MODIS Team Meeting Minutes

Minutes of the MODIS Team Meeting held on Tuesday October 17, 1995.

Action Items:

113. Determine the best method to display a fixed pattern noise (herringbone, Spec 3.4.5.3.3). Assigned to Knight 8/15/95. Due 10/15/95.

114. Determine the extent of ghosting from the SMIR and LWIR polished cold shields. Assigned to Waluschka 8/29/95. Due 9/22/95.

115. Review the MODIS SDST Data Management Plan, Beta Version, dated 6 Oct. 1995, and the MODIS SDST Software Management Plan, dated 25 Oct. 1995. Assigned to Bauernschub 11/2/95. Due 11/22/95.

Distribution:

- ✓ Richard Weber
- ✓ John Bauernschub
- ✓ Rosemary Vail
- ✓ Lisa Shears
- ✓ Mike Roberto
- ✓ Gene Waluschka
- ✓ Bill Barnes
- Les Thompson
- John Bolton
- ✓ Bruce Guenther
- George Daelemans
- ✓ Mitch Davis
- ✓ Ken Anderson
- ✓ Rick Sabatino
- Cherie Congedo
- ✓ Jose Florez
- Gerry Godden
- ✓ Sal Cicchelli
- Larissa Graziani
- ✓ Bob Martineau
- ✓ Bob Silva
- ✓ Robert Kiwak
- ✓ Harvey Safren
- Ed Knight
- ✓ Harry Montgomery
- ✓ Marvin Maxwell
- ✓ Bill Mocarsky
- ✓ Helen Phillips

The following items were distributed:

1) Weekly Status Report #211
2) SBRC Memos submission from week #203
3) Minutes of the previous team meeting

MODIS Technical Weekly October 27, 1995

sent to MODIS.Review 10/30/95 at about 1:30 PM.

1.0 Introduction

This report covers from October 16 through October 27. There was no team meeting on October 24.

The Independent Annual Review was held on October 23 and 24.

George Daelemans returned to GSFC on October 24 after spending two weeks at SBRC during thermal vacuum testing of the Aft Optics Assembly (AOA)/Radiative Cooler (RC). George is preparing a trip report. Preliminary results indicate radiative cooler margin of about 2 degrees,

based on an 85 K focal plane temperature. Neil Therrien reported during the systems and calibration telecon on October 23 that charge subtraction was not needed during the AOA/RC test. Data is still being analyzed for dynamic range, etc. In his weekly of October 22, David Jones has recommended that SBRC seriously consider performing a Lowest Temperature Achievable (LTA) and Normal Load Test (NLT) at PFM instrument level thermal vacuum testing to remove any uncertainty about radiative cooler performance. David Jones reported in his October 29 weekly that after the thermal vacuum test was completed, the Space Background Simulator (SBS) to RC clearance was checked by SBRC and determined to be 0.25 inches. David stated that 0.125 inches would have been better. There was also some obscuration of the SBS/RC interface due to the thermal insulation shroud which could partially account for the PFM RC LTA falling short of the expected 74.1K. The IR background test data is still being analyzed. If further design changes are needed, David mentioned that one consideration is operating the PFM Cold Focal Plane Assembly (CFPA) Read Out Integrated Circuits (ROICs) at - 9 volts instead of - 8 volts to increase the saturation "ceiling".

In an email message on October 24, Lee Tessmer reported results of the October 20 random vibration of the Protoflight Model (PFM) Afocal Telescope Assembly (ATA). ATA wavefront and pointing remained within the alignment procedure specifications. However, the fold mirror changed pointing by more than 14 arc minutes. Mechanics was investigating the cause and corrective action for the fold mirror pointing change. In his October 29 weekly report, David Jones mentioned that one of the three invar studs bonded to the fold mirror had come loose. The two good ones were removed. Epoxy was then used to bond all three studs to the mirror in accordance with a new procedure. SBRC currently proposes to vibrate the fold mirror alone in a test fixture to an acceptance test level.

