

# memorandum

Oak Ridge Office

DATE: October 3, 2011

REPLY TO

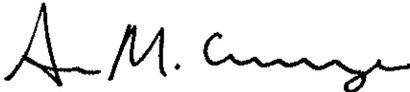
ATTN OF: EM-94:Bennington

SUBJECT: **ENVIRONMENTAL MANAGEMENT PROCEDURE EM-2.1, REVISION 4, "STARTUP AND RESTART OF OAK RIDGE RESERVATION ENVIRONMENTAL MANAGEMENT PROGRAM WORK" - APPROVED**

TO: Environmental Management Staff, EM-90

The attached procedure is issued for your use. Please read and familiarize yourself with it. It will be placed onto the Office of Environmental Management's Office Policies and Procedures Webpage, see <http://www.oakridge.doe.gov/External/Default.aspx?tabid=120>, as soon as possible and will be available there for future reference.

If you have any questions or if we can be of any further assistance, please contact Russ Kelly at 576-6819 or Mary Bennington at 576-8688.

  
for John R. Eschenberg, Manager  
Oak Ridge Office of Environmental Management

Attachment

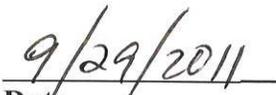
Department of Energy  
Oak Ridge Office  
Office of Environmental Management  
Procedure

STARTUP AND RESTART OF OAK RIDGE RESERVATION  
ENVIRONMENTAL MANAGEMENT PROGRAM WORK

EM – 2.1  
Revision 4

Prepared:

  
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Date



**EM Environmental Management**

safety ❖ performance ❖ cleanup ❖ closure

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## ACRONYMS

AMEM	Assistant Manager for Environmental Management
BfD	Basis for Determination
CA	Corrective Action
CAP	Corrective Action Plan
COR	Contracting Officer's Representative
CR	Core Requirement
CRAD	Criteria and Review Approach Document
CSO	Cognizant Secretarial Office
DOE	U. S. Department of Energy
EM	Office of Environmental Management
FPD	Federal Project Director
HQ	Headquarters
MCR	Minimum Core Requirement
MSA	Management Self Assessment
ORP	Oversight Review Plan
OR	Oversight Review
ORO	Oak Ridge Office
ORR	Operational Readiness Review
PM	Program Manager
POA	Plan-of-Action
PSO	Principal Secretarial Office
QAD	Quality Assurance Division
RA	Readiness Assessment
RC	Readiness Coordinator
SAA	Startup Authorization Authority
SNR	Startup Notification Report
VSS	Vital Safety Systems

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## 1.0 PURPOSE

The purpose of this procedure is to define a process for verification of the readiness of U. S. Department of Energy, Oak Ridge Office, Office of Environmental Management (ORO EM) program work on the Oak Ridge Reservation and surrounding areas before it is started or restarted. This procedure and its described program provides the mechanism for ORO EM staff to identify the type of readiness review (RR) to be conducted for a specific startup or restart if any, the Startup Authorization Authority (SAA), how to conduct the review, and how the review should be documented. This procedure flows down requirements of DOE Order 425.1D, *Verification of Readiness to Startup or Restart Nuclear Facilities*, to be applied to ORO EM program work for Category 2 and 3 nuclear facilities. In addition, this procedure identifies the use of field readiness reviews other than Order 425.1D readiness reviews for startups or restarts of facilities, operations, or activities not subject to O 425.1D review criteria.

RRs are not intended to be tools of line management to achieve readiness. RRs provide independent confirmation of readiness to start or restart operations.

*Note:* While O 425.1D also applies to Category 1 nuclear facilities, ORO EM does not manage any Category 1 facilities and those requirements are excluded from this procedure.

*Note:* For ORO EM work being conducted under contracts still containing DOE Order 425.1C, *Startup and Restart of Nuclear Facilities*, as the requirement document, the requirements of this procedure will not apply if in conflict with requirements of that revision. In such situations, EM Procedure EM-2.1, *Startup and Restart of Oak Ridge Reservation Environmental Management Program Work*, Revision 3, should be applied.

## 2.0 SCOPE

This procedure describes the process that will be used by ORO EM to verify readiness. The procedure provides guidance for: (1) identification of work startups and restarts that require a DOE ORO readiness review, (2) selection of the type of readiness review required, (3) review planning, (4) review implementation, (5) review reporting, (6) corrective action (CA) follow-up, and (7) approval of startup/restart of reviewed activity.

Three types of readiness verification reviews are addressed in this procedure:

- [1] Operational Readiness Reviews (ORRs);
- [2] Readiness Assessments (RAs); and
- [3] Oversight Reviews (ORs).

The selection of the review type depends on the specific startup or restart of the facility, operation, or activity and the potential hazards associated with it.

For hazard category 2 and 3 nuclear facilities, EM will fully adhere to the requirements of DOE Order 425.1D for startup and restart of nuclear facilities, operations, or activities during all such reviews with exception for contract work where Order 425.1C still applies.

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Although the procedure applies to all EM program work, this does not imply that all facilities/activities will require a formal readiness verification review (i.e., ORR, RA, or OR, prior to startup or restart). The procedure defines the framework by which facilities/activities/operations are evaluated in the planning stage to determine if a formal review is required.

The methods and approaches provided in this procedure may be useful to line managers regarding the startup or restart of radiological facilities or non-nuclear facilities in accordance with the requirements of DOE O 430.1B. DOE line managers are encouraged to consider the methods and approaches in this procedure when developing requirements or procedures for startup or restart of radiological or non-nuclear facilities.

### 3.0 REFERENCES AND DEFINITIONS

#### 3.1 References

- 3.1.1 DOE, 2010, DOE Order DOE O 425.1D, *Startup and Restart of Nuclear Facilities*, Washington, D.C.
- 3.1.2 DOE, 2010, DOE Standard DOE-STD-3006-2010, *Planning and Conducting Readiness Reviews*, Washington, D.C.
- 3.1.3 DOE, 2008, DOE O430.1B, *Real Property Asset Management*, Washington, D.C.
- 3.1.4 DOE, 2011, Procedure No. EM-3.3, Revision 7, Integrated Assessment Program

#### 3.2 Definitions

- 3.2.1 Basis for Determination (BfD): A documented method, included with the Startup Notice Report, of evaluating a facility or activity description to determine if the activity is routine or requires further evaluation. It provides the basis for why the proposed RR is appropriate. The description should include hazards, complexity, and impacts on items such as the safety basis and be as specific as possible to facilitate DOE review and approval.
- 3.2.2 Breadth: The set of Core Requirements and the physical boundaries evaluated by the ORR or RA team during the RR. The breadth is specified in the POA by line management.
- 3.2.3 Core Requirement (CR): A fundamental area or topic evaluated during an ORR or RA to assess whether a facility can be operated safely. CRs are listed in Appendix IV, *Core Requirements*.
- 3.2.4 Corrective Actions (CAs): A measure taken to rectify and prevent recurrence of conditions that adversely affect quality and mission accomplishments.
- 3.2.5 Criteria and Review Approach Document (CRAD): This document lists the criteria that the technical experts (team members) plan to use to evaluate and describes the objective evidence that is gathered to determine whether the criteria have been met. The review approach consists of evaluating a sampling of

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documents, hardware/systems, people, and performance. CRADs are a key component of the Implementation Plan (IP) for the RR.

- 3.2.6 Depth: The depth of a review relates to the level of analysis, documentation, or action by which a review objective is assessed. The depth to which different review objectives are assessed may vary within an individual RR. Depth could vary from a simple records review to a detailed assessment that includes a review of all records, all references, and all involved individuals and physical spaces. The POA establishes the breadth of the review and broadly describes the desired depth. The CRADs, part of the IP, translate the POA description of the depth into practical terms of what is intended be reviewed and by what approach.
- 3.2.7 Directed Shutdown: An unscheduled termination of program operations or activities directed by contractor management, local DOE officials, or by DOE Headquarters.
- 3.2.8 Extended Shutdown: A shutdown, planned or unplanned, which because of its duration triggers an automatic readiness review per Order 425.1D.
- 3.2.9 Facility: Those activities, processes, or operations that involve materials in such form, quantity, or concentration that a hazard potentially exists to employees, the public, or the environment.
- 3.2.10 Facility Type: The type of facility is one of five types:
- 3.2.10.1 Nuclear facility (category 2 or 3): A facility which contains enough radioactive material to warrant special controls in the operation involving this material. These are defined as:
- [1] Hazard Category 2: The Hazard Analysis shows the potential for significant on-site consequences, see DOE Standard DOE-STD-1027-92, Table 3.1 and Table A.1.
- [2] Hazard Category 3: The Hazard Analysis shows the potential for only significant localized consequences see DOE-STD-1027-92, Table 3.1 and Table A.1.
- 3.2.10.2 Less than Category 3 Nuclear Facility/Radiological Facility: This is a nuclear facility that contains less than a Hazard Category 3 amount of potentially releasable radioactive material either by inventory or by hazard analysis.
- 3.2.10.3 Non-nuclear facility: Those activities, processes, or operations that may involve hazardous substances other than nuclear materials in such forms or concentration that a potential danger exists to cause illness, injury, or death to personnel within the facility site boundary or members of the public.
- 3.2.10.4 Other Industrial: A facility in which those activities, processes, or operations that may involve hazardous substances or industrial activities in such forms or concentration that a potential danger exists to cause illness, injury, or death to personnel within the facility site boundary.

