|  |
| --- |
| Investigation: FIELDS |
| Progress accomplished this period: | November 2014 Reporting Period |
| 1. | Project Management and Product Assurance |
|  | a. | Project Management* Supported the following PERs and associated TRRs
	+ EDI GDU FM9R
* Supported the following FRBs
	+ None
* Supported the following PSRs
	+ None
* Received delivery of the following hardware items at UNH
	+ None
* Delivery of the following flight hardware items from UNH to GSFC
	+ None
* Supported processing of NCRs and risks
 |
|  | b. | Product Assurance |
|  |  | Turco / Salwen* Provided support of EDI Super PSR
* Supported change out of defective HVOC on GDE FM9
* Completed EIDP uploading for all delivered EDI GDUs
 |
| 2. | Systems Engineering  |
|  |  | Rau, Dors, Needell* Supported GDU SN09 (flight spare) test program with EMI and FIT
* Released GDU SN09 EMI and FIT test reports
* Finish discussions on ADP max bending moment with GNC personnel and agreed with decision to update ACS FSW to avoid ADP frequency
* Prepared for and listened to Webex of MMS FORR
* Performed Acceptance test of DFG Flight Spare and put into storage
 |
| 3. | Post-Delivery Support (UNH) |
|  |  | Observatory Support (FIELDS)* Performed final ADP RE inspections for OBS3 +Z, OBS4 -Z
* Performed walk down of SDP and EDI MLI and FOV on OBS-3 and OBS-4
* Performed post ship Functional testing including SDP Motor and HOP testing and ADP Simulator Testing on all Observatory
* Prepared and released SDP WOAs for GSE removal work at Cape
* Prepared for MRT20 support
* Continued supporting commissioning planning discussions with SOC
* Continued I&T planning for FIELDS at the OBS level for Cape Ops
* Continued reviewing all test data from previous OBS tests
 |
|  |  |
| 4. | Science and Science Data Processing  |
|  |  | SWT and SWG * Participation in all science planning discussions.

Science data processing activities (Compiled by Chutter)* ALL
	+ Continued working on software to run at SDC
* UNH
	+ Working on sample timing
	+ Continued review of science and engineering telemetry from observatory level testing
	+ Helped SDC verify requirements in preparation for FOR/ORR
	+ Continued development of FIELDS real time displays
	+ Worked on combined B product software (with Cluster data)
	+ Worked on combined E product software (with Cluster data)
* LPP
	+ Produced and checked CDF files fully ISTP/MMS standard compliant according to the MMS CDF format guide v1.7 that has been reviewed during the last DSWG telecom.
	+ Calibration default parameters computation set. Fine tuning will be done during commissioning
	+ Better computation of TT2000 time tags (no precision loss anymore).
	+ Bug fixes
* UCLA
	+ Continued bi-weekly mag team telecons to develop calibration data flow, and magnetic conference procedures
	+ Work continues on magnetic field data processing - emphasis on timing
	+ Developing inflight calibration procedures
	+ Work continues on inflight calibration and procedures
	+ Comments received from Prof. Russell on magnetometer team meeting report generated by R. J. Strangeway, B. J. Anderson and J. Slavin. Include identifying who should respond to RFAs and timeline for responses
* GSFC
	+ Tested LANL GeoMag installation at SDC. Failed to get my test program to link. The correct versions of dependencies seem to be missing
	+ Worked on smoothing algorithms for attitude data.
	+ Generated simulated mag L1A data that shows nutation, using simulated attitude/ephemeris from FDOA.
	+ Began work on data overlap removal.
	+ Worked on routine to pre-process L1A data for the orthoganalization calibration process.
* IRFU
	+ Switched to a new version of NASA CDF patch for Matlab which improved writing CDF files containing TT2000 time variables – CDF team has provided several enhancements
	+ Improving software to produce Level 2 DCE and DCV data
* LASP
	+ Working on ADP software
 |
|  |  |  |
| 5. | Magnetometers |
|  | a. | DFG  |  |
|  |  |  | * Acceptance test at UNH of flight spare sensor and electronics complete
 |
|  | b. | AFG |  |
|  |  |  | Pre-launch Preparations* Louise Lee converting analysis software to Python.
* Continued bi-weekly mag team telecons to develop calibration data flow, and magnetic conference procedures
* Continued to evaluate data processing activities - with emphasis on timing corrections.
* Comments received from Prof. Russell on magnetometer team meeting report generated by R. J. Strangeway, B. J. Anderson and J. Slavin. Include identifying who should respond to RFAs and timeline for responses

Post-launch Preparations* Continuing to assess effort requirements to develop and maintain calibration system.

