

Lockheed Martin Solar X-Ray Imager On NOAA GOES-15 Spacecraft Sees 'First Light'

The Solar X-ray Imager (SXI) instrument aboard the NOAA GOES-15 spacecraft has seen "first light." SXI was designed and built by Lockheed Martin, at its Space Systems Advanced Technology Center (ATC) in Palo Alto, for the NASA Goddard Space Flight Center (GSFC) in Greenbelt, Md.

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GOES-15 launched on March 4, 2010 from Cape Canaveral, Fla., but the first image from SXI was a long time coming. Scientists and engineers from NASA, the National Oceanic and Atmospheric Administration (NOAA), and Lockheed Martin have been working to bring the Solar X-ray Imager (SXI) instrument to full functionality since the Geostationary Operational Environmental Satellite (GOES)-15, formerly known as the GOES-P satellite achieved orbit.

"Since the early checkout of GOES-15 and the anomalous turn-on of the Solar X-ray Imager, the team has been aggressively pursuing all avenues to recover the instrument," said Andre' Dress, GOES N-P Deputy Project Manager at NASA's Goddard Space Flight Center in Greenbelt, Md. "Frankly, we were down to our last straw when all the teams' hard work and efforts finally paid off. We now believe we have a full recovery of the instrument's functionality! It's an incredible story and a true testament of our NASA/contractor teams expertise, hard work and determination."

On June 3, the GOES 15 Solar X-ray Imager finally came on-line. Scientists and engineers had subjected SXI to a series of long duration turn-on tests in the hopes of clearing the short. About 16 hours into the testing, the instrument voltages returned to normal values and SXI now appears to be functioning properly.

"We were facing a tough problem when we first attempted to bring SXI on line," said George Koerner, SXI program manager at the ATC. "But because of our ability to bring together subject matter experts from both government and industry, to move forward step by step, and to work as a team patiently and persistently, together we achieved mission success. This is an enormously satisfying outcome."

Since its recovery, several test solar images have also been subsequently taken successfully. The GOES team continue to assess the health of the instrument. This new round of testing will assess SXI's total functionality. That functionality means the team will capture images of the sun with the camera to assess whether the camera is properly processing image data.

"I don't think most people realize how important these space weather instruments are in our everyday life," Dress said. "This data is used by the U.S. Department of Defense, NOAA, NASA, and the Federal Aviation Administration (FAA) in protecting our space assets, land-based assets and directing flight paths for the FAA."

GOES-15 will join three other NOAA operational GOES spacecraft that help the agency's forecasters track life-threatening weather and solar activity that can impact the satellite-based electronics and communications industry. NASA's testing of the spacecraft and its instruments will continue through the entire post-launch test period expected to end in late August 2010. This will be followed by a series of NOAA Science Tests. The GOES series of U.S. satellites are developed by a joint NASA-NOAA-Industry partnership, launched by NASA (with industry partners), and operated by NOAA.

NOAA's environmental satellite system is composed of two types of satellites: Geostationary Operational Environmental Satellites (GOES) for national, regional, short-range warning and "now-casting"; and Polar Operational Environmental Satellites (POES) for global, long-term forecasting and environmental monitoring. Lockheed Martin and its heritage companies built all of the POES satellites going back to the very first weather satellite launch on April 1, 1960, and is currently developing the next generation GOES-R satellite system, with a first launch set for 2015. Both GOES and POES are necessary for providing a complete global weather monitoring system. Both also carry search and rescue instruments to relay signals from people in distress.

The ATC has a 47-year-long heritage of spaceborne solar instruments including the Soft X-ray Telescope on the Japanese Yohkoh satellite, the Michelson Doppler Imager on the ESA/NASA Solar and Heliospheric Observatory, the solar telescope on NASA's Transition Region and Coronal Explorer, the Solar X-ray Imager on the GOES-N, O and P environmental satellites, the Focal Plane Package on Hinode, an Extreme Ultraviolet Imager on each of the

two spacecraft in NASA's Solar Terrestrial Relations Observatory, and the Atmospheric Imaging Assembly and Helioseismic Magnetic Imager on NASA's Solar Dynamics Observatory. The laboratory also conducts basic research into understanding and predicting space weather and the behavior of the sun including its impacts on Earth and climate.

The ATC is the research and development organization of Lockheed Martin Space Systems Company (LMSSC). LMSSC, a major operating unit of Lockheed Martin Corporation, designs and develops, tests, manufactures and operates a full spectrum of advanced-technology systems for national security and military, civil government and commercial customers. Chief products include human space flight systems; a full range of remote sensing, navigation, meteorological and communications satellites and instruments; space observatories and interplanetary spacecraft; laser radar; ballistic missiles; missile defense systems; and nanotechnology research and development.

Headquartered in Bethesda, Md., Lockheed Martin is a global security company that employs about 136,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. The Corporation reported 2009 sales of \$45.2 billion.

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