- 3.2.11 Graded Approach: The process used to determine the level of analysis, documentation, and actions necessary to comply with a requirement that is commensurate with: (1) the relative importance to safety, safeguards, and security; (2) the magnitude of any hazard involved; (3) the lifecycle stage of a facility; (4) the programmatic mission of a facility; (5) the particular characteristics of a facility; (6) the relative importance of radiological and non-radiological hazards; and (7) any other relevant factor.
- 3.2.12 Implementation Plan: 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. Typically contains the review lines of inquiry and approach.
- 3.2.13 Line Manager (LM): The EM line manager who has been designated by the AMEM as responsible for implementing this specific scope of work. In this procedure line management is the Federal Project Director or a Project Manager unless otherwise designated.
- 3.2.14 Management Self Assessment (MSA): An internal review conducted by the line organization for the purpose of confirming readiness.
- 3.2.15 Minimum Core Requirement: The core requirements applicable to the scope of work as defined in the POA.
- 3.2.16 Operational Readiness Review (ORR): A disciplined, systematic, documented, performance-based examination of facilities, equipment, personnel, procedures, and management control systems to ensure that a facility will be operated safely within its approved safety envelope as defined by the facility safety basis. This is the highest level of readiness verification review. A four step process is implemented for the ORR including a Management Self Assessment (MSA) by the contractor's line management; contractor independent ORR; EM MSA; and the DOE ORR.
- 3.2.17 Oversight Review (OR): An EM review conducted by DOE Line management for start-up/restart of facilities, activities, or operations not identified by criteria in Order 425.1D as requiring an ORR or RA. This can include start-ups/restarts in Category 2 or 3 facilities not requiring an ORR or RA or start-ups/restarts in less than Category 3 nuclear facilities, non-nuclear facilities, or other industrial facilities. Need for an OR is determined by the DOE line management when additional assurance of readiness beyond the contractor readiness review is desired but a DOE ORR or RA is not required per DOE O 425.1D.
- 3.2.18 Oversight Review Plan (ORP): A structured review plan that is prepared and implemented for ORs that identifies all of the necessary criteria and review approaches required for the determination of readiness to safely startup and operate the specified facility, activity, or operation. However as allowed in an RA, use of a graded approach for less complex startups/restarts may allow the use of review plans as simple as checklists.
- 3.2.19 Plan-of-Action (POA): The document prepared by line management that describes the scope of the RR, the prerequisites to be met to begin the RR, and the

proposed Team Leader for the RR. The contractor and DOE may prepare separate POAs for their respective RRs (in some instances as specified in the SNR, a DOE RA may not be required) or may have a combined POA. Both contractor and DOE POAs when required are submitted to the Startup Approval Authority (SAA) for approval. The designated RR Team Leader(s) develops their IP from the approved POA.

- 3.2.20 Planned Shutdown: A facility shutdown required to perform schedule activities (such as programmatic or equipment adjustments, reactor refueling, maintenance, surveillance, tests, inspections, and/or safety upgrades) or for programmatic reasons unrelated to the facility's ability to operate. A funding shortfall is a planned shutdown. Local procedures should define the review requirements for shutdowns of this type. In all cases, if a review is required, the 425.1D process will be used.
- 3.2.21 Prerequisites: A set of specific, measurable actions or conditions identified in the contractor and DOE POA(s) that are to be completed prior to the start of the respective ORR or RA.
- 3.2.22 Program Work: Work in a reactor or non-reactor nuclear facility that is accomplished to further the goals of the facility mission or the program for which the facility is operated. Program work may include D&D or Environmental Restoration activities when that is the mission of the facility. Program work is not accomplished when an operational facility is shut down. Program work does not include work that would be required to maintain the facility in a safe shutdown condition, minimize radioactive material storage, or accomplish modifications and correct deficiencies required before program work can resume.
- 3.2.23 Readiness Assessment (RA): A review that is conducted to verify readiness to startup or restart a nuclear facility when an ORR is not required. There is a three step process for implementing RAs: the contractor conducts an independent RA, the contractor declares their readiness to startup or restart, and EM conducts an independent RA. In lieu of an EM RA, EM may oversee the contractor RA if specified in the approved SNR.
- 3.2.24 Readiness Coordinator (RC): The function, expressed in this procedure as a position, of performing or coordinating the completion of various activities described in this procedure; e.g., document routing, readiness determination reviews, etc. The function is the responsibility of the Operations Division and may be delegated to a single position or among several positions with ultimate responsibility residing in the Operations Division Director.
- 3.2.25 Readiness Review (RR): A review conducted to determine readiness to start up or restart a nuclear facility, activity, or operation. There are two types of RRs: ORRs and RAs.
- 3.2.26 Readiness-to-Proceed Memorandum (RTP): The formal document submitted by the contractor certifying the conclusion that the facility is prepared to start or resume nuclear operations. The contractor RR final report and finding closure packages or corrective action plans, along with the appropriate endorsements, are attached to the RTP.

- 3.2.27 Restart: The resumption of program work. Restarts requiring an RR can occur in operating facilities if the process to be resumed meets RR requirements. A restart RR in accordance with DOE O 425.1D may be required even if the same program work is ongoing in another portion of the operating facility.
- 3.2.28 Scope: The overall magnitude of the RR, as defined by the physical breadth and depth of the facilities and equipment to be started, the breadth of CRs selected, and the depth of evaluation of these CRs during the RR. The POA defines the scope of the RR when it establishes the breadth and broadly describes the desired depth.
- 3.2.29 Short Interruption: A cessation of program work required to perform scheduled or unscheduled activities (such as programmatic or equipment adjustments, reactor refueling, maintenance, surveillance, tests, inspections, or safety upgrades) or for programmatic reasons unrelated to the facility's ability to operate, such as a funding shortfall, for which adequate plans pre-exist that ensure a safe restart without the need for a formal RR. This local procedure defines the circumstances that are considered short interruptions and the requirements for restart authorization.
- 3.2.30 Startup: The initial operation of a facility/activity or operation to perform program work.
- 3.2.31 Startup Authorization Authority (SAA): The line manager who is designated in accordance with DOE O 425.1D, section 4.b to authorize the start of nuclear operations when all requirements of the Order have been met. The SAA may range from the Secretary of Energy to a senior contractor line manager. For each startup or restart, the SAA is designated in the SNR.
- 3.2.32 Startup Notification Report (SNR): A quarterly report by the contractor to identify all known future EM facility starts and restarts for category 1, 2 and 3 nuclear facilities. The report identifies the facility and includes the Basis for Determination (BfD) specifying whether an ORR or RA is required. The SNR also identifies the Startup Authorization Authority (SAA) and updates previously provided information. The report is submitted to the SAA for approval.
- 3.2.33 Substantial Process, System or Facility Modification: A modification that requires that DOE conduct an RA following completion of the contractor's readiness activities. (See Appendix I for Substantial Modification/Process Change Criteria)
- 3.2.34 Unplanned Shutdown: An interruption of an activity or operation at a facility for which adequate procedures do not pre-exist that would permit safe restart of the facility without the conduct of a readiness review.
- 3.2.35 Vital Safety Systems: Vital safety systems are safety-class systems, safety significant systems, and other systems that perform an important defense-in-depth safety function.

#### **4.0 ROLES AND RESPONSIBILITIES**

##### **4.1 Assistant Manager for Environmental Management (AMEM)**

- 4.1.1 Perform duties of the Startup Authorization Authority when given that authority in DOE O 425.1D or delegated that authority by higher level DOE official given the authority in the Order.
- 4.1.2 Approve SNRs for startups/restarts for which Startup Authorization Authority resides at the field level.
- 4.1.3 Make recommendation to appropriate official for disposition of SNR items for which Startup Authorization Authority resides at the DOE HQ level.
- 4.1.3 Approve the contractor procedures for implementing the requirements of Contractor Requirements Document, *DOE O 425.1D, Verification of Readiness to Start Up or Restart Nuclear Facilities*.
- 4.1.4 Assign the line manager responsible for ensuring line management readiness process actions in this procedure are completed as described for ORO EM facilities, operations, activities, and programs. Hereafter referred to as line manager (LM).

