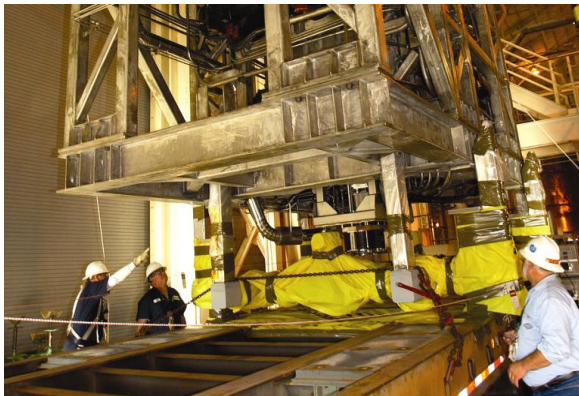
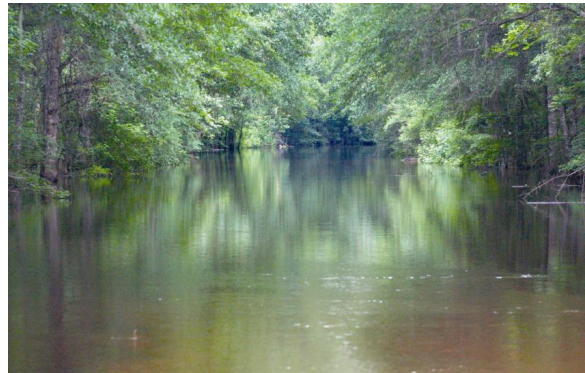




WSRC Earned Value Management System (EVMS) System Description



WESTINGHOUSE SAVANNAH RIVER COMPANY

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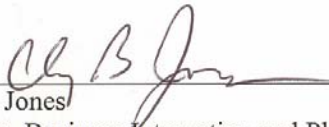
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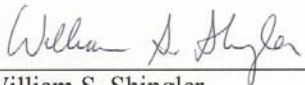
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1.0 INTRODUCTION TO WSRC EARNED VALUE MANAGEMENT SYSTEM (EVMS)

The WSRC EVMS System Description is applicable to all projects (regardless of funding source) that exceed \$20 million and are directed by DOE Order 413.3, to comply with the ANSI/EIA 748-A-1998 industry standard for earned value management. Scopes of work defined as projects in DOE Order 413.3 include Capital Line Item Projects, projects within the Environmental Restoration Program, and projects within the Decontamination and Decommissioning Program greater than \$20M.

The Westinghouse Savannah River Company Earned Value Management System (WSRC EVMS) is comprised of an integrated set of policies, procedures, guidelines, reports, and information systems that enhance effective planning and control of project scope, costs, and schedules. The system meets the internal needs of WSRC and complies with criteria for project cost and schedule control as required by DOE Manual 413.3-1, Project Management for the Acquisition of Capital Assets.

The WSRC EVMS also complies with the SRS Project Management Control System in WSRC Manual 6B, Program Management. The WSRC EVMS provides for effective planning and control and is fully dedicated to the integration of cost, schedule and scope information through supporting SRS policies, procedures, work flow, forms, reports, and computer systems. The WSRC policies, procedures, directives, and guidance referenced in this EVMS System Description support implementing earned value performance measurement and reporting in a disciplined manner.

1.1 WSRC EVMS Policy

The WSRC EVMS System Description provides guidance for the operation of WSRC EVMS. The WSRC policy statement for EVMS (Appendix A) outlines an integrated management control system with principles and policies that require projects do the following:

- Plan all project scope through completion.
- Breakdown the project scope into manageable pieces that can be assigned to a responsible person or organization for control of scope, schedule and cost objectives.
- Integrate project scope, schedule, and cost objectives into a baseline plan against which accomplishments may be measured.
- Collect and record actual costs in the same manner as planned, and compare those costs to the performance baseline in the same manner as planned.
- Objectively measure project performance.
- Analyze significant variances and implement management actions to mitigate risks and manage cost and schedule performance.
- Incorporate authorized changes to the baseline in a controlled and timely manner.

EVMS records and supporting documents are available to DOE and duly authorized representatives, as well as government review teams and surveillance personnel. Detailed reviews of indirect costs and disclosure statements are restricted to government authorized personnel.

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The WSRC EVMS System Description is maintained by the Business Integration and Planning Department. Changes to the WSRC EVMS System Description and associated procedures require the approval of WSRC management. WSRC site level procedures are issued as controlled documents. It is the responsibility of project management to ensure that all project personnel become familiar with the contents of the EVMS System Description and associated procedures and guidelines. The Business Integration and Planning Department ensures that appropriate training and required reading are available to assure that the project team understands the EVMS process.

1.2 System Purpose and Objectives

The objectives and principles cited within the WSRC EVMS are under the umbrella of the guidance, policy, and procedures set forth by the WSRC Manual 6B, Program Management. The WSRC EVMS is an integrated scope, schedule, and cost control system comprising policies, procedures, desktop instructions, workflow processes, reports, and data management systems. The EVMS defines the planning and control processes for accomplishing project scope in an orderly and cost-effective manner. This system is the primary cost and schedule management tool used to meet both external and internal project management objectives. It also meets the internal needs for performance monitoring and management of the project. Appendix B provides a listing of applicable acronyms and a glossary of definitions.

The WSRC EVMS provides the structure for ensuring applicable projects conform to the 32 criteria requirements found in ANSI/EIA 748-A-1998. Appendix C contains the entire 32 criteria which have been summarized below in the standard five functional groups.

Organization

Using a hierarchal Work Breakdown Structure (WBS) and Organization Breakdown Structure (OBS) projects will ensure seamless and complete ownership of the work across all aspects of budgeting, scheduling, cost accumulation and statusing progress that:

- Defines and organizes the authorized project scope in a WBS.
- Identifies which organizations and subcontractors are authorized and responsible for work on the project in an OBS.
- Provides for the integration of the projects planning, scheduling, budgeting, work authorization and cost accumulation process.
- Provides for the integration of the WBS and OBS, as identified in the Responsibility Assignment Matrix (RAM), to facilitate the performance measurement of both cost and schedule.
- Documents the process and organization responsible for the management and control of indirect costs.

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Scheduling &
Budgeting**

Using proven Project Controls processes and procedures to ensure integration of scope, cost, schedule, and technical performance that:

- Establishes an integrated, time-phased schedule and corresponding budget baseline, at the Control Account level, against which work may be authorized and project performance objectively measured.
- Identifies and sequences authorized work in a manner that provides visibility of the task interdependencies and critical path of the project.
- Clearly defines project deliverables, milestones, and performance goals.
- Focuses on cost/schedule management and ensures management visibility for work authorization and control of scope, schedule, and cost components.
- Provides timely, valid and traceable baseline performance and trend data.
- Ensures that the budget of the Work Packages and Planning Packages sum to the Control Accounts and WBS structure, thereby preventing duplication of budget and cost baselines.
- Identifies Contingency (DOE & WSRC), and Undistributed Budget.
- Assesses progress achieved versus progress planned, measured in terms of physical work accomplished.

**Accounting
Considerations**

Ensuring the consistent and accurate collection and reporting of the received costs and accruals associated with each Control Account that:

- Establishes consistent and accurate project cost collection against the final cost objectives without allocation to more than one single Control Account.
- Adheres to accepted accounting principles and Cost Accounting Standards (CAS).
- Ensures that CAS are developed and submitted to DOE on an annual basis.
- Allocates indirect costs, in accordance with the CAS disclosure statement, so that all projects benefiting from an indirect service, bear their fair share of costs.
- Ensures that actual costs are collected and compared to the performance in the same manner as planned.

**Analysis &
Management
Reports**

Reflecting a forward looking approach to cost control that:

- Provides timely visibility into technical cost and schedule progress for both WSRC and the government.
- Generates planning and performance data at the appropriate level to be used by management in the decision making process and provides a sound basis for projecting final costs and future funding requirements.
- Develops meaningful performance indicators to provide early warning of potential project problems.

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Revisions & Data Maintenance Providing necessary and accurate data that can be used as a key element in change management processes that:

- Ensures cost effective, accurate, timely and properly controlled baseline changes at appropriate levels within the project.
- Ensures all budget revisions are reconcilable and traceable to authorized targets and Control Account budgets.
- Prevents modifications to the baseline unless authorized per the Change Control process that formally documents all approved baseline changes.

1.3 Applicability

The WSRC EVMS System Description has been organized using the functional groupings of the 32 EVMS criteria given in ANSI/EIA 748-A-1998. The correlation of the WSRC EVMS System Description sections against the 32 criteria within the five functional groups is depicted in Figure 1.3.

Note: In the interest of instilling sound business practices and providing continuity within the WSRC EVMS process, and following sections are included in the WSRC EVMS System Description sections, even though they are not specifically required within the 32 criteria within ANSI/EIA 748-A-1998

- 4.7 Funds Management
- 6.1 Change Control Approval Levels
- 7.0 Surveillance

1.4 Project Planning and Authorization

WSRC Manual 6B, Program Management, Procedure 1.0 Planning Hierarchy, describes the process within WSRC used to plan the work at SRS. Lower tier procedures and guidelines define detailed planning and control processes. SRS mission needs are first addressed by a comprehensive planning process. The planning process at SRS is a systematic process that includes the development, approval, revision, and integration of SRS plans with budget formulation, budget execution, and program evaluation. The process includes customer input and stakeholder involvement. The Figure 1.4 shows the various levels of planning within the planning process.

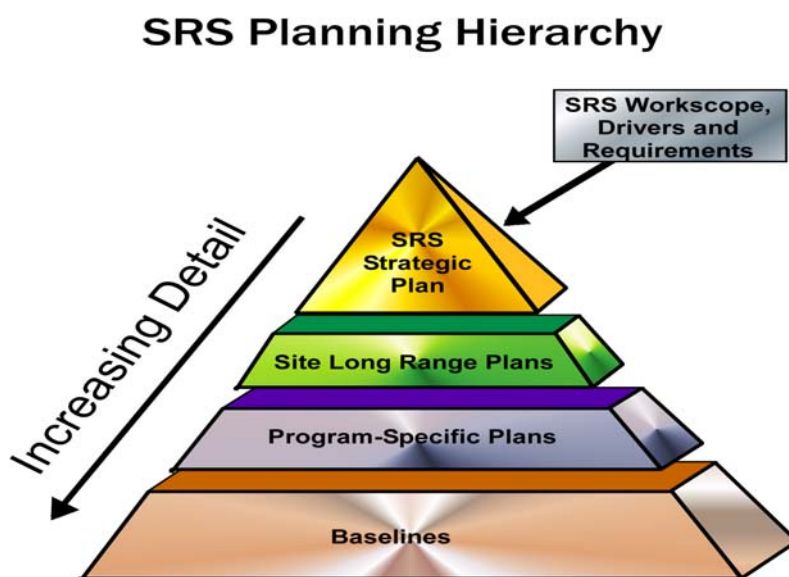


Figure 1.4 - SRS Planning Hierarchy

The comprehensive planning process addresses short-, medium-, and long-range planning for applicable facilities and infrastructures within the SRS boundaries. The planning process addresses setting the planning boundaries, program and mission plans, and, life-cycle plans written for various DOE programs. These describe, in detail, plans for the various missions and programs at SRS, including proposed and planned Line Items and capital projects necessary to accomplish the missions for the DOE programs. The WSRC contract with DOE is the controlling document for all WSRC activities and defines WSRC scope in the Performance Evaluation and Measurement Plan (PEMP), the WSRC planning/authorization limits.

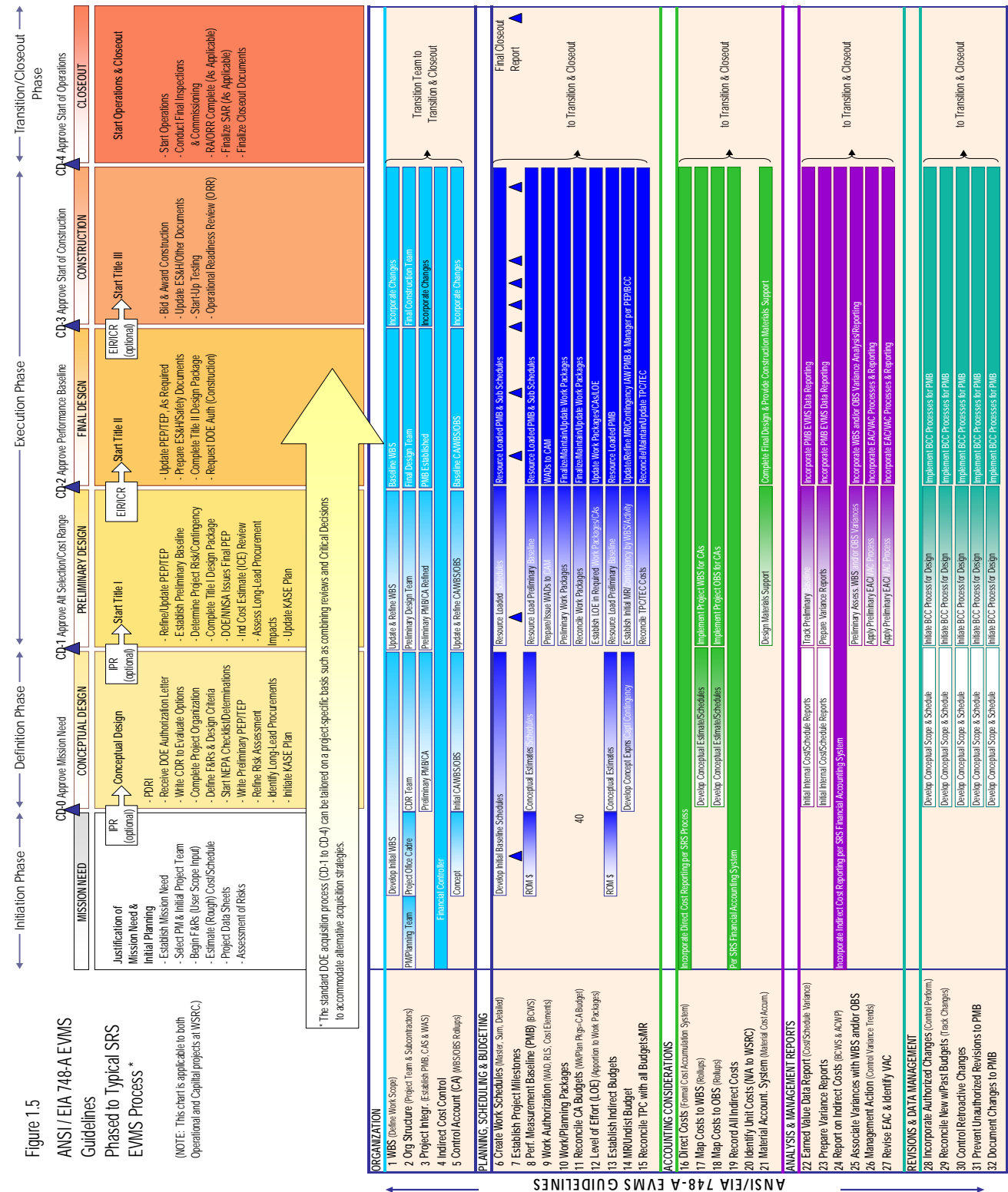
1.5 Integration of DOE Order 413.3 to the WSRC EVMS Process

The relationship between the 32 EVMS criteria listed in ANSI/EIA 748-A-1998 and the WSRC project life-cycle (per DOE Order 413.3) is depicted in Figure 1.5. As shown in the figure, the process begins with the establishment of Mission Need. A Mission Need at WSRC may include a new facility, system, or capability, developing and installing software systems, the remediation and disposition of contaminated sites and facilities, or the restoration or modernization of existing facilities and infrastructures. The DOE critical decision points identified at the top of the chart are for Line Item Projects. These critical decision points may be different for Environmental Restoration and Decontamination and/or Decommissioning type projects since DOE allows the combining or elimination of critical decision points for projects that have low risk or complexity. WSRC works with DOE on each project to determine the critical decision levels. The phases (Initiation, Definition, Execution and Transition/Closeout) are applicable to all project types and therefore, Figure 1.5 is applicable to all types of WSRC projects.

Implementation of the EVMS process begins with approval of Mission Need. The gradual shading shown in the horizontal bars indicate the increasing levels of formality in applying the EVMS process as the project baseline data is developed and refined. The project scope, cost, and schedule are estimated, established and refined over time from conceptual planning through Final Design. As the project gains definition with each succeeding phase, the EVMS methods applied also become more defined and structured. While WSRC initiates an EVMS technique during all phases of project work, DOE Order 413.3 requires the formal EVMS process to begin after approval of CD-2 Approve Performance Baseline (CD-2/3 for Environmental Restoration Projects). At this time, a Performance Measurement Baseline (PMB) is established, and formal (required) EVMS reporting begins. The formal EVMS processes in place include the following:

- Work Breakdown Structure
- Organizational Breakdown Structure and Responsibility Assignment Matrix
- Full financial reporting requirements
- A fully Integrated Resource Loaded Schedule
- A Performance Measurement Baseline
- Assignment of Control Account Managers to Control Accounts
- Implementation of EVMS for Control Accounts within the WBS elements
- Rolling Wave concept for baseline planning
- Full implementation of EVMS performance metrics
- Accessibility of EVMS data throughout the project structure
- Formal Baseline Change Control procedures

Figure 1.5 indicates where EVMS processes begin (gradual shading across bars) and where formal implementation of EVMS processes commences (solid-colored bars). All bars to the right of CD-2 become solid indicating the complete implementation of EVMS requirements.