Tom Kampe reported in a email message on October 27 information on the failure of the bonds between the Engineering Model (EM) Objective Assembly (OA) Near Infrared (NIR) E1 and E2 elements during a vibration test of the EM AOA. The failure was traced to insufficient adhesive between the lens seat and the lens elements, subject to confirmation by the completion of the Failure Review. Tom suggests possible improvements in the bonding method for the flight assemblies. Completed assemblies (PFM Visible (VIS) and NIR, Flight Model 1 (FM1) VIS) need to be inspected and repaired, as necessary. The repair for the VIS and NIR involves disassembly of the objectives from the AOP. The infrared elements are accessible for inspection and the bond integrity for these elements should be verifiable without removal from the AOP.

This weekly also includes reports from Eugene Waluschka, Bill Mocarsky, Bob Martineau, Jose Florez, Rick Sabatino, Ed Knight, John Mehrten, and Sal Cicchelli.

2.0 Eugene Waluschka (IR cameras for testing MODIS LWIR and S/MWIR focal plane filters for light leaks before these filters are assembled with the detectors)

Author: Eugene Waluschka at 710
Date: 10/16/95 10:39 AM
Subject: MODIS Filters:

As you may recall we are trying to test the LWIR and SWIR (get two for the price of one) focal plane filters before they are attached to the detectors. One approach was to just wait and see if

there are any cross talk problems when everything is assembled. A more aggressive approach is to test them prior to mounting to the detectors. One approach was to use a IR camera to examine the filters on transmission. It turns out that there are actually (at least) two IR cameras at SBRC. One of which is on loan from El Segundo and has a spectral range from 3.2 to 5.6 microns and is currently being used by George Daelemans for the circuit board examinations. The other IR camera (my sources tell me) is in the detector division and has a capability of imaging light from 8-12 microns. It is a Inframetrics Model 600 (or something like that) and has lenses that will resolve down to 30 microns. Examining the LWIR (and SWIR) focal plane filters with these camera couldn't hurt and just could reveal light leaks well before assembly with the detectors.

3.0 Bill Mocarsky (GSE Readiness Trip Report)

Author: William Mocarsky at 730
Date: 10/16/95 11:35 AM
Subject: MODIS GSE READINESS -TRIP REPORT

I attended a 2 day "working review" of the GSE Software "Test Readiness" review.
My overall impressions are:

1. SBRC has a lot of work to do to meet their deadlines. They are
still writing the test procedures. The concerns that I have about the shortness
of the schedules are:

a. Will the tests be complete? We uncovered in the brief review some "coverage problems" such as: testing for the "in range" and "out of range" of variables, testing that includes taking input from an external source rather than "initializing database variables to a known value". This means that the test plans need to be reviewed carefully.

b. There appears to be no "system level" test for the complete GSE. Admittedly many components of the system are tested when exercising components, but an overt decision needs to be made to address what tests need to be performed to verify "the system" and what tests can be excluded because of the tests included at the "subsystem" e.g. TAC, etc. level.

2. Some of the components are still being developed and designed. In fact, we may have caught some design problems while we were there EG: SIC control of IEEE-488 using 2 CSTOL procedures may cause erroneous data to be sampled and the MORE PROBLEMATIC issue of "carrying data quality status" throughout data processing. For instance, we do not know if the TAC uses any of the data quality flags in the data proper to control the processing/labeling of its results. It appears that the QA of data must be entered MANUALLY after someone "explains away" the problem either by looking at the input data,

3. The current documentation (system/design) does not have a place where "system level" database parameters (e.g. variables used to control the communication paths for s/w or initialization parameters) or UNIX environment variables are defined.

4. There is no reasonable way to verify the OASIS database for the instrument. This is not a major issue since substantial parts of the database were validated during EM I&T, but the Project should not view these tests are verification of the OASIS database.

5. SBRC is making every effort to adequately perform the tests.

6. I have a concern about the number of GSE people available after December. It appears that only 2-3 people will be available and they are assigned to I&T.

4.0 Bob Martineau (flight model 1 and flight model 2 detector status)

email from Bob for 10/10/95 weekly input:

This information, as usual, comes from a weekly fax sent by SBRC.

1) Cable/Pedestal Assemblies:

- All assemblies needed for the program are completed.

2) Flight Model SCAs:

- Two additional SMWIR SCAs are in for hybridization.

3) Flight Model 1 Detective Assemblies and FPAs:

- The F1 VIS and NIR FPAs have been delivered.

