

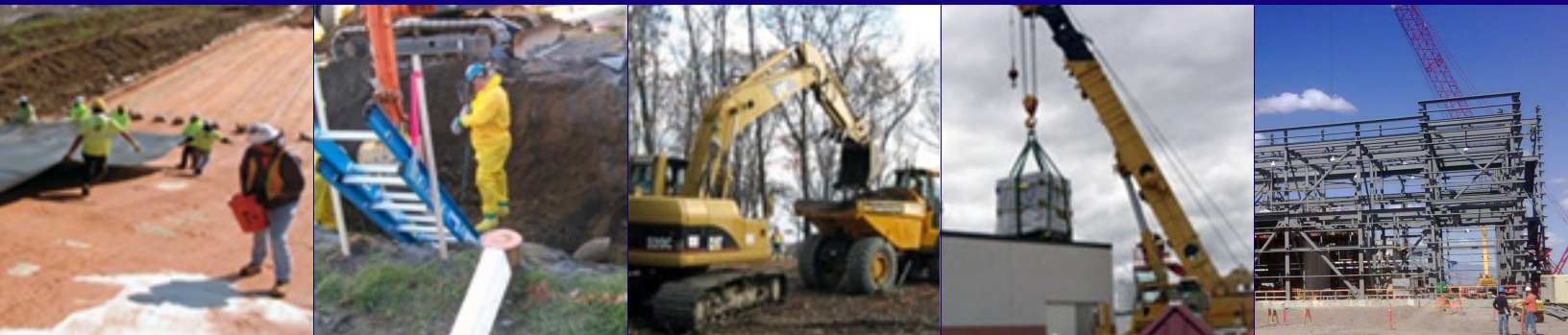


**DOE - EM - SRP - 2010**  
**2nd Edition**

**Environmental Management**  
*Safety ▪ Performance ▪ Cleanup ▪ Closure*

# STANDARD REVIEW PLAN (SRP)

## READINESS REVIEW MODULE



**CORPORATE CRITICAL DECISION (CD) REVIEW AND  
APPROVAL FRAMEWORK ASSOCIATED WITH NUCLEAR FACILITY CAPITAL AND  
MAJOR CONSTRUCTION PROJECTS**

MARCH 2010

OFFICE OF ENVIRONMENTAL MANAGEMENT  
U.S. DEPARTMENT OF ENERGY  
WASHINGTON D. C. 20585

**OFFICE OF ENVIRONMENTAL MANAGEMENT**

**Standard Review Plan (SRP)**

**Readiness Review**

**Review Module**

| Critical Decision (CD) Applicability |      |      |      |      |                |
|--------------------------------------|------|------|------|------|----------------|
| CD-0                                 | CD-1 | CD-2 | CD-3 | CD-4 | Post Operation |
|                                      |      |      | ✓    | ✓    |                |



March 2010

## FOREWORD

The Standard Review Plan (SRP)<sup>1</sup> provides a consistent, predictable corporate review framework to ensure that issues and risks that could challenge the success of Office of Environmental Management (EM) projects are identified early and addressed proactively. The internal EM project review process encompasses key milestones established by DOE O 413.3A, Change 1, *Program and Project Management for the Acquisition of Capital Assets*, DOE-STD-1189-2008, *Integration of Safety into the Design Process*, and EM's internal business management practices.

The SRP follows the Critical Decision (CD) process and consists of a series of Review Modules that address key functional areas of project management, engineering and design, safety, environment, security, and quality assurance, grouped by each specific CD phase.

This Review Module provides the starting point for a set of corporate Performance Expectations and Criteria. Review teams are expected to build on these and develop additional project-specific Lines of Inquiry, as needed. The criteria and the review process are intended to be used on an ongoing basis during the appropriate CD phase to ensure that issues are identified and resolved.

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<sup>1</sup> The entire EM SRP and individual Review Modules can be accessed on EM website at <http://em.doe.gov>, or on EM's intranet Portal) at <https://edoe.doe.gov/portal/server.pt> Please see under /Programmatic Folder/Project Management Subfolder

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## ACRONYMS

|       |   |
|-------|---|
| AA    | Authorization Agreement                     |
| C&V   | Certification and Verification              |
| CD    | Critical Decision                           |
| COO   | Conduct of Operations                       |
| CPOA  | Contractor Plan of Action                   |
| CR    | Core Requirement                            |
| CRAD  | Criteria and Review Approach Document       |
| CRA   | Contractor Readiness Assessment             |
| CRR   | Contractor Readiness Review                 |
| CSE   | Cognizant System Engineer                   |
| CV    | Certification and Verification              |
| CVP   | Certification and Verification Plan         |
| DEAR  | Department of Energy Acquisition Regulation |
| DLM   | DOE Line Management                         |
| DNFSB | Defense Nuclear Facilities Safety Board     |
| DOE   | Department of Energy                        |
| DPOA  | DOE Plan of Action                          |
| DRA   | DOE Readiness Assessment                    |
| DRR   | DOE Readiness Review                        |
| DSA   | Documented Safety Analysis                  |
| EM    | Office of Environmental Management          |
| EPHA  | Emergency Planning Hazards Assessment       |

|       |  |
|-------|--|
| EPIP  | Emergency Plan Implementing Procedure  |
| ES&H  | Environment, Safety, and Health        |
| FHA   | Fire Hazard Analysis                   |
| FPD   | Federal Project Director               |
| FR    | Facility Representative                |
| HQ    | Headquarters                           |
| HSS   | Offices of Health, Safety and Security |
| IPT   | Integrated Project Team                |
| ISM   | Integrated Safety Management           |
| ISMS  | Integrated Safety Management System    |
| IVR   | Independent Verification Review        |
| LMA   | Line Management Assessment             |
| LMORB | Line Management Oversight Review Board |
| LOI   | Line of Inquiry                        |
| MIP   | Maintenance Implementation Plan        |
| MSA   | Management Self-Assessment             |
| ORR   | Operational Readiness Review           |
| POA   | Plan of Action                         |
| QA    | Quality Assurance                      |
| QAP   | Quality Assurance Program              |
| RA    | Readiness Assessment                   |
| RPP   | Radiation Protection Program           |
| RR    | Readiness Review                       |

|      |   |
|------|---|
| RRC  | Readiness Review Coordinator            |
| RTP  | Readiness to Proceed Memorandum         |
| SAA  | Startup Authorization Authority         |
| SB   | Safety Basis                            |
| SE   | Systems Engineering                     |
| SER  | Safety Evaluation Report                |
| SME  | Subject Matter Expert                   |
| SMP  | Safety Management Program               |
| SNR  | Startup Notification Report             |
| SOPP | Standard Operating Policy and Procedure |
| SRP  | Standard Review Plan                    |
| SSC  | Structure, System, and Component        |
| SSO  | Safety Systems Oversight                |
| SVP  | Startup Verification Plan               |
| TQP  | Technical Qualification Program         |
| TSR  | Technical Safety Requirement            |
| V&V  | Verification and Validation             |
| VR   | Validation Review                       |
| WSS  | Work Smart Standards                    |

## DEFINITIONS

**Core Requirement (CR):** A fundamental area or topic of review evaluated during a Readiness Review (RR) to determine whether a facility can be operated safely.

**Corrective Action Plan:** A defined and documented strategy for the correction of findings (which define the deficiency), describes the actions that are to be taken, assigns responsibility for the actions, discusses how the actions address and correct the finding, and indicates the dates when the actions will be complete.

**Criteria and Review Approach Document (CRAD):** A description of the documents, hardware, people, and performance that the technical experts (i.e., RR team members) will examine to gather objective evidence that the criteria have been met. CRADs are a key part of readiness preparations, from Management Self-Assessments (MSAs) through Department of Energy (DOE) RRs.

**Finding:** An identified deficiency. Findings may be classified by the RR team as either prestart or post-start:

- I. **Prestart Finding** – A finding that must be resolved before an activity can be started.
- II. **Post-start Finding** – A finding that must be resolved, but may be corrected after the start of the activity. Post-start findings are addressed by a corrective action plan, which includes any compensatory measures taken.

**Implementation Plan (IP):** The procedural document by which the RR is conducted. This document implements the scope and direction approved in the POA and defines the depth of the review.

**Independent Verification Review (IVR):** A formalized verification of the completeness and adequacy of the implementation of the safety basis (the Documented Safety Analysis (DSA) and associated Technical Safety Requirements (TSRs)) for a nuclear facility. The IVR process is defined in local procedures. A successful IVR, including the resolution of all issues, is normally a prerequisite to the start of a DOE RR.

**Plan of Action (POA):** The document prepared by line management describes the breadth of the RR and the prerequisites that must be met to start the RR. It is the document by which line management defines the breadth and depth (i.e., the scope) of the RR. Both the contractor and DOE prepare POAs: the contractor Plan of Action (CPOA) and the DOE Plan of Action (DPOA). These are submitted to the Startup Authorization Authority (SAA) for approval.

**Prerequisites:** A set of specific, measurable actions or conditions identified in the CPOA and DPOA that are to be completed prior to the start of the respective ORR or RA. At minimum, prerequisites are identified for each of the applicable core requirements of DOE O 425.1.



***Readiness to Proceed Memorandum (RTP):*** The formal document submitted by the contractor that certifies the conclusion that the facility is prepared to start or resume nuclear operations. As a minimum, the contractor RR final report and finding closure packages or corrective action plans, along with the appropriate endorsements, will be attached to the RTP. Submitting the memorandum is a prerequisite to starting a DOE ORR.

