Fermilab Research Alliance, LLC
Earned Value Management System
2012 Annual Surveillance Plan

March, 2012

FINAL
Rev 001

Earned Value Management System (EVMS) Surveillance Plan Overview

Fermilab Research Alliance, LLC (FRA) management maintains an effective and efficient EVMS process though Surveillance, which includes ensuring that projects with a Total Project Cost over $20 million or projects where EVMS is deemed appropriate, conduct an annual assessment of continuing compliance with the FRA EVMS requirements. FRA continuously improves this EVMS process through Surveillance, using the most current techniques and processes to manage projects most efficiently. The FRA EVMS Surveillance and Maintenance procedure (12.PM-008) establishes the methodology for FRA EVMS surveillance. The FRA EVMS was initially certified by the Office of Engineering and Construction Management (OECM) in January 2010. This document summarizes the approach to be used to complete the annual surveillance of the certified EVMS.

1. SURVEILLANCE OVERVIEW

Surveillance is the process of reviewing the implementation and use of the EVMS process to one or more programs or projects. The purpose of this system surveillance is to focus on using EVMS effectively to monitor and manage cost, schedule, and technical performance for FRA. 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.

2. OBJECTIVES OF REVIEW

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

An overview of the surveillance process includes a review of each of the ANSI guideline categories:

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

3. SCOPE OF REVIEW

This review will only focus on one project, the NUMI Off-axis electron neutrino (v) Appearance (NOvA) experiment, since it is required to comply with EVMS criteria for surveillance on the FRA certified system. For purposes of the March 2012 surveillance review, the scope will be restricted to the review of the FRA EVM System Description (EVM-SD) and procedures as they pertain to ANSI Standard 748-B and as they are implemented on NOvA.

4. SURVEILLANCE MEMBERSHIP

Surveillance membership for this review consists of participants from other labs to ensure independence of the surveillance process. Individuals participating in the 2012 FRA EVMS surveillance review include the following:

FRA EVMS Representative

Dean Hoffer – Fermilab National Accelerator Laboratory, Office of Project Management Oversight (OPMO)

Surveillance Team Reviewers

Cathy Lavelle (Team Leader) – Brookhaven National Lab, Project Management Center Manager

Julia Chaffin – Stanford Linear Accelerator Center, Project Controls Manager

Jennifer Fortner – Argonne National Laboratory, Project Support Program Manager

Sherese Humphrey – Argonne National Laboratory, Project Controls

Sue Perino – Brookhaven National Laboratory, Deputy, Photon Science Business Division

Pete Selgrad – Brookhaven National Laboratory, Project Controls

EVMS Surveillance Team Assignments

Team Member	Responsible Area	Guidelines
Cathy Lavelle	Organization	1-3,5
Pete Selgrad	Planning, Scheduling, and Budgeting	6-9 (Scheduling)
Julia Chaffin	Planning, Scheduling, and Budgeting	10-12,14,15 (Budgeting)
Sue Perino	Accounting Considerations	4,13,16-21
Jennifer Fortner	Analysis and Management Reports	22-27
Sherese Humphrey	Revisions and Data Maintenance	28-31

Observers

Marc Kaducak – Fermilab National Accelerator Laboratory, Engineer – Technical Division Headquarters

Kathy Bailey – Argonne National Laboratory, APS-U Lead Project Support

5. 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 FRA EVM-SD and will also rely on the results of other DOE related reviews as appropriate.

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

This surveillance execution will be organized to provide a structured setting to assess the NOvA project's approach to EVM process implementation and its consistency across the project's CAMs. 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 Corrective Actions and Continuous Improvements before a report is generated;
- A clearly defined format for reporting Corrective Actions and Continuous Improvements.

6. CODE OF CONDUCT

Responsibilities

The surveillance team will provide adequate advanced notification of specific control accounts and processes that will be reviewed based on data that will be provided by the project team prior to surveillance date. It is also the intent of this surveillance to not interfere with on-going work to the extent possible. The surveillance team will not require extensive presentations or preparations, and it 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

Corrective Actions and Continuous Improvements 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 team should coordinate with the surveillance team to ensure that Control Account Managers (CAMs) responsible for areas of specific interest are available and cause the least possible disruption of on-going efforts. 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. For this review, sufficiently is defined as three consecutive months of recent data provided at least two weeks prior to review, in this case, the three most recent and available between October, November, December, and January.