- Testing of the F1 LWIR DA is nearly complete. The filter/bezel has still not been received. CTI is now expected to be 10/27.

- The F1 SMWIR DA is ready for wirebonding. Radiometric tests will follow. The filter/bezel is expected mid to late Oct and CTI in mid Nov.

4) Flight Model 2 Detective Assemblies:

- The F2 VIS DA has completed radiometric tests. The filter/bezel has been received. CTI is planned for 10/18.

- The F2 NIR DA is in radiometric test.

- The F2 LWIR and SMWIR DAs are ready for kitting.

Weekly Input for 10/17/95

1) Flight Model SCAs:

- Two additional SMWIR SCAs are in for hybridization.

2) Flight Model 1 Detective Assemblies and FPAs:

- The F1 VIS and NIR FPAs have been delivered.

- F1 LWIR testing is complete. If the filter/bezel is received this week, CTI will be on 10/27.

- The F1 SMWIR DA is scheduled for wirebonding this week. The filter/bezel is expected mid to late Oct, with CTI expected in mid Nov.

3) Flight Model 2 Detective Assemblies:

- The F2 VIS FPA is complete. CTI is planned for 10/20. No performance discrepancies are reported to have been found.

- The F2 NIR DA has completed radiometric test with no performance discrepancies. Further assembly awaits receipt of the filter/bezel.

- The F2 LWIR SCA is to be mounted on the DA today and wirebonded this week.

- The F2 SMWIR DA is ready for wirebonding this week.

SUBJECT: Weekly Input for 10/24/95

1) Flight Model SCAs:

- Two additional SMWIR SCAs are in for hybridization.

2) Flight Model 1 Detective Assemblies and FPAs:

- The F1 VIS and NIR FPAs have been delivered.

- F1 LWIR testing is complete. The filter bezel has been received and is in thermal cycling. Tentative CTI is set for 11/3.

- The F1 SMWIR DA completed wire bonding and is now in QA review. Radiometric tests will follow. Filter bezel delivery is expected in late October, and CTI in mid November.

3) Flight Model 2 Detective Assemblies:

- The F2 VIS FPA CTI was completed 10/20.

- The F2 NIR DA has completed radiometric test with no performance discrepancies. Further assembly awaits receipt of the filter/bezel.

- The F2 LWIR DA and F2 SMWIR DA have completed wire bonding. Radiometric testing will follow.

6.0 Rick Sabatino (GSE software review trip report)

Author: rick.sabatino@omitron.gsfc.nasa.gov (rick sabatino) at Internet
Date: 10/20/95 4:46 PM
Subject: GSE software review trip report - 2nd try

EOS AM Project InterOffice Memo
MODIS October 20, 1995

This report presents comments on the topics covered at the MODIS GSESoftware Review which was held at the Santa Barbara Research Center (SBRC) on October 11 and 12, 1995. In addition to myself, the other representatives from GSFC at this review were Bill Mocarsky, Jeff Bowser, and Bob Silva. The attendees from SBRC included (at various times) Vernon Alferd, Tom Pagano, Leroy Kubel, Arlind Bettencourt, Rod Ontjes, John Leonard, Gary Gensler, and Joe Bauer. The review was also supported by Dave Dayton of DLA DCMC, temporarily supporting the MODIS effort.

At the conclusion of the review, the GSFC team members compiled a list ofaction items generated throughout the review. This list is included at the end of these comments. For the most part, I did not reiterate in the text any of the points noted in specific action items. For a complete picture of the software's status, it is therefore necessary to also review the action item list. These items must be completed prior to the GSE Software Acceptance Review, which is expected to be held in December of this year, and in some cases prior to the start of the acceptance testing effort.

There has been a great deal of progress made in the area of GSE softwaredevelopment since the time of the Software Test Readiness Review (SWTRR) this past August. Many people have contributed a very focused, and dedicated effort in order to try to bring the software to the level of maturity at which it needs to be by now. Most of the problems noted at this year's earlier reviews have been addressed. However, the main issue which has not been overcome is the impact of the greatly compressed schedule on the development effort. In spite of the effort put forth by all the staff supporting the GSE software effort, the scheduled completion of the software for the System Test Equipment (STE) workstations did not occur.