***Readiness Review:*** A review done to evaluate readiness to startup or restart a nuclear facility, activity, or operation. There are two types of RRs: the Operational Readiness Review (ORR) and the Readiness Assessment (RA); each has a contractor (CRR and CRA) and a DOE (DRR and DRA) component.

***Readiness Review Coordinator:*** The onsite DOE person tasked with coordinating RR activities, including transmittal of documents, liaison among contractor, SAA, Headquarters (HQ) readiness personnel in the Offices of Health, Safety and Security (HSS), Environmental Management (EM) and the Chief of Nuclear Safety (CNS), the Defense Nuclear Facilities Safety Board (DNFSB), the Federal Project Director (FPD), and other DOE line management officials. The RR coordinator often reviews and comments on the contractor submittals (i.e., SNR, POA, IP), in addition to coordinating DOE RR documents.

***Startup Authorization Authority (SAA):*** The line manager who is designated in accordance with draft DOE O 425.1D, section 4.b to authorize the start of nuclear operations once all requirements of the Order have been met. The seniority position of the SAA may range from a senior contractor line manager up through the Secretary of Energy. For each startup or restart, the SAA is designated in the Startup Notification Report (SNR). The projects that are the focus of this RR module are of sufficient magnitude that the SAA must be either the DOE Site Manager or a DOE HQ official.

***Startup Notification Report:*** A quarterly report by each responsible contractor to identify nuclear facility new starts and restarts scheduled in the next year. The report identifies the facility and, based on the criteria in draft DOE O 425.1D, specifies whether an ORR or a RA is required. The SAA is identified. Updates to previously provided information are also provided in SNRs.

## **I. INTRODUCTION**

Adherence to the guidance contained in this RR module will help ensure that the FPD and Federal line management are in compliance with DOE requirements associated with RR activities for large capital projects. Readiness Reviews consist of ORRs and RAs; the ORR is a more extensive review than an RA. RAs, in turn, have different levels of complexity and formality; the most extensive RAs are performed for nuclear facility restarts, and require an RA by the contractor and another independent RA by DOE. The process of preparing for both ORRs and the more extensive RAs are fairly equivalent; therefore, the processes described in this module apply equally well to both these types of RRs, with the exception that RAs do not require the development of an IP, nor is the Certification and Verification Plan (CVP) required. Additionally, for RAs, the team members are not required to maintain independence and the RA is less formal; some prerequisites, such as the RTP, are not required, nor are there requirements associated with the final report for RAs. DOE O 413.3A identifies a requirement, “as appropriate,” to perform a Readiness Review for Critical Decision (CD)-4 for projects over \$20 million in total project cost. Additionally, the Readiness Review Section of DOE-STD-1189-2008 states that

*Readiness reviews are performed to ensure that contractor programs, equipment, and personnel are ready to safely start up and operate the facility. DOE Order 425.1, Startup and Restart of DOE Nuclear Facilities, defines the requirements for conducting either an Operational Readiness Review (ORR) or a Readiness Assessment (RA) for nuclear facilities. Readiness reviews may also be performed for non-nuclear facilities at the discretion of DOE.*

The current revision of the DOE Order for readiness of nuclear facilities, DOE O 425.1, describes other, less-extensive types of RAs; however, projects of the magnitude associated with capital projects would require either an ORR or the most extensive RA, the preparations for which is the subject of this module. This module should be used in conjunction with the Commissioning Plan Review Module, which precedes and overlaps this module in timeline, and the Transition to Operations Module, which follows this module in timeline, for achieving and verifying readiness.

## **II. PURPOSE**

This module assists DOE Federal line management in their efforts to bring a project or facility into a condition where it is sufficiently prepared to start or resume operations prior to CD-4 approval. It is intended to be used after some, but not all, of the Standard Review Plan Commissioning Module activities are performed and before the Transition to Operations Module activities begin. The responsibility for achieving a state of readiness to conduct safe operations ultimately resides with the contractor line management of the facility. The Core Requirements described in DOE O 425.1 capture the critical issues that should be considered in preparation for operations. In general terms, readiness must be established in the areas of personnel (training, proficiency, numbers), equipment (safety and process systems operation), and programs (e.g., safety basis implementation, operational formality, maintenance, Integrated Safety Management (ISM), and quality).

Prior to the initiation of the RR, the contractor prepares the facility for operations. Establishing and documenting an internal confirmation of readiness to operate is typically done by contractor line and operations management through the use of internal or expert team-based evaluations. This type of self-assessment facilitates more efficient RRs and reduces the number and significance of issues identified during those reviews that must be tracked and corrected before startup or restart authorization is received.

The contractor's process for achieving operational readiness includes executing a schedule, monitoring the progress of tasks needed to attain operational readiness, conducting practice drills and evolutions, maintaining and reviewing evidence files, reviewing corrective actions, and interviewing personnel to verify their capability.

The success of readiness activities is a function of scheduling and resources. An integrated, resource-loaded, logic-linked schedule is required. Adequate time for evolutions, drills, and simulations must be built into the schedule. Simulations and evolutions should be as realistic as possible; if actual material is not available for use, material should be selected with properties as similar as possible. A level of realism in evolutions must be maintained throughout the process. Sufficient schedule is required to develop methods to simulate, mockup, and reinitialize activities that cannot be performed with the actual hazardous materials. Multiple trial simulations may be required.

DOE personnel (federal staff or support contractors) are expected to be actively engaged in oversight of these readiness activities, ideally through the Integrated Project Team (IPT) framework. Oversight activities should be proportional to the amount of the contractor's readiness efforts.

The module as presented here addresses the requirements of the DOE Acquisition Regulation (DEAR), 48 CFR 970.5223-1; DOE O 425.1, *Startup and Restart of Nuclear Facilities*; DOE-STD-3006, *Planning and Conduct of Operational Readiness Reviews (ORRs)*; DOE-HDBK-3012-2008, *Guide to Good Practices for Readiness Reviews, Team Leader's Guide*; DOE O 226.1A, *Implementation of DOE Oversight Policy*; DOE O 414.1C, *Quality Assurance*; DOE P 450.4, *Safety Management System Policy*; DOE-STD-1189-2008, *Integration of Safety into the Design Process*; and EM-62 Standard Operating Policies and Procedure (SOPP) 47 and associated guidance.

### **III. ROLES AND RESPONSIBILITIES**

A successful RR depends on an experienced, qualified team that should be augmented with the appropriate subject matter experts to address the specific elements of the RR. The specific types of expertise needed are dependent on the type of facility being reviewed, as well as other factors such as complexity and hazards or risks.

To the maximum extent possible, personnel selected to participate in an RR should have design, construction, commissioning, or operating experience within the DOE complex or related programs. Firsthand experience (as opposed to that of an oversight role) in a successful

engineering design and construction project, including transition activities executed under DOE O 413.3A, is preferred.

Management support is another necessary component of a successful RR. Field element managers, as well as the Federal Project Director, must recognize the importance of the RR and provide the resources necessary for its execution. This also requires appropriate interfaces with EM Headquarters personnel who may direct or participate in the RR process.

The roles and responsibilities for all involved in the RR must be clear and consistent with the various requirements of DOE O 413.3A. The table below provides a compilation of RR roles and responsibilities.

| Position                 | Responsibility   |
|--------------------------|--|
| Field Element Manager    | Provides support and resources to the Federal Project Director and Team Leader in carrying out the RR.   |
|                          | Facilitates the conduct of the review. Allocates office space, computer equipment, and support personnel to the team as necessary to accomplish the review within the scheduled timeframe. |
| Federal Project Director | Coordinates with the Team Leader in selecting subject areas for the review and in developing the review criteria.  |
|                          | In conjunction with the Contractor Project Manager, develops the briefing materials and schedule for the review activities.  |
|                          | Coordinates the review team pre-visit activities and follows up on review team requests for personnel to interview or material to review.  |
|                          | Coordinates the necessary training and orientation activities to enable the review team members to access the facility and perform the review.   |
|                          | Unless other personnel are assigned, acts as the site liaison with the review team. Tracks the status of requests for additional information.  |
|                          | Coordinates the Federal site staff's factual accuracy review of the draft report.  |
|                          | Leads in developing the corrective action plan if required. Tracks the corrective actions resulting from the review.   |
| Review Team Leader       | In coordination with the Federal Project Director and the Acquisition Executive or Startup Authorization Authority, selects the subject areas to be reviewed.                              |
|                          | Based on the project complexity and hazards involved, selects the members of the review team.  |
|                          | Verifies the qualifications, technical knowledge, process knowledge, facility-specific information, and independence of the Team Members.  |
|                          | Leads the RR pre-visit.  |
|                          | Leads the review team in completing the review criteria for the subject areas being reviewed.  |
|                          | Coordinates, and forwards to the Federal Project Director, the data call of documents, briefings, interviews, and presentations needed for the review.                                     |
|                          | Forwards the final review plan to the Acquisition Executive or Startup Authorization Authority for approval.   |
|                          | Leads the onsite portion of the review.  |
|                          | Ensures that the review team members complete and document their   |

| Position           | Responsibility  |
|--------------------|---|
|                    | portions of the review. Coordinates the characterization of the findings.<br>Coordinates the review team’s response to factual accuracy comments by Federal and contractor personnel on the draft report.<br>Forwards the final review report to the Startup Authorization Authority or Acquisition Executive for approval.<br>Remains available as necessary to participate in the closure verification of the findings from the review report.  |
| Review Team Member | Refines and finalizes the criteria for the assigned area of the review.<br>Develops the data call of documents, briefings, interviews, and presentations needed for his or her area of the review.<br>Completes training and orientation activities necessary for the review. Conducts any necessary pre-visit document reviews.<br>Participates in onsite review activities. Conducts interviews, document reviews, walkdowns, and observations as necessary.<br>Based on the criteria and review approaches in the Review Plan, determines whether his or her assigned criteria have been met.<br>Documents the results of the review for his or her subject area. Helps to prepare the review report.<br>Makes recommendations to the Review Team Leader for the characterization of findings in his or her area of review.<br>Resolves applicable Federal and contractor factual accuracy comments on the draft review report.<br>Prepares the final review report section for his or her subject area. |

#### IV. REVIEW CRITERIA

The primary objective of this RR module is to provide a detailed approach for the DOE site, including the FPD, to plan for and verify that the contractor is ready to initiate operations and that the DOE staff is ready to oversee operations prior to CD-4 approval. This module provides a set of review criteria for 15 required Items from DOE O 425.1 and DOE-STD-3006 that are organized into three key areas:

- Pre-RR activities (Items 1, 2, 3, 9, 10, 11, 12, 13);
- CRR adequacy (Items 4, 5, 6, 8); and
- Corrective action plan closure (Items 7, 15).

