



**FRA's
Earned Value Management System
Overview
for
Self Assessment Surveillance
March 07-09, 2011**

Dean Hoffer

Head, Office of Project Management Oversight

Outline

- EVMS History at the Lab
- FRA EVMS Documents
- FRA EVMS Process
- Non Costed Scientist Resources
- Training
- Summary

Earned Value Management History

- EV has been performed at some level since the Main Injector Project in the 1990s.
- A standard Cost Processing Tool (Cobra) was selected and used to support EVM on the NuMI Project starting in 1998.
- Each project had their own EVMS process and procedures but used Cobra as the cost processor.
- 1st Draft of Fermilab EVMS Description was generated in 2006, no implementing procedures at that time
- The FRA System Description and Implementing Procedures were first approved for use 17 October 2008
- NOvA is the first project to implement the FRA EVMS and represents a typical project at Fermilab. NOvA's implementation of the FRA System started in October 2008.



Department of Energy
Washington, DC 20585

JAN 28 2010

Dr. Piermaria J. Oddone
Director, Fermi Research Alliance, LLC
P.O. Box 500, MS #105
Batavia, IL 60510

Dear Dr. Oddone:

It is a pleasure to inform you that the Fermi Research Alliance, LLC (FRA) at the Department of Energy (DOE) Fermi National Accelerator Laboratory (Fermilab) site has successfully demonstrated compliance of its Earned Value Management System (EVMS) for non-information technology capital asset projects greater than \$20 million with the American National Standards Institute/Electronic Industries Alliance (ANSI/EIA)-748.

This certification is based on DOE's Office of Engineering & Construction Management (OECM) review of your EVM System Description (current as of January 10, 2010) and OECM's on-site review conducted May 11-15, 2009. Your team is to be commended for attaining this EVMS certification. This acceptance of the FRA EVMS requires application across all FRA acquisition projects requiring EVMS as executed under the guidance of DOE Order 413.3.

DOE expects FRA to maintain its EVMS Certification as evidenced through annual surveillance of this EVMS and submittal of a resulting report(s) directly to OECM. Recognizing that management systems are dynamic to meet changing business needs and to improve effectiveness, we further encourage continuous improvement of this EVMS as long as compliance within the ANSI/EIA-748-A is maintained. Should FRA make said improvements or changes to this Certified EVMS, FRA shall promptly notify OECM of said changes.

The Department of Energy congratulates FRA on this certification. FRA has achieved a significant milestone by demonstrating a performance measurement system that provides valid data and is effective in managing project performance.

Sincerely,

Paul Bosco
Director, Office of Engineering &
Construction Management

cc: Dan Lehman, SC-28
Bruce Chrisman, FRA
Dean Hoffer, FRA



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EVMS Certification Letter

• Received Jan 28, 2010

FRA EVMS Documents

- EVMS Documents
 - FRA Earned Value Management System Description
 - 12.PM-001 Project WBS, OBS, RAM
 - 12.PM-002 Control Accounts, Work Packages, Planning Packages
 - 12.PM-003 Work Authorization
 - 12.PM-004 Project Scheduling
 - 12.PM-005 Cost Estimating
 - 12.PM-006 Monthly Status Reporting
 - 12.PM-007 Change Control
 - 12.PM-008 EVMS Surveillance & Maintenance
- Ownership
 - Office of Project Management Oversight (OPMO) - responsible for maintaining the EVMS and maintaining interfaces with existing Fermilab business and management systems
 - Office of Quality and Best Practices (OQBP) - responsible for surveillance of the EVMS to ensure Lab adherence to the approved certified system

Primary Project Management Tools

- Accounting
 - Oracle's e-Business Suite - Project Costing Module - aka Project Accounting (PA)
- Scheduling
 - Primavera P6 (new standard), Deltek Open Plan (NOvA) & Microsoft Project
- EV Cost Processor
 - Deltek Cobra

FRA EVMS

- Consistent with ANSI/EIA-748A Standard for Earned Value Management Systems
 - Organization
 - Planning, scheduling and budgeting
 - Accounting considerations
 - Analysis and management reports
 - Revisions and data maintenance
- Crosswalk between ANSI/EIA748A and the System Description / Implementing Procedures is in Appendix A of System Description

Organization

- Work Breakdown Structure developed with a product-oriented focus
- WBS Dictionary defines the scope of each WBS element
- Organizational Breakdown Structure is established to ensure the project's scope of work can be efficiently managed
- Organization is likely to include collaborating institutions (universities and/or laboratories) within and outside of the USA
- Responsibility Assignment Matrix establishes the key control points and the managers of the entire project scope

