# U.S. DEPARTMENT OF ENERGY
**Washington, D.C.**

**ORDER**

**DOE O 413.3A**

Approved: 7-28-06
Chg 1: 11-17-08

**SUBJECT:** PROGRAM AND PROJECT MANAGEMENT FOR THE ACQUISITION OF CAPITAL ASSETS

1. OBJECTIVES.

   a. To provide the Department of Energy (DOE), including the National Nuclear Security Administration, with project management direction for the acquisition of capital assets with the goal of delivering projects on schedule, within budget, and fully capable of meeting mission performance, safeguards and security, and environmental, safety, and health standards.

   b. To implement Office of Management and Budget Circulars A-11 Part 7, A-123, A-127, and A-130.

   c. To implement DOE P 413.1, *Program and Project Management Policy for the Planning, Programming, Budgeting, and Acquisition of Capital Assets*, dated 6-10-00.

2. CANCELLATIONS.

   DOE O 413.3, *Program and Project Management for the Acquisition of Capital Assets*, dated 10-13-00. Cancellation of an Order does not by itself modify or otherwise affect any contractual obligation to comply with the Order. Contractor Requirements Documents containing directive requirements that have been applied to a contract remain in effect until the contract is modified to eliminate or replace requirements from canceled directives.

   Further, DOE O 413.3 cancels Chapters 1 through 3 of DOE M 413.3-1, *Project Management for the Acquisition of Capital Assets*, dated 3-28-03, and takes precedence over the Manual where conflicts exist.

3. APPLICABILITY.

   a. DOE Elements.

      The requirements identified in this Order are mandatory for all DOE Elements (unless identified in the exclusions paragraph), including the National Nuclear Security Administration, for all capital asset acquisition projects having a Total Project Cost or Environmental Management Total Project Cost for Clean-Up Projects greater than or equal to $20 Million (M).

Vertical line denotes change.

The principles as set forth in this Order and Project Assessment and Reporting System reporting requirements apply to all projects with a Total Project Cost or Environmental Management Total Project Cost greater than or equal to $5M.

While all requirements are to be addressed, the approach to meeting the requirements should be tailored consistent with the risk, complexity, visibility, cost, safety, security, and schedule of the project. All programs and projects shall comply with applicable laws, regulations, Executive orders, and DOE directives.

The Under Secretary, National Nuclear Security Administration will assure that National Nuclear Security Administration employees and contractors comply with their respective responsibilities under this directive. Any reference in this Order to the Program Secretarial Officer is also applicable to the Deputy Administrator/Associate Administrators, National Nuclear Security Administration. Nothing in this Order will be construed to interfere with the NNSA Administrator's authority under Section 3212 (d) of Public Law (P.L.) 106-65 to establish Administration-specific policies, unless disapproved by the Secretary.

b. DOE Contractors.

The Contractor Requirements Document, Attachment 2, identifies specific requirements of this Order that will apply to management and operating and other prime contracts that include the Contractor Requirements Document. The Contractor Requirements Document must be included in contracts making the contractor responsible for project execution at DOE-owned or -leased facilities.

c. Exclusions.

(1) Naval Reactors, National Nuclear Security Administration. In accordance with the responsibilities and authorities assigned by Executive Order (E.O.) 12344 and to ensure consistency throughout the joint Navy and DOE organization of the Naval Nuclear Propulsion Program, the Director of the Naval Nuclear Propulsion Program will implement and oversee all requirements and practices pertaining to this DOE Order for activities under the Director's cognizance.

(2) Bonneville Power Administration is excluded in accordance with Secretarial Delegation Order 00-033.00A, dated 09/27/2002.

(3) Financial Assistance awards (grants and cooperative agreements), which are covered under 10 CFR 600, are excluded.

4. IMPLEMENTATION. For the design and construction of Hazard Category 1, 2, and 3 nuclear facilities, or for projects including major modifications thereto (as defined in 10 CFR Part 830), the requirements in DOE-STD-1189, as amended, must be fully implemented.

Vertical line denotes change.

5. REQUIREMENTS. Topics addressed in the following paragraphs are accessible through links in the following topic list.

a. Project Management Principles.

Fundamental project management principles provide a framework for successful project execution. The requirements set forth in this Order are established to ensure adherence to the following principles:

(1) Line management accountability

(2) Sound disciplined up-front planning

(3) Development and implementation of sound acquisition strategies

(4) Well-defined and managed performance baselines

(5) Effective project management systems (e.g., quality assurance, risk management, change control, performance management)

(6) Implementation of an Integrated Safety Management System

(7) Effective communication among all project stakeholders

b. DOE Acquisition Management System.

The DOE Acquisition Management System establishes principles and processes to translate user needs and technological opportunities into reliable and sustainable facilities, systems, and assets that provide a required mission capability. The system is organized by project phases and Critical Decisions (CDs), which represent a logical maturing of broadly stated mission needs into well-defined requirements resulting in operationally effective, suitable, and affordable facilities, systems, and other products. Tailoring is an essential element of the acquisition process and shall be applied to all projects, although the greatest amount of tailoring will typically be applied to smaller, low-risk, and non-complex projects. Figure 1 illustrates a typical implementation of the DOE Acquisition Management System for Line Item Projects.

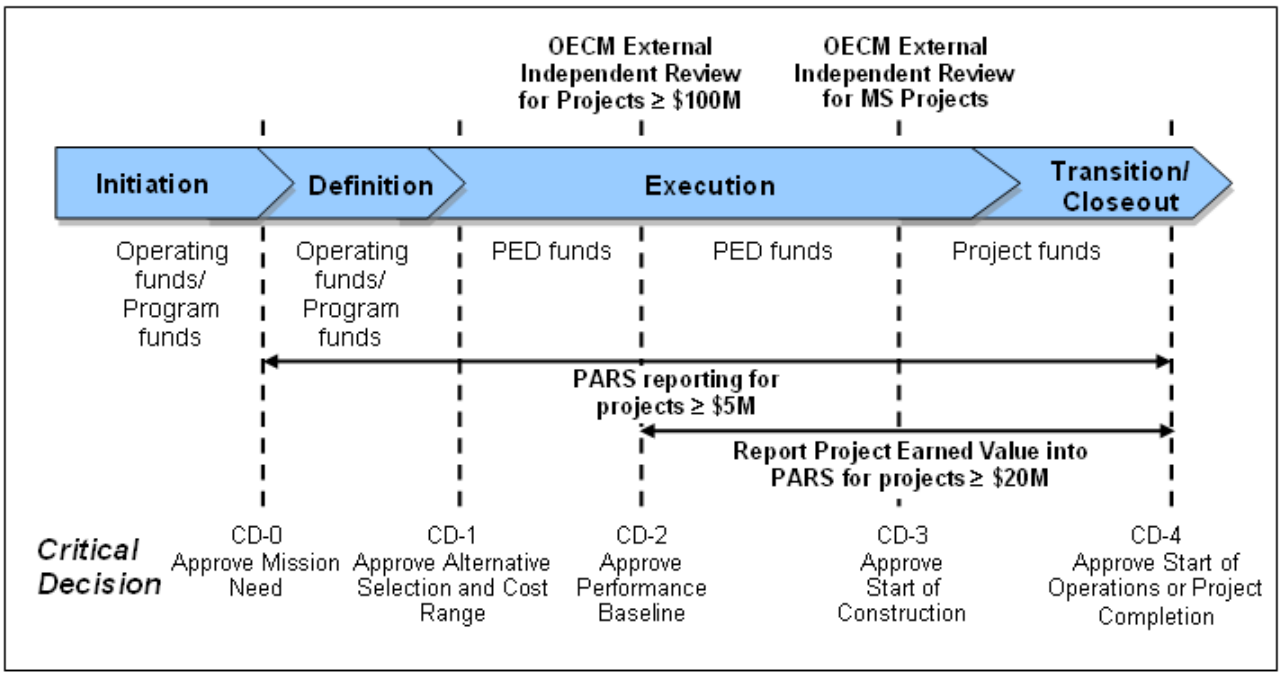


**Figure 1. Typical DOE Acquisition Management System for Line Item Projects.**

c. Project Phases.

(1) Initiation Phase.

During this phase, preconceptual planning activities focus on the Program's strategic goals and objectives. User needs are analyzed for consistency with the Department's strategic plan, Congressional direction, administration initiatives, and political and legal issues. One outcome of the analysis could be a determination that a user need exists that cannot be met through other than material means. This outcome leads to the development and approval of a Mission Need Statement. The information developed during this phase also provides the basis for the Project Engineering and Design budget request when preliminary design activities are planned.

(2) Definition Phase.

Upon approval of mission need, the project enters the Definition Phase where alternative concepts, based on user requirements, risks, costs, and other constraints, are analyzed to arrive at a recommended alternative. This is accomplished using Systems Engineering and other techniques and tools such as alternatives analysis and Value Management/Value Engineering. This ensures the recommended alternative provides the essential functions and capability at optimum life cycle cost, consistent

with required performance, scope, schedule, cost, security, and Environment, Safety and Health considerations. During this phase, the required Value Management assessment is completed, and more detailed planning is accomplished which further defines required capabilities. The products produced by this planning provide the detail necessary to develop a range of estimates for the project cost and schedule.

(3) Execution Phase.

Following the Definition Phase, preliminary design activities mark the beginning of the Execution Phase. Systems Engineering continues to balance requirements, cost, schedule, and other factors to optimize the design, cost, and capabilities that satisfy the mission need. Engineering and design continue until the project has a sufficiently mature design that can be implemented successfully within a firm Performance Baseline.

During this phase, the initial design concepts and the preliminary design are developed into detailed and final designs and plans. These plans are used to procure or manufacture components, fabricate subsystems, or construct, remediate, decommission or demolish facilities. Major activities in this phase include:

(a) Establishing Performance Measurement Baselines and implementing change control procedures;

(b) Satisfying environmental and safety requirements;

(c) Obtaining approved National Environmental Policy Act documentation, if required, prior to the start of detail or final design;

(d) Continuing to refine and optimize cost estimates, schedules, and designs; and

(e) Approving the final design for procurement and implementation.

(f) Identifying and addressing security concerns.

Execution comprises the longest and most costly phase of a project. Value Management and Value Engineering are implemented throughout the project Execution Phase to ensure the most effective solutions are implemented.

If the delivery method is Design-Build versus Design-Bid-Build and a single contract is awarded for both design and construction, it may be

necessary to tailor the project's execution process to allow the project team to propose cost-effective innovative approaches that reduce project duration and cost.

(4) Transition/Closeout Phase.

When the project nears completion and has progressed into formal transition and commissioning, which generally includes final testing, inspection, and documentation, the project is prepared for operation, long-term care, or closeout. The nature of the transition and its timing depends on the type of project and the requirements that were identified subsequent to the mission need.

d. Critical Decisions.

The five Critical Decisions are major milestones approved by the Secretarial Acquisition Executive or Acquisition Executive that establish the mission need, recommended alternative, Acquisition Strategy, the Performance Baseline, and other essential elements required to ensure that the project meets applicable mission, design, security, and safety requirements. Each Critical Decision marks an increase in commitment of resources by the Department and requires successful completion of the preceding phase or Critical Decision. Collectively, the Critical Decisions affirm the following:

- There is a need that cannot be met through other than material means;
- The selected alternative and approach is the optimum solution;
- Definitive scope, schedule and cost baselines have been developed;
- The project is ready for implementation; and
- The project is ready for turnover or transition to operations.

The amount of time between decisions will vary. Projects may quickly proceed through the early Critical Decisions due to a lack of complexity, the presence of constraints that reduce available alternatives, or the absence of significant technology and developmental requirements. In these cases, more than one Critical Decision may be approved simultaneously. Conversely, there may be a need to split a Critical Decision.

(1) CD-0, Approve Mission Need.

The Initiation Phase begins with the identification of a mission-related need. A Program identifies a credible performance gap between its current capabilities and capacities and those required to achieve the goals articulated in its strategic plan and/or in the DOE Target Enterprise

Architecture for IT capital asset projects.. A Mission Need Statement is the translation of this gap into functional requirements that cannot be met through other than material means. It should describe the general parameters of the project, how it fits within the mission of the Program, and why it is critical to the overall accomplishment of the Department mission, including the benefits to be realized. The mission need is independent of a particular solution, and should not be defined by equipment, facility, technological solution, or physical end-item. This approach allows the Program the flexibility to explore a variety of solutions and not limit potential solutions. Approval of CD-0 formally establishes a project and begins the process of conceptual planning and design used to develop alternative concepts and functional requirements. Additionally, CD-0 approval allows the Program to request Project Engineering and Design funds for use in preliminary design, final design, and baseline development.