For each review area, Appendix A of this module provides overall performance objectives and an associated set of acceptance criteria to satisfy each performance objective. Appendix A also contains a list of example Lines of Inquiry (LOIs), grouped by Functional Areas, to facilitate the review of the three key areas listed above. These performance objectives and criteria and LOIs will provide consistent guidance to assist project-specific review teams in developing project-specific LOIs.

##### ***Pre-Readiness Review Activities*** (Items 1, 2, 3, 9, 10, 11, 12, 13)

This area of review evaluates the completion of readiness activities that are normally accomplished before RRs commence, including issuance of the SNR and POAs, oversight of

contractor activities and readiness preparations, including the MSA, and DOE's capability to oversee the new or restarted activity.

***Contractor Readiness Review Adequacy*** (Items 4, 5, 6, 8)

This area of review is intended to evaluate the activities that are concurrent with the RRs, such as verifying that 1) the contractor readiness review has been performed by qualified personnel in accordance with the approved POA; 2) the review has been appropriately documented in the final report; 3) prestart items have been closed and corrective actions have been identified for post-start items; and 4) the prerequisites for the DOE Readiness Review (DRR) have been completed.

***Corrective Action Plan Closure*** (Items 7, 15)

This area of review is intended to evaluate the activities that are conducted after the RR is complete, including verifying that DOE has agreed to the method and schedule for closure of the post-start findings from the CRR and DRR.

**V. REVIEW PLANS AND DOCUMENTATION**

Because the SAA uses the results of RRs to determine whether or not a facility may begin or resume operations safely, it is important to clearly document the plans, methods, assumptions, and results of the reviews. DOE-STD-3006-2000 and DOE-STD-3012-2003 provide guidelines for preparing a review plan and a final report. The CVP should conform to these guidelines.

Surveillance and assessment tools, including formal plans with CRADs and Lines of Inquiry (LOIs), can be utilized in the normal surveillance mode by DOE personnel. The two major DOE teams formed during the RR process are the Certification and Verification (CV) and RR teams. In the CV process, the field elements that certify and verify readiness for ORRs or RAs are required to certify and verify contractor and field element readiness for operations. The draft DOE O 425.1D sections 4.(e-h) and associated Standard DOE-STD-3006-2009, section 7.(b) (corresponds to DOE-STD 3006-2000, section 5.2.9) provide DOE line management with the certification and verification requirements pertaining to the start of the DRR. In the CV process, the DOE line managers must document their actions to verify that the contractor is ready to conduct startup or restart readiness activities and that DOE is ready to oversee these activities. This verification includes the review of closed contractor RR findings and startup or restart prerequisites and other assessments performed to ascertain readiness. The CVP is the vehicle that documents those actions.

The DRR is the last and one of the most important activities in the startup process. The DRR team provides the expertise to assess whether the facility is ready to safely perform the startup or restart activity. The DRR team's recommendation to approve or disapprove the startup or restart of the activity is documented in a final report to the SAA. This review module addresses the case for an SAA from either a Site or Headquarters.

All RR elements, from the MSA through the DRR, are related and have consistent Core Requirements; therefore, the CRADs and LOIs are also related. The more similar the assessments are to the DRR, the less sampling needs to occur. All readiness reviews are sampling-based; 100 percent verification is not an objective of the reviews. For the DOE reviews, sets of CRADs and LOIs are available from HSS or EM-60 to help tailor the specific facility plan being developed. The following activities should be conducted as part of the review plan development and documentation and closure of the review:

- Subsequent to the selection, formation, and chartering of the review teams and receipt and review of the prerequisite documents, assignment of responsibilities for the development of specific LOIs should be developed.
- The review team members should develop specific LOIs utilizing the topics and subject areas listed in the respective Appendices of this Module.
- The individual LOIs should be compiled and submitted to the review sponsor for concurrence before the review begins.
- The project-specific review plan should be compiled with a consistent, uniform numbering scheme such that the results of each line of inquiry can be documented and tracked to closure.
- The LOIs should be satisfied via document reviews and personnel interviews. The bases for the findings, the remarks, and the closure of findings should be documented.

## VI. REFERENCES

- DOE O 226.1A, *Implementation of Department of Energy Oversight Policy*, 07/31/07.
- DOE P 226.1A, *Department of Energy Oversight Policy*, 05/25/07.
- DOE-HDBK-3027-99, *Integrated Safety Management Systems (ISMS) Verification Team Leader's Handbook*, June 1999.
- DOE P 450.4, *Safety Management System Policy*, 10/15/96.
- DOE G 450.4-1B, *Integrated Safety Management System Guide for Use with Safety Management System Policies (DOE P 450.4, DOE P 450.5, and DOE P 450.6); The Functions, Responsibilities, and Authorities Manual; and The Department of Energy Acquisition Regulation*, Vols. 1 and 2, 03/01/01.
- DOE O 413.3A, *Program and Project Management for the Acquisition of Capital Assets*, 07/28/06.
- DOE O 151.1C, *Comprehensive Emergency Management System*, 11/02/05.
- DOE O 425.1D (draft), *Startup and Restart of Nuclear Facilities*
- DOE-STD-3006-2000, *Planning and Conduct of Operational Readiness Reviews (ORR)*, June 2000.

- DOE-STD-3006-2009, *Planning and Conduct of Operational Readiness Reviews (ORR)*, draft.
- DOE-HDBK-3012-2003, *Guide to Good Practices for Operational Readiness Reviews (ORR), Team Leader's Guide*.
- EM-62, SOPP #47, Rev. 0, *Environmental Management Headquarters Operational Readiness Assistance Program*.
- 48 CFR 970.5223-1(c), (e), *Integration of Environment, Safety, and Health into Work Planning and Execution*.



**APPENDIX A: PERFORMANCE OBJECTIVES AND CRITERIA**

Table A-1 shows the performance objectives and requirements to be considered in RRs. Below is a legend of the review topics described in Table A-1.

| Review Topic Area <sup>2</sup>    | Identifier |
|-----------------------------------|------------|
| 1. Pre-RR Activities              | PRRA       |
| 2. CRR Adequacy                   | CRRRA      |
| 3. Corrective Action Plan Closure | CAPC       |

*Table A-1: Performance Objectives and Requirements to be considered for RR Activities*

| ID#  | Performance Objectives and Criteria <sup>3</sup>  | Step <sup>4</sup> | Item <sup>5</sup> | Met? |
|--|---|-------------------|-------------------|------|
| <b>PRRA, Pre-Readiness Review Activities</b> |   |                   |                   |      |
| PRRA-1                                       | Has a SNR been approved identifying the RR level of the project?  | 2                 | 1                 |      |
|  | Does the CPOA, address each of the CRs as identified in paragraph 4d of DOE O 425.1D, is approved by the SAA?   | 10                | 2                 |      |
|  | The DPOA, specifying additional prerequisites such as certification of readiness to oversee facility operations by Operations Office and Headquarters management, is approved by the SAA. | 12                | 2                 |      |
|  | Are the IPs written by ORR team leaders identified in the POAs and transmitted?   | 11, 15            | 3                 |      |
| PRRA-2                                       | Is the CVP developed based on prerequisites identified in the POA and the requirements in DOE O 425.1D and is approved by the Site Manager?   | 5                 |                   |      |
|  | Has the CVP been implemented, and the CV team leader and members have been selected?  | 6, 9              | 4 – 13            |      |
| PRRA-3                                       | Does DOE conduct routine oversight of contractor activities?  | 9                 | 11, 12            |      |
|  | Has a readiness framework or matrix been developed to map routine oversight activities by site organizations and IPT into functional areas and, ultimately, CRs?                          | 3                 |                   |      |
|  | Have readiness leads been selected for each functional area?  | 3                 |                   |      |
|  | Have readiness checklists been prepared and approved?   | 3                 |                   |      |

<sup>2</sup> In supporting the review for each Topic Review Area, Table A-2 provides a list of Functional Areas and associated Core Requirements. Table A-3 provides a list of sample Lines of Inquiry (LOIs) for each Functional Area. Table A-4 provides the LOIs related to the DOE.

<sup>3</sup> The site should provide the technical bases and assumptions that support the answers provided to each Line of Inquiry. If possible, the review teams should independently verify the technical bases and assumptions.

