Fermilab

Final Report

FRA Earned Value Management System (EVMS) Annual Surveillance

March 7-9, 2011

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Executive Summary

An Annual Self-Assessment of the Fermi Research Alliance, LLC (FRA) Earned Value Management System (EVMS) was conducted on March 7-9, 2011 at the Fermi National Laboratory. The FRA Earned Value Management System was certified by the DOE Office of Engineering and Construction Management on January 28, 2010. This surveillance was performed as part of the requirements to maintain that certification and to ensure that Fermilab projects are being managed consistent with that system and in compliance with the 32 Guidelines embodied in ANSI/EIA Standard 748-A "Earned Value Management System" and DOE Order 413.3A. This report reflects the results of the surveillance review performed at Fermilab March 7-9 2011.

Based on projects required to use FRA's EVM System one FRA project NOvA was reviewed to ensure consistent implementation of EVMS. Over the course of the three day review, to verify compliance, the surveillance team reviewed the FRA EVMS Description and Procedures, project documents, and conducted twelve interviews of personnel from the NOvA project and other Fermilab organizations. These interviews included Control Account Managers, Project Manager, Project Controls, CFO/CAO, and the Head of the Office of Project Management Oversight.

In summary, Fermilab has developed an Earned Value Management System that meets the intent of the ANSI Standard. The FRA EVM system is well documented, and the tools, processes, and procedures are in place and the system is being implemented in accordance with the certified system and ANSI/EIA Standard 748-A with some exceptions as noted in the Corrective Action Requests (CARs). The surveillance team's observations resulted in eight Corrective Action Requests (CARs) and five Continuous Improvement Opportunities (CIOs). There were eight system noncompliance issues that were determined to be "systemic" regarding the implementation of EVMS on the NOvA project. Corrective Action Requests are written when a noncompliance issue is discovered during the surveillance review and the team has determined that the noncompliance issue exists across the project and is not an isolated incident.

A list of the CARs and CIOs are identified on the next page and the full write-ups are contained in a standard format for CARs and CIOs in Appendix C and D to this report, respectively Notwithstanding the CARs and CIOs, the results of the EVMS Surveillance Review indicate that Fermilab is generally implementing FRA's Earned Value Management System as certified. Specific recommendations for improving the overall effectiveness of the system are contained in this report.

Corrective Action Requests (CAR) and Continuous Improvement Opportunities (CIO)

Description
CAR01 - `EAC – Not Utilized correctly on the project
CAR02 - Change Requests to Eliminate Variances, Timing of CR Implementation
CAR03 - Variance Analysis - Not timely, not consistently used by project
CAR04 - Variance Analysis Corrective Action Tracking
CIO05 - Actual Cost Reconciliation
CAR06 - Uncosted Scientific Labor Charging Inaccurately
CAR07 - CAM Refresher Training not Performed
CIO08 - Contingency /MR - Not Consistently Handled by the Project
CIO09 - Use and Integrity of Scheduling Data
CAR10 - Risk Assessment not conducted Regularly
CIO11 - Documentation Inconsistencies
CAR12 - Objective Measurement of EV
CIO13 - EVM Implementation

1.0 Introduction

An Annual Self-Assessment of the Fermi Research Alliance (FRA) Earned Value Management System (EVMS) was conducted on March 7-9, 2011 at the Fermi National Accelerator Laboratory. The agenda for the three day surveillance is shown in Appendix A of this report. The surveillance was conducted per the FRA Earned Value Management System (EVMS) Annual Surveillance Plan Rev 2 (see Appendix B of this report).

Surveillance membership consists of FRA and non-FRA staff to ensure independence of the surveillance process. Individuals participating in the 2011 annual EVMS surveillance review include the following:

- Cathleen Lavelle (Team Leader) – Brookhaven National Laboratory NSLS-II Project Controls Manager
- Julia Chaffin – SLAC –Project Controls Manager
- Jennifer Fortner – Argonne National Laboratory – Project Controls Manager
- Robert Kennedy – Fermilab - Project Manager
- Thomas King – URS at FNAL – Senior Project Quality Engineer
- Richard Stanek – Fermilab – Senior Engineer
- Sherese Humphrey – Argonne National Laboratory – Project Controls

This report includes a write-up for each of the five major categories of the ANSI guideline: Organization; Planning, Scheduling, and Budgeting; Accounting Considerations; Analysis and Management Reports; and Revisions and Data Maintenance. The team summarized their observations for the NOvA project reviewed for the five major categories. If there were any non-compliance issues with the implementation of the FRA Earned Value Management System or the ANSI/EIA Standard 748-A, a Corrective Action Request (CAR) was generated. A summary of each CAR/CIO is included in the write-up for each category and the actual CAR detailed write-up is contained in Appendix C of this report. If there were any improvement opportunities to increase system effectiveness and management value, Continuous Improvement Opportunity (CIO) was summarized in the write-up for each category and the actual CIO detailed write-up is contained in Appendix D of this report. CARs require a Corrective Action Plan (CAP) that will be developed by the FRA EVMS Officer and will ensure that the CAP has been acceptably completed. CIOs do not require a corrective action plan but are encouraged to be addressed to improve FRA's EVMS.

2.0 Organization – Guidelines 1-5

The surveillance team was tasked with evaluating the adequacy and compliance of the Organizational grouped Guidelines 1-5 of the ANSI/EIA Standard 748-A. The NOvA project reviewed had a well developed Work Breakdown Structure (WBS) on the Nova project developed down to the Control Account level. The WBS is to be a product oriented breakdown that shows the hierarchy of the project's work scope.

The WBS Dictionary is the central point for every project. The WBS Dictionary for the NOvA project was found to be inconsistent between the highest level of the WBS and the control account. The WBS Dictionary was documented in several locations within the project documentation provided to the team including PEP and the Scheduling tool. The WBS Dictionary descriptions were found to be inconsistent between the two sources for the WBS Dictionary that was provided to the team. It is important that the WBS Dictionary contain consistent information across all project documentation. It is critical that the project review the WBS Dictionary and ensure that the WBS Dictionary is identical in its scope content across all project documentation. Within the FRA EVM System Description, inconsistencies were discovered with reference to the DOE 413.3 Order and the ANSI 748. (See CIO11 in Appendix D for additional detail).

The project had an organization chart that defined its Organizational Breakdown Structure (OBS) showing the organizational elements in which the work was planned and is being controlled. The OBS facilitated the assignment of responsibility, accountability, and authority for all the work to be performed by each of the projects. A dollarized Responsibility Assignment Matrix (RAM) existed for each project which identified the Control Accounts (CAs) where the work scope is to be managed and identified the Control Account Managers (CAMs) responsible for each CA. Each CAM interviewed was aware of the CAs assigned to them through the Work Authorization process and their related budget. Not all CAMs were involved in the original development of the schedule and budget for their assigned CA, but all of them were very knowledgeable of their scope of work. The CAMs would benefit from the Lab conducting CAM Refresher Training on an annual basis as required in the FRA EVMS System Description section 2.6. During the CAM interviews, the CAMs stated that they had not had refresher training. (See CAR07 in Appendix C for additional detail).

The EVMS System is well documented at Fermilab. There are knowledgeable staff responsible for its implementation, and the tools/systems are in place. There is however, a need for more complete implementation of the EVMS processes/principles. An improvement opportunity was identified which recommends that 1) additional project controls resources are needed to fully implement all aspects of EVM and 2) consider reorganizing the project controls group to function as an independent organization which would allow for more consistent standard implementation of project controls across the Laboratory. (See CIO13 in Appendix D for additional detail).

The integration of the technical, schedule, and cost elements was demonstrated by each project. Work Authorization Documents (WADs) were reviewed for each project to ensure that each

project's work scope and budget had been appropriately authorized. In general WADs existed, they were authorized and current.

The CA structure for each project was reviewed to ensure that it has been established at an appropriate level for work performance management and work performance measurement. The CA is the highest level where planned value is assessed, and Chargeable Task Code (CTC) where actual costs are collected, which is why it is key to be established at the appropriate level. The majority of the CAs reviewed on all of the projects appeared to be at an appropriate level to manage the work.

3.0 Planning, Scheduling, and Budgeting – Guidelines 6-15

The surveillance team's review process consisted of verifying that the ANSI/EIA-748 guidelines 6 through 15 are adequately represented in the FRA EVM system description, related procedures, and implementation of the NOνA project. Through a series of interviews and document reviews, two corrective actions (CARs 06 and 12) and two improvement opportunities (CIOs 08 and 09) were identified. Otherwise, FRA was found compliant with these guidelines.

The scheduling process defines the schedule hierarchy that must be established to ensure proper, effective planning, and statusing of all effort on the project. The review team was provided a demonstration of how the project uses the scheduling tool in creating and maintaining a detailed and summary level resource loaded schedule. However, the project lacked the ability to fully demonstrate the existence of total network relationships driving the development of the project's critical path and float calculations. Further, a significant number of CAMs were not familiar or comfortable with the assessment and monitoring of their current schedules. This was particularly evident with regard to supporting project milestones. During the CAMs interviews, many were not able to ascertain if project milestones are supported by the completion of the schedule work packages/activities they own. (See CIO09 in Appendix D for additional detail.)

The work and budget planning process addresses the requirements for the project organization to integrate budget and work planning requirements with the schedule to ensure completion of contractual efforts. In support of this process, CAMs are required to plan the performance measurement while developing the schedule activities. If those durations exceed multiple (usually less than three) periods, an objective method for performance is to be used to effectively measure earned value. Based on interviews with the CAMs and the NOνA project controls personnel, it was evident that objective, interim performance measures within a number of control accounts (at lower level tasks/activities) have not been identified to enable accurate performance assessment each month. This is not in line with the ANSI standard or FRA's EVM system description, as a result, noncompliance exist for those activities without objective performance metrics. (See CAR12 in Appendix C for additional detail).

