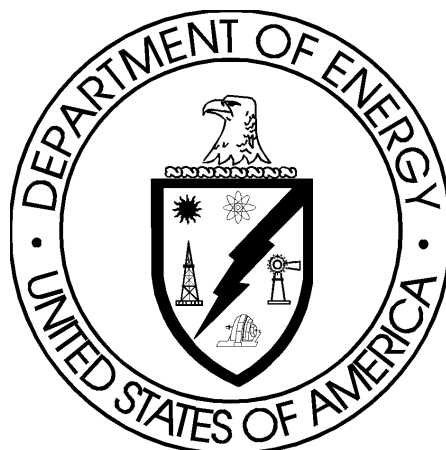


**NOT
MEASUREMENT
SENSITIVE**

**DOE G 413.3-16
9-24-08**

Project Transition/Closeout (CD-4)

[This Guide describes suggested non-mandatory approaches for meeting requirements. Guides are not requirements documents and are not to be construed as requirements in any audit or appraisal for compliance with the parent Policy, Order, Notice, or Manual.]



U.S. Department of Energy
Washington, D.C. 20585

AVAILABLE ONLINE AT:
www.directives.doe.gov

INITIATED BY:
Office of Management

FOREWORD

This Department of Energy Guide provides nonmandatory approaches for implementing the requirements of DOE O 413.3A, *Program and Project Management for the Acquisition of Capital Assets*, dated 7-28-06, and is for use by all DOE elements. Guides are not requirement documents and should not be construed as such. DOE Guides are part of the Departmental Directives Program and provide supplemental information that may be useful for fulfilling requirements in Orders, Manuals, and other regulatory documents.

TABLE OF CONTENTS

FOREWORD i

INTRODUCTION1

DISCUSSION1

1.0 TAILORING2

 1.1 Action..... 2

 1.2 Discussion..... 2

2.0 PROJECT PERFORMANCE AND COMPLETION CRITERIA2

 2.1 Action..... 2

 2.2 Discussion..... 2

 2.3 Guidance..... 3

3.0 READINESS ASSESSMENT/OPERATIONAL READINESS REVIEW4

 3.1 Action..... 4

 3.2 Discussion..... 4

 3.3 Guidance..... 5

4.0 COMMISSIONING PLAN7

 4.1 Action..... 7

 4.2 Discussion..... 8

 4.3 Guidance..... 10

5.0 TRANSITION TO OPERATIONS PLAN12

 5.1 Action..... 12

 5.2 Discussion..... 12

 5.3 Guidance..... 13

6.0 QUALITY ASSURANCE17

 6.1 Action:..... 17

 6.2 Discussion:..... 17

 6.3 Guidance..... 17

7.0 ENVIRONMENTAL MANAGEMENT SYSTEM REVISION.....18

 7.1 Action..... 18

 7.2 Discussion..... 18

 7.3 Guidance..... 19

8.0 SAFEGUARDS, SECURITY, AND SAFETY PLANS19

 8.1 Action—Documented Safety Analysis/Safety Evaluation 19

 8.2 Action—Hazard Analysis 20

 8.3 Action—Security Vulnerability Assessment 20

 8.4 Action—Cyber Security..... 21

**9.0 POST CD-4 APPROVAL REQUIREMENTS (RELATED TO
TRANSITION/CLOSEOUT).....22**

 9.1 Action—Post Implementation Review for Information Technology 22

 9.2 Action—Lessons Learned..... 25

 9.3 Action—Operational Documentation 25

 9.4 Action—Final Project Closeout Report 28

APPENDIX A- REFERENCES A-1

APPENDIX B- ACRONYMSB-1

INTRODUCTION

DOE projects are typically divided into Initiation Phase, Definition Phase, Execution Phase, and Transition/Closeout Phase. This Guide is developed to provide processes and information for DOE project transition/closeout (Figure 1). It is based on the principles and requirements taken from DOE O 413.3A. This Guide addresses project transition to operations, lessons learned, physical closeout, and financial closeout. This Guide is written for the federal project director (FPD) to ensure that processes progress smoothly and that projects meet asset management goals and financial closure requirements of DOE.

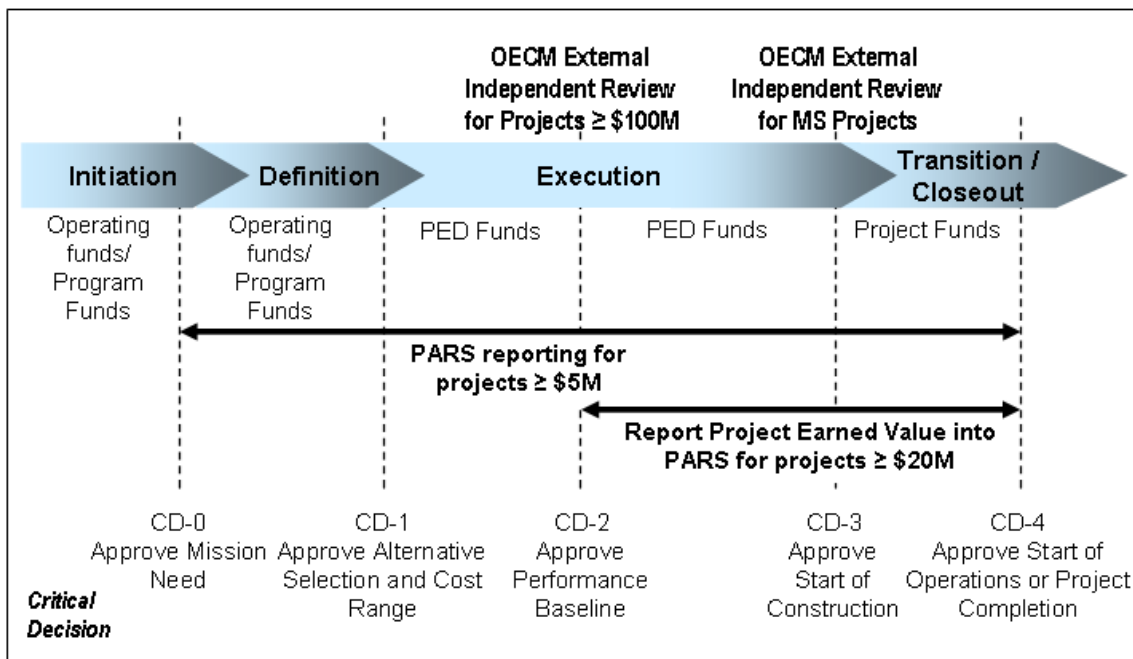


Figure 1. Typical DOE Acquisition Management System for Line-Item Projects.

DISCUSSION

Part of the transition/closeout process from construction and/or remediation to operations or long term stewardship is to develop cost, schedule, and technical parameters that define how the project is to be completed. This process, which is the FPD's responsibility, should be as carefully planned and executed as any other project phase.

Converting a facility from a construction or remediation project to operating or long term stewardship status requires that technical and administrative matters be addressed during early phases of the project. As early as the Definition Phase, the FPD should initiate planning for and development of documentation for transition to operations.

Planning should include development of operations and maintenance manuals, generation of as-built drawings, identification of operations budget, and the procurement of any materials required for initial operations. Planning should be developed in conjunction with the DOE

contractor or user/operating organization who will operate the facility to encourage complete mutual understanding.

DOE project transition, closeout, and termination processes can be applied to all capital funded and expense funded projects that meet DOE criteria for capitalization. The processes described in this Guide should be used in preparation for project transition/closeout and can apply to a portion of a project that functions independently of other portions of a project.

Note: All personal property should follow requirements in DOE O 580.1, *Department of Energy Personal Property Management Guide*.

1.0 TAILORING

1.1 Action

Tailoring is not a specific DOE O 413.3A requirement for Critical Decision- 4(CD-4) Project Transition/Closeout but is subject to the project acquisition executive's approval and should be identified as early as possible. The tailoring strategy should be developed as part of the Project Execution Plan (PEP) and should be reviewed and updated prior to each impacted Critical Decision request. Information on the development of PEP can be found in the PEP guide.

1.2 Discussion

Tailoring should consider the risk, complexity, visibility, cost, safety, security, and schedule of a project. Tailoring planning is addressed only as a reminder to the FPD to lead and implement a tailored approach to all activities included in this Guide. Additional information on tailoring can be found in the PEP guide.

2.0 PROJECT PERFORMANCE AND COMPLETION CRITERIA

2.1 Action

Verify that Key Performance Parameters or Project Completion Criteria have been met and mission requirements achieved.

2.2 Discussion

Key Performance Parameters and Project Completion Criteria are defined in the PEP during the project Definition and Execution phases. The validation of Project Completion Criteria and Key Performance Parameters is a key activity for demonstrating the project has met DOE mission requirements. Additional information on preparing a PEP can be found in the PEP guide.

Key Performance Parameter is defined in DOE 413.3A as “a vital characteristic of a project or facility mission.”

