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SBIRS GEO

Space Based Infrared System

The Next Generation in Global, Persistent IR Surveillance



NORTHROP GRUMMAN



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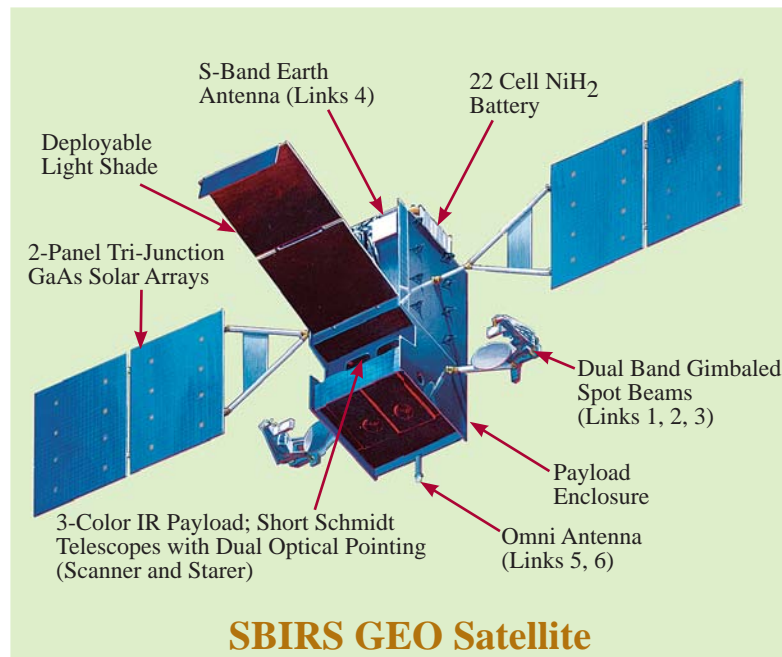
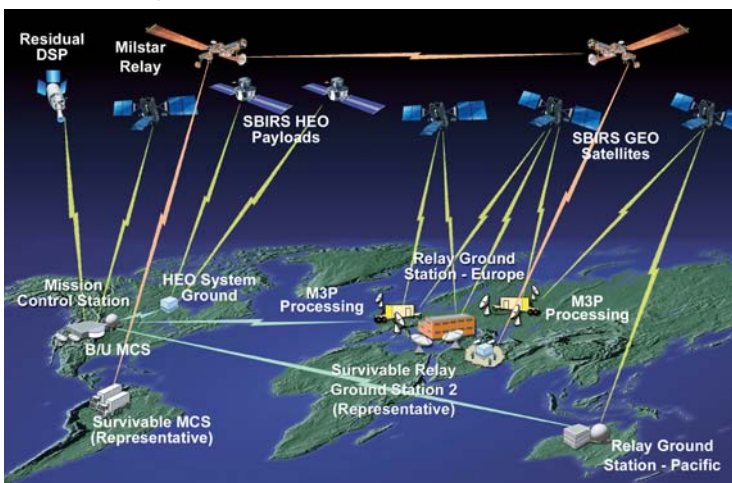
SBIRS Mission

SBIRS is a space based infrared system providing data for missile warning, missile defense, technical intelligence, and battlespace awareness. The program includes geosynchronous earth orbit (GEO) satellites, payloads in highly elliptical earth orbit (HEO), and ground processing and control elements. The integrated system supports multiple missions simultaneously, while meeting stringent availability requirements. Increment 1 was operational with legacy DSP satellites in Dec. 2001; subsequent deliveries included the Interim Backup Mission Control Station, Integrated Training Suite, and initial missile defense capabilities. The first and second HEO payloads were announced on-orbit (with mission performance surpassing specifications) by the Air Force in Nov. 2006 and June 2008, respectively. The first two GEO spacecraft are being readied for launch. Additional HEO and GEO assets are also in work.

Ground System Features

- Manages SBIRS objective constellation of 4 GEO satellites, 2 HEO payloads, and legacy DSP satellites
- Key functions
 - Mission planning/payload tasking
 - Constellation management/TT&C
 - Mission processing
 - Event reporting and data distribution
 - Ground control
- Provides normal, survivable, and enduring operating modes
 - Primary and backup mission control stations and remote ground stations in CONUS and overseas
 - Distributed high availability server architecture
- Operated by Air Force Space Command's 2nd Space Warning Squadron and 11th Space Warning Squadron

SBIRS System Architecture



SBIRS GEO Satellite

Satellite Features

- A2100 derived spacecraft, 12-year design life, 9.8-year MMD
- ~10,000-lb predicted wet weight at launch
- 3-axis stabilized with 0.05 deg pointing accuracy; solar flyer attitude control
- RH-32 rad-hardened single board computers with reloadable flight software
- ~2800 watts generated by GaAs solar arrays
- GPS receiver with Selected Availability Secure Anti-Spoof Module (SAASM)
- ~1000-lb infrared payload: scanning and staring sensors
 - 3 colors: short-wave, mid-wave, and see-to-ground sensor-chip assemblies
 - Short Schmidt telescopes with dual optical pointing
 - Agile precision pointing and control
 - Passive thermal cooling
- Secure communications links for normal, survivable, and enduring operations

Link	Band	Function	
1-S	down	Ka	Survivable mission data
1-T	down	Ka	Normal mission data
2	up	Q	Anti-jam commanding
3	down	Ka	Wideband sensor data
4	down	S	Theater mission downlink
5	down	S	Backup SGLS telemetry downlink
6	up	S	Backup SGLS commanding

SBIRS Team

Air Force acquisition of SBIRS is managed by the Space and Missile Systems Center in Los Angeles, Calif. Lockheed Martin Space Systems Company is the prime contractor responsible for program management, systems engineering, and spacecraft development. Lockheed Martin Information Systems and Global Solutions develops ground systems. Northrop Grumman Electronic Systems is the payload subcontractor and supports systems engineering and ground mission processing development. SBIRS work locations include Sunnyvale and Azusa, Calif; Boulder and Colorado Springs, Colo; Stennis, Miss; and New Town, Pa.

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