Ensuring the identification and accountability of management reserve and contingency is the intent of performing planning, scheduling, and budgeting. In most projects, there is considerable uncertainty regarding the timing, risks, or magnitude of future difficulties. The adequate identification, use, and control of management reserve and contingency provides the capability to adjust for these uncertainties. The FRA EVM system description defines management reserve and contingency. Based on interviews with the PM and CAMs, the NOνA project does not utilize these same

definitions. The team found that, in most cases, the CAMs were familiar with the risk management process and aware of the purpose and proper use but implementation of the risk management process was not regularly implemented on the NOvA project. It was discovered during one interview in Conventional Construction that contingency was entered into the Performance Measurement Baseline (PMB) and performance was earned. This is inconsistent with the FRA EVM System Description and ANSI standard. (See CIO08 in Appendix D for additional detail).

The review team found the FRA EVM system description and related procedures to contain appropriate language compliant with the guidelines 6 through 15. Additionally, the team found that the budget allocations reflected in the project's control account plans, work authorization documents, and contract performance reports agreed with the budget amounts shown in the responsibility assignment matrix; budgets were estimated using appropriate resource types (labor, material, etc.); resources were loaded in project schedules but were ultimately priced in the EV cost tool; CAMs were aware of the requirement to keep the use of level of effort EV method to a minimum; and that the Budget Office is responsible for developing and maintaining rates.

4.0 Accounting Considerations – Guidelines 16-21

The surveillance team was tasked with evaluating the adequacy and compliance of the Accounting elements of the ANSI/EIA Standard 748, Guidelines 16-21. NOvA, uses data from Fermilab's financial management system, which consists primarily of Oracle eBS and Deltek Cobra. The system accumulates direct costs and allocates costs to chargeable task codes within the system on a monthly basis. The task codes used are mapped to the project's control accounts, and the task code structure supports accumulation of costs to higher levels of the WBS. Indirect costs are applied in Oracle eBS based on overheads charged up to a cap limit to the project contracts that are managed by Fermilab.

Actual Costs are extracted from Oracle eBS and loaded into Cobra monthly. The eBS and Cobra totals are reconciled to insure integrity. Contract Performance Reports (CPRs) are generated from Cobra assuring consistency of ACWP values between the financial management system and CPR data. Currently, one person in the NOvA project office extracts the actual cost data from Oracle eBS, validates the data, reformats it to allow Cobra upload, and then performs the Cobra upload. Having a single person perform both the reconciliation function (validation) and recording function (create final version), however, appears to violate the "Segregation of Duties" internal controls guideline. (See CIO 05 in Appendix D for additional detail).

Fermilab Effort Reporting (based on Kronos) and Payroll (based on Oracle PeopleSoft) are used for reporting and tracking FRA effort on the project. Time is reported by FRA resources weekly via Kronos, as time worked by day per chargeable task code. Time data is converted to cost data in PeopleSoft. The time and cost data are then processed in Oracle eBS and loaded into Cobra. Non-FRA resources report their time via spreadsheets, which are combined and entered into Cobra. FRA EVMS has defined a category of scientific labor for which no actual cost is assigned, "uncosted scientific labor". Several CAMs interviewed who were in this category reported that they reported an estimated or average time worked on the project, rather than their actual time worked. (See CAR 06 in Appendix C for additional detail.)

NOvA CAMs were able to demonstrate use of an established process for accruing and reporting subcontractor costs, and have been accruing costs. They had documentation of unit costs where applicable, and were employing recognized costing techniques. CAMs tracked price fluctuations where price variance sources were readily identified and treated as risks within the project, such as certain commodity prices and foreign exchange rates.

5.0 Analysis and Management Reports – Guidelines 22-27

The surveillance team was tasked with evaluating the adequacy and compliance of the Analysis and Management Reports elements of the ANSI/EIA Standard 748, Guidelines 22-27. The NOvA does have processes and procedures in place to do proper analysis and management reporting. The tools are also in place to produce the data necessary to do analysis and reporting. The project does their analysis and reporting on a monthly basis.

The project does generate information for cost and schedule variances at the control account level which are derived from variances at a lower level of the WBS. It did not appear that the CAMs really use this information. The CAMs are involved with the monthly status update but do have limited input on the EAC for their particular areas. It was mentioned by the CAMs interviewed that this is done at the Project Manager level with no input from the CAMs. (See CAR01 in Appendix C for additional detail).

When the CAMs do look at the EAC, they rely on Project Controls to calculate the ETC for them. This calculation is being done based on the percent complete on individual resources at the activity/work package level rather than the control account level. This calculation should be based on performance to date, commitment values for material, pending changes and estimates of future conditions. (See CAR01 in Appendix C for additional detail).

On a monthly basis, significant differences between both planned and actual cost and schedule are determined. CAMs are alerted via email when a significant variance explanation is required. This significant variance shows up in red on a dashboard. The CAMs are alerted when they are in the "red" rather than looking at the monthly differences and monitoring data themselves. It is recommended they look at all the data that is available so they can be more proactive rather than reactive. When a variance is written, it was found the variance analysis reports (VARs) were not completed in a timely manner during the monthly status cycle. There is lag in generation of the variance analysis reports versus final approval of them that implies the information is not being review in a timely manner and therefore possibly not being used by senior management. (See CAR 03 in Appendix C for additional detail).CAR03) The project does not currently maintain a corrective action log to track closure of the corrective actions documented on the variance reports as required by the FRA EVMS System Description and implementing procedure. The corrective actions identified in the variance analysis are not formally tracked to closure. (See CAR 04 in Appendix C for additional detail).

The project has a Risk Management Plan in place. The project would benefit from gathering new information and insights from the monthly status cycle to allow the CAMs and Project Manager to refine and identify risks and mitigation strategies or to remove risks if no longer applicable. Currently, risk management is not regularly done nor is the risk registry updated regularly. It was

noted that the Project Manager is aware of the potential impacts and/or opportunities; however, that awareness is not documented. (See CAR10 in Appendix C for additional detail).

6.0 Revisions and Data Maintenance – Guidelines 28-32

The surveillance team was tasked with evaluating the adequacy and compliance of the Revisions and Data Maintenance elements of the ANSI/EIA Standard 748, Guidelines 28-32.

The team assessed the Revisions and Data Maintenance ANSI guidelines and determined that control account plans and work authorization documents, baseline changes and baseline change logs were generally in accordance with the requirements as well as the ANSI Standard and the FRA EVMS System Description. A sampling of work authorization documents uncovered no issues. The change control log is kept electronically with 282 change requests submitted, totaling ~$26.9M. The change control log shows that information is tracked each time there is a revision to the Performance Measurement Baseline. Access to all of backup documents supporting the change request is available through the document management system. However, the change control signature process takes a significant amount of time in order to receive final approval. This puts pressure on using the preliminary approval signoff as the indication to execute the changes. This situation led in part to the Corrective Action (CAR-02) finding which stated that approved changes to the baseline are not implemented in a timely manner and the changes have been implemented prior to approval. (See CAR 02 in Appendix C for additional detail).

The review team examined whether changes to the baseline were authorized and revisions were made in an appropriate manner. Additionally, the team examined whether the system was in place and being employed to maintain the integrity of the Performance Measurement Baseline, including retroactive changes and re-planning when necessary. NOvA has decided not to use planning packages in their schedule but instead to have detailed tasks associated with each piece of work. Re-planning efforts focus on work in the near-term (the next few months) and result in change requests being processed to correct for impending schedule slippage. Without careful control this can result in making changes to the PMB in order to eliminate variances. This situation led to the second finding covered in Corrective Action (CAR-02) in Appendix C for additional detail).

For the NOvA experiment, there is a change control system in place that matches the requirements of ANSI/EIA Standard 748 and the FRA EVM System Description and in most cases the system is followed exactly. The review team did find a few examples of issues that would have been avoided if the system was followed in all cases. Project controls staff has a good understanding of the controls needed to reconcile the changes made to the project baseline. Overall program scope, budget and schedule objectives appear to be maintained through the baseline change process and work authorization documents. The project demonstrated that project change requests are documented and approved by the requisite approval authority but examples were found where these changes were enacted using only the preliminary approval authorization.