##### **4.2 EM Facility Operations Division (FOD) Director**

- 4.2.1 Ensure that all requirements of readiness process coordination identified in this procedure are accomplished.
  - 4.2.2 Assign Facility Operations Division staff as needed as Readiness Coordinator(s) to accomplish readiness coordination tasks identified in this procedure.
- Note:* An individual staff member may be identified for the Readiness Coordinator role across EM projects or multiple individuals can be utilized to perform the required actions for separate startups/restarts. Identification in this procedure of responsibilities of and actions for Readiness Coordinator shall be understood to be for the individual staff member assigned by the FOD Director for that responsibility or action.
- 4.2.3 Coordinate the development of SNRs with the Contractors and cognizant FPD/PM.
  - 4.2.4 Evaluate the facility/activity/operation to determine the need for a RR and the required level of RR.
  - 4.2.5 Upon RR determination, identify Team Lead to conduct RR and coordinate with AMEM when applicable (e.g., Team Lead Appointment Memo for ORR).
  - 4.2.6 Assist review Team Lead in identifying staff resources for populating review team positions.

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### **4.3 Readiness Coordinator (assigned from Facility Operations Division)**

- 4.3.1 Assist LM in evaluating newly identified startups/restarts in the LM's area of responsibility which may be subject to SNR inclusion consideration. This effort supported by close communication with the Contractor(s).
- 4.3.2 Assist EM FOD Director in evaluating SNRs, especially as pertains to correct selection by the Contractor of the required level of RR and SAA.
- 4.3.3 Assist EM FOD Director in identifying Team Leads and staff resources for populating review team positions.
- 4.3.4 Perform multiple tasks as identified in the procedure assisting other readiness process participants in document preparation, routing, etc.
- 4.3.5 Participate as subject matter expert in RRs.

### **4.4 Federal Project Directors/Project Managers (when acting as LM)**

- 4.4.1 Identify new scope of work activities (facilities, activities, and operations) for screening.
- 4.4.2 Provide oversight of contractor's readiness preparations including readiness reviews when required.
- 4.4.3 Ensure performance of DOE Oversight Reviews.

The remaining roles and responsibilities are defined in this procedure in conjunction with the specific actions that various EM and contractor staff have responsibility for implementing.

## **5.0 PROCEDURE**

### **5.1 Determining the Need for a Startup or Restart Review and Type of Review Required**

- 5.1.1 The DOE ORO EM line manager (LM), i.e. Federal Project Director (FPD) or Project Manager (PM), cooperatively with the contractor shall identify startups/restarts of facilities, activities, or operations within their work responsibility area.
- 5.1.2 The DOE ORO EM Operations Division Director/Readiness Coordinator (RC) shall facilitate a DOE evaluation of startup and restart of facilities, operations, activities projected to occur over the next year. The evaluation shall determine (1) whether Contractor and DOE RRs are required, (2) type of Contractor/DOE RR required, and (3) the appropriate Startup Authorization Authority.
- 5.1.3 IF both of the following conditions are met, an Order 425.1D Readiness Review, ORR or RA, for the restart of Hazard Category 2 and 3 nuclear facilities, activities, or operations is **not** required:
  - a. The restart is a resumption of routine operations after a short interruption (such as maintenance activities governed by existing maintenance procedures and processes) as defined in this procedure.

*Note:* Short may be defined as less than 6 months for Hazard Category 2 and less than 12 months for Hazard Category 3 facilities, activities, or operations. The time frame for a short shutdown for Category 2 can be extended to 12 months based upon evaluation. The evaluation of whether a shutdown is routine and the length of allowed shutdown of Category 2 will be based on previous work record, modifications made during the shutdown, staff turnover and other applicable elements. DOE-STD-3006-2010 provides additional detail for making this determination.

and

- b. The restart is conducted using contractor approved operating procedures that provide specific direction for operating systems and equipment during normal conditions.

5.1.4 A DOE ORR must be conducted for any of the following:

- a. Initial startup of a newly constructed nuclear facility. For the purpose of this criterion, a newly constructed nuclear facility refers to a new facility (not operation or activity) with a new Documented Safety Analysis (DSA) and associated Technical Safety Requirements (TSRs).
- b. Initial startup after conversion of an existing facility to a new nuclear mission with a new DSA and associated TSRs;
- c. Restart of a nuclear facility, activity, or operation that has upgraded its hazard categorization to Hazard Category 2 or 3;
- d. Restart after a DOE management official directs the shutdown of a nuclear facility, activity, or operation for safety reasons;
- e. Restart of a nuclear facility, activity, or operation after violation of a Safety Limit, as defined in 10 CFR Section 830.3; or,
- f. Any situation deemed appropriate by DOE line management.

5.1.5 A DOE RA must be conducted for any of the following:

- a. Initial startup of a new Hazard Category 2 activity or operation (not facility which requires an ORR per 5.1.4. a.) with a new Documented Safety Analysis (DSA) and associated Technical Safety Requirements (TSRs);
- b. Restart after an extended shutdown for a Hazard Category 2 nuclear facility, activity, or operation. (Extended shutdown for a Hazard Category 2 nuclear facility, activity, and operation is 12 months);
- c. Startup or restart of a Hazard Category 2 nuclear facility, activity, or operation after substantial process, system, or facility modification. See Appendix I for detail on making this determination.
- d. Any situation deemed appropriate by DOE line management.

5.1.6 If Contractor/DOE evaluation determines that a Contractor RA is required but DOE O 425.1D does not specifically require a DOE RA, then specific conditions of the startup/restart and the site situation must be evaluated by DOE to determine whether a DOE RA will be conducted. (DOE-STD-3006-2010, Section 4.C.9 provides guidance for making this determination.)

5.1.7 If determined by the DOE line management that additional assurance of readiness beyond a Contractor RR is desired, but a DOE ORR or RA is not required or recommended following evaluation, then a DOE Oversight Review (OR) may be conducted. The criteria in DOE-STD-3006-2010, Section 4.C.9 can be used to

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provide guidance for making this determination. An OR may be conducted as an independent review or may be conducted as a joint review with the Contractor review. As a minimum the DOE LM must provide documented oversight of the contractor RA. This oversight shall be in addition to normal operational oversight.

- 5.1.8 The selection of startups/restarts requiring a Readiness Review and the determination of the level of that review, ORR, RA or OR, shall be subject to review and approval by the Startup Authorization Authority as part of the Startup Notification Report process (see Section 5.3). Differences in Contractor/DOE opinion as to requirement for a readiness review shall be resolved by the Assistant Manager for Environmental Management.

*Note:* Refer to Appendix XI, Readiness Review Flowchart for abbreviated readiness process.

*Note:* It is recommended that RR determination be documented as an ORION assessment record for tracking/monitoring purposes. Attachments can include evaluation meeting attendees, meeting minutes, basis for RR determination, results of evaluation, differing opinions, etc.

## **5.2 Determining the Startup Authorization Authority (SAA)**

- 5.2.1 Each Contractor as part of their submittal of the Startup Notification Report will include a recommendation for the SAA for each applicable startup/restart based upon their startup/restart procedure.
- 5.2.2 The DOE FOD Director in cooperation with DOE LM and Readiness Coordinator will use Appendix II, *Startup Approval Authority Determination Matrix* and current SAA designation memorandum to produce an independent determination of the SAA for each startup/restart. Upon receipt of the Contractors' SNRs, the FOD Director shall resolve differences between the Contractors' and DOE determinations. The SNR containing the SAA recommendations shall be forwarded to the DOE SAA (see 5.3).
- 5.2.3 The selection of the SAA for each startup/restart is approved by the ORO AMEM's or, as appropriate, the HQ DOE officials approval of the SNR.

## **5.3 Development and Approval of the Startup Notification Report**

- 5.3.1 Each Contractor shall produce a Startup Notification Report on a quarterly basis using their startup/restart procedure/process which DOE has approved and letters of technical direction as appropriate. The DOE approved Contractor SNR process should ensure that the Contractor SNRs meets the following criteria:
- a. SNRs are submitted quarterly at a minimum of one month in advance of the end of the quarter;
  - b. SNRs project ahead at least one year every newly identified startup/restart of facilities, activities, or operations determined to require readiness reviews;
  - c. Information from the previously approved SNR is updated for startups and restarts that have been completed and those yet to occur;
  - d. Each SNR should contain a Basis for Determination that includes the justification for proposed type of RR and description for newly identified

startups/restarts with adequate information to meet the requirements of DOE O 425.1D and to allow DOE to make timely and informed decisions (More detailed information concerning required SNR information can be found in DOE-STD-3006-2010, Section 5. G. TABLE 5-1, *Information to be Included in the SNR*);

*Note:* See 5.1 and 5.2 for requirements for criteria to be used in selection of type of readiness review and SAA.

*Note:* See Appendix XI, Readiness Review Flowchart for RR process.