The documentation supporting this software is expected to be completed bythe end of this month. The remaining code is expected to be implemented one week after that. Unit testing of each of the workstation's code will proceed in parallel, leading up to formal acceptance testing beginning in early November. It is possible for this schedule to be met if the team can continue to work at the same level at which it has for the past two months. However, even if this does occur, there are certain repercussions to developing software (or any instrument subsystem) under these conditions.

A partial list of these impacts follows in this paragraph. Issuesrelated to the design of the software can not be given the in depth review (i.e. a "second look") that they would otherwise receive. The thoroughness of code walkthroughs must be curtailed. Test procedures must be utilized before GSFC has even seen them. All documentation does not have the benefit of a considered review by SBRC prior to submission to GSFC. The implementation of changes to the software desired for the PFM must be curtailed. A large amount of parallel testing of unit and workstation software will be undertaken, requiring a good deal of planning and coordination. The staff must continue to work at a very high level of commitment throughout the rest of the year. The tests run for STE2 (which will be sent out to the s/c contractor to support I&T of the instrument there) may only be a subset of those performed for STE1. In addition, there is no plan for any

overall end-to-end GSE system level tests (i.e. test procedures are written by individuals to test their portions of the GSE software, but no larger scope tests are being considered).

With that said, I'll give a brief overview of the two days we spent atSBRC. There was very little in the way of formal presentations made as part of this review. After a brief introduction and status review by Vernon Alferd, we immediately began what would be two days of roundtable discussions, documentation and code walkthroughs, and demonstrations. Overall, this format served as an excellent source of review comments to SBRC for both high level issues and the subset of topics which we pursued in depth. In addition, it presented GSFC with a broad overview of the software's status as well as providing detailed information as threads were followed through the software development for each of the workstations.

During the portion of the review devoted to the TAC, Tom Pagano notedthat while preparing for the review, he had uncovered a design and coding error in the Fourier Transform algorithm (which I believe was the inclusion of an additional factor of 2). The correction of this bug, and an assessment of it's impact on EM test data analysis was captured as an action item. This is indicative of a type of error which is apt to occur (in all GSE software) under the current circumstances. During the discussion on TAC testing, the Test Report form was reviewed and several suggestions made for enhancements. In addition, documentation modifications were identified for inclusion in the versions submitted to GSFC later this month. It is expected that the four TAC algorithms remaining to be coded will be completed in time to be integrated with the rest of the TAC. This will allow the TAC acceptance test results to be applied to the workstation as a whole, and alleviate the need for the retesting of the TAC (which would have occurred if these algorithms were completed after the tests had already been run).

It was noted while reviewing the SIC workstation requirements that therewere significantly fewer requirements in the documentation now than there were in earlier versions. This was attributed to the descoping of this workstation's responsibilities (i.e. it is used to control fewer stimuli), as well as to the removal of non-software requirements. The SIC coding effort is largely completed, although the coding for handling the transfer of SpMA and IAC data to disk is still being written. A design problem may exist in the SIC code related to it's handling of IEEE-488 protocol's setup and sample commands being handled by separate CSTOL statements. It is possible for there to be an interrupt generated between the setup and the sample, and the issue is whether the SIC will correctly handle this situation. There was much discussion held during the review of the SIC Acceptance Test Procedures, which resulted in many suggested modifications. The main area in which other SIC documentation was considered lacking (and hence where most changes were recommended) was in capturing OASIS database and command information.

The PIC and STC workstation coding efforts (including OASIS databaseinformation) have not yet been completed, and their documentation is still being finalized. For the ARC workstation, the coding has been finished, but as with the other portions of the GSE, the documentation is not yet complete. Features of these workstations were discussed and documentation reviewed. In each of these areas, comments were made for adding information to the current coverage of the documents.

In conclusion, the GSFC team left SBRC with some positive impressions andsome concerns. It is a technically superior group of dedicated professionals who currently comprise and support the GSE software development effort. They have made a lot of progress in the past two months by committing to a heavy work schedule. The question is, can this level of effort be continued for another month and a half (especially given that the GSE software cost accounts terminate at the end of this year)?For it is the consensus of the team that SBRC has their work cut out for them as they try to complete the remaining work in the time available. They are on a tight schedule, and meeting the upcoming document deliveries and software due dates are only possibilities, not probabilities. Under these circumstances, GSFC must continue to monitor closely the progressthat SBRC makes towards the goal of completing the GSE

software. The risks associated with developing software within these constraints are many, but they're not unmanageable.