Planning, Scheduling and Budgeting

- A key part of baseline planning is establishing the project assumptions
- Schedule development is a iterative process among the CAM, Functional Managers, Project Controls and the Project Manager
- Work Packages and Planning Packages
 - We have not utilized Planning Packages in the past. The FRA System allows for both. We anticipate using Planning Packages on future projects.
- Risk Management is an integral part of the planning process and is key driver in establishing cost and schedule contingency

Planning, Scheduling and Budgeting

(continued)

- A consistent approach is used in developing and documenting cost estimates
- Work Authorization
 - External Work Authorization - DOE to FRA
 - Difference between Line Item and Major Item of Equipment (MIE) Projects
 - Line items authorized by directives
 - MIE authorized by Financial Plan Guidance and achieving Critical Decisions
 - NOvA is an MIE Project
 - Internal Work Authorization -Project Manager to CAMs

Accounting Considerations

- Fermilab's Oracle eBS (electronic Business Suite) used for actual costs
- Accruals done in Oracle eBS, except for the Cooperative Agreement
- Effort Reporting & Payroll used for Fermilab labor
 - Labor at other institutions appears as M&S to us, but is “labor” in the Open Plan schedule
- Indirects are applied in Oracle eBS
 - Rates set at least annually by CFO, adjusted at fiscal year end to reflect actual indirect costs at Fermilab, may be adjusted at interim dates
 - opportunities for pass-through rates
 - cap on indirects for large purchase orders at \$500K (if criteria is met)
- Actual Costs are extracted from eBS and loaded into Cobra monthly
 - Cobra and eBS totals are reconciled

Accounting Considerations (Actual Costs)