<sup>4</sup> See Appendix C on the steps to be performed by Federal staff in planning for readiness activities

<sup>5</sup> See Appendix B on the required items from DOE O 425.1 and DOE-STD-3006 that are applicable to the Site Office or Federal Project Director (FPD)

| ID#   | Performance Objectives and Criteria <sup>3</sup>   | Step <sup>4</sup> | Item <sup>5</sup> | Met? |
|---|--|-------------------|-------------------|------|
|   | Does readiness lead observe identified activities?   | 3                 |                   |      |
|   | Have other assessment results been obtained by readiness leads?  | 3                 |                   |      |
|   | Is there evidence that closure packages are completed?   | 3                 |                   |      |
|   | Has the Line Management Oversight Review Board (LMORB) been chartered and staffed?   | 4                 |                   |      |
|   | Has LMORB been briefed and concurs with readiness lead recommendations?  |                   |                   |      |
| PRRA-4  | Is there Site Office readiness to oversee verification?  | 21                | 13                |      |
|   | Are DOE personnel verified to be Technical Qualification Program (TQP)-qualified in functional areas being overseen?   | 21                | 13                |      |
|   | Do DOE personnel demonstrate familiarity with facility-specific systems and programs?  | 21                | 13                |      |
|   | Has Support Contractors used a lieu of Feds for overseeing operations qualified to same qualification standards as IPT support contractors and technical staff qualifications?   | 21                | 13                |      |
|   | Has Support Contractors used a lieu of Feds demonstrate familiar with facility specific systems and programs?  | 21                | 13                |      |
| <b>CRRA, Contractor Readiness Review Adequacy</b> |  |                   |                   |      |
| CRRA-1  | Is the contractor's Readiness Review process, including team member qualifications adequate?   | 19                | 6                 |      |
| CRRA-2  | Is the final report complete and sufficient to support the conclusion reached?   | 20                | 7                 |      |
| CRRA-3  | Have the contractor's preparations for startup or restart been verified complete; a manageable list of open prestart issues is permissible? Do the prestart issues have a well-defined schedule for closure?   | 20                | 8                 |      |
| CRRA-4  | Have the DOE RR POA prerequisites been verified to be met prior to endorsing the RTP Memorandum?   | 20                | 10                |      |
| <b>CAPC Corrective Action Plan Closure</b>        |  |                   |                   |      |
| CAPC-1 and CAPC-2                                 | Does a contractor post-start finding have corrective action plans in place?  | 20                | 9                 |      |
|   | Has the contractor's closure of DOE's RR prestart findings been verified, and DOE RR post-start findings have corrective action plans in place. This is usually the Site Office responsibility; however, the SAA may select another organization such as the DOE RR team or an HQ component? | 24                | 15                |      |

Note: Items are described in Table B-1 in Appendix B; Step refers to those shown in Table C-1 in Appendix C.

**Table A-2: Functional Area Crosswalk**

| Functional Area                           | Associated CR(s)               |
|---|--------------------------------|
| Conduct of Operations                     | CR-2, CR-3, CR-4, CR-10, CR-13 |
| Configuration Management                  | CR-9                           |
| Contract Basis                            | CR-1                           |
| Emergency Planning                        | CR-11                          |
| Engineering                               | CR-8, CR-9                     |
| Environmental                             | CR-14                          |
| Facility Safety (includes Nuclear Safety) | CR-7                           |
| Fire Protection                           | CR-7                           |
| Industrial Safety/Hygiene                 | CR-7                           |
| Maintenance                               | CR-8                           |
| Quality Assurance                         | CR-15                          |
| Radiation Protection                      | CR-7                           |
| Startup Planning                          | CR-12                          |
| Training and Qualification                | CR-3, CR-4, CR-6               |
| Transportation and Waste Management       | CR-7                           |

**Table A-3 -- Examples of LOIs associated with each Functional Area**

| Conduct of Operations  |
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| Has the contractor prepared a Conduct of Operations (COO) applicability matrix that has been approved by DOE?  |
| Is a COO safety management program (SMP) in place that meets the following: <ul style="list-style-type: none"> <li>contract requirements;</li> <li>the commitments in the Documented Safety Analysis (DSA) and Technical Safety Requirements (TSRs); and</li> <li>the COO applicability matrix?</li> </ul> |
| Are the implementing mechanisms of the SMP consistent with the guidance in DOE Order 5480.19 and the associated Guides to Good Practices, DOE-STD-1032-92 through DOE-STD-1045-92?   |
| Does the contractor's management assessment program address periodically assessing the effectiveness of the COO SMP?   |
| Have minimum staffing requirements been established for operations and support personnel, including supervisors and managers?  |
| Is the level of knowledge of management, operations, and support personnel adequate based on reviews of examinations and examination results, observation of operations and shift performance, and interviews of selected staff?   |
| Is approval and accomplishment of work performed with a satisfactory level of formality and controls, including line management responsibility for safety, plan of the day, procedures, job-related briefings, worker involvement, and facility manager control of all work within the facility?           |
| Do operations personnel demonstrate a working knowledge of safety-related facility systems and components?   |
| Do operations personnel demonstrate the ability to carry out normal, abnormal, and emergency procedures?   |

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| Are procedures available to the operators to enable them to monitor and control operation under normal, abnormal, and emergency conditions?  |
| Do procedures implement applicable safety requirements and the associated limiting conditions for operation?   |
| Do procedures require continued compliance with safety requirements, including clearly defined surveillance intervals and periodic self-assessments?   |
| <b>Configuration Management</b>  |
| Has an adequate process for configuration control been implemented to maintain the design of, and modifications to, safety-related structures, systems, and components (SSCs)?   |
| Are administrative controls in place to ensure that repairs (or modifications) are adequately analyzed to identify system degradation and to ensure that design changes are documented and approved prior to implementation?   |
| Are drawings and other documentation relied upon for operations and maintenance activities consistent with the existing equipment configuration?   |
| <b>Emergency Planning</b>  |
| Is an emergency preparedness program established in accordance with DOE O 151.1C and implemented with sufficient numbers of qualified personnel, facilities, and equipment?  |
| Do the emergency plan and Emergency Plan Implementing Procedures (EPIPs) describe the base level of emergency preparedness for the facility?   |
| Does the Hazards Survey identify specific hazardous materials and quantities that must be screened to determine if a release could produce consequences consistent with the definition of an Operational Emergency?  |
| Are the results of the Emergency Planning Hazards Assessment (EPHA) used to determine the necessary personnel, resources, and equipment for the Operational Emergency Hazardous Material Program?  |
| Are a spectrum of potential emergency events and conditions postulated and realistically analyzed in the EPHA, including a range of event probabilities and consequences, from low-probability, high-consequence to high-probability, low-consequence, Beyond-Design-Basis events, and events exclusively affecting onsite personnel, as well as those affecting the offsite public? |
| Do the emergency plan and EPIPs provide a program of drills to develop and maintain personnel skills, expertise, and response capability?  |
| Do the site-level emergency response organization elements participate in at least one exercise annually, and are the offsite response organizations invited to participate in at least one exercise every three years to test and demonstrate an integrated emergency response capability?  |
| Does the facility demonstrate the capability to promptly notify workers of an emergency occurrence with the need to take protective actions, and can it promptly notify local response organizations and DOE Headquarters after an event is declared?  |
| Are critiques held with all participating organizations to share post-exercise feedback?   |
| <b>Engineering</b>   |
| Is an engineering support program established with sufficient numbers of qualified personnel, and are adequate facilities and equipment available to ensure the required engineering support services?   |
| Are the facility systems consistent with the description of the facility, procedures, and accident analyses included in the safety basis?  |
| Is the level of knowledge of support personnel adequate based on reviews of examination results and selected interviews?   |
| Do Engineering support personnel demonstrate the ability to carry out normal, abnormal, and emergency procedures under their cognizance?   |

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| Do Engineering support personnel demonstrate a working knowledge of facility systems and components related to safety? Do these personnel also give adequate attention to health, safety, and environmental protection issues?   |
| Are entry-level requirements established for each Engineering Support position, including, as applicable, the minimum education, experience, technical, and medical requirements?  |
| Has the contractor implemented a Systems Engineering (SE) program that includes identification of a cognizant system engineer (CSE) for key nuclear facility safety-related systems, structures, and components (SSCs)? Is the SE program incorporated into appropriate procedures that identify CSE authorities, responsibilities, accountabilities, and training requirements?         |
| <b>Environmental</b>   |
| Has the site's Environmental Management System been effectively implemented to ensure compliance with regulatory requirements through identification of environmental compliance requirements, incorporation of requirements into site policies and procedures, periodic assessments of regulatory compliance, and identification and implementation of corrective actions where needed? |
| Are environmental compliance programs staffed with sufficient numbers of qualified personnel, and are facilities and equipment adequate to ensure safe and compliant operations?   |
| Do personnel exhibit awareness of public and worker safety, health, and environmental protection requirements, and, through their actions, do they demonstrate a high level of commitment to complying with these requirements?  |
| <b>Facility Safety (includes Nuclear Safety)</b>   |
| Are contractor procedures and mechanisms in place to ensure that hazards associated with activities are formally and appropriately analyzed, actions to prevent or eliminate the hazards are taken, and controls are developed, implemented, and verified?   |
| Is a system to maintain control over the design of, and modifications to, facilities and safety-related systems implemented?   |
| Is a program in place to confirm and periodically reconfirm the condition and operability of safety and safety support systems? This includes examinations of records of tests and calibrations of systems and components.   |
| Have safety limits for operating and maintaining designated process and utility systems been developed and implemented?  |
| Is there a program in place to confirm and periodically reconfirm the condition and operability of safety-related systems, structures, and components (SSCs)?  |
| Does this program make use of testing records, safety system calibrations, and the material condition of safety and support systems to confirm condition and operability status?   |
| Is there a process in place to ensure that the facility safety equipment list is periodically reviewed and updated to be consistent with the safety basis (SB) documents?  |
| Are approved test procedures based on Documented Safety Analysis (DSA), and are design requirements being used to establish and verify operability of safety systems?  |
| Do Technical Safety Requirement (TSR) surveillance procedures confirm operability of safety systems?   |
| Does the SB implementation plan include a process to ensure that work control procedures are consistent with the SB requirements?  |
| Are staffing levels consistent with requirements and assumptions from the DSA and TSRs?  |
| Is the criticality safety program established with sufficient numbers of qualified personnel, and are facilities and equipment adequate to ensure criticality safety for operations?   |
| Do operations support personnel in the criticality safety area demonstrate the ability to carry out procedures under their cognizance?   |

