

**NUCLEAR FACILITY STARTUP APPROVAL PROCESS**

AUTHOR: \_\_\_\_\_

*Jeffrey A. Crenshaw*

Jeffrey A. Crenshaw, Safety and Radiation Protection Division

APPROVAL SIGNATURE/DATE: \_\_\_\_\_

*Jeffrey M. Allison*

Jeffrey M. Allison, Manager, DOE-SR

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### CHANGE SUMMARY LOG

Description of Change	Effective Date
<p><b>This directive:</b></p> <ul style="list-style-type: none"><li>• cancels SRIP Chapter 425.1, Revision 1 and all previous revisions of this document,</li><li>• implements the requirements of DOE O 425.1C, and</li><li>• addresses the one issue, two observations, and other editorial changes identified during the January 2005 EM-3.2 Assessment of the Startup/Restart Process for the DOE-SR.</li></ul>	<p><b>18 May 05</b></p>

**TITLE: NUCLEAR FACILITY STARTUP APPROVAL PROCESS**

**1.0 PURPOSE AND SCOPE**

**1.1 PURPOSE**

- 1.1.1 This procedure establishes the Department of Energy Savannah River Operations Office (DOE-SR) startup program for new or existing Hazard Category 1, 2, and 3 nuclear facilities. This procedure implements DOE O 425.1C.
- 1.1.2 This procedure describes approval processes for the startup of all Hazard Category 1, 2, and 3 reactor and nonreactor nuclear facilities at SR. These provisions do not apply to facilities with a hazard category less than 3, or to non-nuclear facilities.
- 1.1.3 The requirements for which this chapter enables compliance are identified on a Configuration Management System (CMS) printout, which can be obtained from the Directives Management Program Manager, Office of Environment, Safety, and Health (OESH).

**1.2 SCOPE**

- 1.2.1 This procedure applies to all DOE-SR Federal employees. The National Nuclear Security Administration – Savannah River Site, consisting of the Savannah River Site Office (SV) and the Fissile Materials Disposition Office (NA-266), may elect to adopt this procedure for the conduct of their business.

**2.0 REFERENCES**

**2.1 SOURCE REQUIREMENT DOCUMENTS**

- 2.1.1 DOE O 425.1C, "Startup and Restart of Nuclear Facilities"
- 2.1.2 Memorandum, Glauthier to Program Secretarial Officers and Operations and Field Office Managers, "Readiness Review Program Follow-up Actions," December 22, 1999
- 2.1.3 Memorandum, Golan to Allison, "Delegation of Authority," December 17, 2004 (and subsequent revisions)
- 2.1.4 Memorandum, Reis to Distribution, "Delegation of Startup and Restart Authority for Hazard Category 2 & 3 Defense Programs Nuclear Facilities," February 2, 1996
- 2.1.5 DOE-STD-3006-2000, "Planning and Conduct of Operational Readiness Reviews (ORR)"

**2.2 INTERFACE DOCUMENTS**

- 2.2.1 DOE M 231.1-2, "Occurrence Reporting and Processing of Operations Information"

- 2.2.2 DOE 5480.19, "Conduct of Operations Requirements for DOE Facilities"
- 2.2.3 DOE-STD-1027-92, "Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, 'Nuclear Safety Analysis Reports'"
- 2.2.4 SRIP 200, Chapter 241.1, "Records Management Program"
- 2.2.5 10 CFR 830, "Nuclear Safety Management"
- 2.2.6 DOE Handbook, DOE-HDBK-3012-96 "Team Leader's Preparation Guide for Operational Readiness Reviews (ORR)"

### 3.0 **ATTACHMENT LISTING**

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### 4.0 **ACRONYMS AND DEFINITIONS**

#### 4.1 **ACRONYMS (This procedure uses the following acronyms):**

AM	Assistant Manager
DOE	Department of Energy
DNFSB	Defense Nuclear Facilities Safety Board
EH	Office of Environment, Safety and Health (DOE-HQ)
HQ	Department of Energy-Headquarters
M&O	Management and Operating
MCR	Minimum Core Requirement
NCR	Nonconformance Report
OESH	SR Office of Environment, Safety, and Health
ORR	Operational Readiness Review
RA	Readiness Assessment
RSA	Readiness Self-Assessment
SAR	Safety Analysis Report
SIMTAS	Site Issues Management and Technical Assessment System
SR	Savannah River Operations Office
TSR	Technical Safety Requirement

