National Nuclear Security Administration

NA-125 Common Program Controls Plan

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Revision History

NA-125 NNSA Program Controls Plan
Owner: Office Of Stockpile Modernization (NA-125)
Use: Provide requirements for the implementation and management of the Earned Value Management System for Enhanced Management A programs in support of NA-125 modernization, alteration, and new weapon system acquisitions.

Release Date	Revision	Change Description	Author(s)
June 2025	0	Initial release	NA-125

This NA-125 Common Program Controls Plan is subject to regular reviews and updates by the responsible document owner.

Each revised plan is subject to the standard document review and approval process before becoming final. Once approved, a new version of this document will be issued to NA-125 and all applicable laboratories, plants, and sites.

Concurrence and Approval

Content of this plan has been coordinated with participating design agencies and production agencies.

Robert B. McKay

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1. Introduction

Program management is a discipline that supports execution of large, complex tasks (e.g., programs, large projects) by breaking the overall endeavor into smaller tasks and providing a framework for integrating, monitoring, and managing these smaller tasks to ensure effective execution. Program controls are established processes and tools to enable monitoring and integration of the totality of work with the intent of ensuring appropriate management insight and oversight of the effort, enabling actions to address risks and emerging issues at the right level of management to ensure successful execution of the program or project. While there are many processes and tools used in the execution of our work, this document is focused on Earned Value Management (EVM) with the intent to drive consistent and appropriate use of that tool across the enterprise.

The National Nuclear Security Administration (NNSA) Office of Stockpile Modernization (NA-125) has implemented a disciplined program controls system approach using EVM to reduce program risks and improve outcomes related to program execution and product delivery. EVM is a project management methodology that integrates a project's technical scope, schedule, budget, and risks into a revision-controlled baseline plan against which progress is measured, providing cost and schedule performance metrics, trends, and forecast information essential for management decisions. This document provides a common approach to implement EVM across all NA-125 modernization programs that require EVM.

2. Purpose

This Common Program Controls Plan (CPCP) addresses application of the principles of EVM for implementation on modernization programs in accordance with a tailored implementation of the Electronic Industries Alliance (EIA) Earned Value Management System (EVMS) Standard EIA-748D.

This CPCP identifies the NA-125 EVMS requirements for implementation by each applicable laboratory, plant, and/or site (LPS), and establishes requirements and formal procedures for planning, authorizing, reporting, analyzing, and controlling program work within technical, schedule, and cost constraints.

3. Scope

The requirements in this document define a set of management practices based on the principles of EVM; this document is not a "how to" guide or project controls manual. NNSA expects that each LPS will follow their internal corporate System Description (SD) project and/or program control procedures when implementing the requirements in this document, and shall establish the required infrastructure (e.g., tools, processes, personnel) to support an effective EVMS.

NNSA Federal Program Managers (FPMs) may tailor requirements for their program(s) via program-specific addendums to this document with concurrence from the NA-125 Assistant Deputy Administrator (ADA). Program-specific addendums will be reviewed with the NA-125 ADA annually after release. If there is a conflict or issue between a CPCP requirement and site

EVM SD and/or program controls procedures, the respective LPS will be required to submit an exception request to the FPM for disposition.

Each Federal Program Office (FPO) shall perform monthly data integrity checks and quality assurance of earned value and schedule submittal data to ensure effective compliance with CPCP EVMS reporting requirements. Anomalies and trends showing degradation of data integrity (see Table 3 and Acumen automated checks for requirements) shall be summarized and communicated to the appropriate LPS on regularly scheduled intervals, no more than quarterly, for corrective action for programs with significant concerns as determined by the FPM. During program execution, representatives from the FPO may perform LPS visits or hold periodic teleconferences and meetings for selected areas of the EVMS and for quality assurance purposes, as required.

Within this CPCP, the following nomenclature is used:

- "Shall" or "must" indicates a requirement to be met and verified.
- "Should" indicates a recommendation.
- "Will" indicates a future action to be executed.
- The terms "project" and "program" (used interchangeably in this CPCP) identify all work authorized by NNSA and the Department of Defense (DoD) for the Nuclear Security Enterprise and associated program documents. By definition, a project involves a planned effort to achieve a specific outcome, the progress toward which is discretely measurable based upon established scope, schedule, and cost parameters. Programs typically have a longer duration, are broader in scope than projects, and consist of multiple related and coordinated projects, including operations, sustainment, and maintenance functions.

The organization of this document is consistent with the five functional areas of EIA-748:

- Organization
- Planning, Budgeting, and Scheduling
- Accounting
- Management Analysis and Reporting
- Baseline Revisions and Data Maintenance

The rationale for each functional area is described and its attributes listed with the associated requirements.

4. Requirements

- At each LPS, programs shall use LPS-established infrastructure, except as indicated, (tools, processes, and personnel) to support an effective EVMS.
- Any exceptions to the requirements set forth in this CPCP shall have written approval by NNSA FPM(s) prior to implementation via documentation in a program-specific addendum.
- For Navy programs, the respective FPO shall coordinate exceptions with the DoD EVM functional lead for their situational awareness and collaboration.

- Each LPS shall notify the applicable FPO of any substantial approved changes to the site EVM SD and/or program controls procedures and perform an impact analysis to ensure that the requirements set forth in this CPCP will still be met.

5. Reviews and Assessments

Reviews are important for ensuring that the EVMS is producing accurate, reliable, repeatable, and actionable data to inform decision makers. To help ensure that the system is executing to the requirements of the CPCP, reviews will be conducted as deemed necessary by the FPO and LPSs prior to the entrance into a new phases of the program.

5.1. Integrated Baseline Review

Integrated Baseline Reviews (IBRs) are joint assessments conducted by the NNSA FPM, the DoD (as applicable), and each applicable LPS to establish a mutual understanding of the Performance Measurement Baseline (PMB). This usually occurs early in Phase 3/Phase 6.3. This understanding provides for an agreement on a plan of action to evaluate the risks inherent in the PMB and the management processes that operate during program execution. If a program conducts an IBR, it should be held approximately six to nine months after the establishment of the PMB or as soon as practical based on the FPM assessment of the PMB maturity levels. If the IBR is to be conducted more than nine months after establishment of the program baseline, the FPO will coordinate with the respective DoD EVM functional lead.

Completion of the IBR should result in an accurate assessment of risks and opportunities within the LPS PMB, and the degree to which the following program management objectives are achievable:

- The technical scope of work is fully included and is consistent with authorizing documents.
- Key program schedule milestones are identified, and LPS schedules are horizontally and vertically integrated to reflect a logical flow to accomplish the work.
- Resources (e.g., budgets, facilities, infrastructure, personnel, skills) are available and adequate for the assigned activities in the PMB.
- Activities are planned and can be measured objectively relative to technical progress.
- The underlying basis of estimate of the PMB is reasonable.
- LPS management processes support successful execution of the program.

The IBR is part of an ongoing management process used to identify program risks and opportunities, implement corrective actions, and understand the practicality and executability of the PMB.

If an IBR is being executed, the NNSA FPO shall develop and issue an IBR plan, schedule, and set of requirements to each applicable LPS at least nine months prior to the IBR to ensure adequate preparation time and training for both the FPO and LPS teams.

5.2. Internal EVMS Surveillance

Each LPS shall execute internal EVMS surveillance annually. Surveillance shall be conducted against the site EVM SD and/or program controls procedures and the NA-125 CPCP. Each LPS shall provide the results of their annual surveillance to the FPO. The results shall be due no later than the last working day in January. The results should be delivered to the FPOs in the same format in which the results are provided to the LPS program team or corporate management team. For example, if results are provided to the LPS program team in the form of PowerPoint slides, then provide the PowerPoint slides to the FPO.

Internal EVMS surveillance shall commence once EVM reporting begins and continue annually until the respective LPS has completed their total scope.

5.3. Federal Program Office Surveillance

The FPO shall assess LPS performance requirements documented in the requisite programmatic plans published by the NA-125 ADA and/or FPO directed for use. The FPO may elect to conduct on-site reviews with the LPS program team or perform a review based on submitted products and will work with the LPS to provide adequate time for planning to mitigate disruptions to program execution. Once completed, the FPO will provide results to the LPS identifying corrections needed, opportunities for improvement, and good practices.

FPO surveillance shall commence once EVM reporting begins and continue on an ongoing basis until the respective LPS has completed their total scope.

5.4. Significant Event Reviews

If a significant event occurs that requires reprogramming, then an IBR-like event will be required. A significant event review may also be performed if a Product Realization Team (PRT) or an entire LPS PMB needs to be replanned or reprogrammed. The FPO will make the assessment and identify the requirements prior to allowing the reprogramming and/or replanning to move forward.

6. Organization

6.1. Program Work Breakdown Structure

This section describes the Work Breakdown Structure (WBS) format and requirements. The WBS is a hierarchical, product-oriented grouping of program elements that organizes and defines the total program scope. The program WBS is a joint WBS between NNSA and the DoD. Each descending level of the WBS is an increasingly detailed definition of its parent-level program scope.

The WBS contains elements common to nuclear weapons programs and enables a standard WBS for planning, execution, data collection, and reporting. The WBS and WBS dictionary will be the basis for scope and schedule development, program cost estimates, the LPS PMB, and NNSA and DoD's PMB.

Each FPM will define and control the Government WBS (GWBS). The GWBS represents the entire program, including all NNSA-managed scope and DoD scope managed by NNSA. The GWBS will thus be the unifying code structure used for EVMS data collection and reporting and for planning and organization of the NNSA Integrated Master Schedule (NIMS). The GWBS will be under configuration management throughout the life of the program.