- e. Contractor SNRs should be submitted to the AMEM with copies to the Contract Officer Representative (COR), LM having responsibility for work scope identified in the SNR, the FOD Director, and the ORO EM Readiness Coordinator/Facility Representative.
- 5.3.2 Upon receipt of Contractor SNRs, the ORO EM Readiness Coordinator will coordinate an evaluation of adequacy of the SNRs using line management and technical subject matter expert (SME) support particularly as relates to RR level determination and SAA selection as compared to a DOE determination of the same. The RC and LM shall facilitate the resolution of DOE issues with the Contractor determination of RR level and/or SAA.
  - 5.3.3 For startup or restart of facilities, operations, or activities in less than Category 3 nuclear facilities, Non-Nuclear Facilities, and other Industrial Facilities, the DOE approval of the contractor's determination in the SNR on type of review and the SAA required for the identified activities will be made by the LM using the input from the evaluation performed in 5.3.2.
  - 5.3.4 Following completion of evaluation of the Contractor SNRs, the FOD Director shall provide a recommendation on the acceptability of the SNRs to the AMEM. Any unresolved differences between the Contractor SNR and DOE evaluation as to review level and SAA determination should be noted.
  - 5.3.5 Upon receipt of the FOD Director recommendation, the AMEM shall approve acceptable items on the SNR with the exception of startup/restarts for which SAA is delegated to a Headquarters DOE manager.
  - 5.3.6 If the SAA for any new or modified SNR activity does reside with a Headquarters official, the SNR should be forwarded to the SAA with the AMEM recommendation for disposition for those items. The SNR should be forwarded no later than one week prior to the end of the quarter.
  - 5.3.7 Upon SNR approval at all appropriate levels, the RC shall ensure that documentation of approval shall be provided to the Contractors through communication from the COR for each Contractor.
  - 5.3.8 The RC shall ensure that copies of the SNRs with approval status are provided to the Office of Environmental Management headquarters, the EM Central Technical Authority (CTA), and the Office of Health, Safety, and Security (HSS) for

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information purposes. Additional copies may be sent to other organizations as directed by the DOE SAA and appropriate for the SNR; i.e. Defense Nuclear Facilities Safety Board (DNFSB) for SNRs covering startups/restarts in DNFSB facilities. This should be accomplished within the first two weeks of the quarter following the Contractors' submittal.

#### **5.4 Scheduling**

5.4.1 The ORO EM Integrated Assessment Schedule is developed and maintained by direction of ORO EM procedure EM-3.3, *Integrated Assessment Program*. Per direction of that procedure, the FPD is responsible for ensuring that ORION is utilized for documenting assessments of work scope under their sphere of responsibility. This would include the inclusion of RRs, as they are identified, on the EM Integrated Assessment Schedule which is used to populate the ORION issue management database. The FPD is also responsible for modifying the ORION record for those RRs as dates may change for the review.

#### **5.5 ORO EM Handling of Contractor Readiness Review Program Submittals**

5.5.1 SNR Submittals – See Section 5.3.

5.5.2 Contractor Plan of Action for ORR or RA.

- i. Contractor will submit a POA for all ORRs and RAs through the DOE Contracting Officer's Representative (COR) with copies to the LM, the FOD Director, and the ORO EM identified Readiness Coordinator/facility representative at a minimum.

*Note:* Standard 3006-2010 provides guidance that a POA should be submitted 4-6 months prior to the initiation of the RR. Should circumstances prevent this, the POA should be submitted as soon as available but no later than one month prior to the initiation of a RR requiring DOE Startup Authorization Authority approval.

*Note:* A limited number of POAs for RAs may be submitted, which by SNR approval, have designated the contractor as Startup Authorization Authority and do not require DOE approval of the POA. Those submittals should be dispositioned as review and comment only.

- ii. When the Contractor POA is received, responsible LM and RC shall coordinate the evaluation of the POA utilizing all staff resources needed; line management staff, subject matter experts, etc, to determine the adequacy of the POA.
- ii. For POAs requiring DOE SAA approval, the responsible LM shall forward the POA to the FOD Director with their recommendation for disposition. The responsible LM should resolve any concerns on adequacy of the POA prior to submitting to the FOD Director.
- iii. For POAs requiring DOE SAA approval, the FOD Director shall forward the POA to the SAA with their recommendation for disposition. The FOD Director should resolve any concerns on adequacy of the POA prior to submitting to the SAA.
- iv. POAs for reviews for which the Contractor has been given SAA, the DOE evaluation is review and comment only. The LM should work with the

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Contractor to resolve any issues with the adequacy of the POA identified in the evaluation.

- v. The FOD Director, in coordination with the RC, shall ensure that all Contractor POAs are forwarded to the Office of Environmental Management headquarters, the EM CTA, and the HSS. Additional copies may be sent to other organizations as directed by the DOE SAA and appropriate for the review; i.e. DNFSB for reviews covering startups/restarts in DNFSB facilities.

*Note:* Forwarding of Contractor POAs can be held until completion of DOE POA for a combined submittal (e.g., one contractor-DOE POA) but must be submitted no later than 2 weeks prior to initiation of the Contractor review.

#### 5.5.3 Contractor Implementation Plan (IP) for ORR or RA.

- i. Contractor will submit an IP for all ORRs and RAs through the DOE Contracting Officer's Representative (COR) with copies to the Federal Project Director, responsible Project Manager and the ORO EM identified Readiness Coordinator/Facility Representative at a minimum.

*Note:* The IP should be submitted 1 month prior to the initiation of the RR. Should circumstances prevent this, the IP should be submitted as soon as available but no later than two weeks prior to the initiation of the RR to allow for DOE review and comment.

- ii. When the Contractor IP is received, LM and RC shall coordinate the evaluation of the IP utilizing all staff resources needed; line management, subject matter experts, etc, to determine the adequacy of the IP.
- iii. The RC shall ensure that all Contractor IPs are forwarded to the Office of Environmental Management headquarters, the EM CTA, and the HSS. Additional copies may be sent to other organizations as directed by the DOE SAA and appropriate for the review; i.e., DNFSB for reviews covering startups/restarts in DNFSB facilities.

*Note:* Forwarding of Contractor IP can be held until completion of DOE IP for a combined submittal but must be submitted no later than 1 week prior to initiation of the review.

#### 5.5.4 Contractor Corrective Action Plan for DOE Review

- i. The Contractor will submit a Corrective Action Plan (CAP) in response to the ORR/RA Final Report when applicable. The CAP should be submitted to the COR with copies to the FPD, PM, and the RC/Facility Representative at a minimum.
- ii. Upon receipt of the CAP, LM should evaluate the CAP utilizing all staff resources needed; RR team members, subject matter experts, etc, to determine the adequacy of the CAs. LM CAP approval should be by correspondence from the COR to an appropriate Contractor official.
- iii. Upon approval of the Contractor CAP, LM shall ensure that the approved CAs are entered into the ORION database and tracked/monitored accordingly.

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## 5.6 Preparing for DOE Operational Readiness Reviews (ORR) and Readiness Assessments (RA)

### 5.6.1 Developing the DOE Plan of Action (POA).

- a. LM incorporation with the RC shall ensure the development of the Plan of Action (POA) using Appendix III, *Operational Readiness Review and Readiness Assessment Plan-of-Action Checklist*. This checklist lists the required elements of a POA with the exception of choosing the team leader.
- b. Once completed, LM shall forward the POA to the FOD Director.

*NOTE:* The contractor POA and DOE POA may be combined into one POA. If combined, the required elements must be identified in the POA for both the contractor and DOE.

*NOTE:* The DOE RA must use a graded approach to the tenets of ORR requirements. An RA may be as short and simple as a checklist, or may approach the breadth and depth of an ORR, depending on the causes and duration of the shutdown and the modifications accomplished during the shutdown. In view of the flexibility to fit the rigor of the RA to the circumstances of the startup/restart situation, DOE shall not conduct readiness reviews similar to RAs but called something different.

*NOTE:* When a DOE RA would be conducted in parallel with the contractor RA, the DOE POA must specify the prerequisites for starting the DOE RA. The DOE POA should also discuss the purpose of conducting the RAs in parallel and the expectations for DOE RA Team's performance in the conduct of the parallel DOE RA. To ensure proper liaison occurs, Line Management, in coordination with the RC and FODD, should include internal and external oversight groups (e.g., DNFSB, HSS, CNS, HQ) in discussions prior to the DOE POA development in order to receive buy-in with basis for parallel reviews.