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Project organization is established early in the project's life-cycle, in order to provide a cohesive and manageable structure for project development, execution and control. Establishment of the baseline for scope, cost and schedule is an integral part of project organization, planning, authorization and management. The Project Manager and initial project team are selected during the Justification of Mission Need and Initial Planning phases. The project team then begins to develop the scope definition, an initial Work Breakdown Structure (WBS), an Organizational Breakdown Structure (OBS), a schedule, and an order of magnitude business decision range estimates to determine the cost range for the project.

The organization of the project continues to be assessed and refined throughout the project life-cycle. It is imperative that all stakeholders agree on the project scope early in the planning process. Once the Performance Measurement Baseline (PMB) is agreed upon, DOE issues a Project Execution Plan (PEP), detailing the scope, schedule, and budget for the project. A WSRC Team Execution Plan (TEP) provides the details for the scope, schedule, and budget, as well as other project execution strategy. Both of these documents are prepared and updated throughout the life of the project.

2.1 Work Breakdown Structure (WBS)

WSRC uses hierarchical coding structures to define all authorized contract work at the appropriate level needed for management insight and control. The Work Breakdown Structure (WBS) is a product oriented integration tool used as the common project reference point for planning, budgeting, estimating, work authorization, cost accumulation, and performance reporting. The WBS is cross-linked to an Organizational Breakdown Structure (OBS) to develop a Responsibility Assignment Matrix (RAM) that aligns the scope with skilled personnel assigned from different organizations. Project resources are then linked and traceable to the scope and the responsible organizations both vertically and horizontally throughout the entire WBS structure.

The WBS is one of the first control tools developed during the project life cycle. The Facility/Line Manager is responsible for defining the project objectives by assessing all mission requirements. The project objectives and project management responsibilities are assigned to a Project Manager who is responsible for the project WBS. The Project Manager develops and integrates the project specific WBS into the Site's overall WBS. When establishing the overall structure the Project Manager, working with the project team and CFOD, validates that the WBS will:

- Be unique to each project.
- Cover the entire project scope of work and relate to the site WBS.
- Divide the work into the appropriate intermediate levels.
- Allow for effective management.
- Be supported by project systems such as accounting, procurement, engineering, or construction.
- Allow project costs to be assigned to lowest-level elements without resorting to cost allocations, except for indirect (overhead) costs.

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- Classify work in the manner in which it will actually be performed once the project is authorized.
- Allow for cost reporting consistent with categories specified by DOE.
- Serve as natural starting point for developing project task schedules.

After the project is authorized, the WBS becomes the primary tool used to ensure integrated cost and schedule control. The WBS organizes the scope baseline and provides the same hierarchical structure in both schedule and costs baseline development. Due to the product oriented nature of the WBS, each project has a unique WBS structure that identifies all of the authorized work required to meet the project objectives. The WBS is used for development of project estimates, cost and schedule control, and for the project forecasts.

The WBS is expanded (Figure 2.1) as necessary to facilitate internal control. The level of WBS detail is dependent on the complexity, size, risk and other factors. The lowest WBS element, the terminal WBS element, is the Control Account. The Control Account is supported by Work Packages and cost activity codes which ensure that all project costs are accumulated against the proper WBS scope. These cost activity codes are utilized in the collection of actual costs and are unique to a given terminal WBS element. The appropriate elements for cost accounting and work authorization can be traced and summarized from the lower WBS elements up to the total project level.

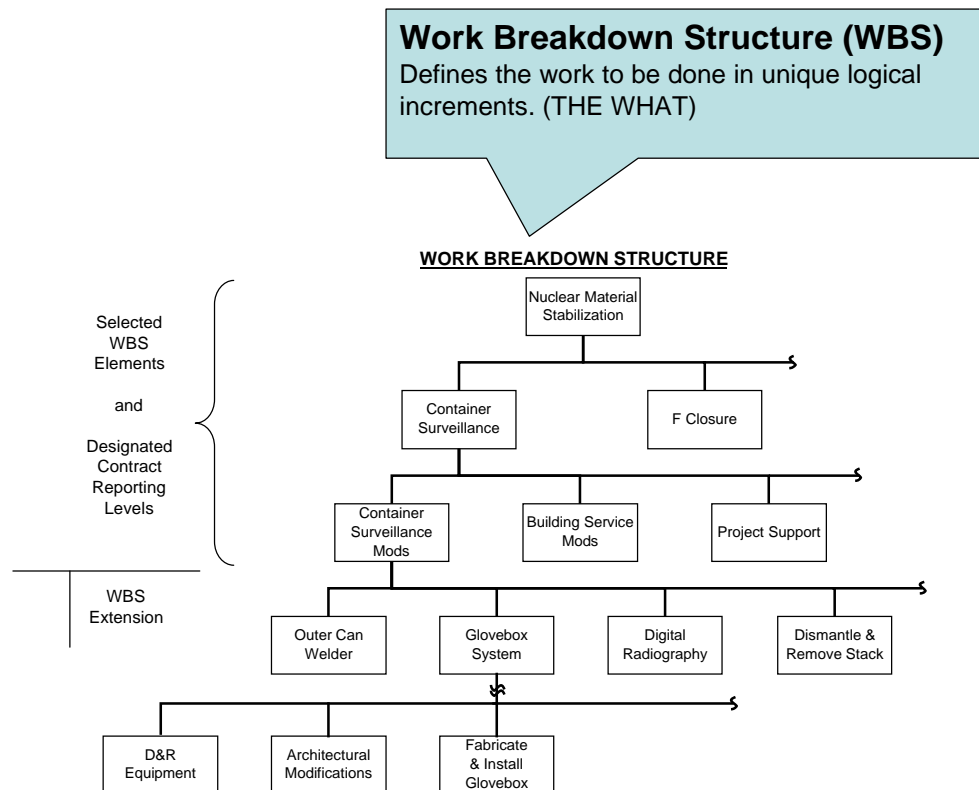


Figure 2.1 – Work Breakdown Structure (WBS) Example

Each project is required to develop a WBS Dictionary which will further define the WBS elements. The WBS Dictionary is a narrative summary description of each WBS element. The WBS Dictionary shall constitute a comprehensive definition of the entire work scope of the project. Additional information and attributes may be documented in a WBS Definition Worksheet as necessary. Approved changes to the project scope that affect the WBS Dictionary summary narratives and associated documents will be incorporated in a timely manner.

2.2 Organizational Breakdown Structure (OBS)

The Organizational Breakdown Structure (OBS) identifies the organization by functional disciplines required to take responsibility for the performance of the project scope. Westinghouse Savannah River Company (WSRC) is the primary contractor, and is supported by several partner companies. These partner companies were contracted for their expertise in various areas and have formed a seamless management and work execution team. In keeping with this philosophy, the Organization Breakdown Structure (OBS) applies across all the partner companies and provides for the assignment of responsibility for elements of the WBS.

The Project Manager ensures that the functions required to take responsibility for the scope completion are reflected in the project organization and that the OBS shows how project personnel are organized. The OBS defines the functional roles and responsibilities as well as the reporting hierarchies. Both the Project Manager and the responsible organization managers in Figure 2.2 have the functional authority, with upper managerial involvement, to ensure that critical technical skills are available to do the work.

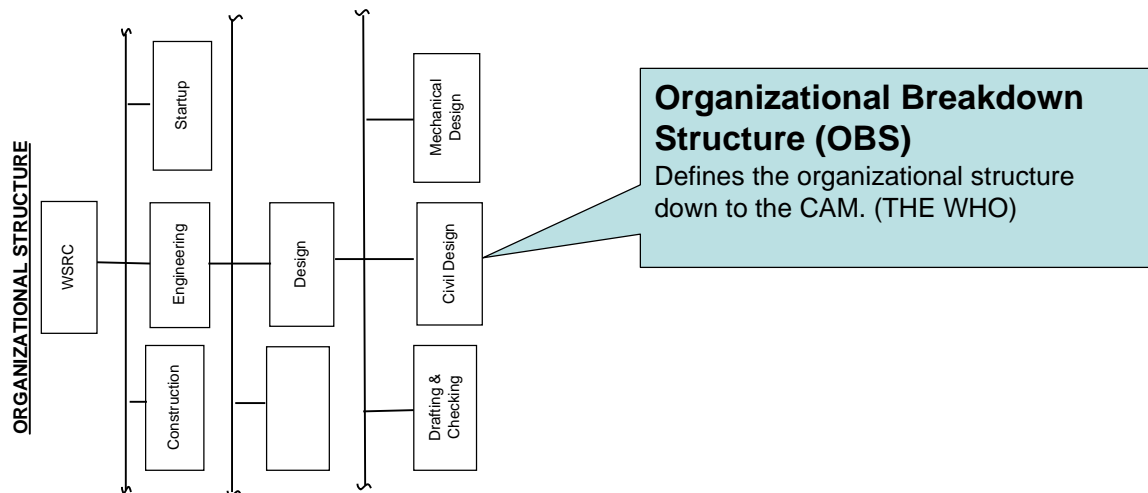


Figure 2.2 - Organizational Breakdown Structure (OBS) Example

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2.3 Responsibility Assignment Matrix (RAM)

The Responsibility Assignment Matrix (RAM) is the intersection of the WBS and the OBS, and defines who has been assigned responsibility for ensuring that the scope associated with this Control Account is accomplished. The RAM defines clear lines of responsibility and accountability for the accomplishment of all aspects of the project scope. Before project authorization, the Project Manager and functional organization managers use the WBS and the OBS to designate responsibilities for managing the scope that must be initiated at the time the project is authorized. Figure 2.3 illustrates a typical RAM.

The RAM defines the resources that are allocated to the work task, and maps the effort to the organization responsible for the work elements. The RAM:

- Identifies the WBS level where Control Accounts are established.
- Identifies, from a single organizational element, the Control Account Manager (CAM).
- Identifies major subcontracts.

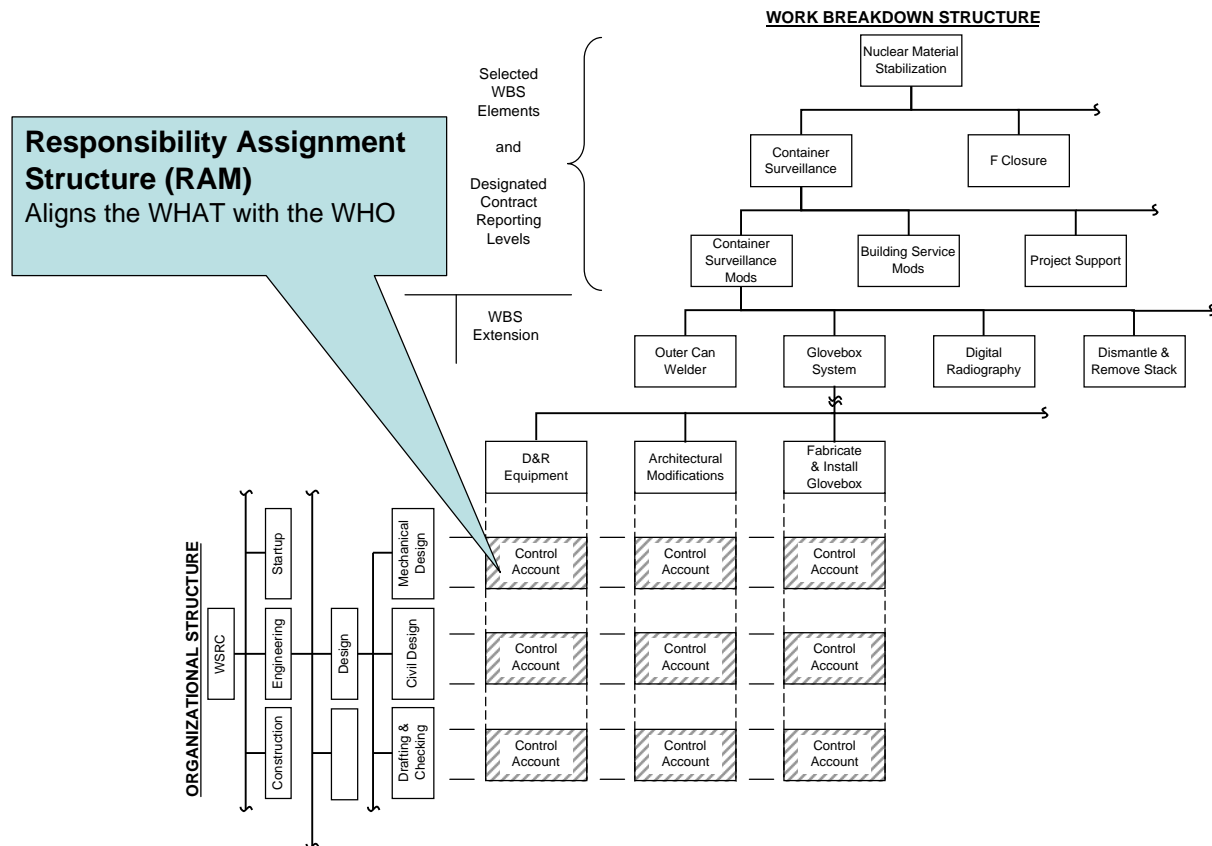


Figure 2.3 - Responsibility Assignment Matrix (RAM) and Control Accounts

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2.5 Project Execution Plan (PEP)

The Project Execution Plan (PEP) is developed for applicable projects and includes an accurate reflection of how the project is to be accomplished, resource requirements, technical considerations, risk management, and roles and responsibilities. The Federal Integrated Project Team, with the leadership of the Federal Project Director, issues the PEP summarizing critical information necessary to manage and control project execution. The PEP is a living document that will be revised throughout the life of the project. Generally, the PEP is initially released as a Preliminary PEP at Conceptual Design, modified, and then formally issued at CD-2.

2.6 Team Execution Plan (TEP)

The Team Execution Plan (TEP), or equivalent document, is a control tool, internal to WSRC, maintained by the Project Manager and Project Team. The TEP provides the details and methods by which the PEP is to be successfully managed. The details include the project implementation plan for executing and managing the project, the WBS, the organizational structure of the Project Team (OBS), the Responsibility Assignment Matrix, and details on the Roles, Responsibilities, Accountability, and Authorities (R2A2). The TEP is a living document that will be revised throughout the life of the project.

3.0 PLANNING, SCHEDULING AND BUDGETING

The WSRC Earned Value Management System process ensures the establishment and integration of scope, cost and schedule baselines. These integrated baselines provide the basis for control and measurement of progress and performance throughout the project life. The baselines evolve from the initial definition of the scope requirements, milestones and schedule, development of cost estimates, budgeting, work authorization, and cost accumulation processes.

Performance is measured against the project baselines and variations from these baselines are analyzed, reported, and controlled during the life of the project. The project management baseline components include scope, cost and schedule:

Scope (Technical) Baseline The scope baseline contains significant project technical goals and characteristics. It describes a product that meets the Project Sponsor's functional performance requirements and ensures operability and maintainability of the final product. This baseline also serves as the quality standard for the project. The Contract supported by the Project Statement of Work and other defining documentation, identifies the actual DOE- and WSRC-approved scope baseline for a specific project.

Cost Baseline The cost baseline establishes the estimated cost of executing the project in accordance with the scope and schedule baselines. The cost baseline is established at the Total Project Cost (TPC) level, which includes both DOE and Contractor Contingency. The Performance Measurement Baseline (PMB), which excludes Contingencies, is the cost baseline against which the EVMS tracks progress and performance. The cost baseline must match the approved project baseline estimate.

Schedule Baseline The schedule baseline establishes the durations, sequences, and interdependencies of project activities for accomplishing the project milestones. The Contract supported by the Project Execution Plan (PEP) and other defining documentation, defines the DOE directed project milestones that the internal milestones and detailed schedules support.

Baselines are established, monitored, and controlled through all phases of a project. As discussed in Section 1.0, Introduction, there are several phases of a project. As depicted in Figure 1.5, each of these phases will establish an approved baseline for measurement and control. WSRC uses EVMS techniques during all phases of project work. The emphasis of this Section 3.0, Planning, Scheduling, and Budgeting, will be establishing an EVMS for work execution after approval of CD-2, Approve Performance Baseline.

Figure 3.0 depicts the steps for planning and establishing the project Performance Measurement Baseline.

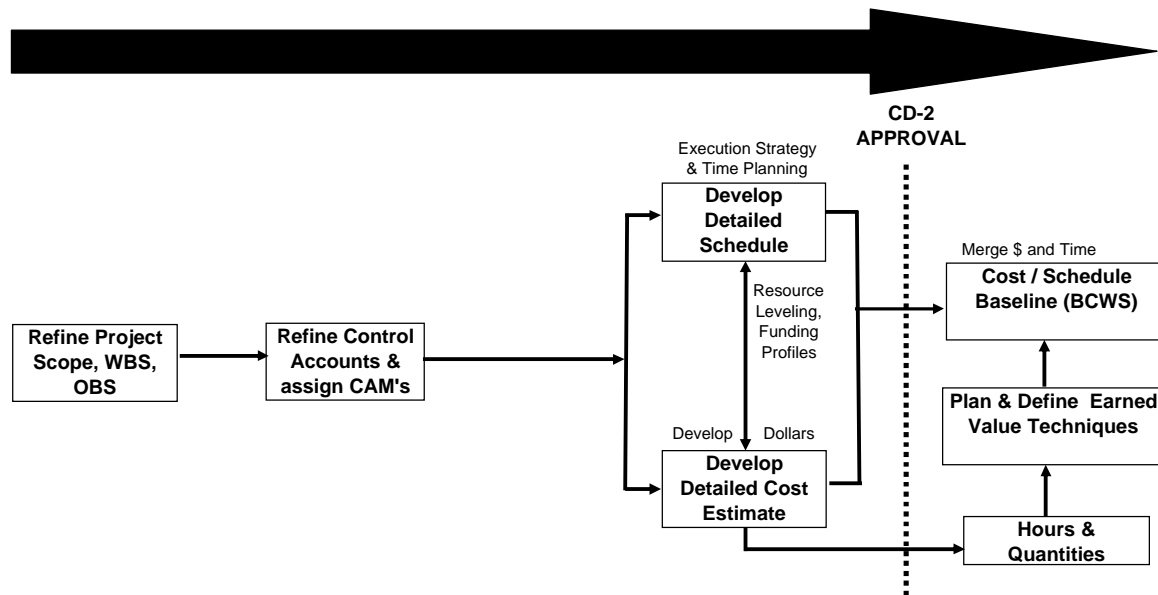


Figure 3.0 - Establishing the Performance Measurement Baseline

3.1 Planning

Planning the project scope from initiation to completion is essential to control “scope creep”, “cost creep”, and “schedule creep”. The Statement of Work (SOW) defines the project objectives and mission, and provides the project scope definition upon which the Scope, Cost, and Schedule Baselines are defined, authorized, measured, and controlled.