All levels below the GWBS will be the responsibility of the participating LPSs. This portion of the WBS is the Contractor WBS (CWBS), and it will contain Control Account (CA), Work Package (WP), and Planning Package (PP) levels, which are used for planning and controlling program scope. The CWBS elements must roll up to the higher-level GWBS elements so the government can summarize all contractor work. Each LPS maintains configuration control of their respective CWBS for the life of the program. The combination of the GWBS and each CWBS forms the complete program WBS.

The use of a standard and consistent program WBS across all LPSs will ensure a common framework for the planning of program scope, cost estimating, scheduling, risk management, data summarization, and performance measurement reporting.

6.2. Requirements

- The CWBS shall be product-oriented.
- The CWBS shall be the required structure code used for EVM reporting to the FPO from the cost processor or EVM reporting tool.
- CA levels of the WBS shall map to a single Control Account Manager (CAM) using a Responsibility Assignment Matrix (RAM).
- The GWBS dictionary is managed by the FPO and provided to the LPSs.
- The GWBS dictionary contains a description of the GWBS-level scope.
- The CWBS dictionaries shall contain a technical scope of work for all applicable elements down to the CA level at a minimum.
- Each CWBS dictionary shall be managed by the respective LPS and shall be placed under configuration control.
- LPSs shall maintain the ability to isolate, separate, and manage NNSA and DoD funding sources in their execution and reporting.

6.3. Format Requirements

- The CWBS CA-level elements must include a two-character LPS designation code in the CWBS as shown in Table 1.

Table 1. Laboratory, Plant, and Site Designation Codes

Designation Code	LPS Name
SD	Sandia National Laboratories Design Agency
SP	Sandia National Laboratories Production Agency
LD	Los Alamos National Laboratory Design Agency

Designation Code	LPS Name
LP	Los Alamos National Laboratory Production Agency
KC	Kansas City National Security Campus
LL	Lawrence Livermore National Laboratory Design Agency
LR	Lawrence Livermore National Laboratory Production Agency
PX	Pantex Plant
YT	Y-12 National Security Complex
SR	Savannah River Site
NV	Nevada National Security Site
NN	NNSA Federal Program Office

- The GWBS and CWBS format for the EVM and for data submittals shall use the two-digit numbering with period "." delimiters.
- Each CWBS shall begin with the LPS site code and must be decomposed to at least one functional level below the LPS contractor code (e.g., SD.01) but shall go down to the LPS WP and/or PP level.
- As new WPs and PPs are created within a CA, they should be numerically ordered (i.e., 01, 02, 03). However, sequential ordering is not required if the LPS wishes to leave numerical gaps (e.g., 01, 03, 05, 07) to allow room to insert future, currently unidentified WPs.
- If an LPS desires, the CWBS may use "ghost" elements to maintain CAs at the same level. If "ghost" elements are used, they shall be ".00" and shall come after the LPS site code. Ghost elements may never be used between a CA and a WP/PP based on lessons learned when exporting the XML file from EV Engine.
- The program WBS is the FPO's EVMS reporting WBS. The LPS shall incorporate the GWBS and CWBS into Oracle's Primavera P6® (P6) or Enterprise Resource Planning System and the LPS's EV Engine reporting WBS for every CA and/or WP for the purpose of generating exports for FPO integration of earned value data using Empower. The top level of the WBS in the LPS schedule and cost processor tools shall follow the GWBS hierarchy. LPSs shall not submit "top" as the top level.
- LPSs may reserve GWBS elements in their CWBS where they do not have any scope, but shall not change the element numbering from the official GWBS.

Table 2 depicts an example of the program WBS format requirements showing the CWBS structure for CAs and WPs two levels below the GWBS.

Table 2. Example of Contractor Work Breakdown Structure Control Accounts and Work Packages

	Program WBS							
	GWBS				CWBS			
Level	L1	L2	L3	L4	L5	L6	L7	WBS String
Site Summary	WXX	01	01	02	SD			WXX.01.01.02.SD
CA1	WXX	01	01	02	SD	01		WXX.01.01.02.SD.01
CA1 WP1	WXX	01	01	02	SD	01	01	WXX.01.01.02.SD.01.01
CA1 WP2	WXX	01	01	02	SD	01	02	WXX.01.01.02.SD.01.02
CA1 WP3	WXX	01	01	02	SD	01	03	WXX.01.01.02.SD.01.03
CA2	WXX	01	01	02	SD	02		WXX.01.01.02.SD.02
CA2 WP1	WXX	01	01	02	SD	02	01	WXX.01.01.02.SD.02.01
CA2 WP2	WXX	01	01	02	SD	02	02	WXX.01.01.02.SD.02.02
CA2 WP3	WXX	01	01	02	SD	02	03	WXX.01.01.02.SD.02.03

6.4. Contractor Work Breakdown Structure Dictionary

A CWBS dictionary is a document that provides detailed information about each element in the WBS, including data such as a work scope description, deliverables, and other data items as needed. The CWBS dictionary is the basis for scope definition and is referenced for any proposed changes based on scope.

6.4.1. Requirements

- The CWBS dictionaries shall include the following:
  - CWBS element number
  - Element name or title
  - Element scope description describing the end item product
  - Deliverables (outputs or exit criteria)
  - Assumptions and constraints
  - Exclusions to the scope (if any)
- The CWBS dictionary shall be maintained under configuration control using a revision number, date, and reference or description.
- The CWBS dictionary entries shall be completed, at a minimum, for all CA-level elements.
- The FPO may request additional levels of CWBS dictionary detail below the CA level for a particular WBS element. The FPO will formally communicate this need and will work with the applicable LPS to coordinate needed actions and mitigate disruptions to program execution.

6.4.2. Format Instructions

LPSs have the discretion to develop WBS dictionaries in their own tools and formats and be able to submit to the FPO as requested.

6.5. Organization Breakdown Structure

The program Organizational Breakdown Structure (OBS) allows scope to be parsed out by responsible party. The OBS is developed to ensure there is only a single individual or organization responsible for an OBS element.

6.5.1. Requirements

- There shall only be a single individual or organization responsible for an OBS element.
- Monthly earned value performance reporting shall include the default output at the WP and/or PP level for the WBS and OBS structures in the earned value data submittal provided to the NNSA FPO.
- The FPO shall provide more detailed cost processor data export instructions to LPSs.
- LPSs shall be prepared to provide their RAM to the FPO as requested.

6.5.2. Format Requirements

- LPSs shall include a WBS structure and an OBS structure in earned value data submissions.
- The LPS OBS organization code shall be assigned at the CA level.
- In the export to XML, the name "OBS" for this code shall be maintained.

7. Planning, Budgeting, and Scheduling

7.1. Control Accounts, Work Packages, and Planning Packages

The CA is a management control point traceable to both the CWBS and OBS where budgets (resource plans) and actual costs are accumulated and compared to earned value. WPs are subdivisions of CAs consisting of one or more scheduled activities and milestones budgeted together. PPs are future segments of work not yet detail-planned into one or more WPs prior to execution of the work. Figure 1 illustrates this concept.

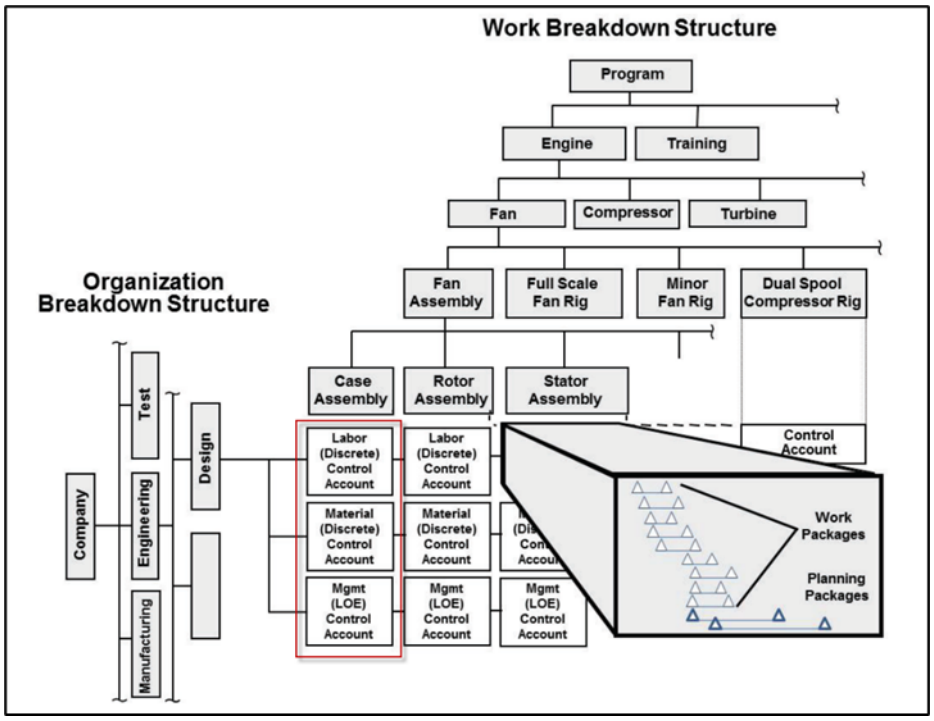

Figure 1. Control Accounts, Work Packages, and Planning Packages

CAs can be composed of either discrete scope or level-of-effort (LOE) scope. Discrete scope represents effort that has a measurable output or can be associated with a physical product or defined deliverable. LOE scope represents effort that has no measurable output and cannot be associated with a physical product or defined deliverable, such as project management and administrative support.