(2) CD-1, Approve Alternative Selection and Cost Range.

CD-1 approval marks the completion of the project Definition Phase, during which time the conceptual design is developed. This is an iterative process to define, analyze, and refine project concepts and alternatives. This process uses a systems methodology that integrates requirements analysis, risk identification and analysis, acquisition strategies, and concept exploration to evolve a cost-effective, preferred solution to meet a mission need. Approval of CD-1 provides the authorization to begin the project Execution Phase and allows Project Engineering and Design funds to be used. For design-build projects, Project Engineering and Design funds may be used to develop a Statement of Work/Request for Proposal. Additionally, long-lead procurements may be approved during this phase, provided National Environmental Policy Act documentation is prepared, where applicable.

(3) CD-2, Approve Performance Baseline.

Completion of preliminary design is the first major milestone in the project Execution Phase. Preliminary design is complete when it provides sufficient information for development of the Performance Baseline in support of CD-2. The Performance Baseline is developed based on a mature design, a well-defined and documented scope, a resource-loaded detailed schedule, a definitive cost estimate, and defined Key Performance Parameters. Approval of CD-2 authorizes submission of a budget request for the total project cost. For projects with design periods less than 18 months, a budget request may be submitted prior to CD-2 approval as part of tailoring.

(4) CD-3, Approve Start of Construction.

With design and engineering essentially complete, a final design review performed, all environmental and safety criteria met, and all security concerns addressed, the project is ready to begin construction, implementation, procurement, or fabrication. CD-3 provides authorization to complete all procurement and construction and/or implementation activities and initiate all acceptance and turnover activities. Approval of CD-3 authorizes the project to commit all the resources necessary, within the funds provided, to execute the project.

(5) CD-4, Approve Start of Operations or Project Completion.

CD-4 marks the achievement of the completion criteria defined in the Project Execution Plan and approval of transition to operations. This decision is predicated on the readiness to operate and/or maintain the system, facility, or capability. Transition and turnover does not necessarily terminate all project activity. Rather, it marks a point at which the operations organizations assume responsibility for operation and maintenance. All projects must have a project transition/closeout plan that clearly defines the basis for attaining initial or full operating capability or meeting performance criteria as required for project closeout, as applicable. The key attributes in turnover are the Government's readiness to operate, the ability to assume operational responsibility, and the acceptance of the asset.

e. Critical Decision Approval Authority and Thresholds.

The Deputy Secretary serves as the Secretarial Acquisition Executive for the Department and promulgates Department-wide policy and direction. The Critical Decision authorities, thresholds and delegations are identified in Table 1.

- Major System Projects.

  Projects with a Total Project Cost greater than or equal to $750M or Environmental Management Clean-Up Projects with an Environmental Management Total Project Cost of $1B are Major System Projects. All Major System Project Critical Decisions must be proposed by the appropriate Program Secretarial Officer and approved by the Deputy Secretary as DOE's designated Secretarial Acquisition Executive before proceeding to the next project phase or Critical Decision.

- Non-Major System Projects.

  Projects with a Total Project Cost less than $750M or Environmental Management Clean-Up Projects with an Environmental Management Total Project Cost less than $1B are Non-Major System Projects. The

designated Acquisition Executive must approve all Non-Major System Project Critical Decisions, except for CD-0, which cannot be delegated below the Program Secretarial Officer.

The Chief Information Officer will function as the Acquisition Executive for all Information Technology capital assets deemed by the Deputy Secretary to be Department-wide with total project Development, Modernization, and Enhancement funding of $20 M and greater, and Development, Modernization, and Enhancement funding of $5 M or more in Current year or Budget year. Departmental Information Technology capital assets will be defined by the Deputy Secretary and are characterized by: 1) their widespread and continuous use among multiple Departmental organizational units; 2) their vital importance to accomplishing the Department's business functions; and 3) their special importance to agency senior management.

**Table 1. Critical Decision Authority Thresholds**

| Critical Decision Authority | Total Project Cost Thresholds* | Life Cycle Clean-Up Project Cost Thresholds* |
|---|---|---|
| **Secretarial Acquisition Executive** | ≥ $750M<br>(or any project on an exception basis when designated by the Secretarial Acquisition Executive)<br>**No delegation authority** | ≥ $1B<br>(or any Clean-Up Project on an exception basis when designated by the Secretarial Acquisition Executive)<br>**Delegation authority to Program Secretarial Office on an exception basis** |
| **Under Secretaries** | ≥ $100M and < $750M<br>(or any project on an exception basis when designated by the Under Secretaries)<br>**Delegation authority to Program Secretarial Officer for projects < $400M** | Not Applicable |
| **Program Secretarial Officer** | ≥ $20M** and < $100M<br>**Delegation authority to a Program Manager or field organization manager. CD-0 may not be delegated below the Program Secretarial Officer.** | <$1B<br>**Delegation authority to Headquarters or field Senior Executive Service manager. CD-0 may not be delegated below the Program Secretarial Officer.** |
| **Chief Information Officer** | > $5M and < $750M<br>Departmental Information Technology Projects<br>**No delegation authority** | Not Applicable |

* The Deputy Secretary and the Under Secretaries must be formally notified of all CD-0 and CD-4 approvals for Non-Major System Projects.

** For projects with a Total Project Cost or Environmental Management Total Project Cost less than $20M, the Program Secretarial Officer determines Acquisition Executive authority.

Table 2 provides a list of mandatory prerequisites to obtain Secretarial Acquisition Executive/Acquisition Executive approval for each Critical Decision. Additionally, Table 2 provides approval authorities. Where no approval authorities are noted, authorities are established through other directives or the Programs (e.g., Functions and Requirements Assignment Matrix). Any reference in this Table to the Program Secretarial Officer is also applicable to the Deputy Administrator/Associate Administrators, National Nuclear Security Administration. Appropriate to project risk, size, and complexity, requirements are expected to be tailored to the project and be approved by the Secretarial Acquisition Executive/Acquisition Executive. Projects must utilize the five Critical Decisions; however, in unique circumstances, Critical Decisions may be combined or split by appropriate tailoring. The tailoring approach must have a rational, clear, and documented basis. DOE-STD-1189, as amended,- provides implementation guidance for Hazard Category 1, 2, and 3 nuclear facilities safety requirements.

**Table 2. Critical Decision Requirements**

| CD Requirements | |
|---|---|
| **Order 413.3A Requirements*** | **Approval Authority** |
| **CD-0 Requirements** | |
| Perform Pre-conceptual Planning activities that focus on the Program's strategic goals and objectives, safety planning, and design. Also, for Hazard Category 1, 2, and 3 nuclear facilities, and to the specificity possible, document DOE expectations for safety in design. (See DOE-STD-1189, as amended.) | |
| Prepare a Mission Need Statement that documents a mission requirement that cannot be met through other than material means. Additionally, the Mission Need Statement will document the potential hazards and their safety, security, and risk implications. | Program Secretarial Officer (with recommendation from Program Analysis and Evaluation for projects with a Total Project Cost or Environmental Management Total Project Cost > $100M) |
| Prepare a Tailoring Strategy, if required, that describes the project's approach for appropriately adapting Critical Decision requirements based on the project's risk and complexity. The Tailoring Strategy may be included in the Project Execution Plan at later Critical Decisions. | Secretarial Acquisition Executive or Acquisition Executive |
| Perform a Mission Validation Independent Project Review on all Major System Projects. | Program Secretarial Officer |
| Prepare a Program Requirements Document (for National Nuclear Security Administration only) that defines the ultimate goals which the project must satisfy. | |
| Evaluate projects for Information Technology elements within the Departmental Enterprise Architecture framework. | Chief Information Officer for Departmental Information Technology capital assets with Development Modernization Enhancements funding > or equal to $5M in Current Year or Budget Year, or Development Modernization Enhancements funding > or equal to $20M. |

**Table 2. Critical Decision Requirements (continued)**

| CD Requirements | |
|---|---|
| **CD-1 Requirements** | |
| Prepare a Safety Design Strategy for projects subject to DOE-STD 1189, as amended. | Safety Basis Approval Authority |
| Prepare a Conceptual Design Report which is an integrated systems engineering effort that results in a clear and concise definition of the project. | |
| Prepare an Acquisition Strategy that describes the high-level business and technical management approach designed to achieve project objectives within specified resource constraints. | Program Secretarial Officer (with recommendation from the Office of Engineering and Construction Management for Major System Projects). |
| Comply with the One-for-One Replacement legislation (excess space/offset requirement) as mandated in House Report 109-86. | |
| Prepare a preliminary Project Execution Plan, including a Risk Management Plan and Risk Assessment, that establishes the initial policy and procedures to be followed to manage and control project execution. | Secretarial Acquisition Executive or Acquisition Executive |
| Approve appointment of the Federal Project Director. | Secretarial Acquisition Executive or Acquisition Executive (with Program Manager recommendation) |
| Establish and charter an Integrated Project Team. An Integrated Project Team, led by the Federal Project Director, is a multi-disciplinary team, which includes safety expertise. The Charter includes membership, roles and responsibilities, decision making authority and operating guidance. The Charter may be included in the Project Execution Plan. | Secretarial Acquisition Executive or Acquisition Executive |
| Conduct a Design Review of the conceptual design. Design Reviews are performed to determine if a product (drawings, analyses, or specifications) is correct and will perform its intended functions and meet requirements.<br><br>As part of the Design Review, for high-risk, high-hazard, and Hazard Category 1, 2, and 3 nuclear facilities, conduct a Technical Independent Project Review, the focus of which is to determine that the safety documentation is sufficiently conservative and bounding to be relied upon for the next phase of the project.<br><br>For Information Technology projects, the design review is a review of the preliminary System Description Document. | |
| Prepare a Project Data Sheet for Line Item Projects to request Project Engineering and Design funds for preliminary and final design. | |
| Approve Long-Lead Procurements, if necessary. | Secretarial Acquisition Executive or Acquisition Executive |
| Implement Integrated Safety Management into management and work process planning at all levels per DOE P 226.1. | |
| Prepare environmental documents including National Environmental Policy Act strategy and analyses, and permit applications. | |

**Table 2. Critical Decision Requirements (continued)**

| CD Requirements | |
|---|---|
| Document High Performance Sustainable Building considerations, also referred to as "sustainable environmental stewardship" per DOE O 450.1, chg 2, is documented in the Conceptual Design Report and Acquisition Strategy, as appropriate. | |
| Prepare a Preliminary Security Vulnerability Assessment Report as defined in DOE M 470.4-1. | |
| Prepare an Initial Cyber Security Plan for Information Technology projects in accordance with DOE O 205.1. | |
| Prepare a Conceptual Safety Design Report*** for Hazard Category 1, 2, and 3 nuclear facilities. | Safety Basis Approval Authority via the Conceptual Safety Validation Report |
| Prepare a Preliminary Hazard Analysis Report for facilities that are below Hazard Category 3 threshold as defined in 10 CFR 830, Subpart B and obtain DOE approval (field level). | |
| Prepare a Conceptual Safety Validation Report on the DOE review of the Conceptual Safety Design Report for Hazard Category 1, 2, and 3 nuclear facilities. | Safety Basis Approval Authority |
| Determine that the Quality Assurance Program is acceptable and continues to apply. The Quality Assurance Program must fully address all applicable Quality Assurance Criteria as defined in 10 CFR 830 Subpart A and DOE O 414.1C. | |
| **CD-2 Requirements** | |
| Update the Safety Design Strategy for projects subject to DOE-STD 1189, as amended. | Safety Basis Approval Authority |
| Establish a Performance Baseline to include Key Performance Parameters, total project cost, schedule and scope. The key project milestones and completion date shall be stated no less specific than month and year. The scope will be stated in quantity, size and other parameters that give shape and form to the project. The Performance Baseline may be included in the Project Execution Plan. | Secretarial Acquisition Executive approves Performance Baselines for Major System Projects, Acquisition Executive for Non-Major System Projects. For performance baseline deviation approvals, see Section 5.i. Baseline Management |
| Update the Project Execution Plan to incorporate changes resulting from the design effort in all areas including design considerations, performance baseline, risk analysis, project management, configuration management, and roles and responsibilities. | Secretarial Acquisition Executive or Acquisition Executive |

Vertical line denotes change.