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| Can plant personnel recognize and respond to criticality safety limits?  |
| <b>Fire Protection</b>   |
| Is the contractor's fire protection program defined in accordance with contract requirements, and do the implementing mechanisms comply with DOE expectations?   |
| Is the contractor staffed with adequate numbers of technically competent, experienced, fully qualified personnel, including fire protection engineers, technicians, and firefighting personnel?  |
| Has a baseline needs assessment been completed that establishes the minimum required capabilities of site firefighting forces? Does the assessment include staffing, apparatus and equipment, and pre-fire plans? Is this information incorporated into the site Emergency Plan? |
| Can fire protection support personnel demonstrate their ability to carry out normal, abnormal, and emergency procedures under their cognizance?  |
| Are fire protection systems designed, installed, and maintained to ensure reliable operation? Have design requirements per DOE O 420.1B been observed?   |
| Does qualified fire protection staff review plans and specifications for all new facilities and for significant modifications to existing facilities per approved procedures?  |
| Do procedures ensure that Fire Hazard Analyses (FHAs) have been prepared for each hazardous facility and that the results have been integrated into the Documented Safety Analysis (DSA) and Technical Safety Requirements (TSRs) for nuclear facilities?                        |
| Does a process exist for developing, reviewing, recommending approval, tracking, and maintenance of fire safety equivalencies and exemptions?  |
| Does an auditable system exist that prioritizes and monitors corrective action plans resulting from fire safety appraisals?  |
| Are fire-related lessons learned and near misses disseminated internally to facility fire personnel?   |
| Is there a comprehensive, documented, and effective fire protection self-assessment program that includes all aspects (program and facility) of the fire protection program?   |
| Are agreements in place for offsite fire support when needed?  |
| <b>Industrial Safety/Hygiene</b>   |
| Are the occupational safety and industrial hygiene (including chemical safety) programs established with sufficient numbers of qualified personnel, and are facilities and equipment adequate to ensure services for safe operations?  |
| Do the implementing mechanisms of the Occupational and Industrial Safety and Hygiene Programs flow down from contract requirements to subcontractors, do they fully comply with the contract requirements, and do they reflect all work activities?                              |
| Is the level of knowledge of occupational safety and industrial hygiene support personnel adequate based on reviews of training records, selected interviews, and demonstrated performance?  |
| Do occupational safety, industrial hygiene, and chemical safety support personnel demonstrate their ability to carry out normal, abnormal, and emergency procedures under their cognizance?  |
| Do occupational safety and industrial hygiene support personnel demonstrate a working knowledge of safety-related facility systems and components?   |
| Have personnel been trained to anticipate, recognize, evaluate, and respond to hazards that may be present in the workplace?   |
| Has the full spectrum of hazards associated with the work scope and facility operations been identified, analyzed, and categorized?  |



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| Are the individuals responsible for analyzing the industrial hygiene hazards integrated with the work planning team; specifically, those personnel assigned to analyze the activity processes?  |
| Does the contractor's safety and health organization perform trending analysis of findings from the occupational exposures and health hazards programs?   |
| Has the contractor developed program management goals related to occupational exposures and health hazards? Are the goals measurable, and do they include short-term (annual) and long-term goals (several years) to assess and manage occupational exposures and health hazards? Is progress towards these goals monitored regularly, and are goals adjusted as necessary? Do line managers have performance elements in their personnel appraisals relating to successful attainment of program management goals? |
| Is a program established to promote a site-wide safety culture?   |
| <b>Maintenance</b>  |
| Is a maintenance management program established with sufficient numbers of qualified personnel, and are facilities and equipment adequate to ensure safe operations?  |
| Is there an approved compliant Maintenance Implementation Plan (MIP) for each nuclear facility? Is the MIP reviewed and updated as required by DOE O 433.1A?  |
| Does the work control system require that safety systems be retested following maintenance?   |
| Does the maintenance program include surveillance activities for equipment and parameters in accordance with manufacturer recommendations and safety basis commitments and requirements?  |
| Does the maintenance program include a work development and control process that allows for the effective and timely execution of work to support maintenance and surveillance activities?  |
| Are maintenance requirements based on recommendations from the equipment manufacturers?   |
| Does the maintenance program include a formal process for component and equipment recalls for calibration and maintenance activities?   |
| Do contractor self-assessments and operational awareness activities include evaluating the effectiveness of the maintenance program and conducting periodic assessments to verify proper implementation of maintenance requirements specified in nuclear facility Technical Safety Requirements (TSRs)?   |
| Do maintenance support personnel demonstrate the ability to carry out normal, abnormal, and emergency procedures under their cognizance?  |
| Do maintenance support personnel demonstrate a working knowledge of safety-related facility systems and components? Do they give adequate attention to health, safety, and environmental protection issues?   |
| Are entry-level requirements established for each maintenance position, including, as applicable, the minimum education, experience, technical, and medical requirements?   |

| <b>Contract Basis</b>   |
|---|
| <p>Have all contractual requirements from the Department of Energy Acquisition Regulation (DEAR) clause and the laws, regulations, and DOE directives clause been implemented, including the following?</p> <ul style="list-style-type: none"> <li>• annual updates;</li> <li>• List A/B; and</li> <li>• requirements flowdown</li> </ul> <p>If not, are compensatory measures in place and formally agreed to by DOE for the period of implementation?</p> |
| Is the contractor organization familiar with DOE O 410.1, including the exemption process?  |
| Are Work Smart Standards (WSSs) periodically reviewed and updated to incorporate any changes to better support operations for those contracts that use it?  |
| Are authorization agreements (AA) for Hazard Category 1 and 2 facilities, and equivalent contract documents for other facilities, current?  |
| Have Safety Management Program commitments in safety basis documentation been identified and verified as implemented?   |
| <b>Quality Assurance</b>  |
| Are contractor procedures and mechanisms in place to establish and maintain a quality assurance program (QAP) that complies with the DOE nuclear safety requirements in 10 CFR Part 830 Subpart A and DOE O 414.1C?   |
| <ul style="list-style-type: none"> <li>• Do the Quality Assurance (QA) or Quality Control Plan and implementing procedures address personnel training and qualifications, quality improvement programs, document and record management, work processes, receipt inspection, commercial-grade dedication, management and independent assessments, acceptance test planning and implementation, and the process for dispositioning field changes?</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Is the level of knowledge of QA support personnel adequate based on examination results, assessment results, and observation of performance?</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Are there procedures and mechanisms in place that include provisions for evaluating performance against formally established nuclear safety and environment, safety, and health (ES&amp;H) performance measures and other nuclear safety and ES&amp;H performance indicators?</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Are there procedures and mechanisms in place to ensure that an effective issues management program, including processes for determining root causes, verifying completion of corrective actions, and following up to ensure that corrective actions are effective?</li> </ul>  |
| Is the Safety Software QA program established to ensure that analysis and design of safety software functions and requirements, and their bases, are defined and documented?  |
| <ul style="list-style-type: none"> <li>• Is software documentation available to guide the user in installing, operating, managing, and maintaining the software?</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Is the software verification and validation (V&amp;V) process defined and performed, with resulting documentation maintained, to ensure that (a) the software adequately and correctly performs all intended functions, and (b) the software does not perform any unintended function?</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Is the Software Configuration Management process and related documentation for safety analysis and design software, including calculational software and operational control software, adequately defined, maintained, and controlled?</li> </ul>  |
| Are formal procedures for software problem reporting and corrective actions for software errors and failures established, maintained, and controlled?   |



| <b>Radiation Protection</b>   |
|---|
| Has contractor line management established a radiation protection Safety Management Program (SMP) to ensure that operations and maintenance activities comply with the requirements of the safety basis documents and regulatory permits?   |
| Has line management assigned clear organizational interfaces to ensure that radiological control personnel are fully integrated for planning and executing the work?  |
| Does the site contractor have an assessment plan for conducting internal audits and assessments of all functional elements of the radiation protection program (RPP) no less frequently than every 36 months? Are identified issues managed, tracked, and effectively resolved?   |
| Are there adequate facilities and equipment available to ensure that radiological control personnel are able to conduct monitoring and job coverage activities?   |
| Are adequate numbers of qualified personnel available, including radiological control technicians and health physics personnel, to support activities, as evidenced by reviews of training records, selected interviews, and demonstrated performance?  |
| Are processes in place to ensure that monitoring and measuring instrumentation and systems are maintained and calibrated so that defined functions can be accomplished accurately?  |
| <ul style="list-style-type: none"> <li>• Do calibration periodicity and accuracy standards comply with DOE contract or regulatory standards?</li> <li>• Are calibration laboratories appropriately certified and inspected?</li> </ul>  |
| Does the contractor have a plan for verifying the adequacy and integrity of the structural radiation shielding?   |
| <b>Startup Planning</b>   |
| Has an adequate startup test program been developed that includes plans for graded operations testing to simultaneously confirm operability of equipment, the viability of procedures, and the adequacy of operator training?   |
| <ul style="list-style-type: none"> <li>• Is the startup testing program adequate to ensure that equipment is capable of performing its intended function?</li> <li>• Does the plan contain a deliberate operations phase that includes the validation of processes for equipment, procedures, and operators after startup authorization, including any required restrictions and additional oversight? If applicable, are those hazards and evaluations that could not be addressed prior to the DOE readiness review included in the deliberate operations phase between authorization to start up and the achievement of routine operations?</li> </ul> |
| Have the functions, assignments, responsibilities, and reporting relationships (including those between the line operating organization and environment, safety, and health (ES&H) support organizations) been clearly defined, understood, and effectively implemented, with line management responsibility for safety?  |
| Is line management clearly identified as being responsible for overall safe operation?  |
| Are clear lines of authority and responsibility for ES&H established and maintained at all organizational levels?   |
| Does the project safety management program include a process for routine self-assessments and identification of appropriate corrective actions?   |
| Does the safety management program effectively implement the Integrated Safety Management System (ISMS) process?  |
| Do personnel exhibit an understanding of the principles of ISMS as it relates to their job activities?  |
| Is a program established to promote a site-wide safety culture?   |

