

June 25, 2007

# Technical Problems Persist on Key NPOESS Sensor

WARREN FERSTER, WASHINGTON

The first version of a sensor that has been a trouble spot in the U.S. effort to field a new generation of polar-orbiting weather satellites could end up flying with some of its capabilities impaired.

The Visible Infrared Imaging Radiometer, or VIIRS, is among several sensors to be demonstrated in space beginning in 2010 aboard a test platform for the National Polar-orbiting Operational Environmental Satellite System (NPOESS). Program officials are evaluating the VIIRS problem to determine its severity, and will decide by August whether to deliver the sensor as is or make modifications, according to a written statement provided by Sally Koris, a spokeswoman for NPOESS prime contractor Northrop Grumman Space Technology of Redondo Beach, Calif.

VIIRS is designed to monitor cloud formations and other atmospheric and ocean-surface phenomena. The VIIRS data product that stands to suffer the most if the problem is not corrected is ocean color, Northrop Grumman said. Scientists use this information to estimate chlorophyll levels, a key measure of ocean health and biological vitality.

VIIRS, along with the other main NPOESS sensors, is slated to debut aboard the NPOESS Preparatory Project, a NASA-led mission that is scheduled to launch in 2010. That mission also is a critical component of NASA's environmental monitoring and climate change research program.

It is this dual mission that could be affected by what NPOESS program officials refer to as an optical cross talk problem with the VIIRS sensor. The term refers to an unwanted scattering of light by the sensor's filters that can cause errors in some of its data products.

In its written response to questions, Northrop Grumman said the NPOESS team continues to evaluate the problem,

which cropped up during testing last year. Analyses to date indicate that 16 of the 22 VIIRS environmental data products are largely unaffected. Of the six others, some "are showing performance impacts ranging from manageable to more severe depending on assumptions, with the Ocean Color/Chlorophyll mission being the most affected," Northrop Grumman said.

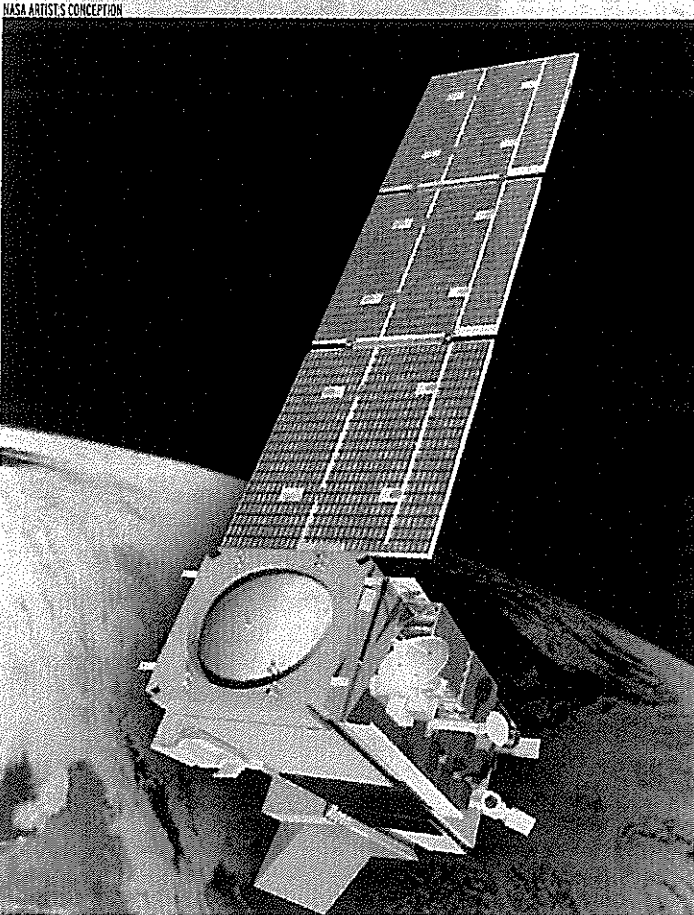
NPOESS program officials are studying an alternative filter package that might solve the problem, and will decide by August whether to make that change. A decision to change the filters could delay the delivery of the VIIRS sensor to Ball Aerospace & Technologies Corp. of Boulder, Colo., which is building the satellite platform for the NPOESS Preparatory Project, Koris said in a telephone interview.

Koris said such a delay would not affect the satellite's launch date because there is margin built into the schedule, adding that the August decision date makes sense from a programmatic standpoint. She stopped short of conceding the possibility that the first VIIRS sensor will have less capability than originally planned, saying that the issue still is under study.

But Koris also noted that the NPOESS Preparatory Project is a "risk-reduction mission." The satellite, she said, is "being flown to better understand the instruments [and] bring out all problems for the operational system."

The second flight version of the VIIRS instrument is part of the payload aboard the first operational NPOESS satellite, now slated for launch around 2013.

In a written response to questions, Andrew Carson, NASA program director for the NPOESS Preparatory Project, said the agency is evaluating the optical cross talk problem's impact on VIIRS ocean color data. "We are hopeful that one of the alternate filter fixes that are being studied will improve the sensor performance in the ocean color area," Carson said. "It is still very early in the VIIRS flight unit test



➤ The first version of the Visible Infrared Imaging Radiometer is slated to fly in 2010 aboard the NPOESS Preparatory Project satellite (above).

program... We look forward to evaluating the full capability of the sensor as the VIIRS testing continues."

NASA currently relies on the commercially operated OrbView-2 satellite as well as the Moderate Resolution Imaging Spectroradiometer instruments on its Terra and Aqua satellites for ocean color data, Carson said. OrbView launched in 1997, while Terra and Aqua launched in 1999 and 2002, respectively.

VIIRS, which is being developed for NPOESS by Raytheon Space and Airborne Systems of El Segundo, Calif., has a checkered history. Last year it was cited as a major cause of the massive cost growth that prompted the government to restructure the multibillion-dollar NPOESS program, which is managed by the U.S. Air Force

and the National Oceanic and Atmospheric Administration.

The restructuring reduced the number of NPOESS satellites to be procured and eliminated sensors and capabilities dedicated to climate change research. Those measurements originally were to be made by NASA satellites, but cost considerations prompted the government to try and include them as part of the NPOESS mission.

NASA and the National Oceanic and Atmospheric Administration are studying options for flying the climate-change research sensors that were dropped from the NPOESS platforms.

Staff writer Colin Clark contributed to this article.

Comments: [ferster@space.com](mailto:ferster@space.com)