Tracking progress throughout project execution is accomplished using earned value data and other performance indicators providing ongoing verification of progress towards meeting Project Completion Criteria. Final verification that Key Performance Parameters and/or Project

Completion Criteria have been met should be closely linked with project performance testing (or project commissioning, see section 4) and DOE acceptance as defined in the PEP. The extent to which completion is documented depends on the nature of the project. At a minimum the verification of meeting Project Completion Criteria should be documented with a statement of acceptance which lists all remaining work (corrective actions or punch list items) to be completed prior to final closeout including responsible individuals, completion dates, and estimated resource needs (if any).

2.3 Guidance

A key element in verifying that Project Completion Criteria have been met is the Checkout process. Checkout is an activity performed largely in parallel with acceptance testing and should be completed prior to acceptance from the construction contractor. Checkout includes a facility walk-through for identification of visible deficiencies. Checkout, in conjunction with acceptance testing, provides the basis for verifying that Project Completion Criteria have been met. For nuclear or environmental remediation projects, a completed Readiness Assessment (RA) or Operational Readiness Review (ORR) should be used to support that personnel, training, equipment, and programs/processes are in-place for safe and compliant operation of the facility (see section 3).

Equipment, systems, and facility checkouts/walk-throughs are typically a combined effort involving the user/operating organization and the project organization (DOE and contractor). The purpose of a walk-through is to visually inspect completed work and identify deficiencies. Walk-throughs are performed by establishing combined project organization and user/operating organization teams to review and inspect structures, systems, and components, and comparing the completed product against approved requirements and design documents.

Discrepancies and deficiencies are documented, corrective actions identified, responsible individuals assigned, and a corrective action completion dates identified. Corrective actions are tracked to completion and then re-inspected for acceptability. Identification and correction of safety deficiencies should be a key component of all checkout/walk-through activities. Funding for all checkouts, walk-throughs, and corrective action activities is a project responsibility.

Documentation of equipment, systems and facility acceptance should include project acceptance checklists. Depending on the size and complexity of the project and project management structure, there should be multiple levels of acceptance checklists that are tiered to allow more detailed reviews and documentation for the acceptance of sub-systems and equipment. A higher level checklist signoff can be accomplished based on the successful completion of the lower level component reviews.

The PEP should define the process for documenting the transition/closeout process from construction and/or remediation to operations or long term stewardship. Specific information regarding what should be included in the PEP can be found in the PEP guide. Ultimately an inspection and acceptance report is issued, documenting that Project Completion Criteria have been met, technical performance has been demonstrated acceptable, and the mission need has been satisfied. This allows the FPD to certify that work is complete.

3.0 READINESS ASSESSMENT/OPERATIONAL READINESS REVIEW

3.1 Action

Complete a Readiness Assessment (RA) or Operational Readiness Review (ORR) and resolve all pre-start findings ensuring operations and maintenance staff are properly trained and qualified to operate and maintain the equipment, system, and facilities being turned over. ORRs and RAs are not required for projects involving non-nuclear equipment, operations or facilities, unless required by the head of the field organization or acquisition executive.

3.2 Discussion

A significant challenge associated with DOE projects is planning and managing the transition of a project from construction to operation. Although the ORR/RA is conducted during the project execution phase in preparation for CD-4, a project will not be successful in completing the readiness review unless adequate planning is started early during the conceptual phase.

As stated in DOE-STD-3006-2000, *Planning and Conduct of Operational Readiness Review*, the guidance contained in the standard should be useful to line managers when specifying other readiness review methods and approaches for startup of radiological facilities or non-nuclear facilities. DOE program requirements (or guidance) are available for other readiness reviews; for example, accelerator projects should reference DOE O 420.2B *Safety of Accelerator Facilities*, for accelerator readiness review requirements.

3.2.1 Focus on Achieving Readiness

A common mistake in readiness planning is to focus on the scope of the readiness review, instead of identifying the scope of work required to make the facility/equipment/processes ready to be operated. Readiness preparation should include:

- Planning for the training and qualification of operations, maintenance, and surveillance personnel;
- Conducting the necessary operational facility, systems, and equipment tests;
- Developing and approving the safety analysis including implementation of the safety and security analysis requirements, operations, maintenance, and surveillance procedures; and
- Documenting the completed work required to achieve readiness.

Readiness planners should be sensitive to how facility, systems, and equipment interface with existing operations, and plan to include those interfaces in readiness preparations.

3.2.2 Early Determination of the Readiness Review

Readiness planning should begin early in the project lifecycle; ideally no later than conceptual design. The FPD, with recommendation from the IPT, decides the type of readiness review to be

performed to verify initial operations and the authorization authority (AA) or startup authority. Management documents (PEP, project data sheet, etc.) should identify readiness planning schedule and cost data. For nuclear facilities and equipment, the startup notification report is the formal mechanism for the AA to approve the level of readiness review to be conducted. The project should be identified on the startup notification report prior to CD-2 supporting development of the project baseline. For non-nuclear facilities and equipment, line management should define the process and develop a detailed schedule used to verify that the facility/operations are ready.

3.2.3 Developing a Project Approach to Readiness

Readiness planning includes—

- Assigning a responsible individual (i.e., a readiness lead) for the project's readiness preparation activities,
- Ensuring the activities are included in the project's WBS and WBS dictionary,
- Preparing a conceptual resource loaded schedule with milestones, and
- Preparing a conceptual cost estimate.

The user/operating organization is key to the successful definition of work required to achieve the necessary level of readiness to conduct operations, and should be a key member of the IPT starting at the conceptual design phase. Additional information on IPT membership can be found in the IPT guide. Readiness implementation should include a phased approach with a staged occupancy/startup.

A desirable (but not mandatory) activity for the readiness lead would be to prepare a readiness/startup plan to be used in support of the readiness preparation and review. This plan should be tailored to review needs. Prior to CD-3, the readiness/startup plan should provide sufficient detail in the project schedule to clearly understand relationships between facility, systems, or equipment operations documentation, user/operating personnel training, approval of safety and security basis documents, testing of facility/systems/equipment, and the path to the readiness review. The detailed schedule should be used by the IPT to successfully navigate the next phase of the project. As with any other project activity, readiness preparations and the associated required reviews should be planned, assigned, scheduled, estimated, and managed as a sub-project within the larger project.

3.3 Guidance

The readiness lead should be project organization or user/operating organization personnel. The FPD should have overall responsibility to ensure adequate continuing oversight and progress is maintained throughout all the readiness preparation activities. The FPD ensures the review provides an independent and credible assessment of the project's readiness and that the operating organization remains fully involved throughout the execution phase of the project.

A large part of the RA/ORR is a review of project documentation. A vital function of the readiness lead ensures that project documentation is identified, approved (as appropriate), filed, and maintained throughout the project. The project documentation should be maintained in a centralized, controlled location and be readily retrievable on short notice. In addition, a successful RA/ORR requires communication and coordination among several organizations, including major contractors and subcontractors, DOE Headquarters, DOE field office/operations office, State agencies and regulatory agencies.

3.3.1 Operational Readiness Review Scope

An ORR is a disciplined, systematic, documented, performance-based examination of facilities, equipment, personnel, procedures, and management control systems for ensuring a facility can be operated safely and securely within its approved safety and security envelope as defined by the facility safety basis and security plan. The ORR scope is defined in the Plan of Action which address all of the core requirements identified in DOE O 425.1C, *Startup and Restart of Nuclear Facilities*. A tailored approach should be used in defining the depth of the ORR based on core requirements and is documented in the ORR Implementation Plan approved by the ORR Team Leader. The ORR is effectively the mechanism for the project organization to demonstrate that

- the facility/system/equipment is in a state of readiness to safely and securely conduct operations in accordance with the safety basis and security plan;
- management control programs are in place to ensure safe and secure operations can be sustained; and
- user/operating organization personnel are trained and qualified.

The ORR provides the basis for the government's acceptance of the asset.

An RA is conducted to determine a facility's readiness to startup or restart when an ORR is not required or when a contractor's standard procedures for startup are not judged by the contractor or DOE management to provide an adequate verification of readiness. For restarts of nuclear facilities not requiring an ORR as defined in DOE O 425.1C, *Startup and Restart of Nuclear Facilities*, DOE line management evaluates (and ensures that contractor line management evaluates) the need to perform an RA prior to restart.

3.3.2 Certification and Verification

The following are prerequisites for starting the DOE ORR:

- DOE line management has received correspondence from the responsible contractor and/or DOE user/operating organization certifying that the facility/system/equipment is ready for startup and this has been verified by the ORR.
- DOE line management has verified that the contractor and/or DOE user/operating organization preparations for startup have been completed.

- DOE line management has certified that it meets, as a minimum, the applicable DOE-specific core requirements.

At the start of the DOE ORR, all startup actions should be completed, with the exception of a manageable list of open pre-start findings that have a well-defined schedule for closure. These results should be reviewed by the DOE ORR team. In the certification and verification process, DOE line management documents the actions taken to verify DOE field office and contractor readiness, including a review of closed contractor review findings, assessments of completed defined prerequisites, and other assessments performed to ascertain readiness.