3.1.1 Work Breakdown Structure

As discussed in Section 2.0, the project Work Breakdown Structure (WBS) is used as the basic building block for planning the authorized project scope. The WBS is a product-oriented division of the project scope which will allow work authorization, tracking, and reporting within a framework that provides cost/schedule integration, traceability and management control. The WBS is the tool that defines a project and groups the project’s discrete work elements to help organize and define the total scope of the project. It is a hierarchical code structure that allows for a summation of costs and resources.

3.1.2 WBS Dictionary

The WBS Dictionary defines the scope for each element in the project WBS. While the WBS may be the table of contents for the project, the WBS Dictionary is the book itself - telling what work will be accomplished.

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3.1.3 Organizational Breakdown Structure

The Organizational Breakdown Structure (OBS) establishes the organizational relationships and sets the framework for assigning responsibilities. The OBS is used to define the organization that will take ownership and be held accountable for those tasks. It is also used to map performance to the functional organizations for additional management oversight.

3.1.4 Responsibility Assignment Matrix

The Responsibility Assignment Matrix is the intersection of the WBS and OBS, and defines who has been assigned responsibility for ensuring that the scope associated with this Control Account is accomplished.

3.1.5 Control Account Plans

A Control Account is an assigned terminal WBS level used to monitor scope, cost and schedule performance of a significant element of the work. The Control Account Manager (CAM) is the specific manager assigned to the Control Account. The CAM has responsibility for executing the SOW associated with their assigned Control Account(s). They are responsible for the detailed planning and execution of the work within their assigned Control Accounts.

3.2 Risk and Opportunity Management

Risk and Opportunity Management is an essential element of every project and is an ongoing process continuing throughout the life of the project. Risk and Opportunity Management places the emphasis on the elimination of risk instead of risk mitigation whenever possible. A risk and opportunity analysis shall be performed during each project phase and at the discretion of the Project Manager. Risk and opportunity analysis will also be reviewed and updated when preparing an Estimate at Completion (EAC). The Project Manager will lead the Project Team in the preparation of the Risk and Opportunity Management Plan (ROMP). The ROMP will document the methodology for incorporating certain risk mitigation activities into the project scope, cost, and schedule baselines.

3.3 Scheduling

Scheduling facilitates effective planning, statusing, critical path management, and variance analysis, which are essential to the success of all projects. The schedule control system ensures that work is planned and scheduled, establishes interfaces between project participants, and provides visibility of work progress and valid schedule information necessary to make timely management decisions. The scheduling process supports the integration of the project's scope, cost and schedule objectives by documenting a logical sequence of work through the creation of relationships and interdependencies that determines total work time and the related critical path. The process ensures that the schedule supports resource planning, performance measurement, and the project objectives. WSRC uses a site-wide coding structure to facilitate the integration of schedules.

The WBS forms the basis for planning the project schedule and together with the OBS provides the framework for both vertical and horizontal integration of scope, cost and schedule baselines. Vertical traceability refers to the ability to relate activities and milestones between different levels of schedules. The project WBS and standard scheduling coding structures allow vertical traceability between the various scheduling levels. As a result of this vertical traceability, milestones that appear on more than one level of the schedule hierarchy will have the same date (planned, actual or forecast) on each level. Horizontal traceability refers to the ability to relate activities and milestones to logically preceding and succeeding activities and milestones. WSRC uses the Primavera Project Planner (P3) schedule software which allows this traceability from a single data base to be automated through all levels of the schedule hierarchy. The size and complexity of the project determines any tailoring of the project schedule to suit the project management and communication needs.

Detailed plans resulting from the planning and budgeting process support the schedule hierarchy. A typical schedule hierarchy is shown in Figure 3.2.

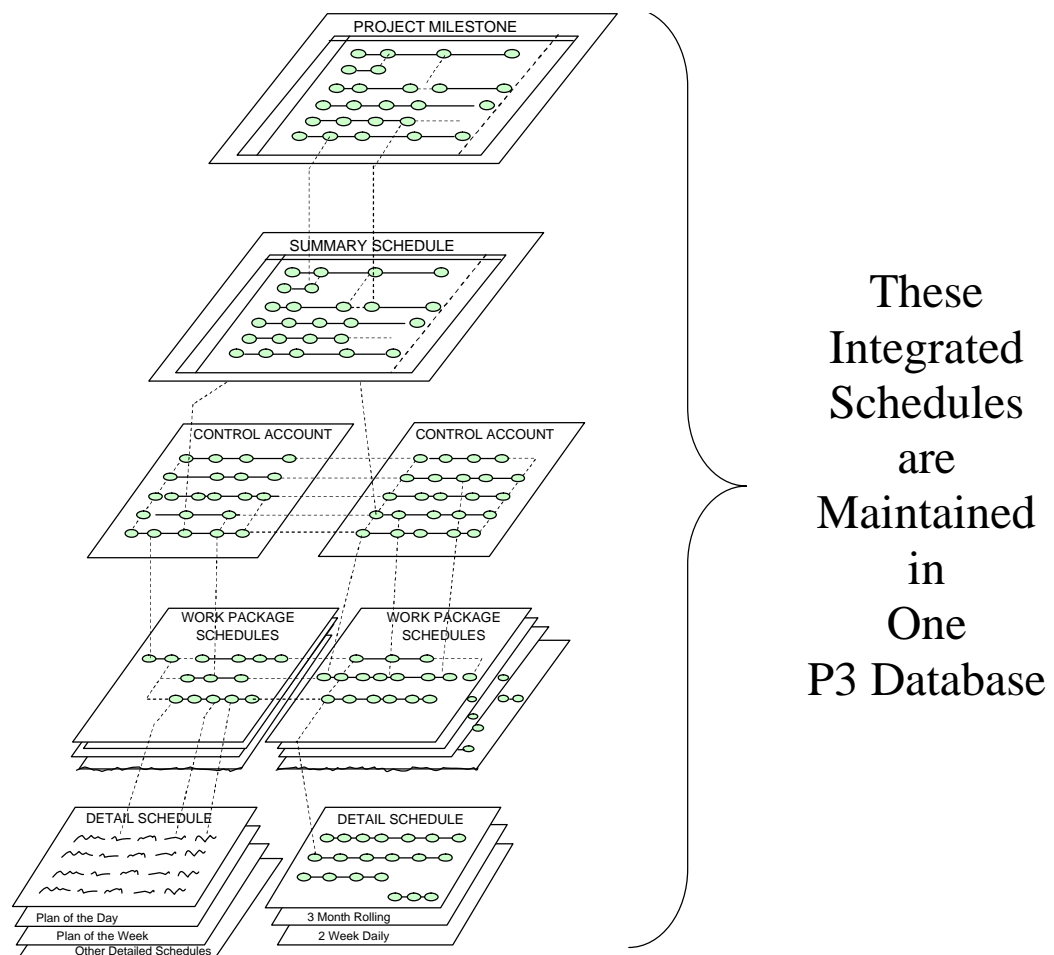


Figure 3.2 - Schedule Hierarchy

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3.3.1 Project Milestone Schedule (Level I)

The Project Milestone Schedule lists the major milestones of a project with their corresponding scheduled completion dates. The major milestones include all Project related control milestones, WSRC's internal KASE (Key Activities for Successful Execution) milestones, and additional support milestones recommended by the Project Team.

3.3.2 Project Summary Schedule (Level II)

The Project Summary Schedule identifies the major activities, interface points, and duration estimates for the completion of the project for all organizations and disciplines. It shows all interfaces as defined by the Project Milestone Schedule by the vertical integration of the schedule hierarchy and includes all Major Milestones.

3.3.3 Control Account Schedules (Level III)

The Control Account Schedule expands the Level II schedule to specifically identify project activities and their associated logic ties. This intermediate level schedule provides a comprehensive plan and schedule for each Control Account with detail at the Work Package/Planning Package level. It includes the interrelationships between disciplines as well as schedule relationships to other organizations associated with the project. Activities roll-up into the Project Summary Schedule by vertical integration of the schedule hierarchy. It includes all Major and Other Project Milestones to be completed within the scheduled time frame for completion of the project scope of work.

3.3.4 Work Package Schedules (Level IV)

The Work Package Schedules are an expansion of the Level III schedule representing details at the deliverable level. These detailed schedules are the working level schedules for the scheduling of individual Work Packages and tasks. Vertical integration of the schedule hierarchy provides traceability to more summary levels of the hierarchy.

3.3.5 Detail Schedules/Work Lists (Level V)

The Level V Schedules are extremely detailed schedules identifying specific daily activities and/or the individual(s) who will perform them. They include, but are not limited to plan of the day, plan of the week, 3 month rolling schedules, 2 week daily schedules, and other detailed schedules or work lists.

3.3.6 Critical Path

Through the creation of the relationships among tasks, significant interdependencies are established which determine the total work time and the related longest path through the project. This longest path is called the Critical Path. Each activity on the critical path becomes a critical activity, and represents the schedule path with the highest risk and least margin for error. Based on schedule progress and performance, the critical path of a project can change. Therefore the critical path needs to be identified, analyzed, and evaluated on a regular basis.

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3.4 Estimating

The estimating process requires planning, discipline and interfacing with numerous Functional Departments and Project Team members. The estimate, associated scope of work, and execution strategy sets the expectations of achievement by the Project Team to WSRC Management and to DOE. The estimate, time-phased with the schedule, becomes an integral component of the PMB which is the basis for implementing the EVMS.

3.4.1 Estimate Details

Developing the Estimate details requires defining the Control Accounts, Work Packages, and tasks within the project WBS. The body of the Estimate is assembled by addressing such items as labor, materials, subcontracts, and indirect costs.

3.4.2 Contingency Development

Contingency is included in an Estimate to cover costs, based on past experience, which is known to regularly occur but are difficult or impossible to identify at the time the estimate is prepared. These costs may be a result of uncertainties within the defined project scope, incomplete design, or unforeseen and unpredictable conditions. As such, Contingency is part of the original, intended scope of work.

WSRC has developed three specific Contingencies in order to capture all facets of Contingencies related to a project at an 80/20 confidence level. At SRS these risk responsibilities have been divided between the contractor (WSRC) and the owner (DOE). All three of the Contingencies discussed below are subject to Change Control as discussed in Section 6.0, Revisions and Data Maintenance.

- **Estimate Contingency**

Addresses costs for uncertainties within the defined project scope and represents the assessment of the confidence level the Project Team has in the content of the estimate. Utilizing a Monte Carlo Risk Assessment Program, a probabilistic determination identifies the percentage to be added to (or subtracted from) the estimate value for an 80/20 confidence level. Estimate Contingency at the 50/50 confidence level is called Contractor Contingency (Management Reserve). The remaining Contingency dollars to reach an 80/20 confidence level is DOE Contingency.

- **Technical & Programmatic Risk Assessment (T&PRA) Contingency**

T&PRA addresses technical risks or programmatic risks outside the defined project scope. The risks are either Technical, resulting from the requirements to minimize or maximize properties or processes, systems, or equipment; or Programmatic such as regulatory changes. Residual risks/residual consequences identified in the formal Risk and Opportunity Management Plan (ROMP) are quantified in a Monte Carlo Risk Assessment Program to generate probabilistic dollar values associated with the identified risks. The resultant dollar values identified through this process are included

in the estimate at an 80/20 confidence level. The PEP will define who controls the T&PRA Contingency.

- **Schedule Contingency**

Schedule Contingency addresses the Project Team's confidence in the ability to execute the project to the baseline schedule. This probabilistic determination yields an assessment in time duration. This time duration is translated to a cost impact and the Schedule Contingency dollars are then included in the estimate. When converting the time duration to a cost impact, the team includes the project support costs associated with the schedule extension plus potential incentives to subcontractors or equipment vendors to improve their schedule. The PEP will define who controls the Schedule Contingency.

3.4.3 Resource Loading of Schedules

The schedule is resource loaded during the process of completing the project estimate. Resources may include hours, dollars, and bulk quantities identified by WBS, Control Account, Work Package, and task. Loading hours provides a sanity check against available workers, activity durations, planned work in congested areas, and allows resource leveling to smooth peaks and valleys in the available work force. Loading dollars provides the basis for the Budgeted Cost of Work Scheduled (BCWS) required in an EVMS, and for funding requirements by fiscal year. Loading bulk quantities provides sanity checks against procurement plans, available construction equipment, and provides the basis for bulk quantity installation curves to be used in managing the work.

The resource leveled final approved schedule becomes the schedule baseline against which schedule progress is measured. The time-phased dollar profile from this schedule is loaded to the cost processor for finalizing the BCWS/PMB for performance measurement and reporting.

3.5 Budgeting

Planning and budgeting consists of those activities needed to generate the detailed plans that will be used to manage, control, monitor, and measure cost and schedule performance on the project. Figure 3.5.1 depicts the Budget Structure.

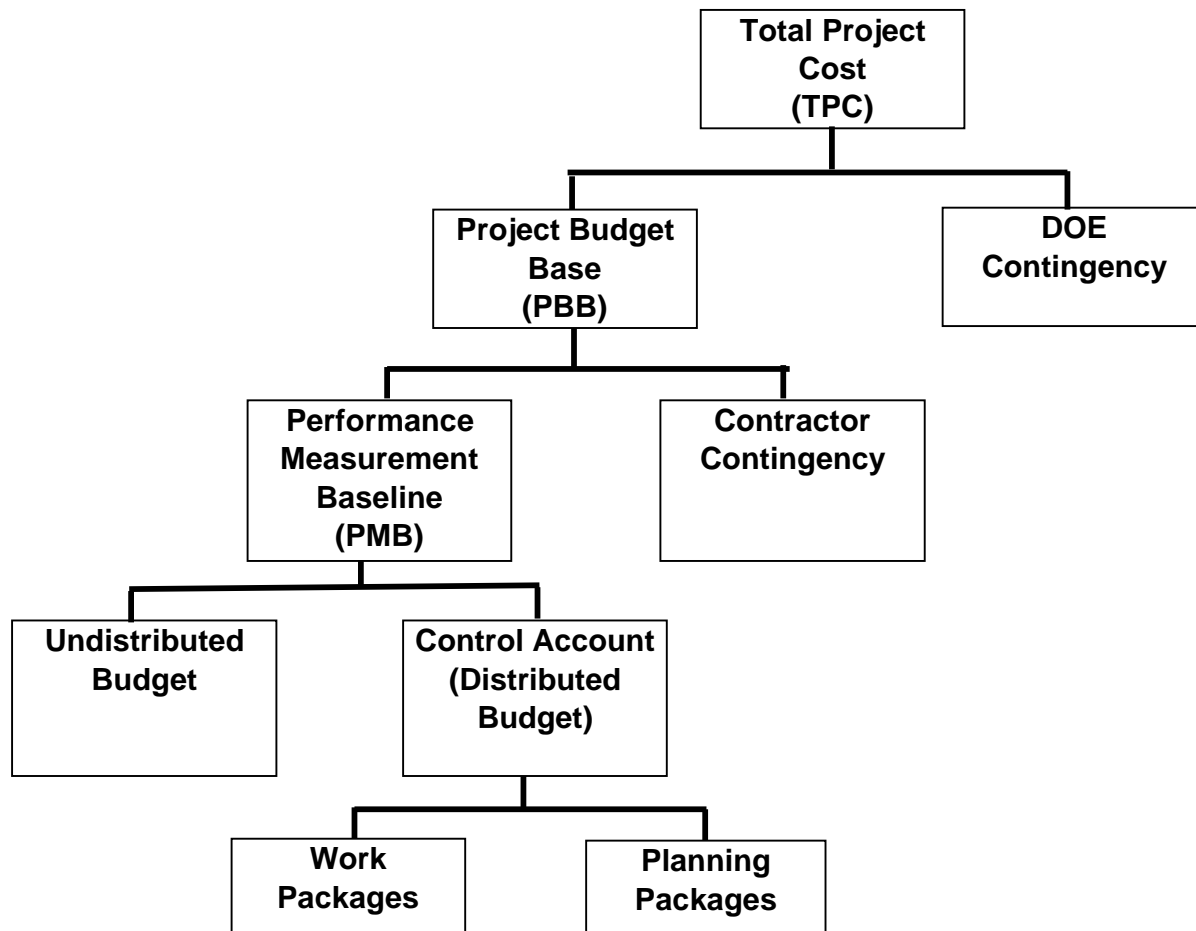


Figure 3.5.1 - Budget Structure

3.5.1 Performance Measurement Baseline

The Performance Measurement Baseline (PMB) is the time-phased budget plan against which project performance is measured. It includes all allocated or Distributed Budgets plus any Undistributed Budget, and is under Change Control. PMB does not include Contingency.