**Table 2. Critical Decision Requirements (continued)**

| CD Requirements | |
|---|---|
| Employ an Earned Value Management System that is compliant with ANSI/EIA-748-A-1998 for projects with a Total Project Cost or Environmental Management Total Project Cost greater than or equal to $20M. Projects having a Total Project Cost or Environmental Management Total Project Cost between $20M and $50M must have an Earned Value Management System that is self-certified by the contractor as ANSI/EIA-748-A-1998 compliant. Projects having a Total Project Cost or Environmental Management Total Project Cost greater than or equal to $50M require an ANSI/EIA-748-A-1998 compliant system certified by the Office of Engineering and Construction Management. For projects not required to utilize an Earned Value Management System (e.g., firm fixed-price contract projects), an alternative performance management system must be described in the Project Execution Plan. | Secretarial Acquisition Executive/Acquisition Executive for Alternative Performance Management System |
| Perform a Performance Baseline Validation External Independent Review or a Performance Baseline Validation Independent Project Review. External Independent Reviews are conducted by the Office of Engineering and Construction Management to validate the Performance Baseline for projects with a Total Project Cost or Environmental Management Total Project Cost greater than or equal to $100M. Independent Project Reviews are conducted by the Project Management Support Office to validate the Performance Baseline for projects with a Total Project Cost or Environmental Management Total Project Cost less than $100 M. | The Office of Engineering and Construction Management for projects with a Total Project Cost or Environmental Management Total Project Cost ≥ $100M, The Project Management Support Office for projects with a Total Project Cost or Environmental Management Total Project Cost < $100M must issue a Performance Baseline Validation Letter to the Program Secretarial Officer that describes the cost, schedule, and scope being validated. |
| Develop an Independent Cost Estimate or perform an Independent Cost Review for Major System Projects as part of the Performance Baseline Validation External Independent Review performed by the Office of Engineering and Construction Management. An Independent Cost Estimate should be performed where complexity, risk, cost, or other factors create a significant cost exposure for the Department. | |
| Determine that the Quality Assurance Program is acceptable and continues to apply. The Quality Assurance Program must fully address all applicable Quality Assurance Criteria as defined in 10 CFR 830 Subpart A and DOE O 414.1C. | |
| Prepare a Preliminary Design. This stage of the design is complete when it provides sufficient information to support development of the Performance Baseline. | |
| Update the Project Data Sheet, if applicable. | |

**Table 2. Critical Decision Requirements (continued)**

| CD Requirements | |
|---|---|
| Conduct a Design Review of the preliminary design. Design Reviews are performed to determine if a product (drawings, analyses, or specifications) is correct and will perform its intended functions and meet requirements.<br><br>For nuclear facilities, design reviews should include a focus on safety and security systems.<br><br>For Information Technology projects, the design review is a review of the updated System Description Document. | |
| Prepare a Preliminary Safety Design Report*** based on the Conceptual Safety Design Report for Hazard Category 1, 2, and 3 nuclear facilities. | Safety Basis Approval Authority via the Preliminary Safety Validation Report |
| Prepare a Hazard Analysis Report by updating the Preliminary Hazard Analysis Report based on new hazards and design information and obtain DOE approval (field level). | |
| Update the Preliminary Security Vulnerability Assessment Report. | |
| Update the Initial Cyber Security Plan for Information Technology projects. | |
| Prepare a Preliminary Safety Validation Report based on DOE review of the Preliminary Safety Design Report for Hazard Category 1, 2, and 3 nuclear facilities. | Safety Basis Approval Authority |
| Incorporate Preliminary Sustainable Environmental Stewardship-High Performance Sustainable Building provisions into the preliminary design and design review. | |
| Complete (or obtain approval of) final National Environmental Policy Act documentation, which must be completed prior to the start of final design. | |
| **CD-3 Requirements** | |
| Update the Safety Design Strategy for projects subject to DOE-STD 1189, as amended. | Safety Basis Approval Authority |
| Complete and review Final Design or determine that the design is sufficiently mature to start procurement or construction.<br><br>For Information Technology projects, the Final Design review is a review of the final System Description Document. | |
| Update all CD-2 project documentation and required approvals to reflect any changes resulting from final Design, including the Project Execution Plan, Performance Baseline, Project Data Sheet, etc. | Various: See prior approvals |
| Perform an External Independent Review for Construction or Execution Readiness. An External Independent Review is performed by the Office of Engineering and Construction Management on all Major System Projects to verify execution readiness. A similar Independent Project Review must be performed by the appropriate Program Secretarial Office for Non-Major System Projects unless justification is provided and a waiver is granted by the Acquisition Executive. | |

Vertical line denotes change.

**Table 2. Critical Decision Requirements (continued)**

| CD Requirements | |
|---|---|
| Prepare the Preliminary Documented Safety Analysis*** based on the Preliminary Safety Design Report for Hazard Category 1, 2, and 3 nuclear facilities. | Safety Basis Approval Authority via the Safety Evaluation Report |
| Update the Hazard Analysis Report and obtain DOE approval (field level). | |
| Update the Preliminary Security Vulnerability Assessment Report. | |
| Update the Cyber Security Plan for Information Technology projects. | |
| Prepare a Safety Evaluation Report based on review of the Preliminary Documented Safety Analysis for Hazard Category 1, 2, and 3 nuclear facilities. | Safety Basis Approval Authority |
| Prepare a Construction Project Safety and Health Plan** and obtain DOE approval (field level). | |
| Incorporate Final Sustainable Environmental Stewardship-High Performance Sustainable Building provisions into the Final Design and the External Independent Review. | |
| Update the Quality Assurance Program for construction, field design changes, and procurement activities. | |
| **CD-4 Requirements** | |
| Verify Key Performance Parameters or Project Completion Criteria have been met and mission requirements achieved. | |
| Complete a Readiness Assessment or an Operational Readiness Review and resolve all pre-start findings including ensuring Operations and Maintenance Staff are properly trained and qualified to operate and maintain the equipment, systems, and facilities being turned over. | |
| 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. | |
| 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. | |
| Issue an updated Quality Assurance Plan to address testing, identified deficiencies, and startup, transition, and operation activities. | |
| Revise the environmental management system to ensure that it incorporates new environmental aspects related to turnover and operations | |
| | |

Vertical line denotes change.

**Table 2. Critical Decision Requirements (continued)**

| CD Requirements | |
|---|---|
| Prepare the Documented Safety Analysis with Technical Safety Requirements for Hazard Category 1, 2, and 3 nuclear facilities. | Safety Basis Approval Authority via the Safety Evaluation Report |
| Update the Construction Project Safety and Health Plan** | |
| Finalize the Hazard Analysis Report and obtain DOE approval (field level). | |
| Finalize the Security Vulnerability Assessment Report. | |
| Finalize the Cyber Security Plan for Information Technology projects and complete the Certification and Accreditation, as required. | |
| Prepare a Safety Evaluation Report based on a review of the Documented Safety Analysis and Technical Safety Requirements for Category 1, 2, and 3 nuclear facilities. | Safety Basis Approval Authority |
| **Post CD-4 Requirements** | |
| 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). | |
| Prepare a Lessons Learned Report and submit to OECM for broader sharing among the DOE project management community. | |
| Complete project required Operational Documentation. | |
| Conduct 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 the Office of Management and Budget's Circular A-11. | |

* Documents and reports are not intended to be stand-alone and may be combined.
** Not applicable to Clean-Up Projects. See DOE M 413.3-1 for additional Environmental Management Clean-Up Project guidance.
*** For major modifications, as defined in 10 CFR 830.3, the Conceptual Safety Design Report and the Preliminary Safety Design Report may either be separate documents or be subsumed within the Preliminary Documented Safety Analysis. This would be addressed in the project's Safety Design Strategy, for DOE approval.

f. Tailoring.

Tailoring is an essential element of the acquisition process and must be appropriate considering the risk, complexity, visibility, cost, safety, security, and schedule of the project. The requirements of this Order are to be applied on a tailored basis as appropriate to the project. Tailoring is subject to the Acquisition Executive's approval and is identified prior to the impacted Critical Decision and approved as early as possible starting at CD-0, if appropriate. In the Tailoring Strategy or the Project Execution Plan, the Federal Project Director will identify those areas a project plans to tailor and an explanation/discussion of each

Vertical line denotes change.

tailored area. The Project Execution Plan/Tailoring Strategy is updated prior to each Critical Decision request. Tailoring does not imply the omission of essential elements in the acquisition process that are necessary for all projects, or other processes that are appropriate to a specific project's requirements or conditions. Moreover, concerning matters relating to integrating safety into the early design of a facility, it is not anticipated that tailoring or modification of the acquisition process would be desirable. Details concerning the application of tailoring are provided in DOE M 413.3-1.

g. Application of Critical Decisions to Unique Projects.

Although most DOE projects will follow the outlined Critical Decision process, there are some unique project situations where customizing the process is beneficial, such as the following:

(1) Environmental Management Cleanup Projects.

These projects include Environmental Clean-up work, Environmental Management Clean-Up Projects, and Environmental Restoration projects. These "projects" could include hundreds of release sites at the lowest level, that are aggregated into Environmental Protection Agency regulated Operable Units or Performance Baseline Summaries. These are further aggregated into a total site-wide program. Decontamination and decommissioning activities may also be aggregated in the same manner. Other projects may range from a single project for a closure site, to disposition of a waste stream, to a grouping of similar work activities or geographic locations within a large site. See DOE M 413.3-1 for additional Environmental Management Clean-Up Project guidance.

(2) Information Technology Projects.

Departmental Information Technology capital assets will be defined by the Deputy Secretary and are characterized by: 1) their widespread and continuous use among multiple Departmental organizational units; 2) their vital importance to accomplishing the Department's business functions; and 3) their special importance to Agency senior management. Information Technology projects are not meant to encompass process or control systems that are an integral part to a broader project. Additionally, this policy is applicable to commercial-off-the-shelf acquisitions.

The DOE Critical Decision process is normally tailored for Information Technology projects to provide sufficient flexibility during the phased or spiral approach required for these projects. Generally, system design and development using a combined CD-2/3 process is required to support various procurement alternatives and software/firmware

implementation in lieu of conventional construction. This tailored approach does not reduce or eliminate management, performance to baselines or technical requirements. The Federal Project Director uses this framework to guide development of documentation to plan, manage, and execute the project and designate appropriate design approvals at the Integrated Project Team level.

(3) Design-Build Projects.

Design-Build is a project delivery method where a single contract is awarded for both design and construction. Design-Build can be used most successfully with projects that have well-defined requirements, are not complex, and have limited risks. This applies to projects that have few "unknowns" or new technology requirements, little to no program or system integration, and are not unique or first-of-a-kind. Projects such as road building, administrative facilities, fire stations, and/or replication of previously accomplished projects are generally the most appropriate for design-build consideration. The Design-Build approach requires the development of a functional design and clearly stated operating requirements that provide sufficient information to allow prospective contractors to prepare bids or proposals, but also allows them the flexibility to implement innovative design and construction approaches, value engineering, and other cost and time savings initiatives. This overall objective of the Design-Build approach is to reduce the total cost to the government and deliver projects more quickly than the traditional Design-Bid-Build approach.

Projects for which Design-Build is an appropriate delivery method will generally have clear and well-defined requirements early in the process. Accordingly, at the time of CD-0, much of the cost and schedule information is known along with key design criteria. For such projects, CD-0 and CD-1 may be accomplished simultaneously. Essentially, in requesting a simultaneous approval CD-0 and CD-1, the Integrated Project Team is asserting that:

- There is no advantage to the government of further evaluation of alternatives;
- The project functions and requirements are well known; and
- A reasonable cost and schedule range can be established.

In some instances, design-build projects may be managed in a close-coupled or fast-track fashion, whereby the initiation of facility construction precedes the development of detailed facility design, e.g., construction begins during the preliminary design stage of a project. In these cases, the project's technical risks are typically much more

significant than for a traditional design and construction approach. To address potential complications, aggressive risk mitigation strategies are required to address the unique characteristics of close-coupled or fast-track design-build projects. Risk management strategies must be outlined in the risk management plan and at a minimum address: (1) all technical uncertainties, (2) the establishment of design margins to address the unique nature of the design, and (3) increased technical oversight requirements.