7.1.1. Requirements

- The CWBS CAs shall represent the entire decomposed scope for their parent-level GWBS elements.
- A CA shall include a minimum of one WP or PP.
- The sum of WPs and PPs for a given CA shall define the total scope of that CA.
- The sum of all WP and PP budgets within a CA shall equal the CA Budget at Completion (BAC).
- The WP/PP shall be the minimum reporting level to the NNSA FPO for the EVM data submitted in the earned value data submissions, but variance analysis reporting will be conducted at the CA level.
- LPSs shall maintain the ability to isolate, separate, and manage NNSA and DoD funding sources in their EV Engine.
- Every WP and/or PP shall be coded with the LPS code in the WBS element.
- CAs shall be planned through the duration of the site-approved program scope.
- Discrete CAs shall not span more than 24 months in duration.
- CAs that cannot meet the 24-month duration requirement shall request an exception through the exception process.

- CAs shall be of appropriate length to support the associated work scope and shall not be shortened arbitrarily to meet the 24-month requirement.
- Discrete scope shall be planned based on the associated work scope and shall not be planned by fiscal year.
- The BAC for LOE scope should not exceed 20% of the total BAC for the LPS PMB.
- To ensure forward planning discipline, PPs shall be converted into WPs no less than 3 months prior to the first day of the baseline PP.
- No performance shall be earned, nor shall actual costs ever be incurred, nor shall Earned Value Technique (EVT) be assigned on a PP.
- Schedule visibility tasks or schedule visibility activities shall not have resources in the schedule.
- Labor budgets in the resource-loaded schedules shall include hours.
- Phase 2/Phase 6.2 and Phase 2A/Phase 6.2A actual costs shall be separated as their own EVM contract/PMB and shall not occur additional costs once reported.
- Actual costs that have been incurred during Phase 2/Phase 6.2, and Phase 2A/Phase 6.2A shall not be captured in the resource-loaded schedules.
- Resource loading and authorization of budgets shall be by Element of Cost (EOC).
- EOCs shall be included in the XML export from the EV Engine.
- LOE scope should not be in the resource-loaded schedules.
- LOE costs shall be included in the PMB.
- The following EVTs will be permitted. Each WP shall have only one EVT assigned. If the LPS would like to use a technique that is not included in the following list, then an exception request must be submitted and approved prior to use:
    - LOE
    - Apportioned effort
    - 0/100
    - 50/50
    - Weighted milestones
    - Units complete
    - Percent complete or physical percent complete
        - This method can be used for activities greater than two accounting periods, but interim, objective performance measurement criteria shall be included based on predetermined documented completion criteria known as Quantifiable Backup Data (QBD) at the WP level.
        - QBD can be documented in a variety of ways. One method would be to capture QBD in a document or spreadsheet external to the WP, for example, a task/activity in an engineering release WP could have QBD for Drawing 1 Complete = 30%, Drawing 2 Complete = 60%, Drawing 3 Complete = 100%.
        - An alternative acceptable approach is to the use of P6 steps to document QBD as long as discipline in their application, maintenance, and statusing was employed.
- The Program Evaluation and Review Technique is not an acceptable performance technique and shall not be used. This is an EVT that calculates earned value by multiplying BAC by the ratio of cumulative actual cost divided by Estimate at Completion (EAC). This is based on lessons learned from other programs. This technique

has proven to be unreliable and provides an inaccurate snapshot of the program's cost and schedule performance.
- Rolling wave planning shall be used. The FPO recommends using planning periods that are no longer than two years.

7.2. Control Account Plan

The purpose of a Control Account Plan (CAP) is to document and authorize the work statement, schedule, budget, assumptions, and constraints prior to the start of execution and before incurring actual costs for work performed.

The authorization to proceed with work can occur just prior to the actual start of the planned work, but no work should proceed without properly executed work authorization. During program execution, the CAP may be modified, affecting any of the scope, schedule, or budget as a result of the baseline change control process.

CAP documentation shall be developed per applicable site EVM SD and/or program controls procedures. CAPs that are developed may be reviewed by the NNSA FPO as needed for completeness, accuracy, and traceability between the statement of work, schedule, and LPS PMB data, including evidence of documented baseline change control of the CAPs.

7.3. Program Schedule Development

After development of the CWBS, activities can be defined, planned, and resource-loaded in the scheduling tool. Activities are grouped and organized based on the CWBS structure. Development of the program schedule is an iterative process beginning with definition of milestones, deliverables, and activities, and followed by sequencing the work and estimating durations and resource requirements. Schedule development also includes adjustments for internal and external constraints and dependencies, resource availability, and consideration of known and unknown risks. The completed schedule should represent an accurate model or forecast of the program plan from start to finish. The program schedule is then used as a management tool to track and record progress, report status, assess change impacts, and manage priorities and risks.

Schedules should be prepared to employ the level of detail required to provide adequate definition of time and resource allocations to complete the program scope, create discrete logical ties to drive milestone dates, and meet contractual obligations. The number and types of schedules and the degree of schedule detail is dependent upon the contract type, scope, size, complexity, risk level, and reporting requirements.

7.3.1. NNSA Integrated Master Schedule

The FPO shall develop a NIMS composed of summary-level activities and transition milestones derived from each LPS's Integrated Site Schedule (ISS). The FPO and LPSs use the NIMS as a tool to understand and define alignment, handoffs, and dependencies among Design Agency (DA) and Production Agency (PA) schedules. The tool will also be used to analyze the program's critical path. Additionally, the FPM will use the NIMS to manage NNSA scope.

7.3.2. NIMS Architecture

The NIMS is a standalone summary schedule maintained by the FPO that reflects the complete integrated program scope planned by the LPSs in a duration-driven programmatic schedule. The NIMS is vertically traceable to the lower-level ISSs through a NIMS Contribution File submitted by the LPS. NIMS key milestones are driven by internal LPS activities, summary-level external programmatically defined milestones representing transitions of responsibility, and required non-program-controlled receivables (e.g., other program money). In addition, the NIMS also incorporates external dependencies as documented in interface requirements agreements, technology transfer agreements, and the production control documents from or to other areas outside of the program. Specific program definition of the monthly NIMS Contribution File submittal will be provided by the FPO to the LPS.

The NIMS provides programmatic information of all scope and the logic through integrated site summary activity paths supported by each LPS's detailed ISS. Logic paths include all defined transitional key NIMS milestones and are duration-driven as submitted by the responsible LPS for defined scope. The NIMS will articulate downstream impacts to current execution forecasts in the status file with a comparison to the baseline.

The NIMS is the official complete programmatic schedule as of the most current month's data submittal and allows LPSs to confirm and analyze previously unknown drivers, pushing or pulling scope based upon estimated duration of scope completion. The goal of the feedback loop is to keep the NIMS and ISSs in optimal alignment.

7.3.3. Attributes

- See Section 7.3.1 and Section 7.3.2.
- The NIMS does not contain detailed schedule data.
- The NIMS is the integrated program summary-level schedule of the entire programmatic scope as summarized from ISS detailed schedules based upon scope ownership.
- "Transition of responsibility" for recording the official completion of a milestone is a key concept and rule. For example, a final design release from a DA schedule to the PA is not 100 percent complete until the receiving PA has acknowledged receipt of the design submittal; this ensures all captured scope and duration of transitional work.

7.3.4. Requirements

- LPSs, including both technical and programmatic representatives as well as project controllers, shall participate in the monthly review of the NIMS.
- LPSs shall update NIMS milestone handoffs in their current ISS files as soft-constrained milestones to the date generated by the NIMS information passback, unless better information is known about the handoff and is agreed to within the DA/PA/NNSA team.

7.4. Integrated Site Schedules

ISS status files are the basis for all schedule products and most EVM products. The ISS status file is the current detailed plan from each LPS depicting how they will accomplish their scope of

work. Schedules are detailed at a level dictated by the LPS Corporate SD and/or site project controls procedures and in accordance with best practices contained within the Government Accountability Office (GAO) "Schedule Assessment Guide" and the "Planning and Scheduling Excellence Guide" published by the National Defense Industrial Association (NDIA). ISS details evolve over time through rolling-wave planning techniques, but provide sufficient details to allow the LPSs to perform critical and near-critical path analysis. ISS files inform status and performance within the EVM cost processor tools for discrete work. The ISS directly informs the NIMS. If the ISS files do not provide an accurate depiction of the current status of LPS scope completion and external handoffs, then all deliverables based on the ISS will be inaccurate. LPS communication, internally and externally, regarding current status is paramount for an accurate depiction of the overall health of the program to the CAMs, LPS program managers, LPS leadership, the FPM, the DoD, NNSA leadership, and Congress. The FPO promotes best practices used by other programs (e.g., jointly statusing schedules at the PRT level, sharing joint milestone forecasts at the project/program level prior to finalizing NIMS submissions, sharing critical paths across LPSs) to ensure internal and external communication is effective across the program.

