

Space Event Processing

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Space systems have become a critical component of US military operations. Military commanders rely on navigation, communications, environmental surveillance, and warning information received from or provided via space systems. Any degradation to these systems could have a significant impact on the success of a military operation. In addition, the United States must protect its ground assets from intelligence collection by other countries.

The US Space Command (USSPACECOM) was established in 1985 to normalize the use of space in support of US deterrence capabilities and to centralize all military activity related to US space systems. USSPACECOM advocated the space requirements of the other unified commanders. In 2002 USSPACECOM functions were transferred to the US Strategic Command (USSTRATCOM), and USSPACECOM was inactivated.¹

USSTRATCOM conducts space operations through its joint functional component command, JFCC Space, which is headquartered at Vandenberg AFB, California, and commanded by the Fourteenth Air Force commander.²

Space Events

A space event is an activity impacting on a US space asset or an activity involving another nation's space assets. Possible space events include the following:

- New foreign launch (NFL)
- Antisatellite (ASAT) launch
- Preplanned launch (PPL)
- Maneuvers
- Separations
- Reentries
- Breakups

A new foreign launch is defined as the launch of a satellite by a foreign country or agency without prior coordination with USSTRATCOM. An ASAT launch is a specific type of NFL that is designed to destroy or degrade the capabilities of a satellite belonging to the United States or another nation. An ASAT launch is typically considered to be a hostile act by the launching nation. The space surveillance network (SSN) is used to detect, track, identify, and catalog the objects from these space launches. The SSN will be discussed in further detail in chapter 19.

A preplanned launch is a space launch in which USSTRATCOM has received advance notification and launch information from the launching agency and/or payload(s) owner about the payload mission, launch profile, and parameters. There are two types

of PPLs: cooperative and domestic. A domestic launch refers to a PPL that is launched from within the United States or from a US platform. A cooperative launch refers to a PPL that is launched by a nation other than the United States but with prior coordination with USSTRATCOM.

A maneuver is simply a change in orbit of a satellite. This change can occur with the satellite orbit's size (shape), its inclination (orbital plane), or both.³ Most satellite maneuvers are considered station keeping, which means the satellite is being moved slightly in order to keep it in a particular orbit around the earth. However, there are cases where a satellite may maneuver for repositioning, end-of-life preparations, or other reasons. In these cases the Joint Space Operations Center (JSpOC) will coordinate with various intelligence sources to determine the purpose of these maneuvers and send warnings to forward users if necessary.⁴

A separation is the intentional disconnection of one or more parts of a satellite from its main body. There are certain satellites that have been specifically designed to perform separation missions. Satellite separations are usually confirmed by intelligence sources.

A reentry refers to a near-Earth space object that, due to the drag force of the atmosphere and gravitational effects, can no longer remain in orbit and falls back to Earth. Objects that survive reentry may generate false indications of a missile threat to the US or Russian missile-warning systems. As a result, the JSpOC manages a reentry assessment program that predicts atmospheric reentry times for these reentering space objects and provides notification to the National Military Command Center (NMCC).

A satellite breakup is defined as the unintentional separation of several objects from the main body of a payload, rocket body, or other orbiting object. Most breakups are believed to have been caused by propulsion-related events or accidental detonations; however, the causes of some satellite breakups are simply unknown. The number of new objects detected as a result of a breakup will vary greatly. Such variation is due to the satellite's orbital parameters, collision variants, and the availability of space surveillance sites that have coverage of the event.

Responding to Space Events

When a space event occurs, the JSpOC at Vandenberg AFB, California, is responsible for determining if the event is accidental, incidental, or the result of a hostile action directed against the United States and forwarding its assessment to USSTRATCOM. The JSpOC gathers information from a variety of sources, especially its Combat Operations Division's Space Situational Awareness Operations (SSA OPS) Cell (fig. 12-1) to make this determination.

Once the USSTRATCOM commander has been provided with the JSpOC's report, the commander may request a space event conference from the NMCC. During the space event conference, USSTRATCOM describes the activity and provides one of the following assessments:

- NO—An attack against a space system has not occurred nor is one in progress.
- CONCERN—Events are occurring that have raised the level of concern. Further assessment is necessary to determine the nature of the activity involved. Pending

completion of the ongoing assessment, precautionary measures to enhance responsiveness or survivability are suggested.

- YES—A verified attack against a space system has occurred. This means that all source data confirms the hostile event has occurred or is occurring.

The assessment provided by USSTRATCOM will determine what courses of action to take in response to the space event.



Figure 12-1. JSpOC SSA OPS Cell operator. (USAF photo)

Conclusion

The nature of space operations is such that its theater of operations is not normally host to the personnel affected. Also, all space ground facilities are located in another combatant commander's area of responsibility. As a result, when a verified attack occurs or is in progress, USSTRATCOM relies on the other unified commanders to protect US assets and, when necessary, respond to space events with force. The Joint Space Operations Center, along with other agencies within the space and intelligence community, provides the unified commanders with the information necessary to avert or mitigate threats to space systems and their associated ground-support systems. For additional information regarding space event processing, contact the JSpOC Combat Operations Division at Vandenberg AFB.

Notes

1. USSTRATCOM, "U.S. Strategic Command History," <http://www.stratcom.mil/about-ch.html> (accessed 16 January 2008).
2. USSTRATCOM, "Functional Components," http://www.stratcom.mil/organization-fnc_comp.html (accessed 16 January 2008).
3. David Wright, Laura Grego, and Lisbeth Gronlund, *The Physics of Space Security: A Reference Manual*, 183, http://www.amacad.org/publications/Physics_of_Space_Security.pdf (accessed 23 January 2008).
4. Briefing, 1st Space Control Squadron, 614th Space Operations Group, subject: Welcome to the 1st Space Control Squadron, 4 June 2007.