

EVMS Training Snippet Library: EVMS Stage 1 Surveillance



**Office of Acquisition and Project Management (OAPM) MA-60
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Achieving Management and Operational Excellence

This EVMS Training Snippet sponsored by the Office of Acquisition and Project Management (OAPM) covers OAPM's approach to EVMS Stage 1 Surveillance.



- **Recurring process of review**
 - Continued compliance with ANSI/EIA-748 and DOE policy
- **Verifies implementation**
 - The use of the EVM system is maintained over time and on subsequent applications (e.g., on new projects)
- **Assesses extent of system use for management purposes**
 - If the contractor is continuing to use their EVMS effectively to monitor and manage cost, schedule, and technical performance

What is EVMS Surveillance and why do we do it?

Surveillance is the recurring process of reviewing a contractor's EVMS to ensure continued compliance with ANSI/EIA-748 and DOE policy.

An effective surveillance process ensures that the key elements and the use of an EVMS are maintained over time and on current and subsequent projects.

The purpose of surveillance is to ensure that the contractor is continuing to use its EVMS effectively to monitor and manage cost, schedule, and technical performance.

DOE Surveillance Policy and Procedures



Page 3

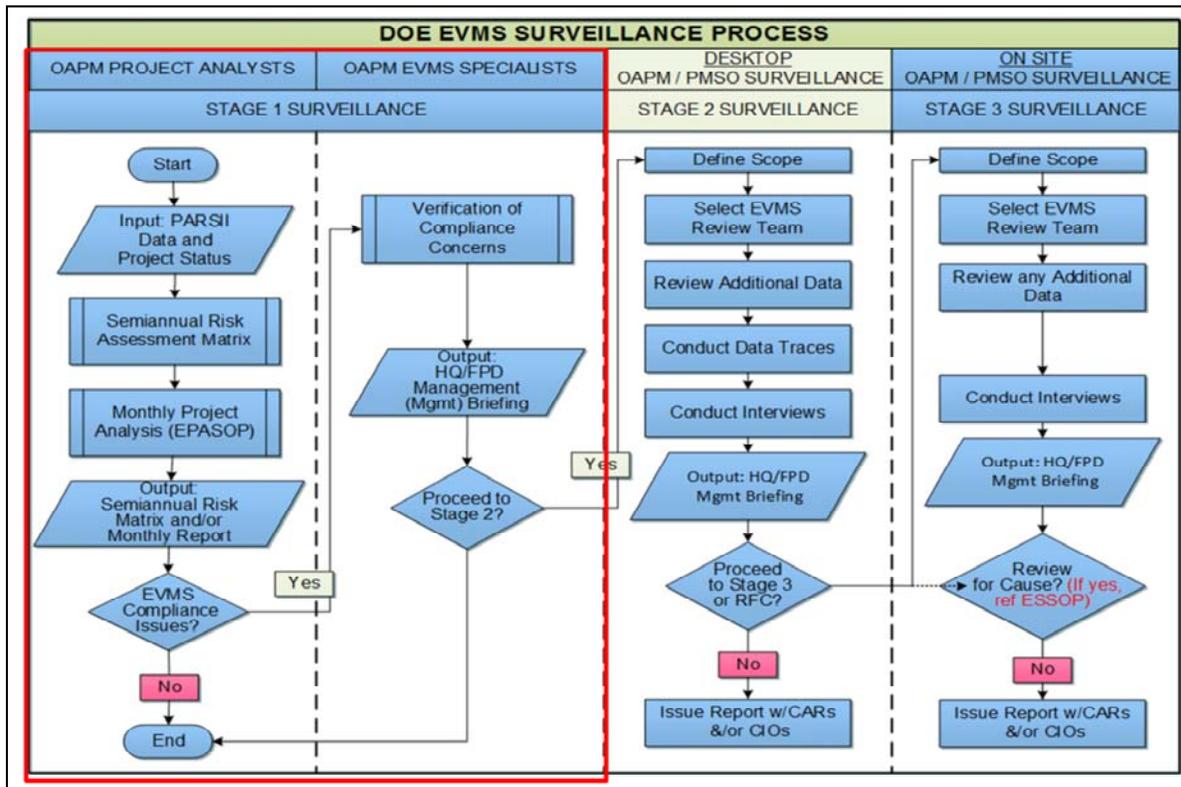
- **Department of Energy (DOE) Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, 11/29/2010**
- **DOE Guide 413.3-10A, *Earned Value Management System (EVMS)***
- **OAPM EVMS Surveillance Standard Operating Procedure (ESSOP)**



DOE Order 413.3B identifies surveillance requirements for the contractor, the Project Management Support Office, and for the Office of Acquisition and Project Management.