7.4.1. Attributes

- LPS schedules each have their own identifiable critical path and a valid calculation of total float and free float between activities and finish milestones based on logic and duration before the ISS is baselined and for every monthly status update cycle.
- LPS are aware of driving activities that are determining milestone dates as a regular practice, allowing appropriate actions (as required) to maintain commitment dates or explain the impact to key milestones.
- The use of date constraints is minimized, and any date constraints are justified in P6 user-defined fields or other fields. Soft constraints are only used for discrete activities and milestones that are predecessors from external schedules like NIMS handoffs or from supplemental schedules such as production schedules or vendor delivery schedules.
- PRTs communicate handoffs on a monthly basis and reflect this in their schedules:
    - ISS lower-level handoffs not included in the NIMS are coordinated between LPSs. LPSs may use auxiliary tools to facilitate the communication as long as they do not interfere with or supersede the NIMS methodology.
    - Handoffs between LPSs are coordinated during the monthly status process, reflected in each ISS, and ultimately reflected in the NIMS key milestone dates.
- Each ISS is built at a detailed level to provide insight into progress and report performance, but do not contain so much detail that the ISS tracks day-to-day activities.
- LOE activities included in the ISS never impact critical path calculations and/or milestones or drive discrete activity types within the ISS.
- Critical paths are determined by the software's calculation using the longest path.

7.4.2. Requirements

- ISSs shall be developed and maintained in Oracle's Primavera P6® Project Management (P6).

    - Note: For scope after either component or system First Production Unit (FPU), alternate production scheduling tools such as Enterprise Resource Planning (ERP) may be used.
- LPS schedules shall adhere to this CPCP and site SDs and/or site project controls procedures, which should be aligned to scheduling best practices.
- LPSs shall regularly perform their own data quality checks in accordance with NDIA and GAO scheduling guides.
- LPSs shall represent NIMS milestone handoffs with another LPS by using the LPS owner's activity ID in their schedule and as a predecessor to the ISS's equitable link (either a milestone or activity).
- NIMS milestone activity IDs shall not change under any circumstance or be reused if deleted through change management. LPSs may choose to manage the NIMS milestone activity ID in a separate field.
- LPSs shall only use milestones with soft constraints to represent key NIMS milestone handoffs from other LPSs or external program interfaces. These NIMS milestone handoffs shall not be represented by a schedule visibility task.
- LPSs shall status their schedules in alignment with their accounting calendars.
- LPSs shall not add slack or contingency to the schedule within individual tasks.
- LPSs shall not use fractions of days as a planning basis in the schedule.
- Each ISS shall include any Other Program Money (OPM) external interface milestones that have impact on LPS milestones but are managed outside the program.
- If OPM is represented in the ISS, then the LPS shall code the activities as OPM in the funding source code field.
- LPS schedules shall represent all the NIMS scope, as applicable by PRT, defined in the NIMS definitions in Appendix A.
- Transition in responsibilities shall be represented by a NIMS milestone as defined in Appendix A.
- Each LPS ISS shall include all discrete scope of work through the last production unit, consistent with rolling wave planning methodologies, unless post-FPU schedule data is managed with production planning software.
- Each LPS PMB shall include all scope through the life of program.
- Each LPS ISS shall be built to requirements documented in the respective SDs and/or site project controls procedures.
- Details of each ISS shall be planned in accordance with the respective SDs and/or site project controls procedures and allow for critical path analysis of site-specific scope. The critical path of the program is represented in the NIMS.
- NIMS milestone handoffs shall be updated in each LPS's status schedule using the date from the NIMS, unless better information is known about the handoff and is agreed to within the DA/PA/NNSA team.
- Agreed-to handoff dates shall be baselined from the agreed-upon NIMS schedule once detailed schedules representing full ISS scope in the NIMS is constructed and shall be modified through the baseline change process.
- Any changes to the baseline dates of NIMS milestones shall not be implemented until a change has been approved through the configuration change management process.
- Resources shall be time-phased at the WP level or PP level, at a minimum.

- LPSs shall avoid inserting incomplete or preliminary schedule duration impacts from issues (e.g., realized risks) into their ISS. Once the issue's impact is fully understood, reviewed, and potentially mitigated, each affected LPS may add the duration into their ISS.
- LPSs shall maintain monthly backup XER or XML files for both the status and baseline files to archive the files that were sent to NNSA for the life of the program.
- If supplemental schedules (e.g., ERP) are used, the PA must be able to provide a mechanism to translate production data to the ISS.
- Each LPS shall build and maintain their respective ISS to meet the standard Defense Programs schedule quality assessment criteria guidelines in Table 3 unless their internal site SD and/or site project controls procedures require more rigorous metrics.
- Each LPS shall perform monthly schedule quality checks using the criteria in Table 3 on their status and revised baseline schedules and provide the results to the FPO upon request.

Table 3. Quality Assessment Criteria Guidelines

Metric	What It Is	Goal (if not defined in the respective site SD/program control procedures)
Logic	Predecessors and successors	• ≤ 5% • At least 1 ea. task, with exception of first and last activity in the schedule
Leads	Overlap/concurrency between tasks (negative lag)	• 0
Lags	Delay between linked tasks	• ≤ 5% • May exceed threshold when used specifically for resource leveling, provided that this justification is documented
Relationship Types	Other than finish-to-start	• ≤ 10% • May exceed threshold with appropriate justification based on type of work and/or activities (e.g., LOE, planning package)
Mandatory Constraints	Mandatory start or mandatory finish	• 0 • P6 term also known as "hard constraint" by the GAO Schedule Assessment Guide on the Defense Contract Management Agency 14-point metrics
High Float	Total float > 12 months	• ≤ 10% • May exceed threshold with appropriate justification (e.g., LOE, reason why work scope is being done early)
Negative Float	Negative float shall not occur in baseline schedule	• Negative float should only occur in a status schedule once work has commenced; check for negative float before baselining the schedule
High Duration	Tasks > 88 days	• ≤ 5% • May exceed threshold with appropriate justification based on type of work and/or activities (e.g., long-lead procurements) • Only applicable for activities within work package

Metric	What It Is	Goal (if not defined in the respective site SD/program control procedures)
Low Duration	Tasks < 15 days	• ≤ 5% • May exceed threshold with appropriate justification based on type of work and/or activities • Only applicable for activities within work package
Invalid Date	Forecast dates prior to or actual dates after current status date	• 0%

8. Management Analysis and Reporting

Management analysis and reporting is the mechanism for communicating performance to the FPO. The WP is the level at which EVM data will be submitted to the FPO with variance analysis reported at the CA level. This is done so that DoD and NNSA data can be segregated by analysis performed at the CA level as the scope is jointly executed. All EVM metrics are calculated and reported in accordance with Appendix B. General attributes and requirements of the EVM performance reporting system include the following.

8.1.1. Attributes

- Each LPS performs analysis of the significant variances between both planned and actual schedule performance as well as actual performance and actual costs for the performance period. (See Appendix B)
- Root cause analysis for variances exceeding thresholds include CA-level program impacts and corrective actions documented in detail per site corporate SD and/or site project controls procedures.
- EACs are maintained at the CWBS levels where the work is planned, performance is earned, and actuals accumulated. The summation of these generate an overall EAC for the entire program.
- Revised EACs are developed based on most current information to include performance to date, commitment values for material or other accrued EOC types, and estimates of future conditions.
- Independently calculated EACs are compared against the CAM-updated EAC to evaluate the realism of the reported EAC.
- The CAM's EAC is compared to the BAC to produce the Variance at Completion (VAC).

8.1.2. Requirements

- LPSs shall submit Variance Analysis Reports (VARs) at the CA level.
- Submitted VARs shall:
    - Explain and submit to the FPO the top ten cumulative variances in each of the cost, schedule, and VAC categories.

        - The top ten VARs can be based on cost/schedule variances deviating from the plan significantly from an absolute dollar amount, but more importantly the VARs selected for submittal should be those CAs causing management concern because they are higher risk and higher impact related to schedule, deliverables, critical path, etc.
    - Adequately explain drivers to at least 80% of each variance and address both current period and cumulative variances.
    - Address planned versus actual labor rates, labor usage, material price, and material usage to the extent possible with data provided by the cost processor.
- VAR requirements may be subject to change by the FPO based on the needs and phase of the program. If this occurs, the FPO shall provide the LPSs with new requirements.
- The FPO may require additional VARs for submittal on an as-needed basis.
- Estimates to Complete (ETCs) shall be CAM informed.
- LPSs shall submit any forecasted emerging drivers that are expected to substantially impact planned performance if they are not within the top ten.
- Any CA that has a combination of a cost, schedule, and VAC variance shall be addressed on the same VAR and the VAR report counts as a single VAR out of the top ten.
- Internally, each LPS shall document explanations for all variances at a lower level as prescribed by internal guidance.
- VARs shall at a minimum document the root causes for the variances in detail, the CA and program impacts, corrective actions, and expected recovery (including completion date).
- All VARs submitted must include the best practice standard Integrated Program Management Report 5 (IPMR-5) sections. LPSs may use their EVMS tool's standard CPR/IPMR-5 report formats for VARs or custom Excel-based VAR templates.
- ETCs shall be updated monthly. At a minimum, open WPs shall be analyzed and updated.
- A comprehensive EAC update shall be performed at least annually, or more frequently if performance indicates the current estimate is no longer reasonable.
- At the CA level, LPSs shall analyze the To-Complete Performance Index (TCPI) to the EAC.
    - If the delta between the Cost Performance Index (CPI) and the TCPI is greater than ± 0.10, report rationale in the VAR.
    - LPSs shall not artificially manipulate the EAC to maintain a TCPI that is within a 0.10 range of the CPI.
    - Monthly VAR submittals are per the Top 10 requirement.

Table 4 provides monthly reporting submittal requirements and due dates.