- c. The FOD Director/RC is responsible for selecting a Team Leader that meets the following qualifications:
  - Technical knowledge of the area assigned for evaluation, including experience working in the technical area;
  - Knowledge of performance-based assessment processes and methods;
  - Knowledge of facility, activity, or operation-specific information;
  - Must have the personal attributes, skills, and experience to manage all phases of the assessment;
  - Must not be from an organization that is assigned direct line management responsibility for the work being reviewed;
- d. The FOD Director makes recommendation for approval of the POA to the SAA.
- e. The SAA approves the POA prior to the start of the review and provides the POA to the designated team leader.
- f. The RC shall forward the POA to the Office of Environmental Management headquarters, the EM CTA, and the HSS. Additional copies may be sent to other organizations as directed by the DOE SAA and appropriate for the SNR; i.e. DNFSB for SNRs covering startups/restarts in DNFSB facilities.

*Note:* The POA should be completed and approved 2-4 months but no less than 1 month prior to initiation of the review.

### **5.6.2 Selecting the RR Team Members**

- a. The RR team leader must select the team members in accordance with the following criteria:
  - 1) Team members must meet the following qualification and training requirements:
    - a) Technical knowledge of the area assigned for evaluation, including experience working in the technical area;
    - b) Knowledge of performance-based assessment processes and methods; and
    - c) Knowledge of facility, activity, or operation-specific information.
  - 2) The team must not include as senior members (i.e., team leader, subteam leader, senior advisor) individuals from offices that are assigned direct line management responsibility for the work being reviewed. Any exceptions require SAA approval.
  - 3) A team member must not review work for which he or she is directly responsible.
- b. The team leader must determine and document the qualifications of the team members and their freedom from a conflict of interest in the areas they are assigned to review.
- c. The FOD Director/RC must support the DOE Readiness Review Team Leader in staffing the DOE Readiness Review team.

*Note:* DOE-HDBK-3012, *Guide to Good Practices for Operational Readiness Reviews, Team Leader's Guide*, provides information useful to team leaders in preparing for and conducting Readiness Reviews.

### **5.6.3 Developing the Implementation Plan (IP)**

- a. The Team Lead/RR team must develop an IP using Appendix IV, *Core Requirements* and based on the scope defined in the POA.

*Note:* A DOE RA IP may be as short and simple as a restart check procedure, or may approach the breadth and depth of an ORR IP. The IP must include the full RA scope defined in the POA.

*Note:* A DOE RA IP may be combined with the Contractor IP. This would typically be done if the POAs had been combined also. If combined, the IP must address both Contractor and DOE core requirements that were identified in the POA.

- b. The IP must document the evaluation criteria and the review approaches based on the scope defined in the POA using Appendix VI, *Criteria Review and Approach Document*.
- c. Provide the IP to the FOD Director, FPD, PM, RC and Facility Representative for review and comment.
- d. The Team Leader approves the IP.
- e. Following Team Lead approval, the RC shall ensure the forwarding of the DOE IP to the Contractor and SAA with cc to the identified POCs for readiness activities for EM Headquarters, the EM CTA, and HSS.

Additional copies may be sent to POCs for other organizations as directed by the DOE SAA and appropriate for readiness documentation; i.e. DNFSB for RRs covering startups/restarts in DNFSB facilities.

- f. For ORRs, the RC transmits the IP to the DOE EM Deputy Assistant Secretary for Corporate Safety Assurance for review and information.

*Note:* The IP should be completed and approved 1 month but no less than 2 weeks prior to initiation of the review.

#### **5.6.4 Conducting a Management Self Assessment (MSA) in Conjunction with Readiness Review**

Note: An MSA is required for an ORR but may be performed for an RA based on the scope, complexity, etc. of the startup/restart. The Team Lead and Team Members do not have to be independent of the Line. Typically the Team Lead is responsible PM.

- a. The approach and methodology for the conduct of the MSA will be defined in an MSA review plan. The MSA Plan must include:
  - (1) the minimum core requirements identified in the approved POA;
  - (2) the team members selected by the Team Lead (with support from the appropriate facility representative and subject matter experts);
  - (3) verification that the contractor readiness process was adequate for verifying readiness with respect to the MCRs and prerequisites;
  - (4) verification that the ORO matrix support and EM line management programs are fully functional and staffed with qualified personnel;
  - (5) a format for documenting findings and transmitting these to the contractor for corrective action (CA);
  - (6) a process for verification of MSA finding closure; and
  - (4) a format for documenting the overall results of the MSA.
- b. The DOE PM makes recommendation for approval of the MSA review plan to LM.
- c. LM must approve the MSA review plan.
- d. The DOE MSA team conducts the MSA in accordance with the MSA review plan.
- e. The MSA review Team Lead provides the final report to the LM and FPD, if different.
- f. LM formally transmits Final Report to Contractor through the COR with a request for a Corrective Action Plan (CAP) as appropriate.
- g. If the review has identified findings against DOE, LM develops corrective actions (CAs).
- h. The DOE MSA team lead verifies adequate closure for line management of the MSA findings for both the Contractor and DOE prior to initiation of the DOE Readiness Review.

#### **5.6.5 Initiation of DOE Readiness Review:**

- a. Prior to initiation of the DOE readiness review the following actions must be completed.
  - 1) DOE line management has received a Readiness to Proceed Memorandum from the responsible contractor certifying that the facility, activity, or operation is ready for startup or restart
  - 2) The contractor has completed their ORR or RA.

- 3) DOE line management has verified that the contractor's preparations for startup or restart have been completed with the exception of a manageable list of open prestart issues. Any open prestart issues must have a well-defined schedule for closure to allow the DOE Readiness Review team to review the closure process and must not be of such nature that they would preclude the adequate evaluation of criteria of the DOE review.
  - 4) DOE LM and RC have verified that the DOE POA prerequisites have been met.
  - 5) In the verification process, the responsible LM must document their actions to verify DOE and contractor readiness, including:
    - Review of closure of the contractor's ORR/RA findings,
    - Assessment of completion of defined prerequisites, and
    - Other assessments performed to ascertain readiness. This would include the DOE MSA as a minimum for ORRs.
- b. Specific events significant to the startup and restart process that occur prior to the formal commencement of the DOE ORR; e.g., site emergency response drills, may be reviewed by the DOE ORR team at the time they are conducted.
  - c. LM and RC will prepare a memorandum to the SAA requesting that the Readiness Review be started; the review team lead must be copied on this letter. The memorandum must contain a copy of the contractor Readiness to Proceed letter.
  - d. If HQ is the Startup Authority, the contractor Readiness to Proceed letter with line management recommendation is forwarded through the Assistant Manager of Environmental Management with their concurrence.
  - e. When directed by the SAA, the readiness review team will commence the readiness review in accordance with the approved IP. Appendix V, *Conducting a Readiness Review* provides detailed information for performing the review.

#### **5.6.6 Developing and Distribution of the DOE Readiness Review Final Report**

- a. The DOE RR Team Leader with team member support must develop a final report in accordance with Appendix VIII, *Final Report Development*.
- b. The Team Lead shall submit the RR Final Report to the SAA with cc's to the identified POCs for readiness activities for EM Headquarters, the EM CTA, and HSS. Additional copies may be sent to POCs for other organizations as needed and appropriate for readiness documentation; i.e. DNFSB for RRs covering startups/restarts in DNFSB facilities.
- c. The DOE final report shall be provided to the Contractor through COR correspondence with a requirement to develop a Corrective Action Plan (CAP) if any findings are noted. Correspondence shall designate the required response time for the CAP and the required nature of the response to differing levels of findings.
- d. The DOE LM shall also develop a CAP for any findings of the Final Report which must be resolved by DOE.

#### **5.6.7 Closure of DOE Readiness Review Findings**

- a. LM, RC and Team Lead will ensure development of written CAPs, Contractor and DOE as required, and their approval by DOE to correct the

- findings. Action plans must provide evaluation of, and address, any overall programmatic deficiencies and causes.
- b. As findings are closed, finding closure packages will be developed by the entity responsible for CA closure verification, as designated by the SAA, and must include a brief description of actual corrective actions taken, evidence of completion, and reasons for concluding that closure has been achieved.
  - c. DOE shall verify closure of prestart findings. The organization verifying the closure must be designated by the SAA. This is typically either the Readiness Review team as delegated through the Team Lead appointment memorandum or the responsible LM. Actions taken to verify closure of pre-start findings may be documented on a Finding Resolution Form (Form 3, see Appendix X).
  - d. A contractor CAP for post-start findings will be processed in accordance with EM 3.3, *Integrated Assessment Program*.