In addition to the preceding information, some specific recommendations related to performing RA/ORR activities follow:

- Contractor ORRs should not start prematurely.
- Readiness should be achieved before starting the review.
- ORRs are to confirm readiness, not achieve readiness.
- Contractors should conduct a management self assessment prior to starting the ORR.
- DOE should reduce last minute perturbations by providing the ORR/RA implementation plan to oversight groups well ahead of the review.
- When planning the contractor and DOE ORR should include not only time for conducting interviews and observations but also time to consolidate individual preparation, including preparing forms, and analyzing data.

Readiness is not achieved until all pre-start findings have been resolved. DOE line management must ensure that all prestart findings of the DOE Operational Readiness Review or Readiness Assessment prior to startup or restart of the facility are resolved. If appropriate, prestart findings from an RA must be resolved and approved by the authorization authority.

4.0 COMMISSIONING PLAN

NOTE: Much of this section is pulled from the Portland Energy Conservation's *Model Commissioning Plan and Guide Specifications*, dated February 1998 (available online at <http://www.peci.org/CxTechnical/mcpgs.html>). It has been modified, in places, to fit DOE's needs for developing Commissioning Plans.

4.1 Action

Issue a Checkout, Testing, and Commissioning Plan that identifies subtasks, systems, and equipment. The commissioning plan ensures that the equipment, systems, and facilities including high performance sustainable building systems, perform as designed and are optimized for

greatest energy efficiency, resource conservation, and occupant satisfaction. The Commissioning Plan includes checkout and testing criteria required for initial operations.

*** Not applicable to clean-up projects.*

4.2 Discussion

The DOE PM Glossary (online at <http://management.energy.gov/documents/DOE20PM20Glossary.pdf>) defines commissioning as a systematic process for achieving, verifying, and documenting that the performance of the facility or system and that its various components meet the design intent and the functional and operational needs of the owners, users, and occupants. Commissioning is a systematic process of ensuring that building/facility systems perform interactively. This is achieved beginning in the design phase by documenting the design intent and continuing through construction, acceptance, and the warranty period with actual verification of performance, operation and maintenance (O&M) documentation and the training of operating personnel.

Commissioning, including checkout and testing, is performed to demonstrate structures, systems, and components (SSC)/structures, systems, and equipment (SSE) meet or exceed previously established project requirements. The Key Performance Parameters and Project Completion Criteria (see section 2) should be defined or referenced in the PEP. Commissioning and the resulting transition to operations are best achieved by—

- early project planning, organization, and preparation for transition;
- systematically performing required inspections and testing; and
- providing adequate documentation of testing and transition activities.

If commissioning and testing are required for project transition and closeout, a commissioning authority should be designated as a member of the integration project team (IPT) at Critical Decision-1 (CD-1). The Commissioning Authority is responsible for commissioning and testing if the IPT believes Commissioning is required for project transition and closeout. The Commissioning Authority approves the Commissioning Plan including the elements described in Section 3. Additional information on membership of the IPT can be found in the IPT guide. If commissioning and testing costs are considered significant enough to influence alternative analysis, a commissioning authority should be designated at CD-0 to be part of the gap or alternative analysis process.

4.2.1 Commissioning Mission

4.2.1.1 Objective

The objectives of the commissioning plan specifications during the design phase are as follows.

1. Ensure that the design team applies commissioning concepts to the design, e.g., clear and complete design intent documentation is developed, clear and concise process system and integrated system performance test requirements and acceptance criteria are specified, defined, and conveyed for inclusion in the construction documents, and commissioning-focused design reviews are conducted.
2. Ensure that the design team prepares commissioning specifications and specific forms or data sheets for documenting construction inspections and checks and ensure the Commissioning Authority develops a Commissioning Plan for inclusion in the construction documents.

By meeting the above objectives during the design phase, the following can be achieved.

- Commissioning work can be accurately bid.
- The commissioning process can be effectively executed by the contractor.
- Contractors or DOE user/operating organization can understand how to efficiently execute the commissioning process.
- There is a systematic, efficient and enforceable method to accomplish the commissioning objectives.
- The commissioning objectives are met by—
 - ensuring that applicable equipment and systems are installed properly and receive adequate operational checkout by installing contractors,
 - verifying and documenting proper performance of equipment and systems,
 - ensuring that O&M documentation left on site is complete, and
 - ensuring that the owner's operating personnel are adequately trained.

4.2.1.2 Commissioning Scope Description

The scope description provides a suggested outline (and checklist) for use in preparing a commissioning plan. A tailoring approach should be applied to the development of the commissioning plan, as necessary for the various types of DOE project scope, complexity, and associated project risks. This document provides guidance and useful references related to each of the outline items listed. The FPD and commissioning authority can refer to the *Model Commissioning Plan and Guide Specifications*, Portland Energy Conservation, dated February 1998 (online at <http://www.peci.org/CxTechnical/mcpgs.html>) for further details.

The commissioning plan describes the high-level activities required for the project, such as testing, startup, transition to operations, staffing, training, documentation preparation, etc. The Commission Plan scope should be under configuration control.

4.3 Guidance

4.3.1 Commissioning Planning

The commissioning plan is comprised of the following four separate documents designated as “parts.”

Part I. *Commissioning Requirements–Design Phase*

Part II. *Commissioning Plan–Design Phase*

Part III. *Commissioning Guide Specifications*

Part IV. *Commissioning Plan–Construction Phase*

A brief description of each part follows:

4.3.1.1 Part I. Commissioning Requirements—Design Phase

The Commissioning Requirements–Design Phase relates to actions to be carried out during the development of the contract documents. Included are lists of the responsibilities for each member of the design team and for all players during the construction phase. If a bid for an architectural/engineering (A/E) firm is to be implemented, this document should be included in the request for proposal (RFP).

4.3.1.2 Part II. Commissioning Plan—Design Phase

The Commissioning Plan–Design Phase guides the commissioning activities during the design phase. It provides details of responsibilities called out in Part I, *Commissioning Requirements–Design Phase* for the architect, design engineers, commissioning manager, construction manager, project manager, and federal project director. The plan describes the duties of the design team and commissioning authority in developing the site-specific commissioning specifications and for developing the first two drafts of the Commissioning Plan–Construction Phase.

4.3.1.3 Part III. Commissioning Guide Specifications

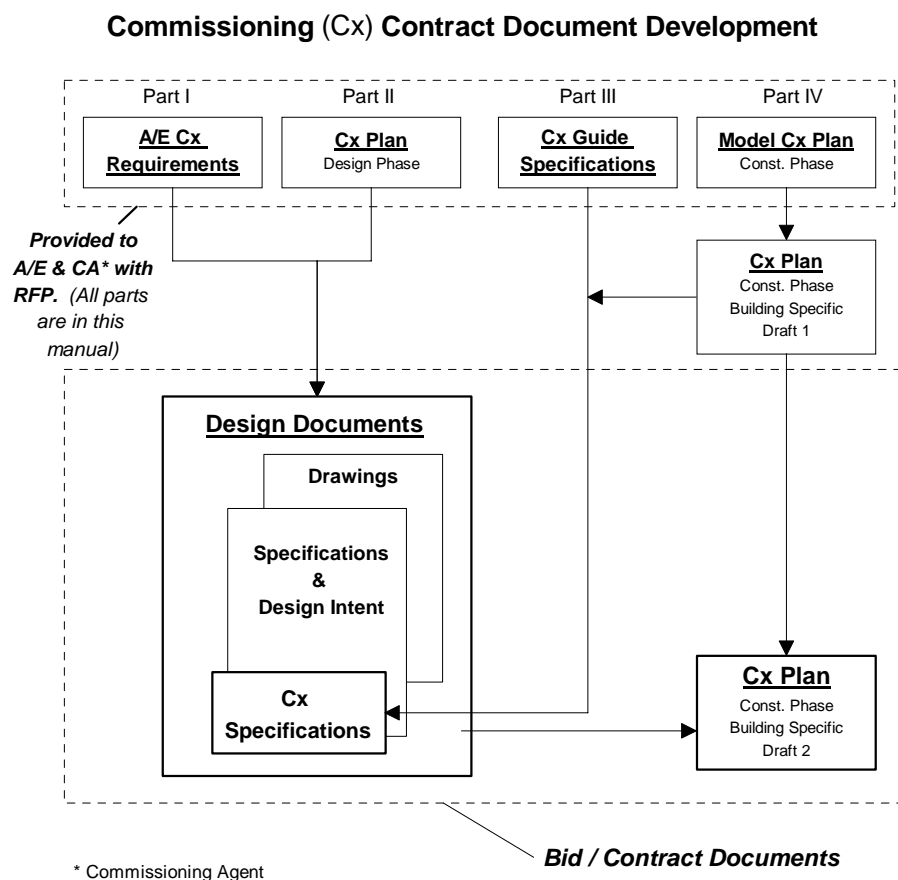
The commissioning guide specifications contain recommended language that describes both the requirements and the process to incorporate commissioning into construction specifications. All divisions and sections that relate to commissioning should include language ensuring that the contractors or DOE user/operating organization are clearly informed regarding their commissioning responsibilities. An explanation of the commissioning process is also provided.

