

SPACE BASED INFRARED SYSTEMS

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Mission

The Space-Based Infrared System (SBIRS) will replace the stalwart Defense Support Program (DSP) System as a key part of North America's missile early warning and defense systems. SBIRS will provide critical functions for protecting the United States and its allies by supporting four mission areas: Missile Warning (MW), Missile Defense (MD), Battlespace Awareness (BA), and Technical Intelligence (TI). SBIRS is designed to perform these critical missions well into the 21st century.

Features

The SBIRS constellation will consist of infrared (IR) sensor payloads on host satellites in Highly Elliptical Orbit (HEO) and two IR sensors each on dedicated SBIRS satellites in Geosynchronous Earth Orbit (GEO). The HEO sensor is designed to detect the launch of Submarine Launched Ballistic Missiles from the north polar region and can be tasked to perform other IR detection missions as well. The GEO scanning sensor is designed to perform the Strategic MW mission, the Global TI, as well as the initial phase of the Strategic MD mission. It provides a shorter revisit time and greater sensitivity than the DSP sensor over its full field of view. The GEO staring sensor is designed to perform the Theater MW and Theater MD missions, the BA mission, the TI mission in focus areas, and the final phase of the Strategic MD mission. It provides step-stare or dedicated stare operations over smaller geographic regions than the scanning sensor.

Ground control and mission data analysis for the new SBIRS GEO satellites and HEO payloads will be performed by the 2nd Space Warning Squadron (SWS) in the Mission Control Station (MCS) at Buckley AFB, CO, as it currently conducts for the DSP satellites.

Ground control of the HEO sensors is currently performed by the 11th SWS in the Mission Control Station Backup (MCSB) at Schriever AFB, CO. The ground architecture also consists of the Interim MCSB (IMCSB) in Boulder, CO, Relay Ground Stations (RGS) located around the world and a Mobile Ground System (MGS). The SBIRS Survivable Endurable Evolution (S2E2) will replace the MGS. The US Army's in-theater Joint Tactical Ground Stations (JTAGS) units, which currently receive and process DSP data, will be transitioned to receive and process SBIRS sensor data.

Background

The Department of Defense recognized the need to replace the venerable DSP system in a summer study completed in Sep 1994. SBIRS achieved Increment 1 Initial Operation Capability (IOC) on 18 Dec 2001 when the MCS consolidated command and control and data processing elements from legacy systems into a modern peacetime facility, processing all Air Force and other IR data in a fused manner. The first HEO payload was operationally certified by United States Strategic Command (USSTRATCOM) on 5 Dec 2008 for use in the Strategic and Theater MW missions. It has also been certified by the National Geospatial Agency (NGA) for use in the TI mission. The second HEO payload was operationally certified by USSTRATCOM on 7 Aug 2009. The first GEO satellite is expected to launch in calendar year 2011. SBIRS Increment 2 is the designation of the full deployment of the new SBIRS constellation of satellites and sensors, along with the new Ground Segment hardware and software.

General Characteristics

Primary missions: Missile Warning, Missile Defense, Battlespace -Awareness, Technical Intelligence

Contractor Team: Lockheed Martin, Northrop Grumman

Launch Weight (GEO): 10656 pounds (4833 kilograms) max wet weight at launch

On-orbit Weight (GEO): 5603 pounds (2547 kilograms) initial on-orbit estimated wet weight

Weight (HEO): 536 pounds (243 kilograms)

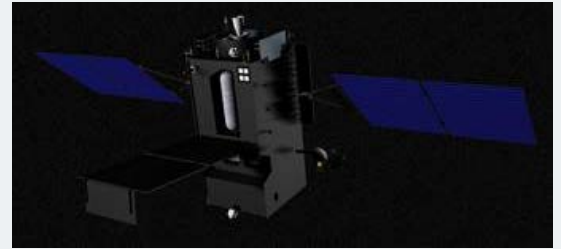
Orbit Altitude (GEO): Approximately 22,300 miles (35,970 kilometers)

Orbit Altitude (HEO): Classified

Power (GEO): Requires approximately 2361 watts (working power at end of life)

Power (HEO): Payload requires approximately 345 watts (maximum average)

Photos



SBIRS High features a mix of four geosynchronous earth orbit (GEO) satellites, two highly elliptical earth orbit (HEO) payloads, and associated ground hardware and software. SBIRS High will have both improved sensor flexibility and sensitivity. Sensors will cover short-wave infrared like its predecessor, expanded mid-wave infrared and see-to-the-ground bands allowing it to perform a broader set of missions as compared to DSP.

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Related Links

- [Space Based Infrared Systems Animation](#)

Dimensions (GEO): 7 ft x 6.3 ft x 19.7 ft (stowed), 48.6 ft x 22.4 ft x 19.7 ft (deployed)

Dimensions (HEO): 6.8 ft x 3.9 ft x 2.9 ft

Date Deployed (GEO): May 2011

Date Certified (HEO): 5 Dec 2008

Latest Satellite Block: HEO payloads 3-4 and GEO satellites 3-4 on contract

7 Jun 2010

GEO Satellite Unit Cost: \$1287.85* (TY\$)

* The above is the Average Procurement Unit Cost as reported in the Defense Acquisition Executive Summary Operational Inventory

(Current as of March 2013)

Point of Contact: Air Force Space Command Public Affairs Office;
150 Vandenberg St., Suite 1105; Peterson AFB, Colo., 80914-4500;
DSN 692-3731 or (719) 554-3731.