The PMB is formed by the dollar budgets assigned to the scheduled Control Accounts, resulting in the project's BCWS profile. BCWS is established for Work Packages and Planning Packages and summed to the Control Account level. Further BCWS summarizations are made through the WBS and organizational levels. At each level from the detail Work Package to the total contract, BCWS reflects the dollarized performance plan against which work accomplished can be measured. This BCWS or PMB, becomes the key earned value component for comparison of work accomplished with work scheduled; and actual cost with the value of the work performed. The PMB represents the formal plan for each CAM to accomplish their assigned Control Account(s) on schedule and within budget.

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3.5.2 Undistributed Budget

The Undistributed Budget (UB) includes known scope and applies to authorized efforts not yet identified to a WBS, Control Account or a summary level Planning Package. It is part of the PMB, and is rarely used at SRS. UB should be kept to a minimum and distributed in a timely manner. Project Controls maintains a UB Log to verify it is being utilized for execution of the scope for which it was intended, and that the sum distributed does not exceed the amount identified in the UB. All UB transactions are incorporated into the PMB via Change Control and are reported to the customer in the monthly status report.

3.5.3 Control Accounts

Control Accounts are established at the terminal WBS level and roll-up to only one WBS element.

The Control Account is the level at which the Project Manager delegates authority, budgets work (BCWS), monitors activity (ACWP), measures performance (BCWP), and reports deviations against the plan. Control Accounts may be subdivided into Work Packages and/or Planning Packages that are planned and statused in job hours and in dollars, using an appropriate earned value method. The sum of the Work Packages and Planning Packages must equal the Control Account budget. The approved project baseline estimate is used for establishing budgets for Control Accounts.

A Control Account is assigned to a single responsible organization. Performance Data can be summarized up through both the WBS and the organizational structure for reporting to higher levels of management. Control Accounts have planned start and completion dates (coinciding with the schedule hierarchy) and are opened and closed as part of the work authorization process.

The Control Account Manager (CAM) is responsible for the detailed planning and performance of his/her assigned Control Account(s). The Control Account Plan documents the scope, cost, and schedule baselines, as well as the earned value techniques to be utilized in statusing the Control Account.

3.5.4 Work Packages

Project work is subdivided into manageable groups of activities within a Control Account and assigned to a Work Package within a single Control Account. Budget established at the Work Package level identifies specific resource requirements in terms of dollars, job hours, or other measurable units to provide the detail for effective execution of the baseline plan. Work Package descriptions must clearly distinguish one Work Package from another and incorporate frequent, objective indicators of progress. If performance measurement is to be performed at the Work Package level, then the Work Package level is the management control point where actual costs are accumulated and performance measurement comparisons are made prior to rolling performance up the Control Account level. A Work Package represents a manageable scope of work, usually a short time-span task, assigned to one responsible organizational element. It is integrated in the schedule with start and completion dates and employs an earned value method that is representative of physical accomplishment.

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3.5.5 Planning Packages

Planning Packages are the aggregation of work within a Control Account, normally future efforts, that has been identified and budgeted in early baseline planning, but are not yet detailed into Work Packages. Planning Packages require a scope of work, budget and period of performance. While identified and budgeted, Planning Packages can not yet be defined into discrete, apportioned, or level of effort (LOE) Work Packages.

A Planning Package is converted to a Work Package when the detailed planning of the Work Package can be completed. The conversion of Planning Packages to Work Packages over a period of time is referred to as the “Rolling Wave Planning” concept. As shown in Figure 3.5.5, Planning accounts are created when the level of detail associated with existing planning is insufficient to objectively measure performance of imminent work.

Planning Packages differ from Work Packages in that the time phasing of the budget may be spread over the assumed duration of the Planning Package or may be a lump sum value that is spread by the CAM. Although Planning Packages represent a less concise definition of the task, they must:

- have an organizational identity,
- be assigned to a Control Account,
- be defined in terms of start and stop dates, and
- have specific assigned budgets.

This prevents budgets allocated to future work from being applied to current work. These budgets are time-phased and summarized to the Control Account total to ensure that the total BCWS for the Control Account (the sum of all Work Packages and Planning Packages) agrees with the budget released to the Control Account. Once authorized, Work Packages may be changed only through Change Control.

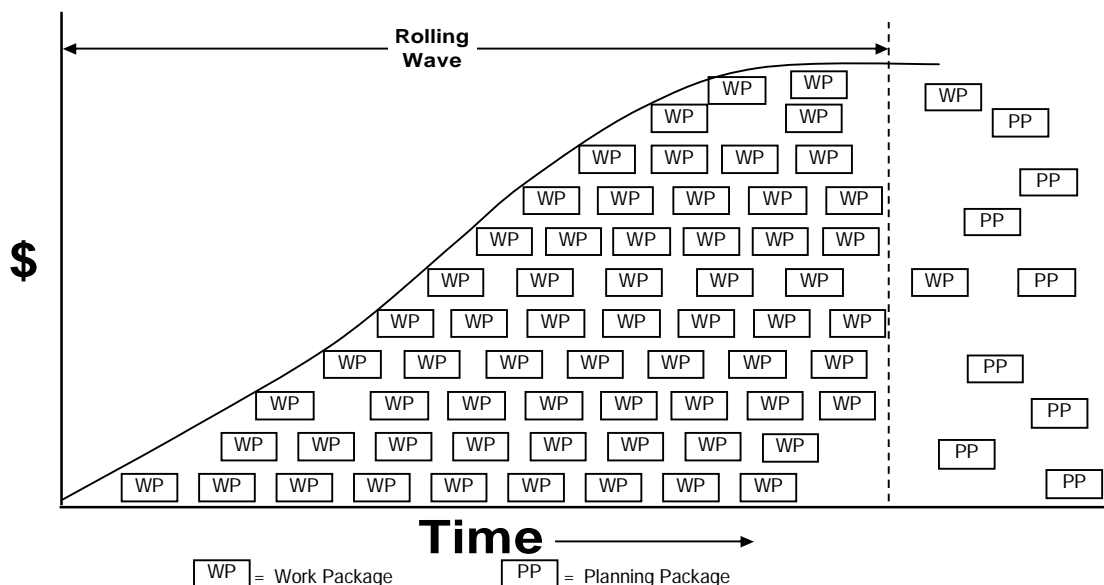


Figure 3.5.5 - Rolling Wave Planning

3.5.6 Over-Target Baseline

The ANSI EIA 748-A-1998 Earned Value Criteria discusses situations where Baselines in excess of the contract value or an Over-Target Baseline (OTB) may occur. The intent of the criteria is when the available budget for the remaining work is insufficient to ensure valid performance measurement, the PMB may be adjusted (with DOE concurrence) to reflect the OTB value.

If an EAC determines a project overrun is imminent, the project shall inform DOE-SR and solicit their direction. Variance reporting will explain the situation until DOE direction is received.

3.6 Performance Measurement / Earned Value

Earned Value is used to evaluate performance for all activities. Meaningful performance metrics enable better management insight and decision making, therefore, the objective measurement of work accomplished must yield an accurate performance assessment. As discussed in Section 5.0, Analysis and Management Reports, the three key components for EVMS metrics (BCWS, ACWP, BCWP) are always expressed in dollars.

3.6.1 Earned Value Methods and Techniques

All Earned Value (EV) methods and techniques will include the following characteristics:

- **Stability** – The EV method chosen for a Work Package will not change after the Work Package is opened.
- **Objectivity** – For discrete work, completion of an event will be based upon predetermined criteria or a tangible product.
- **Ability to audit** – The procedure and criteria for evaluating physical accomplishment will be auditable.

There are three basic methods used for measuring performance. Application of these methods and their various techniques depends on the end product or service to be measured. Objective techniques are used where practicable. Each Work Package will utilize one of the following EV methods to track work progress:

- **Discrete Effort** – Discrete tasks are those tasks which are quantifiable to individual work products or predetermined tangible measurement. Techniques utilized for Discrete efforts are:
 - **Fixed Formula** – 0/100, 50/50, 25/75 etc.
 - **Units Complete** – physical quantity count
 - **Milestone** – predetermined percent complete based on internal milestones within the Work Package
 - **Percent Complete** – predefined earning methodology based on detailed steps or hours necessary to complete the task.
- **Apportioned Effort** – This method involves the EV for a discrete Work Package being based upon a defined relationship with a related Work Package(s) from which progress is measured objectively. For example, Non-Manual Construction Support

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could be evaluated at 90% of the composite percent complete of all direct construction Work Packages. The final 10% would be earned when the paperwork closeout at the end of the project is complete (which is generally after the craft is gone).

- **Level of Effort (LOE)** – This method is used for efforts of a general or supportive nature, which does not produce a definite end product. A LOE Work Package uses only one EV technique – the BCWP equals the BCWS in each reporting period. LOE tasks are measured through the passage of time rather than through application of a discrete EV technique. Project Management and Project Controls are examples of two Control Accounts that could use the LOE method. LOE accounts are to be kept to a minimum.

Material or subcontract items must utilize an effective performance measurement technique that allows for earned value to be claimed in the same accounting period as actual costs. The earned value techniques will be documented in the Control Account Plan, but in general material will be earned in the following manner:

- **Engineered Equipment** – Engineered materials are budgeted and costed for performance measurement reporting purposes when the material is received and accepted, or is based on a verifiable progress payment schedule.
- **Field or Bulk Materials** – Field materials are budgeted and costed for performance measurement reporting purposes when the material is withdrawn from stores.
- **Subcontracts** – The request for proposal shall include any subcontractor requirements for supporting the WSRC EVMS. The Project Manager balances this request by assessing the subcontract risk and management visibility requirements versus the subcontractor cost to generate the EVMS reporting.

3.6.2 Earned Value Tools

Various subsystems will be utilized by the Functional Departments to assess the performance of their assigned Control Accounts and Work Packages. The cost processor is the WSRC tool which houses the time-phased project BCWS at the task, Work Package, or Control Account level, summarizing to the various WBS/OBS levels and the total project. The cost processor becomes a source of metric information used for reporting and analysis in the EVMS process.

3.7 **Work Authorization and Execution**

Control account planning, budgeting and work authorization refers to those activities that culminate in establishing the Performance Measurement Baseline (PMB) for a project and in authorizing the functional organization to perform the work associated with the PMB. Control account planning and budgeting is a recurring process, throughout the life of the project, during each project phase.

When the Project Manager receives the appropriate authorization documents from DOE and the WSRC Controller organization, the process of authorizing the specific project scope to the responsible organizations begins. The Project Manager issues a formal authorization document

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to the project team members, empowering them to develop Control Account Plans (CAPs). Authorization to begin work against the CAP will also be executed through a formal authorization document. Once execution begins, a resolved trend serves as the authorizing document for any changes to the execution of the CAP scope. Any change to the BCWS requires an approved BCP.

3.7.1 Control Account Plans

During baseline development, the WBS, and Control Account scope, cost and schedule baselines are finalized and become the components for the Control Account Plan (CAP). The CAM, with assistance from Project Controls, is responsible for structuring each Control Account (CA) into one or more Work Packages or Planning Packages (often this is done during baseline development as part of the planning, scheduling, and estimating effort). A scope definition will be written and maintained by the CAM for each Work Package which will be an extension of the WBS Dictionary for that Control Account.

The CAP is developed by compiling this previously planned work into a logical executable plan and should contain the following information:

- CA Scope
- CA Baseline Schedule
- CA Cost Estimate Details broken down into a time-phased budget; the BCWS
- CA Work Package Scope, Cost, Schedule, and Earned Value Technique
- CA Planning Package Scope, Cost and Schedule
- CA Log showing the sum of Work Packages plus Planning Packages equals the CA

The CAPs require signature approval by the CAMs and the department managers, as appropriate, before they are submitted to the Project Manager for review and signature approval. When the CAP is approved by the Project Manager, the control account work scope is authorized for execution. Project Controls distributes and files the approved and acknowledged CAPs as work authorizations documentation, and the plan becomes the baseline for measuring cost and schedule performance.

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4.0 ACCOUNTING CONSIDERATIONS

The WSRC commitment to financial stewardship and its accounting system is based on accepted accounting principles and cost accounting standards which comply with Department of Energy regulations and requirements, including the ANSI/EIA 748-A-1998 guidelines. Efficient, sound management principles are applied to budgeting, cost recording, distribution, and reporting of financial information.

Costs are recorded in a manner consistent with the “WSRC Financial Management Standards (FMS) Manual” (WSRC-IM-92-113). Project costs are recorded against cost activity codes at the “terminal” level of the Work Breakdown Structure (WBS). FMS Section CFOD-BMR-92-PR4.28 explains how costs are collected and reported for Line Items, General Plant Projects (GPP), Capital Equipment Projects, and Operating Expense Funded Projectized scopes of work (such as Environmental Restoration and decontamination and decommissioning).

As a contract requirement, WSRC complies with the Cost Accounting Standards in its accounting and charging practices. A Cost Accounting Standards disclosure statement is developed and submitted to DOE on an annual basis. The disclosure statement provides a general description of WSRC’s accounting practices, including the criteria for classifying direct and indirect costs and the basis for allocating indirect costs.

4.1 WSRC Accounting System

The Integrated Budget, Accounting and Reporting System (IBARS) is the official financial system at WSRC. It provides the mechanism for recording project cost information related to the project’s Control Accounts planned within the WBS structure. The accounting system ensures the collection and reporting of the incurred costs and accruals associated with those Control Accounts within the accounting period, provides the Project Manager with the tools and information needed to manage project cost collection activities against the final cost objectives. The cost accounting system is integrated with financial accounting records. Subsidiary cost accounts are all reconcilable monthly to the general ledger accounts in accordance with WSRC financial procedures (CFOD-BMR-92-PR4.48).

Direct labor and indirect overhead costs are distributed to final cost objectives as defined by the project’s WBS, through standard rates. Direct and indirect costs are recorded and mapped to the project’s final cost objective. Direct materials that can be specifically identified to a final cost objective are charged to the final cost objective. Materials that cannot be directly associated with final cost objectives are considered indirect and charged to the organization utilizing the resources. These indirect materials are charged to a final cost objective as overhead costs through indirect rates applied to direct labor dollars in the Consolidated Labor System (CLS).

WSRC IBARS is supported by numerous financial systems (See Table 4-1) to ensure accounting data integrity. Figure 4.1 shows the integration of the WSRC accounting system and how it collects, identifies, and records Actual Costs of Work Performed, for both direct and indirect work, in a manner consistent with the way the scope is planned in the project.

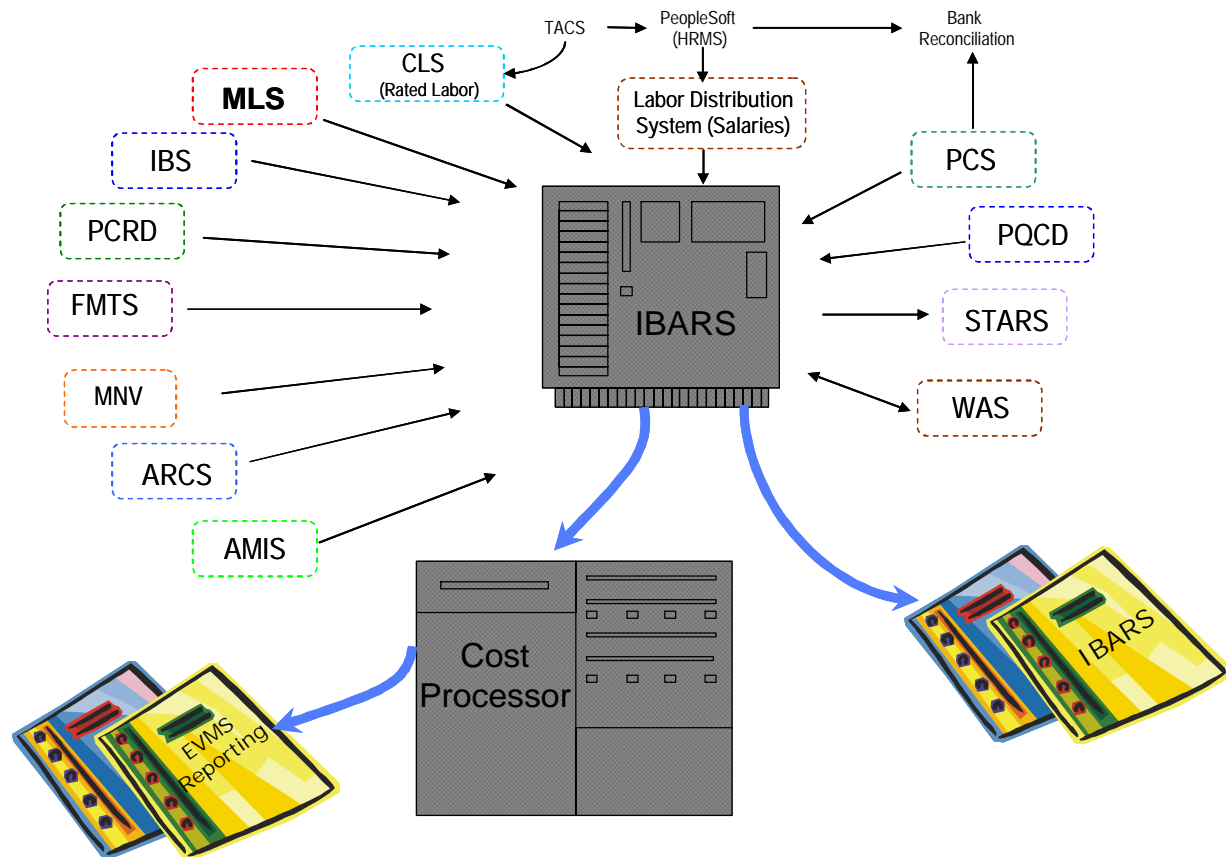


Figure 4.1 - WSRC Integrated Budget and Accounting System (IBARS)

In order to maintain reporting integrity, the retroactive change of accounting records is not allowed. Prior period adjustments and corrections for mischarges, rate adjustments, and accounting errors are made to the current accounting month only prior to the month-end closeout. Accounting adjustments and cost transfers from one charge code to another are proposed by the project team and processed by Chief Financial Officer (CFO) Accounting in accordance with formal procedures.

