



NOTE: The USAF Battlelab Plan for 1998 contains the following:

UFO is an acronym where "U" stands for UHF

"F" stands for Follow and "O" stands for On (referring to a type of satellite)

This explains the need for the terminology [UER/UCT](#).

It's the latest wrinkle which REALLY muddies the waters!

USAF BATTLELAB TO IMPROVE SATELLITE DETECTION

By David Atkinson
Defense Weekly 10 August 1998

While the Air Force knows where almost all objects in low-earth orbit are, it doesn't know exactly where--so the service wants to improve the way it detects and tracks objects in orbit.

In order to support the Air Force's space control mission, which aims to secure freedom of maneuver in orbital space for the United States and its allies, the Air Force's Space Battlelab at Schriever AFB, Colo., is undertaking several studies to improve both initial detection of orbiting bodies, the way the environment acts on them, and the methods used to better predict where the objects will be at any given time.

"Several initiatives are being worked on in space surveillance," Lt. Col. Robert Bivins, Commander of the Air Force Battlelab, told Defense Daily in a recent telephone interview.

The Air Force currently tracks more than 8,000 objects in orbit. Most are debris, but a large number are satellites, both U.S. and foreign. In the future, some will belong to or provide services to enemy states or organizations.

One program, known as Satellite Tracking using Ambient Radio Frequency (STAR), would use highly sensitive passive listening systems to pinpoint the position of satellites by their reflection of common commercial television and radio signals.

"The goal is to see a fairly small-sized target out to 1,000 kilometers," Bivens said.

In April, the STAR program began tracking representative satellites using a large passive array in rural Maryland. The program is in the design study phase for both fixed and mobile systems. One of the goals of the program is to free satellite detection from the large, fixed arrays now used and

make the process both passive and world-wide.

"This is a way, if we were able to put passive detectors around the world, we would have better situational awareness [in space]," Bivins said.

[Passive in this sense means no radiated signals that can be detected by an enemy.]

A final government analysis of whether the program merits additional research is scheduled for November.

Finding the satellites, however, is not the only problem. The data and methodology used to track and predict the position of objects in space can also be improved, Bivins said.

First, the Space Battlelab is examining whether using increased processing power to compute the position of an orbital body will dramatically improve the accuracy of the track.

"Based on our radar capability, we can only be so accurate," Bivins said. The program looks to increase the number of times per minute that data on objects is collected. "Right now, we do one observation a minute as it passes through the SSN [Space Surveillance Network]. If we increase that exponentially, it should improve our predictions." But, Bivins pointed out, that will only work if the data put into the prediction is accurate.

One way that the battlelab is seeking to improve that data is through the Modified Atmospheric Density Model (MADM) initiative. This effort will try to improve the modeling of the effects of atmospheric drag and solar environments on the path of satellites.

The battlelab is using data from well-known objects in orbit to determine differences between actual and predicted paths. The differences can then be extrapolated back and used to model the environmental effects on other objects in similar orbital paths.

"Based on our radar capability, we can only be so accurate," Bivins said. "The hope is that the environmental prediction will allow us to improve our accuracy."

That accuracy will not only allow the U.S. Space Command to keep an eye on its own systems, but will also make the targeting of hostile satellites easier.

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