#### **5.6.8 Startup/Restart Approval**

- a. After closure of all pre-start CAs and approval of CAs for post-start findings, LM with RC support (if SAA resides at ORO) or the AMEM (if SAA is at Headquarters) will prepare a Startup Authorization memorandum for concurrence signature by the SAA and shall contain the following minimum requirements:
  - 1) Final RR Report.
  - 2) A statement that the readiness review process required by DOE O 425.1D has been completed, and should include
  - 3) all contractor and DOE pre-start findings have been verified closed, and
  - 4) an approved CAP is being tracked for post-start findings.
- b. Upon signature of the Startup Authorization memorandum by the SAA, the facility/activity/operation may be started or restarted.
- c. LM will ensure that all documentation for the review from the POA to the final report, findings/actions and then evidence for closure of actions/findings are entered into the ORION database as they become available. Documentation should also include sign in sheets for the opening and closing meetings for the review, the Implementation Plan, information provided at the closeout meeting, correspondence, and any other applicable closure documentation.
- d. The DOE Operations Division will maintain an electronic file for each assessment containing, at a minimum, DOE and Contractor POA, Implementation Plan, and Final Report.

#### **5.7 Oversight of the Contractor's Process for Verifying Readiness to Start Up or Restart Nuclear Facilities**

- 5.7.1 The FOD Director must ensure appropriate review of Contractors' procedures/process for meeting requirements of Contractor Requirements Document, *DOE O 425.1D, Verification Of Readiness To Start Up Or Restart Nuclear Facilities* and make recommendation for concurrence by the AMEM or designee.
- 5.7.2 The AMEM must approve the contractor procedures for implementing the requirements of Contractor Requirements Document, *DOE O 425.1D, Verification of Readiness to Start Up or Restart Nuclear Facilities*. If appropriate, forward these procedures with comment to the appropriate PSO and CTA as well as HSS.

- 5.7.3 DOE LM must ensure that the contractor properly implements the requirements of the CRD to include:
- a. Ensuring that the contractor develops a POA that adequately defines the scope of the RR appropriate for the circumstances associated with the startup or restart.
  - b. Ensuring that the contractor POA appropriately specifies the prerequisites for starting the contractor's RR.
  - c. Evaluating the adequacy of the contractor RR.
  - d. Evaluating that the contractor RR final report adequately describes the review and contains sufficient detail to support its conclusion.
  - e. Ensuring the contractor and DOE have satisfactorily resolved all prestart findings of the contractor and DOE RRs (if applicable) prior to startup or restart of the facility, activity, or operation.
  - f. Ensuring that the contractor and DOE have developed and implemented approved corrective action plans for post-start findings.
- 5.7.4 The FOD Director must ensure that the contractor prepares and submits quarterly SNRs that accurately reflect all Readiness Reviews required for startup or restart of nuclear facilities, activities, or operations.

## **5.8 Implementing Oversight Reviews (OR)**

- 5.8.1 LM will decide if an OR is to be performed based on the need for additional assurance of readiness beyond the contractor readiness review for non-nuclear or other industrial facilities.
- 5.8.2 LM will assign a Team Leader.
- 5.8.3 The team leader will select team members based on scope of the review.
- 5.8.4 The review team will establish review criteria and document in the implementation plan (may be a simple checklist.)
- 5.8.5 LM will notify the OR team lead that the review may begin.
- 5.8.6 The review team may use the guidance provided in Appendix V, *Conducting a Readiness Review* using a graded approach for conducting the OR.
- 5.8.7 When all issues identified during the OR have been adequately resolved, LM will approve startup or restart of the facility, activity, or operation.

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## **6.0 RECORD KEEPING**

The POAs, Implementation Plans, Assessment Plans, Review Reports, CAPs, and other formal assessment correspondence are considered quality records and will be retained for at least three years in the EM Record Keeping system (e.g., FOD electronic files). In addition, this documentation should be maintained in the ORION database. Thereafter, final retention will be the responsibility of the ORO Records Management Program.

## **7.0 APPENDICES**

Appendix I, Substantial Modification Determination  
Appendix II, Startup Approval Authority Determination Matrix  
Appendix III, Operational Readiness Review and Readiness Assessment Plan-Of-Action Checklist  
Appendix IV, Core Requirements  
Appendix V, Conducting A Readiness Review  
Appendix VI, Criteria Review and Approach Document (EXAMPLE Form 1)  
Appendix VII, Deficiency Form (EXAMPLE Form 2)  
Appendix VIII, Final Report Development  
Appendix IX, Approval Form  
Appendix X, Finding Resolution Form (EXAMPLE Form 3)  
Appendix XI, Readiness Review Flowchart

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## Appendix I

### Substantial Modification Determination

Process for determining whether a process, system, or facility modification is substantial, based on the impact of the changes in the safety basis, equipment, operating procedures, training, or staffing, and the extent and complexity of these changes, and whether or not these changes resulted in a positive Unreviewed Safety Question (USQ) determination.

Substantial Facility/System Modification: Changes that increase the risk already accepted by the DOE for the facility and that have impacts on the operational complexity of the facility/system. The determination as to whether or not changes are substantial will be based on the review of the contractor's Basis for Determination (BfD).

Examples of changes that would likely be considered substantial include:

- The number and significance of operational process changes necessary to accommodate the modification (see Substantial Process Change below);
- The number of procedure changes and the difficulty or significance of the process changes to which the procedures apply;
- Changes to the process controls, limits, and instrumentation;
- The necessary level of training or retraining of operational and oversight staff to introduce the modification;
- The significance of the changes to the DSA and TSRs, with emphasis on the operational aspects of the changes; and,
- The level of operational process change and complexity of operational activities.

Substantial Process Change: The determination as to whether or not changes are substantial will be based on reviewing the contractor's BfD. A change that meets one or more of the following criteria should be evaluated to determine whether it meets the criteria for a Substantial Process Change:

- Alters the footprint of an existing Hazard Category 2 of 3 facility with the potential to adversely impact one or more credited safety functions of the existing facility;
- Introduces a new hazard not previously analyzed that requires a revision to the Hazards Analysis.

Or if the change:

- Requires a structural addition to an existing building or structure, designed to house hazardous activities or processes that will require a new or revised safety basis;
- Requires the expansion of work into a new area of an existing facility where that new area is not encompassed in the existing safety basis;
- Requires deactivation, decommissioning, or demolition of a facility, operation or activity, provided that the deactivation is not encompassed in the existing authorization basis; or
- Involves environmental remediation activities in a new geographic area, structure, or building, provided that the work can reasonably be expected to encounter quantities of nuclear materials that would require designation as a hazard category 2 nuclear facility per DOE/STD-1027-92, Attachment 1.

**Appendix II**

**TABLE I – START UP AND RESTART REQUIREMENTS SUMMARY (DOE O 425.1D)**

Hazard Category of facility being started		Initial Startup of Newly Constructed Facility	Initial Startup of New Activity or Operation	Initial Startup after Conversion to a New Nuclear Mission	Restart for upgrade in Hazard Categorization	Restart after Shutdown directed by DOE Management Official for safety reasons	Restart after shutdown following Violation of Safety Limit	Restart after Extended Shutdown*	Restart after Substantial process, system or Facility modifications	Deemed appropriate by DOE Official
<b>Hazard Category 1</b>	Authorization Authority	S-1 or designee	DSA Approval Authority or official of commensurate level	S-1 or designee	S-1 or designee	Official of level commensurate or higher than official ordering shutdown	Official of level commensurate with Safety Basis Approval Authority for Safety Limit or designee	* >6 months Cognizant Sec Officer	Cognizant Sec Officer or designee	Official of level commensurate with official directing review be conducted
	Review Type	ORR <sub>a</sub> CRD 2.a.(2)(a)	RA <sup>b</sup> CRD 2.(a)(3), CRD 2.b.(1)	ORR <sub>a</sub> CRD 2.a.(2)(b)	ORR CRD 2.a.(2)(c)	ORR CRD 2.a.(2)(d)	ORR CRD 2.a.(2)(e)	RA <sub>b</sub> CRD 2.a.(3)	RA <sub>b</sub> CRD 2.a.(3)	ORR/RA CRD 2.a.(2)(f), CRD 2.b.(3)
<b>Hazard Category 2</b>	Authorization Authority	S-1 or designee	DSA Approval Authority or official of commensurate level	S-1 or designee	S-1 or designee	Official of level commensurate or higher than official ordering shutdown	Official of level commensurate with Safety Basis Approval Authority for Safety Limit or designee	* >12 months Cognizant Sec Officer or designee	Cognizant Sec Officer or designee	Official of level commensurate with official directing review be conducted
	Review Type	ORR <sub>a</sub> CRD 2.a.(2)(a)	RA <sub>b</sub> CRD 2.(a)(3) CRD 2.b.(1)	ORR <sub>a</sub> CRD 2.a.(2)(b)	ORR CRD 2.a.(2)(c)	ORR CRD 2.a.(2)(d)	ORR CRD 2.a.(2)(e)	RA <sub>b</sub> CRD 2.a.(3)	RA <sub>b</sub> CRD 2.a.(3)	ORR/RA CRD 2.a.(2)(f), CRD 2.b.(3)
<b>Hazard Category 3</b>	Authorization Authority	Cognizant Sec Officer or designee	DSA Approval Authority or official of commensurate level	Cognizant Sec Officer or designee <sub>a</sub>	Cognizant Sec Officer or designee	Official of level commensurate or higher than official ordering shutdown	N/A <sub>c</sub>	As defined in local procedures	As defined in local procedures	Official of level commensurate with official directing review be conducted
	Review Type	ORR <sub>a</sub> CRD 2.a.(2)(a)	RA CRD 2.a.(3), CRD 2.b.(1)	ORR <sub>a</sub> CRD 2.a.(2)(b)	ORR CRD 2.a.(2)(c)	ORR CRD 2.a.(2)(d)	N/A	RA CRD 2.a.(3)	RA CRD 2.a.(3)	ORR/RA CRD 2.a.(2)(f), CRD 2.b.(3)