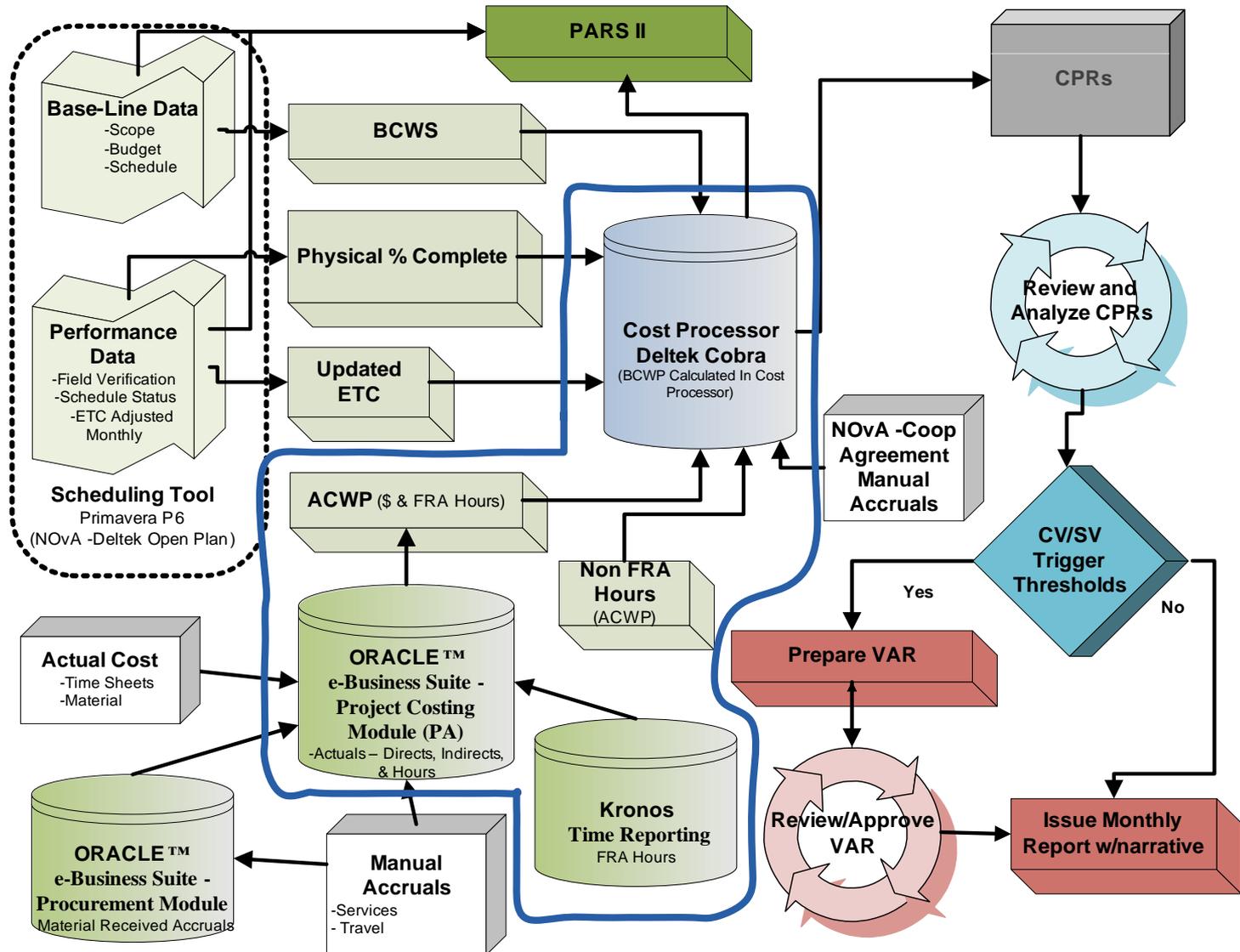
Labor

- Effort reporting and Payroll data combine to generate labor costs
- Labor burdens (fringe, paid time off) applied in PA

Materials & Services

- Invoicing often lags behind the receipt of goods/services
- The Oracle eBS Material Management System automatically accrues costs for items that have been “received” at Fermilab but not yet invoiced
- Service Accruals
 - Ability to record ‘receipts’ for services
- Minimizes artificial variances where earned value not offset by invoiced costs

Monthly Analysis and Management Reporting



Estimate to Complete/Estimate at Completion

- CAMs review ETC/EAC at control account level during monthly status cycle
- If felt to be inaccurate, CAMs propose ETC change to project manager
- Project manager assesses; if approved, information forwarded to Project Controls for input into forecast baseline and updating in Cobra.

Variance Thresholds (with hours)

Variance Analysis Thresholds for Control Accounts		
Green Thresholds – Cost and Schedule Performance falling outside of yellow or red thresholds		
Yellow Thresholds		
Cost Variance Schedule Variance	Type	Threshold limit
Dollars	Current Period	$\geq \pm 5\%$ to $< \pm 10\%$ and $\geq \$50K$
	Cumulative	$\geq \pm 5\%$ to $< \pm 10\%$ and $\geq \$100K$
Hours	Current Period	$\geq \pm 5\%$ to $< \pm 10\%$ and ≥ 350 hrs
	Cumulative	$\geq \pm 5\%$ to $< \pm 10\%$ and ≥ 700 hrs
Red Thresholds		
Cost Variance Schedule Variance	Type	Threshold limit
Dollars	Current Period	$\geq \pm 10\%$ and $\geq \$100K$
	Cumulative	$\geq \pm 10\%$ and $\geq \$200K$
Hours	Current Period	$\geq \pm 10\%$ and ≥ 700 hrs
	Cumulative	$\geq \pm 10\%$ and ≥ 1400 hrs

Note: This applies to SV% (Schedule Variance in %) or CV% (Cost Variance in %) and the SV or CV in \$ or hours.

Analysis and Management Reports

(continued)

- FRA management monitors project performance including EV data from:
 - Project monthly reports
 - Monthly Project Management Group (PMG) meeting chaired by an Associate Director
 - FRA Director's Reviews prior to DOE's Office of Project Assessment review and Critical Decisions

Project Management Group Meetings

- Monthly meetings to discuss project progress, pending work, and current/ potential issues
- Institutionalized practice for all projects covered by DOE O 413.3A (413.3B when incorporated into FRA contract)
- Members
 - Project Office
 - Divisions supplying project resources
 - Supporting Sections (i.e. ES&H, Procurement, etc)
 - Directorate (i.e. Associate Directors, OPMO)
 - DOE (Federal Project Director, Program Manager)
- Members have direct control over resources, so can take action if issues arise
- PMG also function as project change control board

Revisions and Data Maintenance (Change Control Process)