In addition, pre-functional checklists and sample functional tests are included for many common types of equipment and systems. There are few systems and components that lend themselves to pre-functional checklist (as listed within the PEIC referenced earlier in this document) or generic type of testing, save the HVAC systems for normal building habitability. Most new facilities have very unique and often one of a kind process systems requiring a dedicated test team to validate and put into service.

4.3.1.4 Part IV. Commissioning Plan—Construction Phase

The Commissioning Plan—Construction Phase is developed in draft form for the specific project during the design phase, which provides direction for the development of commissioning specifications by the design team. During the construction phase, the plan provides direction for the commissioning tasks during construction. The plan focuses on providing support to the specifications and provides forms for application of the commissioning process.

The following graphic illustrates the above process.



For details of each section including more detailed scope, roles and responsibilities, checklists, required documents, see “Model Commissioning Plan and Guide Specifications”.

5.0 TRANSITION TO OPERATIONS PLAN

5.1 Action

*Issue a Project Transition to Operations Plan** that clearly defines the basis for attaining initial operating capability, full operating capability, or project closeout, as applicable. The plan includes documentation, training, interfaces, and draft schedules.*

*** Not applicable to clean-up projects.*

5.2 Discussion

The Transition to Operations Plan (TOP) is a prerequisite to obtain Secretarial acquisition executive/acquisition executive approval for CD-4. The purpose of the TOP is to identify and plan for project transition phase activities that are required for approval to begin initial or full operations of project deliverables. The overall goal is to ensure a smooth turnover of the project deliverables (i.e., equipment, facility, product, or asset) and a seamless hand-off of responsibility/ownership from the project organization to the user/operating organization. A TOP is prepared to ensure efficient and effective management of the transition scope; align schedules, identify resources to facilitate project transition; and provide proper customer/sponsor/stakeholder interfaces.

A TOP is an agreement between the project organization (FPD and project manager), DOE program, and the user/operating organization that describes the process for implementing transition to operations activities. A tailored approach should be used when developing the TOP based upon the programmatic importance and complexity of the project. Systems engineering techniques should be applied when developing and implementing the TOP.

The key to a successful transition to operations is early, thorough, forward-looking planning. The TOP is a living document that should be kept current by the IPT throughout the project life-cycle. For additional information on the responsibilities of the IPT see the IPT guide. A preliminary TOP should be included/referenced in the PEP. Project funded activities associated with transition to operations should be identified and incorporated into the project performance baseline, and DOE program funded activities associated with transition to operations should be planned for by the program. A draft TOP should be started during design and completed as soon as possible after final design is completed. The final TOP is completed during construction before the project's integrated startup and commissioning activities, and is a prerequisite for CD-4 under DOE O 413.3A. For projects that are implemented in phases, the TOP should be started during the initial phase of design, with incremental updates to the plan made as necessary during project phases.

IPT members who are responsible for TOP should prepare the plan. It is very important to have participation (i.e., buy-in) by the user/operating organization and DOE program. In addition, participation by other key stakeholders should be considered.

The TOP should be approved by the project's DOE program sponsor, the DOE federal project director, the contractor project manager and the user/operating organization in accordance with the roles, responsibilities and authorities outlined in the PEP. The TOP should be under configuration control.

5.3 Guidance

References and topics to be considered are discussed below. Using a tailored approach, the FPD and the IPT should assess each component of the project and their applicability for project transition to operations planning. The TOP should be comprehensive to address all transition phase activities but does not need to be voluminous and should reference other supporting documents as appropriate.

5.3.1 Project Description and Mission

The summary project description from the PEP or project data sheet could be used.

The description should include detailed benefits that DOE and key stakeholders will realize at the completion of the project transition phase and list potential negative impact on DOE mission including project cost and schedule, security, environmental, safety, technical and operational dependencies or efficiency if transition to operations is delayed.

5.3.2 Planning Management, Organization and Control

Describe the transition phase scope and activities such as testing (components, equipment, subsystems, systems, facilities, and software), activation, acceptance, beneficial occupancy, startup, commissioning, staffing, training, and readiness review. The transition to operations scope should be under configuration control (see section 5.3.10 below).

5.3.3 DOE Orders and Program Guidance

List the DOE Directives and program guidance applicable to the transition to operations scope.

5.3.4 Key Transition Phase Steps and Deliverables

Key transition phase steps should include project activities that should be undertaken to meet requirements identified in applicable DOE Directives and can include agreements between DOE program offices, or with regulatory agencies and other stakeholders (e.g., memorandum of agreement). The transition phase deliverables include the list of CD-4 prerequisites provided in Table 2 of DOE O 413.3A. Transition phase deliverables can also include transition to operation documentation. The key transition phase steps and deliverables should be under configuration control (see section 5.3.10 below).

5.3.5 Strategy

Consistent with the PEP and project performance baseline, describe the strategy for completing the transition to operations scope, steps and deliverables. The strategy can be supported by a

sequence logic/network diagram or a Gantt chart. DOE Headquarters program personnel should be actively engaged in the strategy development because of its programmatic importance to DOE missions and budget planning.

5.3.6 Operation or Long Term Stewardship Cost

Summarize the program's annual and life-cycle cost estimates for operation or long term stewardship of the project deliverables. Include the cost basis and assumptions for operation, maintenance, decontamination & decommissioning, and/or future surveillance activities, as appropriate.

5.3.7 Organizations, Stakeholders and Public Interfaces

Describe the transition phase information and communications interfaces between DOE and contractor organizations, stakeholders, and the public. Identify the information needs and process for meeting those needs. Transition to operations interfaces should be consistent with the PEP, the project organization chart, and organization breakdown structure.^{1,2,40}

5.3.8 Transition Team Roles and Responsibilities

Identify the membership and leader of the transition team, and describe their roles and responsibilities for completing all of the transition to operations activities. Lines of communication should be clearly defined in this section. A responsibility assignment matrix (RAM) could be used.

5.3.9 Configuration Control

The PEP provides the configuration control process and responsibilities for the project funded transition to operations scope. Describe or reference the process and responsibilities for non-project (i.e., DOE program) funded transition to operations scope. Describe how these processes will be integrated.

5.3.10 Project Key Performance Elements and Completion Criteria

Describe the initial operations and/or full operations key performance requirements, and list the Project Completion Criteria (from the PEP or other project documentation, e.g., project functional requirements). Summarize the plan and process for verifying that these standards and criteria can be met (see section 2.0 above).

5.3.11 Schedule and Key Milestones

Provide a comprehensive, integrated (project and program), transition to operations schedule and identify key milestones. The schedule and key milestones should be consistent with the integrated project schedule, the transition to operations strategy, and sequence logic/network diagrams.

5.3.12 Readiness Review

Consistent with the PEP, identify the type of readiness review process, readiness review preparation roles and responsibilities, schedule and key milestones, interfaces with other transition to operations activities, resource requirements, readiness review documentation (e.g., contractor and DOE: plan of action, implementation plan, final report, and resolution of findings), and proposed approval authority (see section 3.3.1 above).

5.3.13 Operations and Maintenance Management

Identify the operations and maintenance program requirements for facility equipment, structures, systems and components. This section could reference the operating and maintenance manuals for project deliverables. Also identify spare parts, chemicals, supplies, and required specialized vendor support for initial operation.

5.3.14 Facility Support, Operations and Maintenance Training

Summarize as appropriate the plan for training the project test team, activation team, startup team, commissioning team, user/operating O&M personnel, and support personnel (e.g., emergency response/access for fire, hazard containment, security, etc.), including training materials development, qualification and/or certification.

5.3.15 Environment, Safety and Health (ES&H), and Quality Assurance

Summarize the plan for preparing key ES&H documents needed to support CD-4, such as: documented safety analysis (DSA) and technical safety requirements (TSRs) for Hazard Category 1, 2, and 3 nuclear facilities; hazards analysis plan; DOE safety evaluation report; USQ procedure; updated construction project safety and health plan; energy and resource conservation plan; revision of the environmental management system and Quality Assurance Plan to incorporate any new aspects related to turnover and operations; and updated site emergency plan and facility emergency planning hazards assessment, if applicable (see section 8 below).

5.3.16 Safeguards and Security (S&S)

Describe the process for validation of S&S equipment, programs, and processes, as applicable. Summarize the plan for preparing key S&S documents needed to support CD-4, such as the cyber security plan for IT projects, the security vulnerability assessment report, and the facility and/or Site Security Plan (see section 8 below).

5.3.17 Permits and Licenses

Identify any permits and licenses that are required for initial operation and/or full operation of the project. Discuss the process for obtaining these permits and licenses, and providing any formal notifications to satisfy intra-program and interagency agreements.

5.3.18 Authorization and Notification

Describe (or reference the document that describes) the process and responsibilities for formal authorization of initial operation and/or full operation of the project deliverables. The description (or reference document) should list any required notifications, both internal and external to the DOE, such as to regulatory agencies.

5.3.19 Project Acceptance, Beneficial Occupancy, and Transfer to Operations

Describe the process for formal acceptance and/or beneficial occupancy of the project deliverables and transfer/handover to the user/operating organization. This should be based on meeting the terms of the project contract, with deliverable acceptance by the contract administrator and formal acceptance and/or beneficial occupancy documentation which accept the deliverables from the project organization to the user/operating organization consistent with the PEP and transition to operations strategy.