7.0 Appendices

Agenda

FRA EVMS Surveillance Plan

Corrective Action Requests (CAR)

Continuous Improvement Opportunity (CIO)

Appendix A

Agenda

FRA Earned Value Management System (EVMS) Annual Surveillance
March 7-9, 2011

Monday, March 07, 2011						
Time	***Subject***	***Name***	***Location***	***Subject***	***Name***	***Location***
8:00 - 9:00	Review Team Orientation Meeting**	Review Team #1 & #2	One North WH1NW	**please come earlier if you think you need help with wifi		
9:00 - 9:10	Welcome Remarks	Pier Oddone	One North WH1NW	**LEGEND**	Team Interviews	
9:10 - 9:20	Team Lead In-Brief	Cathleen Lavelle	One North WH1NW		Team Activity	
9:20 - 10:00	EVMS Overview	Dean Hoffer	One North WH1NW		EVMS Participants	
10:00 - 10:40	NOvA Overview	John Cooper	One North WH1NW		Team Data Trace	
10:40 - 11:00	transition to interview/ break		One North WH1NW		Review Team #1 & #2	
11:00 - 12:00	Controls Interview - B.Freeman/S.Saxer	Review Team #1 & #2	One North WH1NW			
12:00 - 1:00	**Lunch - working**					
1:00 - 2:00	PM Interview J.Cooper/S.Saxer	Review Team #1	John Cooper's Office WH12E	CAM Interview P.Lukens/B.Freeman	Review Team #2	FishTank WH13X
2:00 - 2:30	Review & Documentation	Review Team #1	John Cooper's Office or 1 N	Review & Documentation	Review Team #2	FishTank WH13X
2:30 - 3:30	CFO/CAO Interview C.Conger/M.Rhoades	Review Team #1 & #2	One North WH1NW			FishTank WH13X
3:30 - 4:00	Review & Documentation	Review Team #1 & #2	One North WH1NW			FishTank WH13X
4:00 -4:45	Review Team Meeting	Review Team #1 & #2	One North WH1NW	**4:00 - 4:45 NOvA debrief in Small Dining Room WH1SW**		
4:45 - 5:00	Outbrief	Review Team Lead	One North WH1NW			
6:00	**Team Dinner - Trattoria Totuccio ((630) 355-2818 - pay for your own meal)**					

Fermilab Research Alliance (FRA)

Earned Value Management System (EVMS)

Annual Surveillance Plan

March 7, 8, 9, 2011

EVMS Surveillance Plan Overview

Fermilab management maintains an Earned Value Management System (EVMS or EVM system) to ensure projects with a total project cost (TPC) over $20 million or projects where EVMS is deemed appropriate, conduct self-assessments to demonstrate continuing compliance with the EVMS requirements. Fermilab strives to continuously improve this EVMS process by assessing and modifying management techniques and processes to efficiently manage projects. This review plan summarizes the approach to be used to complete the 2011 surveillance of the FRA certified EVM system to be conducted in March 2011.

Surveillance Overview

Surveillance is the process of reviewing the implementation and use of the Earned Value Management System process to one or more programs or projects. The purpose of this surveillance is to focus on using EVMS effectively to monitor and manage cost, schedule, and technical performance. An effective surveillance process provides assessment, training, and mentoring of the EVMS process so that the elements of the process are maintained over time and on subsequent applications. Through the process of surveillance, successful practices will be shared as part of the continuous improvement process.

Objectives of Review

The goal of this EVM system surveillance is threefold. First, it ensures that processes and procedures are being followed appropriately. Second, it confirms that processes and procedures continue to satisfy the guidelines in the American National Standards Institute/Electronic Industry Alliance's (ANSI/EIA) 748-A Standard for Earned Value Management Systems. Third, the EVM system is a requirement within the DOE FRA contract, (DE-AC02-07CH11359 C.4(c)(5)(v))

Scope of Review

For purposes of the March 2011 self assessment review, the criteria for a project within the scope of this review is:

1) Total Project Cost is $20 Million or greater, and
2) The project has an approved CD-2 cost/schedule baseline.

There is one project, NOvA, which currently fit this criteria and is required to comply with the FRA Earned Value Management System, and therefore will be the selected as part of the system surveillance plan. The scope is limited to the evaluation of the implementation of the EVM system in the NOvA project.

An overview of the surveillance process includes a review of all of the guidelines in ANSI/EIA-748-A standard's EVMS Guidelines categories:

1 Organization
2 Planning, Scheduling, and Budgeting
3 Accounting Considerations
4 Analysis and Management Reports
5 Revisions and Data Management

Surveillance Membership

Surveillance membership consists of FRA and non-FRA staff to ensure independence of the surveillance process. None of the team members is associated with the NOvA project. Individuals participating in the March 2011 FRA annual EVMS surveillance include the following:

Team Leader

- Cathleen Lavelle – Brookhaven National Laboratory NSLS-II Project Controls Manager

Team Participants

- Julia Chaffin – SLAC – SLAC Project Controls
- Jennifer Fortner – Argonne National Laboratory – Project Controls Manager
- Robert Kennedy – Fermilab - Project Manager
- Thomas King – URS at FNAL – Senior Project Quality Engineer
- Richard Stanek – Fermilab – Engineer V

Process and Guideline Selection

All aspects of EVM will be considered during this system surveillance. A comprehensive surveillance will address the full content of the EVM system description and will also rely on the results of other related reviews as appropriate.

This EVMS surveillance will be based upon the remaining work and content that is specific to the project being reviewed. The selection of EVMS guidelines and processes reviewed will be relevant to the project phase.

Project Surveillance Execution

This surveillance will be organized to provide a structured setting to assess the EVMS implementation and its consistency across the project. This can be facilitated by:

- A clear code of conduct;
- Understanding of how results will be used;
- Including contractor and customer project office personnel as observers on the surveillance team;
- Obtaining out-briefings and discussions of potential findings before a report is generated;
- A clearly defined format for reporting findings and recommendations.

Responsibilities

The surveillance team will provide adequate advanced notification of specific control accounts and processes that will be reviewed. It is also the intent of this surveillance to avoid or minimize on-going work. The surveillance team will not require extensive presentations or preparations. The team can review and interpret data provided in the project's native formats. The review will be conducted in a professional manner and in a spirit of constructive assessment and discovery. The surveillance team leader is solely responsible for the final determination of findings and recommendations and ensuring that the results are communicated to the project and Laboratory management.

Project personnel should be prepared to demonstrate through objective project information that they are complying with applicable policies and procedures. The project personnel should also ensure that adequate data and project policies are available to the surveillance team sufficiently in advance of the review to allow for meaningful analysis. The project team should coordinate with the surveillance team to ensure that control account managers (CAM) responsible for areas of specific interest are available and results in the least possible disruption of on-going efforts.

The surveillance team leader will ensure that the review focuses on system compliance and does not become involved with non-system-related issues. Documented findings and corrective action plans are available and used to close out issues identified during the review.

Team Leaders Responsibilities

Assessment team leaders are independent of the assessed organization and are responsible for:

- Planning, organizing, conducting and reporting the results of their assigned assessments
- Assigning prepared and qualified assessors to assessment activities
- Coordinating and directing assessment team activities during all phases of an assessment
- Participating in data gathering while conducting the assessments in the field
- Serving as the primary point of contact between the assessed organization and the assessment team
- Ensuring that CAPs are issued for noncompliance with requirements, that opportunities for improvement are reported as recommendations and that commendable practices are reported

Team Members Responsibilities

Assessment team members are independent of the assessed organizations and may include personnel, subject matter experts or others from organizations as needed to adequately perform the assessments. Assessment team members are responsible for:

- Assisting the assessment team leader with planning assessments
- Gathering data while conducting assessments
- Keeping the team leader and assessed organizations informed during the assessment

- Assisting the assessment team leader with reporting assessments and issuing CAPs

Observer Participation
Observers are guests approved by the team leader to accompany the team, but their participation is limited and specified by the team leader.

Project Information

Successful surveillance is predicated upon demonstration of compliance with procedures through explanations and illustrations using objective project information consisting of documents, computer files, working papers, notes, or other forms of data and communication which demonstrate compliance/non-compliance with a policy, procedure, or process. Objective project information is created in the normal conduct of business and is not prepared solely for the review of a surveillance team. Examples of objective project information include work authorizations, cost and schedule status databases, variance analysis reports, and estimate-to-complete rationale.

Orientation

Orientation time will be established to introduce members of the surveillance and project teams and to discuss key EVMS-related forms and procedures. A brief overview of the nature of the projects will be beneficial to understand its unique language and goals and any unusual organizational relationships. The surveillance team will use the orientation period to explain the goals and scope of the review, the code of conduct, the disposition of finding/concerns, and the resolution process.

Data Gathering

The surveillance review will be conducted both through interviewing CAMs and project staff and verifying the integrity of objective project information. The EVMS interviews are used to obtain sufficient data for an opinion without overburdening the project. Based on surveillance results, additional interviews may be conducted.

Interviews will generally be conducted in a location close to the CAM's office, which will facilitate ease of access to objective project information. During each interview, the surveillance team assesses the level of understanding and compliance with policies, procedures, and processes and monitors project practices to assess how well they comply with the intent of the EVM guidelines. The interview team will be comprised of staff internal and external to FRA and will be divided between two surveillance teams. None of the surveillance team members are associated with the NOvA project.

The surveillance review will be thorough and structured. This involves developing a list of subject areas to facilitate scheduled interviews to ensure discussions address the entire EVMS

process. The content of review topics and questions will be provided to appropriate project personnel prior to the review to facilitate responses and documentation availability.

CAM interviews are a key component of EVMS surveillance because CAMs are the source of much of the EVMS information. CAM interviews are supplemented with data integrity tests performed independently. The ultimate objective is to determine the CAMs' use of the information derived from the EVMS as an effective management tool. Several CAMs will be interviewed from the project based on the Responsibility Assignment Matrix. Additional interviewees will include the project manager, project controls representative(s), and Fermilab's Chief Financial and Chief Accounting Officers. The assessment interviews may address any or all of the 32 guidelines in the National Defense Industrial Association (NDIA) Program Management Systems Committee (PMSC) Intent Guide, November 2006 edition.

