BEHIND THE MEXICANA BANKRUPTCY

$7.95 AUGUST 9, 2010

AVIATION WEEK & SPACE TECHNOLOGY

Israel's Technology Reach

Satellite Collision Avoidance

SpaceX's Mars Plans

The McGraw-Hill Companies

AviationWeek.com/awst

Deconflicting

Three major satellite operators launch automated position-monitoring tool

FRANK MORRING, JR./WASHINGTON

A new cooperative data tool will help keep geostationary commercial communications satellites from colliding or causing signal interference, a service its initiators hope to extend to government spacecraft and satellites in low Earth orbit as well.

Spurred in part by the February 2009 collision between an active Iridium spacecraft and a defunct Russian military-communications satellite, the new Space Data Center automatically plots conjunctions in the orbits of satellites owned by participating operators and alerts their control centers to the problem.

The non-profit organization that runs the system, at present limited to 126 satellites in geostationary orbit, is already in talks with the U.S. Strategic Command (Stratcom) on trading the data it has for better space-debris ephemera and a heads-up when a commercial spacecraft in the system is in the way of a military spacecraft.

"There's good, reasonable assurance that the data we have is accurate," says Tobias Nassif, vice president of satellite operations and engineering for Intelsat and a director of the new Space Data Association. "And in exchange [Stratcom] can provide us some more accurate data on orbital debris and also warn us of impending collisions with DOD [Defense Department] assets."

The talks likely will meet with cooperation from Stratcom and the U.S. Air Force, which is in charge of space situational awareness for the command. The U.S. military has been working the problem from the other end since the satellite collision last year, adding personnel and computer power to the challenge of preventing spacecraft collisions (*AW&ST* July 6, 2009, p. 18).

Intelsat was joined by SES and Inmarsat in setting up the Space Data Association, which is organized on the Isle of Man. It is an offshoot of the Socrates-Geo system set up before the Iridium collision by Analytical Graphics Inc.'s Center for Space Standards and Innovation, which performed some of the same functions as the Space Data Center.

ORBITAL SCIENCES CORP.

New satellite-position data center should help avoid collisions, interference from wayward spacecraft like Galaxy 15.

There actually is no "bricks-and-mortar" center, only a distributed network with servers in the U.S. and U.K. running software developed under contract by Analytic Graphics. For greater geographic dispersion, the Space Data Center also is looking for server space in Asia.

"This is really an organization put together by the operators for direct support of operations," Nassif says. "We're not a trade association; we're not a lobbying group. We, as the operators, saw a need to better share data amongst each other to help avoid collisions."

In his role as chief of Intelsat satellite operations, Nassif is responsible for handling his company's wayward Galaxy 15 satellite, which has been uncontrollable because of an electronics glitch since April. The spacecraft has been drifting to the east in the geostationary belt since then, forcing Intelsat to find ways to avoid collisions and interference with other spacecraft's signals.

Galaxy 15 is expected to stop generating electricity when its solar arrays drift away from the Sun this month, and the problem developed before the new data center went on line. But it presents exactly the type of situation the new system is meant to handle.

In addition to data on spacecraft positions and possible conflicts, plans call for the center to generate data on radio-interference mitigation beginning in January. It also will enable controllers at member companies to test their collision-avoidance plans, calculating how they will affect the projected conjunction before the spacecraft are commanded to shift their orbits. And it will include contact information at other spacecraft operators, so personnel can quickly reach each other and work together to prevent collisions and interference.

"We think there are other things that we can share among ourselves, operator to operator, to help improve our operations and safety in space," Nassif says. "Now, all three of us as companies are pretty fierce competitors, so to do something like this is a pretty major step."

In addition to the U.S. military, the three founding companies are in discussions with NASA, the U.S. National Oceanic and Atmospheric Administration, and the European Space Agency about joining the Space Data Center. They are also finalizing a fee structure—which Nassif says will be modest—to encourage other commercial operators to join for the broadest possible coverage—including low Earth orbit data. At their website —www.space-data.org—membership information will be available.

"We've had a lot of folks contact us saying they want to know how to join, or what the cost is to join," Nassif says.