Approval of CD-0 and CD-1 establishes Design-Build as the project delivery method and allows the project to go forward with development of sufficient design work to establish the Performance Baseline and solicitation package. Because of the maturity of the requirements, the lack of complexity, and the cost and schedule knowledge gained from similar efforts, establishing the Performance Baseline may be expedited. In most cases, CD-3 may be requested simultaneously with CD-2. A tailored External Independent Review would be accomplished to support validation of the Performance Baseline.

Design-Build projects generally will not use Project Engineering and Design funds. The Project Data Sheet must be submitted for the budget year in which the Design-Build contract is to be awarded and must include the costs of design as part of the Total Project Cost. The program office may budget for Project Engineering and Design funds if there is a need to develop significant performance or technical specifications for the project.

(4) Projects Requiring Long-lead Procurement.

For particular projects, including those requiring long-lead procurement or major equipment items, it may be necessary to split CD-2 and/or -3. For example, long-lead procurement might constrain construction, and an early or phased CD-3 could be initiated and justified. While there is potential risk in procuring equipment before the design is complete, the potential schedule improvement may be significant and more than compensate for the risk. The need to phase or segment CD-3 should not be confused with minor, early activities that are necessary and generally performed prior to CD-3. Activities such as site characterization, limited access, safety, and security issues (i.e., fences, etc.) are often necessary prior to CD-3, and may be pursued as long as funding approvals are in place. If an early or phased CD-3 is anticipated, the need for this decision and the process is normally documented in the Project Execution Plan/Tailoring Strategy.

(5) Projects Authorized by the Annual National Defense Authorization Acts.

The following are requirements from Title 50 United States Code for projects authorized by the annual National Defense Authorization Acts:

(a) The Secretary shall submit a request for funds for a conceptual design for a project if the estimated cost of the conceptual design exceeds $3 million.

(b) The conceptual design for a project shall be completed before requesting funds for a construction project.

(c) If the Total Estimated Cost for construction design for a project exceeds $600,000, funds for that design must be specifically authorized by law.

(d) Construction on a project may not be started if the current Total Estimated Cost of the project exceeds by more that 25% the amount shown in the most recent data sheet submitted to Congress.

This is only a sampling of the more common unique projects that may require tailoring of the Critical Decision process or project phases. Therefore, rather than accommodate these as exceptions, guidance is provided in DOE M 413.3-1.

h. Reviews.

Reviews are an important project activity and must be planned as an integral part of the project and tailored appropriate to project risk, complexity, duration, and Critical Decision or phase. The following is a summary of key reviews organized by Critical Decision.

(1) CD-0.

(a) Mission Validation Independent Project Review.

A Mission Validation Independent Project Review is a limited review prior to CD-0 for Major System projects. It validates the mission need and the cost range. A Value Study may also be conducted, as appropriate, to assist in CD-0.

(b) Mission Need Statement Review.

The Office of Program Analysis and Evaluation within the Office of the Chief Financial Officer will review the Mission Need Statement and provide a recommendation to the Program Secretarial Officer for projects with a Total Project Cost or Environmental Management Total Project Cost greater than or equal to $100M.

(2) CD-1.

(a) Acquisition Strategy Review. Acquisition Strategies for Major System Projects must be sent to the Energy Systems Acquisition Advisory Board Secretariat for review by the Office of Engineering and Construction Management prior to scheduling CD-1 decisional briefings. The Federal Program Manager, Federal Project Director and Contracting Officer must concur with the Acquisition Strategy prior to the Office of Engineering and Construction Management review. The Office of Engineering and Construction Management will provide a recommendation to the appropriate Program Secretarial Officer or Deputy/Associate Administrator who holds approval authority. Approval of the Acquisition Strategy does not constitute approval required by the Offices of Procurement and Assistance Management (DOE or National Nuclear Security Administration, as applicable) for specific contract clearance purposes, including contract acquisition plans.

(b) Technical Independent Project Review. Prior to CD-1 approval, the Program Secretarial Officer will perform a Technical Independent Project Review to ensure safety and security is effectively integrated into design and construction for high risk, high hazard, and Hazard Category 1, 2, and 3 nuclear facilities. The review should ensure safety documentation is complete, accurate, and reliable for entry into the next phase of the project.

(c) Design Reviews. Design Reviews are an integral part of a project. Beginning at CD-1 and continuing through the life of the project, as appropriate, Design Reviews are performed by individuals external to the project. Design Reviews are performed to determine if a product (drawings, analysis, or specifications) is correct and will perform its intended functions and meet requirements. Design Reviews must be conducted for all projects and must involve a formalized, structured approach to ensure the reviews are comprehensive, objective, and documented.

(3) CD-2.

(a) Performance Baseline Validation Review. A Performance Baseline Validation Review is required to provide reasonable assurance that the project can be successfully executed. Independent Project Reviews are required to validate the Performance Baseline for projects with a Total Project Cost or Environmental Management Total Project Cost less than $100M. The Acquisition Executive may request an External Independent Review in lieu of an Independent Project Review through the Office of Engineering and

Construction Management, and must do so if the Acquisition Executive has no Project Management Support Office to perform the review. For all projects with a Total Project Cost or Environmental Management Total Project Cost greater than or equal to $100M, the Office of Engineering and Construction Management utilizes the external independent review in support of the performance baseline validation. As part of the External Independent Review, either an Independent Cost Estimate or Independent Cost Review is employed.

(4) CD-3.

(a) Construction or Execution Readiness Review. An External Independent Readiness Review must be performed by the Office of Engineering and Construction Management on Major System Projects to verify execution readiness. At a minimum, this review verifies the readiness of the project to proceed into construction or remedial action. The findings of the Execution Readiness Review and any corrective actions must be presented to the Secretarial Acquisition Executive as a part of CD-3 approval. A similar Independent Project Review may be performed by the appropriate Program Secretarial Officer for Non-Major System Projects as requested by the Acquisition Executive.

(5) CD-4.

(a) Operational Readiness Review or Readiness Assessment. As appropriate, an Operational Readiness Review or Readiness Assessment is conducted prior to approving CD-4.

i. Baseline Management.

(1) Performance Baseline Deviation.

A Performance Baseline deviation occurs when the approved cost, schedule, performance, or scope parameters cannot be met. The Federal Project Director must ensure management is promptly notified whenever the project performance indicates the likelihood of a Performance Baseline deviation. When a deviation occurs, the approving authority must make a specific determination whether to terminate the project or establish a new Performance Baseline. The Secretarial Acquisition Executive must approve Performance Baseline changes under any of the following circumstances for Projects:

- An increase in excess of the lesser of $25M or 25% (cumulative) of the original CD-2 cost baseline.

- A delay of six-months or greater (cumulative) from the original project completion date.

- A change in scope that affects the ability to satisfy the mission need, an inability to meet a Key Performance Parameter, or non-conformance with the current approved Project Execution Plan, which must be reflected in the Project Data Sheet.

The Secretarial Acquisition Executive must approve Performance Baseline changes under any of the following circumstances for Clean-Up Projects:

- An increase in excess of the lesser of $100M or 25% (cumulative) of the original CD-2 Environmental Management Total Project Cost baseline.

- A delay of one year or greater (cumulative) from the original project completion date.

- Any change in scope that affects the site end-state.

The Under Secretaries for Projects and the Program Secretarial Officer for Environmental Management Clean-Up Projects are the approval authorities for Performance Baseline changes below Secretarial Acquisition Executive approval level. These approval authorities may be delegated to the Program Secretarial Officers or below. New Performance Baseline approval thresholds and authorities should be documented in the Project Execution Plan for project changes below the thresholds identified above. Additionally, all Performance Baseline deviation decisions must be reported to the Secretarial Acquisition Executive. These approval levels must be incorporated into the change control process for each project. New performance baselines to be established because of a deviation must be validated by the Office of Engineering and Construction Management for projects with a Total Project Cost or Environmental Management Total Project Cost greater than or equal to $100M and by the Project Management Support Office for projects with a Total Project Cost or Environmental Management Total Project Cost less than $100M.

(2) Directed Changes.

Project changes caused by DOE Policy Directive, Regulatory, or Statutory action, such as changes in approved budget or the addition of new requirements are to be called Directed Changes. Directed changes follow the appropriate baseline management process.

(3) Change Control.

Change control ensures that project changes are identified, evaluated, coordinated, controlled, reviewed, approved/disapproved, and documented in a manner that best serves the project. The change control process is defined in the Project Execution Plan. One key goal of change control is to ensure Performance Baseline thresholds are not exceeded. Changes can be classified into two broad categories: those that impact the Performance Baseline and those that do not. Approval authority for changes depends upon the impact of the change and can range from the contractor to the Secretarial Acquisition Executive, usually with the involvement and support of a Change Control Board. Significant changes could require Congressional notification. Additional information concerning change control is provided in DOE M 413.3-1.

j. Project Reporting and Progress Reviews.

Monthly project status must be reported using the web-based Project Assessment and Reporting System. Approval of CD-0 initiates a requirement for project status reporting which continues through the approval of CD-4 for all projects with a Total Project Cost or Environmental Management Total Project Cost greater than or equal to $5M. Additionally, the Acquisition Executive or designee must begin holding quarterly progress reviews. The requirement for quarterly reviews cannot be delegated below the Acquisition Executive for Non-Major System Projects. The Secretarial Acquisition Executive may delegate quarterly reviews for Major System Projects to the Under Secretaries. For Environmental Management Clean-Up Projects, quarterly reviews may be delegated to the Program Secretarial Officer. The Office of Engineering and Construction Management must be invited to quarterly reviews for all projects with a Total Project Cost greater than or equal to $100M.

At CD-2 and continuing through CD-4, critical performance information must be reported in the Project Assessment and Reporting System. Projects having a Total Project Cost or Environmental Management Total Project Cost greater than or equal to $20M must report Earned Value performance. All projects with a Total Project Cost or Environmental Management Total Project Cost greater than or equal to $5M require, at a minimum, the input of Key Performance Parameters, key milestones and a project performance assessment (Green, Yellow, or Red) as determined by the:

- Federal Project Director for projects having a Total Project Cost greater than or equal to $5M and less than $20M (or up to $100M for Environmental Management Clean-Up projects);

- Program Secretarial Officer for Projects having a Total Project Cost greater than or equal to $20M and less than $100M (see above bullet for Environmental Management Clean-Up projects);

- Program Secretarial Officer for Environmental Management Clean-Up Projects having a Total Project Cost greater than $100M and less than or equal to $400M; and

- The Office of Engineering and Construction Management for Projects having a Total Project Cost greater than or equal to $100M and Environmental Management Clean-Up Projects having an Total Project Cost greater than $400M.

Project performance assessment is determined using the following criteria:

- Green – Project is expected to meet its cost, schedule, and Performance Baseline.

- Yellow – Project is at risk of breaching its cost, schedule, and Performance Baseline.

- Red – Project is expected to breach its cost, schedule, and Performance Baseline.

k. Topical Areas.

(1) Acquisition Strategy.

An acquisition strategy is a high-level description of a business and technical management approach designed to achieve project objectives within specified resource constraints. The acquisition strategy conveys the Integrated Project Team's approach for the successful acquisition of the project, its intended outcomes, and rationale for that approach. This document is a CD-1 requirement and is the framework for planning, organizing, staffing, controlling, and leading a project. Key elements of an Acquisition Strategy are provided in DOE M 413.3-1.

(2) Conceptual Design/Conceptual Design Report.

Following approval of CD-0, Approval of Mission Need, the project team will commence development of the alternative strategies that will satisfy the Mission Requirements identified in the Program Requirements Document. These alternative strategies will culminate in the proposed path forward for the project, the Conceptual Design. The activities that support the development of the Conceptual Design are funded through the Program Office and these costs will eventually be collected and

included in the project's Total Project Cost. Title 50 U.S. Code for Projects authorized by annual National Defense Authorization Acts requires that any time during the development of the Conceptual Design or the Conceptual Design Report the cost will exceed the $3M notification threshold, Congress must be officially notified. Until the approval of CD-1, Approval of Preliminary Baseline Range, there is no capital funding authorized for the project, i.e., all funds expended will be Program funds. In view of the Congressional notification requirement, the project must keep track of the costs that are allowed for the Conceptual Design.

The specific information that is included in the Conceptual Design and the allowable and prohibited costs are identified in DOE M 413.3. As a minimum, the Conceptual Design should develop the following: the scope required to satisfy the Program Mission requirements, the project feasibility and attainment of specified performance levels, reliable cost and schedule range estimates, project criteria and design parameters, and identification of requirements and features.

(3) Earned Value Management System.