Action Items

1) SBRC - develop, document, and submit to GSFC the CM procedures whichwill be implemented specifically for software which is undergoing acceptance testing.

2) SBRC - modify the Test Report form for documenting both Unit andAcceptance test results. The noted deficiencies include version number of the software being tested, PTE signature, inclusion of attachments, and the disposition of any noted failures.

3) GSFC - respond to Lou Trautwein's memo asking for relief from theimpact of SBRC having to wait for GSFC review of CDRL changes during software testing.

4) GSFC - review the TAC algorithms' software implementation forconsistency with the source of the algorithms and the representations in the Detailed Design.

5) SBRC - assess the impact of the error found by System's Engineering inthe description and implementation of the Fourier Transform algorithm used by the TAC. The results will be transmitted to GSFC.

6) GSFC - discuss the issues related to the inclusion of non-requiredcapabilities in the delivered GSE software.

7) GSFC - review the TAC requirements to ensure that there are nonerequiring the TAC software to check the metadata or SNAP log quality flag prior to processing test data.

8) SBRC - verify that files output by the TAC (containing results of testdata analyses) contain the quality flags from the original test data. In addition, they should also contain information identifying which test data (i.e. input data) was used to generate the analysis. Displays of TAC analyses should include the quality flag.

9) SBRC - identify how test data is quality stamped. This includes how the determination is made as to how the data is classified, where that information is saved (e.g. on the paper test report, in the metadata file, SNAP log file, etc.), and whether or not it is stored manually or automatically.

10) SBRC - quantify the amount of data which the PIC collects before stopping to transfer it to the ARC. A price/performance review must be performed which will address the impact of increasing the number and size of the PIC's dual/port RAM cards on the amount of data collected by the PIC.

11) SBRC - update the GSE and TAC Maintenance Manuals and Operational Procedures documents to include OASIS information noted during the review.

12) SBRC - provide a disposition to GSFC and SBRC for each of the requested modifications to the GSE EM software which are currently filed in the "PFM change folder".

13) SBRC - provide details for testing of STE2 (i.e. identify how the Acceptance Test Procedures will be utilized to test STE2).

14) SBRC - identify how the GSE software system will be acceptance tested, as opposed to simply testing the software/requirements of the individual workstations.

15) SBRC - determine how the SIC will handle the situation which results when an interrupt is generated between the CSTOL statement which sets up the IEEE-488 bus and the one which actually samples the data. Ensure that the SIC design and code will correctly handle this situation. Include a test to cover this situation in the Acceptance Test Procedures.

7.0 Ed Knight (starting point for discussion of issues regarding flight operations roles and responsibilities for FOT/SBRC/GSFC; need for SBRC support of MCST for some deliverables; FOS CDR and mission operations meeting report)

Author: eknight@highwire.gsfc.nasa.gov (Ed Knight) at Internet
Date: 10/22/95 1:24 PM
Subject: Flight Operations Roles and Responsibilities
Subject: FOT/SBRC/MCST Roles and Responsibilities

The Operations Interface Control Document (OICD) currently being written by Claire Wilda will contain a section on the roles and responsibilities of the various MODIS groups. Specifically, Appendix A of the OICD defines deliverables and need dates. Four groups are included--the Instrument Provider (SBRC), the S/C manufacturer (LMAS), the Flight Operations Team (LMAS/GSFC), and the Instrument Operations Team (MODSOT within MCST).

However, as currently constituted, MCST cannot provide some of its listed deliverables without extensive SBRC support. There needs tobe a discussion with the MODIS Project Office on the best way to ensure that these deliverables can be provided. This email is intended to raise those issues and serve as a starting point for that discussion.

The following are items that MCST is expected to provide that require either no or minimal SBRC support:

The Long Term Instrument and Science Plans.
Activity Definitions
Activity level Constraints
Activity level Schedules
Verification of completeness of Project Data Base

The following are items that MCST cannot provide without substantial SBRC involvement:

FOT Training--We are required to train the FOT on how to operate the instrument. We ourselves need to be trained by SBRC.