5.3.20 Business Functions

Discuss the transition strategy for project business functions; the process to transfer licenses, contracts, equipment, assets, real property, and records to the user/operating organization, as applicable; disposition of any Government-furnished equipment provided to project contractors; and the process for handling unresolved project litigation and liabilities.

5.3.21 Project Information and Records Turnover

Identify the project information and records that will be transferred from the project organization to the user/operating organization, and describe the sequence, responsibilities, and formal acceptance process for turnover. Project information and records could include test reports, operation and maintenance manuals, training materials, agreements, acceptance documents, ES&H documents, design basis documents, as-built drawings, specifications, equipment manuals, warranties and configuration management documents.

5.3.22 Transition to Operations Reporting

Describe how transition to operations reporting will be handled. For example, it could be a separate report or it could be incorporated into the project quarterly review with the DOE program sponsor. Discuss the report content, frequency and responsibility for preparation.

5.3.23 User/Operating Organization Staff Planning

Summarize the plan for mobilizing the user/operating organization workforce, as required so that it can assume responsibility for operation of the project deliverables by CD-4 or according to the schedule stipulated in the Program Budget Decision memo signed by the CFO. This may include a ramp up of staff during testing, activation, startup and/or commissioning as appropriate, so that the user/operating organization staff gain experience. This section could reference a more detailed user/operating organization staffing plan.

5.3.24 Lessons Learned and Process Improvement

Document transition to operations lessons learned, including performance history leading to successful operation of the project. Implement process improvement opportunities throughout the life of the project to improve transition workflow (see section 9 of this Guide).

5.3.25 Project Organization De-staffing Planning

Summarize the plan for demobilizing the contractor's project workforce and for DOE project staff, as applicable for a smooth transition to operations. This section could reference a more detailed project organization de-staffing plan.

6.0 QUALITY ASSURANCE

6.1 Action:

Issue an updated Quality Assurance Plan to address testing, identified deficiencies, and startup, transition, and operation activities.

6.2 Discussion:

Over the duration of the project many changes are likely to occur. They should be in the area of testing, startup, transition, operational activities or other identified deficiencies. These are likely to affect the existing project quality assurance program. In addition each of these changes should have useful lessons learned for specific areas. Incorporation of all lessons learned for similar projects at the same or other sites could be very useful. An update of the Quality Assurance Plan may be necessary. The Quality Assurance Plan should be updated under guidance of the federal project director.

6.3 Guidance

The Quality Assurance Plan is developed at the inception of the project and is updated, as necessary over, the project life cycle. The FPD is responsible for planning and implementing the Quality Assurance Program for the project. During the preparation of the project documentation appropriate consideration needs to be given to Quality Assurance because quality affects cost, availability, effectiveness, safety, security, and performance. Quality assurance needs to address the following 10 criteria:

- Program
- Personnel training and qualification
- Quality improvement
- Documents and records
- Work processes

- Design
- Procurement
- Inspection and acceptance
- Management assessment
- Independent assessment

Depending on the nature of the project, the key requirements/elements of a quality assurance program are provided in DOE O 414.1C and Title 10 Code of Federal Regulations (CFR) Part 830 Subpart A.

7.0 ENVIRONMENTAL MANAGEMENT SYSTEM REVISION

7.1 Action

Revise the environmental management system to ensure that it incorporates new environmental aspects related to turnover and operations.

7.2 Discussion

DOE O 413.3A requires a revision of the environmental management system when a construction/build or remediation project initiates project closeout and transition activities. This revision is required upon the completion of a project and the transfer or turnover of the project deliverables to another organization for operations or long-term stewardship responsibilities. The purpose of revising the environmental management system is to ensure project facility/systems/equipment operations or long-term stewardship activities continue to achieve environmental protection and regulatory compliance. The revision needs to reflect the environmental aspects necessary to ensure continued protection of human health and the environment and compliance with environmental regulations after a project is turned over for operations or long-term stewardship activities.

The environmental management system is to address the environmental aspects of project operations or activities and to ensure ongoing compliance with environmental regulatory requirements. Executive Order 13423 dated January 24, 2007, *Strengthening Federal Environmental, Energy, and Transportation Management*, requires that all agencies implement an environmental management system at the appropriate organizational levels. DOE sites have met this requirement principally through compliance with and/or certification to ISO 14001, *Environmental Management Systems—Specification with Guidance for Use*. For information on what should be included in an EMS, refer to the DOE G 450.1 series.

7.3 Guidance

Prior to CD-4, an environmental management system should be revised and implemented upon the turnover/transition date to reflect the project's operational configuration and/or the long-term stewardship activities. This environmental management system can either be under a site-wide management system or be facility specific. Further, the environmental management system should reflect the environmental aspects related to turnover, i.e., project operations or long-term stewardship, as well as the six elements of an environmental management system according to ISO 14001 (online at http://www.iso.org/iso/iso_catalogue/management_standards/iso_9000_iso_14000/iso_14000_esentials.htm).

8.0 SAFEGUARDS, SECURITY, AND SAFETY PLANS

8.1 Action—Documented Safety Analysis/Safety Evaluation

Prepare the Documented Safety Analysis Report with Technical Safety Requirements for Hazard 1, 2, and 3 nuclear facilities.

Prepare a Safety Evaluation Report based on a review of the preliminary Documented Safety Analysis for Category 1, 2, and 3 nuclear facilities.

8.1.1 Discussion

During the transition/closeout phase, the project team should continue to update and finalize safety documents and procedures that have been initiated in the prior phases of project activity.

Approved final Documented Safety Analysis (DSA), Technical Safety Requirements (TSRs) and other hazard control documents contain the principal safety basis for a DOE decision to authorize facility operation. Once facility operation is authorized, the final DSA and hazard controls will be the principal safety bases for sustaining authorization and safety oversight. A final DSA documents the safety basis and provides detailed information for a determination that the facility can be operated, maintained, shut down, and decommissioned safely and in compliance with applicable laws and regulations. This has much the same meaning as does the similar language for preliminary documented safety analysis (PDSA), except that for final DSA the descriptions of operations are complete, detailed, and based on final information.

8.1.2 Guidance

During construction, the final DSA is developed. It is based on the facility as built and as it will be operated and finalizes the description of needed safety management programs. After the construction has been completed and the DSA has been updated to reflect the as-built drawings and development of the TSR bases, DOE reviews the revised DSA and updates the Safety Evaluation Report (SER) authorizing operations subject to any necessary conditions, including the need for an Operational Readiness Review (See section 3.1 of this document and DOE O 425.1C). DOE issues the SER that documents DOE review and approval of the DSA.

8.2 Action—Hazard Analysis

Finalize the Hazard Analysis Report and obtain DOE approval (field level).

8.2.1 Discussion

Additional analyses to prepare the DSA include evaluation of equipment that was not part of the preliminary and final design, such as government furnished equipment or specialty equipment designs that were performed in separate design activities not fully addressed in the PDSA, and detailed operational analysis for those activities that did not need to be considered for development of the design. In addition, hazards analyses that were completed as part of the PDSA should be reviewed to ensure that they remain accurate and changes made as necessary. Note that Government-furnished equipment ideally should be included in the early hazard and accident analysis activities and treated as though it was part of the design. Otherwise the design interfaces and potentially the acceptability of the Government-furnished equipment may not be found in a timely fashion. Then this additional task would be a final check on interfacing facilities or systems that are not under the direct control of the project.

8.2.2 Guidance

To complete operational hazards analyses and analyze other upset conditions that were not developed in the PDSA, the hazards analysis process should engage the operations staff. Detailed operational concepts should be developed by the operations staff in conjunction with the safety analysis efforts and should include government furnished equipment that should be used in these operations.

The DSA cannot be completed until there is a high degree of certainty that facility configuration matches the design documentation, safety basis documentation, and the operating procedures for that configuration. Final verification that the DSA information is consistent with the as-built configuration is necessary before sending the DSA and TSR to DOE for approval. A rigorous change control process will help in this regard.

The final development of the DSA and TSR should provide for implementation planning. The initial planning for these activities should be included in the TOP, which should be base-lined during preliminary design. The TOP provides the concepts that support when and how many operations staff is brought into the project to support transition and defines (to the extent known at the time) the activities that need to be performed, including those needed to implement the commitments expected to be in the DSA and TSR. Many of the details of activities needed to implement the DSA and TSR are based on limited information available in preliminary design. Consequently, the detailed strategy and activities needed to implement the DSA and TSR should be addressed and compared to the baseline in the TOP such that appropriate adjustments can be made.

8.3 Action—Security Vulnerability Assessment

Finalize the Security Vulnerability Assessment Report and any required security plan.

8.3.1 Discussion

During the transition/close-out, all security system documentation is reviewed and an acceptance determination made. System component and complete system acceptance testing is evaluated against the test and acceptance plan. For security an approved security plan, procedures, trained security professionals on-hand, and, if required a successful ORR, or an RA should be completed prior to a CD-4.