**Notes:**  
a- Note if other DOE orders require a higher level of startup authorization, the official described in this order will recommend startup to the higher-level official  
b- DOE RA required  
c- Assumes Hazard Category 3 facilities do not have safety limits

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**Appendix III**

**Operational Readiness Review and Readiness Assessment  
Plan-Of-Action Checklist**

The plan-of-action should clearly delineate management responsibilities, authority, and accountability for the ORR (as specified in the DOE O 425.1D) and include the following:

ELEMENT	COMPLY (YES/NO)	JUSTIFICATION
<b>Note: DOE O 425.1 D, <i>Verification of Readiness to Start Up or Restart Nuclear Facilities</i> and DOE STD 3006-2010, <i>Planning and Conducting Readiness Reviews</i> provide the detail needed to ensure adequate implementation of the elements listed below.</b>		
Notice of the intent to conduct a review.		
Name of the Facility, Activity, or Operation Being Started/Restarted.		
Description of Facility, Activity, or Operation: This should include buildings, systems, and processes included in the startup or restart.		
Designation of Action as a New Start or Restart.		
If this is a New Start then provide New Start Discussion to include the following elements or details about the facility or process: a. hazard categorization for new facilities and the basis for their designation; and b. status of the DSA and TSRs.		
If this a Restart, then provide a Restart Discussion to include the following elements: a. hazard categorization; b. cause of the shutdown; c. duration of the shutdown; d. repairs accomplished during the shutdown period; e. modifications accomplished during the shutdown period and their effect on the approved safety basis; f. any anticipated process changes following restart; and, g. status of the DSA and TSRs, including a history of IVRs or other verification reviews.		
Scope of the review including the physical and geographic scope and description of the structures, systems, and components (SSCs), individual processes and programs that are within the scope.		
Proposed Team Leader		

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<b>ELEMENT</b>	<b>COMPLY (YES/NO)</b>	<b>JUSTIFICATION</b>
Define the breadth of the review by addressing all core requirements (CR) identified in Appendix IV		
Justification for not evaluating a CR Note: DOE O 425.1D allows omitting all or part of a CR in the scope of the ORR. To utilize this provision, a prior successful, independent and timely review should have occurred within 12 months unless justification can be made for a longer period. (DOE-STD-3006-2010 provides examples.)		
Prerequisites		
Estimated start date(s) of the review		
Estimated duration of the review		
Senior Advisor (if needed)		
Startup Authorization Authority		
Preparer and Reviewer of the POA		
FOD recommendation for Approval to the SAA		
SAA Approval		

## Appendix IV

### Core Requirements

Core requirements verify the readiness of personnel, procedures, programs, and equipment within the scope of the Readiness Review to safely start nuclear operations. These core requirements are directly related to the seven guiding principles of ISM.

- (1) Line management has established Safety Management Programs (SMPs) to ensure safe accomplishment of work:
  - (a) Contract requirements for the SMPs have been flowed down into facility-specific procedures;
  - (b) SMP implementing procedures have been effectively implemented in support of the facility;
  - (c) A sufficient number of qualified personnel is available to effectively implement the SMPs in support of the facility; and
  - (d) Adequate facilities and equipment are available to ensure that SMP support and services are adequate for safe facility operation.

The following SMPs are identified in 10 CFR Section 830.204, Documented Safety Analysis:

- Quality Assurance Programs
- Procedures Management
- Maintenance Management
- Personnel Training Program
- Conduct of Operations
- Emergency Preparedness
- Fire Protection Program
- Waste Management Program
- Radiation Protection
- Criticality Safety Program

The SAA will designate and approve via the POA those specific SMPs to be included in the breadth of the readiness review and the scope of the desired review of each designated SMP. Additional support programs (e.g., Electrical Safety Program) may be specified in the POA if required to ensure safety of nuclear operations.

- (2) Functions, assignments, responsibilities, and reporting relationships, including those between the line operating organization and environment, safety and health support organizations, are clearly defined, understood, and effectively implemented, with line management responsibility for control of safety.
- (3) The selection, training, and qualification programs for operations and operations support personnel have been established, documented, and effectively implemented.

Training and qualification requirements for each position encompass the range of assigned duties and activities. The selection process and applicable position-specific training for managers ensures competence commensurate with their responsibilities.

Modifications to the facility have been reviewed for potential impacts on training and qualification. Training has been performed to incorporate all aspects of these changes.

- (4) Level of knowledge of managers, operations, and operations support personnel is adequate based on reviews of examinations and examination results, selected interviews of managers, operations, and operations support personnel, and observations of operational demonstrations.
- (5) Personnel exhibit an awareness of public and worker safety and health and environmental protection requirements and, through their actions, demonstrate a high-priority commitment to comply with these requirements. Worker safety and health requirements of 10 CFR Part 851, Worker Safety and Health Program, have been implemented within the facility.

- (6) Facility safety documentation (normally DSA and TSRs) is in place that describes the “safety envelope” of the facility.
- (a) The safety documentation characterizes the hazards/risks associated with the facility and identifies preventive and mitigating measures (systems, procedures, administrative controls, etc.) that protect workers and the public from those hazards/risks.
  - (b) Facility safety documentation is approved and has been implemented.
  - (c) Implementation of facility safety documentation has been verified and is current.
  - (d) SSCs are defined.
  - (e) A system to maintain control over facility design with emphasis on Vital Safety Systems (VSS) is established.
  - (f) Procedures for maintaining the safety documentation have been adequately defined and implemented and provide for required updates.
  - (g) A DOE-approved USQ procedure has been effectively implemented.
- (7) A program is in place to confirm and periodically reconfirm the condition and operability of VSS. This includes examinations of records of tests and calibration of these systems. The material condition of all safety, process, and utility systems is adequate to support the safe conduct of work.
- (8) The facility systems and procedures, as affected by facility modifications, are consistent with the description of the facility, procedures, and accident analysis and assumptions included in the safety documentation.

A formal program is defined and implemented to control facility modifications. Authorized modifications within the scope of the Readiness Review have been completed and fully closed, or evaluated and determined not to affect the ability to safely start nuclear operations.

- (9) Adequate and accurate procedures and safety limits are approved and in place for operating the process systems and utility systems. The procedures include necessary revisions for all modifications that have been made to the facility. Facility processes ensure that only the most current revision to each procedure is in use.
- (10) A routine operations drill program and an emergency management drill and exercise program have been established and implemented. Records for each program are adequate to demonstrate the effectiveness of completed drills and exercises as well as planning for future drills and exercises.
- (11) An adequate startup or restart program has been developed that includes plans for graded operations and testing after startup or resumption to simultaneously confirm operability of equipment, the viability of procedures, and the performance and knowledge of the operators.

The plans should indicate validation processes for equipment, procedures, and operators after startup or resumption of operations, including any required restrictions and additional oversight. Any compensatory measures required during the approach to full operations are described.

- (12) The formality and discipline of operations are adequate to conduct work safely, and programs are in place to maintain this formality and discipline (e.g., DOE O 422.1, Conduct of Operations Requirements for DOE Facilities).

Sufficient numbers of qualified personnel are available to conduct operations.

- (13) Formal agreements between the operating contractor and DOE have been established via the contract or other enforceable mechanism to govern safe facility operations.

A systematic review of the facility’s conformance to these requirements has been performed.

These requirements have been implemented in the facility, or compensatory measures are in place during the period of implementation. The compensatory measures and the implementation period are approved by DOE.

- (14) An effective feedback and improvement process (i.e., Contractor Assurance System) has been established to identify, evaluate, and resolve deficiencies and recommendations made by contractor line management and independent contractor audit and assessment groups. The process also provides for resolution of issues and recommendations by external official review teams and audit organizations. (e.g., DOE O 226.1B, Implementation of Department of Energy Oversight Policy, dated 7-31-07)
- (15) The breadth, depth, and results of the responsible contractor Readiness Review, including corrective actions, is adequate to verify the readiness of hardware, personnel, and management programs to support nuclear operations. The Readiness Review scope met the requirements of the approved POA.
- (16) The technical and managerial qualifications and competence of those personnel at the DOE field element and at DOE Headquarters assigned responsibilities for providing direction and guidance to the contractor, and those assigned oversight responsibilities within the scope of the Readiness Review, including the facility representatives, are commensurate with the assigned responsibilities.
- (17) DOE field element management systems for DOE oversight of facility operations, such as oversight and assessment programs, occurrence reporting, facility representatives, corrective actions, and quality assurance programs, are adequate.