## 4.2 DEFINITIONS

- 4.2.1 **Deficiency:** The variance of an item or activity from established policies, requirements, procedures, standards, or criteria.
- 4.2.2 **Facility Shutdown:** The situation in which a reactor is taken subcritical either manually or automatically to a safe shutdown condition. For a nonreactor nuclear facility, the condition in which the facility ceases operations for which the facility was being operated and is placed in a safe condition (i.e., program work ceases). In a shutdown condition, a nuclear facility must still meet all applicable TSRs and applicable Departmental environmental, safety, and health requirements.
- 4.2.3 **Graded Approach:** A process by which the level of analysis, documentation, and actions necessary to comply with a requirement in this procedure are commensurate with the following criteria:
- A. The relative importance to safety, safeguards, and security;
  - B. The magnitude of any hazard involved;
  - C. The life cycle stage of a facility;
  - D. The programmatic mission of a facility;
  - E. The particular characteristics of a facility;
  - F. The complexity of the activities in the facility; and
  - G. Any other relevant factor.
- 4.2.4 **Hazard Categories:** The consequences of unmitigated releases of radioactive and/or hazardous material are evaluated as required by 10 CFR 830 and classified by the following hazard categories:
- Category 1. The hazard analysis shows the potential for significant offsite consequences.
- Category 2. The hazard analysis shows the potential for significant onsite consequences.
- Category 3. The hazard analysis shows the potential for only significant localized consequences.

4.2.5 **Nonreactor Nuclear Facility**: A facility in which activities or operations that involve radioactive and/or fissionable materials in such form and quantity that a nuclear hazard potentially exists to the employees or the general public. Included are activities or operations that:

- A. Produce, process, or store radioactive liquid or solid waste, fissionable materials, or tritium;
- B. Conduct separations operations;
- C. Conduct irradiated materials inspection, fuel fabrication, decontamination, or recovery operations;
- D. Conduct fuel enrichment operations; or
- E. Perform environmental remediation or waste management activities involving radioactive materials.

Incidental use and generating of radioactive materials in a facility operation (e.g., check and calibration sources, use of radioactive sources in research and experimental and analytical laboratory activities, electron microscopes, and X-ray machines) would not ordinarily require the facility to be included in this definition.

4.2.6 **Nuclear Facility**: For the purpose of this procedure, reactor and nonreactor nuclear facilities.

4.2.7 **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. The ORR scope is defined based on the specifics of the facility and/or the reason for the shutdown as related to a minimum set of core requirements. A graded approach is used in defining the depth of the ORR based on these core requirements.

4.2.8 **ORR Breadth**: The set of core requirements which are evaluated by the ORR Team during conduct of the ORR.

4.2.9 **ORR Depth**: The level of analysis, documentation, or action by which a particular review objective is assessed. The depth to which different review objectives are assessed may vary within an individual readiness review. Depth could vary from a simple records review to a detailed assessment including review of all records, all references, and all involved individuals and physical spaces.

4.2.10 **ORR Implementation Plan**: The procedural document by which the ORR is conducted. This document implements the policy and actions approved in the ORR Plan-of-Action or approved startup plan.