DOE Guide 413.3-10A provides overall principles regarding EVM and surveillance.

Rather than approach surveillance as an event-based task similar to the initial certification review, OAPM decided to adopt a risk-based, data-driven surveillance method modeled after the risk based, data driven EVMS surveillance approach widely endorsed by industry groups and Governmental agencies, such as National Defense Industry Association (NDIA), General Accounting Office (GAO), Department of Defense (DOD), and Energy Facility Contractor's Group (EFCOG). An OAPM EVMS Surveillance Standard Operating Procedure was developed to provide process level 'how to' instruction. While this is the approach used by OAPM, the SOP is available for use by the PMSO, FPDs and their project control staff, and the contractor.



This figure shows the three stages of surveillance in OAPM's process. In this Snippet, we are focusing on Stage 1 Surveillance elements outlined in red on the slide.

Stage 1 involves OAPM's Project Analysts, those assigned to one or more projects for technical oversight, and the OAPM EVMS Specialist, as the subject matter expert.

There are two key elements of Stage 1 surveillance: (1) Project level risk assessment and (2) project level data analysis. The results of these two processes drive the decision whether further EVMS assessment is justified and, if so, how to focus increased surveillance on processes and guidelines that have the greatest risk of unfavorably affecting system integrity.

The OAPM EVM Specialist and Project Analyst review project level data and performance analysis reports from PARS II on a monthly basis. Reports are available to identify particular issues with data integrity and project performance and health. The OAPM EVM Specialist and Project Analyst conduct an EVM risk assessment to generate a risk profile for the entire portfolio of projects for each contractor, for which earned value is required and subject to surveillance. The risk assessment is done on a periodic (such as semi-annual) basis, or if there is a sufficient change to a project or the contractor's portfolio that could change the risk assessment results.



- **Step 1: Data Analysis**

- Conducted in collaboration with OAPM Project Analysts and EVM Specialists, as well as PMSO, FPD, and project personnel
- While the intent and purpose of project analysis and EVMS surveillance differ, one supports the other

Collaboration is an essential part of EVM system surveillance and project analysis.

The first step of Stage 1 is data analysis. Monthly Project assessment is done as a part of the OAPM Project Analyst's role in managing the specific projects. While conducting project analysis, issues are identified that are not only project performance related, but which also may indicate EVM system compliance concerns. In this way, project analysis directly supports EVMS surveillance.

The OAPM Project Analyst coordinates with the OAPM EVM Specialist when potential non-compliances or systemic concerns are identified or suspected. Both interact with the PMSO and the FPD who have project level knowledge of the technical baseline, progress, as well as cost, schedule, and technical risks. This interaction provides valuable insight into the identification of disconnects and system issues among other projects.

Due to the complementary and overlapping impacts of EVM System integrity and project analysis, collaboration is essential.



- **Step 1: Data Analysis – continued**
 - Data analysis procedures
 - OAPM EVMS & Project Analysis Standard Operating Procedure (EPASOP)
 - Data sources:
 - PARS II Reports
 - Contractor's EVMS self-surveillance documentation
 - Assessments conducted by the FPD, PMSO, and/or APM relative to project performance and EVM system health
 - Additional information from the FPD as requested
 - Identify
 - Disconnects
 - Negative trends
 - Significant changes that may point to systemic issues

To fulfill both of these needs, that is project assessment and EVMS surveillance, the OAPM has issued a Standard Operating Procedure for EVM data analysis entitled EVMS and Project Analysis SOP, acronym EPASOP. It contains a data surveillance process, conducted monthly, using many PARS II reports specifically designed for this purpose.

Other data sources include the contractor's EVMS self-surveillance documentation, and any assessments conducted by the FPD, PMSO, and/or the OAPM that evaluate project performance, such as monthly project status reports and peer reviews. These sources are analyzed to identify data disconnects, negative trends, and significant changes that may, upon further review, indicate compliance issues within the contractor's EVM system. Additional information may be requested from the FPD for completion of stage 1, such as:

- 1) Contractor PM's experience using EVM to manage (in years)
- 2) Percentage of subcontracts versus the total, and material versus the total as a percent. These are generally to determine if these topics are significant on the project.
- 3) Primavera (or other tool) .XER type schedule files for the baseline and forecast.