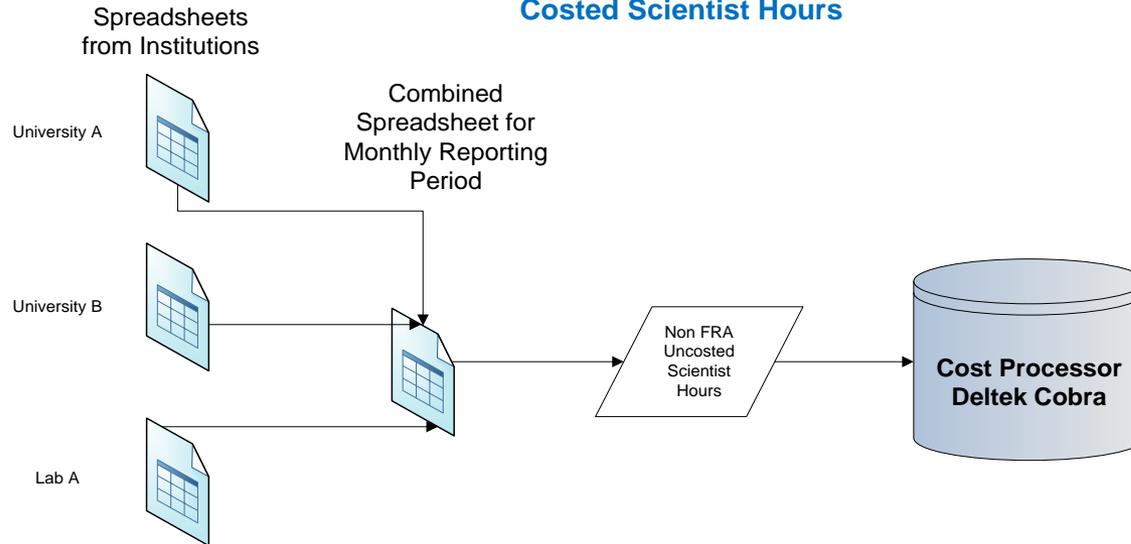
- Change Control Thresholds are project specific and agreed on with DOE.
- High level thresholds (DOE's) are identified in the Project Execution Plan (PEP).
- Lower level thresholds (FRA's) are identified in the Project Management Plan (PMP)

Non Costed Scientist Resources

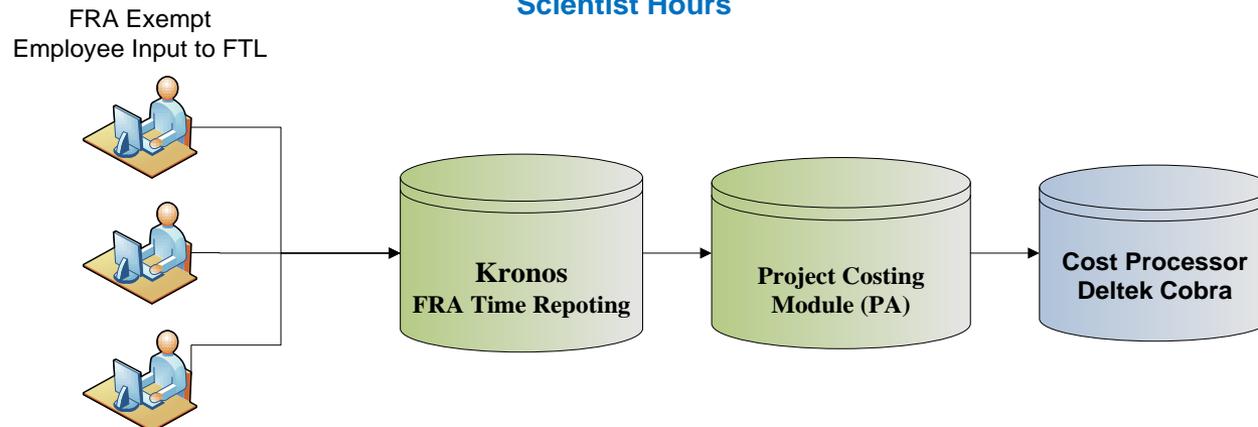
- Implementing Procedure 12.PM-005 Cost Estimating
 - For scientific labor on DOE projects, the labor rate will be set to comply with “OHEP Guidance to Ensure Compliance with DOE O413.3A.”
- Per OHEP guidance, scientist labor is included in the project cost under certain circumstances
- The scientist hours are loaded into the schedule and the cost processor
- Scientist work is tracked by schedule task and milestone progress
- In general, work packages with non costed scientist labor also have costed labor, which allows EV to be measured on that work
- FRA is working with OHEP and others to address this in a consistent manner across labs

Processes for Collecting Uncosted Scientist Hours Worked

Process for Collecting Non FRA Non Costed Scientist Hours



Process for Collecting FRA Non Costed Scientist Hours



EVMS Training

- Initial Training
 - Feb 6, 2009 Sr. Managers Class (17)
 - Dec 3-4, 2008 2 day Class (25)
 - Oct 26-27, 2009 2 day Class (19)
 - June 8-9, 2010 2 day Class (15)
- Refresher Training
 - Oct 16 2009 Refresher Session (3)
 - Oct 21 2009 Refresher Session (18)
 - Nov 30, 2009 Sr. Management Refresher Session (15)

Summary

- Documentation has been provided for you on the review website ahead of time
- Interviews have been arranged
- FRA is ready to support the Surveillance Team in the evaluation of our EVMS to
 - Verify the FRA EVMS is in compliance with ANSI/EIA-748A
 - Verify NOvA's is in compliance with the FRA Certified EVMS
- Now John Cooper will give the overview of the NOvA Project and it's implementation of the FRA EVMS