Engineering: Post-delivery Activity* Watching over activities in assessing LM6142.
 |
|  |  |  |  |
|  | c. | SCM | * Continued science data processing preparation activities
 |
|  |  |  |  |
| 6. | EDI |
|  |  | Ship Set 4 - GDU SN9R* GDU assembly, bench test, baseline FFT in vacuum
* EMC test, FIT test
* PER
* Vibration

GDE - UNH efforts* Replaced optocoupler in GDE SN9
* Performed TVAC cycle after replacement

Flight Software* Continued implementation and testing of Electric Field Mode
 |
|  |  |  |
| 7. | SDP (KTH, UNH) |

|  |  |  |
| --- | --- | --- |
|  |  | * Support commissioning planning activities.
 |

|  |  |
| --- | --- |
| 8. | ADP |
|  |  | LASP ADP Post-Delivery Support Activities * Participation with Project to resolve negative margin predictions for ADP boom bending strength during formation maintenance maneuvers. Decision made to update ACS FSW to avoid ADP boom fundamental frequency.
* Supported MMS IS I&T planning teleconferences
 |
|  |  |  |
| 9. | Commissioning and Mission Operations (Needell) |
|  |  | * Prepared slides for and attended FORR
* Prepared draft update of FIELDS User manual - out for review
* Prepared and delivered draft training presentation at SOC request
* Continued testing commissioning scripts with SOC
* Reviewed, updated and approved for release SOC Wiki pages for Commissioning and Flight Ops.
 |
|  |
| 10. Problems encountered and updates this period |

|  |  |  |
| --- | --- | --- |
|  |  | None |

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 11. Issues and Concerns |
|  |  | From FIELDS PM* Inadequate funding for the Phase E activities.
	+ Working with the project to estimate needs for presentation at MRR and KDP-E meeting.

ADP boom bending loads* This issue, presented in October, has now been resolved. All parties agreed to update ACS FSW to avoid the ADP fundamental frequency.

Science Data Processing Issues (Compiled by Chutter)* GSFC
	+ Definitive attitude has jitter on phase as well as pointing direction: need to determine if the level of noise introduced is acceptable. Need to determine if LANL needs to smooth data for their higher level products.
 |

|  |
| --- |
| Activities planned for next reporting period |
|  |  | Management |
|  |  |  | * Anticipating a RFP for the remainder of the mission.
* Compile and present Phase E budget enhancement needs.
* Process NCRs related to the flight spare EDI GDU. Support FRBs as needed.
* Prepare and conduct the following PSRs.
	+ EDI GDU FM9R
* Make or coordinate delivery of the following to the MMS Project
	+ EDI GDU FM9 (flight spare) (to Obs-4 at Asrtotek)
 |
|  |  | Product Assurance, Configuration Management, Parts, Materials, Facilities |
|  |  |  | Turco/Salwen* TV test support for EDI GDU FM9
* Contamination inspection and packing for EDI GDU FM9
 |
|  |  | Systems Engineering & FIELDS I&T |
|  |  |  | Rau, Dors, Needell* Continue supporting GDU SN09 (flight spare) test program with TV
* Attend EDI GDU SN09 PSR
* Final review of FIELDS Instrument Users Manual
* Submit verification material for EDI GDU SN09
 |
|  |  | Post-Delivery Support (UNH) |
|  |  |  | Observatory Support (FIELDS)* Remove all SDP Sensor Safety GSE from OBS
* Support MRT20 and all contingency planning
* Deliver and integrate GDU SN09 to Cape
* Continue review of commissioning planning material on SOC website
* Continue I&T planning for FIELDS at the OBS level with focus on Cape
* Prepare WOAs for FIELDS work at Cape for GDU install
 |
|  |  | Science |
|  |  |  | SWT and SWG* Support science telecons as needed

