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| Investigation: FIELDS |
| Progress accomplished this period: | January 2015 Reporting Period |
| 1. | Project Management and Product Assurance |
|  | a. | Project Management* Prepared and submitted cost and staffing estimates for enhanced support of Phase E activity.
* Received RFP for Phase D cost to complete proposal. Extended corresponding RFPs to subs.
* Continued review of changes to ITAR and EAR restrictions.
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|  | b. | Product Assurance |
|  |  | Turco / Salwen* Prepare and submit EIDP materials for the EDI GDU SN9R, formerly the flight spare.
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| 2. | Systems Engineering  |
|  |  | Rau, Dors, Needell* No activity
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| 3. | Post-Delivery Support (UNH) |
|  |  | Observatory and Commissioning Planning Support (FIELDS)* Returned GDU SN08 to UNH to be used as flight spare
* Continued I&T planning for FIELDS at the OBS level for Cape Ops
* Continued reviewing all test data from previous OBS tests
* Processed S/C current measurements for magnetic emission analysis
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| 4. | Science and Science Data Processing  |
|  |  | SWT and SWG * Participation in all science planning discussions.
* Continue work on the EDI instrument paper

UNH Science Team* Matt Argall, former UNH graduate student recently awarded his PhD, was appointed to a postdoctoral research scientist position

Science data processing activities (Compiled by Chutter)* ALL
	+ Continued working on software to run at SDC
* UNH
	+ Working on sample timing – Burst DCE/DCV/SCM still needs work
	+ Updated scripting at SDC – more to write for commissioning data
	+ Promoted code from SDC sandbox to production system
	+ Continued development of FIELDS real time displays – installed and tested at UCLA
	+ Worked on EDI E field software
	+ Worked on combined E product software (with Cluster data)
* LPP
	+ SCM L1BtoL2 has been written and is under test at SDC
* UCLA
	+ Continued bi-weekly mag team telecons to develop calibration data flow, and magnetic conference procedures
	+ Developing inflight calibration procedures
	+ Work continues on inflight calibration and procedures
* GSFC
	+ Delivered version 0.2.1 of AFG/DFG processing software to SDC. Includes:
		- Fixes to coordinate transformation library.
		- L2pre processing software now includes code to transform mag data data to GSE.
	+ Worked on code to remove overlap between fast and slow survey for the L2pre srvy data product
	+ Worked on code to filter and downsample fast and slow survey to a common cadence suitable for use in orthogonalization.
	+ Continued discussions with LANL: reviewed suggested changes to coordinate system document, comparisons of LGM vs other coordinate transformation tools.
	+ Tested the SDC installation of the LANL software library (it didn’t pass).
* IRFU
	+ Implemented a check for non-nominal bias settings (from HK\_10E).
	+ Implemented phase in L2/L2pre from defatt files instead of HK\_101.
* LASP
	+ Working on ADP software
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| 5. | Magnetometers |
|  | a. | DFG  |  |
|  |  |  | * Continued science data processing preparation activities
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|  | b. | AFG |  |
|  |  |  | Pre-launch Preparations* Louise Lee converting analysis software to Python.
* Restarted bi-weekly Mag team telecons. Main topic of conversation continues to be calibration data flow. Confirmed decision to have a “calpre” file for Level 1B and L2pre data products. The Mag Con will validate the definitive cal file, which will in turn be used as a basis for the next iteration of the calpre file.
* Began preparation of the Phase D completion proposal and inputs to the PPBE.
* Decision to add commissioning specific CDF data file names - specifically add f128 as a designator for 128 sps survey data (as opposed to brst for regular burst mode data).

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

Engineering: Post-delivery Activity* Watching over activities in assessing LM6142.
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|  | c. | SCM | * Continued science data processing preparation activities
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| 6. | EDI |
|  |  | Commissioning* Generated and submitted scripts for EDI HV commissioning

Flight Software* Continued implementation of Gun HV ramping and Gun parking option
* Continued implementation and testing of electric field mode

Software Loads* Generated compression/decompression routines to reduce time needed for uploads on orbit
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| 7. | SDP (KTH, UNH) |