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Table 4.1 - Accounting Collection Systems Supplying IBARS Data

<u>ACCOUNTING SYSTEM</u>	<u>SYSTEM DESCRIPTION</u>
Asset Management Information System (AMIS)	AMIS records actual transactions affecting capital and non-capital assets.
Accounts Receivable Cash System (ARCS)	ARCS contains financial entries related to the cash and accounts receivable ledgers.
Consolidated Labor System (CLS)	CLS is a labor distribution system designed to provide a structured means of accumulating labor hours and calculating labor costs for work performed. Indirect labor costs are also allocated through. CLS obtains a feed of labor hours from TACS.
Field Material Tracking System (FMTS)	FMTS is the site standard material management system containing actual financial transactions for stores issuances.
Integrated Budget, Accounting and Reporting System (IBARS)	IBARS provides the structure and tools necessary to manage SRS financial activities. IBARS ensures data integrity within the General Ledger as well as interfacing systems. Transactions are collected through various interfacing systems primarily by activity or organization codes and posted to the General Ledger in IBARS.
Integrated Budget System (IBS)	IBS is the funds management system, which provides the structure and tools utilized in developing and executing funding requests. IBS is used for developing the task budget requests during an Out Year Budget (OYB).
Labor Distribution System (LDS)	LDS calculates and creates the financial transactions related to salary postings.
Maintenance Logistic System (MLS)	The MLS software supports cost distribution associated with equipment maintenance activities for assets that are the responsibility of the Portable Equipment Commodity Management Center (PECMC) to manage.
Manual Voucher System (MNV)	MNV system permits the creation of manual vouchers on-line, electronic routing and approval of vouchers, daily posting to IBARS, and provides a common system for processing entries. The system may be used to record transactions using any General Ledger/sub ledger accounts.
PeopleSoft Human Resources Mgmt System	PeopleSoft stores Human Resources, Benefits Administration, and Payroll data.
Procurement Cycle System (PCS)	PCS records and tracks requisitions during preparation of purchase orders, records receipt of materials, matches invoices to receiving and purchasing date, processes payments to vendors, tracks Store's inventory, and processes diverse interface feeder system to the Integrated, Budget, Accounting and Reporting (IBARS).
Power Quantity/Cost Distribution System (PQCD)	PQCD accumulates actual quantity data and calculates the cost of the power products.
Standardized Tracking and Reporting System (STARS)	STARS is a financial reporting and funding forecasting application that provides for input of "to go" financial forecasts..
Time & Attendance Collection System (TACS)	TACS Time Entry function collects weekly expended hours against activity codes.
Work Authorization System (WAS)	WAS provides the structure for an responsible organization to assign work to a performing organization.

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Actual costs are automatically posted in various application systems and are fed to IBARS (i.e., CLS accumulates hours and calculates labor costs associated with work performed on the WBS). Labor costs are reported by final cost objective, performing organization, responsible organization, and employee.

Other WSRC direct cost, such as materials, travel, etc, as well as subcontract charges (including subcontract labor, materials, travel, etc.) are captured from source systems or documents such as purchase orders, and travel expense reports. All other costs are collected through an activity code or an organization code and are reported by final cost objective, performing organization, and responsible organization. Other costs are also automatically posted in the various application systems and are fed to the IBARS.

4.4 Indirect Costs

Indirect costs are those costs that cannot be identified specifically with a final cost objective and are accumulated in indirect costs pools. These pools are established and managed at levels where the costs are homogeneous in nature and represent resources expended for the common benefit of more than one final cost objective supported by the pools. Indirect costs are categorized as either General & Administrative (G&A), Essential Site Services (ESS), Business Unit Overhead, Department Overhead, or Service Centers. Indirect costs are distributed to the projects through an allocation process by applying recovery rates based on a proportionate allocation base. FMS Section CFOD-BMR-92-PR4.55 describes how indirect costs are allocated and managed. This includes ensuring that the rates are liquidating the costs to the final cost objectives, and the implementation of corrective actions.

Business Unit Overhead costs are incurred for the benefit and support of their respective organizational units, while G&A and ESS costs benefit the entire site. Service Center costs associated with providing a specific service or group of services are accumulated and then charged to the user in a standard rate representative of the services used or on a basis representative of the resources consumed. (Examples of Service Center costs include F/H Area Labs, Analytical Labs, Fuel, Power, S&S Operations Support, Document Control, Etc.)

Site Overhead costs are those costs that benefit the site as a whole and are not identified to a specific WBS scope. They are accumulated within an organization coding structure and have associated budget and performance goals. Site Overhead includes corporate administration functions such as G&A and ESS expenses. These indirect costs are allocated via a rate to each terminal WBS element containing actual costs within the project WBS structure.

The ESS Pool is comprised of activities performed by support divisions whose scope of work benefits the entire site. Some major functions include laboratory operations support, radiological dosimetry, bioassay laboratories, site engineering standards, technical and process computing, environmental monitoring and protections, emergency operations, medical facilities and services, and management of site roads and grounds. Also included are the labor, fringe benefits, travel, office supplies and other miscellaneous costs in support of those activities listed above.

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G&A costs are in support of site wide functions which are administrative in nature and benefit the entire site. Some major functions include Office of the President, General Counsel, Human Resources, Public Affairs, Planning & Budgets, Finance, Internal Oversight, and Procurement and Materials Management. Labor, fringe benefits, travel, office supplies and other miscellaneous costs of the organizations listed above are included in the pool.

The G&A allocation is made after the ESS distribution, i.e., ESS is included in the base over which G&A distributes. There are two rates for both G&A and ESS: operating and capital. The allocation base for operating is the total operating cost, including cost funded projects, while the base for capital is the total cost for Capital Equipment (CE), General Plant Projects (GPP), and Line Items (LI). Capital receives a partial allocation of G&A and ESS based on a casual-beneficial analysis. Fee is excluded from the base upon which ESS and G&A are allocated. Total Project Cost (TPC) includes ESS, G&A and Fee.

4.5 Material and Subcontract Accounting

Direct materials (including subcontracts) are charged at actual cost to the final cost objective. Direct materials are those materials that can be specifically and consistently identified to a final cost objective, whether they are procured directly from an outside vendor or withdrawn from a material center inventory.

Purchased materials are generally charged to the final cost objective at the time the receiving report is processed, or accrued at the point at which the material becomes the property of WSRC. Large material orders containing progress payment provisions are charged to the final cost objectives as milestones are completed and when invoices are processed for payment. All Site Inventory items are costed to an asset holding account (WBS 1.17) within the Project Baseline Summary (PBS) 13. Costs for material are charged to inventory accounts as incurred, and charged to the final cost objective when withdrawn.

Materials that cannot be directly associated with a final cost objective are considered indirect and are charged at actual cost to the organization utilizing the resources. These indirect materials are charged to a final cost objective as overhead costs through indirect rates applied to direct labor dollars in CLS.

4.6 Capital Project Cost Classification and Funding

Both direct and associated indirect capital project costs are collected at the terminal WBS within the project WBS structure. These activities are categorized according to funds classification guidance provided in the DOE Accounting Handbook Chapter 10, DOE Field Budget Guidance, the National Defense Authorization Act, the Energy and Water Appropriations Act, and DOE field specific guidance. Figure 4.6 illustrates some of the major categories that fall within the funds classifications.

$$\text{TPC} = \text{TEC} + \text{OPC}$$

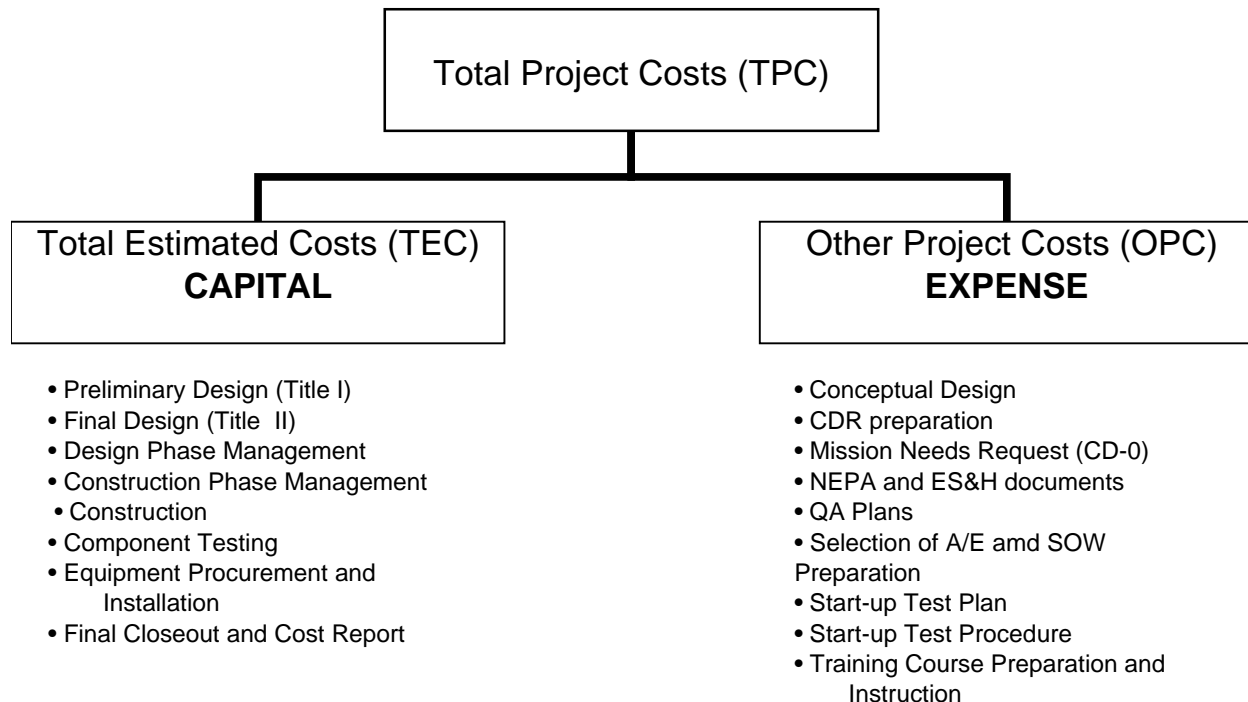


Figure 4.6 - Typical Funds Classifications

4.7 Funds Management

Financial guidelines are developed and implemented covering the collection, monitoring and reporting of data on the authorization, obligation, commitment and expenditure (actual and forecasted) of funds and budget by type of fund, and Budget and Reporting (B&R) control points. These internal guidelines are consistent with the DOE guidance provided each year. Funds and budgets are closely monitored to prevent exceeding authorized limits and to avoid exceeding available funding.

Funds management data (both actual and forecasted costs, commitments and projected funds available to the contract) are integrated with the performance measurement and accounting systems at the terminal level WBS. The forecast of total funds required is the sum of actual and accrued costs to date and the forecast to complete costs (including outstanding commitments) for the remainder of the appropriation period.

Evaluations of fiscal year end spending forecasts, as developed through analysis of past performance trends and projections of future expenditures, provides early warnings when

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obligated funding limits may be exceeded. Appropriate management actions are taken to remain within the current authorization or acquire additional funds if these cost estimates indicate an overrun.

Periodic analysis of uncosted and uncosted/unencumbered obligation balances is required to ensure proper funds management and avoid exceeding available funding. Baseline changes resulting from these situations are managed in accordance with the WSRC Change Control Process.

The impact of all scope and schedule changes is evaluated against the budget and availability of funds. Conversely, the impact of changes to the amount of available funds is assessed against required funds to accomplish the acceleration of scope and schedule.

Funds management analysis, provided by the CFO Planning and Budget section (working with the Controller organizations), compares the sum of Fiscal-Year-To-Date costs, remaining fiscal year estimates to complete, and encumbrances estimate to the forecast obligation for each B&R control point. The obligation forecast is compared to the planned fiscal year obligation expected from DOE to determine the uncosted and uncosted/unencumbered obligation balance by B&R control point.

Funds management analysis will also distinguish funds by funding type, (i.e., Operations, Capital Equipment, General Plant Projects (GPP) and capital Line Items) and DOE B&R.

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5.0 ANALYSIS AND MANAGEMENT REPORTS

Section 3.0 discussed developing the Performance Measurement Baseline (PMB). This section will discuss how cost and schedule status will be measured and analyzed. The monthly management reporting cycle identifies project performance based on EVMS metrics and variance analyses. The report also recommends corrective actions as appropriate.

5.1 Project Status

Visibility into project performance helps the Project Manager to focus resources on those areas in need of attention. Accurate and reliable EVMS data is necessary for proper analysis and management control. The Project Manager ensures traceability of project performance down to the Control Account.

5.1.1 Schedule Status

The project schedule activities are statused at least monthly. The Project Manager and Control Account Managers (CAM) provide status based on:

- Physical work accomplished or completed (% complete).
- Remaining duration of open activities.
- Actual Start and Finish dates.
- Review of schedule logic and constraint dates.

5.1.2 Cost Status

The cost processor is used to calculate the cost and schedule performance indices, cost and schedule variances, and variances at completion. It is the integration point for the Budgeted Cost of Work Scheduled (BCWS), Actual Cost of Work Performed (ACWP), and Budgeted Cost of Work Performed (BCWP).

The cost processor maintains the time-phased project dollar baseline at the task, Work Package, or Control Account level, summarizing to the various WBS levels and the total project. This BCWS becomes the PMB for reporting.

The physical percent complete (through the current reporting period) is updated in the cost processor utilizing information from the EVMS processes and subsystems discussed in Section 3.0. The cost processor calculates the BCWP which is the budgeted value of the physical work accomplished in terms of the dollar budget assigned to that work.

The actual costs are obtained from the site financial system, Integrated Budget, Accounting and Reporting System (IBARS) discussed in Section 4.0. IBARS includes both actual costs and accruals. Accruals are submitted on a monthly basis to cover subcontract or progress payment work performed but not yet billed.

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5.1.3 Subcontract Status

The subcontract planning and control process establishes guidelines for the effective control of subcontracts through integrated planning, control, analysis, and performance measurement. The request for proposal shall include any subcontractor requirements for supporting the WSRC EVMS. The Project Manager balances this request by assessing the subcontract risk and management visibility requirements versus the subcontractor cost to generate the EVMS reporting. The subcontractor planning and status reporting shall validate the following primary features:

- Evaluation of the EVMS flow-down requirements for subcontractor data integration into WSRC's EVMS. Establishing Work Packages and/or Planning Packages and their durations within Control Account(s) for BCWS based upon subcontractor-supplied planning information, and/or in-house documentation.
- Subcontracted effort planned as level of effort will be contained in unique work or Planning Packages supported by internal WSRC management processes that will allow visibility into the work being performed.
- If a subcontractor Cost Performance Report (CPR) is required, the reported BCWP and ACWP, as confirmed, would be recognized and incorporated into the WSRC EVMS.
- If a CPR is not required, the WSRC subcontractor technical representative and/or the WSRC Project Manager reports the BCWP at the time of the event, milestone, performance, or acceptance. Subcontractor reports, such as statused schedules, technical reports, labor and equipment daily reports, and invoices are used to determine and/or verify BCWP and ACWP.

5.1.4 Material Status

The WSRC budgeting and accounting system uses the following material cost categories:

- Engineered Equipment
- Field or Bulk Materials

Engineered Equipment is budgeted and costed for performance measurement reporting purposes when material is received and accepted or based on progress payments.

Field or Bulk Materials are budgeted and costed for performance measurement reporting purposes when the material is withdrawn from stores.

5.2 **EAC and FAC Development**

WSRC employs several techniques to develop project cost projections. The EAC is the most disciplined tool used to evaluate the approved execution plan. The Forecast-at-Completion (FAC) is a less rigid high spot evaluation of final project costs performed on a routine basis.

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5.2.1 Estimate-at-Completion (EAC) Development

The contract, site procedures, and the PEP define the minimum frequency for preparing a comprehensive EAC. An EAC is prepared to accurately reassess the total cost, schedule, and risk of the project. The EAC consists of two components:

- Actual Cost To-Date (ACWP) and the status of work completed on the project.
- Estimated cost of the remainder of work to complete on the project, which is the Estimate-to-Complete (ETC).

$$(EAC = ACWP + ETC)$$

A detailed estimate, schedule reassessment, risk analysis, and associated Contingencies are prepared for the remainder of work to-go on the project. This establishes the ETC value and, when combined with actual cost to date on the project, determines the EAC.

The formal EAC is reviewed with WSRC Senior Management and the customer for input and approval. After the approvals, the EAC is summarized and incorporated in the monthly customer and WSRC management reports. A formal EAC becomes the latest Trend Forecast.

5.2.2 Forecast-At-Completion Development (FAC)

The FAC consists of two components:

- Actual Cost To-Date on the project, which is the ACWP.
- Summary evaluation of the remainder of the work to go on the project, which is the Forecast-to-Complete (FTC).