8.3.2 Guidance

Prior to CD-4, the final update of the vulnerability assessment is required, with a resulting Final vulnerability assessment report. This report should document the proposed security systems and features, as well as demonstrate how the facility design, construction, and operations satisfy security requirements. Also, any required updates to the resulting security plan should be incorporated for implementation.

At CD-4 there is transition from the project organization to the user/operating organization for assumption of responsibility for management operations and maintenance. The facility/site management and operations group takes over the responsibility for the management, operation, and associated support.

8.4 Action—Cyber Security

Finalize the Cyber Security Plan for information technology (IT) projects and complete the certification and accreditation.

8.4.1 Discussion

At this stage of an IT project all training materials and documentation should be complete. The project team should ensure that all components of the system test and evaluation plan (STEP) have undergone acceptance testing and operational review, as appropriate. It is necessary to document the findings, propose an action plan for addressing failures and issues, and identify the residual risks by compiling all cyber security designs, plans, agreements, test results, etc., into the cyber security plan.

8.4.2 Guidance

It is required to execute the STEP as part of the entire system, and make necessary changes to the IT system, validate changes and revise the Cyber Security Plan. This will allow the integrated project team to request accreditation of the final Cyber Security Plan. This is accomplished through the submission of the Cyber Security Plan to a cyber system security manager for final certification, and the subsequent request of accreditation by the approval authority (AA) which will result in the project receiving full or interim approval to operate. Finally, the project can record and register the Cyber Security Plan.

9.0 POST CD-4 APPROVAL REQUIREMENTS (RELATED TO TRANSITION/CLOSEOUT)

9.1 Action—Post Implementation Review for Information Technology

Conduct a Post Implementation Review for information technology projects and document that the project has attained the desired results and met the Key Performance Parameters in accordance with the Capital Programming Guide, Supplement to Part 7 of Office of Management and Budget Circular A-11.

9.1.1 Discussion

The purpose of the Post Implementation Review (PIR) is to track and measure the impact and outcomes of implemented information technology (IT) projects to ensure that they meet the program mission. The need to evaluate a system's ability, both functionally and economically, is a continuous process to ensure that the system still supports both the end user and the mission needs of the organization. The PIR is typically conducted on implemented projects to evaluate the actual results compared to estimates in terms of cost, schedule, performance, and mission outcomes; to determine the causes of major differences between planned end results; and to help improve project management practices. Stage evaluations are conducted on project success to ensure a positive return on investment, and decide whether continuation, modification, or termination of the project is necessary. PIRs should be conducted on all major DOE IT projects and the type of review to be conducted will be based on the stage of project development. The goals of a PIR are to—

1. keep the Department and key stakeholders apprised of the project's performance and contribution in support of strategic goals and objectives;
2. ascertain the degree of project success in terms of meeting objectives, delivering planned levels of benefits, and addressing the specific requirements as originally defined;
3. ensure that the project meets mission support objectives;
4. examine the efficacy of all elements of the business solution to determine if improvements can be made to optimize the benefits of the system;
5. document lessons learned to improve future projects, the IT decision process, and overall performance of the IT portfolio;
6. provide insight into the strengths and weakness of the processes and procedures performed in the selection and control phases of the Capital Planning and Investment Control process;
7. re-assess project investment, technical compliance, and compliance against the enterprise architecture; and

8. update the enterprise architecture and Capital Planning and Investment Control processes.

9.1.2 Guidance

The DOE Office of the Chief Information Officer is responsible for developing the list of potential review projects. The DOE IT Council makes the final decision on which projects will be reviewed. All major projects should have PIR review. In addition, all projects prior to being reported as a steady state investment should have a PIR. Finally, senior management should request a PIR review if one or more of the following conditions exist.

1. Operating costs increase significantly.
2. User complains on system performance.
3. Number of software changes increases.
4. Scope or strategic plan significantly changes.
5. Major legislative changes have been enacted.
6. DOE changes policy.

In order to perform the PIR review comprehensive information should be gathered, analyzed and documented in the PIR summary and recommendation report. There are nine elements that should be reviewed.

9.1.2.1 Cost and Schedule.

Earned value data is used to analyze project costs and schedule variances. The DOE standard includes a detailed explanation for the cause of the variance, what corrective actions are being taken to resolve the variances, and what the impact will be on other related work or the final project. Projects between \$5M and \$20M have the option of using American National Standards Institute (ANSI)-748, Earned Value Management System (EVMS) Standard, or implementing a similar system that is capable of providing cost, schedule, and performance status. For all projects \$20M or more the ANSI-748 EVMS should be utilized and the Department will perform a validation review in accordance with the requirements of DOE Order 413.3A. The system should be able to report cost and schedule variances, and other baseline performance measurement data.

9.1.2.2 Technical and Operational Performance.

A technical evaluation of the project results in an analysis of the system's operational readiness: project vs. actual capabilities, statistical data, and technical effectiveness of the system. Technical performance indicators cover both software and hardware. Technical performance indicators include processing cycles, response times, and storage capabilities. In addition, the impacts of system performance to user and mission capabilities and predetermined DOE program objectives should be measured. Baseline requirements should be compared against the

functionality of the implemented system to determine if the system was developed as originally defined.

9.1.2.3 Enterprise Architecture Compliance.

The original architecture plan should be compared against the implemented system in order to determine if there were deviations from the original requirements. The PIR should also determine if the system components integrates with the current existing infrastructure.

9.1.2.4 Security Analysis

The security analysis compares the systems security measures against the DOE certification and accreditation guidelines and is a requirement for all systems processing, transmitting, or storing DOE information. Documentation includes a risk assessment, system security plan, configuration management plan, contingency plan, results of previous assessments, security controls assessments, independent verification and validation, and independent audits.

9.1.2.5 Project Risk Management.

The PIR should review and evaluate the process used by the Integrated Project Team to identify risks, develop risk strategies, employ the strategies to address the risks, the impacts on the project, and if they were managed effectively.

9.1.2.6 Records Management.

The PIR should evaluate the documentation in support of the records management program which provides for the systematic control of the records captured, stored, maintained, retrieved, used, and disposed. The disposition approvals from the DOE Records Officer and National Archives and Records Administration need to be requested and approved prior to implementation. Records management addresses the life cycle of records from the creation or receipt to the maintenance and use to the disposition.

9.1.2.7 Impact on Goals and Strategic Objectives.

The PIR should determine if the project met the stated outcomes and benefits and if they are in alignment with the DOE goals and objectives.

9.1.2.8 Impact on Stakeholders.

The PIR should evaluate if the stakeholders (users, customers, and business process owners) are satisfied with the project. This is normally accomplished through surveys and interviews.

9.1.2.9 Best Practices and Lessons Learned.

The PIR should document in best practices and lessons learned successful procedures, practices, issues, and problems, to improve the Information Technology Investment Management Process and future IT projects.

To provide a consistent approach to evaluating a project, DOE has developed a standard template and scoring criteria. The results will be reported to the IT Council who will review the report and provide a recommendation to the Office of the Chief Information Officer. The Office of Chief Information Officer will authorize any corrective actions and the DOE program will report back on the status of the corrective actions. The review template includes 31 elements and covers project managers certification, cost, schedule, and project management performance metrics including critical decision approvals, earned value data, steady state components, operational costs and schedule dates, performance tables, security, and project management scores on four pages and can be found in the Guide to IT Capital Planning and Investment Control, dated September 20075 (online at [http://cio.energy.gov/documents/DOE_CPIC_Guide_091007_FINAL\(1\).pdf](http://cio.energy.gov/documents/DOE_CPIC_Guide_091007_FINAL(1).pdf)).

9.2 Action—Lessons Learned

Prepare a Lessons Learned Report and submit to OEEM for broader sharing among the DOE project management community.

9.2.1 Discussion

The DOE lessons learned program is designed to enhance the lines of communications between all elements of the DOE including its contractors and is a key element in organizations' commitment to continuous improvement. The Lessons Learned Program includes two processes. The first is a development process that includes identification, documentation, validation, and dissemination of lessons learned. The second is a utilization and incorporation process that includes identification of applicable lessons learned, distribution to appropriate personnel, identification of actions that will be taken as a result of the lessons learned, and follow-up to ensure that appropriate actions were taken. In addition, the lessons learned program contains processes to measure operational performance improvements and program effectiveness.

9.3 Action—Operational Documentation

Complete project operational documentation.

9.3.1 Discussion

Converting a facility from construction project status to operating status requires that technical and administrative matters be addressed during earlier stages of the project. As early in the execution phase as feasible, the project organization should initiate planning for and development of the documentation for transition to operations. During transition, the user/operator will normally accept beneficial occupancy of the facility and take ownership of project documentation.

Project documentation transferred from the project organization to the user/operating organization could include, for example, environmental and safety, design basis, drawings (as-built) and specifications, configuration management, equipment and operating manuals, other project records, and other relevant information. As appropriate, project documentation that supports transition, turnover, Operational Readiness Review (e.g., ORR, RA, or other readiness review) and operation and maintenance should be made available to the user/operating

organization. Project records not provided to the user/operating organization are prepared for storage or disposal in accordance with DOE O 243.1, . Records should be complete, properly identified, approved, and orderly. In certain cases, electronic and hard copies of project records should be provided.