Table 4. Monthly Reporting Requirements for Earned Value Performance

Monthly Program Status Reporting Submittal	Due Date	File Format and Remarks
Product development schedules: P6 schedule data • P6 schedules with attached baselines • NIMS contribution file(s) Production schedules: production data • Production metric data – starts as soon as the component FPUs • P6 Files if the LPS does not use an ERP system * DAs are exempt from delivering P6 schedules once all their discrete work is complete.	5th	XML, XER, or Excel (for production metrics or NIMS contribution file(s) only)
Monthly program status and financial report for NNSA and DoD	10th	Word, Excel, and/or PowerPoint, template to be provided
Monthly earned value performance data electronic submittal files: Files separated by NNSA and DoD at the WP level with EOCs included	15th	wINSIGHT XML export or Empower Optimized Zip or An Empower-compatible file as approved by the FPO
Contract Budget Base (CBB), Management Reserve (MR), undistributed budget, and Authorized Unpriced Work (AUW) and undistributed budget logs; separated by NNSA and DoD	15th	Excel
IPMR-5 (VAR) reports	20th	Excel or HTML (Empower Narrative EDI Export if possible)
Contract funds status report for DoD programs, as applicable	20th	Quarterly in Excel
OPM funds status report as needed	20th	Excel

9. Accounting

9.1. Purpose

The purpose of the accounting system is to ensure all direct and indirect costs charged to the program are collected and recorded in the LPSs' financial accounting systems, reconciled to the EVMS reporting systems, and traceable to NNSA's Standard Accounting and Reporting System. It is also required to understand and account for any timing differences in the recording and reconciliation of actual costs between these systems.

The NNSA FPO objective for actual costs in the EVMS reporting system is for each LPS to adhere to their contract requirements for cost accounting standards and corporate SD procedures to validate financial system data integrity for EVMS reporting and audits.

9.1.1. Requirements

- The actual costs in the EVMS shall reconcile to the direct costs in the accounting system by WBS element for the fiscal period and cumulatively.

- Actual costs shall be recorded in the same accounting period that earned value is earned.
- The EVMS reporting system shall use accruals or estimated actuals to account for the costs of work accomplished in a reporting period that have not yet had direct costs recorded in the accounting system. Material, subcontract, and other direct costs are EOC types where accrual-based accounting of actual costs is typically used.
- Actual costs shall be reported in the EVMS at the WP level, at a minimum.
- Changes to actual costs shall only occur for correction of errors and/or accounting adjustments and shall be implemented in the current period. No retroactive changes shall be allowed without prior authorization from the FPO. Any changes to historical costs will result in a rejected submittal, which will then require the data to be reworked and resubmitted.

10. Baseline Revisions and Data Maintenance

The objectives of the change management process in the EVMS are to maintain the integrity of LPS PMBs, ensure reliability of performance data, and control re-planning of remaining future work. Each LPS maintains their respective PMB to reflect the most current execution plan and report the most accurate program performance data to NNSA management, DoD management, and all program stakeholders. The timely and accurate incorporation of authorized changes to the PMB ensures that the information generated from the EVMS provides an accurate assessment of progress and facilitates correct management actions and decisions.

The FPO evaluates each LPS's performance data monthly to analyze the occurrence of baseline changes and their impacts to schedules, PMB, and CBB. The FPO also reviews and monitors the proper application of each LPS's MR in accordance with allowable and unallowable EVMS industry best practices. In addition, the FPO reserves the right to request copies of internally approved Baseline Change Proposals (BCPs) to evaluate the details of the change and to fully understand MR transactions found in the monthly earned value data and baseline change log as well as transfers of budget into and out of CAs.

MR is derived from risk exposure and uncertainty. MR will be held at the LPS level. MR should only be used for in-scope unplanned work and known unknowns (e.g., realized risks, uncertainty).

Contingency is derived from risk exposure, uncertainty, and unknown unknowns. Contingency will be held by the FPM. Contingency should only be deployed to the LPSs and incorporated into their baselines for new scope and unknown unknowns. Deployment of contingency to LPSs is most often a budgetary and funding transfer.

For more information on the NNSA change management process and thresholds, consult the respective FPO prior to moving forward with the change process.

10.1. Changes to Performance Measurement Baselines

10.1.1. Requirements

- LPSs shall implement baseline change management procedures compliant with EIA-748 guidelines for revisions and data maintenance.
- LPS PMBs shall not be continuously revised in an attempt to match authorized budget authority (funds). Additional budget requires identification of new scope. Continually replanning the baseline distorts the data used to make projections, which are critical in arriving at an accurate EAC.
- The FPO shall approve the use of contingency, mission assignment transfers between LPSs, and/or other types of baseline changes based on the criteria defined in Table 5.
- Only changes that have been reviewed and authorized shall be implemented in the baseline.
- All changes to LPS PMBs shall be documented in the respective LPS CBB log.
- All changes in the log and the BCPs shall identify if the impact is to DoD, NNSA, or both as well as the amount of the impact for each customer.
- Any retroactive changes to performance, actual costs, or planned value shall be implemented only after approval and shall be recorded in the current reporting period.
- All single-point adjustments to replan a WP or CA to eliminate schedule and/or cost variances shall only be allowed with FPO approval and authorization via the change control process. Single point adjustments shall be coordinated with the FPO prior to submitting a change package.
- Impacts by customer (NNSA and DoD) shall be identified on the BCP form.
- AUW shall only be authorized by the FPM for emergency use with written approval detailing a not-to-exceed value and timeframe in which a BCP shall be submitted (typically not longer than 90 calendar days).
- Each approved AUW shall be recorded in the LPS change log as an individual entry.
- Approved changes shall be implemented into their respective baseline within two accounting months after approval.
- BCPs for the transfer of scope between LPSs shall be proposed, planned, submitted for consideration to the change board, and implemented at the same time.
- BCPs are categorized by level according to the required approval authority.
- All BCPs shall be examined according to the threshold criteria for approval by the appropriate approval authority.

10.1.2. Baseline Change Control Levels and Approval Thresholds

Table 5. NNSA Approval Authority Levels for Baseline Change Proposals

Approval Authority	Scope	Schedule	Budget
Level 1: Nuclear Weapons Council (NWC)	• Changes that affect or alter mission need and NWC-authorized program performance objectives and DoD Military Characteristics or Stockpile-to-Target Sequence requirements	• Changes to first production unit date, initial operational capability date, or last production unit date	• Changes from the authorized lifecycle cost estimate that meets cost over-run reporting thresholds of 125% of total baseline cost and/or 150% of baseline per unit cost as reported in the Selected Acquisition Report per 50 USC 2753
Level 2: NNSA NA-10	• Change impacts the ability to meet NWC-authorized program performance objectives and requirements • Changes to other NA 10 programs' authorized scope negotiated in interface requirements agreements	• Changes that impact other NA-10 programs' authorized work scope	• Any change to the performance baseline (NNSA level)
Level 3: FPM	• Change impacts the ability to meet program source requirements, but not NWC-authorized program performance objectives, requirements, and/or Military Characteristics or Stockpile-to-Target Sequence requirements • Addition or modification to planned joint tests with the DoD • Movement of scope from one LPS to another, including moving scope concurrent with funds transfer • Movement of scope between LPS and the DoD	• Any change, resulting from a modification to a baseline schedule, that impacts NIMS milestones • Changes that impact the ability to meet program control document deliverables • Changes to NNSA/DoD baseline execution date for joint test, joint hardware deliverables, or a major joint schedule milestone greater than 30 days	• All changes that modify the baseline greater than ±$1.5M at a single LPS or ±$5M total for multi-LPS changes, regardless of the reason, including risk-based deployment of an LPS's management reserve and scope removal • Note: LPS shall not sub-divide changes into smaller pieces to get under the $1.5M limit • Any type of single-point adjustment • In-scope change using LPS's MR when the LPS has insufficient MR • Any change affecting FPO contingency budget

Approval Authority	Scope	Schedule	Budget
Level 4: LPS Program Manager or Mult-LPS Change Board	• All other additions or deletions of scope not captured above	• Changes to integrated baseline schedules not captured above	• All other changes to LPS PMB not captured above • Includes single LPS contractor changes less than $1.5M • Includes administrative changes and conversion of PPs to WPs within Level 4 change limits

11. Exception Request Process and Program-Specific Implementation and/or Exceptions

Exceptions to this CPCP should be used sparingly. No LPS should assume that the exception has been granted until the respective FPM provides written authorization for relief of the requirement documented in the CPCP. Any exception shall be submitted to the FPM, who will coordinate with the NA-125 ADA. The list below is the process that each exemption request shall follow:

1. LPS submits a memorandum from the LPS program manager specifically identifying the requirement to which the LPS would like an exception, a justification of why the requirement cannot be met, and the impact to the LPS if the request is denied. If the LPS has more than one requirement, they can submit a single memorandum identifying each requirement, a justification for each exception, and an impact for each exception if the FPO denies the request.
2. The ADA or FPM receives the request.
3. The ADA or FPM analyzes the impact to the program's EVMS.
4. The ADA or FPM responds to the LPS with a memorandum documenting the decision.
5. The program archives and electronically retains the memorandum for reference throughout the life of the program.

If necessary, a program shall create an addendum to this document to identify tailored requirements or exceptions. Addenda may also include specifics such as the location of the GWBS, program-specific BCP thresholds, program-specific coding, program-specific milestones and definitions, or other requirements deemed necessary by the FPM.