The surveillance team leader will ensure that the review focuses on system compliance and does not become involved with non-system-related issues. Additionally, the surveillance team leader will make certain corrective actions identified during any previous review were appropriately and remain effectively closed.

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 the FRA EVM-SD and 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. This surveillance team will be located in a central location that facilitates access to project information within the Laboratory. Examples of objective project information include work authorizations, critical decision documentation, cost and schedule status databases, variance analysis reports, and estimate-to-complete rationale. A complete list of required documents will be provided to the project team at least six weeks prior to the review date but additional documents may be requested during or prior to the actual review. All required documents will be available via web access to the surveillance team at least two weeks prior to the review.

Orientation

Orientation time will be established at the start of the review 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 Corrective Actions / Continuous Improvement, 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 initial number and scope of interviews will be defined after the project team has provided a dollarize Responsibility Assignment Matrix (RAM) no later than six weeks prior to the review date. At least three weeks prior to the review, the surveillance team will provide a list of CAM and project staff interviews to the project team. The surveillance team will request a number that is balanced between obtaining sufficient data for an opinion without overburdening the project. The project team will coordinate the scheduling of these interviews and provide an agenda to the surveillance team prior to the review. 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 company policies, procedures, and processes, and monitors local practices to assess how well they comply with the intent of the EVM guidelines. The surveillance review will be thorough and structured. This involves developing a list of subject areas to facilitate scheduled interviews, ensuring that discussions address the complete EVMS process.

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. All interviews will incorporate common attributes based on the National Defense Industrial Association (NDIA) Program Management Systems Committee (PMSC) Intent Guide, May 2011 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 control account level (Guideline 2 Intent Guide). Verify that external Work Authorization with the identified Customer exists, at least, at the project level.

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 the there is a documented process and organizations established to specifically manage and control indirect costs (Guideline 4 Intent Guide)..
f. Verify that Responsibility Assignment Matrix or equivalent documents control accounts at appropriate level (Guideline 3 & 5 Intent Guide).

2. Planning, Scheduling and Budgeting
   a. Ensure Project Schedule specifics (Guideline 6 Intent Guide)
      i. WBS/OBS identifiers 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.
      iv. The project schedule identifies significant interdependencies.
      v. Task durations are meaningful and relatively short.
      vi. Longer tasks use objective earned value techniques.
      vii. Resource estimates are reasonable and consistent with the schedule.
      viii. The baseline is reasonable to achieve project requirements as demonstrated through schedule analysis techniques.
      ix. The project schedule baseline is established.
      x. The schedule provides current status and forecasts of completion dates for all discrete work.
      xi. The project has a critical path.
   b. Verify that objective completion criteria are used as basis to determine achievement (Guideline 7 Intent Guide).
   c. Verify that CAM updates schedule status (Guideline 7 Intent Guide).
   d. Verify that 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 authorization and summarizes above the control account 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 that schedule and cost variances are collected at control accounts (Guideline 10 Intent Guide).
   i. Verify the work packages are uniquely identified, have a budget, and have an earned value technique (Guideline 10 Intent Guide).
   j. 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).
   k. Verify that the control account work packages and planning packages (if any) add to the control account total budget (Guideline 11 Intent Guide).

l. Identify level of effort designated work is appropriately categorized and identifiable (Guideline 12 Intent Guide).
m. Verify there is a documented process for managing indirect costs with an organizational structure identifying ownership, responsibility, authority levels, and distribution of indirect costs reflected in the program budgets at the appropriate level. (Guideline 13 Intent Guide). .
n. Verify that management reserve and undistributed budget logs reconcile with last two months of Cost Performance Reports (CPR) (Guideline 14 Intent Guide).
o. 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 CPR reconcile with books of record (Guideline 16 Intent Guide).
   b. Verify that WBS and OBS summarize direct costs from one control account (Guideline 17/18 Intent Guide).
   c. Verify that indirect costs are applied to the direct costs per Laboratory Policy (Guideline 19 Intent Guide).
   d. Verify that unit cost are identified when needed (Guideline 20 Intent Guide).
   e. Verify that effective performance measurement is assessed on material no earlier than point of receipt and consistent with the method budgeted (Guideline 21 Intent Guide).
   f. Verify that an established process exists for reporting subcontractor costs and material actual costs (Guideline 21 Intent Guide).

