National Aeronautics and
Space Administration

Goddard Space Flight Center
Greenbelt, Maryland
20771

NASA

Reply to Attn of: 900

TO: 421/MODIS Instrument Systems Manager, R. Weber

FROM: 900/MODIS Science Team Leader

SUBJECT: Solutions for MODIS "Ghosting" Problems

It is my understanding, based on discussions with several of the MODIS Science Team members, that the "Ghosting" Solutions review presented by SBRC personnel at GSFC on Tuesday, August 24, and the subsequent discussions with the Science Team Discipline Leaders on the following day, resulted in the following consensus:

1. VIS and NIR Focal Planes - The two 3-lens objective assemblies will be redesigned and the anti-reflection (AR) coatings for the lenses will be optimized. This will result in all of the VIS/NIR Bands except Band 18 meeting the transient response requirement with a comfortable margin.

2. SWIR/MWIR Focal Plane - A 7-region spectral blocker and mask will be added at the intermediate focal plane and objective assembly lenses and cooler window AR coatings will be optimized. This will result in all bands except Band 21 meeting the transient response requirement with margins in excess of a factor of five. Tilting of the intermediate window to the passive cryogenic cooler will be examined, and, if successful, Band 21 should also meet all specifications.

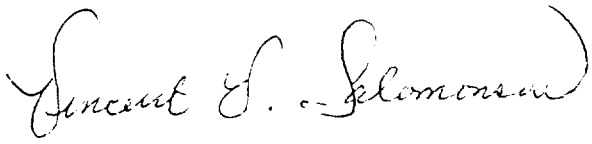
3. LWIR Focal Plane - The intermediate cooler window will be tilted, the thermal blocker coatings will be redesigned, AR coatings on remaining surfaces will be optimized, and a 3-region dichroic assembly will be inserted at the intermediate focal plane in place of the present fold mirror. As a result, all of the bands except Band 30 will meet the transient response specification.

In summary, the proposed changes should result in all specifications being met and specified absolute radiometry within two kilometers of a cloud for all bands except Bands 18, 21, and 30. These three bands will be within a factor of two of spec; this level of ghosting in these three bands will not materially degrade science.

Compared to where we were a month or two back, this is a vast improvement and you and the SBRC team are to be congratulated. After consultation with some of the key members of the Science Team, I wish to state that the proposed ghosting

solutions, as outlined above, are acceptable to the Science Team and I urge that they be implemented as expeditiously as possible.

What appeared to be an intractable problem only a few weeks ago, now seems to have resulted in modifications that will, in several areas, result in improved MODIS performance. I hope that you will extend my warmest regards to the EOS-AM Project, the SBRC ghosting team, and to the members of your in-house engineering team for a highly professional effort. By all reports, this has been a joint government/contractor effort that could well serve as a model for future activities.



Vincent V. Salomonson

cc:
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