

MODIS Team Meeting Minutes

Minutes of the MODIS Team Meeting held on Tuesday April 26, 1994.

Action Items:

73. Complete the MODIS brochure and released for printing. Assigned to Bauernschub 10/18/93. Due 11/15/93.
75. Determine if the four electronic module boxes can be individually thermal tested in air, or must the thermal testing be done in a vacuum. Assigned to Silva 10/26/93. Due 11/ 9/93
86. Complete CDR Action Items. Assigned to ALL 3/15/94. Due 4/ 7/94

The following items were distributed:

- 1) Weekly Status Report #135
- 2) SBRC Memos submission from week #127
- 3) Minutes of the previous team meeting

Attendees:

- | | | |
|--------------------|--------------------|--------------------|
| ✓ Dick Weber | ✓ Bruce Guenther | ✓ Larissa Graziani |
| ✓ John Bauernschub | George Daelemans | ✓ Bob Martineau |
| ✓ Rosemary Vail | John Barker | ✓ Bob Silva |
| Lisa Shears | Patricia Weir | Ken Brown |
| ✓ Mike Roberto | ✓ Mitch Davis | ✓ Robert Kiwak |
| ✓ Nelson Ferragut | Jack Ellis | ✓ Harvey Safren |
| ✓ Gene Waluschka | ✓ Ken Anderson | ✓ Ed Knight |
| Bill Barnes | ✓ Rick Sabatino | ✓ Marvin Maxwell |
| ✓ Les Thompson | ✓ Cherie Congedo | ✓ Bill Mocarsky |
| | ✓ Harry Montgomery | Rick Mills |

MODIS Technical Weekly

April 29, 1994

GENERAL

Comments on the award fee milestones for 1 May thru August 31 are due to Ken Anderson by noon on Thursday.

Ken Anderson mentioned that seven GSFC personnel participated in the MODIS audit at SBRC last week. The replan is significantly over contract but within our budget. The group estimated about a three month slip in the delivery of the PFM instrument to about 9/96, which is not a problem. In general, there should be no more requirements changes and it is time to stop asking what if ... in terms of any improvements. Now, better is the enemy of good enough according to Paul Villone. The GSFC team felt there was too little slack in the PFM schedule under the replan and that we were paying too much for calibration.

An instrument thermal analysis presentation was made by MMAS on Tuesday, April 26. A handout for the presentation is available. It is "EOS-AM Spacecraft Instrument Thermal Analysis" by Anil Trehan, dated April 26.

The MODIS science team meeting is May 4, 5, and 6 at the Greenbelt Marriott. Tom Pagano will discuss the MODIS test program.

SBRC's response to formal action items for the CDR is available at the library. The topics covered include software, mechanisms, electrical, alignment, mechanical, systems engineering, reliability, calibration, optics, detectors, science, testing, and contamination. Please review your area and provide comments to Mike Roberto by May 12. If you need a copy of the document, it is in the library (X-5641 or X-4406) and the document number is VJ50-0145.

DISCUSSION

Software

Rick Sabatino mentioned that the GSE software is on schedule for an October delivery.

Contamination

Larissa Graziani has started to review the four papers about scatter from particulate-contaminated mirrors by Spyak and Wolfe of the University of Arizona. The mirror used in the University of Arizona studies is cleaner than ours will be at the start.

The goal for our engineering team is to independently determine the following:

- 1) Verify SBRC's analysis of the impact of scatter on instrument performance which they based on BRDF measurements of the scan mirror made by TMA Technologies.
- 2) Scan mirror contamination at launch and the contamination buildup during the 5 year mission.
- 3) Impact of mirror contamination on scatter. If this is significant, determine if keeping the mirror cleaner is viable.
- 4) Impact of scan mirror surface roughness on scatter. If this is significant, determine if improving the mirror surface is viable.
- 5) If the telescope optics are significant contributors to scatter, determine what to do about it.

Optics

Gene Waluschka mentioned that MISR may be interested in using SBRC's polarimeter.

Mechanical

Nelson Ferragut is planning a couple of trips to Florida to check on the mainframe. A fit check trip is planned for about May 15. At about the end of June or early July, there will be a trip for the vibration test of the mainframe (now the structural model).

It is still an open question of whether or not the graphite epoxy afocal telescope bench (ATB) and the aft optics platform (AOP) will be used in the Florida test.

Nelson believes it is difficult to assert at this time that it is impossible to do the modal test with the flight kinematic mounts. Previous testing was not attempting to measure the impact of expected nonlinearities on dynamic behavior. He also mentioned in his QMR comments that changing to flex mounts for the modal testing will introduce additional unknowns. The boundary conditions at the brackets/kinematic mounts interfaces could be different than those expected in flight. For example, a flex mount without a mono-ball (bearing with a shaft through it) at the bracket interface will put a local bending moment into the structure.

Cherie Congedo and Bill Case have concerns about non-linear behavior of the kinematic mounts related to the Teflon liners for the bearings. This may be more of a problem than the stiction. Information is being sought on the use of kinematic mounts with the heritage of the MODIS kinematic mounts on other instruments.

Detectors

Five VIS sensor chip assemblies (SCAs) and 3 NIR SCAs have passed their tests. Two of each will be delivered to SBRC for the PFM.

Radiation recall of readout integrated circuits (ROICs) will be started next week. Radiation testing is likely needed because of design changes to qualify the chip. Hughe's Technology Center (HTC) will be providing 5 PFM S/MWIR ROICs and 7 PFM LWIR ROICs to SBRC next week.

This week SBRC is going to Graphics Research to determine if four detector cable assemblies which were rejected for contamination reasons may actually be okay to use. A new buy of 40 W1 detector cables and 15 W2 cables by Graphics Research is set for June delivery to SBRC (the W1 cable is for the PV detectors and the W2 is for PC detectors).

For SCA reliability testing, one S/MWIR SCA with two detector arrays has been temperature cycled 100 times. There were no opens after 50 cycles. Testing has not yet been performed after the 100 temperature cycles. Three fanout detector assemblies (FDAs) on invar have been temperature cycled 50 times but not yet tested. Two FDAs have been tested on Be and SBRC is in process of building a third.

Bob has requested the new detector schedule.

The following provides some information on indium bump bonding of the MODIS PV detectors: Depending on the focal plane and the detector size, the number of bumps per unit cell varies from one to 120. For unit cells containing many bumps, only a few of the bumps are active. For most PV bands, each unit cell connects to an A and a B detector, so there are two sets of active bumps on the unit cell. After hybridization (indium bump bonding the detector array to the ROIC to make a SCA), the determination is made of whether to use the A or the B bank for SCA. The change is hard wired into the ROIC. As the focal plane assembly is built up, the selection is made permanent. The NIR focal plane is the exception to the above and has no A,B detector select.

Integration and Test

Harvey Safren talked with Vern Alferd. Vern mentioned that Zeron (sp) of Huntington Beach, CA has agreed to October 15, 1994 for the delivery date for the dedicated MODIS calibration facility (DMCF).

The digital part of the brassboard analog electronics module (BAEM) is now working.

The optical jukebox now has 116 Gbytes.

Electronics

Mitch Davis has discussed a format for the SBRC monthly report for the electronics which would be similar to the format he uses in making presentations to his GSFC management. This would make it easier for Mitch to track what SBRC is doing in electronics and the report should be easier to generate than the current report SBRC generates monthly for electronics. The format provides the capability of following the problems, etc. month to month in an organized manner. This type of format looks promising to me.

Mike Roberto April 29, 1994