The purpose of the interview is to assess the CAMs' understanding and implementation of the following subjects:

1. Organization
    a. Verify that the Work Breakdown Structure (WBS) contains (Guideline 1 Intent Guide)
        i. All project work, including revisions for authorized changes.
        ii. All contract line items and end items.
        iii. All external reporting elements.
        iv. Extended to the control account level.
        v. Map to WBS dictionary.
    b. Verify that a Work Authorization with scope, schedule, and budget exists at the control account level (Guideline 2 Intent Guide).
    c. Verify that the Organizational Breakdown Structure (OBS) is documented (Guideline 3 Intent Guide).
    d. Verify that the same WBS is linked between schedules, work authorization, and control account plans (Guideline 3 Intent Guide).
    e. Verify that Responsibility Assignment Matrix or equivalent documents control accounts at the appropriate level (Guideline 3 & 5 Intent Guide).
    f. Verify indirect account structure and organizational assignment/authority are clearly defined according to approved accounting procedures (Guideline 4 Intent Guide)

2. Planning, Scheduling and Budgeting
    a. Ensure Project Schedule specifics (Guideline 6 Intent Guide)
        i. WBS/OBS identifiers (e.g. Control Account Manager, responsible manager) exist in the project schedule at activity level for summarization.
        ii. Project schedule reflects entire WBS Dictionary.

iii. Critical target/contractual dates are identified in the project schedule and there is a clear definition of what constitutes commencement and completion of each work package.
iv. The project schedule identifies significant interdependencies.
v. Resource estimates are reasonable and consistent with the schedule.
vi. The baseline is reasonable to achieve project requirements as demonstrated through schedule analysis techniques.
vii. The project schedule baseline is established.
viii. The schedule provides current status and forecasts of completion dates for all discrete work.
ix. The project has a critical path.

b. Verify that objective completion criteria are used as a basis to determine achievement (Guideline 7 Intent Guide).
c. Verify that CAM updates schedule status (Guideline 7 Intent Guide).
d. Verify the integration of scope, schedule and budget at the control account level (Guideline 8/9 Intent Guide).
e. Verify that the time-phased Performance Measurement Baseline (PMB) equals the work authorized and summarizes the control accounts to the contract value (Guideline 8/9 Intent Guide).
f. Verify that control account budgets identify elements of cost including subcontractor (Guideline 9 Intent Guide).
g. Verify that management reserve and undistributed budget, if any, track to logs (Guideline 9/14 Intent Guide).
h. Verify task durations are meaningful and relatively short (Guideline 10 Intent Guide).
i. Verify longer tasks use objective earned value techniques (Guideline 10 Intent Guide).
j. Verify that schedule and cost variances are collected at control accounts (Guideline 10 Intent Guide).
k. Verify the work packages are uniquely identified, have a budget, and have budget or assigned value in terms of dollars, labor hours or other reasonable units (Guideline 10 Intent Guide).
l. Verify that planning packages are not in the current month and reflect the manner in which the work will be performed (Guideline 10 Intent Guide).
m. Verify that the control account work packages and planning packages (if any) add to the control account total budget (Guideline 11 Intent Guide).
n. Identify level of effort designated work is appropriately categorized and identifiable (Guideline 12 Intent Guide).
o. Verify there is a document process for managing indirect costs with an organizational structure identifying ownership responsibility and authority levels.
p. Verify that management reserve and undistributed budget logs reconcile with last two months of Cost Performance Reports (CPR) (Guideline 14 Intent Guide).

q. Verify that baseline control logs reconcile with performance measurement baseline (Guideline 15 Intent Guide).

3. Accounting Considerations
   a. Verify that Actual Cost of Work Performed (ACWP) in the contract performance reports (CPR) reconcile with books of record (Guideline 16 Intent Guide).
   b. Verify a work-order/job-order/task-code charge number structure exists that uniquely identifies costs at the control account level allowing for accumulation of costs to higher levels of the WBS (Guideline 17/18 Intent Guide).
   c. Verify that all indirect costs are recorded and appropriately distributed to the recorded direct costs per Laboratory Policy (Guideline 19 Intent Guide).
   d. Verify, if using unit cost, the accounting system produces actual unit costs for measuring cost performance (Guideline 20 Intent Guide).
   e. Verify that material costs are accurately charged to control accounts using recognized and accepted costing techniques (Guideline 21 Intent Guide).

4. Analysis and Management Reports
   a. Verify that variance analysis is performed and reporting conforms to the project defined control thresholds as required (Guideline 22 Intent Guide).
   b. Verify that significant schedule and cost variance analysis is performed at least monthly and contains a narrative of the cause, impacts, and corrective action as appropriate (Guideline 22/23 Intent Guide).
   c. Verify that corrective actions are assessed, implemented and closed in a timely manner (Guideline 23/26 Intent Guide).
   d. Verify indirect costs are budgeted and applied with variances reported at a level and frequency needed for management control (Guideline 24 Intent Guide).
   e. Verify that variance analysis as reported to the customer reconciles with the analysis at the control account level (Guideline 25 Intent Guide).
   f. Verity the Estimate to Complete (ETC)/Estimate at Complete (EAC) and compare this to the PMB to identify variances at completion (Guideline 27 Intent Guide)
      i. Verify that Comprehensive EACs are updated monthly per requirements and take into account performance to date efficiencies.
      ii. Verify that CAMs compare estimates to budgets at work package frequently enough to avoid adverse impact.
      iii. Verify that time-phased ETC reconciles with the EAC as reported to the customer.
      iv. Verify that risks and opportunities are integrated into summary schedule and ETC resource plans.

5. Revisions and Data Maintenance
   a. Verify that work authorization plus any baseline change documentation is recorded in a timely manner and equals the current control account budget (Guideline 28/29 Intent Guide).

b. Verify any changes to budgets are authorized by tracing the last change proposal authorized. Verify schedule and cost integration at control account level and that the WBS is updated as appropriate (Guideline 23/29 Intent Guide).
c. Verify that change logs reconcile and contain justification (Guideline 28/29 Intent Guide).
d. Verify that retroactive changes are made only for correction of errors, accounting adjustments, effects of customer management directed changes to improve accuracy of data. If any have been made, verify that they are consistent with disclosed EVMS policy (Guideline 30 Intent Guide).
e. Verify, in at least one control account, that the most recent month's changes/adjustments as reported to the customer, are reflected in the Performance Measurement Baseline (PMB) and reconcile to entries in the contractual baseline log (Guideline 30 Intent Guide).
f. Verify that negative earned value status, if any, has been adequately explained (Guideline 30 Intent Guide).
g. Verify that all baseline changes within a month are authorized, follow the baseline management control process, and reconcile to baseline control requests (BCRs) or the equivalent (Guideline 31/32 Intent Guide).

Surveillance Results

Concerns Identified During the Surveillance

The surveillance team will gather data by reviewing documentation and interviewing members of the project team. The assessment is conducted in accordance with the plan and schedule. Team members obtain and document the information needed to satisfy the purpose and scope of the assessment. Activities performed may include any of the following:

- Conduct interviews
- Examine documents and records to determine compliance
- Examine work products
- Notify management of the responsible organization of potential noncompliance with requirements or opportunities for improvement

A key component of surveillance is communicating timely, pertinent, and candid feedback. Surveillance team members and project personnel should seek clarification to fully understand questions asked, the data sought, and the responses provided. If, after fully understanding the information provided, a surveillance team member believes that there may be a question of compliance; the surveillance team will discuss the observation. If the surveillance team agrees that observation is still a question of compliance, Fermilab and the project will be notified by the surveillance team of the concern no later than during Out-Briefs at the end of each day. This gives the FRA project the opportunity to supply the surveillance team additional information to clarify the observation. This may result in the concern of the observation being resolved, or may result in a recommendation or a finding of non-compliance. Findings and recommendations are defined as:

Findings

Findings fall into two broad categories: 1) non-compliance with the accepted EVMS description and 2) non-compliance with the ANSI/EIA 748 EVMS guidelines. Failure to resolve findings reduces confidence in the ability of project management to effectively use the EVMS process to achieve project goals and objectives of the stakeholders.

Recommendations

The team members may recommend EVMS implementation enhancements such as sharing of successful practices, tools, or other items that come to their attention. Recommendations, however, are not the same as findings and, therefore, need not be tracked for closure.

Surveillance Final Out-Brief

The assessment team leader conducts a closing meeting with the assessed organization and assessment team to:

- Inform them of the assessment results including any non-conformances or opportunities for improvement
- Allow the assessed organization to provide feedback on potential non-conformances and discussion of opportunities for improvement
- Respond to questions

The surveillance team will evaluate what they have observed and the information received during the surveillance to come to a consensus if any findings or recommendations should be issued. Also, the surveillance team should identify if the findings are systemic rather than implementation issues. Any findings and recommendations are to be presented by the surveillance team leader at the Final Out-Brief.

It is possible that the project team may disagree with the final surveillance results. When a finding is not due to a team's misunderstanding, the EVMS process owner (Fermilab Office of Project Management Oversight (OPMO)) must be able to explain the impact of deviating from policy and the benefits to the project and management team of compliance with the intent of the EVMS guidelines.

Final Report

The surveillance team develops the final report for Fermilab by the following process:

- A preliminary report is provided to allow Fermilab and the reviewed project the opportunity to give any additional feedback in a reasonable timeframe.
- Any feedback received will be evaluated to determine if corrections or additions are required in the final report.

- The final report will be issued by the surveillance team leader to the director of OPMO, the director of OQBP, and the QA Manager.

When preparing the final report, the assessment team members review information obtained and draw conclusions about any non-conformance, opportunities for improvement or commendable practices observed. Observations will be examined to determine if collectively, they indicate more significant problems.