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| Has a feedback and improvement process been established to identify, evaluate, and resolve deficiencies and recommendations made by oversight groups, official review teams, audit organizations, and the operating contractor?  |
| <b>Training and Qualification</b>  |
| Do personnel, both contractors and assigned subcontractors, possess the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities?   |
| Are personnel trained and qualified in accordance with Federal or state laws, DOE directives, and other applicable requirements?   |
| Are the selection, training, and qualification programs for operations, operations management, technical, and operations support personnel been established, documented, and implemented for the range of duties required to be performed to operate and support activities? |
| <ul style="list-style-type: none"> <li>• Is training for technical staff personnel based on an assessment of their position duties and responsibilities?</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Do the selection process and applicable position-specific training for managers ensure competence commensurate with responsibilities?</li> </ul>  |
| Are operating personnel trained on the systems they will be operating?   |
| Are equipment operators certified or qualified to operate assigned equipment?  |
| Does the operational training and qualification program include an operational drill program?  |
| Do the processes for modifications to the facility include the potential impacts on training and qualifications?   |
| Have requirements for continuing training been adequately defined, and have programs been developed?   |
| Do the training programs for operations and maintenance personnel include training on the requirements contained in the approved safety basis?   |
| Do the training programs for operations and maintenance personnel emphasize the importance of complying with procedures and safety requirements?   |
| Is the training program based upon the latest equipment design, including modifications?   |
| Do operations personnel retain a practical and adequate understanding of systems and operations? Do these personnel give adequate attention to, and retain an adequate knowledge of, health, safety, and environmental protection issues?                                    |
| Are adequate training staff and resources available to support training and qualification?   |
| Are the tasks required for competent job performance identified and documented through a systematic analysis of job requirements?  |
| <ul style="list-style-type: none"> <li>• Is the training program based on the results of this analysis?</li> <li>• Are the learning objectives derived from the analysis?</li> </ul>   |
| <b>Transportation and Waste Management</b>   |
| Are the facility's hazardous materials, including radioactive material, waste packaging and transportation activities governed by an up-to-date, comprehensive, documented packaging and transportation safety program in compliance with DOE O 435.1?                       |
| Have the contractor's radioactive waste management program requirements been flowed into the applicable subcontracts?  |
| Has the contractor developed and implemented processes for packaging and transportation and the development of a Transportation Safety Document and Transportation Plan?   |
| Has the contractor developed and implemented a documented packaging procurement and selection program with written policies and procedures that instruct personnel how to select appropriate packaging for the transportation of hazardous or radioactive material?          |
| Is the transportation emergency response to shipping incidents involving hazardous materials, including radioactive material and waste shipments, provided in a consistent, accountable manner that follows approved procedures and complies with all requirements?          |

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| Is the training of hazardous materials transportation personnel current? |
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**Table A-4: Examples of LOIs Specific to DOE**

| DOE   |
|---|
| Has the Site Office developed a certification and verification (C&V) plan that captures the requirements for startup and restart of nuclear facilities?   |
| <ul style="list-style-type: none"> <li>Is the C&amp;V plan implemented effectively through the use of process and equipment reviews; facility surveillances, including testing and maintenance; and periodic assessments to verify that maintenance requirements in the Technical Safety Requirements have been properly implemented?</li> </ul>  |
| <ul style="list-style-type: none"> <li>Does the C&amp;V plan assign responsibility for each functional area and Core Requirement?</li> </ul>  |
| <ul style="list-style-type: none"> <li>Does the C&amp;V plan involve the Federal Project Director and other site management in the review of oversight activities?</li> </ul>   |
| Has the Site Office implemented the requirements of DOE O 360.1B, section 4 for all assigned Federal employees who support or oversee work in nuclear facilities?   |
| Has the Site Office established an effective and compliant training and qualification program for Federal employees?  |
| Are procedures and mechanisms in place for nuclear facilities personnel, including Facility Representatives (FRs), Safety Systems Oversight (SSO) personnel, and Subject Matter Experts (SMEs) and their line managers to verify that nuclear activities are formally and appropriately authorized and performed safely in a manner that protects the public, workers, and the environment? |
| Are formal training and qualification requirements and staffing levels established for the FRs, SSOs, and SMEs?   |
| Are staffing level analyses current?  |
| Are minimum staffing levels met? If not, are plans and resources in place to address deficiencies?  |
| Have issues that were identified during previous DOE reviews been appropriately resolved? Have corrective actions been completed, or is a clear path to completion indicated?   |
| Are there procedures and mechanisms to ensure that the contractor develops and monitors lessons-learned programs?   |
| Is a DOE process established for reviewing occurrence reports and approving corrective action reports?  |
| Do readiness review activities demonstrate effective readiness implementation as described in EM-62 Standing Operating Policies and Procedure (SOPP) 47, Rev. 0?  |
| Do procedures exist to ensure that delegations continue to satisfy delegation criteria?   |
| Are Federal personnel identified and designated as responsible for verifying complete and accurate implementation of approved Documented Safety Analyses (DSAs), including any conditions for approval in Safety Evaluation Reports (SERs)?   |
| Are procedures and mechanisms in use by the Site Office to assess the contractor's process for flowing down contract requirements into site procedures and mechanisms and for ensuring that hazards mitigation programs and controls are implemented?   |
| Does a process exist to obtain either concurrence or exemptions from the Central Technical Authority (CTA) per DOE O 410.1 requirements?  |

## APPENDIX-B: REQUIRED ACTIONS

There are a number of required Items from DOE O 425.1 and DOE-STD-3006 that are applicable to the Site Office or Federal Project Director (FPD), including the ones shown below in Table B-1.

| Item | Action  |
|------|---|
| 1    | Startup Notification Report (SNR) process (for which the Readiness Review Coordinator (RRC) is responsible): These actions are described in DOE O 425.1D, which include review and approval (if the Site Manager is the Startup Authorization Authority (SAA)) or concurrence (if an official from Headquarters (HQ) is the SAA) with the contractor's determination of the level of RR. The FPD needs to keep the Readiness Review Coordinator (RRC) updated on schedule changes in the project so that he or she can keep the schedule current. SNRs are normally submitted quarterly to HQ and must include projects projected to start within one year, but they also typically contain starts projected to occur within two years. |
| 2    | Plan of Action (POA) responsibilities: Review of the contractor's POA (CPOA) to ensure that the scope and depth are appropriate, in addition to drafting the DOE POA (DPOA). Often, the FPD or staff will review and comment on the CPOA and draft the DPOA (consistent with first 15 Core Requirements (CRs) from the CPOA plus the addition of the three DOE CRs) and submit it to the RRC for processing. POAs are required for Operational Readiness Reviews (ORRs) and Readiness Assessments (RAs).  |
| 3    | The Team leader, identified in the POA, prepares an Implementation Plan (IP) only for ORRs and submits it to the RRC for processing.  |
| 4    | Team leaders are responsible for selecting the team members.  |
| 5    | The DOE RR team leader must ensure that team members are qualified and independent. These attributes are well described in DOE O 425.1, DOE-STD-3006, and DOE-HDBK-3012-2003. The Site Office or FPD should work with the DOE team leader to obtain and support team members (e.g., logistics, travel, badging, and identifying contractor counterparts and site support personnel). It is recommended that a mix of onsite (independence permitting) and offsite personnel comprise the team. Upon the conclusion of the DOE RR, the team leader submits the final report to the SAA.  |
| 6    | Determine the qualification adequacy of the contractor RR team members and oversee the contractor RR.   |
| 7    | Review the final report to determine whether or not it supports the conclusion reached.   |
| 8    | Verification that the contractor's preparations for startup or restart have been completed (closure of prestart findings); a manageable list of open prestart issues is permissible. The prestart issues must have a well-defined schedule for closure.   |
| 9    | Ensuring that contractor post start findings have corrective action plans in place.   |
| 10   | Verify that the DOE RR POA prerequisites have been met prior to endorsing the Readiness to Proceed Memorandum.  |
| 11   | Document the routine DOE oversight of the contractor processes for achieving readiness.   |
| 12   | Document the other DOE functional area assessments performed to ascertain readiness.  |
| 13   | Verify that Federal staff and support contractors are ready to oversee operations. This includes making a determination as to whether qualifications are adequate and training is current.  |
| 14   | Endorse and transmit the Readiness to Proceed Memorandum to the SAA.  |

| Item | Action   |
|------|--|
| 15   | Verify closure of DOE's RR pre-start findings, and ensure that post-start findings have corrective action plans in place. This is usually the Site Office responsibility; however, the SAA may select another organization, such as the DOE RR team or an HQ component, to accomplish this task. |

The division of responsibility for these issues between the FPD and other site personnel varies for each site. Items 1 and 3 are being performed throughout the complex with little to no difficulty, and requirements and guidance are clear in this area. The FPDs have no responsibility for Item 3, and only a schedule input to Item 1. Item 2 could be a large or small responsibility for the FPD, usually based on the size of the Federal site staff (i.e., the smaller the staff, the larger the FPD responsibility for Item 2). Guidance on addressing Item 2 is provided in Appendix A. Items 4 through 13, particularly 9 through 13, are a source of much confusion; a lack of clear guidance in this area compounds the problem. Item 11 (and the coordination of Item 12) are primarily FPD responsibilities; the FPD must ensure that DOE personnel are familiar with the facility (a necessary component of Item 13). The site operating structure is normally responsible for the remainder of the Items. The DOE process for addressing Items 4 through 13 has different names at different sites, ranging from the DOE Management Self-Assessment (DOE MSA), Certification and Verification Review (CVR), Line Management Assessment (LMA), Startup and Verification Plan (SVP) Review, Validation Review (VR), and others. This Module identifies the process as Certification and Verification (CV).