An Earned Value Management System is the integrated set of policies, processes, procedures, systems, and practices that meet the intent of the guidelines identified in ANSI/EIA-748-A-1998. This system is generally documented by a system description and procedures that translate the Earned Value Management Policy into specific organizational approaches of how the 32 guidelines in ANSI/EIA-748-A-1998 will be executed. For projects executed under firm fixed price contracts or level of effort contracts, the Secretarial Acquisition Executive/Acquisition Executive may approve an alternative performance management system. The Earned Value Management System or alternative performance management system is described in the Project Execution Plan. A complete description of the Earned Value Management System capabilities are provided in ANSI/EIA-748-A-1998 and is discussed in the DOE M 413.3-1.

(4) Environment, Safety and Health Documentation Development.

At CD-1, for Hazard Category 1, 2, and 3 nuclear projects, a Conceptual Safety Design Report is developed to:

(a) Document and establish a preliminary inventory of hazardous materials, including radioactive materials and chemicals;

(b) Document and establish the preliminary hazard categorization of the facility;

(c) Identify and analyze primary facility hazards and facility Design Basis Accidents;

(d) Provide an initial determination, based on preliminary hazard analysis, of Safety Class and Safety Significant Structures, Systems, and Components;

(e) Include a preliminary assessment of the appropriate Seismic Design Category for the facility itself as well as Safety Significant Structures, Systems, and Components;

(f) Evaluate the security hazards that can impact the facility safety basis (if applicable); and

(g) Include a commitment to the nuclear safety design criteria of DOE O 420.1 (or proposed alternative criteria).

At CD-2, a Preliminary Safety Design Report is developed from the Conceptual Safety Design Report to reflect more refined analyses based on the evolving design and safety integration activities during preliminary design. The Preliminary Safety Design Report should include the results of process hazards analyses and confirm or adjust, as appropriate, the items included in the Conceptual Safety Design Report. At CD-3, a Preliminary Documented Safety Analysis Report is prepared and updates the safety information in the Preliminary Safety Design Report and identifies and justifies changes from the design approach described in the Preliminary Safety Design Report. At CD-4, a Documented Safety Analysis Report is developed based on information from the Preliminary Documented Safety Analysis Report and the Safety Evaluation Report. Technical Safety Requirements are developed to document and establish specific parameters and requisite actions for safe facility operation. DOE-STD-1189, as amended, provides the technical guidance on the preparation of nuclear facility safety documents.

For CD-1, projects involving facilities that are below Hazard Category 3 threshold as defined in 10 CFR 830, Subpart B, must prepare a Preliminary Hazard Analysis Report to identify and evaluate all potential hazards and establish a preliminary set of safety controls. Hazardous chemicals are analyzed in accordance with Integrated Safety Management requirements (DOE P 450.4), 29 CFR 1910.119, Process Safety Management of Highly Hazardous Chemicals, and 40 CFR 68, Chemical Accident Prevention Provisions. For CD-2, a Hazard Analysis Report is developed by updating the Preliminary Hazard Analysis Report to include any new or revised information on facility hazards and safety design. For CD-3 and -4, hazard analysis and controls are updated in the Hazard Analysis Report

Vertical line denotes change.

All projects must comply with environmental protection requirements including National Environmental Policy Act documentation, anticipated permitting requirements, and cost-effective environmental stewardship-high performance sustainable building principles. A Construction Project Safety and Health Plan is prepared prior to construction activities per 10 CFR 851 Appendix A. paragraph 1(d). An Operational Readiness Review or Readiness Assessment is conducted for Hazard Category 1, 2, and 3 nuclear projects in accordance to DOE O 425.1C. The Program Secretarial Officer will need to determine what level of readiness review is needed for projects involving facilities that are below Hazard Category 3 threshold.

(5) Integrated Project Team.

The Integrated Project Team, organized and led by the Federal Project Director, is an essential element in DOE's acquisition process and is used during all phases of a project's life cycle. This team consists of professionals representing diverse disciplines with the specific knowledge, skills, and abilities to support the Federal Project Director in successfully executing a project. The team membership will change as a project progresses from initiation to closeout to ensure the necessary skills are always represented to meet project needs. Team membership may be full or part time, depending upon the scope and complexity of a project. The Federal Project Director and the team will prepare and maintain a Team Charter that describes:

(a) membership;

(b) responsibilities and authority;

(c) leads (as appropriate);

(d) meetings;

(e) reporting; and

(f) operating guidance.

Additional information on Integrated Project Teams is provided in DOE M 413.3-1.

(6) Integrated Safety Management System.

The Department is committed to performing all work so missions can be accomplished with adequate controls in place to protect the public, workers, and the environment. The fundamental premise of Integrated Safety Management System is that accidents are preventable through early and close attention to planning, design, and physical execution of a

project. The Integrated Safety Management System is designed to ensure that safety is appropriately addressed throughout the life cycle of a project. Identification of potential hazards must begin early in project planning and continue throughout the life cycle of the project. DOE policy requires safety management systems be used to systematically integrate safety into management and work processes at all levels. The Integrated Safety Management System is characterized by DOE's expectation that project management will effectively implement seven guiding principles:

(a) Line management responsibility for safety;

(b) Clear roles and responsibilities;

(c) Competence commensurate with responsibility;

(d) Balanced priorities;

(e) The Conceptual Safety Design Report must identify safety standards and requirements to include preliminary seismic design category for the facility itself as well as Safety Class and Safety Significant Structures, Systems, and Components;

(f) Engineered controls tailored to the functions being designed or performed; and

(g) Approval to proceed.

Tailoring is to be applied to a project's Integrated Safety Management System to enable tasks to be managed at the appropriate levels. In effect, management systems function to optimize task planning and performance to enable those closest to the task plan to assume responsibility. Additional Integrated Safety Management System information is provided in DOE M 413.3-1 and the OECM, Project Management Practices, Integrated Safety, Revision E, June 2003. This document defines the five Integrated Safety Management core functions:

(h) Define work scope;

(i) Analyze hazards;

(j) Establish and implement controls;

(k) Perform work/design; and

(l) Provide feedback and improvement.

(7) Key Performance Parameters.

A Key Performance Parameter is a vital characteristic of the project or facility mission. It is a characteristic, function, requirement, or design basis that if changed would have a major impact on the system or facility performance, schedule, cost, and/or risk; or, the ability of an interfacing project to meet its mission requirements. They could be applicable either to the overall system/facility level as a whole and/or to one or more major subsystems. Parameters that are appropriate for Key Performance Parameters are those that express performance in terms of accuracy, capacity, throughput, quantity, processing rates, purity, or others that define how well a system, facility, or other type of project will perform. Additional details concerning the application of Key Performance Parameters are provided in DOE M 413.3-1.

(8) Performance Baseline.

The Performance Baseline, as established in the Project Execution Plan, defines the cost, schedule, performance, and scope commitment to which the Department must execute a project. When the development effort has reached a phase where the requirements and design are mature and the uncertainty and risks have been eliminated, reduced, mitigated, or accepted a project is able to establish the parameters within which it will be executed. These key parameters, when completely identified, define the Performance Baseline. The Performance Baseline includes the entire project budget (total cost of the project including contingency) and represents DOE's commitment to the Congress and the Office of Management and Budget. The Performance Baseline must be controlled, tracked, and reported from the beginning to the end of a project to ensure consistency between the Project Execution Plan, the Project Data Sheet, and the Exhibit 300 (a requirement of Office of Management and Budget Circular A-11, Part 7).

(9) Project Execution Plan.

The Project Execution Plan is the core document for management of a project. The Federal Project Director is responsible for the preparation of this document. It establishes the policies and procedures to be followed to manage and control project planning, initiation, definition, execution, and transition/closeout, and uses the outcomes and outputs from all project planning processes, integrating them into a formally approved document. A Project Execution Plan includes an accurate reflection of how the project is to be accomplished, resource requirements, technical considerations, risk management, configuration management, and roles and responsibilities. A preliminary Project Execution Plan is required to support CD-1. This document continues to be refined throughout a project's life cycle and revisions are documented through the

configuration management process. Key elements of a Project Execution Plan are provided in DOE M 413.3-1.

(10) Quality Assurance.

Quality Assurance begins at project inception and continues through the project's life cycle. The Federal Project Director is responsible for planning and implementing a Quality Assurance Program for the project. Quality affects cost, availability, effectiveness, safety, and performance. Appropriate aspects of Quality Assurance need to be considered during the preparation of project documents. The project's application of Quality Assurance is documented in either the organizational or project-specific Quality Assurance Program that addresses 10 basic criteria: program, personnel training and qualification, quality improvement, documents and records, work processes, design, procurement, inspection and acceptance, management access, and independent assessment. The key requirements/elements of a Quality Assurance Program are provided in DOE O 414.1C and 10 CFR 830 Subpart A.

(11) Risk Management.

Risk Management is an essential element of every project. The DOE risk management approach must be analytical, forward looking, structured, informative, and continuous. Risk assessments are started as early in the project life cycle as possible and should identify critical technical, performance, schedule, and cost risks. Once risks are identified, sound risk mitigation strategies and actions are developed and documented. As a project progresses, new information improves additional insight into risk areas and allows the continuous refinement of the risk mitigation strategies. A close relationship between the Integrated Project Team and the contractor promotes better understanding of program risks and assists in developing and handling project risks. Additional risk management information is provided in DOE M 413.3-1.

(12) 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.

In order to support overall project planning and design, applicable safeguards and security requirements must be identified at the earliest possible project phase. Project success will depend upon the satisfaction of safeguards and security requirements. Using the preliminary safeguards and security plans developed in the previous phase and the increasing

maturity of program planning will allow project personnel to determine that all safeguards and security requirements can be met and are appropriately factored into project cost and schedule.

Following the identification of applicable safeguards and security requirements, their potential impact on mission objectives; satisfaction of environment, safety, and health requirements; and other aspects of the project must be evaluated. Preliminary identification of alternatives (including facility design and the incorporation of safeguards and security technologies) must be made and these alternatives evaluated with respect to their impact on mission needs, satisfaction of other requirements (such as safety requirements), and other cost effectiveness. The applicable safeguards and security requirements, the alternatives considered in the first project phase, and the preliminary approach to satisfying safeguards and security requirements must be documents and this documentation should be reviewed as part of CD-0. This input becomes part of the conceptual design requirements for further development.

Identification of potential security risks must begin early in project planning as part of implementing Integrated Safeguards and Security Management. DOE P 470.1 requires safeguards and security management systems be used to systematically integrate security into management and work practices at all levels. Approval authorities of the safeguards and security documents are prepared according to DOE M 470.4-1. Starting with CD-1 and continuing through CD-3, for safeguards Category I, II, and III, nuclear material assets are identified and vulnerability and risk assessments are performed. The Security Vulnerability Assessment Report, developed in CD-1 and updated in subsequent CDs, describes the methodologies used in vulnerability analyses, sets forth supporting information used, provides the results of vulnerability analyses and risk assessments, and establishes risk ratings. A security plan is developed and submitted to DOE for approval.

Identification of potential sources of elevated safeguards and security risk and/or avoidable safeguards and security costs must begin early in project planning and continue as project planning and design efforts proceed. DOE P 470.1 requires that a balance must be achieved among safeguards and security, programmatic, and operational considerations and that safeguards and security strategy must be tailored to the work being performed to mitigate risk. Achievement of this balance and the tailoring of safeguards and security strategy within capital projects is best accomplished through the systematic application of security expertise operating in conjunction with the project management system. To that end, the preliminary assessment of potential safeguards and security concerns and alternatives developed prior to CD-0 must continue and the results be documented as the project matures. A critical review of the integration of

safeguards and security into the overall project plan and design must be included as a portion of the CD-1 decision process.

Prior to CD-2, the set of applicable safeguards and security requirements, the methods selected to satisfy those requirements, and any potential risk acceptance issues must be reviewed and validated as complete and accurate. During the CD-2 decision process, the Project Execution Plan and the Performance Baseline must be reviewed to ensure that cost, schedule, and integration aspects of safeguards and security are appropriately addressed, that all feasible risk mitigation has been identified, and that the safeguards and security concerns for which explicit line management risk acceptance will be required are appropriately supported.

6. KEY ROLES AND RESPONSIBILITIES.

Three themes regarding roles and responsibilities necessary to achieve defined project objectives as well as the objectives of this Order include:

- Strengthening line management accountability for successful project management results;
- Clearly defining the roles, responsibilities, authority, and accountability of the Federal Project Management Team relative to the contractor Project Management Team; and
- Developing effective Integrated Project Teams to assist the Federal Project Director in planning, programming, budgeting, and successfully acquiring capital assets.