The FAC is a summary level assessment prepared periodically to capture performance, issues, trends, and resource requirements identified since the last formal EAC.

5.3 **Variance Analysis and Reporting**

Effective analysis of deviations from the plan for both schedule and cost provides management the ability to rapidly and effectively implement corrective actions. The Cost Performance Reports (CPR) issued from the cost processor data provide the CAM(s) the metrics to assess the performance of their assigned Control Accounts. All metrics will be updated monthly and will provide management the ability to:

- Assess actual progress, costs incurred, and their comparison to baseline plans.
- Identify and analyze significant variances between planned and actual performance for initiation of corrective action.
- Structure and summarize the status, progress, and analytical data to report to all levels of management.
- Assemble and present the information in formal, contractually required reports for submittal to DOE.

Figure 5.3 depicts the basic flow for Cost Performance Reports (CPR) during each reporting period.

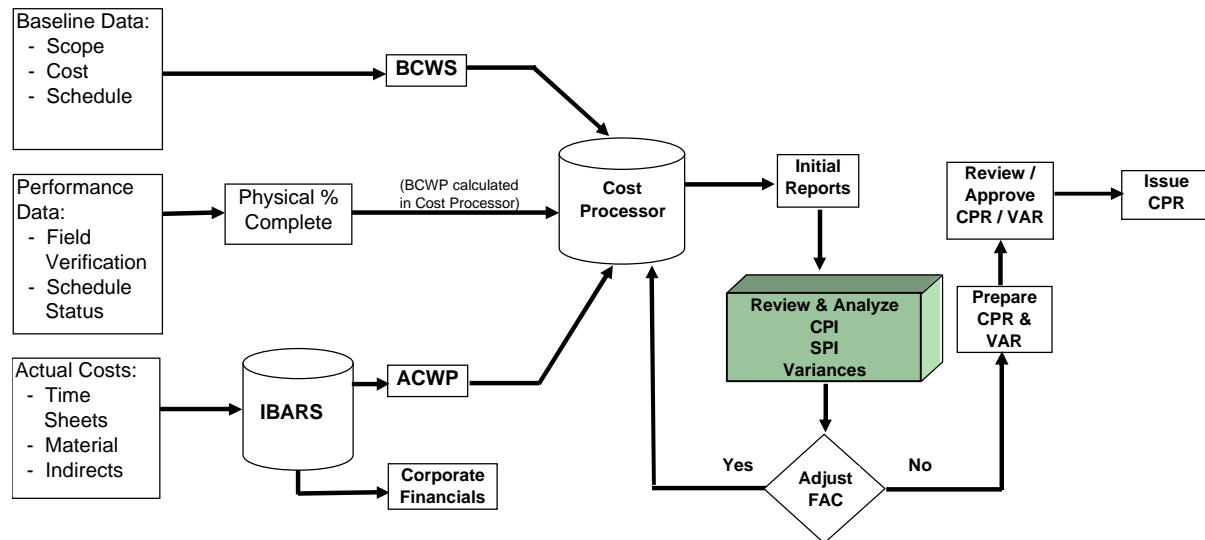


Figure 5.3 - CPR & VAR Production Process Flow

5.3.1 Variance Analysis Thresholds

Project performance will meet the thresholds defined by DOE's Project Execution Plan (PEP). However, the Project Manager may use more rigorous thresholds based on the project risk and other factors. In these cases, the WSRC Team Execution Plan (TEP) will identify the internal control thresholds.

5.3.2 Variance Analysis

CAMs, with the support of Project Controls, are required to review, analyze, and report on all Control Accounts with variances exceeding thresholds for current month, cumulative, or at completion. Variance analysis provides the means for the CAM to communicate scope, cost, schedule, and EAC divergences from the PMB. The formulas for determining variances are as follows:

- **Schedule Variance (SV)**

This comparison of BCWP with BCWS ($SV = BCWP - BCWS$) shows whether completed work was performed earlier or later than planned. Out of sequence progress (BCWP) can give a false indicator of schedule health. A positive SV does not necessarily mean that the project is ahead of schedule; it means that work is being performed earlier than planned.

Variances may not indicate whether the scheduled milestones are being met, whether a completed activity is a critical event, or if delays in an activity's completion will affect the completion date of the project.

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Schedule analysis should include a review of the critical path and total float. It should also verify that there is not an excessive use of constraints, and that the resource availability plans are still valid.

- **Cost Variance (CV)**

This comparison of BCWP with ACWP ($CV = BCWP - ACWP$) shows whether completed work has cost more or less than was budgeted for that work.

- **Variance At Completion (VAC)**

The standard EVMS formula for VAC is the difference between the Budget at Completion (BAC) and the EAC. In DOE Manual 413.3-1 BAC is defined as *not* including contractor Contingency and equals the Performance Measurement Baseline (PMB).

However, WSRC identifies the VAC formula at the PMB or TPC level as follows:

- $VAC_{(PMB)} = BAC_{(PMB)} - EAC_{(PMB)}$
- $VAC_{(TPC)} = BAC_{(TPC)} - EAC_{(TPC)}$

WSRC performs variance at completion analyses at both the Control Account level and the Total Project Cost (TPC) level. The BAC at the Control Account level is exclusive of Contingency. However, the BAC at the project level is the TPC which does include Contingencies. The bottom up EAC process used by WSRC includes a through review of the Control Accounts as well as a re-evaluation of the Contingency costs associated with the current project risks. This allows meaningful variances at completion to be performed at the Control Account level and at the Total Project Cost level.

5.3.3 Variance Analysis Report

Control Accounts with variances exceeding thresholds for current month, cumulative, or at completion, will be required to submit variance explanations using the Variance Analysis Report (VAR). The CAM will provide an accurate description of the problem. The description focuses as much as possible on the root cause, rather than symptoms. This analysis includes identifying the cause of the variance, determining the impact of the variance on milestones, determining the effect on the FAC, and specifying the corrective action(s).

5.4 **Project Reporting**

Providing timely and accurate project performance and analysis is essential to the successful management of the project. Earned value data, along with critical path analysis, must be utilized by all levels of management for effective project execution. Data produced by the EVMS must be timely and of sufficient quality to provide an effective foundation for management decisions.

Performance analysis is a continuous activity. The integrated project scope, schedule, and cost data are gathered and interpreted into project status information. Significant current or potential

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problems are identified and root causes determined. Alternative courses of action are assessed and corrective action is taken if necessary.

The reporting systems for the project are structured to gather project status information for all management levels (i.e.: CAMs through senior WSRC and DOE management). Data integrity is maintained to accommodate different focus areas and cross-cuts.

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6.0 REVISIONS AND DATA MAINTENANCE

The integrity of the WSRC Earned Value Management System (EVMS) and the assessment of project performance are dependent on maintaining the validity of the Performance Measurement Baseline (PMB) throughout the performance period. To ensure that the PMB remains valid, the WSRC EVMS includes procedures which provide for a timely, formal, and documented process that:

- Defines conditions under which baseline documents and, subsequently, Project Baselines may be changed in a controlled manner.
- Ensures that scope, schedule, and cost baselines are always processed together to facilitate accurate performance measurement.
- Identifies the controlling authority for Project changes, based on formal thresholds and limits of authority.
- Establishes a process for managing and documenting changes to project scope, cost, and schedule baseline documents and/or the PMB. The PMB will include only authorized scope for the project.
- Accommodates emergency changes.
- Controls retroactive changes.
- Maintains a record log of all Baseline Change Proposal (BCP) actions in process, approved or declined.
- Maintains a Trend Program that provides a systematic method for reporting and dispositioning identified scope, cost, and/or schedule impacts to the project.

This section of the System Description applies to project changes that have an impact on the approved cost, schedule or scope baselines in accordance with DOE Order 413.3. Changes to the scope baseline are reviewed for acceptability and approved in accordance with appropriate site level procedures.

6.1 Approval Levels

The approval levels are established following the guidelines listed in DOE Order 413.3. Specific Change Control requirements for the project are addressed in the Project Execution Plan.

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6.2 Project Change Identification

The Project Manager shall manage changes to the Project Baseline in accordance with the appropriate Change Control procedures. These requirements commence with the establishment of these ranges, budgets and schedules, and baseline documents.

WSRC Project Controls maintains a Trend Program that provides a systematic method for reporting and dispositioning identified potential scope, cost and/or schedule impacts to the project. Periodic reports are issued indicating the total cost for the trends identified and any action taken or recommended. The trend program is a documented system for identifying and analyzing current or potential deviations of costs and schedule from the latest project plan. The results of the trend program provide input to the project Change Control system where changes to the scope, schedule, or cost baselines have occurred, and provides input to the EAC process.

The Trend Program provides the area teams with early identification and warning of potential changes to scope, costs and/or schedules, with the objective of mitigating the impact of identified negative changes and maximizing the benefit of positive changes. The rapid resolution of trends will provide the project team with an ongoing process to manage issues as they arise.

Timely incorporation of authorized changes is essential to ensure accurate reporting of the PMB. At a minimum, performance reporting on approved changes will be implemented during the period in which they are incorporated, or consistent with other project functional capabilities (e.g., financial, procurement, contracts, etc.), within the next month's reporting cycle. The PMB should reflect the initial baseline plus all the approved baseline changes for accomplishing the work. Budgets should reflect the current levels of authorized scope.

Changes to prior period baseline performance data (retroactive changes) should be limited to accounting adjustments, to correct data errors, or to incorporate customer (DOE) Directed Changes and can only be made through an approved Change Control action.

Reallocation and/or use of project Contingencies as a result of baseline changes will be recorded in the project Baseline Change Control Log. A BCP for new scope must be approved to document the approval of new work. Emergency or urgent changes follow the criteria in the following sections.

6.3 Emergency/Urgent Changes

The WSRC Change Control system utilizes the following two special types of changes to handle non-standard changes that may or may not have an impact on the project baseline:

- An Emergency Change Notice (ECN) is used to define the cause and actions that must be taken immediately to minimize risk on health, safety, environment, security, or government property. The ECN is prepared in parallel with corrective action and is used to formally notify DOE of the upset event and the corrective action. For ECNs, the funding source to cover the corrective action need not be identified on the ECN.

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- A Provisional Authorization Request (PAR) is used in instances when work needs to be initiated as quickly as possible to minimize impacts to approved cleanup acceleration objectives or to take advantage of programmatic windows of opportunity. For a PAR, funding must be identified for the scope that is to be performed for the duration of the PAR, until a formal BCP may be completed and approved.

Follow-up formal BCPs are required for both ECNs and PARs to fully define impacts on the project baseline. The follow-up BCPs are processed consistent with the guidance in applicable procedures and as approved by the approval authority.

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7.0 SURVEILLANCE

WSRC management will ensure compliance of the Earned Value Management System (EVMS) through periodic self-assessments. WSRC will conduct EVMS Self-Assessments using the Facility Evaluation Board - Project Review Team (FEB-PRT). The results of each evaluation are reported directly to the WSRC President. WSRC insures compliance with the EVMS policies and procedures through the use of internal surveillance programs.

An independent assessment program is part of the WSRC assessment program described in Procedure Manual 12Q, Assessment Manual and supporting procedures. The WSRC independent assessment program periodically performs performance-based assessments of facilities/projects, support departments and programs. The assessments sample applicable functional areas in WSRC-SCD-4, Assessment Performance Objectives and Criteria, to assess level of performance, evaluate the adequacy of the ongoing self-assessment process, and assure adherence to applicable Department of Energy directives and regulatory requirements. Procedure Manual Q11, Procedure 3.0, Facility Evaluation Board Procedure, provides additional implementation details.

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ANSI/EIA 748-A-1998, *Earned Value Management Systems*.

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Acquisition of Capital Assets*.

U.S. Department of Energy, DOE Manual 413.3-1, *Program and Project Management for the
Acquisition of Capital Assets*.

National Defense Industrial Association (NDIA), Program Management Systems Committee
IPMSC), ANSI/EIA 748-A-1998, *Intent Guide, Revision 9a*.

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IPMSC), *Surveillance Guide*.

Defense Contract Management Command (DCMC), *Earned Value Management Implementation
Guide*.

U.S. Department of Energy, *Earned Value Management Application Guide*.

WSRC EVMS Policy Statement

WSRC 6B Program Management Manual

WSRC Financial Management Standards (FMS) Manual” (WSRC-IM-92-113)

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**WSRC Earned Value
Management System (EVMS)**

**APPROVED
COMPANY-LEVEL
PROCEDURE**

Policy

Westinghouse Savannah River Company (WSRC) will apply Earned Value Management System (EVMS)—an integrated management control system—to all work at the Savannah River Site (SRS) that is managed as a project. Use of EVMS will allow both the Department of Energy (DOE) and WSRC Program and Project Managers to have visibility into cost, schedule, and scope/technical progress on their contracts for the purpose of performance measurement and management.

Requirements

An EVMS System Description provides guidance on application of the WSRC EVMS to meet the contractual and project-specific requirements of each project:

- Planning all project work scope to completion
- Breaking down the project work scope into manageable pieces that can be assigned to a responsible person or organization for control of technical, schedule and cost objectives
- Integrating project work scope, schedule, and cost objectives into a baseline plan against which accomplishments may be measured
- Incorporating authorized changes to the baseline in a controlled and timely manner
- Collecting and recording actual costs, and comparing those costs to the performance baseline in the same manner as planned
- Collecting and recording physical progress, and comparing that progress to the performance baseline
- Objectively measuring performance
- Analyzing significant variances and implementing management actions to mitigate risk and manage cost and schedule performance

Exceptions or deviations to the EVMS System Description may exist for certain projects based on project-specific DOE policies or directives. Implementation of WSRC's EVMS may be tailored to meet the contractual requirements for each project. Such projects will maintain a formal, approved addendum to the system description and to applicable procedures describing the exceptions or deviations.

Responsibilities

Business Integration and Planning

The Manager of Business Integration and Planning is responsible for developing and maintaining the policies, company level procedures, processes, and systems that comprise the EVMS.

Project Managers and Task Leads

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WSRC Project Managers and Task Leads are responsible for applying EVMS principles to all project work at SRS, and for tailoring the application of tools based on the nature of the activity and control requirements.

Site Program/Project Controls, Scheduling and Estimating

Site Program/Project Controls, Scheduling, and Estimating is responsible for providing EVMS requirements for company-level procedures, processes, and systems. This organization is also responsible for ensuring that WSRC projects are appropriately staffed and trained with controls personnel competent to administer an EVMS.

Facility Evaluation Board Project Review Team

The Facility Evaluation Board Project Review Team will assess project compliance with the established procedures. These assessments will be performed on a frequency set by WSRC senior management.

References

- WSRC Contract No. DE-AC09-96SR18500, Performance Evaluation and Measurement Plan
- DOE M 413.3-1, Project Management for the Acquisition of Capital Assets
- ANSI / EIA 748 Intent Guide Revision 9a, U. S. DOE Earned Value Management Guide draft (8/10/2004)
- Procedure Manual [6B](#), Program Management Manual
- Financial Management Standards

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Accrual - Posting of costs for work performed and not paid.

Activity - A unique task or function identified as an integral part of an overall objective.

Activity Code - See Cost Activity Code or Schedule Activity Code.

Actual Cost of Work Performed (ACWP) - Represents "what was paid for" in the execution of work. This is one of three basic components of an earned value (or achieved value) control system and may be measured in either dollars or job hours.

Apportioned Effort - Effort which is not readily divisible into short-span Work Packages, but is related in direct proportion to some other measured effort.

Authorized Work - Effort which has been definitized and is in the project scope plus that effort for which written authorization by DOE has been received but for which the cost has not been agreed upon and definitized into the project.

Baseline - A documented, quantitative expression of projected costs, schedule and technical requirements, including scope that has been formally reviewed and agreed upon, that thereafter serves as the basis for use and further development, and that can be changed only by using an approved Change Control process. It serves as a base or standard for measurement during the performance of an effort; the established plan against which the status of resources and the progress of a project can be measured.

Baseline Change - A formal modification of planned costs, schedule, and technical requirements for a defined project. Baselines should include criteria to serve as a standard for measuring the status of resources and the progress of a project. The initial baseline for a project is normally finalized at the completion of the Conceptual Phase. The approved project baseline may be modified through the use of a formal baseline Change Control process. The project baseline is defined and maintained in the Project Execution Plan.

Baseline Change Proposal (BCP) - The instrument/document prepared to provide the description and justification of a proposed change and its resulting impacts.

Budget -

1. The process of allocating taxpayer dollars by Congress.
2. The amount of money that is available for and assigned to a particular project purpose (e.g. design phase, construction phase).
3. The baseline resources in terms of dollars, man months or other definite units that are identified to accomplish a specific task.
4. The estimated cost proportionally linked to a defined scope of work and the associated resources (labor and material) to do the work.
5. The approved estimated cost of executing a scope of work within established schedule and technical baselines.

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Budget-at-Completion (BAC) - The total authorized budget for accomplishing the program scope of work. It is equal to the sum of all budgets plus any Undistributed Budget. (Contractor Contingency is not included.) The Budget-at-Completion will equal the Performance Measurement Baseline (PMB) as it is allocated and time-phased in accordance with program schedule requirements. (WSRC defines the $BAC_{(TPC)}$ at the total project level to include all contingencies.)

Budgeted Cost of Work Performed (BCWP) - The value of completed work expressed in terms of the budget (performance baseline value) assigned to such work. Also referred to as earnings or earned value.

Budgeted Cost of Work Scheduled (BCWS) - The portion of the time phased budget expenditure plan, scheduled to be accomplished during a given period of time (i.e., the current month and inception to date).