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|  |  | * Support commissioning planning activities.
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| 8. | ADP |
|  |  | LASP ADP Post-Delivery Support Activities * Supported MMS IS I&T planning teleconferences
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| 9. | Commissioning and Mission Operations (Needell, Dors, Rau, Vaith, Singer) |
|  |  | * Attended SOC Training session - presented FIELDS portion of training.
* Delivered updated and planned final Telemetry Database (CTDB8.0) to SOC
* Reviewed and delivered final FIELSD CSTOL scripts.
* Participated in MRT3
* Provided inputs for other MRTs as needed (MRT3, MRt11, MRT26 )
* Supported commissioning planning meetings as needed.
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| 10. Problems encountered and updates this period |

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| 11. Issues and Concerns |
|  |  | Science Data Processing Issues (Compiled by Chutter)* GSFC
	+ Interfaces between each Mag calibration process and between each of the MAG institutions remain a subject of ongoing confusion.
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| Activities planned for next reporting period |
|  |  | Management |
|  |  |  | * Complete and submit the requested proposal for the balance of Phase D.
* Prepare and submit inputs to the PPBE
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|  |  | Product Assurance, Configuration Management, Parts, Materials, Facilities |
|  |  |  | Turco/Salwen* Support project as needed
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|  |  | Systems Engineering & FIELDS I&T |
|  |  |  | Rau, Dors, Needell* Support project as needed
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|  |  | Post-Delivery Support (UNH) |
|  |  |  | Observatory and Commissioning Planning Support (FIELDS)* Support MRT26 and 20A
* Final Inspections of ADP RE on OBS-2 +Z and OBS-3 -Z prior to final stack
* Final Inspections of ADP RE on OBS-4 +Z and OBS-1 -Z prior to fairing install
* Final FIELDS inspections on all OBS prior to launch
* Red tag removal of all covers on EDI GDU prior to launch
* Final VIF testing prior to launch
* Continue FIELDS preparations for flight and early orbit operations with focus on real time data analysis plans to cover deployments, health and safety and interference
* Continue data analysis of S/C current measurements for magnetic emissions
* Continue contingency planning
* Continue review of commissioning planning material on SOC website
* Continue I&T planning for FIELDS at the OBS level at Cape
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|  |  | Science |
|  |  |  | SWT and SWG* Support science telecons as needed
* Complete and submit the EDI instrument paper

Science data processing plans * ALL
	+ Use SPDF tools to verify CDF and skeleton files follow MMS CDF Guide
	+ Support SODAWG
* UNH
	+ Work on real time data display for SDP deployment
	+ Incorporate calibration from LASP to make first L2 EPSD product
	+ 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 CDF files provided by M. Chutter in Mag123 system (see MRT9 data test).
	+ [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
	+ [in progress]Test DSP spectra calibration.
* UCLA
	+ Continue developing in-flight calibration procedures
	+ Continue converting analysis activities
	+ Continue working on timing corrections
	+ Generate responses to amended RFAs from the Mag team meeting
	+ Expand on the calibration data flow as outlined during the MMS SWT and FIELDS meetings
* GSFC
	+ Test the Orthogonalization calibration process (e.g. with Cluster data). Use the results to produce sample inputs to the Mag Conference and the next level of Mag calibration
	+ Augment L2pre software to handle data overlap, fine timing corrections and/or filtering, temperature correction
	+ Look into potential problems with sun pulse phase algorithm (pointed out by Thomas Nilsson).
	+ Implement versioning scheme for the L1B, QL, and L2pre data products: requires inputs from SDC.
	+ 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.
	+ Continue work with LANL and DSWG to create attitude/ephemeris data product, transformation software and documentation
* IRFU
	+ Implement initial version of offset correction.
* 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.
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|  |  | Mag Team (UCLA) |
|  |  |  | * Submit Phase D proposal and inputs to the PPBE
* Continue developing inflight calibration procedures.
* Continue data analysis software activities.
* Generate responses to the amended RFAs from the Mag team meeting
* Verify end-to-end data flow from SDC to Mag team home institutions.
* Gather Phase E Statements of Work for Mag team members.
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|  |  | EDI |
|  |  |  | Commissioning* Generate and provide scripts for EDI HV commissioning

Flight Software* Continue implementation and testing of electric field mode
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|  |  | SDP (UNH, KTH/IRFU) |
|  |  |  | * Support commissioning planning activities
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|  |  | ADP/SDP/DSP (LASP) |
|  |  |  | ADP* Support final ADP RE inspections and cover removals at KSC.

Systems and Program Management* Support project as needed.
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|  |  | Commissioning and Mission Operations (Needell) |
|  |  |  | * Continue supporting SOC preparations for software freeze.
* Support MRT 20a (EDI HV and Eclipse prep)
* Continue to participate in Commissioning planning.
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