Data Validity Check

- EV Data Validity (WBS Level)
- Retroactive Change Indicator (6-Mo, PMB Level)

Schedule Health Assessment

- Schedule Missing Logic (Activity Level)
- Relationship Leads and Lags Report
- Schedule Relationship Types (Activity Level)
- Schedule Hard Constraints (Activity Level)
- Schedule Total Float Analysis (Activity Level)
- Schedule Duration Analysis (Activity Level)
- Invalid Forecasts and Actual Dates (Activity Level)
- Schedule Hit or Miss Report

Variance Analysis

- EV Project Summary (6-Mo, PMB Level)
- Performance Analysis (WBS Level)
- Variance Analysis Cumulative (WBS Level)

Trend Analysis

- Baseline Volatility – Past and Near-Term (PMB Level)
- EV Project Summary (6-Mo, PMB Level)
- MR Balance v. CV, VAC, & EAC Trends
- Management Reserve (MR) Log
- Performance Index trends (WBS Level)
- Variance Analysis Cumulative (WBS Level)

EAC Reasonableness

- CPI v. TCPI (PMB Level)
- EV Data Validity (WBS Level)
- Performance Index Trends (WBS Level)

Predictive Analysis

- Funding Status (Monthly at Project Level)
- IEAC Analysis (WBS Level)

• Analysis Folder

- Wealth of data available
- Reports available for DOE analysts and DOE Contractors for their assigned projects
- Reports are organized into folders and subfolders for ease of use
- Detailed instructions

PARS II is the central repository for key Departmental-level capital asset project information, including EVMS data provided directly into PARS II from contractor's systems. A key feature for conducting data analysis is the Analysis Reports in the Reports section of PARS II. To the left is a breakout of the "Analysis" folder which contains subfolders containing key reports that are helpful in conducting EVMS surveillance and project performance analysis. Each report has detailed instructions.

In Stage 1, the most common reports to use are located in the Data Validity subfolder and Schedule Health Assessment subfolder. More detail on these reports can be found in group 5 Snippets.

Data Validity and Schedule Health Assessment



Page 8

- **Data Validity Reports**
 - EV Data Validity errors, such as
 - Cumulative BCWP > BAC
 - Cumulative ACWP > EAC
 - Retroactive Change Indicator
- **Schedule Health Assessment Reports**



The PARS II reports, particularly those identified above, are used in identifying EVM system concerns or questionable actions. This includes data validity errors such as cumulative budgeted cost for work performed greater than the budget at completion, or cumulative actual cost of work performed greater than the estimate at completion for that work. The retroactive change indicator report shows whether history has been changed and if current period retroactive changes were made for unallowable reasons in violation of EVMS Guideline 30. Reports that are helpful in identifying systemic issues are located in the Schedule Health Assessment folder. These reports reveal issues with generally accepted scheduling practices and ANSI/EIA-748 EVM Guidelines 6 and 7.



- **Step 2: Assess EVM System Risk by Project (periodically)**

- Purpose: To assist in prioritizing the EVM surveillance schedule, and to **determine depth and scope** should Stage 2 surveillance be warranted.
- Use **DOE EVMS Risk Matrix**
- Conduct risk assessment to **generate a risk profile** for the entire portfolio of projects for each contractor and/or site
- **Identify and select** projects for additional surveillance

Next we have Step 2 of Stage 1 Surveillance where the EVM system risk is assessed. The purpose is to identify where the risks are in terms of the health of the EVM system and the implementation of EVMS on each project. The results are then collected for the entire project portfolio for each contractor. This is done periodically (such as semi-annually) or whenever something significantly changes on a project that would impact the risk rating. Within OAPM, this is a collaborative effort between the Project Analyst and an EVM Specialist.

These results guide surveillance activities to particular EVMS processes or implementation areas where the risk assessment indicates possible compliance issues.

Assessing Project Risk



- **For EVMS Surveillance purposes:**
 - Apply Risk Matrix to *each EVM-applicable project within a contractor's portfolio*
 - Rate each project in each of 14 areas
 - Use results from portfolio perspective to determine where to focus surveillance efforts

