MODIS Science Team Meeting, Oct. 1 - 3, 1991. Attachment F

REVIEW OF THE MODIS-N SPECIFICATION

Jack Engel

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RELAXED SPECTRAL BAND REGISTRATION REQUIREMENTS WOULD IMPROVE MARGINS

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- The specification (Para 3.4.6.3) presently requires ±0.1 IFOV coregistration between "any two corresponding detector elements from different spectral bands having the same IFOV".
  - The requirement applies equally to bands in different focal planes, and bands within the same focal plane. However, it is significantly easier to meet the requirement within the same focal plane.
  - The specification for the Thematic Mapper recognized the difference in difficulty by requiring ±0.2 IFOV coregistration within a focal plane, while allowing ±0.3 IFOV coregistration between focal planes.
  - If the MODIS-N requirement were changed to ±0.1 IFOV coregistration between corresponding detector elements within an focal plane and ±0.2 IFOV coregistration between corresponding detector elements in different focal planes, we would have resonable margins for both conditions.
  - Would this change significantly affect the science?

THE THERMAL EMITTANCE BAND SPECIFICATIONS (para 3.3.4.2) NEED MINOR CHANGES

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- We are currently predicting an NEΔT of 7.7K for band 21 at Ttyp = 300K. The requirement is 5.0K. At 335K we predict an NEΔT of 2.5K.
  - It would seem that band 20 with nearly identical spectral requirements (identical λc), would satisfy this requirement at 300K with an NEΔT of 0.024K, and that Ttyp for band 21 would be specified at either 335 K (Tmax for band 20) or at 700K (Tmax for band 21) as the other "Fire" bands are specified.
  - Meeting the requirement at 300K may require the use of non-linear gain. Is it necessasry?

- None of the notes are necessary.

POLARIZATION
(PARA 3.3.5)

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- The polarization requirements will be very challenging to meet over the specified spectral range (0.43 - 2.2μm) and scan angles to ±45°.

- Can the 2% requirement be relaxed for any of the 19 bands to which it applies? We were informed that the MODIS-T requirement has been relaxed to 2.3%.

CONCEPTUAL DESIGN FOR REFLECTANCE CHECK ACROSS THE SURFACE OF THE SCAN MIRROR

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- Concern: Non-Uniform Contamination of the Scan Mirror On-Orbit
- Status: Baseline design for On-Orbit calibration sources does not provide information over the length of the Scan Mirror.
- Conceptual Solution: Characterize Spectral Reflectance of Scan Mirror across its length.
- Two Methods: Both use the SRCA Monochromator (VIS/NIR) with the following modifications:

  1) The collimator fold mirror must be capable of being tilted in small steps, in the scan direction, with a stepper motor.

  2a) A Reflecting Roof Mirror must be located within the scan cavity in a location near the end or the Earth Scan. The Scan Mirror is viewed at large angles of incidence.

  3a) A Silicon Photodiode must be added at the end of the SRCA exit slit to sense the Reflected Energy from the Scan Mirror and Roof Mirror.

  4a) Vignetting due to beam translation needs to be characterized.

  2b) The Scan Mirror is viewed at Normal Incidence. (No additional optics required.)

  3b) A Silicon Photodiode must be added at the side of the SRCA exit slit to sense the reflected energy from the Scan Mirror.

  Either or both methods can be implemented.

SCAN MIRROR REFLECTANCE CHARACTERIZATION

METHOD B - NORMAL INCIDENCE

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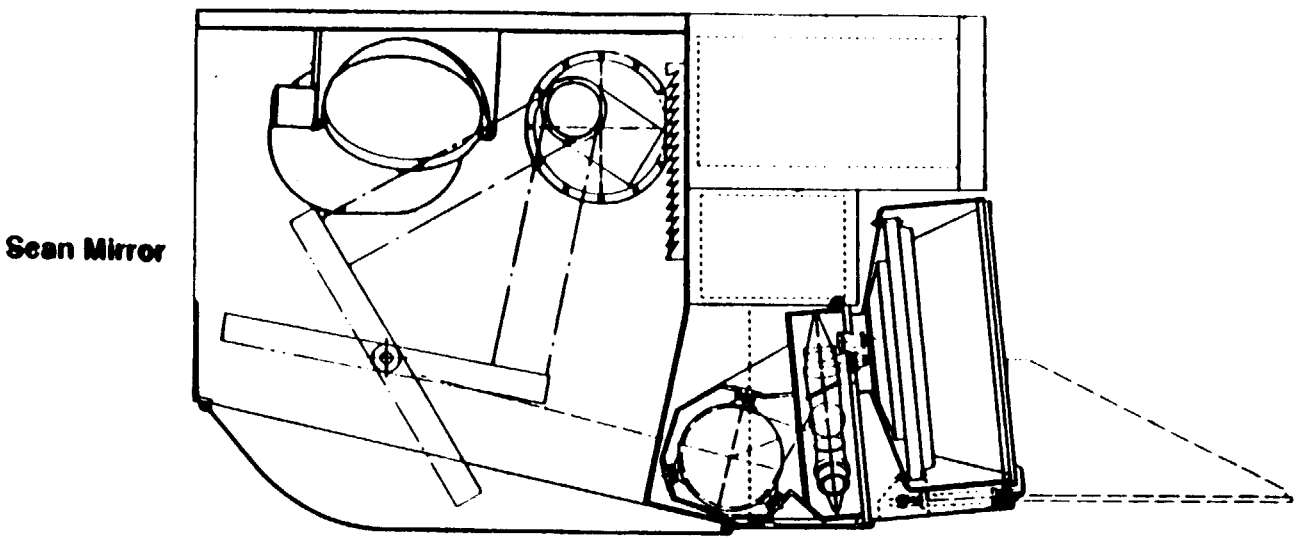

SCAN MIRROR REFLECTANCE CHARACTERIZATION

METHOD A - ROOF MIRROR

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