Problem areas identified during the assessment that are determined to be non-compliant with management system requirements or the organization's implementing requirements will be reported as findings, documented on Corrective Action Plans (CAPs), and processed in accordance with the Fermilab Corrective & Preventive Action Procedure, 1004.1001. Areas that are potentially non-compliant but are not within the agreed upon scope or are compliant but present opportunities for improvement, are reported as recommendations on Continuous Improvement Opportunities (CIOs).

Corrective Action Plan

The Fermilab EVMS process owner will develop a Corrective Action Plan (CAP) to address any findings or recommendations identified in the final report from the surveillance team. The CAP should include:

- Who is responsible and who is designated to managed the resolution
- The estimated completion dates
- The root cause, if controls need to be updated or if the activity has the correct controls under current operating conditions
- Mitigation actions, if any, until the appropriate controls are in place
- A schedule with realistic dates for when the corrective actions are to be completed.

The CAP will be tracked by OQBP in accordance with the Fermilab Corrective & Preventive Action Procedure 1004.1001. The surveillance team will receive a copy of the CAP for information only; no further actions are required by the surveillance team.

Surveillance Review Close-out

FRA EVMS process owner is to insure that CAP has been acceptably completed. OQBP will ensure the close-out of the CAP and any follow-up verification and validation is documented and retained for future EVMS surveillances.

EVMS Surveillance Team Assignments

Name	From	Title	Team	Responsibility Area	NDIA Guidelines
Cathleen Lavelle (Team Lead)	BNL	Project Controls Manager, NSLS-II Photon Science Directorate, BNL	1	organization	1 - 5
Julia Chaffin	SLAC	SLAC Project Controls	2	analysis & mgmt	22 - 27
Jennifer Fortner	Argonne	Project Controls Manager	2	planning & budget	6 - 15
Robert Kennedy	Fermilab	Project Manager	2	reporting & acctng	16 - 21
Rich Stanek	Fermilab	Engineer V	1	revisions	28 - 32
Thomas King	Fermilab	Sr. Project Quality Engineer	1	planning & budget	6 - 15

Table of Revisions

Author	Description	Revision	Date
T. King	Final Draft – submitted for Team Lead Approval	A003	03/01/2011
T. King	• Change references from Fermilab EVMS Surveillance to FRA EVMS Surveillance • Omitted "6.1 Code of Conduct" title • Change team assignment for T. King • Removed footer - 11-IA-QA-006_EVMS_Surveillance_Plan-Rev001.docx	001	03/05/2011

Appendix C

Corrective Action Requests

FRA Earned Value Management System (EVMS) Annual Surveillance
March 7-9, 2011

1. Subject: **Estimate at Completion is Not Utilized Correctly on the Project**	2. Guideline Ref **27**	3. Control Number: **CAR-01**
4. CA#, WBS#, or Functional Area: **All WBS Elements**		

5. Description:

REQUIREMENT:
ANSI/EIA-748 GL#27 states: "Develop revised estimates of cost at completion based on performance to date, commitment values for material, and estimates of future conditions. Compare this information with the performance measurement baseline to identify variances at completion important to company management and any applicable customer reporting requirements including statements of funding requirements."

The FRA EVMS System Description states in 5.2.7 Monthly Project Status Calculations and Forecasts: " As part of the monthly project status report, project management updates the EAC and analyzes it at the control account level to account for all changes from the baseline that have been identified. The EAC update reflects a current analysis of project risks and includes all proposed change requests.

DISCUSSION: The EAC reported in the monthly Cost Performance Report appears to be analyzed at the Project level; however, the individual CAMs have little, input understanding or ownership of the monthly EAC analysis. The EAC does not include the proposed change requests as stated in the FRA EVMS System Description.

OBSERVATION / FINDING: The EAC is being analyzed at the Project level. In interviews with the CAMs, the CAMs indicated they have no input to the EAC. It was found that when the CAMs do their monthly status report, they do not perform an analysis of the project risks (see CAR10) nor do the CAMs include proposed change requests in the EAC.

When asked how the ETC was calculated, it was mentioned that the ETC is calculated by Project Controls not the CAM based on the percent complete on the individual resources at the activities/work package level. CAM Interviews indicated that the CAMs provide little input into the ETC/EAC and have limited understanding/ownership of their respective EACs. ETC is being used as the percent complete against an activity/work package and does not include the work that has been performed (ETC = BAC – BCWP).

Interviewed CAMs indicated that they do a bottoms-up EAC prior to major DOE reviews which appear to occur annually.

Also, as identified in CAR-10, the CAMs review/input into the Project risk registry is minimal. According to the system description, risk analysis should be a part of the monthly status report so it can be included in the EAC analysis.

6. Attachments: None

1. Subject: **Change Requests to Eliminate Variances, Timing of CR Implementation**	2. Guideline Ref: **30 and 31**	3. Control Number: **CAR-02**

4. CA#, WBS#, or Functional Area:
WBS # 2.0.1.1.2.8 and 1.0.1.1.3.2.3
WBS # 2.9.1, 2.9.2 and 2.9.3

5. Description:

REQUIREMENT:
Change Request to Eliminate Variances
ANSI/EIA-748 GL#30 states: "Changes that would arbitrarily eliminate existing cost and schedule variances should not be made."
FRA EVMS System Description 6.1.5 states: "Internal replanning is intended for in-scope changes that relate to future work."
FRA Change Control Procedure 12.PM-007 states: "Changes shall not be authorized to mask cost or schedule variances that can be corrected management attention or action. Requested changes to the project baseline to eliminate poor project performance issues and/or mitigate baseline variances are not approved."
Timing of CR Implementation
ANSI/EIA-748 GL#31 states: "Any changes to the project must be approved and implemented following the baseline management control process."
FRA EVMS System Description 6.1.5 states: "Approved changes are incorporated into the performance management baseline in a timely manner, usually before the end of the next reporting period."
FRA Change Control Procedure 12.PM-007 states: "An internal change must be approved before a budget revision can be formally incorporated into the performance measurement baseline and its associated work executed. The CAM must work with Project Controls to update all affected CAP and Project documents that reflect scope, schedule, and budget information and assure that these updates are consistent with the approved CR."

DISCUSSION:
Change Request to Eliminate Variances
Internal replanning efforts are allowed on open work packages as long as the past portion of the work already completed is not affected. Changing budget or schedule within an open work package without splitting off the future work into a new activity and locking down the past work, changes history and eliminates variances.
Timing of CR Implementation
Changes to the project management baseline can only be enacted after the Change Request (CR) is formally approved by the Project Manager or designee consistent with the FRA EVMS System Description and Change Control Procedure 12.PM-007.

OBSERVATION / FINDING:
Change Request to Eliminate Variances
CR276 "Schedule Adjustments for 53MHz RF System Fabrication and Testing" changes the baseline schedule according to a replanning effort for an ongoing activity. The fact that these changes were made without splitting the activity into past and future work packages jeopardizes the integrity of past performance data.
Timing of CR Implementation
CR238 "Schedule Adjustments for Selected Detector Assembly Tasks with Baseline Start Dates in Oct 2010" changes the baseline schedule from having start dates in Oct 2010 to start dates in Jan 2011. The CR was initiated on 11/16/2010, received "preliminary approval" on 11/16/2010" but did not receive final approval until 1/7/2011. According to discussions with the Project Scheduler during the interview process, changes to the PMB were made in Nov 2010 prior to the final approval of the CR. In discussions with Project personnel this practice is implemented in multiple areas within the project.

6. Reference:
CR# 238 NOvA Document 5386-v2
CR# 276 NOvA Document 5646-v2

1. Subject: **Variance Analysis – Not Timely, Not Consistently Used By Project**	2. Guideline Ref: **#22, #23**	3. Control Number: **CAR-03**
4. CA#, WBS#, or Functional Area: **All Control Accounts – Analysis and Management Reports**		

5. Description:

REQUIREMENT:
ANSI/EIA-748 GL#22 guideline states:
"At least on a monthly basis, generate the following information at the control account and other levels as necessary for management control using actual cost data from, or reconcilable with, the accounting system: 1) Comparison of the amount of planned budget and the amount of budget earned for work accomplished. This comparison provides the schedule variance. 2) Comparison of the amount of the budget earned and the actual (applied where appropriate) direct costs for the same work. This comparison provides the cost variance.**"**

ANSI/EIA-748 GL#23 guideline states:
"Identify, at least monthly, the significant differences between both planned and actual schedule performance and planned and actual cost performance, and provide the reasons for the variances in the detail needed by program management.**"**

DISCUSSION:
The NDIA EVMS Intent Guideline 22 states the following: "On at least a monthly basis, generate schedule variance and cost variance data that supports management control needs by allowing the project manager to focus on those areas in need of attention. The intent of this guideline is to recognize that analysis must be accomplished on a regular, periodic basis."

The NDIA EVMS Intent Guideline 23 states the following: "The purpose of this guideline is to ensure both significant schedule and cost variances are analyzed, at least monthly, at a level of detail required to manage the effort, i.e., to enable management decision-making and corrective action."

The FRA System Description states the following in section 5.3.2 Monthly Reporting Cycle: "reports generated from the EVMS are updated and published monthly. The large amount of data, number of people providing input, processing time, and other considerations require that an orderly process is used to collect, review, report, and use the data generated by the system."

The FRA EVMS Procedure 12.PM-006 Monthly Status Reporting states the responsibilities of the PM and CAM as "reviewing variance reports and providing acceptance or required corrective action" and "preparing variance reports and required corrective action plans" respectively.