DOE EVMS RISK MATRIX w/ SCHED RISK		DATE:	ANALYST:	
CONTRACTOR:		PROJECT:		
RISK ELEMENT	HIGH RISK PARAMETERS 3.00	MEDIUM RISK PARAMETERS 2.00	LOW RISK PARAMETERS 1.00	RATING
PROJECT PHASE	PRIOR TO CD-3 Organizing, Scheduling, Work Authorization	EARLY TO MID CD-3 Accounting, Material Management, Change Incorporation	LATE CD-3 Managerial Analysis, Change Incorporation	L
PM EVM EXPERIENCE	< 2 YRS Organizing, Scheduling, Managerial Analysis	2 – 5YRS Scheduling, Managerial Analysis	> 5YRS Managerial Analysis	L
CONTRACT BUDGET BASE VALUE	≥ \$100M Work Authorization, Accounting, Managerial Analysis	\$50M < f.o.p. < \$100M Work Authorization, Accounting, Managerial Analysis	\$20M < \$50M Scheduling	L
PRIME WORK REMAINING %	> 50% Managerial Analysis, Change Incorporation	10 - 50% Managerial Analysis, Change Incorporation	< 10% Accounting, Material Management	L
SUBCONTRACTOR WORK REMAINING %	> 50% Work Authorization, Scheduling, Subcontract Management, Managerial Analysis	10 – 50% Work Authorization, Scheduling, Subcontract Management,	< 10% Accounting, Subcontract Management	L
MATERIAL REMAINING %	> 30% Work Authorization, Scheduling, Accounting, Material Management	15 – 30% Accounting, Material Management	< 15% Material Management	L

This is a partial view of the DOE EVMS Risk Matrix. The risk assessment matrix approach used in the DOE is based on concepts from the NDIA Surveillance Guide and DCMA guidance, and has proven useful in application. OAPM applies this to all EVMS applicable projects within a contractor's portfolio, and recommends this method as a useful best practice for all those responsible for EVMS surveillance, including contractors, FPDs and PMSOs.

The template which includes instructions is available from OAPM.

Stage 1 Surveillance Output



Page 11

- **Determine if EVM compliance concerns exist**
 - If No – Stage 1 continues as defined with monthly data analysis and periodic risk matrix updates
 - If Yes -
 - Prepare and present Management Briefing
 - If Management supports the concerns, proceed to Stage 2
 - If not, concerns monitored as part of Stage 1 continuing activities



As the Stage 1 surveillance analysis and risk assessment processes are completed, the Project Analyst and EVM Specialist confer regarding any EVM system risk assessment ratings and compliance concerns. A high or medium risk overall, as well as data integrity concerns, would indicate continuing with Stage 2 surveillance. If nothing substantial was noted, then Stage 1 Surveillance continues as defined with the monthly data analysis and periodic risk matrix updates.

If EVM system-related concerns have developed, the Project Analyst and the EVM Specialist verify them, and then prepare and present a brief, which includes the results summarized by organizational categories to OAPM and PMSO management. Based on the outcome of the briefing or as requested by the Acquisition Executive (AE), a Stage 2 Surveillance may be authorized. If not, concerns may be put on a 'watch list' to monitor over the next few data analysis cycles as part of Stage 1 continuing activities.

DOE OAPM EVM Home Page

Page 12

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Home » Operational Management » Project Management » Earned Value Management

EARNED VALUE MANAGEMENT

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Act
Financial Assistance
Information Systems
Procurement and
Acquisition
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Reviews and
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Earned Value Management (EVM) is a systematic approach to the integration and measurement of cost, schedule, and technical (scope) accomplishments on a project or task. It provides both the government and contractors the ability to examine detailed schedule information, critical program and technical milestones, and cost data.

- EVMS Surveillance Standard Operating Procedure (ESSOP) - 26 Sep 2011 (pdf)
- EV Guideline Assessment Templates - (MS Word)
- DOE EVMS Cross Reference Checklist - (pdf)
- DOE EVMS Risk Assessment Matrix - (MS Word)
- Formulas and Terminology "Gold Card" - Sep 2011 (pdf)
- Slides from the DECM Road Show: Earned Value (EV) Analysis and Project Assessment & Reporting System (PARS II) - May 2012 (pdf)
- DOE EVM Guidance

EVM TUTORIALS

Module 1 - Introduction to Earned Value (pdf 446.86 kb) July 17, 2003

This module is the introduction to a series of online tutorials designed to enhance your understanding of Earned Value Management. This module's objective is to introduce you to Earned Value and outline the blueprint for the succeeding modules. This module defines Earned Value management. It looks at the differences between Traditional management and Earned Value management, examines how Earned Value management fits into a program and project environment, and defines the framework necessary for proper Earned Value management implementation.

<http://energy.gov/management/office-management/operational-management/project-management/earned-value-management>

Career Development
Program
Real Estate
History

For information on the other Stages of Surveillance, refer to the EVMS Training Snippet Library. For information relative to EVMS procedures, templates, helpful references, and training materials, please refer to OAPM's EVM Home page.

Thank you.