



Fermilab

Closeout Presentation

Director's Earned Value Management Mini Assessment of the Muon g-2 Project

May 19, 2015

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Executive Summary

A Director's Earned Value Management Mini Assessment of the Muon g-2 project was conducted on May 19, 2015 at the Fermi National Accelerator Laboratory (Fermilab). At the request of Marc Kaducak, Head of Office of Project Support Services, the assessment is to ensure that the project is performing Earned Value Management (EVM) in accordance with DOE and Laboratory requirements for monthly status and reporting. The Muon g-2 project will undergo a DOE CD-2/3 follow-up review June 25-26, 2015 and this assessment will help the project prepare for the formal baseline phase that follows the review.

The Muon g-2 project – funded by the Department of Energy (DOE), National Science Foundation (NSF), and in-kind contributions from multiple sources – will support an experimental measurement of the anomalous magnetic moment of the muon at an unprecedented level of precision. The experimental goal is a measurement uncertainty of 0.14 parts per million, or a factor of four beyond the world's current best measurement by E821 at Brookhaven National Laboratory. This precision measurement offers one of the most sensitive tests of the Standard Model and a powerful potential window into new physics. After achieving CD-2/3, the project is required to report to DOE HQ monthly on only the DOE on project funded areas.

The Committee determined that there are two main areas where additional improvements will be needed prior to a DOE CD-2/3 Review planned in late June: updating project documentation and utilizing a monthly reporting calendar to ensure a complete EVMS cycle is performed. After addressing these recommendations, the Muon g-2 project should be well placed to successfully set a baseline and begin official reporting after its DOE CD-2/3 review.

The Committee identified additional areas of improvement – in the form of comments – that relate primarily to performing within an EVMS surveillance review. These, while important, are not necessarily preventing the project from proceeding to CD-2/3. Practice related to the EVMS should continue to allow for a successful baseline establishment and reporting post achieving DOE CD-2/3.

Introduction

The purpose of this assessment was to ensure that the project is performing Earned Value Management (EVM) in accordance with DOE and Laboratory requirements for monthly statusing and reporting in preparation for its CD-2/3 review in late June 2015.

This closeout report is broken down into two basic sections. The first section provides the assessments of the project's earned value management data. Each area within this first section is organized by Findings, Comments and Recommendations. Findings are statements of fact that summarize noteworthy information presented during the review. The Comments are judgment statements about the facts presented during the review and are based on reviewers' experience and expertise. The comments are to be evaluated by the project team and actions taken as deemed appropriate. Recommendations are statements of actions that should be addressed by the project team. The second section of this presentation has the committee's answers to the review's charge question.

The Muon g-2 project is to develop a response to the assessment recommendations and present it to the Laboratory Management and regularly report on the progress during the Project's Project Management Group Meetings (PMGs) and at the Performance Oversight Group (POG). The recommendations will be tracked to closure and a documented status of the project's resolution will need to be available for future reviews.

1.0 Earned Value Management

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Findings

- An Organizational Breakdown Structure (OBS) was presented with internal and external organizations responsible for accomplishing work.
- A Responsibility Assignment Matrix (RAM) was presented with fifteen Control Accounts (CAs) and ten Control Account Managers (CAMs). One CA was completed at the time of the review (476.05 BNL Equipment Disassembly & Transport).
- There were fifteen Work Authorization Documents (WADs) provided for the review updated through BCR018.
- The project has external dependencies related to the Muon Campus and the detectors that add schedule risk and, in some cases, cost risk.
- Two months (March and April) of Variance Analysis Reports (VARs) were posted for the review committee.
- Three months (January, February, and March) of Contract Performance Reports (CPRs) were posted for the review committee.
- Eighteen change requests appear in the change log provided for the review, all of which were already implemented into the baseline. The change log provided was through March status.
- Two CAMs were interviewed during the review (Morgan and Winter).
- Variance Analysis is performed on current and cumulative values with required reporting on thresholds that are triggered as red and yellow.
- There are 439 Leads/Lags, 59 Constraints, and 3,487 activities within the provided baseline schedule.

Comments

- The RAM contains at least two CAs with Level of Effort (LOE) amounts in excess of those typically considered acceptable by EVM practices (less than 15% per CA). These should be evaluated to ensure that reporting on these does not impact EV metrics.

- The schedule documentation is missing regarding some lead/lags and constraints. These should be reviewed and updated within the schedule.
- Communication between the teams for off project and on project scope appears effective and well-coordinated.
- Seven of the fifteen WADs have instances where the period of performance listed on the first page does not reconcile between the dates shown within the attached P6 schedule. The period of performance does match with the dates shown in Cobra. This should be investigated to determine what is causing this mismatch and corrected.
- The WAD process was relatively new to the two CAMs interviewed. The WADs were created shortly before the review began, this process should be continued and made more familiar going forward.
- The CAMs interviewed demonstrated ownership of schedule, cost, and scope information.
- Heading into CD-2/3 and beyond, it would be beneficial to have a project monthly process calendar that indicates when reports are available and information is required. This will allow for everyone on the project to coordinate a sharing of information and potentially help speed up the monthly reporting cycle.
- Monthly status sheets are being utilized and appear effective by allowing for multiple users and collaborators to update at the same time.
- The Variance Analysis Reports (VARs) reviewed for March and April provided sufficient detail to be able to determine issues taking place within the control accounts and provided corrective actions. At this time the corrective actions are not being logged and tracked to completion but should be heading into CD-2/3.
- As discussed by the PM, moving away from a directly calculated EAC will be necessary post CD-2/3. When this is done, CAMs need to be familiarized and able to speak to the EAC and ETC at the CA level. CAMs and the PM will need to continually assess the EAC for validity each month.
- Based on a review of changes to the baseline, the formalized process is still being fully implemented and needs to be exercised. For example, the new BCR form was not consistently used with the most recent BCRs processed (BCR017 and BCR018). Additionally, notification of BCR impact on CAs was not fully communicated in at least one instance. However, it was discussed that this will be done going forward.
- The change control log indicates movement of budget between contingency and management reserve after BCRs have been processed. A method of formally tracking this movement with an approval from the FPD should be explored.

- Tracing BCRs between date submitted, approved, and implemented is not clear in the documentation provided (change control log and BCR forms). This should be clarified going forward.
- A general documentation review related to consistency between all project documentation.

Recommendations

1. Utilize a monthly reporting calendar to ensure a complete EVMS cycle, to include fully processing BCRs and updating WADs.
2. Update all documentation to ensure consistency and accuracy.

2.0 Charge Question

Has the Project demonstrated a process for monthly statusing and reporting that satisfies DOE and Laboratory EVM requirements?

The processes laid out and discussed in CAM interviews appear to satisfy the DOE and Lab EVM requirements. However, the full implementation still needs improvement. There are still areas for improvement to satisfy all of the Laboratory's Earned Value Management requirements but a clear path to full compliance exists. Following the implementation of the recommendations from this review and continued exercising of the monthly process, the Muon g-2 project should be successful in reporting to DOE and Fermi Management.