Change Control (CC) -

1. A documented approval process that applies technical, financial and management review to project baseline(s) modification.
2. A document approval process applying technical, financial and management review of changes to work scope requirements, budget, or schedule baselines.

Change Control Board (CCB) - Division-level board established by the operating division, and led by the program manager, to authorize modifications, manage costs, schedule, and scope changes to its annual operating plan, out-year plans, and authorized modifications.

Change Level - A DOE classification for a proposed change to a baseline which indicates level of authority required to make final disposition on the change based on established thresholds in the Project Execution Plan.

Conceptual Design - Key element of planning for construction projects. Utilizing the Functional Performance Requirement (FPR) and the Functional Design Criteria (FDC), Conceptual Design serves to develop a project scope that satisfies program needs and operating performance levels; identify and quantify project risks; and develop a reliable budget estimate and realistic performance schedule.

Consolidated Labor System (CLS) - A site-wide labor distribution system designed to provide a structured means of accumulating labor hours and calculating labor costs associated with work performed according to Work Breakdown Structure elements. Data is entered into CLS per approved employee CLS time record sheets. The CLS is designed to accumulate data and to itemize labor costs by task, performing organization, and responsible organization and employee.

Constraint - A relationship between or among activities that limits the progression of successor activities due to the nature of the predecessors. Constraints may be requirements that are known at the beginning of a project or they may develop once the project work has begun. They may or

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may not have budget values associated with them but should be included in the project schedule because they can impact other activities and milestones.

Contingency - An amount of money evaluated to cover costs which, based on past experiences, are known to be regularly encountered but difficult or impossible to estimate at the time the estimate is prepared. These costs may result from incomplete design, unforeseen and unpredictable conditions or uncertainties within the defined project scope. This Contingency consists of two elements; that portion that belongs to DOE -SR (owner), and that portion which belongs to WSRC (contractor). DOE-SR approval is required for use of DOE-SR Contingency funds.

Contractor Contingency - The Contractor's portion of the money evaluated to cover costs which, based on past experiences, are known to be regularly encountered but difficult or impossible to identify at the time the estimate is prepared. Also called Management Reserve.

Control Account (CA) - The management control point at which actual costs are accumulated and performance determined. It represents the defined work assigned to one responsible organizational element and must contain the specific scope of work, definitive schedule, assigned budget, unique identification and method of measuring performance. The Control Account concept is applicable to all programs.

Control Account Manager (CAM) - The individual responsible to the Project Manager for the management and execution of the Control Account scope, schedule, and cost.

Control Account Plan (CAP) - A plan depicting management control points for elements of work for which additional planning is accomplished, performance is measured, and work is controlled. The plan level is at the level of a baselined WBS where work can be assigned from the Project Manager to a group or organization for execution.

Cost Account - *See Control Account*

Cost Account Manager - *See Control Account Manager.*

Cost Activity Code - A nine character alpha numeric code established within the WSRS accounting system to identify a unique task for the purpose of collecting all costs associated with that task. This is the lowest level at which costs are accumulated and reported. Each cost activity code is unique and is related to a single terminal WBS element. Cost activity codes are defined by the Control Account Manager.

Cost Baseline - A budget that has been developed from the cost estimate upon approval of the technical baseline. The majority of the budget should be time-phased in accordance with the project schedule. The cost baseline is referred to as a baseline since it is integrated with the technical and schedule baselines and subject to formal Change Control. The cost baseline normally contains direct and indirect budget; management reserve budget; Undistributed Budget; and the Contingency amount, as appropriate.

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Cost Collection - The accumulation of expenditures, accruals, and where applicable, man-hours, for labor, materials, or services.

Cost Estimate - A documented statement of costs estimated to be incurred to complete the project or a defined portion of a project.

Cost Performance Baseline - See Cost Baseline.

Cost Performance Index (CPI) - A dimensionless number determined by dividing the Budgeted Cost of Work Performed (BCWP) by the Actual Cost of Work Performed (ACWP). A value greater than 1.0 indicates that the work accomplished cost less than planned, and a value less than 1.0 indicates the work accomplished cost more than planned.

Cost Processor - Cost performance measurement tracking and reporting software.

Cost Variance (CV) - The algebraic difference between earned value and actual cost (Cost Variance = Earned Value - Actual Cost); A positive value indicates a favorable position and a negative value indicates an unfavorable condition.

Critical Path - A logically related sequence of activities in a CPM schedule having the longest duration. The total float is zero. A delay in any activity will have a corresponding impact on the completion date of the project.

Critical Path Method (CPM) - A network analysis technique used to predict project duration by analyzing which sequence of activities (which *path*) has the least amount of schedule flexibility (the least amount of *float*). Early dates are calculated by means of a forward pass using a specific start date. Late dates are calculated by means of a *backward pass* starting from specified completion date (usually the forward pass's calculated project *early finish date*).

Earned Value (EV) - A method for measuring project performance that compares the value of work performed (Budgeted Cost of Work Performed) with the value of work scheduled (Budgeted Cost of Work Scheduled) and the cost of performing the work (Actual Cost of Work Performed) for the reporting period and/or cumulative to date. Periodic, consistent measurement of work performed in terms of the budget planned for that work. In criteria terminology, earned value is the budgeted cost of work performed. It is compared to the budgeted cost of work scheduled (planned) to obtain schedule performance and it is compared to the actual cost of work performed to obtain cost performance.

Earned Value Measurement System (EVMS) - The integrated set of processes, which implements the standard and its criteria. In its simplest form, EVMS can be implemented without any software. Software simply enhances productivity, allows the implementation of EVM more economically and facilitates managing complex projects. EVMS is not software.

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Earned Value Management - Earned Value Management is a methodology that allows both Government and Contractor Program Managers to have visibility into cost, schedule, and technical progress on their contracts to measure and manage performance. ANSI/EIA 748-A-1998, Earned Value Management System contains the industry guidelines, which establish the framework within which an adequate integrated cost, schedule, and technical management system will fit.

Emergency Change Notice (ECN) - A change notice between WSRI and the DOE whereas the work must begin immediately due to risk to health, safety, environment, security or government property.

Estimate - See Estimated Cost.

Estimate-at-Completion (EAC) - The actual cost incurred to date (including accruals) plus the estimate of cost for completing the work. [EAC = ACWP (Actual Cost of Work Performed) + ETC (Estimate-To-Completion)]. The EAC shall be quantity-based and shall not include pending scope changes but should include trends related to the authorized scope. Detailed EACs are a formalized thorough review of the full work scope, cost, and schedule performance against the approved baseline. Formal EACs are to provide updated “bottom-up” cost projections for the remaining scope of work including remaining risks that are combined with the actual to date. The EAC process includes a re-evaluation of project risks and associated costs. The contract, site procedures, and PEP define the minimum frequency for preparing a comprehensive EAC.

Estimate-to-Complete (ETC) - Estimate of costs to complete all remaining work to the end of the project or program.

Estimate Contingency - The amount of cost Contingency added to or subtracted from the cost estimate to address the uncertainties and risks related to the components of the cost estimate. It reflects the probability of project cost over-run and under-run and includes Contractor Contingency and DOE Contingency.

Estimated Cost -

1. An anticipated cost for a defined scope of work.
2. An evaluation of all the costs of the elements of a project or effort as defined by an agreed-upon scope. Three specific types based on degree of definition of a process industry plant are:
 - A. Order-of-magnitude estimate – an estimate made without detailed engineering data. Some examples would be an estimate from cost capacity curves, an estimate using scale-up/down factors, and an approximate ratio estimate. It is normally expected that an estimate of this type would be accurate within +50% or –30%.
 - B. Budgeted estimate – budget in the case applies to the owner’s budget and not to the budget as a project control document. A budget estimate is prepared with the use of flow sheets, layouts, and equipment details. It is normally expected that an estimate of this type would be accurate within +30% or –15%.

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C. Definitive estimate- as the name implies, this is an estimate prepared from very defined engineering data. The engineering data includes as a minimum, nearly complete plot plans and elevations, piping and instrument diagrams, one-line electrical diagrams, equipment data sheets and quotations, structural sketches, soil data, and sketches of major foundations, building sketches, and a complete set of specifications. This category of estimate covers all types from the minimum described above to the maximum definitive type, which would be made from "approved for construction" drawings and specifications. It is normally expected that an estimate of this type would be accurate within +15% and - 5 %.

Forecast-at-Completion (FAC) - The FAC is a summary level cursory analysis of the projected final costs of the project. It is prepared using project control tools such as the trend forecast, performance metrics, the schedule database, and Contingency utilization plans.

Functional Manager - A line manager or supervisor within the functional organization.

Functional Organization - An organization or group of organizations with a common operational orientation such as Engineering, Construction, Operations, Quality Assurance, Material, Finance, Contracts, etc. See Organization Breakdown Structure.

Funding - The incremental authorization by DOE for expenditures on programs/projects.

General & Administrative Expense (G&A) - Costs, which benefit the entire, site and represent the cost of doing business. The most common types of expenses in this category are executive management, human resources, legal and finance. Because of the nature of these expenses, they are logically allocated over a base, which represents the total activity of the site. This base includes all direct costs and indirect overhead costs previously allocated to a final cost objective.

General Plant Project (GPP) - Miscellaneous minor new construction project of a general nature; the total estimated costs of which may not exceed the congressional authorization of \$5.0 million per project. General Plant Projects are necessary to adapt facilities to new or improved production techniques, to effect economies of operations, and to reduce or eliminate health, fire, and security concerns. (NOTE: If any portion of the project is considered GPP, then the entire project must be funded with GPP funds).

Indirect Budget - The target value established for costs to be incurred by persons and/or departments for tasks, which do not have a direct relationship to the design, testing, and/or production of the end product, or contractually specified task.

Indirect Cost - That portion of labor, material or other costs not directly related or specifically identifiable to a contractually authorized end product or service. Such costs will usually include, but are not limited to, supervisory and administrative labor and expendable type materials such as operating supplies, utilities and fringe benefits. Resources expended and not directly identified with any specific WBS product or service. See overhead costs.

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Indirect Cost Pools - A grouping of indirect costs identified with two or more cost objectives but not separately identified with any final cost objective. Such separate pools have normally established for indirect cost in Engineering, Construction, Procurement and/or Material, etc.

Integrated Budget, Accounting & Reporting System (IBARS) - A financial management and accounting system designed to provide task-oriented budgeting, accounting and reporting for the Savannah River Site.

Key Activities for Successful Execution of Projects (KASE) Model - A tool used to help project teams improve project execution. It represents a preferred sequence of activities ranging from pre-conceptual work through financial closeout. The model reflects a sound, disciplined approach to the performance of project work while continuing to allow flexibility in project execution based on project size and complexity.

Life Cycle Costs - The total of all costs incurred or estimated to incur throughout the life of a facility from planning through acquisition, maintenance, operations and disposition. Decontamination, decommissioning, Environmental Restoration, and transition to future use, if required, are part of life cycle costs.

Line Item (LI) Projects - Projects that are specifically reviewed and approved by Congress. Projects with a total project cost greater than \$5 million are categorized as line item projects. (DOE Good Practices Guide).

Level-of-Effort (LOE) - Work scope of a general or supportive nature for which performance cannot be measured or is impracticable to measure. Resource requirements are represented by a time-phased budget scheduled in accordance with the time the support will likely be needed. The earned value is earned by the passage of time and is equal to the budget scheduled in each time period.

Long-Lead Procurement - Equipment or material that must be procured or acquired well in advance of the need for the materials because of long delivery times.

Management Assessment - A process of evaluating activities and facilities to determine compliance with applicable requirements, adherence to best management practices, and effectiveness of performance in meeting objectives in the areas of environmental protection, safety and health protection, quality, management and organization.

Management Reserve (MR) - See definition for "Contractor Contingency".

Master Schedule - A summary-level schedule that identifies the major activities and key Milestones of a project. See also Milestone Schedule.

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Milestone (MS) - An event in a CPM schedule representing objectives determined to be critical control points, selected by Management to monitor and control progress toward the accomplishment of approved scope of work. A Milestone has no duration assigned.

Milestone Schedule - A summary-level schedule that identifies the major milestones. See also Master Schedule.

Monte Carlo Analysis - A method of calculation which approximates solutions to a variety of mathematical problems by performing statistical sampling experiments on a computer; applies to problems with no probabilistic content as well as to those with inherent probabilistic structure.

Mission Need - A required capability within the DOE overall purpose, including cost and schedule considerations. When mission analyses or studies directed by appropriate executive or legislative authority identify a deficiency in existing capabilities or an opportunity, mission need is set forth as justification for system acquisition approvals, planning, programming, and budget formulation.

Mitigate - To lessen the severity of consequences of an event.

Operating Expense Funded Project (OPEX) - A project funded by operating budget funds. These projects are classified as demonstration, experimental, pilot and/or temporary (less than 2 years life expectancy). Exceptions to these criteria require specific written direction from DOE.

Organizational Breakdown Structure (OBS) - A depiction of the project organization arranged to indicate the line-reporting relationships within the project context.

Other Project Cost (OPC) - All other costs related to a project that are not included in the TEC such as supporting research and development, pre-authorization costs prior to the start of Title I design, plant support costs during construction activities and one-time costs incurred for startup activities during the transition between the completion of construction and operation of the facility. OPC is estimated and controlled for cost projects and line items greater than \$5.0 million TEC, validation requirements, and DOE Order 5100.3, Field Budget Process estimating requirements. OPC estimate and control is not required for CE and GPP projects. [Ref.: DOE Order 2200.6, Chapter VI, Paragraph 1f(4); DOE Order 4700.1].

Percent Complete - The percentage a task is actually complete – progress towards completion. (Can also be applied to higher level efforts, e.g., project percent complete.) It is based upon the current accepted scope of work for the task.

Performance Measurement - The process of determining physical, earned value progress (Budgeted Cost for Work Performed [BCWP]) on a project by comparing that to the time-phased budget baseline of work planned (Budgeted Cost of Work Scheduled [BCWS]) and also comparing it to the actual costs for that work (Actual Cost of Work Performed [ACWP]).

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Performance Measurement Baseline (PMB) - The total time-phased budget plan against which program performance is measured. It is the schedule for expenditure of the resources allocated to accomplish program scope and schedule objectives, and is formed by the budgets assigned to Control Accounts and applicable indirect budgets. The Performance Measurement Baseline also includes budget for future effort assigned to higher Work Breakdown Structure levels (summary level Planning Packages) plus any Undistributed Budget. Contingencies and Management Reserve are not included in the baseline as it is not yet designated for specific work scope.

Performance Monitoring - Systematic review, recording, and trending of monitored parameters of systems and components to measure and assess the impact of any performance changes of a particular system or component.

Planning Package - A logical aggregate of work, usually future efforts that can be identified and budgeted, but which is not yet organized in detail at the Work Package or task level.

Performance Measurement Baseline (PMB) - The total time-phased budget plan against which program performance is measured. It is the schedule for expenditure of the resources allocated to accomplish program scope and schedule objectives, and is formed by the budgets assigned to Control Accounts and applicable indirect budgets. The Performance Measurement Baseline also includes budget for future effort assigned to higher Work Breakdown Structure levels (summary level Planning Packages) plus any Undistributed Budget. Contingencies and Management Reserve are not included in the baseline as it is not yet designated for specific work scope.

Preliminary Baseline Range - Prior to CD-2, a formal baseline reflecting the cost, schedule and technical requirements of the current phase of a project and a baseline range for the remaining phases - also see BASELINE, above.

Program - An organized set of activities directed toward a common purpose or goal, undertaken to support an assigned mission. A program is characterized by a strategy for accomplishing a definite objective(s), which identifies the means of accomplishment, particularly in quantitative terms with respect to manpower, materials, and facilities requirements. Programs are typically made up of technology-based activities, projects, and supporting operations. (Programs are generally at the PBS level at SRS)

Program Manager - An individual in an organization or activity who is responsible for management of a specific function or functions related to program management.

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Project -

1. In general, a unique effort that supports a program mission with defined start and end points, undertaken to create a product, facility, or system with interdependent activities planned to meet a common objective/mission. Projects include planning and execution of construction/renovation/modification/environmental restoration or decontamination and decommissioning efforts, and large capital equipment or technology development activities. Tasks that do not include the above elements, such as basic research, grants, operations and maintenance of facilities, are not considered projects.
2. SGCP Definition - A scope of work that normally addresses a single site or area subject to remediation, decontamination, decommissioning, or monitoring. A project number may also be used to collect costs for a specific administrative function. A project is a subset of an Activity Data Sheet and each project is subdivided by phase of remediation, etc.

Project Baselines - See *Baselines*.**Project Budget Base (PBB)** - The negotiated project cost plus the estimated cost of authorized but unpriced work. $PBB = (PMB + \text{Contractor Contingency})$.**Project Cost Baseline** - A documented budget value, or set of values, that is developed from the Cost Estimate and subject to Formal Change Control.**Project Execution Plan (PEP)** - A plan that defines the project strategy and project parameters (cost, schedule, and scope elements of the baseline) and identifies thresholds for Change Control and reporting. The Project Execution Plan encompasses and defines the distinct project management activities; it evolves with the project, adding sections or details to sections, as needed. The PEP is a DOE document supported by the project team.**Project Performance Baseline (PPB)** - A documented, quantitative expression of projected cost, schedule, and scope that has been formally reviewed and agreed upon, that there after serves as the basis for project performance.**Project Team** - Team, comprised of members from the impacted operating organization and supporting organizations, led by the project manager and with total responsibility for all aspects of the development and execution of assigned plant modifications.**Project Trend Program** - An analysis process that identifies deviations or potential deviations from the established scope, schedule, and/or budget baselines for a project. This early warning process is based on the philosophy that any changes or impacts may be mitigated if identified as early as possible.**Provisional Authorization Request (PAR)** - A change request that is used to authorize a scope of work to WSRC from the DOE that is needed quickly and is followed up with the normal Change Control process. This is required because work should begin as soon as possible due to

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programmatic urgency and funds exist to cover the duration of the PAR, which must be specified in the PAR.