OBSERVATION / FINDING:
Based on an assessment of the project's document database, VARs are not completed in a timely manner during the monthly status cycle. VARs were sampled for WBS 2.0.1.2 and resulted in uncovering October, November, and December VARs were not prepared, approved, or fully signed until February. This lag in generation versus final approval implies that the information is not being review in a timely manner and therefore not possibly being used by senior management. After further interviews with the PM, CAMS, and Project Controls it was determined that VARs have no formal deadline for completion or approval at the CAM and PM level. A clear project business process/monthly update cycle regarding the VAR process and utilization of its information for management decision-making is absent from the PEP.

OBSERVATION / FINDING (Continued):
Additionally, review of select VARs within multiple control accounts uncovered that the quality of the analysis does not allow for proper utilization by project management. Explanation of variance, description of the problem, impacts, and corrective actions are not identified in sufficient detail needed for project management. This could be due to lack of oversight from the project controls, a need for refresher training, or some combination of these and other issues. Regardless, it does not allow the project to use the VARs effectively.

6. Attachments:
VAR Info 2.0.1.2

signature date says 07 Feb 11

CLASSIFICATION (When Filled In)

CONTRACT PERFORMANCE REPORT FORMAT 5 - EXPLANATIONS AND PROBLEM ANALYSES								FORM APPROVED OMB No. 0704-0188	
1. CONTRACTOR		2. CONTRACT		3. PROGRAM				4. REPORT PERIOD	
a. NAME Fermi National Accelerator		a. NAME		a. NAME NOvA project				a. FROM (YYYYMMDD) 2010/10/01	
b. LOCATION (Address a Batavia, Illinois		b. NUMBER		b. PHASE				b. TO (YYYYMMDD) 2010/10/31	
		c. TYPE	d. SHARE RATIO	c. EVMS ACCEPTANCE (YYYYMMDD NO X YES					
2.0.1.2 Recycler Kicker System									
	BCWS	BCWP	ACWP	SV in $	SV in %	CV in $	CV %	SPI	CPI
Current:	344,853	269,338	211,039	-75,515	-22%	58,299	22%	0.78	1.28
Cumulativ	1,862,355	1,577,605	2,150,395	-284,749	-15%	-572,790	-36%	0.85	0.73
	BAC	EAC	VAC in $	VAC in %	CPI to BAC	CPI to EAC			
At Comple	8,620,541	9,204,840	-584,298	-7%	1.09	1.00			
Thresholds Exceeded: Current Period Schedule, Current Period Cost, Cumulative Schedule, Cumulative Cost									
Explanation of Variance/Description of Problem: Current period schedule variance due to scheduled delivery of kicker cable, while we had early delivery in August.									
Impact:									
Corrective Action:									
Monthly Summary (to include technical causes of VARs, Impacts) and Corrective Action(s): Current period schedule variance due to scheduled delivery of kicker cable, while we had early delivery in August.									
Prepared by: Paul Derwent		Date: 7-Feb-11		Approved by:			Date:		

signature date says 10 Feb 11

CLASSIFICATION (When Filled In)

CONTRACT PERFORMANCE REPORT FORMAT 5 - EXPLANATIONS AND PROBLEM ANALYSES				FORM APPROVED OMB No. 0704-0188
1. CONTRACTOR	2. CONTRACT		3. PROGRAM	4. REPORT PERIOD
a. NAME Fermi National Accelerator Lab	a. NAME		a. NAME NOvA project	a. FROM (YYYYMMDD) 2010/11/01
b. LOCATION (Address and Z Batavia, Illinois	b. NUMBER		b. PHASE	b. TO (YYYYMMDD) 2010/11/30
	c. TYPE	d. SHARE RATIO	c. EVMS ACCEPTANCE (YYYYMMDD NO X YES	

2.0.1.2 Recycler Kicker System

	BCWS	BCWP	ACWP	SV in $	SV in %	CV in $	CV %	SPI	CPI
Current:	61,197	138,763	279,268	77,565	127%	-140,505	-101%	2.27	0.50
Cumulative	1,923,552	1,716,368	2,429,663	-207,184	-11%	-713,295	-42%	0.89	0.71
	BAC	EAC	VAC in $	VAC in %	CPI to BAC	CPI to EAC			
At Complet	8,620,541	9,337,072	-716,531	-8%	1.12	1.00			

Thresholds Exceeded: Current Period Schedule, Current Period Cost, Cumulative Schedule, Cumulative Cost

Explanation of Variance/Description of Problem:
Slightly ahead of schedule for month, slowly catching up. Cost variance due to charges to 2.0.x tasks with work associated with 1.0.x tasks because of lack of funds in R&D.

Impact:

Corrective Action:

Monthly Summary (to include technical causes of VARs, Impacts) and Corrective Action(s):
Slightly ahead of schedule for month, slowly catching up. Cost variance due to charges to 2.0.x tasks with work associated with 1.0.x tasks because of lack of funds in R&D.

Prepared by:	Date:	Approved by:	Date:
Paul Derwent	9-Feb-11		

approved on 15 Feb 11

CLASSIFICATION (When Filled In)

CONTRACT PERFORMANCE REPORT FORMAT 5 - EXPLANATIONS AND PROBLEM ANALYSES				FORM APPROVED OMB No. 0704-0188
1. CONTRACTOR	2. CONTRACT		3. PROGRAM	4. REPORT PERIOD
a. NAME Fermi National Accelerator	a. NAME		a. NAME NOvA project	a. FROM (YYYYMMDD) 2010/12/01
b. LOCATION (Address a Batavia, Illinois	b. NUMBER		b. PHASE	b. TO (YYYYMMDD) 2010/12/31
	c. TYPE	d. SHARE RATIO	c. EVMS ACCEPTANCE (YYYYMMDD NO X YES	

2.0.1.2 Recycler Kicker System

	BCWS	BCWP	ACWP	SV in $	SV in %	CV in $	CV %	SPI	CPI
Current:	114,913	156,839	257,553	41,927	36%	-100,714	-64%	1.36	0.61
Cumulativ	2,038,465	1,873,207	2,687,216	-165,257	-8%	-814,009	-43%	0.92	0.70
	BAC	EAC	VAC in $	VAC in %	CPI to BAC	CPI to EAC			
At Comple	8,621,451	9,438,026	-816,574	-9%	1.14	1.00			

Thresholds Exceeded: Current Period Schedule, Current Period Cost, Cumulative Schedule, Cumulative Cost

Explanation of Variance/Description of Problem:

Slightly ahead of schedule for month, slowly catching up. Cost variance due to charges to 2.0.x tasks with work associated with 1.0.x tasks because of lack of funds in R&D.

Impact:

Corrective Action:

Monthly Summary (to include technical causes of VARs, Impacts) and Corrective Action(s):

Slightly ahead of schedule for month, slowly catching up. Cost variance due to charges to 2.0.x tasks with work associated with 1.0.x tasks because of lack of funds in R&D.

Prepared by:	Date:	Approved by:	Date:
Paul Derwent	14-Feb-11		

1. Subject: **Variance Analysis Corrective Action Tracking**	2. Guideline Ref: **#26**	3. Control Number: **CAR 04**

4. CA#, WBS#, or Functional Area:
All WBS/CA – Analysis and Management Reports

5. Description:

REQUIREMENT:
ANSI/EIA-748 GL# 26 guideline states:
"Implement managerial action taken as the result of the earned value information.

FRA System Description/Procedure 12.PM-006 Monthly Status and Reporting – "The corrective action log status shall be monitored and updated.."

DISCUSSION:
The NDIA EVMS Intent Guideline 26 states the following:

Assess management actions and modify them as required to achieve project objectives. Earned value data must be utilized by all levels of management for effective project execution. Because of this, the data produced by the earned value management system must be available to managers on a timely basis and must be of sufficient quality to ensure that effective management decisions can be made as a result of its analysis. The project's internal reports and the reports forwarded to their customer must indicate the overall cost and schedule impacts of such problems on the project.

The FRA EVMS Procedure 12.PM-006 Monthly Status and Reporting states in section 4.2 CAM Variance Review and Analysis, that "After accepting the variance analysis, the Project Manager (or designee) will note any required corrective action on the corrective action log. The corrective action log status shall be monitored and updated when necessary, at least on a monthly basis until the action is closed".

OBSERVATION / FINDING:
The CAMs interviewed prepare variance analysis reports based on thresholds established for the project. The variance analysis reports identify the cause, impact and corrective action (if required); and the variance analysis reports are reviewed and accepted by the project manager. Based on interviews with the CAMs and discussions with the project manager/project controls, the project does not currently maintain a corrective action log to track closure of the corrective actions documented on the variance reports as required by the FRA EVMS System Description and implementing procedure. The corrective actions identified in the variance analysis are not formally tracked to closure. The project personnel do not track the closure of corrective actions outlined in the project variance analysis.

A Corrective Action Log is not created or maintained and for this reason the FRA EVM System Description/Procedure requirement for a Corrective Action Log to track corrective actions to closure is non compliant.

6. Attachments: None

1. Subject: **Uncosted Scientific Labor Charging Inaccurately**	2. Guideline Ref: **9, 22, 23**	3. Control Number: **CAR-06**

4. CA#, WBS#, or Functional Area:
WBS 2.2, 2.3, 2.5

5. Description:

REQUIREMENT:
ANSI/EIA-748 GL#9 states: **"**Provide for integration of the program work breakdown structure and the program organizational structure in a manner that permits cost and schedule performance measurement by elements of either or both structures as needed."