- 4.2.11 **ORR Plan-of-Action**: The document prepared by line management which describes the breadth of the ORR and the prerequisites which must be met to start the ORR. It is the document by which line management defines what is evaluated by the ORR. Both the management and operating (M&O) contractor and DOE-SR prepare Plans-of-Action which are submitted to the authorization authority for approval. When the specified content, review chain, and approval level are included in another plan (such as a startup plan), it can serve as the ORR Plan-of-Action for the particular new start or restart.
- 4.2.12 **ORR Scope**: The overall magnitude of the ORR as defined by the breadth of core requirements selected and the depth of evaluation of these core requirements during conduct of the ORR.
- 4.2.13 **Planned Shutdown**: A facility shutdown for performing scheduled activities (such as programmatic or equipment adjustments, reactor refueling, maintenance, surveillances, tests, inspections, and/or safety upgrades) or for programmatic reasons unrelated to the facility's ability to operate, such as a funding shortfall.
- 4.2.14 **Prestart Finding**: An identified deficiency that must be corrected before an activity can be started.
- 4.2.15 **Program Work**: Work in a reactor or nonreactor nuclear facility that is accomplished to further the goals of the facility mission and/or the program for which the facility is operated. Program work is not accomplished when a facility is shutdown. 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 recommence.
- 4.2.16 **Reactor**: Means, unless modified by words such as containment, vessel, or core, the entire nuclear reactor facility, including the housing, equipment, and associated areas devoted to the operation and maintenance of one or more reactor cores. Any apparatus that is designed to sustain nuclear chain reactions in a controlled manner, including critical and pulsed assemblies and research, test, and power reactors, is defined as a reactor facility. All assemblies designed to perform subcritical experiments that could potentially reach criticality are also to be considered reactor facilities. Critical assemblies are special nuclear devices designed and used to sustain nuclear reactions. Critical assemblies may be subject to frequent core and lattice configuration change and may be used frequently as mockups of reactor configurations.
- 4.2.17 **Readiness Assessment**: A review that is conducted to determine a facility's readiness to startup or restart when an ORR is not required, or when the M&O contractor's standard procedures for startup are not judged by the M&O contractor or DOE management to provide an adequate verification of readiness.
- 4.2.18 **Readiness Self-Assessment**: A performance- and compliance-based self-inspection by the M&O contractor line management to verify operational readiness of a facility, system, or process. The Readiness Self-Assessment (RSA) measures the satisfactory completion of the commitments stated in the Startup Plan.

- 4.2.19 **Routine Startup**: A startup following a planned shutdown lasting less than 90 days. Examples include routine maintenance outages or facilities that operate on an as-needed basis (e.g., operate only two or three times a quarter based on program requirements) or perform startups on a routine basis (e.g., operate for only one or two shifts and startup each day).
- 4.2.20 **Safety Basis**: The combination of information relating to the control of hazards at a nuclear facility (including design, engineering analyses, and administrative controls) upon which the Department depends for its conclusion that activities at the facility can be conducted safely.
- 4.2.21 **Senior Advisor**: Senior individuals with significant experience in determination of operational readiness and specific technical expertise who serve as technical assistants and advisors to the ORR Team leader.
- 4.2.22 **Startup**: The initial operation of a facility or process to perform program work.
- 4.2.23 **Startup Notification Report**: A quarterly report generated by the M&O contractor and approved by DOE that identifies all known future nuclear facility new starts and restarts. The report identifies the facility and based on the criteria of DOE O 425.1C specifies whether an ORR or a Readiness Assessment (RA) is considered to be required. For facilities requiring readiness review, the startup approval authority is identified. The report should include a description of the facility or program work, reason for non-operation, the approximate date operations were last conducted (for restarts) and the projected date for startups. The report should project startups and restarts at least one year ahead, as practicable.
- 4.2.24 **Startup or Restart Plan**: The management plan developed by the M&O contractor and approved by DOE which describes the process and activities necessary to conduct a new start or restart of the facility. The plan is a programmatic management document which may include the provision for an ORR or RA. The contents of the plan frequently contain all the information specified in the ORR Plan-of-Action. In those cases, if the appropriate endorsements and approvals have been obtained, the ORR Plan-of-Action is unnecessary.
- 4.2.25 **Technical Safety Requirements**: Those requirements that define the conditions, safe boundaries, and the management/administrative controls necessary to ensure the safe operation of a nuclear facility and to reduce the potential risk to the public and facility workers from uncontrolled releases of radioactive and/or hazardous materials or from radiation exposures due to inadvertent criticality. A Technical Safety Requirement (TSR) consists of safety limits, operating limits, surveillance requirements, administrative controls, use and application instructions, and the basis thereof. TSRs include Technical Specifications and Operational Safety Requirements.
- 4.2.26 **Unplanned Shutdown**: The termination of program work at a facility for any cause, such as equipment malfunction, personal error, or on-shift operator response to indications or a situation that would have had unsafe consequences without shutdown.