In order to support the two overarching requirements from DOE O 425.1 to document that 1) the Site Manager has determined that the contractor is ready to start operations; and that 2) DOE is ready to oversee the activities. Each DOE site must have a CV process to implement and document its activities associated with Items 4 through 13. Furthermore, DOE-STD-3006- states that DOE line management (DLM<sup>6</sup>) responsible for overseeing contractor operations should prepare an endorsement to the Readiness to Proceed Memorandum (i.e., Item 14) as a part of forwarding it to the SAA.

This endorsement must address the following two elements:

- 1) DOE line management's assessment of the contractor's readiness to commence operations. This assessment should be based on day-to-day observations of contractor activities and an assessment of the adequacy of the contractor ORR and corrective actions (i.e., Items 11 and 12).
- 2) Readiness of DOE line management to oversee contractor operations following startup, including meeting the prerequisites and Core Requirements in the DOE POA. The basis for this conclusion, including the results of any DOE line MSAs conducted in anticipation of startup, should be included in the endorsement (i.e., Item 13).

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<sup>6</sup> The DLM is determined as follows: When HQ is the SAA, the DLM is the Site Manager for sites where the Office of Environmental Management (EM) is the Lead Program Secretarial Officer (LPSO); the DLM is the DOE EM Program Manager where EM is not the LPSO; in those situations when the Site Manager is the SAA, the DLM is the AM or FPD for the Program where the activity is located.

The preferred process for DOE to address element 1 above is to have the corresponding DOE technical personnel (including Facility Representatives (FRs), Subject Matter Experts (SMEs), Safety Systems Oversight (SSO) personnel, and contractor support personnel) on board and overseeing contractor activities from an early stage, ideally from design conception (CD-1B). This will also support the second element of verification, in which DOE is ready to oversee contractor activities, as this process allows for the DOE technical cadre to become familiar with the plant, personnel, and procedures from the ground floor up, which adds to their qualifications. The bulk of the day-to-day observations of contractor activities should be accomplished by members of the Integrated Project Team (IPT). For the most part, the IPT members should be named readiness leads in each functional area, responsible for tracking and updating a readiness matrix based on the CRs. Findings from their own surveillances and assessments (Item 11) along with results from other assessments (Item 12) either from the FRs, site technical experts, including SMEs and SSOs, or outside entities, are tracked through closure. These readiness leads have detailed, real-time knowledge of their assigned areas. Duplication of surveillances, assessments, and audits in any particular area is therefore avoided. Likewise, as the contractor is conducting the MSA, they are observing selected activities. The readiness leads use checklists developed to be consistent with the POAs (for RRs and the contractor MSA) and IP in order to verify the completion of prerequisites. Other tools, including the Evidence Closure Package, which documents the completion of tasks and is tracked on a readiness checklist, are standardized. These packages are kept in a readiness evidence file maintained by the readiness lead.

Use of a Line Management Oversight Review Board (LMORB) is highly recommended. It is typically made up of the Federal Project and Deputy Project Directors, the DOE Site Manager and Assistant Manager of the line program associated with the Project, the DOE Assistant Manager for Environment, Safety, and Health (ES&H), the IPT Readiness Coordinator, selected SMEs, and the contractor's readiness manager. It is also desirable, but not necessary, to have an offsite expert or two as members, preferably one who has recently been through RR preparations at another DOE site and an HQ RR expert. The readiness leads periodically present the status of verification in their areas to an LMORB. These meetings provide assurance that closure criteria and prerequisites are satisfied, and ensure that oversight activities used to verify readiness of process, programs, personnel, and equipment have been performed. Formal minutes from these review board meetings should be kept to document recommended actions. The review board should meet with a greater frequency towards completion of the reviews.

The second element, verification that DOE is ready to oversee contractor activities, is not being performed at many sites. Instead, this determination is being left to the DRR Team to address as part of their review, as CRs 16 (DOE personnel qualifications) and 18 (DOE oversight programs) address DOE site capabilities. This is not acceptable; it is analogous to using an RR as a tool for achieving readiness. The certification and verification that DOE is ready to oversee the new activity is a prerequisite to the DRR. A review of qualifications and programs must be completed before the DRR commences. CR 16 states that "the technical and managerial qualifications of those personnel at the DOE field organization and at DOE Headquarters who have been assigned responsibilities for providing direction and guidance to the contractor, including the Facility Representatives, are adequate;" CR 18 states that "DOE operations office oversight programs, such as occurrence reporting, Facility Representative, corrective action, and

quality assurance programs, are adequate.” Additionally, most DRRs, due in part to time limitations, do not review the qualifications of DOE HQ personnel, nor do they review any qualifications of DOE support contractors who, at many small sites, function to some degree as a Federal employee, providing direction and guidance. The CVP must address not only the qualifications of FRs, but also SSOs, SMEs, and other DOE personnel who give direction and guidance to the Contractor, as well as ascertaining their degree of engagement and knowledge in the project. These other personnel consist of the Contracting Officer, the Contracting Officer’s Representative and the FPDs and Deputy FPDs. Additionally, if it is determined that support contractors are (or will be after the facility or activity is operational) in positions that gives guidance to the contractor, their qualifications must also be reviewed (i.e., they should have qualifications and experience similar to that of the current IPT members in that discipline and meet or exceed the qualifications of the “technical staff,” as described in DOE Order 5480.20A). The DOE capability needs to be verified with enough lead time to correct any deficiencies to prevent a delay in starting the RR due to DOE problem areas. Because of this potential impact, these actions are grouped with the prerequisite RR activities in the Review Scope and Criteria Section. In general, the CVP is organized to define those DOE actions required during each of the various phases of the process for starting or restarting the facility or activity. The responsibility for developing the CVP should rest with the RCC, with significant support from the FPD. The CVP must specify the actions and documentation to assess each Item—4 through 13—and identify the responsible individual.

Figure D-1 shows that the CV review of Items 4 through 8, which is a performance-based review using CRADs, has a duration of five weeks. The first part consists of various SMEs observing the CRR activities, while the latter two weeks consists of verification of closeout actions (from the CRR and the CV itself). This review, combined with the documentation of the ongoing activities that support Items 9-13, are to be documented in a report and provided to the Site Manager, who uses it as part of the basis for certifying to the SAA that both the contractor organization and the Site Office are ready for the subsequent RR. This report will document the conduct of the CV review, any findings, opportunities for improvement, and noteworthy practices. The Finding Forms and CRADs used are incorporated as part of the report.



**APPENDIX C: FEDERAL STAFF READINESS PLANNING ACTIVITIES**

*Table C-1: Readiness Functions and Responsibilities for Federal Staff*

| <b>Step</b> | <b>Description</b>  | <b>Performer</b>                       |
|-------------|---|--|
| 1           | Review and comment on the Startup Notification Report (SNR).  | Readiness Review Coordinator (RRC)     |
| 2           | Approve and forward the SNR to the Startup Authorization Authority (SAA) and Headquarters.  | Site Manager                           |
| 3           | Organize DOE oversight activities to align with the Readiness Review (RR) framework; appoint Readiness Leads in each Functional Area and ensure that each Core Requirement is accounted for.  | Federal Project Director (FPD)         |
| 4           | Charter a Line Management Oversight Review Board consisting of, at a minimum, senior DOE site personnel.  | FPD                                    |
| 5           | Develop a Certification and Verification Plan (CVP) based on prerequisites identified in the DOE Plan of Action (POA) and requirements in DOE O 425.1, section 4, and DOE-STD-3006-2000, section 5.2.9 or DOE-STD-3006-2009, section 7. | RRC/FPD                                |
| 6           | Select team leader and members.   | Site Manager, supported by RRC and FPD |
| 7           | Provide the CVP to site personnel, including Facility Representatives, Subject Matter Experts, and Systems Safety Oversight personnel, for review and comment.  | RRC/DOE Site Reviewers                 |
| 8           | Resolve and incorporate any comments on the CVP as applicable and submit it to the Site Manager for approval.   | RRC                                    |
| 9           | Implement the CVP.  | CV team leader and members             |
| 10          | Review, approve, and ensure distribution of the contractor POA  | RRC/FPD                                |
| 11          | Comment on and distribute the contractor's Implementation Plan (IP) (if an Operational Readiness Review (ORR)).   | RRC                                    |
| 12          | Prepare, approve, and distribute the DOE Plan of Action (POA).  | RRC/FPD                                |
| 13          | Review EM SOPP 47; check with EM-62 for the latest DOE complex-wide RR and project-specific lessons learned.  | DOE RR team leader                     |
| 14          | Draft DOE IP (if an ORR).   | DOE ORR team leader                    |
| 15          | Transmit IP to team members for comment and issue the IP.   | DOE ORR team leader                    |
| 16          | Distribute the DOE IP.  | RRC                                    |