The project organization is responsible for delivering a completed project to the user/operating organization. A successful turnover for operations includes providing the user/operating organization a comprehensive set of operational documentation and records. This will be best accomplished by partnering with the user/operating organization to identify all operational documentation and records required to turnover a completed project. The project organization is responsible for assembling the documentation and records needed to properly transition and turnover a completed project to the user/operating organization. All records that are turned over to the user/operating organization or sent to storage should be accompanied by a complete inventory list. A duplicate of these lists should be kept by the project organization and turned over to the field/site project management organization when the project office is closed.

9.3.2 Guidance

The list of operational documentation and records will depend on the project type and the needs of the user/operating organization. Provided below is a list of the types of documents and records that should be considered for turnover to the user/operating organization. Partnership with the user/operating organization and a tailored approach should be used to develop a comprehensive list of all operational documents and records to be transferred from the project organization to the user/operating organization.

9.3.2.1 Final Design

The final design is the completion of the design effort and production of all the approved design documentation necessary to permit Project procurement. The final design is used to permit construction, testing, checkout, and turnover to proceed.

9.3.2.2 Procurement

The procurement documentation includes key documents used to execute the project. These could include the construction/restoration contract, statement of work, contract amendments, and other related documents.

9.3.2.3 Construction

Construction documentations are the documents that record the execution of construction. These documents could include drawings and specifications, construction meeting minutes, inspection reports, material submittals, and other related records.

9.3.2.4 Pre-Operational Testing

As part of the commissioning activities, most facility systems and equipment will undergo thorough testing as part of its acceptance process to verify that the systems and equipment were

installed correctly and satisfies the manufacture's operational specifications. Important for operations, this documentation demonstrates that the systems and equipment were installed and operated as required by the project specifications.

9.3.2.5 Startup

Startup activities of facility systems and equipments are part of the commissioning activities. Systems and equipment installed and completed by the construction contractor should be tested and accepted by the project organization before they are made available to the user/operating organization. To facilitate the turnover to the user/operating organization, the acceptance process should be in partnership with the user/operating representative; in most cases this representative is a technician or mechanic who will assume ownership of the system or equipment once accepted and started. Startup activities are an important part of the transfer of knowledge to the user/operating organization. These documents could include testing and startup procedures, checklists, and records.

9.3.2.6 Safety

Operational safety of the new or restored facility is critical at the turnover of the completed project to the user/operating organization. Safe operation of the facility and its systems and equipment should be documented. Operational procedures are developed to document the appropriate use and safe operations of the facility systems and equipments.

9.3.2.7 Quality

Important to the project and user/operating organization is the quality assurance of the construction activities and the systems and equipments provided by the project. Proper documentation of the construction and/or installation, inspection, and acceptance will facilitate quality assurance and ensure that the completed project satisfies the project's objectives and specifications.

9.3.2.8 Safeguards and Security

Safeguards and security refers to an integrated system of activities, systems, programs, facilities, and policies for the protection of classified information and/or classified matter, unclassified control information, nuclear materials, nuclear weapons, nuclear weapon components, and/or the Department's and its contractors' facilities, property, and equipment. Project success will depend upon the satisfaction of safeguards and security requirements. The project organization's safeguards and security plans and related documents which describes the applicable requirements and assures these have been satisfied should be turnover to the user/operating organization.

9.3.2.9 Permits and Licensing

Permits and licensing required for facility operations should be identified and provided to the user/operating organization to facilitate the transition to operations. In many cases the project organization has the expert staff to research and identify the permits and licensing requirements to operate the constructed facility.

9.3.2.10 Operations and Maintenance Manuals

One method of transferring knowledge from the project organization to the user/operating organization is the transfer of operation and maintenance manuals for systems and equipment provided by the various vendors. The turnover of these manuals to the user/operating organization is critical for the proper operation and maintenance of the facility's systems and equipment by the user/operating organization & maintenance staff.

9.3.2.11 Manufacturer's Warranties

All warrantee documents for new systems and equipment installed as part of the project should be collected, properly categorized, and turned over to the user/operating organization to facilitate their use in the future if necessary.

9.3.2.12 As-Built Drawings

As-built drawings record the actual construction details used to construct or restore a facility. They record required deviations from the original design and in most cases are recorded on as-built drawings. This knowledge should be captured and transferred to the user/operating organization for operation and future reference if necessary.

9.4 Action—Final Project Closeout Report

Perform final administrative and financial closeout and prepare a Final Project Closeout Report once all project costs are incurred and invoiced and all contracts are closed. The report includes final cost details as required (including claims and claims settlement strategy where appropriate).

9.4.1 Discussion

Final project closeout begins at CD-4 or at the point when all environmental activities are completed and the site is turned over for alternative use. This includes long-term stewardship, surveillance for environmental remediation, disposition, or at project termination. Generally, closeout starts after all physical, regulatory, contractual activities are complete. Following the Critical Decision-4 approval, the FPD submits a Final Project Closeout Report through the site financial officer (FO) to the DOE Chief Financial Officer (CFO).

The purpose of the Final Project Closeout Report is to provide a determination of the overall closure status of the project, contracts, regulatory drivers, and fiscal condition in accordance with performance goals and measures established for closeout.

9.4.2 Guidance

The Final Project Closeout Report should consist of two key deliverables, a project completion report typically prepared by the DOE contractor and a project final cost report prepared by the FPD.

The DOE contractor, who has prime contracting responsibility for the DOE project, is responsible for the technical, contractual, and financial contents of the project completion report. However, the FPD should work closely with the contractor project manager to ensure that the project completion report is accurate and reflects the project's condition. For projects that are managed directly by DOE the FPD is responsible for preparing the project completion report. The essential elements of the project completion report and the project final cost report are discussed in section 9.4.2.1 and section 9.4.2.2 of this Guide respectively. The requirement of a project completion report should be identified in the PEP so that adequate time and resources can be allocated to facilitate project closeout.

The FPD approves and submits the Final Project Closeout Report to the cognizant site CFO, who reviews, assembles, approves, and forwards to the DOE CFO a closeout package containing the project final closeout report. In addition, the closeout package should contain a summary of financial actions requested of the DOE CFO for project closeout and the site FO's signature and date of approval of this action.

Ultimately, The DOE CFO places all unused funds into the project overrun reserve to resolve any remaining costs of the project. Use of these funds should be requested in writing and include a description of the problem, causes of the problem, and corrective actions. In addition, the current status of the contractual, regulatory, financial, and physical project should be explained. The DOE CFO approves all requests.

9.4.2.1 Project Completion Report

The FPD acceptance of the project completion report is the official acceptance of the contractor deliverables and other reporting requirements on behalf of the Government.

Elements of the project completion report should address the following key activities.

9.4.2.1.1 Physical Closeout

Physical closeout provides documentation to affirm all work associated with the project is complete and the Government accepts beneficial occupancy or environmental completion of the project. Elements of project physical closeout can include:

1. confirmation that all Project Completion Criteria were completed satisfactorily;
2. all turnover punch list items reviewed and documented as closed;
3. excess material and equipment identified, retrieved, and disposed of in accordance with DOE property disposition regulations;
4. all purchase orders (POs) closed or placed in a single account;
5. outstanding obligations identified and described in the contractor's financial closeout;
6. an occupancy checklist prepared and used to accelerate the transition process;

7. remaining project control accounts, except for outstanding obligations, closed;
8. project lessons learned report completed and submitted to DOE (see section 9.2 of this Guide); and
9. an acquisition executive CD-4 approval statement enclosed.

9.4.2.1.2 Contractual Closeout

Contractual closeout is performed by the contracting officer (CO) and includes identification and status of each project contract and subcontract, their values and their terms and conditions. The contract status should include any incomplete deliverables; terms, conditions, and dates for obtaining remaining deliverables; real and potential claims; pending and any ongoing legal actions; warranties made as part of the contract; and any other information that might prove useful to the user organization in relation to legal, contractual, warranty, or deliverables.

9.4.2.1.3 Financial Closure

The project organization is responsible for the financial closeout. Although financial closeout and physical closeout can occur in parallel, financial closeout is finalized only after a successful physical closeout is complete. Financial closeout follows two parallel paths help to identify unspent project fund balances and deobligate them for use these funds elsewhere as needed; these paths are adjusting the Department's construction and capital asset accounts and preparing the project Final Cost Report.

The general steps involved in the financial closeout process can include:

- Approval of Critical Decision 4 marks the beginning of the project closeout.
- Remove Project from Construction Work in Progress (CWIP) Account.
- Capitalize project funds and begin depreciation.
- The prime contractor prepares the Closing Statement of Cost.
- The chief financial officer (CFO) uses the contractor's Closing Statement of Cost to adjust the Department's construction and capital asset accounts, determine whether any unspent balances remain, prepare the Final Closing Statement of Cost, deobligate remaining balances using the approved funding program.