Acronyms

Term	Definition
AER	Advanced Engineering Release
AUW	Authorized Unpriced Work
BAC	Budget at Completion
BCP	Baseline Change Proposal
BDR	Baseline Design Review
CA	Control Account
CAM	Control Account Manager
CAP	Control Account Plan
CBB	Contract Budget Base
CDG	Conceptual Design Gate
CDR	Conceptual Design Review
CER	Complete Engineering Release
CPCP	Common Program Controls Plan
CPI	Cost Performance Index
CRA	Contractor Readiness Assessment
CWBS	Contractor Work Breakdown Structure
DA	Design Agency
DER	Development Engineering Release
DoD	U.S. Department of Defense
DSA	Document Safety Analysis
EAC	Estimate at Completion
EER	Engineering Evaluation Release
EIA	Electronic Industries Alliance
Empower	Encore Analytics Empower Earned Value Analytics Software
EOC	Element of Cost
EE	Engineering Evaluation
ERP	Enterprise Resource Planning
ETC	Estimate to Complete
EVM	Earned Value Management
EVMS	Earned Value Management Systems
EVT	Earned Value Technique
FDR	Final Design Review
FPM	Federal Program Manager
FPO	Federal Program Office
FPU	First Production Unit
FWDR	Final Weapon Development Report
GAO	Government Accountability Office

Term	Definition
GWBS	Government Work Breakdown Structure
HATT	Hazard Analysis Task Team
IBR	Integrated Baseline Review
IPMR	Integrated Program Management Report
ISS	Integrated Site Schedule
LOE	Level of Effort
LPS	Laboratory, Plant, and/or Site
MC	Major Component
MR	Management Reserve
NDIA	National Defense Industrial Association
NESS	Nuclear Explosive Safety Study
NIMS	NNSA Integrated Master Schedule
NNSA	National Nuclear Security Administration
NWC	Nuclear Weapons Council
OBS	Organizational Breakdown Structure
OPM	Other Program Money
P6	Oracle Primavera Project Planner (scheduling software)
PA	Production Agency
PCDG	Product Conceptual Design Gate
PDDR	Product Definition and Document Review
PDRAAG	Preliminary Design Review and Acceptance Group
PMB	Performance Measurement Baseline
PP	Planning Package
PPEG	Pre-Production Engineering Gate
PPPG	Pre-Pilot Production Gate
PPI	Process Prove-In
PQ	Qualification Plan
PRR	Production Readiness Review
PRT	Product Realization Team
PX	Pantex Plant
QAIP	Quality Assurance Inspection Process
QBD	Quantifiable Backup Data
QE	Qualification Evaluation
QER	Qualification Evaluation Release
RAM	Responsibility Assignment Matrix
SD	System Description
TCPI	To-Complete Performance Index
VAC	Variance at Completion
VAR	Variance Analysis Report

Term	Definition
WBS	Work Breakdown Structure
WDCR	Weapon Design and Cost Report
WP	Work Package
WSS	Weapon Safety Specification
XER	Schedule file format from P6
XML	Extensible Markup Language (text file)

References

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Government Accountability Office, GAO-16-89G, "Schedule Assessment Guide: Best Practices for Project Schedules," December 22, 2015.

Government Accountability Office, GAO-20-195G, "Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Program Costs," March 2020.

National Defense Industrial Association, "Planning & Scheduling Excellence Guide," Version 5.0, September 12, 2022.

National Defense Industrial Association, Integrated Program Management Division, "Earned Value Management Systems EIA-748-D Intent Guide," August 28, 2018.

National Nuclear Security Administration, "Work Breakdown Structure Guideline for NA-14 Decision Support and NA-18 Systems Engineering & Integration," September 2017.

National Nuclear Security Administration, NAP 413.2, "Program Management Policy," February 4, 2019.

National Nuclear Security Administration, Office of Defense Programs, "Defense Programs Program Execution Instruction," Revision 4, December 2024.

Appendix A: NIMS Milestones Definitions

Table A-1. Component Handoffs

Milestone/Activity	Description
Design Start	Milestone signifying the start of component design efforts. This will be the starting point from when the schedule starts after the Weapon Design and Cost Report (WDCR).
PRT Start	Milestone signifying the PRTs that begin after baseline data date. Place this milestone where it is estimated that the PRT will be stood up and begin design.
Develop Development Engineering Release (DER)	Activity capturing the first iteration of the engineering release for development builds at the DA (typically) supporting the Conceptual Design Review (CDR). The activity concludes when the PA verifies the component-level engineering release is received.
DER Complete and Received	Milestone signifying the transfer of responsibility from DA to PA when the development build component-level DER is received by the PA. This milestone is only completed when the PA has accepted the DER in their system. If the engineering release is for a build at the DA, this is the transition point reported up through the NIMS and will be entirely owned by the DA. There will be a separate DER released prior to each development build. Within the NIMS, each DER milestone will be represented, and each will be distinguished with a parenthetical notation of the development build gates (e.g., DB1 = Development Build 1, DB2 = Development Build 2).
Conduct CDR	Activity capturing the final preparation and execution by the DA for the CDR. Activity concludes at the successful completion of the design review.
CDR Complete	Milestone signifying the successful completion of the CDR. Successful completion may include conditions or actions, but it will not include the need for a delta CDR.
Prepare and Conduct Product Conceptual Design Gate (PCDG)	Activity capturing the final preparation and execution by the DA for the PCDG. This will typically be the effort between CDR and the gate completion.
PCDG Complete	Milestone capturing the successful completion of the PCDG, signifying the completion of the gate. Successful completion may include conditions or actions but will not include the need for a delta PCDG.
Development Build (N)	Activity capturing the critical duration of a specific development build (N). The activity begins with the PA (or DA) reception of the DER and concludes when the first delivery of component hardware is received at the DA's receiving dock. Once ownership is acknowledged by the LPS' receiving department, responsibility transitions to the DA. Hardware delivery quantities needed to complete this milestone are defined by the PRT. The hardware may be built by the PA or the DA and is reported by the builder. Agreement from both agencies must be documented and appropriately passed to the NIMS. The number of cycles of development builds is determined by the PRT and documented in the LPS schedules and summarized in the NIMS as a development build.

Milestone/Activity	Description
DB(N) HW Available (Hardware)	Milestone that represents when the critical grouping of hardware for a specific development build is received by the DA's receiving department. Milestone signifies the transfer of responsibility from PA (or DA, if the DA is building the hardware) to the DA. This does not represent all hardware delivery quantities needed to complete the full DB(N), nor does it represent merely the first set of hardware delivered. It represents the initial set of hardware required (defined by and agreed upon by the PRT) for the DA to begin the test/analysis cycle and update the next iteration of the engineering release. (The full development build will be represented in LPS schedules.) Milestone is complete when DA has received the critical grouping of hardware. For the final development build, this milestone will represent the transition point to the DA activities leading to an Advanced Engineering Release (AER) with Process Prove-In (PPI)-ready definition needed for subsequent PA Product Definition and Document Review (PDDR) work; under most circumstances this will be a PA to DA transition point.
DA Test/Analysis Update of Engineering Release	Activity capturing an iteration of component design development at the DA including tests, analyses, and updates to the DER. The activity concludes when the PA verifies receipt of updated component level DER. The cycle(s) conclude when the DA releases the last engineering release in support of the Baseline Design Review (BDR) and for the PA to begin final design build.
DA Prepare PPI-Ready Definition	Activity following final development build that captures the preparation of the AER, which is required by the PA to perform the PDDR. This is a DA-owned duration, the result of which is an AER released to the PA.
AER completed for PDDR	Milestone capturing the completion of the final or top tier AER required by the PA for PDDR work to begin. Milestone is considered complete when PA has accepted the AER in their system. This signifies a transfer of responsibility from the DA to the PA.
Conduct BDR	Activity capturing the final preparation and execution by the DA for the BDR. Activity concludes at the successful completion of the design review.
BDR Complete	Milestone capturing the completion of the BDR. Successful completion may include conditions or actions, but it will not include the need for a delta BDR.
Prepare for and Conduct Pre-Production Engineering Gate (PPEG)	Activity capturing the final preparation and execution by the DA for the PPEG. This will typically be the effort between the completion of the BDR and the completion of the PPEG.
PPEG Complete	Milestone capturing the successful completion of the PPEG, signifying the completion of the gate. Successful completion may include conditions or actions but will not include the need for a delta PPEG.
Prepare for and Conduct PDDR	PA activity held prior to the Final Design Review (FDR) to ensure that requirements necessary for production are in place and are mapped from design to production. Activity is complete once the review has concluded, and the component begins preparation of the FDR.
PDDR Complete	Milestone signifying the completion of the PDDR.
Prepare for and conduct FDR	Activity capturing the final preparation and execution by the DA for the FDR. Activity concludes at the successful completion of the design review.
FDR Complete	Milestone signifying the completion of the FDR. Successful completion may include conditions or actions, but it will not include the need for a delta FDR. From a NIMS perspective, the FDR will gate both the Pre-Pilot Production Gate (PPPG) and the Complete Engineering Release (CER).