Memory Load Data--We have to build the loads in the SCF before sending them to the FOT. We need SBRC's load building software with sufficient training/documentation/practice to be able to use it.

Instrument Activation Procedures--We have been assuming that SBRC is developing the procedures to power the instrument on, take it through its functional checkouts, and make the transition to Science Mode.

Flight Software--MCST is expected to be responsible for maintaining the MODIS flight software. This will require MCST to be trainedby SBRC or a long term maintenance agreement with SBRC.

The following are items that will be substantially easier for MCST to deliver with SBRC assistance:

Instrument Parameters in Project Data Base--MCST is responsible for identifying and providing needed instrument parameters to the Project Data Base. While MCST can fill in the needed values as best as possible from SBRC documentation, ultimately we will need to go back to the source for some elements.

Activity Commands Blocks/Procedures--SBRC is required to deliver to LMAS the command blocks and procedures used for S/C I&T tests. To theextent possible, these will be the same command blocks and procedures used on-orbit. Changes and omissions need to be filled in by MCST. The fewer required changes or omissions, the better.

This is also probably not a complete list of all required deliverablesbut it does capture the major issues. I believe the Project Office, SBRC, and MCST need an agreement on how these deliverables will be met before the OICD is circulated for signature.

Author: eknight@highwire.gsfc.nasa.gov (Ed Knight) at Internet
Date: 10/23/95 9:40 AM
Subject: FOS CDR Report

Subject: FOS CDR and Mission Operations Meeting Report

From October 16 to October 18 Kirsten Parker and/or I attended the FOS CDR as the MODIS representatives. Overall, the CDR seemed togo well. The presenters kept things at a high level. This was useful to those of us who do not follow object oriented flow diagrams, though I suspect that it means that more detailed review will be required by some GSFC entity. The focus seemed more appropriately balanced between theAM-1 mission and the required flexibility for later missions. In addition, there was a substantial effort to explain the system to an audience of users--the FUI presentation on Day 2 was particularly well done.

One significant concern is that the FOS team has not yet done a thorough job of identifying their dependencies on other groups, specifically in what they need from the Instrument Teams beyond the next six months. Eventhen, some of these details are sketchy. A splinter meeting was held on this topic and a memo from FOS is expected shortly spelling out exactly what they need in the near term from us.

On October 19, Kirsten Parker and I attended a Mission Operations Meeting hosted by Angie Kelly (MOM). This meeting gave some of us the first look at the planned "reshape" of EOS. More details are available upon request. We discussed the facilities available in Building 32, the Expedited Data Service, and the timeline. Angie is working on the integrated Project schedule (FOS, FOT, S/C and Instruments), and several items desired from the Instrument Teams between now and December were identified. Additionally, MISR, CERES, and Angie Kelly felt that a quarterly coordination meeting was a good idea and are talking about holding one in early December.

From the two meetings, we received 3 formal action items to complete worksheets for the FOS and MOM and several informal actions, which are being handled as appropriate.

8.0 John Mehrten (MODIS quick look and FDDI symbol issues)

Author: "Mehrten, John A" <jmehrten@msmail3.hac.com> at Internet
Date: 10/19/95 1:49 PM

Subject: MOD Quick Look/FDDI Symbol Issues

This msg provides a brief documented summary of the MODIS packet issue and the MODIS FDDI Protocol symbol issue. Each existed before GIIS Chg 4, but were highlighted during its evaluation. Thus far, these issues have only been discussed with you, LMAS Payloads Accommodation, and not any GSFC Systems or EOSDIS personnel.

o Each topic is first presented by the statements from Leroy Kubel's 8/24/95 PL3095-A05224 GIIS Change 4 Record of Discussion memo, and are followed by Later Comments.

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o 1 - - Item 48, Figure 6-6, CCSDS Version 1 Source Packet Format.

Comment (J. Mehrten): This change redefines the science packet Header to be the first 120 bits instead of the first 48 bits. Bit 49 started, what was defined as the "Data Zone", and contained the Secondary Header (64-bit Time Tag and an 8-bit Quick Look Flag) and a variable length instrument data field. The revision to a 120 bit Header defines the original 48 bits to be the"Primary Header" and the next 72 bits to be the "Secondary Header" (which is the same name and contents as before). The difference is that these latter items are now a part of the new "Header" definition and not a part of the Data Zone.