Line managers are responsible for successfully developing, executing, and managing projects within the approved Performance Baseline. Delegation of authority from one line manager to a lower-level line manager must be documented and consistent with DOE delegation authorities and the qualifications of the lower-level line manager. Although the authority and responsibility for decision-making may be delegated to a lower-level manager, the senior manager remains accountable for the decisions made by subordinate managers. Key roles and responsibilities of line managers are described in the following sections:

a. Deputy Secretary.

(1) Serves as the senior manager responsible and accountable for all project acquisitions.

(2) Exercises decision-making authority, including Critical Decisions for all Major System Projects.

(3) Identifies special interest projects and ensures senior executive-level quarterly reviews are provided for those projects.

(4) Approves disposition of projects and Performance Baseline changes at the Secretarial Acquisition Executive approval level upon Performance Baseline deviations.

(5) Serves as Chair for the Energy Systems Acquisition Advisory Board.

(6) Approves site selection for facilities at new sites.

(7) Conducts quarterly project performance reviews for Major System Projects, which may be delegated to the Under Secretaries.

b. Under Secretaries.

(1) Receive Acquisition Executive authority from the Secretarial Acquisition Executive, as appropriate.

(2) Delegate Acquisition Executive authority, as appropriate (refer to Table 1).

(3) Exercise decision-making authority, including Critical Decisions, functioning as the Acquisition Executive.

(4) Hold line accountability for applicable program and capital asset project execution and implementation of policy.

(5) Hold accountability for project-related site environment, safety and health, and safeguards and security.

(6) Serve as Chair and appoint members for Acquisition Advisory Boards.

(7) Approve disposition of projects and Performance Baseline changes below Secretarial Acquisition Executive approval level upon Performance Baseline deviations (may be delegated to Program Secretarial Officers).

(8) Maintain a list of special interest projects and ensure senior executive-level quarterly reviews are provided for those projects.

(9) Establish Project Management Support Offices or delegate this responsibility to Program Secretarial Officers.

(10) Address and resolve issues between projects reporting to them.

(11) Conduct quarterly project performance reviews when serving as the Acquisition Executive. These reviews may be delegated to the Program Secretarial Officer.

c. Program Secretarial Officers and Deputy Administrators/Associate Administrators for the National Nuclear Security Administration.

(1) Hold line accountability for applicable program and capital asset project execution and implementation of policy.

(2) Hold accountability for project-related site environment, safety and health, and safeguards and security.

(3) Approve Mission Need Statement documents and Acquisition Strategy documents for all capital asset projects (cannot be delegated).

(4) Approve disposition of projects and Performance Baseline changes below Secretarial Acquisition Executive approval level following Performance Baseline deviations. If delegated, this authority cannot be further delegated.

(5) Exercise decision-making authority, including Critical Decisions when functioning as Acquisition Executive.

(6) Approve CD-0 for all projects with a Total Project Cost or Environmental Management Total Project Cost less than $100M (cannot be delegated).

(7) Delegate Acquisition Executive functions, as appropriate (refer to Table 1).

(8) Nominates Federal Project Directors, when the Acquisition Executive is above the Program Secretarial Officer, no later than CD-1 (can be delegated). The Federal Project Director appointment is subject to the approval of the Acquisition Executive.

(9) Serve as Chair and appoint members for Acquisition Advisory Boards.

(10) Direct Independent Project Reviews.

(11) Establish Project Management Support Offices when responsibility is delegated or directed by the Under Secretaries.

(12) Ensures that safety is fully integrated into design and construction for high-risk, high-hazard, and Hazard Category 1, 2, and 3 nuclear facilities.

(13) Appoint a Safety Basis Approval Authority no later than CD-0 for projects including the design and construction of Hazard Category 1, 2,

Vertical line denotes change.

and 3 nuclear facilities, or for projects including major modifications thereto.

d. Project Management Support Offices (when established).

(1) Provide independent oversight and report directly to the Under Secretaries, or Program Secretarial Officer, as appropriate.

(2) Serve as the Secretariat for the Program Secretarial Officer/National Nuclear Security Administration-level Advisory Board functions.

(3) Coordinate quarterly performance reports.

(4) Perform Performance Baseline Validation Independent Project Review and other Independent Project Reviews as required by the Program Secretarial Officer.

(5) Develop Program-specific implementing guidance, policies, and procedures.

(6) Collect, analyze, and disseminate lessons learned and "best practices."

(7) Coordinate with other DOE organizations and offices, including the Office of Engineering and Construction Management, to ensure effective and consistent implementation of project management policies and directives.

(8) Provide assistance and oversight to line project management organizations.

(9) Analyze project management execution issues.

(10) Actively assist senior management on issues related to project management performance, including implementation of corrective actions.

(11) Provide support to the Federal Project Directors.

(12) Validate the Performance Baseline for capital asset projects with a Total Project Cost or Environmental Management Total Project Cost greater than or equal to $20M and less than $100M.

e. Program Managers and Heads of Field Organizations.

(1) Direct initial project planning and execution roles for projects assigned by the Acquisition Executive.

Vertical line denotes change.

(2) Initiate definition of mission need based on input from Sites, Laboratories, and Program Offices.

(3) Establish the Integrated Project Team.

(4) Oversee development of project definition, technical scope, and budget to support mission need.

(5) Initiate development of the Acquisition Strategy before CD-1 (during the period preceding designation of the Federal Project Director).

(6) Perform functions as Acquisition Executive when so delegated.

(7) Develop project performance measures, and monitor and evaluate project performance throughout the project's life cycle.

(8) Allocate resources throughout the program.

(9) Oversee the project line-management organization and ensure the line project teams have the necessary experience, expertise, and training in design engineering, safety and security analysis, construction, and testing.

(10) Serve as the Federal Project Director until the Federal Project Director is appointed.

(11) Ensures that safety is fully integrated into design and construction for high-risk, high-hazard, and Hazard Category 1, 2, and 3 nuclear facilities.

f. Acquisition Executives.

The following roles and responsibilities are for illustrative purposes, and each designated Acquisition Executive is guided by the specific limits of his/her delegated authority.

(1) Approve Critical Decisions (CD-0 cannot be delegated below the Program Secretarial Officer level).

(2) Appoint and Chair Acquisition Advisory Boards to provide advice and recommendations on key project decisions.

(3) Approve the appointment of the Federal Project Director.

(4) Designate the Design Authority at CD-1.

(5) Monitor the effectiveness of Federal Project Directors and their support staff.

(6) Approve project changes in compliance with change control levels identified in Project Execution Plans.

(7) Conduct monthly and quarterly project performance reviews.

(8) Ensures that safety is fully integrated into design and construction for high-risk, high-hazard, and Hazard Category 1, 2, and 3 nuclear facilities.

g. Federal Project Director.

Successful performance of DOE projects depends on professional and effective project management by the Federal Project Director. The Federal Project Director is responsible and accountable to the Acquisition Executive/Program Secretarial Officer or delegated authority, as appropriate, for executing the project.

The Federal Project Director's assigned project must meet cost, schedule and performance targets unless circumstances beyond the control of the Project direct result in cost overruns and/or delays. Federal Project Directors must demonstrate initiative in incorporating and managing an appropriate level of risk to ensure best value for the government. In cases where significant cost overruns and/or delays occur, the Federal Project Director alerts senior management in a timely manner and takes appropriate steps to mitigate these cost overruns or delays.

Roles and responsibilities of the Federal Project Director's team must be clearly defined relative to the contractor management team. Further guidance is provided in DOE M 413.3-1.

(1) Attains and maintains certification in concert with the requirements outlined in DOE O 361.1A before they are delegated authority to serve as a Federal Project Director.

(2) Plans, implements, and completes a project using a Systems Engineering approach.

(3) Initiates development and implementation of key project documentation (e.g., Project Execution Plan).

(4) Defines project cost, schedule, performance, and scope baselines.

(5) Is responsible for design, construction, environmental, safety, security, health, and quality efforts performed comply with the contract, public law, regulations, and Executive Orders.

(6) Is responsible for timely, reliable, and accurate integration of contractor performance data into the project's scheduling, accounting, and performance measurement systems.

(7) Evaluates and verifies reported progress; makes projections of progress and identifies trends.

(8) Serves as the single point of contact between Federal and contractor staff for all matters relating to a project and its performance.

(9) Serves as the Contracting Officer's Representative, as determined by the Contracting Officer.

(10) Leads the Integrated Project Team and provides broad program guidance. Delegates appropriate decision-making authority to the Integrated Project Team members.

(11) Prepares and maintains the Integrated Project Team Charter and operating guidance with Integrated Project Team support.

(12) Approves changes in compliance with the approved change control process documented in the Project Execution Plan.

(13) Ensures that safety is fully integrated into design and construction for high-risk, high-hazard, and Hazard Category 1, 2, and 3 nuclear facilities.

h. Departmental Staff and Support Offices.

Departmental Staff and Support Offices develop policy and related implementing guidance, perform review functions, and provide advice and recommendations to Department leadership. Key roles and responsibilities of these offices regarding the acquisition of capital assets follow.

i. Office of Health, Safety and Security.

(1) Serves as a member of the Energy Systems Acquisition Advisory Board.

(2) Advises the Deputy Secretary in his/her role as the Secretarial Acquisition Executive on environmental, safety, and security matters related to all Critical Decision approvals.

(3) Serves on the Independent Project Review as a team member at the request of the Secretarial Acquisition Executive, Program Secretarial Officer, Program Manager, Operations/Field Office Manager, or Federal Project Director.

(4) Participates on External Independent Reviews as an observer at the request of the Office of Engineering and Construction Management.

Vertical line denotes change.

(5) Participates in safety and security documentation and Quality Assurance reviews for acquisition projects at the request of the Office of Engineering and Construction Management and/or the Acquisition Executive when considered appropriate.

(6) Participates in Operational Readiness Reviews or Readiness Assessments at the request of the line organizations.

(7) Supports the Central Technical Authorities as requested.

j. Office of the Chief Information Officer.

(1) Holds delegated Acquisition Executive authority over Departmental Information Technology Projects between $5M < $100M.

(2) Develops and maintains Department-wide policy, requirements, and guidance for Information Technology projects, including Information Technology hardware, software and application, and capital assets.

(3) Advises and provides programmatic support to ensure that Information Technology is acquired and information resources are managed in accordance with all applicable statutory, regulatory, and agency requirements.

(4) Provides Information Technology investment management process assistance to Program Offices, field elements, and contractor locations, as requested.

(5) Regularly collects process performance measurement information, and prepares a summary report on the status and performance of Information Technology investments.

(6) Establishes Enterprise Architecture policy and practice within DOE to ensure the development and maintenance of a sound and integrated Information Technology portfolio of investments that are aligned to the strategic business goals of the Department.

k. Office of Engineering and Construction Management within the Office of Management.

(1) Serves as DOE's principal point of contact relating to project management.

(2) Develops policy, requirements, and guidance for the acquisition of capital assets.

Vertical line denotes change.

(3) Assist in the planning, programming, budgeting, and execution process for the acquisition of capital assets in coordination with the Program Secretarial Officers and Project Management Support Offices.

(4) Supports the Office of the Secretary, the Secretarial Acquisition Executive, the Under Secretaries, and the Program Secretarial Officer in the Critical Decision process; and oversight of the acquisition management process.

(5) Serves as Secretariat for the Energy Systems Acquisition Advisory Board.

(6) Serves as an Acquisition Advisory Board member for Non-Major System Projects with a Total Project Cost or Environmental Management Total Project Cost greater than or equal to $100M.

(7) Manages the Project Management Career Development Program.

(8) Manages the Earned Value Management System certification process.

(9) Reviews Acquisition Strategies for Major System Projects.

(10) Maintains a corporate project reporting capability.

(11) Establishes, maintains, and executes a corporate independent review capability to provide an independent assessment and analysis of project planning, execution, and performance.

(12) Validates the Performance Baseline for all capital asset projects with a Total Project Cost or Environmental Management Total Project Cost greater than or equal to $100M to permit inclusion in the DOE annual budget.

l. Office of Program Analysis and Evaluation.

Reviews Mission Need Statements for all capital asset projects with a Total Project Cost or Environmental Management Total Project Cost greater than or equal to $100M, and makes a recommendation to Program Secretarial Officer prior to CD-0.

m. Integrated Project Team.

(1) Supports the Federal Project Director.