Science data processing plans for December 2014* ALL
	+ Work on INITIAL versions of software by end of December
	+ Use SPDF tools to verify CDF and skeleton files follow MMS CDF Guide
	+ Support SODAWG
* UNH
	+ Work on real time data display for EDI and DFG/AFG
	+ Continue working on EDI E Field interfaces
	+ Work on RunEst software (for E Field and mag spin axis calibration)
	+ Continue work on scripting to control processing
	+ Continue L0 to L1 software updates as necessary
	+ Continue working on combined E and B products
	+ Work on error and warning management
* LPP
	+ [in progress] Analyze the results of the MRT9 data test and correct the software where needed.
	+ [in progress]Test further the SCM calibration software with the new SCM L1A
	+ [in progress] Include CDF version number computation (vX.Y.Z) - SDC provided us with the software/procedure to inquire MMS database in order to know which version of the same data in the latest. This has to be implemented in SCM software.
	+ L1B data will be delivered in both SCM123 and OMB reference frames as decided on the data processing group meeting, Iowa, March 2014
	+ Include coordinate transformation from mechanical frame OMB to GSE in L1BtoL2
	+ [new] Write the software that gives the calibration factor for a given bandwidth in order that Mark Chutter can calibrate SCM spectra.
* UCLA
	+ Continue developing in-flight calibration procedures
	+ Continue converting analysis activities
	+ Continue working on timing corrections
	+ Circulate amended RFAs from the Mag team meeting, and generate responses
* GSFC
	+ Demonstrate the calibration process (Orthogonalization) as input to Mag Conference and next level of Mag calibration
	+ Provide additional sample data, as necessary.
	+ Continue work with LANL and DSWG to create attitude/ephemeris data product and transformation software.
	+ Work on fully functional L2pre software: finish DMPA-GSE transformation.
	+ Modify L2pre software to handle data overlap, fine timing corrections.
	+ Travel to UCLA to coordinate with Hannes on calibration issues: UCLA will host a calibration database, but the algorithm for merging the results of each Mag calibration process still needs clarification, and interfaces need to be defined.
	+ Update Level 2 calibration document to document decisions from the SWT Meeting: timing corrections; plans to modify calibration file: add uncertainties and temperature correction coefficients.
* IRFU
	+ Implement initial version of SDP offset files
	+ Release new version of Level-2 files for MRT9
* LASP
	+ Continue improving DCE software
	+ Write the software that gives the calibration factor for a given bandwidth in order that Mark Chutter can calibrate E spectra.
 |
|  |  | Mag Team (UCLA, IWF, LPP) |
|  |  |  | * Continue bi-weekly Mag team telecons as time permits given the AGU and holiday season. Continue developing inflight calibration procedures. Continue data analysis software activities. Circulate amended RFAs from the Mag team meeting, and generate reponses.
* Expand on the calibration data flow as outlined during the MMS SWT and FIELDS meetings.
 |
|  |  |  |  |
|  |  | EDI |
|  |  |  | Ship Set 4 - GDU SN9R* Detector Characterization
* TV Test
* Magnetics Testing
* Installation of GeBK tape
* FIELDS Acceptance Test
* Cleaning & Bagging
* PSR
* Shipment to Cape
 |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
|  |  | SDP (UNH, KTH/IRFU) |
|  |  |  | * Support commissioning planning activities
 |

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  | ADP/SDP/DSP (LASP) |
|  |  |  | ADP* Support ADP RE inspections as needed.

Systems and Program Management* Support project as needed.
 |
|  |  | Commissioning and Mission Operations (Needell) |
|  |  |  | * Release final FILEDS Users Manual
* Continue testing scripts with SOC
* Participate in MRT 20 (Early ops)
* Prepare for MRT 26 (10 day OITL)
 |
|  |  |  |

\*\*\* end \*\*\*