This may be a more logical way to partition primary and secondary headers, but may now imply more serious use of the Secondary Header for EOS routing of data. A potential problem arises in that since it was in the Data Zone, MODIS has always further partitioned the 8-bit Quick Look Flag into 1 bit for the flag itself, and the other 7 bits were used for MODIS Header details.

The impact of the GIIS change might be slight or significant according to alternate resolutions as follows:

a. Allow MODIS to still utilize the 7 bits of the Quick Look Flag, which now falls within the boundaries of the 120 bit Header.

b. Or, MODIS comply with change 4 for a full 8 bits for the Quick Flag Field and repatriation bits in the new Data Zone for the previously defined MODIS peculiar fields. This would have a significant Flight software impact and possible firmware impact.

Action: LMAS indicated from their viewpoint, that we could keep the header as is, but that we submit a request to GSFC to change the UIID document to allow MODIS to continue to use the existing header format. SBRC will initiate an UIID change request by 9/15/95.

LATER COMMENT - - (The start of Waiver preparation, triggered another round of coordination dialog before submittal.) This probably doesn't affect S/C operations, but may have an impact on EOSDIS in routing data if their routing screen is looking for the full 8 bits in the Quick Look Flag. On the other hand, maybe most instruments only flip the first bit when setting the Quick Look Flag, and there is no practical impact.

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o 2 - - Para. 6.4.3, High-Rate Science Data Transfer Protocol.

Comment (J. Auchter/F. Gallagher): With regard to the transmission of 10 "II" symbol pairs as the preamble field of the High-Rate Science data message format.

Action: LMAS indicated that they needed to review this requirement further.

LATER COMMENT - - The memo did not provide details for the uninitiated. Thus, some background by J. Auchter & J. Mehrten is presented below.

The FDDI high rate link has a FDDI Protocol consisting of several symbols that are use in pairs. We currently send 10 "II" pairs between each MODIS packet. There are also several other pairs for framing, but I believe the issue was whether or not we should be sending the "II" pairs between every packet.

The GIIS requires instruments which do not transmit continuously to send the 10 "II" pairs each time they begin retransmitting. MODIS should only have to do this when we first begin transmitting. My recollection is that even though we are not required to do this between every packet, we decided to keep doing it, since leaving it in shouldn't cause any problems (other than a slightly higher data rate than otherwise). Taking it out requires at least 2 changes: 1) removing the current writes which occur between every packet, and 2) inserting some special logic to send the 10 "II" pairs when we first start transmitting.

I think the intent of the original requirement may be to alert the S/C data processing system that a previously OFF instrument has come ON, and its data has to now be folded into the overall integrated/buffered data that goes to the recorder or direct broadcast to the gnd. We would need to know S/C implementation details to judge if ever present "II" preamble pairs create a problem.

John Mehrten/SBRC 805-562-7212

9.0 Sal Cicchelli (bagging MODIS during acoustics testing)

Author: Sal Cicchelli <scicchel@div720.gsfc.nasa.gov> at Internet
Date: 10/14/95 8:49 PM
Subject: Preliminary Review of Double-Bagging MODIS Instrument for Ac

On 10-17-95, Mike Roberto requested that I review the present SBRC plan to enclose the MODIS flight unit with a double bag (for maintenance of cleanliness levels) during acoustic testing at SBRC.

I have obtained some preliminary review information from discussions with Pete Rossoni and Bob Coladonato of GSFC:

a. It is a common practice to bag instruments for acoustic testing in the GSFC chamber.

b. An attenuation analysis (difference of dB level across the boundary of the double bag over the entire frequency range) should be done to estimate the adequacy of the level of acoustic energy impinging on the test item. Perhaps SBRC has already done some analysis in this regard. The data which are needed to do an attenuation analysis are: the bag material and thickness, and spacing between bags. It is requested that SBRC provide this information.

c. It is preferable that an attenuation- measuring microphone be placed within the same enclosure as the test item. The figure on sheet 12 of the SBRC Acoustic Test Procedure (# ALLE04) shows that the current plan is to bag that microphone separately.

MR
10/30/95