9.4.2.1.4 Regulatory Closeout

A major component of closing an environmental remediation or facility transition projects is the demonstration of regulatory compliance with the Resource Conservation Recovery Act (RCRA) and/or the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Failure to comply could lead to legal actions and delay closure. The regulatory process varies depending on the type of project, applicable regulation, and the government

agencies having jurisdiction. Regulatory closeout consists of certifying that environmental actions have met all requirements and no additional active management is needed, with the possible exception of long-term monitoring. Regulatory closeout also provides for possible site turnover to other responsible agencies or private parties and transition to other use.

9.4.2.2 Project Final Cost Report

The contractor project manager should provide the FPD an estimate of any outstanding costs required to complete the project enabling the de-obligation process to start prior to complete closeout of all actions. The FPD works with the site FO to ensure that DOE accounting requirements are met for project closeout. The FPD project final cost report includes the project name, title, budget classification, original de-obligation amount and subsequent obligations or de-obligations, actual cost summary organized in same categories as the original project data sheet, capital investment for the project, and the value of plant and capital equipment adjustments. The project final cost report will be used to zero out the uncosted balance of the project budget, establish a reserve account for open items, and satisfy the requirements to remove a project from the Construction Work in Progress Account in accordance with DOE O 534.1B, *Accounting*, dated 1-6-03. The accounting data from the project final cost Report provides physical evidence that all conditions necessary to closeout the project and/or retire the contract have been met. Closeout document requirements differ for cost reimbursement contracts and fixed-price contracts. A review of the final contract modification is required for cost reimbursable contracts with the contractor finance confirming the final contract price. A review and payment of the final invoice is required in accordance with DOE and field office procedures. The site FO or designee should confirm the required closeout documents to the extent warranted by the individual circumstances and applicable procurement regulations, such as Federal Acquisition Regulation (FAR) 4.804-5, *Procedures for Closing Out Contract Files*, and advise the DOE CFO accordingly. This should include a review and reconciliation of financial/closeout records by the site FO with any discrepancies being resolved with the contractor's finance officer.

REFERENCES

1. DOE M 140.1-1B, *Interface with the Defense Nuclear Facilities Safety Board*, dated 3-30-01.
2. DOE P 141.2, *Public Participation and Community Relations*, dated 5-2-03.
3. DOE O 200.1, *Information Management Program*, dated 9-30-96.
4. DOE O 231.1A Chg 1, *Environment, Safety and Health Reporting*, dated 6-3-04.
5. DOE O 243.1, *Records Management Program*, dated 2-03-06.
6. DOE M 413.3-1, *Project Management for the Acquisition of Capital Assets*, dated 3-28-03.
7. DOE G 413.3-3, *Safeguards and Security for Program and Project Management*, dated 11-5-07.
8. DOE O 413.3A, *Project and Program Management for the Acquisition of Capital Assets*, dated 7-28-06.
9. DOE 413.3-series Guides.
10. DOE O 414.1C, *Quality Assurance*, dated 6-17-05.
11. DOE G 414.1-2A, *Quality Assurance Management System Guide for Use with 10 CFR 830 Subpart A, Quality Assurance Requirements, and DOE O 414.1C, Quality Assurance*, dated 6-17-05.
12. DOE O 420.1B, *Facility Safety*, dated 12-22-05.
13. DOE O 420.2B, *Safety of Accelerator Facilities*, dated 7-23-04.
14. DOE G 421.1-2, *Implementation Guide for Use in Developing Documented Safety Analyses to Meet Subpart B of 10 CFR 830*, dated 10-24-01.
15. DOE G 421.1-1, *DOE Good Practices Guide Criticality Safety Good Practices Program Guide for DOE Nonreactor Nuclear Facilities*, dated 8-25-99.
16. DOE G 423.1-1, *Implementation Guide for Use in Developing Technical Safety Requirements*, dated 10-24-01.
17. DOE G 424.1-1A, *Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements*, dated 7-24-06.
18. DOE O 425.1C, *Startup and Restart of Nuclear Facilities*, dated 3-13-03.

19. DOE G 430.1-1, Chapter 8, *Startup Costs*, dated 3-28-97.
20. DOE G 430.1-1, Chapter 9, *Operating Costs*, dated 3-28-97.
21. DOE O 430.1B Chg.1, *Real Property Asset Management*, dated 9-24-03.
22. DOE O 433.1A, *Maintenance Management Program for DOE Nuclear Facilities*, dated 2-13-07.
23. DOE G 450.1-10, *Senior Manager Implementation Guide for Use with DOE O 450.1, Environmental Protection Program*, dated 10-25-04.
24. DOE O 450.1 A, *Environmental Protection Program*, dated 6-4-08.
25. DOE M 470.4-1, *Safeguard, and Security Program Planning and Management*, dated 8-26-05.
26. DOE O 470.4A, *Safeguards and Security Program*, dated 5-25-07.
27. DOE O 471.1A, *Identification and Protection of Unclassified Controlled Nuclear Information*, dated 6-30-00.
28. DOE M 470.4-3 Chg.1, *Protective Force*, dated 8-26-05.
29. DOE O, 534.1B, *Accounting*, dated 1-6-03.
30. DOE O 580.1 Chg1, *Department of Energy Personal Property Management Program*, dated 5-8-08
31. DOE O 5480.19 Chg 2, *Conduct of Operations Requirements for DOE Facilities*, dated 10-23-01.
32. DOE O 5480.20A Chg 1, *Personnel Selection, Qualification, and Training Requirements for Nuclear Facilities*, dated 7-12-01.
33. DOE PM Glossary, 12-10-03 (online at <http://management.energy.gov/documents/DOE20PM20Glossary.pdf>).
34. DOE PM Practices, Closeout, dated June 2003 (online at <http://management.energy.gov/documents/Closeout.pdf>).
35. DOE Standard 1189-2008, *Integration of Safety into the Design Process*, dated March 2008.
36. DOE Standard 7501-99, *The DOE Corporate Lessons Learned Program*, dated December 1999.

37. DOE-STD-3006-2000, *Planning and Conduct of Operational Readiness Reviews (ORR)*, dated June 2000.
38. Federal Acquisition Regulation (FAR) section 52.216, Allowable Cost and Payment
39. FAR; section 4.804, Closeout of Contract Files.
40. Guide to IT Capital Planning and Investment Control, dated September 2007 (online at [http://cio.energy.gov/documents/DOE_CPIC_Guide_091007_FINAL\(1\).pdf](http://cio.energy.gov/documents/DOE_CPIC_Guide_091007_FINAL(1).pdf)).
41. PMBOK Third Edition Chapter 10 Project Communication Management
42. Model Commissioning Plan and Guide Specifications, Portland Energy Conservation, dated February 1998 (online at <http://www.peci.org/CxTechnical/mcpgs.html>).
43. 10 CFR Part 830 Subpart A, Quality Assurance Requirements.
44. Capital Programming Guide, Supplement to Part 7 of the Office of Management and Budget's Circular A-11
http://www.whitehouse.gov/omb/circulars/all/current_year/part7.pdf
45. DEAR Section 904 804-1, Closeout by the Office Administering the Contract.
46. Department of Energy Accounting Handbook, Chapter 21, Financial Closeout.
47. DOE Acquisition Guide, A DOE Guide to the Award and Administration of Contracts.
48. U.S CODE Title 42, Chapter 103, Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).
49. U.S CODE Title 42, Chapter 82, Resource Conservation and Recovery Act of 1976 (RCRA).

ACRONYMS

ANSI	American National Standards Institute
AA	Authorization/Approval Authority
CPIC	Capital Planning and Investment Control
CFO	Chief Financial Officer
CFR	Code of Federal Regulations
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CO	Contracting Officer
CD	Critical Decision
CD-0	Critical Decision 0
CD-1	Critical Decision 1
CD-2	Critical Decision 2
CD-3	Critical Decision 3
CD-4	Critical Decision 4
DOE	Department of Energy
DOE G	Department of Energy Guide
DOE M	Department of Energy Manual
DOE O	Department of Energy Order
DSA	Documented Safety Analysis
EVMS	Earned Value Management System
ES&H	Environmental Safety and Health
FAR	Federal Acquisition Regulation
FPD	Federal Project Director
FO	Financial Officer
HAR	Hazard Analysis Report
IT	Information Technology
IPT	Integrated Project Team
ISO	International Standards Organization
M&I	Management and Integrating (Integration)
M&O	Management and Operating
NEPA	National Environmental Policy Act
OECEM	Office of Engineering and Construction Management
O&M	Operation and Maintenance
ORR	Operational Readiness Review
PDSA	Preliminary Documented Safety Analysis

PEP	Project Execution Plan
PIR	Post Implementation Review
PO	Purchase Order
RA	Readiness Assessment
RFP	Request for Proposal
RCRA	Resource Conservation and Recovery Act
RAM	Responsibility Assignment Matrix
S&S	Safeguards and Security
SER	Safety Evaluation Report
SSP	Site Security Plan
SSC	Structures, Systems, and Components
SSE	Structures, Systems, and Equipment
STEP	System Test and Evaluation Plan
TSR	Technical Safety Requirement (Report)
TOP	Transition to Operations Plan
USQ	Unreviewed Safety Question
VA	Vulnerability Assessment
WBS	Work Breakdown Structure