4.2.27 **Validation Review Plan**: An assessment plan developed by SR which outlines an optional assessment used to verify facility readiness by DOE line management prior to a DOE ORR. The validation review plan may also be used as documentation of the contractor's RA when an ORR is not required. The resulting documentation would be a Validation Report. The validation review plan should be developed early in the process of preparing a facility for startup and should use a graded approach commensurate with the complexity and hazards associated with the facility. It may also encompass many of the long-term continuing assessments performed by the SR line management organization as they relate to the startup. The validation review plan is considered a living document during the startup preparations and may be revised as necessary to encompass newly identified areas of assessment.

## 5.0 **GENERAL**

**NOTE:** The reference to the M&O contractor throughout this procedure can be replaced with those other contractors who may be involved in startup activities at the site.

This procedure establishes a startup or restart process that incorporates independence as a part of the overall operational readiness determination. The Readiness Self-Assessment performed by the M&O contractor line organization is the primary means for demonstrating facility readiness. The M&O contractor ORR provides company-level endorsement of the facility readiness independent of M&O contractor line management. The SR validation efforts provide the DOE line organization with input regarding the readiness of the facility to operate, while the DOE ORR provides DOE senior management with an independent and final assessment of the facility's state of operational readiness. In nonroutine startups that do not require an ORR, the M&O contractor performs RAs to verify readiness, with DOE oversight or a DOE RA.

The OESH is the lead organization for DOE O 425.1C. As such, assistance is extended mainly in an advisory capacity to the various Line Organizations to provide guidance in the planning and performance of readiness review activities, and to ensure that the process is conducted in a consistent manner. This responsibility does not preclude OESH from participating on ORR/RA Teams.

To enhance the ORR/RA process, it is strongly recommended that Cognizant AMs appoint team leaders as early in the process as possible. By being selected early, team leaders can familiarize themselves more intimately with current/planned facility activities.

Additionally, team leaders can become more familiar with planned startup/restart activities in order to support negotiations with the M&O contractor regarding the scope of ORRs. Also, by being more knowledgeable of the facility and planned readiness activities, team leaders can enhance the process and provide a more focused readiness evaluation.

Throughout this procedure, requirements are noted as being the actions of the "Cognizant Assistant Manager (AM)" or the "Manager, DOE-SR." It is not intended for these individuals to personally perform all these actions, but it does place the responsibility for their accomplishment in the appropriate organization and at the appropriate management level. In many cases, the team leader plays a significant role in accomplishing the requirements. The Cognizant AM or the Manager, DOE-SR, will perform actions usually associated with the actual approval of a specific item (Plan-of-Action, Implementation Plan, etc.).

The requirements of this procedure should be implemented using a graded approach in accordance with the guidance of Appendix 1 of reference 2.1.2. When applying this procedure to operational restrictions, the M&O contractor and Cognizant AM should use professional judgment to evaluate each situation. Applying these requirements without considering the real nature of the hazards or recent activities for which credit may be taken is neither advised nor cost effective.

## **6.0 REQUIREMENTS**

Three levels of startup are defined as (1) Startups requiring an ORR, (2) Startups requiring a RA, and (3) routine startups. This procedure does not apply to routine startups. Any startup not meeting the ORR criteria or the routine startup definition by default, require Readiness Assessments. Unless specified otherwise in the SNR, the contractor line management shall be the startup/restart authority for all Readiness Assessment startups/restarts.

### **6.1 STARTUP REQUIREMENTS**

**NOTE:** Attachment A provides the criteria for when an Operational Readiness Review or a Readiness Assessment is required for startup and restart of nuclear facilities.

- 6.1.1 The **OESH** ensures the M&O contractor submits a quarterly Startup Notification Report, identifying and updating planned new start or restart activities.
- 6.1.2 The **OESH** coordinates the Cognizant AM review of the M&O contractor's proposals in the Startup Notification Report.
- 6.1.3 Using Attachment A, the **Cognizant AM** determines appropriate startup requirements and approval authorities. In order to ensure consistency across the site, the OESH should concur in this determination. The OESH forwards the Startup Notification Report to the Manager, DOE-SR, with a recommendation for approval or modification.
- 6.1.4 The **Manager, DOE-SR**, approves and forwards the Startup Notification Report and recommendation for approval or modification to HQ to the approval authority with a copy to EH-2.
- 6.1.5 When the Startup Notification Report is approved or modified and approved by HQ, the **OESH** forwards the Startup Notification Report to the M&O contractor for action.