## Appendix V

### Conducting a Readiness Review

1. The review will be conducted in accordance with the Implementation Plan.
2. An in-briefing meeting will be held at the onset of each review to discuss logistics and to introduce team members to their contractor counterparts.
3. The in-brief meeting will be coordinated by the review team lead.
4. Review team members must conduct a sufficient level of review to verify that all readiness criteria have been met, or that sufficient justification is in place for instances where a given requirement is determined not to be applicable.
5. Review team members must document that they have verified acceptability or non-acceptability of the readiness criteria. This determination will be made through:
  - a. Document Reviews- which may commence prior to the start of the Team's fieldwork, will validate the inter-relationship between the safety basis and the work control documents. The Team will review a wide variety of applicable procedures and other work control documents, including administrative procedures, operations procedures and surveillance procedures, drill program guides and critiques, and corrective action tracking documents. These reviews will confirm that required processes, including the applicable safety basis defined SMPs are implemented by written work instructions. Document reviews will also be used to confirm that an appropriate level of training has been accomplished and that modifications to the facilities, if any at the time of the review, have been completed in accordance with work control documents.
  - b. Interviews-will further evaluate levels of knowledge of appropriate management, technical support personal, operations, and operations support personnel, including security. Interviews will form a portion of the Team's basis for evaluating the knowledge of facility personnel. These will confirm that personnel have adequate levels of knowledge of their assigned roles and the relationship of those roles and the safety basis including SMPs.
  - c. Performance Demonstrations and Walk-Downs- encompassing the scope of the activities will be observed. Selected procedures and work area walk-downs will be performed to sample facility conditions, housekeeping, facility configuration, procedures, and operations orders to assist the Team in reaching conclusions regarding adequacy of safety basis and activity-specific requirement implementation, and of equipment and operational control. The Team will observe personnel during the conduct of meetings, pre-evolution briefings, and maintenance/operations/surveillance activities as applicable. The Team will observe the conduct of operational and surveillance activities to confirm that assigned personnel have the knowledge and skills to perform these activities as defined in approved work instructions and perform at a level sufficient to assure the safe conduct of the activity. Demonstrations of activities within the scope of the review using mock-up or non-contaminated components and surrogate materials may be observed. Demonstrations may be used to confirm that work instructions are written to a sufficient level of detail and that they can be performed as written.

- d. Review Integration -The Team will integrate the results of the fieldwork (observations, interviews, document reviews, etc.) and arrive at preliminary conclusions. Where additional information is needed to arrive at a conclusion, that information will be obtained by appropriate means that may include additional performance demonstrations and/or interviews. Daily team meetings where the results and highlights from each day's activities will be discussed and necessary additional actions will be identified to aid the integration process.
  - e. Review team meetings will be held, as appropriate, to ensure close communication of issues to the Team Leader and to identify widespread or systematic problems that may cross several disciplinary areas.
6. Team members will utilize Forms 1 and 2 described in Appendices VI and VII to document the review. Each deficiency identified during the review must have a Deficiency Form (Appendix VII) completed. RAs and ORs may use checklists to document the review if allowed by the Implementation Plan.
  7. Regular meetings with project staff will be offered to communicate emerging issues.
  8. At the conclusion of the review, the Team Leader will conduct an exit meeting at which a draft copy of all pre-start and post-start findings and proficiencies will be presented.

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**Appendix VI**

**Criteria Review and Approach Document  
(Form 1)**

FUNCTIONAL AREA:	OBJECTIVE, REV. DATE:	OBJECTIVE MET	
		YES	NO

**OBJECTIVE** *as stated in the CRAD*

**APPROACH**

**Documents/Records Reviewed:**

**Interviews Conducted:**

**Observations Performed:**

**DISCUSSION OF RESULTS**

Restate each criterion in the order given in the CRAD.

The discussion should include the relevant conclusion from the interviews, document/record reviews, and performance observations that led to the conclusion as to whether the criterion was met. Discussions include deficiencies and noncompliance's and may include or refer to findings. Whenever a deficiency supports a finding, the finding number should be included in parentheses at the end of the sentence that summarizes the finding. At the end of the discussion for each criterion, state whether or not the criterion was met.

**CONCLUSION**

The Objective has/has not been met.

*You make a statement on each Form 1 whether or not the Objective has (or has not) been met. Add a discussion that supports the conclusion.*

**Findings:**

**Proficiencies:**

Team Member: _____	Team Leader: _____
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**Appendix VII**

**Deficiency Form  
(Form 2)**

Functional Area:	Objective No.:	Finding/ Proficiency	Pre-start Post-start	Issue No.: Rev. No.: Date:
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**ISSUE:**

(The identified finding or proficiency) This section reads exactly (word for word) as the issue documented on the Form 1. There must be a Form 2 written for each issue identified on the Form 1.

**REQUIREMENT:**

**REFERENCES:**

**DISCUSSION:**

Submitted: _____ Team Member	Approved: _____ Team Member
	Date: _____

## Appendix VIII

### Final Report Development

1. Upon completion of the DOE Readiness Review, the team leader, with support from individual team members, must prepare and approve a final report.
2. The final report must document the results of the Readiness Review and make a conclusion as to whether startup or restart of the nuclear facility, activity, or operation can proceed safely.
3. If the report is an ORR Final Report, the report must state whether the contractor has established the following:
  - a. An agreed-upon set of requirements to govern safe operations of the facility, activity, or operation;
  - b. That this set of requirements has been formalized with DOE through the contract or other enforceable mechanism;
  - c. That these requirements have been appropriately implemented in the facility, activity or operation, or appropriate compensatory measures, formally approved by DOE, are in place during the period prior to full implementation; and that,
  - d. In the opinion of the DOE Readiness Review team, adequate protection of the public health and safety, worker safety, and the environment will be maintained.
4. The final report must be of adequate detail to support its conclusion, such that a knowledgeable reader would reasonably be expected to draw the same conclusions. Elements of the final report will include the following:
  - Title Page
  - Team Approval Signature Page
  - Table of Contents
  - Executive Summary
  - Introduction (including scope, audit criteria references, and other references, as needed)
  - Approach
  - Status of Requirements (For ORRs only)
  - Implementation of ISMS
  - Lessons Learned
  - Results, including a summary of the deficiencies and proficiencies, and summaries of readiness by functional review area (e.g., Personnel and Training, Procedures and Management Controls, Facilities and Equipment, pre-start and post-start findings)
  - Dissenting Professional Opinions
  - Forms 1 and 2 (examples provided in Appendix VI and VII) that include documents/records reviewed, interviews conducted, demonstrations observed, response to lines of inquiry, identified issues, summary conclusions
  - Team composition and experience/qualifications
5. If the report is an ORR Final Report, the report should include a statement regarding the team leader's assessment of the adequacy of the implementation of the core functions and guiding principles of Integrated Safety Management (ISM) at the facility undergoing the review.
6. There must be a lessons learned section of the final report that may relate to design, construction, operation, and decommissioning of similar facilities, activities or operations and to help guide future Readiness Review efforts.
7. The team leader must approve the final report (Appendix IX, *Approval Form*), and each team member must approve the section of the final report for which he or she was responsible. There will be a provision for dissenting professional opinions if agreement cannot be achieved.

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**Appendix IX**

**Approval Form**

**[Operational Readiness Review/Readiness Assessment/Oversight Review]**

**Subject Activity:** \_\_\_\_\_

I, by signature here, acknowledge that I concur with the Team Leader in the findings and conclusions of this [Operational Readiness Review/Readiness Assessment/Oversight Review] for [Activity].

\_\_\_\_\_  
Team Member

\_\_\_\_\_  
Date

**APPROVED:**

\_\_\_\_\_  
Team Leader

\_\_\_\_\_  
Date

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**Appendix X**

**Finding Resolution Form  
(Form 3)**

Functional Area:	CRAD No. & Title:	Issue No.:
ISSUE:		
Finding Designation: <input type="checkbox"/> Prestart <input type="checkbox"/> Poststart		
Date Received: Responsible Individual: Phone#:		

Action Plan:

- a. Evaluation of root cause or systemic failure that results in the finding.
- b. Specific corrective action, including completion dates and responsibilities.
- c. Compensatory measures (post-start findings).
- d. DOE approval (for DOE RRs only)

Resolution:

Actual actions taken and justification for difference from approved Action Plan.

Corrective Action Completion

Certified By: _____	Date: _____
Verified By: _____	Date: _____

### Appendix XI Readiness Review Flow-Chart