(2) Develops a project contracting strategy.

(3) Ensures project interfaces are identified, defined, and managed to completion.

(4) Identifies, defines, and manages to completion the project environmental, safety, health, security, and quality assurance requirements.

(5) Identifies and defines appropriate and adequate project technical scope, schedule, and cost parameters.

(6) Performs periodic reviews and assessments of project performance and status against established performance parameters, baselines, milestones, and deliverables.

(7) Plans and participates in project reviews, audits, and appraisals as necessary.

(8) Reviews all Critical Decision packages and recommend approval/disapproval.

(9) Reviews and comments on project deliverables (e.g., drawings, specifications, procurement, and construction packages).

(10) Reviews change requests (as appropriate) and support Change Control Boards as requested.

(11) Participates, as required, in Operational Readiness Reviews or Readiness Assessments.

(12) Supports preparation, review, and approval of project completion and closeout documentation.

(13) Ensures that safety is fully integrated into design and construction for high-risk, high-hazard, and Hazard Category 1, 2, and 3 nuclear facilities.

n. Central Technical Authorities.

The Central Technical Authorities are responsible for maintaining operational awareness, especially with respect to complex, high-hazard nuclear operations, and ensuring the Department's nuclear safety policies and requirements are implemented adequately and properly. In this context, it is important to recognize that the Central Technical Authorities have responsibilities related to nuclear safety directives that apply to projects. The overall roles and responsibilities of the Central Technical Authorities include:

(1) Concur with the determination of the applicability of DOE Directives involving nuclear safety included in contracts pursuant to DEAR 48 CFR 970.5204-2(b).

(2) Concur with nuclear safety requirements included in contracts pursuant to DEAR 48 CFR 970.5204-2.

(3) Concur with all exemptions to nuclear safety requirements in contracts that were added to the contract pursuant to DEAR 48 CFR 970.5204-2.

(4) Recommend to the Assistant Secretary for Environment, Safety and Health issues and proposed resolutions concerning DOE safety requirements, concur in the adoption or revision of nuclear safety requirements (including supplemental requirements), and provide expectations and guidance for implementing nuclear safety requirements for use by DOE employees and contractors.

o. Chief of Defense Nuclear Safety and Chief of Nuclear Safety.

The Chiefs (and staff) are responsible for evaluating nuclear safety issues and providing expert advice to the Central Technical Authorities and other senior officials. For Hazard Category 1, 2, or 3 nuclear facilities, the Chief:

(1) Participates as part of the Energy Systems Acquisition Advisory Board, or similar advisory boards.

(2) Provides support to both the Central Technical Authorities and Acquisition Executive regarding the effectiveness of efforts to integrated safety into design at each of the Critical Decisions, and as requested during other project reviews.

(3) Validates that integration of design and safety basis activities include the use of a system engineering approach tailored to the specific needs and requirements of the project.

(4) Determines that nuclear facilities have incorporated the concept of defense-in-depth into the facility design process.

(5) Validates that Federal personnel assigned to the Integrated Project Team as nuclear safety experts are appropriately qualified.

p. Energy Systems Acquisition Advisory Board.

The Energy Systems Acquisition Advisory Board advises the Secretarial Acquisition Executive on Critical Decisions related to Major System Projects, site selection, and Performance Baseline deviation dispositions.

q. Energy Systems Acquisition Advisory Board Membership.

(1) Secretarial Acquisition Executive as Chair

(2) Under Secretaries

(3) DOE General Counsel

(4) Director of Management

(5) Chief Financial Officer

(6) Director of the Office of Engineering and Construction Management

(7) Assistant Secretary for Environmental Management

(8) Chief Health, Safety and Security Officer

(9) Deputy Administrator for Defense Programs

(10) Director of the Office of Science

(11) Assistant Secretary for Nuclear Energy

The Deputy Secretary may designate other Program Secretarial Officers or functional staff as Energy Systems Acquisition Advisory Board members (temporary or permanent) as needed.

r. Energy Systems Acquisition Advisory Board Secretariat.

The Energy Systems Acquisition Advisory Board Secretariat resides in the Office of Engineering and Construction Management and provides administrative and analytical support and recommendations to the Energy Systems Acquisition Advisory Board.

s. Non-Major System Project Advisory Boards.

The designated Acquisition Executive will appoint an Advisory Board to provide advice and recommendations on actions for projects that are not designated as Major Systems. The designated Acquisition Executive is the Chair of the Advisory Board. The Advisory Board replicates and conducts identical functions to those performed by the Energy Systems Acquisition Advisory Board. Members may be selected from within the Acquisition Executive's organization. However, at least one member from an office not under the Acquisition Executive will be designated as a contributing representative. The Office of Engineering and Construction Management will provide a member to each Advisory Board for projects with a Total Project Cost or Environmental Management Total Project Cost greater than or equal to $100M. The Office of

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Engineering and Construction Management will not be a Board member for projects with a Total Project Cost or Environmental Management Total Project Cost less than $100M, but may be invited to attend the Advisory Board meetings. The implementing documentation and composition of each Advisory Board along with meeting agendas and minutes will be provided to the Office of Engineering and Construction Management.

7. REFERENCES.

a. 10 CFR 830, Subpart A, Quality Assurance Requirements.

b. 10 CFR 830, Subpart B, Safety Basis Requirements.

c. 10 CFR 830.206, Preliminary Documented Safety Analysis.

d. 10 CFR 851, Worker Safety and Health Program.

e. 29 CFR 1910.119, Process Safety Management of Highly Hazardous Substances.

f. 40 CFR 68, Chemical Accident Prevention Provisions.

g. ANSI-EIA-649, National Consensus Standard for Configuration Management.

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

i. DEAR 48 CFR 970.5204-2, Integration of Environmental, Safety, and Health into Work Planning and Execution.

j. DOE O 205.1, *Department of Energy Cyber Security Management Program*, dated 03-21-03.

k. DOE P 413.1, *Program and Project Management Policy for the Planning, Programming, Budgeting, and Acquisition of Capital Assets*, dated 06-10-00.

l. DOE O 425.1C, *Startup and Restart of Nuclear Facilities*, dated 03-13-03.

m. DOE O 430.2A, *Departmental Energy and Utilities Management*, dated 04-15-02.

n. DOE O 451.1B, Chg 1, *National Environmental Policy Act Compliance Program*, dated 09-28-01.

o. DOE P 470.1, *Integrated Safeguards and Security Management*, dated 05-08-01.

p. DOE P 450.4, *Safety Management System Policy*, dated 10-15-96.

q. DOE P 226.1, *Department of Energy Oversight Policy*, dated 06-10-05.

r. DOE O 414.1C, *Quality Assurance*, dated 06-17-05.

s. DOE O 420.1B, *Facility Safety*, dated 12-22-05.

t. DOE M 413.3-1, *Program Management for the Acquisition of Capital Assets*, dated 03-28-03.

u. DOE M 470.4-1, *Safeguards and Security Program Planning and Management*, dated 08-26-05.

v. DOE O 361.1A, *Acquisition Career Development Program*, dated 04-19-04.

w. DOE O 450.1, Chg 2, *Environmental Protection Program*, dated 12-07-05.

x. DOE-STD-1189, as amended.

y. House Report 109-86, "Energy and Water Development Appropriations Bill, 2006."

z. OECM, Project Management Practices, Integrated Safety, Revision E, June 2003.

aa. OMB Circular A-11, Part 7, Planning, Budgeting, Acquisition, and Management of Capital Assets, dated June 2006; and Supplement to Part 7-Capital Programming Guide.

bb. OMB Circular A-123, Management's Responsibility for Internal Control, dated 12-21-04.

cc. OMB Circular A-127, Financial Management Systems, dated 07-23-93.

dd. OMB Circular A-130, Management of Federal Information Resources, Transmittal Memorandum #4, dated 11-28-00.

8. CONTACT. Questions concerning this Order should be directed to the Office of Engineering and Construction Management, 202-586-1784.

BY ORDER OF THE SECRETARY OF ENERGY:

CLAY SELL
Deputy Secretary

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**DEPARTMENTAL ELEMENTS TO WHICH
DOE ORDER 413.3A IS APPLICABLE**

Office of the Secretary
Departmental Representative to the Defense Nuclear Facilities Safety Board
National Nuclear Security Administration
Office of Chief Financial Officer
Office of Chief Information Officer
Office of Civilian Radioactive Waste Management
Office of Congressional and Intergovernmental Affairs
Office of Economic Impact and Diversity
Office of Electricity Delivery and Energy Reliability
Office of Energy Efficiency and Renewable Energy
Office of Energy Information Administration
Office of Environmental Management
Office of Fossil Energy
Office of General Counsel
Office of Health, Safety and Security
Office of Hearings and Appeals
Office of Human Capital Management
Office of Inspector General
Office of Intelligence and Counterintelligence
Office of Legacy Management
Office of Management
Office of Nuclear Energy, Science, and Technology
Office of Policy and International Affairs
Office of Public Affairs
Office of Science
Secretary of Energy Advisory Board
Southeastern Power Administration
Southwestern Power Administration
Western Area Power Administration

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**CONTRACTOR REQUIREMENTS DOCUMENT**
**DOE ORDER 413.3A, *Program and Project Management for the Acquisition of Capital Assets***

This Contractor Requirements Document sets forth intended requirements to be applied to contractors responsible for performing program and project management of Department-owned facilities and for other contractors as determined by the Federal Project Director and Contracting Officer, in conjunction with the Federally-assigned Integrated Project Team members. Regardless of the performer of the work, the affected contractor is responsible for complying with the requirements of this Contractor Requirements Document as included in the contract. The contractor is responsible for flowing down Contractor Requirements Document requirements to subcontractors at any tier to the extent necessary to ensure contractor compliance.

The contractor's project management system must satisfy the following requirements:

1. The industry standard for Performance Management Systems, described in ANSI/EIA-748-A-1998, must be implemented and self-certified on all projects with a Total Project Cost greater than $20M. For projects not required to utilize an Earned Value Management System (e.g., firm fixed-price contract projects), an alternative Performance Management System must be described in the Project Execution Plan and utilized. For projects with Total Project Cost equal to or greater than $50M, the Earned Value Management System must be validated by the Office of Engineering and Construction Management. It is to be used for control and reporting of project performance as defined in the Project Execution Plan and no later than CD-2.

2. Cost and schedule performance, milestone status, and financial status no later than CD-2 must be reported to DOE on a monthly basis using DOE-approved work breakdown structure elements and data elements for all projects with a Total Project Cost greater than or equal to $20M, except firm fixed-priced contracts. The report must also include variance analyses and corrective action plans that integrate cost, schedule, and scope if variances exceed DOE-established reporting thresholds. Analyses of cost and schedule trends, financial status, and baseline change control activity, including the allocation of management reserve, potential problems, and critical issues will also be reported. Reporting by the contractor may be required earlier than CD-2 as specified by the Contracting Officer.

3. For project contracts to be awarded as subcontracts by the contractor, the contractor must have a written Acquisition Plan that is appropriate for the requirement and dollar value of each subcontract and consistent with its contract's provisions. The Acquisition Plan for a project contract to be awarded by the contractor is to be developed by a team of contractor employees including, at a minimum, the prospective Project Manager and Contract Negotiator. The Acquisition Plan must receive the concurrence of both the Federal Project Director and the DOE Contracting Officer.

4. Technical performance analyses and corrective action plans must be reported to DOE for variances to the project baseline objectives resulting from design reviews, component and system tests, and simulations.

5. A critical path schedule and a project master schedule must be developed and maintained.

6. Cost estimating must be an integral part of cost baseline including life cycle cost development and maintenance, budget request development, and estimates at completion.

7. Project technical, cost, and schedule risks must be identified, quantified, and mitigated throughout the life of the project. Risks must be identified, evaluated, and mitigation strategies developed and implemented.

8. An integrated contractor technical, cost, and schedule baseline must be developed and maintained using a contractor-level Change Control Board.

9. A configuration management process must be established that controls changes to the physical configuration of project facilities, structures, systems, and components in compliance with ANSI/EIA-649, National Consensus Standard for Configuration Management. This process must also ensure that the configuration is in agreement with the performance objectives identified in the technical baseline and the approved quality assurance plan.

10. A Value Management/Engineering process must be used that identifies high-cost project activities in order to realize a maximum return on investment through the use of systems engineering tradeoffs and functional analyses that identify alternate means of achieving the same function at a lower life cycle cost.