Milestone/Activity	Description
Prepare for and Conduct PPPG	Activity capturing the final preparation and execution for the PPPG. Activity concludes at the successful completion of the gate. The NIMS will only capture the effort between FDR and completion of the gate.
PPPG Complete	Milestone capturing the completion of the PPPG signifying the completion of the gate. Successful completion may include conditions or actions, but will not include the need for a delta PPPG. (From a NIMS view, this milestone will be one of two milestones that gates the commencement of PPI—the other being CER available/received.)
Develop CER	Activity capturing final design definition at the DA. The activity concludes when PA verifies receipt of the component level CER. Within the NIMS, this represents all efforts to develop the CER following the FDR. (Efforts most certainly will have commenced prior to the FDR completion, but those will only be represented in the individual LPS schedules.)
CER Available/Received	Milestone signifying the transfer of responsibility from DA to PA when the top-level CER is received by the PA, which authorizes the use of the listed minimum product definition for fabrication of production quantities of parts, subassemblies, or assemblies to meet directive schedule requirements of the top-level part number for each GWBS level component when received by the PA.
PPI Build	Activity capturing the critical duration of the PPI build at the PA. The activity commences when both CER is received and the PPPG is complete. The activity concludes when the component hardware and build data package is complete to support the Production Readiness Review (PRR).
PPI Lot Complete	PA milestone that captures when the component hardware and build data package is complete and when the DA verifies receipt of the PPI build package specified in the qualification plan
Prepare for and Conduct PRR	Activity capturing PA final preparation and execution of the PRR. This can include, but is not limited to, the completion of Qualification Plans (PQs) and EEs.
PRR Complete	Milestone capturing a successful completion of the PRR and PRT authorization to transition into the Qualification Evaluation (QE) build.
QE Build	Activity capturing QE build activities at the PA. The activity concludes when the DA verifies receipt of the QE build data package specified in the qualification plan.
QE Build Complete	Milestone representing when all data from QE build is received by the DA to inform the Qualification Evaluation Release (QER).
Update PQ & Develop QER	Activity capturing the update of the PQ/EER and the development of the QER based on QE build data. The activity concludes when the PA verifies receipt of QER.
QER Available/Received	Milestone signifying the transfer of responsibility from DA to PA when the component top level QER is received by the PA. Follows completion of the EE activities as defined by either a PQ or EER. The QER is the engineering release used to document the status of the EE or re-EE of the product(s) or process(s) listed.
Quality Assurance Inspection Process (QAIP) and Diamond Stamp	Activity capturing the assembly of the QAIP data package and QAIP submittal. The activity concludes when the diamond stamped hardware is received either internally at the next assembly level or ready to sell.
Major Component (MC) FPU	Milestone signifying the completion of the MC-level FPU and the transfer of responsibility between PA to PA (either internally at next assembly level or externally to another PA) when diamond-stamped hardware is sold by the PA. This milestone will represent the point in time that FPU hardware is received and accepted at Pantex.

Milestone/Activity	Description
Component FPU	Milestone signifying the completion of lower-level component FPU. This also represents the transfer of responsibility between PA to PA. These components are not, however, MC-level components, nor are they components that are delivered to Pantex.

Note: Other component milestones and activities may be defined and added to the NIMS as needed following the initial schedule release. Examples may include delta design reviews, conditional engineering releases, additional critical hardware deliveries, critical Tooling, Tester or gage deliverables, etc. No milestones or activities will be added to the NIMS without full agreement from the FPO and relevant DAs and PAs.

Table A-2. System Handoffs

Milestone/Activity	Description
System Conceptual Design Work	Activity that represents the system-level DA work leading up to the system CDR—including requirements work and any system level testing required. (Assumption is that system CDR will not be conducted prior to the start of Phase 3)
System CDR Complete	Milestone signifying the completion of the system CDR. Successful completion may include conditions or actions, but it will not include the need for a delta CDR. (Assumption is that system CDR will not be conducted prior to the start of Phase 3)
Prepare and Conduct System BDR	Activity that represents the critical effort for the system-level DA work being done leading up to the system BDR.
System BDR Complete	Milestone signifying the completion of the system BDR. Successful completion may include conditions or actions, but it will not include the need for a delta BDR.
Prepare and Conduct System PPEG	Activity that represents the system integrator's critical effort required for work leading up to the system PPEG.
System PPEG Complete	Milestone signifying the completion of the system PPEG. Successful completion may include conditions or actions, but it will not include the need for a delta PPEG.
Prepare and Conduct System FDR	Activity that represents the critical effort for the system-level DA work being done leading up to the system FDR.
System FDR Complete	Milestone signifying the completion of the system FDR. Successful completion may include conditions or actions, but it will not include the need for a delta FDR.
Prepare and Conduct PDRAAG	Activity that represents the critical effort by the system integrator to prepare for and conduct the PDRAAG review. This activity will represent the duration between the release of the initial FWDR and the completion of the PDRAAG review meeting.
PDRAAG Complete	Milestone signifying the completion of the PDRAAG review. Successful completion may include conditions or actions, but it will not include the need for a delta review.
All Component BDRs Complete	Milestone signifying the completion of all component level BDRs. This milestone is used only in the NIMS (i.e., it will not have a direct dependency on a LPS schedule) and will serve as a gathering milestone in which to link all lower-level component BDR and allow for float calculations within the NIMS. Milestone will be linked to the system BDR complete milestone.
All Component FDRs complete	Milestone signifying the completion of all component level FDRs. This milestone is used only in the NIMS (i.e., it will not have a direct dependency on a LPS schedule) and will serve as a gathering milestone in which to link all lower-level component FDR and allow for float calculations within the NIMS. Milestone will be linked to the system FDR complete milestone.
Phase 3 Authorization Received	Milestone signifying authorization of Phase 3 for the program when authorization memo has been distributed. This will be the starting point from when the NIMS system schedule starts after WDCR. (Conceptual design work will most likely have begun prior to this date.)
Prepare for and Conduct System CDG	Activity that represents the system integrator's critical effort required for work leading up to the system CDG.
System CDG Complete	Milestone signifying the completion of the system CDG. Successful completion may include conditions or actions, but it will not include the need for a delta CDG
Phase 4 Authorization Received	Milestone signifying authorization of Phase 4 for the program when authorization memo has been distributed.
Phase 5 Authorization Received	Milestone signifying authorization of Phase 5 for the program when authorization memo has been distributed.

Milestone/Activity	Description
Develop PWDR	Activity that represents the system-level DA work being done leading up to the release of the PDRAAG.
PWDR Developed/Released for PDRAAG	Milestone signifying the completion and release of PWDR document. Milestone is complete when the document has been received by PDRAAG.
Prepare Initial MAR	Design Agency develops initial Major Assembly Release (MAR) for NNSA review and initiates entrance criteria to F-DRAAG.
Initial MAR Complete	Milestone signifying completion of the Initial MAR.
Prepare and Conduct F-DRAAG	Activity that represents the critical effort by the system integrator to prepare for and conduct the Final Design Review and Acceptance Group (F-DRAAG). This activity will represent the duration between the release of the initial MAR and the completion of the Final Weapon Development Report (FWDR).
F-DRAAG Complete	Milestone signifying the completion of the F-DRAAG. The F-DRAAG meets to review Initial FWDR.
Prepare FWDR	Activity that represents the effort to finalize and release the FWDR upon receipt of F-DRAAG comments to the NWC.
FWDR Complete	Milestone signifying the completion for the FWDR.

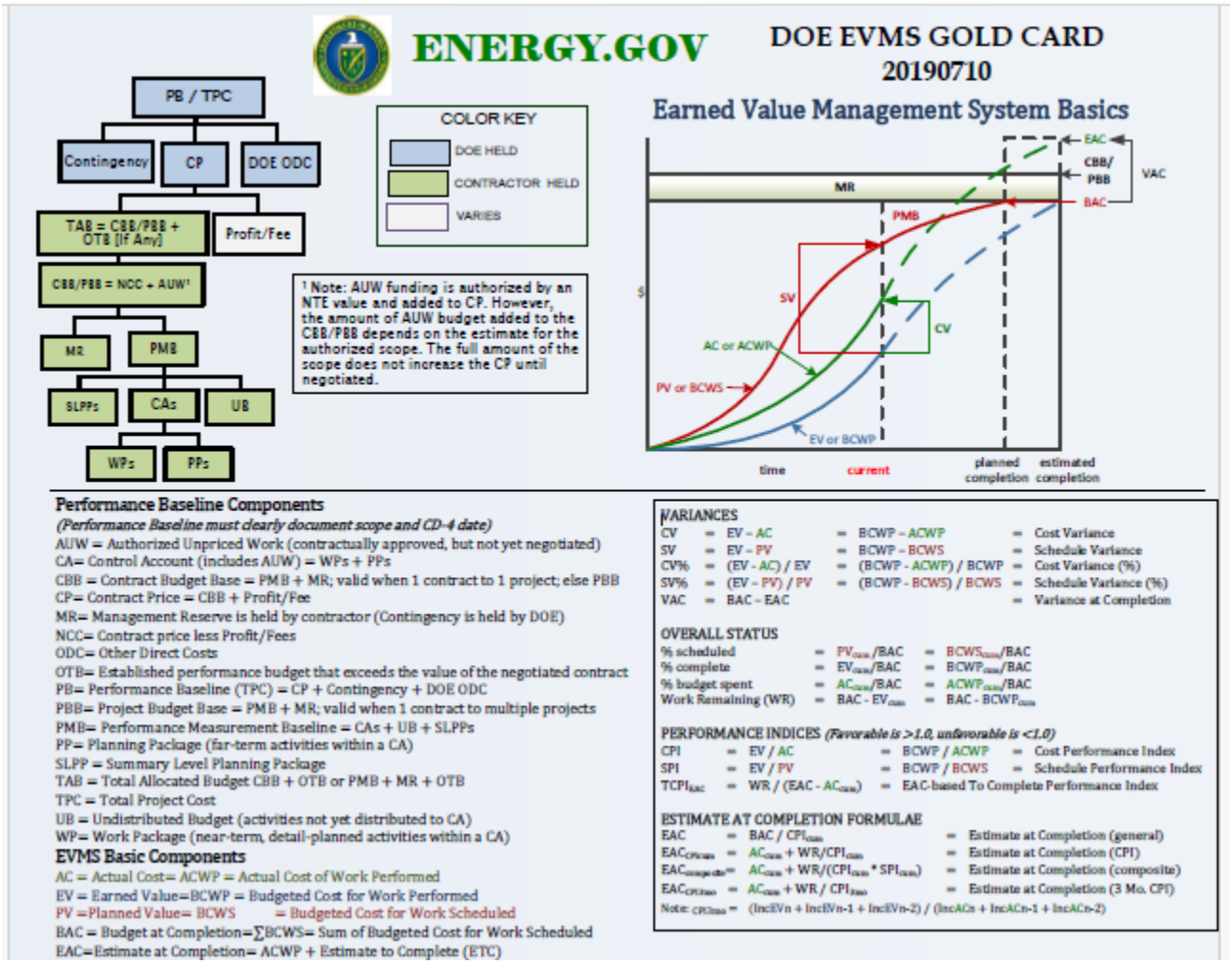
Table A-3. System Tests—Ground and Flight Tests