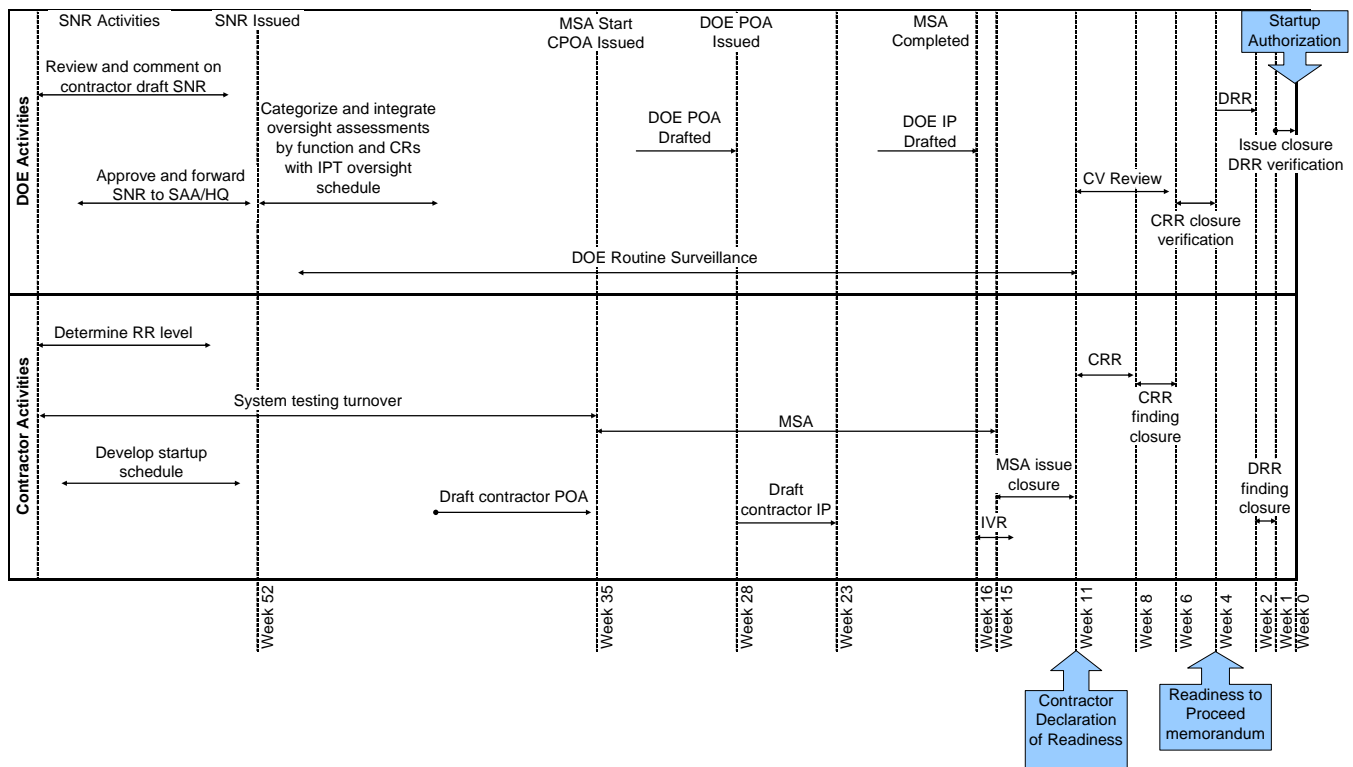
| Step | Description  | Performer   |
|------|--|---|
| 17   | Support DOE team pre-visit activities and arrange for required training and logistics support for the pre-visit and ORR.   | RRC   |
| 18   | Transmit the documentation requested by team members from the pre-visit.   | FPD/RRC   |
| 19   | Oversee the contractor RR to fulfill Item 6: "Determination of the adequacy of the qualification of the CRR team members and provide oversight of the CRR."  | CV team   |
| 20   | <p>Upon receipt of the Contractor Readiness to Proceed Memorandum, fulfill Items 7 through 10:</p> <p>7. Review of the CRR final report for sufficiency to support conclusion.</p> <p>8. Verification that the contractor's preparations for startup or restart have been completed (closure of prestart findings) with the exception of a manageable list of open prestart issues. The prestart issues must have a well-defined schedule for closure.</p> <p>9. Ensuring that contractor post-start findings have corrective action plans in place.</p> <p>10. Verification that the DOE RR POA prerequisites have been met.</p> <p><b>Note:</b> A copy of the contractor ORR final report must be included with the Readiness to Proceed Memorandum.</p> | CV Team   |
| 21   | Verification of completion of Item 13, Site Office readiness to oversee activities.  | CV Team   |
| 22   | After satisfactory completion of step 20 and 21, formally endorse readiness to the SAA.  | FPD if SAA is Site Manager; Site Manager if a Headquarters employee is the SAA. |
| 23   | Direct the DOE team leader to commence the DOE ORR.  | SAA   |
| 24   | Verify the contractor's closure of DOE findings.   |   |

## APPENDIX D: READINESS REVIEW TIMELINE

Upon successful completion of the DOE Readiness Review (RR), the Startup Authorization Authority (SAA) may grant permission for the project to commence. The successful completion of the DOE RR is a verification of all of the readiness activities that have been initiated prior to the RR.

The timeline associated with RRs should be modified by the complexity of the project. Generally, the contractor should start the Management Self-Assessment (MSA) at about the same time that the contractor Plan of Action (CPOA) is submitted—about six months before the contractor RR (CRR) begins. The Implementation Plan (IP) for the CRR should be issued about three months before the CRR commences. The framework and tracking for RR activities are based on the Core Requirements (CRs). All activities and prerequisites are grouped with a CR. At least one prerequisite should exist for each of the CRs. The MSA prerequisites and objectives should conform to the CRR prerequisites, as described in the CPOA. Any prerequisites not completed before the MSA begins should be identified for the senior manager and MSA team leader, and should be planned for completion prior to the end of the MSA fieldwork. The DOE Plan of Action should be prepared six months before the DOE RR. The DOE RR team leader prepares the IP about three months before the DOE RR begins. It is important that the Criteria and Review Approach Documents (CRADs) for RRs be consistently applied throughout. Figure G-1 depicts a typical timeline and associated activities.

**Figure D-1: Timeline of Readiness Review Activities**



The RR itself is not a process to help achieve readiness; rather, it is an independent confirmation of readiness. The project should be ready to commence activities by the time the DOE RR is initiated. Site line management is responsible for verifying and certifying that the contractor is ready to commence activities and that Federal personnel are ready to oversee the activities. The DOE RR can then begin. One of the primary objectives of this RR Module is to describe the process and the actions that need to be taken by DOE site line management, including the Federal Project Director (FPD), to determine whether readiness has been achieved. One of the FPD's main interfaces in this area is with the Site Readiness Review Coordinator (RRC), who works with the originators of the Startup Notification Report, Plans of Action, and Implementation Plans. Additionally, the RRC functions as the site liaison and conduit for information exchanges between the contractor, the SAA (who could be either a Headquarters Manager or Site Manager) and Headquarters Readiness Review personnel in the Offices of Health, Safety and Security and Environmental Management, and the Chief of Nuclear Safety. Large sites normally have an individual dedicated full-time to this position; smaller sites fill this function as a collateral duty.

## **APPENDIX E: READINESS REVIEW (RR) SCOPE AND DEPTH**

The Plan of Action (POA) (Item 2), for an RR determines its breath and depth. The breadth of an RR or Management Self-Assessment (MSA) is defined as the scope; it establishes the geographical (physical) and bounding conditions (regarding processes, structures, systems, and components) and the Core Requirements (CRs) to be used during the review. The depth refers to the level of analysis, documentation, or action by which each CR is assessed. Variations in the depth are determined by the number of criteria that are used to assess a given CR or by the intensity of the review approaches. The review approaches include documentation reviews, interviews, walk downs, and observations of facility evolutions. Increased depth is attained by applying more of the review approaches for a given criterion (or objective) or a larger sampling size. Team members are guided by a set of criteria and review approach documents (CRADs). The team members will review documentation and procedures, inspect equipment and systems, interview personnel, and observe simulated or actual evolutions as they are performed. For specific evolutions, the team members will review the records and procedures, observe the evolution, witness the execution of the procedure and the generation of the records, and then follow up on pertinent issues with interviews. The graded approach, as described in Appendix 1 of DOE-STD-3006 should be used to assist the team members in determining the appropriate assessment depth. Sets of CRADs associated with each CR have been developed and are available from the Offices of Health, Safety and Security, Chief of Nuclear Safety (CNS), or Safety Management and Operations (EM-60).

Another key element in developing a POA is to ensure that, where applicable, the new or revised authorization basis is in place. The changes to the Documented Safety Analysis (DSA) and Technical Safety Requirements (TSRs) should be completed, approved by DOE, and fully implemented in the field. Changes to the DSA and TSRs should be made effective prior to commencing the readiness review. It is a good practice to conduct an Independent Verification Review (IVR) prior to the RR for formal verification that controls are fully implemented, surveillances have been conducted with satisfactory results, and that the appropriate personnel are aware of the new or changed controls and their impact.