ANSI/EIA-748 GL#22 states: "At least on a monthly basis, generate the following information at the control account and other levels as necessary for management control using actual cost data from, or reconcilable with, the accounting system: (1) Comparison of the amount of planned budget and the amount of budget earned for work accomplished. This comparison provides the schedule variance. (2) Comparison of the amount of the work budget earned the actual (applied where appropriate) direct costs for the same work. This comparison provides the cost variance."

ANSI/EIA-748 GL#23 states: "Identify, at least monthly, the significant differences between both planned and actual schedule performance and planned and actual cost performance, and provide the reasons for the variances in the detail needed by program management."

DOE OECM EVMS Certification Review (May 2009) CAR-01 states: "It is recognized the unique nature of the support being provided by scientists at the various universities and that the science community culture at many places does not include accounting for their labor hours worked on project. However, accurate project status and projections of project completion schedule and costs cannot be determined without accounting for scientists' labor."

FRA EVMS System Description Section 5.1.2.1 states: "For projects where uncosted labor is utilized, actual hours of effort for those resources will be collected."

DISCUSSION:
Collection of accurate data is required in order to fulfill the ANSI/EIA-748 guidelines 9, 22, 23. As a result of CAR-01 from the DOE OECM EVMS Certification Review held in May 2009, FRA EVMS System Description Section 5.1.2.1 was introduced to insure that Earned Value is recorded accurately for uncosted labor.

OBSERVATION / FINDING:
CAMs interviewed that are uncosted scientists stated that they charge an estimated or an average time per week to the project. They do not report time based on the actual hours worked. They indicated that they work more hours for the project than they charge to the project.

6. Attachments: None

1. Subject: **CAM Refresher Training Not Performed**	2. Guideline Ref:	3. Control Number: **CAR-07**

4. CA#, WBS#, or Functional Area:
All WBS Elements

5. Description:

The Control Account Managers (CAMs) are required to undergo CAM Refresher Training on an annual basis per the FRA EVMS System Description. Based on the CAM Interviews and the presentations during the plenary sessions, the last CAM Refresher Training was held over one year ago.

REQUIREMENT:

FRA EVMS System Description section 2.6 Training states: "All personnel involved in planning or implementing the EVMS process, including existing staff and on-site contractor personnel, new hires, and transfers, are trained at the level applicable to their roles and responsibilities. At a minimum, EVMS training requires that Project Managers and Control Account Managers read the current version of this Earned Value Management System Description document and complete EVMS training when first associated with a project. These individuals may also be required to read additional EVMS reference materials or addendums as identified by specific project requirements. Refresher training for those involved in active projects will be required on an annual basis."

DISCUSSION:

EVMS Refresher Training is required to be conducted for the CAMs on an annual basis per the FRA EVMS System Description. The last refresher training class was held Sept/October 2009 per the plenary session presentation by the NOvA Project Manager. During their interviews, the CAMs were asked when they were given EVMS training and most CAMs stated they had not received any EVMS training after the initial training session.

OBSERVATION / FINDING:

The CAMs would benefit from CAM Refresher Training on an annual basis consistent with the requirement in the FRA System Description. The CAMs would then be better prepared to generate variance analysis, prepare EACs, understand and better understand the project schedule , assess risks and prepare change requests with regular annual EVMS refresher training.

6. Attachments:
None

1. Subject: **Risk Assessment Not Formalized and Conducted Regularly**	2. Guideline Ref: #27	3. Control Number: CAR-10
4. CA#, WBS#, or Functional Area: **All Control Accounts**		

5. Description:

REQUIREMENT:
ANSI/EIA-748 GL# 27 guideline states:
"Develop revised estimates of cost at completion based on performance to date, commitment values for material, and estimates of future conditions. Compare this information with the performance measurement baseline to identify variances at completion important to company management and any applicable customer reporting requirements including statements of funding requirements."

The FRA Earned Value System Description states, in section 3.2 Risk Management, "As the project progresses, new information and insights allow the Project Manager to refine the identified risks and mitigation strategies or remove the risk from consideration once it is no longer applicable. This is accomplished through regular review of project risks by Control Account Managers (CAM) as they analyze cost and schedule variances, develop corrective actions, and execute the corrective actions to completion. In addition, risks are considered during the development of Estimates to Complete (ETC) by the CAM."

DISCUSSION:
The NDIA EVMS Intent Guideline 27 states the following: "EACs should consider all emerging risks and opportunities within the project's risk register (or other similar database) which will impact the integrated master schedule and resource plan for the remainder of the work."
The NOvA Risk Management Plan, section 5. Risk Management Tools and Practices, section 5.3 Integration of Risk Management with Other Activities, states, "Risk management is a line activity in NOvA and, as such, will be a normal part of many activities and meetings. The NOvA Risk Management Board will meet regularly to discuss risk issues. NOvA Collaboration meetings will also regularly include reports from Level 2 managers that will address risk-related issues."

NOvA's Implementation of FRA's Earned Value Management System states, "Calculate earned value and provided project management with earned value reporting and variance analysis information in a timely manner in order to identify potential risks and opportunities to the project and to efficiently and effectively manage those risks and opportunities regularly."

5. Description: (cont'd)
OBSERVATION / FINDING:
Following the interview with project management and CAMs, it appears that the project performs limited risk management; however, it is referred to as contingency management. However, the contingency application to activities is not contingency it is management reserve per the definitions in the System Description. It was explained that MR (assigned contingency) is assigned at the activity level based on the remaining budget of the activity. As activities are completed, assigned contingency is transferred to unassigned contingency. However, not much is correlated to the risk event list that qualifies/quantifies management reserve.

During interviews with project management and CAMs, it was discovered that the projects discusses risk events, but the project does not formally conduct regular risk analysis. And, the most current evidence of risk analysis is an outdated risk list that was updated August 2010. It was also discovered that formal risk identification, analysis, modification and retirement are done prior to major reviews, which is when the last formal update was done. The risk registry that is loaded on the surveillance review webpage contains a lot of relevant information; however, it does not quantify those events.

Based on the requirement/expectation detailed in the project's Risk Management Plan, risk identification, retirement and updates are to occur on a regular basis; and the information derived from those regularly scheduled meetings be reported to the appropriate stakeholders. It was observed that the project does not meet regularly to formally document risk updates; again, this is only contingent upon major DOE reviews.

Based on the requirements/expectation detailed in the Laboratory's EVM-SD, "As the project progresses, new information and insights allow the Project Manager to refine the identified risks and mitigation strategies or remove the risk from consideration once it is no longer applicable. This is accomplished through regular reviews of project risks by Control Account Managers (CAM) as they analyze cost and schedule variances, develop corrective actions, and execute the corrective actions to completion. In addition, risks are considered during the development of Estimates to Complete (ETC) by the CAM." It is clear that the project manager is aware of potential impacts and/or opportunities; however, that awareness is not documented anywhere. There was no evidence provided to the team that a Risk Management Board exists for the project, nor is there clear evidence that the Level 2 managers are fully integrated into the formal process of risk management. There does not seem to be any evidence of fluctuations in remaining contingency.

6. Attachments:
None

1. Subject: **Objective Measurement of EV**	2. Guideline Ref: **#7**	3. Control Number: **CAR-12**
4. CA#, WBS#, or Functional Area: **Planning, Scheduling, and Budgeting**		

5. Description:

REQUIREMENT:
ANSI/EIA-748 GL#7 states "Identify physical products, milestones, technical performance goals, or other indicators that will be used to measure progress."

FRA System Description Section 5.1 Performance Measurement, 5.1.1 Performance Management Techniques (PMT)

DISCUSSION:
The NDIA EVMS Intent Guideline 7 states, "Identify objective interim measures within tasks to enable accurate performance assessment each month. The master schedule includes key program and contractual requirements. It enables the team to predict when milestones, events, and program decision points can be expected to occur. In a development environment, lower tier schedules must contain specific task start and finish dates that are based on physical accomplishment and are clearly integrated with program time constraints. These tasks will align with the objective interim measures within long work packages to enable accurate performance assessment. A sufficient number of interim measures will be defined after the detailed schedule is established to ensure performance is measured as accurately as possible. Interim measures will be based on the completion criteria developed for each increment of work to provide a basis for objectivity, limiting the subjectivity of work accomplished. Accurate schedule status depends on the selection of objective measures of progress to indicate work completion. These measures are necessary to substantiate technical achievement against the schedule plan and justify progression to the next task. A key feature of an interdependent schedule is that it establishes and maintains the relationship between technical achievement and progress statusing."

The FRA System Description states in section 5.1.1 Performance Measurement Techniques, that "Milestone: Milestones are defined, and relative weights are assigned to them. At any point, the value earned is the original work package budget multiplied by the combined weight of the completed milestones and divided by the total weight of all milestones. This method can be applied to any work package and is generally the preferred method for work packages that span more than two fiscal periods."

FRA's 12.PM-004 Project Scheduling Procedure, Desktop Instructions – 12.PM-004.DT-01 Guideline for Developing a Schedule states, "Milestones method is preferred for activities that are greater than 2 reporting periods (2 months for Fermi) and the activities are not Unit Type activities."

NOvA's Implementation of FRA's Earned Value Management System states, "Activity not easily matching other PMTs; Tasks > 2 mos that use this method [% complete] should have EV "peg-points" specified for them up front, with each peg-point corresponding to a particular physical percent complete."