Rebaseline - The process whereby the project's costs, time scale or resources have to be re-calculated due to a change in the project's objectives, a change in the deliverables to meet requirements, or the project's original scope and plans have become untenable.

Request for Project Authorization (RPA) - A document issued by the Project Manager with the concurrence of the Project Sponsor to obtain approval/concurrence of the project, program, and financial organizations within WSRC for projects that exceed \$25,000 and DOE-SR for projects that exceed \$250,000 for initiation of an Operating Expense (OPEX), Line Item (LI) subproject, Capital Equipment (CE), or General Plant Project (GPP). This document ensures that the appropriate managerial approvals have been obtained, the capitalization criteria in DOE Order 2200.6 have been met, and the responsibility has been assigned for the expenditures.

Resolved Trend - A Trend Notice that has been dispositioned by the Project Manager.

Resource Leveling - Any form of network analysis in which scheduling decisions (start and finish dates) are driven by resource management concerns (e.g., limited resource availability or difficult-to-manage changes in resource levels).

Resource Plan - A time-phased summary of resources needed to accomplish the project as provided by the resource loaded schedule.

Responsibility Assignment Matrix (RAM) - The RAM correlates the work required by a Work Breakdown Structure (WBS) element to the functional organization responsible for accomplishing the assigned tasks. The responsibility assignment matrix is created by intersecting the WBS with the program Organizational Breakdown Structure (OBS). This intersection identifies the Control Account.

Risk - A factor, element, constraint, or course of action on a project that introduces an uncertainty of outcome and the possibility of technical deficiencies, inadequate performance, schedule delays, or cost overruns that could impact a Departmental Mission. In the evaluation of project risk, the potential impact and the probability of occurrence must be considered.

Risk and Opportunity Analysis - The identification and quantification of risks and opportunities to determine if factors, elements, constraints, or courses of action on a project introduce an uncertainty of outcome and the possibility of technical performance, schedule delays, or cost deficiencies that could negatively or positively impact the project. In the evaluation of project risk and opportunities, the potential impact and the probability of occurrence must be considered.

Risk Handling - Strategies developed with the purpose of eliminating, or at least reducing, the higher risk levels identified during the risk analysis. The strategies may include risk reduction or mitigation, risk transfer, risk avoidance, and risk acceptance.

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Schedule Activity Code - Code used to organized project activities into manageable groups for updating a single identifiable work step.

Schedule (Resource Loaded) - The logical sequence of the list of activities needed to complete the project that includes duration and start and finish dates. Resources needed for each activity (man-hours and cost, and, where applicable, materials and/or services) are loaded into the schedule to determine if the resource requirements are achievable and realistic.

Schedule Baseline - The duration and sequence of project activities and the commitment dates by which major project activities must be accomplished. The approved project schedule is a component of the overall project plan. It provides the basis for measuring and reporting schedule performance.

Schedule Contingency - A duration of time and associated cost - based on the schedule risk analysis (and including residual schedule risks identified by the T&PRA).

Schedule Logic - Sequential relationship between activities that establishes order of accomplishment.

Schedule Performance Index (SPI) - The ratio of work performed to work scheduled (BCWP/BCWS). Ratio of work accomplished versus work planned, for a specified time period. The SPI is an efficiency rating for work accomplishment, comparing work accomplished to what should have been accomplished.

Schedule Variance ("SV") - The difference between the budgeted cost of work performed and the budgeted cost of work scheduled at any point in time (BCWP - BCWS).

Scope - The description of the functional performance requirements of a project that ensures constructability, operability and maintainability. This baseline also contains the work and tasks to be done in order to satisfy the project's performance requirements.

Surveillance - The act of monitoring or observing to verify whether an item or activity conforms to specified requirements, and to identify opportunities for improvement.

System - A collection of independent components integrated to perform a specific function or functions.

Team Execution Plan (TEP) - A control tool, internal to and maintained by the Project Team, which details the methods by which Project Execution Plan is to be successfully managed. The TEP is a living document that will be revised throughout the life of the project. The degree of detail necessary in the Team Execution Plan is determined by the Project Manager and will likely be proportional to the degree of perceived project risk (tailored approach). Additionally, either this document or the Project Execution Plan will reference the locations of contractor-level baselines.

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Technical Baseline - All documents, including all safety documentation, used to identify, justify and demonstrate the physical, functional or operational requirements of configuration controlled structures, systems and components.

Technical & Programmatic Risk Analysis (T&PRA) Contingency - An amount of cost Contingency added to the cost estimate to allow for the probability of occurrence of technical and programmatic risks which are not included in the traditional cost Estimate Contingency analysis (Note: Technical Risks - Possible impacts associated with developing a new design/process [or approach] either to provide a greater level of performance or to accommodate some new requirements or constraints. Programmatic Risks - Possible disruptions caused by decisions, events, or actions that affect project direction, but are outside the project manager's control).

Technical Risk - Any technical factor, element, constraint, or course of action that introduces as uncertainty of outcome or the possibility of deficiencies, inadequate performance, schedule delays or cost overruns.

Terminal WBS Element - The lowest level of the WBS structure.

Total Estimated Cost (TEC) - The estimated cost for the project, including the costs of land and land rights, engineering, design, and inspection cost, direct and indirect construction costs, and initial equipment necessary to place the plant or installation in operation. TEC includes costs for corrective action for any deficiencies attributable to design and/or construction during Testing; cost of all as-built drawings and design bases; cost of the Safety Analysis Report (SAR); and costs of spares and Contingency. TEC excludes: WSRC indirect costs that will continue regardless of construction activity; costs of WSRC support activities performed for internal management and technical support of the project manager by non-dedicated personnel.

Total Project Cost (TPC) - Cost of the project including all of the TEC, the cost of all preliminary design, conceptual engineering, research and development, project support for a given project, and the cost of transition to operations plus all other costs identifiable and related to the project.

Trend - Deviation from the current trend forecast and/or the associated schedule.

Trend Analysis - A systematic evaluation of monitored parameters to identify and predict changes in the performance of a system or component.

Trend Base - The latest approved project cost and schedule, from which deviations are quantified and measured. The Trend Base is the latest approved Critical Decision (CD) baseline, or authorized "rebaseline".

Trend Forecast - The Trend Base, plus resolved trends. This is the basis against which a pending trend is evaluated.

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Trend Notice - A summary level document used to identify and describe a trend.

Undistributed Budget (UB) - Budget associated with specific work scope or contract changes that have not been assigned to a Control Account or summary-level Planning Package.

Variance Analysis - The comparison of the actual and forecast progress, actual costs, and the cost and schedule ranges, current phase budgets and schedules, or cost and schedule baselines established for the work in order to determine deviation from plans.

Variance At Completion - The mathematical difference between the budgeted amount to complete and the estimated amount to complete the task. ($VAC = BAC - EAC$)

Work Breakdown Structure (WBS) - The integrating tool used to organize projects and segmented tasks for planning, budgeting, estimating, scheduling, work authorization, cost accumulation and performance reporting purposes. The WBS framework organizes and graphically displays elements representing work to be accomplished in logical relationships.

Work Breakdown Structure (WBS) Dictionary - A summary level description of the scope of work addressed by each WBS element.

Work Package – A breakdown of the Control Account into discrete measurable tasks with a definitive start and stop date, and can be used to measure work performance or earned value. A work package may include the collection of documents used to authorize work, provide instructions for the work, and document the accomplishment of the work.

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Acronyms List

ACWP	Actual Costs of Work Performed
BAC	Budget at Completion
BAC_(PMB)	BAC equals PMB
BAC_(TPC)	BAC at the TPC level = BAC + Contractor Contingency + DOE Contingency
BCP	Baseline Change Package
BCWP	Budgeted Cost of Work Performed
BCWS	Budgeted Cost of Work Scheduled
CA	Control Account
CAM	Control Account Manager
CAP	Control Account Plan
CAS	Cost Accounting Standards
CCB	Change Control Board
CD	Critical Decision
CE	Capital Equipment
CFO	Chief Financial Officer
CFOD	Chief Financial Officer Division
CLS	Consolidated Labor System
CO	Contracting Officer
CPB	Contact Performance Baseline
CPI	Cost Performance Index
CPM	Critical Path Method
CPR	Cost Performance Report
CV	Cost Variance
D&D	Decommissioning and Deactivation
DOE	Department Of Energy
DOE-SR	Department of Energy – Savannah River Operations Office
DP	Defense Programs
EAC	Estimate at Completion
ECN	Emergency Change Notice
EIR	External Independent Review

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EM	Environmental Management
ER	Environmental Restoration
ESS	Essential Site Services
ETC	Estimate to Complete
EVMS	Earned Value Measurement System
FAC	Forecast At Completion
FY	Fiscal Year
FYF	Fiscal Year Forecast
FYTD	Fiscal Year To Date
G&A	General and Administrative
GFSI	Government Furnished Services and Items
GPP	General Plant Project
IBARS	Integrated Budget, Accounting & Reporting System
IBS	Integrated Budget System
IPABS	Integrated Planning, Accountability, and Budgeting System
IPS	Integrated Project Schedule
LCCE	Life Cycle Cost Estimate
LI	Line Items
LOE	Level of Effort
MARS	Management Analysis and Reporting System
MC	Management Challenge
MCS	Management Control System
MS	Milestone
NOA	Notice of Authorization
NNSA	National Nuclear Security Administration
OBS	Organization Breakdown Structure
OPC	Other Project Costs
OPEX	Operating Expense Funded Project
PAR	Provisional Authorization Request
PARS	Project Assessment and Reporting System
PBB	Project Budget Base

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PBI	Performance Based Incentive
PBS	Project Baseline Summary
PEP	Project Execution Plan
PMB	Performance Measurement Baseline
PMCS	Project Management Control System
PP	Planning Package
RAM	Responsibility Assignment Matrix
RPA	Request for Project Authorization
SOW	Statement of Work
SPI	Schedule Performance Index
SRS	Savannah River Site
STARS	Standardized Tracking and Reporting System
SV	Schedule Variance
TACS	Time and Attendance Collection System
TCPI	To Complete Performance Index
TEC	Total Estimated Costs
TEP	Team Execution Plan
TPC	Total Project Cost
UB	Undistributed Budget
VAC	Variance-at-Completion
VAR	Variance Analysis Report
WBS	Work Breakdown Structure
WP	Work Package
WSRC	Westinghouse Savannah River Company
FYP	Yearly Forecast Plan

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The following excerpts are from the DOE Manual 413.3-1 Chapter 12.

12.4 INDUSTRY STANDARD

Industry has long recognized the importance of earned value in program and project management and the industry-developed ANSI/EIA 748-A-1998, Earned Value Management Systems defines 32 criteria for implementing earned value management. These 32 criteria have become the Department standard for EVMSs. The criteria are grouped into five major categories:

- Organization
- Planning, scheduling, and budgeting
- Accounting Considerations
- Analysis and Management Reports
- Revisions and Data Management

ANSI/EIA 748-A-1998 also contains a section on “Common Terminology” which provides definitions of the terms and concepts used to build and understand the application of EVMS. In addition, there is a section, “EVMS Process Discussion,” to aid in the understanding and application of earned value management techniques. The additional sections of the standard provide a comprehensive and practical understanding of the principles of earned value management. This understanding, however, should be coupled with actual experience in the application of the principles and guidelines in a comprehensive business management system environment. The Department will publish a guide for implementing EVMS in the near future.

12.7 CRITERIA CONCEPT

No single EVMS can meet every management need for performance measurement. Due to variations in organizations, projects, and working relationships, it is impractical to prescribe a universal system for cost and schedule control, relative to the scope of the contract. The criteria approach establishes the overall framework within which an adequate integrated cost/schedule/technical management system will fit.

The criteria provided in the standard provides the basis for determining whether a contractor’s EVMS is acceptable. The criteria allow EVMSs to be adapted to fit the specific needs of various project and contract types. The criteria should be applied appropriately based on common sense and practicality, as well as sensitivity to the overall requirements for performance management. The procedures described in this chapter provide a basis to assist the government and the contractor in implementing an acceptable EVMS.

The criteria concept does not describe a system, nor does it purport to address all of the contractor’s needs for day-to-day or week-to-week internal control, such as informal

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communications, internal status reports, reviews, and similar management tools. These management tools are important and should augment and be derived from the cost/schedule EVMS and should be an effective element of program and project management by both the contractor and the government.

The criteria represent the standards against which the validity of contractors EVMSs are assessed. The criteria approach continues to provide contractors the flexibility to develop and implement effective management systems tailored to meet their respective needs, while still ensuring fundamental earned value management concepts are provided. The criteria are reproduced below.

Organization

- Define the authorized work elements for the program. A work breakdown structure, tailored for effective internal management control, is commonly used in this process.
- Identify the program organizational structure, including the major subcontractors responsible for accomplishing the authorized work, and define the organizational elements in which work will be planned and controlled.
- Provide for the integration of the company's planning, scheduling, budgeting, work authorization and cost accumulation processes with each other, and as appropriate, the program work breakdown structure and the program organizational structure.
- Identify the company organization or function responsible for controlling overhead (indirect costs).
- Provide for integration of the program work breakdown structure and the program organizational structure in a manner that permits cost and schedule performance measurement by elements of either or both structures as needed.

Planning and Budgeting

- Schedule the authorized work in a manner which describes the sequence of work and identifies significant task interdependencies required to meet the requirements of the program.
- Identify physical products, milestones, technical performance goals, or other indicators that will be used to measure progress.
- Establish and maintain a time-phased budget baseline, at the control account level, against which program performance can be measured. Budget for far-term efforts may be held in higher level accounts until an appropriate time for allocation at the control account level. Initial budgets established for performance measurement will be based on either internal

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management goals or the external customer negotiated target cost, including estimates for authorized but undefinitized work. On government contracts, if an over-target baseline is used for performance measurement reporting purposes, prior notification must be provided to the customer.

- Establish budgets for authorized work with identification of significant cost elements (labor, material, etc.) as needed for internal management and for control of subcontractors.
- To the extent it is practical to identify the authorized work in discrete work packages, establish budgets for this work in terms of dollars, hours, or other measurable units. Where the entire control account is not subdivided into work packages, identify the far term effort in larger planning packages for budget and scheduling purposes.
- Provide that the sum of all work package budgets plus planning package budgets within a control account equals the control account budget.
- Identify and control level of effort activity by time-phased budgets established for this purpose. Only that effort which is unmeasurable or for which measurement is impractical may be classified as level of effort.
- Establish overhead budgets for each significant organizational component of the company for expenses which will become indirect costs. Reflect in the program budgets, at the appropriate level, the amounts in overhead pools that are planned to be allocated to the program as indirect costs.
- Identify management reserves and undistributed budget.
- Provide that the program target cost goal is reconciled with the sum of all internal program budgets and management reserves.

Accounting Considerations

- Record direct costs in a manner consistent with the budgets in a formal system controlled by the general books of account.
- When a work breakdown structure is used, summarize direct costs from control accounts into the work breakdown structure without allocation of a single control account to two or more work breakdown structure elements.
- Summarize direct costs from the control accounts into the contractor's organizational elements without allocation of a single control account to two or more organizational elements.
- Record all indirect costs which will be allocated to the contract.

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- Identify unit costs, equivalent units costs, or lot costs when needed.
- For EVMS, the material accounting system will provide for-
 - accurate cost accumulation and assignment of costs to control accounts in a manner consistent with the budgets using recognized, acceptable, costing techniques;
 - cost performance measurement at the point in time most suitable for the category of material involved, but no earlier than the time of progress payments or actual receipt of material; and
 - Full accountability of all material purchased for the program including the residual inventory.

Analysis and Management Reports

- At least on a monthly basis, generate the following information at the control account and other levels as necessary for management control using actual cost data from, or reconcilable with, the accounting system.
 - Comparison of the amount of planned budget and the amount of budget earned for work accomplished. This comparison provides the schedule variance.
 - Comparison of the amount of the budget earned the actual (applied where appropriate) direct costs for the same work. This comparison provides the cost variance.
- Identify, at least monthly, the significant differences between both planned and actual schedule performance and planned and actual cost performance, and provide the reasons for the variances in the detail needed by program management.
- Identify budgeted and applied (or actual) indirect costs at the level and frequency needed by management for effective control, along with the reasons for any significant variances.
- Summarize the data elements and associated variances through the program organization and/or work breakdown structure to support management needs and any customer reporting specified in the contract.
- Implement managerial actions taken as the result of earned value information.
- Develop revised estimates of cost at completion based on performance to date, commitment values for material, and estimates of future conditions. Compare this information with the performance measurement baseline to identify variances at completion important to company

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management and any applicable customer reporting requirements including statements of funding requirements.

Revisions and Data Maintenance

- Incorporate authorized changes in a timely manner, recording the effects of such changes in budgets and schedules. In the directed effort prior to negotiation of a change, base such revisions on the amount estimated and budgeted to the program organizations.
- Reconcile current budgets to prior budgets in terms of changes to the authorized work and internal replanning in the detail needed by management for effective control.
- Control retroactive changes to records pertaining to work performed that would change previously reported amounts for actual costs, earned value, or budgets. Adjustments should be made only for correction of errors, routine accounting adjustments, effects of customer or management directed changes, or to improve the baseline integrity and accuracy of performance measurement data.
- Prevent revisions to the program budget except for authorized changes.
- Document changes to the performance measurement baseline.