Milestone/Activity	Description
Kickoff	Milestone representing the completion of the kickoff meeting for a specific joint test. This is complete when meeting is held. This milestone will be the starting point of each individual test within the NIMS.
Design and Coordinate Test	Activity representing all planning, design, and coordination efforts (including test plans, documents, procedures, and preliminary test reviews) leading up to receipt of test hardware and building of test body.
Hardware Received	Milestone signifying when all hardware necessary for a test has been delivered to the LPS that is conducting the test.
Build Test Body	Activity representing the critical effort of building the test body/bodies (after all hardware is received) required for testing as well as the time required to ship test body to the test facility.
Test Hardware Available at Facility	Milestone signifying when test body has been received and accepted by the test facility—this milestone will also represent the start of the test window.
Execute Test	Activity representing the execution of the test, or test window.
Test Complete	Milestone signifying when test is complete—all test procedures have been accomplished, and all necessary data has been collected.
Prepare Quick-Look Report	Activity representing the preparation and compilation of the quick-look report.
Quick-Look Report Delivered	Milestone signifying that the quick-look report is completed and has been distributed or is available on the approved platform to all required recipients.
Prepare Final Test Report	Activity representing the preparation and compilation of the final test report.
Final Test Report Delivered	Milestone signifying that the final test report is completed and has been distributed or is available on the approved platform to all required recipients.

Table A-4. WR System Pantex Readiness

Milestone/Activity	Description
Conduct HATT Walkdowns	Activity representing Hazard Analysis Task Team walkdowns for operating procedures, facilities equipment, layout, and tooling to develop the safety basis and the Nuclear Explosive Safety Study (NESS).
HATT(s) Complete	Milestone representing Hazard Analysis Task Team walkdowns are complete at PX.
WSS Complete	Milestone signifying all safety-related information is complete in the Weapon Safety Specification (WSS) document.
Prepare DSA	Activity representing the critical effort at PX to prepare the Document Safety Analysis (DSA). This will represent the duration between the completion of the final HATT and the completion of the DSA
DSA Complete	Milestone representing the completion and availability of the DSA to allow for preparation of the Contractor Readiness Assessment (CRA).
Conduct NESS	Activity representing the critical effort at PX to conduct the NESS. This will represent the duration between the acceptance of the Process QER and the completion of the NESS.
NESS complete at PX	Milestone signifying the release of the Nuclear Explosive Safety Study report at PX. The report presents the case for PX to operate in a safe manner. It is developed by PX SME's who will reach out to DAs as necessary.
All HW available at PX	Milestone signifying the completion of all component-level FPUs and their delivery and acceptance at PX for the system FPU build. This milestone is used only in the NIMS (i.e., it will not have a direct dependency on a LPS schedule) and will serve as a gathering milestone in which to link all lower-level component FPUs and allow for float calculations within the NIMS. Milestone will be linked to the system FPU build activity.
Prepare and Conduct EE	Activity representing the effort for Engineering Evaluations (EE) at Pantex. The evaluations precede the Contactor Readiness Assessment (CRA).
EE Complete	Milestone signifying the Engineering Evaluations on safety basis controls and ensuring the plant is prepared for operations.
Prepare CRA	Activity representing the critical effort at PX to prepare for and release the CRA. This will represent the duration between the latter of the DSA Complete or NESS Complete and the CRA completion.
CRA Complete	Milestone signifying the release of the final Contractor Readiness Assessment at PX.
Prepare RA	Activity representing the critical effort at PX to prepare the Readiness Assessment. This will represent the duration between the completion of the CRA and the completion of the RA
RA Complete	Milestone signifying the release of the readiness authorization at PX.
FPU Build at PX	Activity representing the build of the system FPU at Pantex. This will be gated by availability of all HW from PAs, completion of the readiness authorization, and completion of the NESS report.
Prepare QER	Activity representing the final preparation of the Production QER. This duration will represent the time between the FPU build completion and the release and receipt by PX of the QER.
Production QER Complete	Milestone to reflect the receipt of the Qualification Engineering Release (product) and the development of the QER based on Engineering Evaluation Data Package. The activity concludes when the PA verifies receipt of PQ/EER
FPU Complete	Milestone signifying the completion of the FPU build at Pantex.

Appendix B: DOE EVMS Gold Card



ENERGY.GOV

DOE EVMS GOLD CARD
20190710

Earned Value Management System Basics

PB / TPC
Contingency
CP
DOE ODC
TAB = CBB/PBB + OTB [IF Any]
Profit/Fee
CBB/PBB = NCC + AUW[1]
MR
PMB
SLPPs
CAs
UB
WPs
PPs

COLOR KEY
DOE HELD
CONTRACTOR HELD
VARIES

[1] Note: AUW funding is authorized by an NTE value and added to CP. However, the amount of AUW budget added to the CBB/PBB depends on the estimate for the authorized scope. The full amount of the scope does not increase the CP until negotiated.

EAC
CBB/PBB
VAC
BAC
MR
PMB
SV
CV
AC or ACWP
PV or BCWS
EV or BCWP
$
time
current
planned completion
estimated completion

Performance Baseline Components

(Performance Baseline must clearly document scope and CD-4 date)

AUW = Authorized Unpriced Work (contractually approved, but not yet negotiated)
CA= Control Account (includes AUW) = WPs + PPs
CBB = Contract Budget Base = PMB + MR; valid when 1 contract to 1 project; else PBB
CP= Contract Price = CBB + Profit/Fee
MR= Management Reserve is held by contractor (Contingency is held by DOE)
NCC= Contract price less Profit/Fees
ODC= Other Direct Costs
OTB= Established performance budget that exceeds the value of the negotiated contract
PB= Performance Baseline (TPC) = CP + Contingency + DOE ODC
PBB= Project Budget Base = PMB + MR; valid when 1 contract to multiple projects
PMB= Performance Measurement Baseline = CAs + UB + SLPPs
PP= Planning Package (far-term activities within a CA)
SLPP = Summary Level Planning Package
TAB = Total Allocated Budget CBB + OTB or PMB + MR + OTB
TPC = Total Project Cost
UB = Undistributed Budget (activities not yet distributed to CA)
WP= Work Package (near-term, detail-planned activities within a CA)

EVMS Basic Components

AC = Actual Cost= ACWP = Actual Cost of Work Performed
EV = Earned Value=BCWP = Budgeted Cost for Work Performed
PV =Planned Value= BCWS = Budgeted Cost for Work Scheduled
BAC = Budget at Completion=∑BCWS= Sum of Budgeted Cost for Work Scheduled
EAC=Estimate at Completion= ACWP + Estimate to Complete (ETC)

VARIANCES

CV	=	EV – AC	=	BCWP – ACWP	=	Cost Variance
SV	=	EV – PV	=	BCWP – BCWS	=	Schedule Variance
CV%	=	(EV - AC) / EV	=	(BCWP - ACWP) / BCWP	=	Cost Variance (%)
SV%	=	(EV – PV) / PV	=	(BCWP - BCWS) / BCWS	=	Schedule Variance (%)
VAC	=	BAC – EAC			=	Variance at Completion

OVERALL STATUS

% scheduled	=	PV_{cum}/BAC	=	$BCWS_{cum}$/BAC
% complete	=	EV_{cum}/BAC	=	$BCWP_{cum}$/BAC
% budget spent	=	AC_{cum}/BAC	=	$ACWP_{cum}$/BAC
Work Remaining (WR)	=	BAC - EV_{cum}	=	BAC - $BCWP_{cum}$

PERFORMANCE INDICES *(Favorable is >1.0, unfavorable is <1.0)*

CPI	=	EV / AC	=	BCWP / ACWP = Cost Performance Index
SPI	=	EV / PV	=	BCWP / BCWS = Schedule Performance Index
$TCPI_{EAC}$	=	WR / (EAC - AC_{cum})	=	EAC-based To Complete Performance Index

ESTIMATE AT COMPLETION FORMULAE

EAC	=	BAC / CPI_{cum}	=	Estimate at Completion (general)
EAC_{CPIcum}	=	AC_{cum} + WR/CPI_{cum}	=	Estimate at Completion (CPI)
$EAC_{composite}$	=	AC_{cum} + WR/(CPI_{cum} * SPI_{cum})	=	Estimate at Completion (composite)
EAC_{CPI3mo}	=	AC_{cum} + WR / CPI_{3mo}	=	Estimate at Completion (3 Mo. CPI)

Note: CPI_{3mo} = (IncEVn + IncEVn-1 + IncEVn-2) / (IncACn + IncACn-1 + IncACn-2)