11. A quality assurance program must be developed and implemented for the contract scope of work when the contractor's requirements include DOE O 414.1C, *Quality Assurance* or 10 CFR 830 Subpart A, *Quality Assurance Requirements* (as applicable).

12. An Integrated Safety Management system must be developed and implemented for the contract scope of work when the contractor is complying with the requirements of DEAR 48 CFR 970.5223-1-, *Integration of Environment, Safety and Health into Work Planning and Execution*.

13. Contractors performing design for projects must at a minimum conduct a Preliminary and Final Design Review, in accordance with the Project Execution Plan. For nuclear projects, the design review will include a focus on safety and security systems.

14. High performance sustainable building principles must be applied to the siting, design, construction, and commissioning of new facilities and major renovations of existing facilities.

15. For projects including Hazard Category 1, 2, and 3 nuclear facilities or for projects including major modifications thereto (as defined in 10 CFR Part 830), the requirements

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in DOE-STD-1189, as amended, must be fully implemented. The following documents must be submitted: Safety Design Strategy (CD-1), Conceptual Safety Design Report (CD-1), Preliminary Safety Design Report (CD-2), Preliminary Documented Safety Analysis (CD-3), and Documented Safety Analysis with Technical Safety Requirements (CD-4). For major modifications, the Conceptual Safety Design Report and the Preliminary Safety Design Report may either be separate documents or be subsumed within the Preliminary Documented Safety Analysis.

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# DEFINITIONS

1. Acquisition Executive. The individual designated by the Secretary of Energy to integrate and unify the management system for a program portfolio of projects, and implement prescribed policies and practices.

2. Acquisition Strategy. An acquisition strategy is a high-level business and technical management approach designed to achieve project objectives within specified resource constraints. It is the framework for planning, organizing, staffing, controlling, and leading a project. It provides a master schedule for activities essential for project success, and for formulating functional strategies and plans.

3. Capital Assets. Capital assets are land, structures, equipment, intellectual property (e.g., software), and Information Technology used by the Federal government and having an estimated useful life of two or more years. Capital assets include environmental restoration (decontamination and decommissioning) of land to make useful leasehold improvements and land rights, and assets whose ownership is shared by the Federal Government with other entities. Capital assets may be acquired in different ways: purchase, construction, or manufacture; a lease-purchase or other capital lease (regardless of whether title has passed to the Federal Government); or exchange. This Order does not apply to land, structures, equipment, intellectual property (e.g., software), or Information Technology acquired by State and local governments or other entities through Financial Assistance (i.e., DOE grants and cooperative agreements), or to assets acquired under General Plant Projects for maintaining infrastructure at a site.

4. Conceptual Design. The concept for meeting a mission need. The Conceptual Design process requires a mission need as an input. Concepts for meeting the need are explored and alternatives considered to arrive at a set of alternatives that are technically viable, affordable and sustainable.

5. Configuration Management. The technical and administrative direction and surveillance actions taken to identify and document the functional and physical characteristics of a configuration item; to control changes to a configuration item and its characteristics; and to record and report change processing and implementation status.

6. Contingency. Contingency is the portion of the project budget that is available for risk uncertainty within the project scope, but outside the scope of the contract. Contingency is budget that is not placed on the contract, and is included in the Total Project Cost.

7. Construction Manager. The individual or firm responsible to DOE for supervision and administration of a construction project to ensure the construction contractor's compliance with construction project requirements.

8. Contractor Requirements Document. A Contractor Requirements Document is the DOE document that identifies the requirements that the Prime Contractor’s project management system must satisfy (Attachment 2).

9. Critical Decision. A formal determination made by the Secretarial Acquisition Executive/Acquisition Executive at a specific point in a project's life cycle that allows the project to proceed to the next phase or Critical Decision.

10. Deviation. A deviation occurs when the current estimate of a performance, technical, scope, schedule, or cost parameter is not within the threshold values of the Performance Baseline for that parameter. It is handled as a deviation, not through the normal change control system.

11. Directed Change. A change imposed on a project(s) that affects the project's baseline. Example of directed changes include, but are not limited to (a) changes to approved budgets, or funding, and (b) changes resulting from DOE policy directives and regulatory or statutory requirements.

12. Earned Value. Earned Value is the budgeted value of work actually accomplished in a given time. Simply defined, Earned Value represents the value of work accomplished during the period.

13. Earned Value Management. Earned Value Management is a program and project management methodology of which organization, planning, progressing, tracking, management control, reporting, and communication are essential elements.

14. External Independent Review. A project review conducted by individuals outside DOE. The Office of Engineering and Construction Management selects an appropriate contractor to perform these reviews.

15. Final Design. Completion of the design effort and production of all the approved design documentation necessary to permit procurement, construction, testing, checkout, and turnover to proceed. Final design occurs between Critical Decision-2 and -3.

16. Independent Cost Estimate. A "bottoms-up" documented, independent cost estimate that has the express purpose of serving as an analytical tool to validate, crosscheck, or analyze cost estimates developed by project proponents.

17. Independent Cost Review. An essential project management tool used to analyze and validate an estimate of project costs by individuals having no direct responsibility for project performance.

18. Independent Project Review. Independent Project Reviews are important project management tools and serve to verify the project's mission, organization, development, processes, technical requirements, baselines, progress, etc. Independent Project Reviews are performed by reviewers from within or outside the Program, but having no association with the project being reviewed.

19. Integrated Project Team. An Integrated Project Team is a cross-functional group of individuals organized for the specific purpose of delivering a project to an external or internal customer.

20. Integrated Safety Management. The application of the integrated safety management system to a project or activity. The fundamental premise of Integrated Safety Management is that accidents are preventable through early and close attention to safety, design, and operation, and with substantial stakeholder involvement in teams that plan and execute the project, based on appropriate standards.

21. Key Performance Parameters. A vital characteristic of a project or facility mission. A characteristic, function, requirement, or design basis, that if changed, would have a major impact on the facility or system performance, scope, schedule, cost and/or risk, or the ability of an interfacing project to meet its mission requirements. Thus, a Key Performance Parameter may be a performance, design or interface requirement. Parameters that are appropriate for Key Performance Parameters are those that express performance in terms of accuracy, capacity, throughput, quantity, processing rate, purity, or others that define how well a system, facility or other project will perform.

22. Life Cycle Costs. The sum total of the direct, indirect, recurring, nonrecurring, and other related costs incurred or estimated to be incurred in the design, development, production, operation, maintenance, support, long-term stewardship (if applicable), and final disposition of a project/system over its anticipated useful life span. Where system or project planning anticipates use of existing sites or facilities, restoration and refurbishment costs are included in the life cycle costs.

23. Line Item. An appropriation by Congress for a specific effort, activity, or project.

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

25. Maintenance. Day-to-day work required to sustain property in a condition suitable for its designated purposes, including preventive, predictive, and corrective maintenance.

26. Major System. A project with a Total Project Cost of greater than or equal to $750M or an Environmental Management Total Project Cost of $1B or designated by the Deputy Secretary.

27. Management Reserve. An amount of the total contract budget withheld for management control purposes by the contractor. Management Reserve is not part of the Performance Measurement Baseline.

28. Mission Need Statement. A concise document that details a mission requirement the Department cannot meet through nonmaterial method.

29. Non-Major System. Any project with a Total Project Cost less than $750M or an Environmental Management Total Project Cost less than $1B.

30. Performance Baseline. The collective key performance, scope, cost, and schedule parameters, which are defined for all projects. Performance Baseline includes the entire

project budget (total cost of the project including contingency) and represents DOE's commitment to Congress.

31. Performance Measurement Baseline. The Performance Measurement Baseline is the baseline that encompasses all project work packages and planning packages. The Performance Measurement Baseline provides a view from the bottom-up where work packages are summed within the Work Breakdown Structure. Management Reserve, contingency, profit, fee and similar cost items separately identified in the contract are not part of the Performance Measurement Baseline because no work is associated with those budgets.

32. Project. A unique effort that supports a program mission having defined points for starting and ending, undertaken to create a product, facility, or system and containing interdependent activities planned to meet a common objective or mission. A project is a basic building block (in relation to a program) that is individually planned, approved, and managed. A project is not constrained to any specific element of the budget structure (e.g., operating expense, plant or capital equipment). Projects include planning and execution of construction, assembly, renovation, modification, environmental restoration, decontamination and decommissioning, large capital equipment, and technology development activities. Work that does not include the above elements, e.g., basic research, grants, ordinary repairs, maintenance, and operation of facilities are not considered projects. However, these activities can be managed as projects.

33. Project Data Sheet. A generic term defining the document that contains summary project data and the justification required to include the entire project effort as a part of the Departmental budget.

34. Project Engineering and Design. Design funds established for use on preliminary design, which are Operating Expense funds. Typically, Project Engineering and Design funds are used for preliminary and final design and related activities for design-bid-build strategies, and for preliminary design and related costs in design-build strategies.

35. Risk Management. Effective risk management is an essential element of every project. The DOE risk management concept is based on the principles that risk management must be analytical, forward-looking, structured, informative, and continuous. Risk assessments should be performed as early as possible in the project life cycle and should identify critical technical, performance, schedule, and cost risks. Once risks are identified, sound risk mitigation strategies and actions should be developed and documented.

36. System Engineering. A proven, disciplined approach that supports management in clearly defining the mission or problem; managing system functions and requirements; identifying and managing risk; establishing bases for informed decision-making; and, verifying products and services meet customer needs. The goal of the System Engineering process is to transform mission operational requirements into system architecture, performance parameters, and design details.

37. Total Project Cost. DOE has traditionally identified project costs in two categories: (1) Total Estimated Cost, and (2) Other Project Cost. The sum of the Total Estimated Cost and Other Project Costs make up the Total Project Cost.

- Total Estimated Cost includes project costs incurred after CD-1 such as costs associated with the acquisition of land and land rights; engineering, design, and inspection; direct and indirect construction/fabrication; and the initial equipment necessary to place the plant or installation in operation. Total Estimated Cost may be funded as an operating or capital expense.

- Other Project Costs include all project costs that are not identified as Total Estimated Cost costs. Generally, Other Project Costs are costs incurred during the Initiation and Definition Phases for planning, conceptual design, research and development, and during the Execution Phase for startup and operation. Other Project Costs are always operating funds.

38. Value Management. Value Management is an organized effort directed at analyzing the functions of systems, equipment, facilities, services, and supplies for achieving the essential functions at the lowest life cycle cost consistent with required performance, quality, reliability, and safety. Value Management encompasses Value Engineering.

39. Value Engineering. Value Engineering is a planned, detailed review/evaluation of a project to identify alternative approaches to providing the needed assets.

40. Value Study. Value Study is an intensive review of requirements and the development of alternatives by the use of appropriate value techniques utilizing aspects of engineering, requirements analysis, the behavioral sciences, creativity, economic analysis, and the scientific method.

41. Variance. A variance is a deviation from the approved scope, cost, or schedule performance. Variances must be tracked and reported. Variances should be mitigated through corrective actions and not eliminated through baseline change control unless valid rationale can be presented to justify a change in baseline. Baseline changes are submitted for changes in technical, work scope, funding, or directed changes.

# U.S. Department of Energy
**Washington, D.C.**

**PAGE CHANGE**

**DOE O 413.3A Chg 1**

Approved: 7-28-08
Chg 1: 11-17-08

**SUBJECT:** PROGRAM AND PROJECT MANAGEMENT FOR THE ACQUISITION OF CAPITAL ASSETS

1. PURPOSE. To transmit revised pages to DOE O 413.3A, *Program and Project Management for the Acquisition of Capital Assets,* dated 7-28-06.

2. EXPLANATION OF CHANGES. To incorporate the requirements of DOE-STD-1189-2008, *Integration of Safety into the Design Process,* mandatory for Hazard Category 1, 2 and 3 nuclear facilities into the directive.

3. LOCATION OF CHANGES.

| Pages | Paragraphs |
|---|---|
| 2 | 3a, 3c(1) and 4 |
| 11-13 and 15-17 | Table 2 |
| 28 | 5k(4) |
| 36-37 | 6c(13) |
| 40 | 6i and 6i(2) |
| 41 | 6i(5) |
| 45 | 6q(8) |
| 47 | 7x |
| Attachment 1 | All |
| Attachment 2, page 2-3 | 12 and 15 |

After filing the attached pages, this transmittal may be discarded.

BY ORDER OF THE SECRETARY OF ENERGY:

JEFFREY F. KUPFER
Acting Deputy Secretary