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JSPOC Conjunction Alerts Could Be Improved, Group Says

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WASHINGTON — U.S. Air Force warnings to satellite operators of impending close orbital passes involving their satellites are not reliable, primarily because the service is unable to automatically process precise orbit-location data available from these companies, according to industry officials.

A study by satellite operator Intelsat found that the majority of so-called conjunction summary messages it received from the Air Force's Joint Space Operations Center (JSPOC) in September 2011 proved upon further analysis to be false alarms, said Tobias Nassif, Intelsat's vice president of satellite operations and engineering. Nassif also is director of the Space Data Association (SDA), a data-sharing cooperative among commercial satellite operators whose goal is to prevent orbital collisions and radio frequency interference.

Similarly, Intelsat has independently identified a number of potential close approaches that did not generate warnings from the JSPOC, he said.

Nassif said the SDA has met with officials at Strategic Command, which oversees JSPOC, to discuss the "feasibility of providing, on an experimental basis, a service able to securely combine and process operator-provided satellite location data with high-fidelity" government data inside a government facility to provide a more accurate picture of the space environment. The SDA has not received a response on its proposal, which is being explored with other governments as well, he said.

Conjunction summary messages prompt satellite operators to provide precise data on the affected satellite back to the JSPOC, which then runs a targeted analysis integrating that information with data from government sensors to determine whether evasive maneuvers are necessary, Nassif said. Even if fuel-consuming maneuvers are ultimately deemed unnecessary, time and resources are spent on a process that could be less costly and more efficient, he said.

In a written response to questions, U.S. Navy Capt. Jeffrey Bender, a spokesman for Strategic Command, acknowledged that JSPOC's conjunction assessment network is a closed system that cannot automatically process operator-provided satellite location data. "We do, however, have a manual process to receive owner/operator ephemeris data. The owner/operator ephemeris is then available for use in our standard conjunction assessment process," he said.

Commercial satellite owners typically rely on two primary data sources to ensure smooth operations of their fleets in the increasingly crowded orbital environment. One is the so-called two-line element orbital parameter data made publicly available by JSPOC, which tracks some 20,000 Earth-orbiting objects via its Space Surveillance Network of ground- and space-based sensors. The operators have more precise information on the location of their own satellites, which depending on design, size and mission might be maneuvered up to eight times a day.

JSPOC's conjunction summary messages are based on Space Surveillance Network data that are more accurate than the publicly released two-line elements. However, these data are not updated often enough to accurately predict conjunctions involving commercial satellites, Nassif said.

In contrast, commercial satellite owners have extremely precise information on the whereabouts of their assets, Nassif said. Washington- and Luxembourg-based Intelsat, for example, conducts

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