Thanks to a Department of Defense Space Test Program-funded launch, Kestrel Eye was deployed into space and activated Oct. 24, 2017, and once it was a safe distance from the International Space Station, the satellite powered up and received signals from the ground station to begin the technical checkout of the satellite.

The technical checkout was to verify its functionality and to make adjustments. The next major step, which occured April 28, 2018, was to open the aperature cover and begin to take images. The satellite continuted to take images through the spring and summer in preparation for the Military Utility Assessment. The MUA was conducted at U.S. Pacific Command in September 2018. The major findings of the MUA were: Kestrel Eye JCTD successfully provided rapid imagery directly from the satellite to the tactical ground station; and the overall assessment conclusion recommending further development of the system to fully demonstrate its readiness to be a program of record.



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