NOvA's Implementation of FRA's Earned Value Management System, Control Account Manager Instructions for Providing Monthly SubProject Progress Information for Open Plan

5. Description: (cont'd)

OBSERVATION / FINDING:
Based on the requirements set forth in FRA's System Description and guidelines from NOvA's Implementation of FRA's Earned Value Management System, CAMs are required to develop activities for their respective control account(s). While developing those activities, the CAMs are required to plan activities with durations that do not exceed two financial periods (two months); and if those durations exceeded two periods, an objective method for performance is to be used to effectively measure earned value. Based on interviews with the CAMs and the project controls personnel assigned to the project, it was discovered that there were activities that exceeded two periods without documented, objective milestones for objective performance measurement. Currently, there are 107 planned or in progress activities that have durations that range from 40 to 250 working days that do not have any objective performance measure documented. The total cost of these planned/in progress activities is ~$9M, which is 3.8% of the project's cost (this percent does not include already completed activities; the total percent impact could be higher.) Occurrences of this lack of objective measurement were not limited to one control account; there were several instances throughout the schedule that were not in compliance with the documentation referenced above.

Effective, objective measurement was not established for all activities that exceeded a two month duration. This is not in line with FRA's EVMS System Description, and as a result non compliances exist for those activities without objective performance metrics.

6. Attachments:
None

Continuous Improvement Opportunity

1. Subject: **Actual Cost Reconciliation**	2. Guideline Ref (if applicable):	3. Control Number: **CIO-05**
4. CA#, WBS#, or Functional Area: **All WBS elements**		

5. Description:

REQUIREMENT:
GAAP internal controls guideline "Segregation of Duties" states: no person will hold more than one role amongst the following business critical roles: authorization, recording, asset custody, and reconciliation.

DISCUSSION:

OBSERVATION / FINDING:
One person in Project Controls validates the Actual Cost file which comes from the accounting system. The same person in Project Controls also creates the final version of the file from data in the accounting system. Having one person or even one group perform both the recording (create final version) and the reconciliation (validation) functions for Actual Cost data violates the "Segregation of Duties" internal controls guideline.

The head of Fermilab OPMO stated in the March 07, 2011 Daily Outbrief that future experiments will separate the Field Financial Manager role and the Project Controls recording role. One person, however, currently is responsible for both roles for the NOvA project.

RECOMMENDATION:
It is recommended that the actual cost file be validated by the Finance Group and entered into the EV system by a person in Project Controls to ensure the integrity of the Actual Cost data reported on a monthly basis.

6. Attachments:

None

1. Subject: **Contingency/Management Reserve – Not Consistently Handled by the Project**	2. Guideline Ref (if applicable):	3. Control Number: **CIO-08**
4. CA#, WBS#, or Functional Area: **General**		

5. Description:

Based on the Fermi Research Alliance (FRA) Earned Value Management (EVM) System Description, Contingency and Management Reserve (MR) are very clearly defined as being established by unknown and known risks respectively.

The FRA System Description states in Section 3.6.1 Contingency and Management Reserve: "Management reserve and contingency are elements of the approved Total Project Cost (TPC) that are identified early in the project development and provide budget that covers future known risks (management reserve) and unknown risks (contingency) of the project, but are not part of the Performance Measurement Baseline."

Based on interviews with the PM and CAMs, the NOvA project does not have these same definitions and it is encouraged to clarify this language in the Project Execution Plan (PEP), Risk Management Plan (RMP), and/or the NOvA Project Implementation of FRA EVMS document. The clarification should address the deviation, if any, from the FRA EVM System Description regarding how the NOvA project defines and uses Contingency and MR. Further, it should clarify how each relates to identified risks (see CAR10).

Also, in the Conventional Construction WBS, Contingency was entered into the Performance Measurement Baseline (PMB) and performance was earned on the task that contained the Contingency. This is inconsistent with the FRA EVM System Description and ANSI standard, as shown below.

The FRA System Description states in section 3.6.1 Contingency and Management Reserve: "Management reserve and contingency are elements of the approved Total Project Cost (TPC) that are identified early in the project development and provide budget that covers future known risks (management reserve) and unknown risks (contingency) of the project, but are not part of the Performance Measurement Baseline."

The NDIA EVMS Intent Guideline 14 states the following: "Because management reserve is budget that is not yet tied to work, it does not form part of the performance measurement baseline."

During CAM interviews, movement of more Contingency into the PMB was discussed as an upcoming change request. This cannot take place. This action was treated as a CIO since it was an isolated event within the NOvA project and not proven to be systemic.

6. Attachments:

None

1. Subject: **Use and Integrity of Scheduling Data**	2. Guideline Ref (if applicable):	3. Control Number: **CIO-09**

4. CA#, WBS#, or Functional Area:
General

5. Description:

ANSI/EIA-748 GL#6 states: "Schedule the authorized work in a manner which describes the sequence of work and identifies significant task interdependencies required to meet the requirements of the program."

Guideline 6 ensures that the project schedule provides a logical sequence of work leading to a milestone, event, and/or decision point needed to ensure that the schedule supports the project objectives.

The FRA EVMS System Description states that "Risks in achieving both performance and budget goals must be clearly recognized and actively managed through: Continual review of cost/performance/ schedule risk tradeoffs."

Team members working to and understanding the current and baseline project schedule is essential for monitoring progress, analyzing variances, and tracking corrective actions. The Scheduling data/reports information is available and posted for the CAMs, but the Schedule appears to be minimally used or useful to the CAMs. The schedule had a significant number of tasks that were not logically linked (no inter-dependencies) with many tasks constrained so that the critical path could not be truly assessed.

Total tasks	6036
No Predecessors	23%
No Successors	28%

In some cases, the CAMs did not know what milestones they impact or what work outside of their WBS they would impact. They found it difficult to locate the Scheduling data/document(s) and how to use this data. Some could not identify the critical path or interfacing milestone. The project manager knows what this schedule impacts. The lack of a working schedule may be resulting in reactive rather than proactive practices and may be contributing to the creation of CR to eliminate variances. Also the large float may not create the sense of urgency that there are milestones and a schedule to follow. There appears to be minimal ownership of the Schedule at the CAM level. Related to insufficient utilizing/ reviewing the schedule, the CAMs do not appear to review and retire risks in a formal or timely manner, but leave reviews of risks for the DOE reviews of the project.

Recommendation:

As a best practice, the CAMs should be required to understand their milestones and inter-dependencies of tasks and how they impact the project. The PM should be encouraged/trained in the development and use of relevant milestones. The NOvA project schedule should be adjusted to incorporate more meaningful internal milestones rather than the external scheduled milestones (e.g. DOE CD4) to allow the CAMs to understand the true critical path. Project controls and the CAMs should work together on the schedule with the CAMs actually taking ownership of the schedule.

6. Attachments:

None

1. Subject: **Documentation Inconsistencies**	2. Guideline Ref (if applicable):	3. Control Number: **CIO-11**
4. CA#, WBS#, or Functional Area: **General**		

5. Description:

WBS Dictionary
The scope definition document in the WBS dictionary is the control point for the work-scope content in each element. The WBS Dictionary definitions are not consistent between the highest level of the WBS and the control account (lowest level of the WBS).

Inconsistencies were found while reviewing the WBS dictionary. There were similar scope definitions under two different WBS elements for design work. When the CAM was asked to show the team the WBS Dictionary he was not able to readily access the WBS dictionary to get clarification; he referenced the WBS descriptions from the scheduling tool. The team reviewed the WBS Dictionary posted on the website which was not consistent in scope content with the WBS description in the scheduling tool. There was further confusion upon reading the scope definitions in the project's PEP. The scope definitions in the PEP didn't match the WBS Dictionary posted on the website nor did it match the definitions in the scheduling tool. It is recommended that the team modify the WBS Dictionary so it clearly states the scope at the lowest level (control account). It is recommended that the WBS Dictionary be placed under configuration control (version control) and be posted in a location readily available to the project team. If this information is to be kept in the scheduling tool, it is recommended the definitions be updated in the tool as well.

ANSI Standard Reference
It is the review team's understanding that FRA is still contractually held to DOE 413.3A which references ANSI Standard 748-A. However, various documents (Monthly Status Reporting, EVMS Surveillance document) are inconsistent in referencing 748-A. Recommend keeping all documents consistent with contractual requirements.

6. Attachments:

None

1. Subject: **EVM Implementation**	2. Guideline Ref (if applicable):	3. Control Number: **CIO-13**
4. CA#, WBS#, or Functional Area: **General**		

5. Description:

DISCUSSION:

OBSERVATION:

The FRA Earned Value Management System Description, procedures, processes and tools are well documented with mature systems and tools for implementing effective performance measurement and reporting for Earned Value Management. The project personnel and CAMs are professional, knowledgeable managers who, when interviewed, largely understood the review team's questions and provided accurate informed responses regarding the processes/procedures and the intent of effective Earned Value Management and Reporting. The Project Controls staff takes direction from the NOvA Project Manager. This results in the Project Controls staff not being accountable to a supervisor who is responsible for implementing consistent EVMS principles and standards across all project. It is the observation of the team, that the Project Controls staff was somewhat limited in their effectiveness in providing objective assessment and reporting of performance. The review team believes the project and other Fermilab projects would benefit from the project controls function reporting to an organization outside of the project to permit independent assessments of performance and reporting and allow for more consistent and standardized implementation of Fermilab's Earned Value Management System across the Laboratory.

RECOMMENDATION:

In order for the Project Controls staff to implement Earned Value management for the benefit of the project, it is recommended that the project controls staff report organizationally to an autonomous group which would allow for the most effective, value added objective assessment of project performance. This recommendation would benefit the project enabling the Project Controls staff to provide objective performance measurement, reporting and oversight to the project. Centralizing Project Controls affords the project and future projects an opportunity to standardize tools, templates, performance assessment and reporting across the Laboratory.

6. Attachments:

None