4. Analysis and Management Reports
   a. Verify that variance analysis is performed to the project thresholds as required (Guideline 22 Intent Guide).
   b. Verify that variance analysis contains cause, impacts, and corrective action as appropriate (Guideline 22/23 Intent Guide).
   c. Verify that corrective actions are assessed and closed in a timely manner (Guideline 23/26 Intent Guide).
   d. Identify budgeted and applied (or actual) indirect costs at the level and frequency needed by management for effective control, along with the reasons for any significant variances (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 Estimate to Complete (ETC)/Estimate at Complete (EAC) (Guideline 26 Intent Guide)
      i. Verify that Comprehensive EACs are updated per requirements and take into account efficiencies.
      ii. Verify that CAMs review achievability of control account EAC monthly.
      iii. Verify that time-phased ETC reconciles with the EAC as reported externally.

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 equal current control account budget (Guideline 28/29 Intent Guide).
   b. Trace last change proposal authorized. Verify schedule and cost integration at control account level and that the WBS is updated as appropriate (Guideline 28/29 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 last month's changes as reported to the customer and this month's PMB 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 31/32 Intent Guide).
   g. Verify that all baseline changes within a month reconcile to baseline control requests or the equivalent (Guideline 31/32 Intent Guide).

Additional interviewees may include the project director, the project controls manager, and line management.

7. SURVEILLANCE RESULTS

Concerns Identified During the Surveillance

The surveillance team will gather data by reviewing documentation and interviewing members of the project team. 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; the FRA project lead representative and pertinent members will be notified by the surveillance team of the concern no later than during initial out-brief discussions at the end of the day. This gives the 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 for Continuous Improvement, or could be an observationof non-compliance requiring Corrective Actions. Corrective Actions / Continuous Improvement are defined as:

Corrective Actions - Corrective Actions fall into two broad categories: 1) non-compliance with the accepted EVMS description or procedures and 2) non-compliance with the ANSI/EIA 748B EVMS guidelines. Failure to resolve Corrective Actions reduces confidence in the ability of project management to effectively use the EVMS process to achieve project goals and objectives of the stakeholders. A Corrective Action Plan is required for each finding.

Continuous Improvements - The team members may recommend EVM implementation enhancements such as sharing of successful practices, tools, or other items that come to their attention. Continuous Improvements, however, are not the same as Corrective Actions and, therefore, need not be tracked for closure. However, should a recommendation have an asterisk (*), the team members have elected that this practice is critical enough to require tracking to closure.

Surveillance Final Out-Brief

The surveillance team will evaluate what they have observed and the information received during the interviews from the project team to come to a consensus if any Corrective Actions / Continuous Improvement should be issued. Also, the surveillance team should identify if the observations are systemic rather than isolated issues. Any Corrective Actions / Continuous Improvement are to be presented by the surveillance team to the project team 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 FRA EVMS Representative must be able to explain the impact of deviating from FRA policy and the benefits to the project and management team of non-compliance with the intent of the EVMS guidelines.

Final Report

The surveillance team will develop a preliminary report and give the FRA EVMS Representative the opportunity to give any additional feedback in a reasonable timeframe. The surveillance team will take into consideration any feedback received when developing the final report. The final report will be issued by the surveillance team leader to the FRA EVMS Representative (head of OPMO), the head of the Office of Program and Project Support (OPPS), and the head of the Office of Quality and Best Practices (OQBP). Dates for report delivery will be agreed to by each team at the Final Out-brief.

Corrective Action Plan

The FRA EVMS Representative will develop a Corrective Action Plan (CAP) to address any Corrective Actions or Continuous Improvements identified in the Final Report from the surveillance team. The CAP should include a schedule with realistic dates for when the corrective actions are to be completed. The project personnel will provide input regarding corrective actions, including estimated completion dates. The surveillance team will receive a

copy of the CAP for information only; unless it is determined at the Final Out-brief that further actions are required by the surveillance team – such as a follow-on review.

Corrective Action Plan Processing and Tracking

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 Corrective Actions , documented on Corrective Action Plans (CAPs), and processed in accordance with the Fermilab Corrective & Preventive Action Procedure, 1004.1001.

Surveillance Review Close-out

The FRA EVMS Representative is to insure that CAP has been acceptably completed. The close-out of the CAP and any follow-up verification performed should be document and retained for future EVMS surveillances.

Table of Revisions

Author	Description	Revision	Date
T.King	Final submitted and approved by Team Lead	001	02/06/2012
T. King	Added Observers' name	002	02/17/2012