## 6.2 STARTUPS OR RESTARTS REQUIRING AN OPERATIONAL READINESS REVIEW

**NOTE:** All communications with and transmittals to the approval authority are through the appropriate chain of line management. Documentation from each step in the ORR process is provided in a timely manner to appropriate internal and external oversight organizations for information and comment.

6.2.1 If EH provides comments to line management at any time during the startup or restart process for a particular nuclear facility, the **Cognizant AM** indicates to EH (through the approval authority) the actions taken to resolve the comments, or provides technical justification why no action is required.

6.2.2 If the M&O contractor provides a Startup Plan to DOE, the **Cognizant AM** reviews and approves the M&O contractor Startup Plan and notifies the M&O contractor of the approval in writing.

**NOTE:** Guidelines for the review of M&O contractor Startup Plans are provided in Attachment B. If the M&O contractor Startup Plan contains the elements of a Plan-of-Action, including appropriate M&O contractor reviews and approvals, and is also to be used as the M&O contractor Plan-of-Action, the startup or restart approval authority must approve the Startup Plan. (See steps 6.2.7 and 6.2.9 thru 6.2.12.)

6.2.3 The **Cognizant AM** may develop an SR Validation Review Plan based on the work scope for startup and other pertinent documentation such as an M&O contractor Startup Plan.

**NOTE:** Guidelines for development of a SR Validation Review Plan are provided in Attachment C. The Cognizant AM of the facility is responsible for developing the SR Validation Review Plan. However, previous experience has shown that close coordination with the other AM organizations in development of the plan and performance of the validations is essential for a smooth, successful startup process. The Cognizant AM must ensure that lines of communication between affected AM organizations and matrixed responsibilities are universally understood early in the startup process.

6.2.4 The **Cognizant AM** ensures the M&O contractor's line management performs an RSA pursuant to established procedures.

6.2.5 The **Cognizant AM** ensures in-process oversight is performed (in accordance with the SR Validation Review Plan if used) during the shutdown (or during construction, testing, startup preparation, and startup phases for new facilities) to verify adequate performance of all required work and to verify the facility maintains applicable TSRs and environmental, safety, and health requirements. The Cognizant AM immediately provides deficiencies identified during SR validation efforts to the M&O contractor for consideration and resolution.

**NOTE:** The Cognizant AM should coordinate with other AM organizations as necessary to ensure adequate verifications in matrixed areas of responsibility.

6.2.6 The **Cognizant AM** ensures the M&O contractor prepares and submits to the Cognizant AM an M&O contractor ORR Plan-of-Action.

- 6.2.7 The **Cognizant AM** reviews the M&O contractor ORR Plan-of-Action to ensure all requirements identified in Attachment D applicable to the M&O contractor are included and adequately addressed.
- 6.2.8 The **Cognizant AM** prepares the DOE ORR Plan-of-Action following the requirements in Attachment D. Designates the DOE ORR Team Leader.
- 6.2.9 The **Cognizant AM** forwards the M&O contractor ORR Plan-of-Action and DOE ORR Plan-of-Action along with recommendations for approval to the Manager, DOE-SR.
- 6.2.10 The **Manager, DOE-SR**, reviews the M&O contractor's ORR Plan-of-Action and the DOE ORR Plan-of-Action and recommendations for approval.
- 6.2.11 The **Manager, DOE-SR**, transmits the M&O contractor ORR Plan-of-Action, the DOE ORR Plan-of-Action, and recommendations for approval to the approval authority. Forwards copies for review and comment to EH-2.
- 6.2.12 Upon receipt of the final approved DOE and M&O contractor ORR Plans-of-Action, the **Manager, DOE-SR**, notifies the M&O contractor in writing that the Plans-of-Action have been approved. Provides a copy of the approved DOE ORR Plan-of-Action to the M&O contractor.
- 6.2.13 The **Cognizant AM** compares the SR Validation Review Plan (if used) to the contents of the approved DOE and M&O contractor ORR Plans-of-Action and revises the validation requirements as necessary to address the scope of these documents.
- 6.2.14 The **Cognizant AM** ensures the M&O contractor's ORR Team Leader prepares an approved M&O contractor ORR Implementation Plan and submits the plan to the Cognizant AM.

**NOTE:** The ORR Implementation Plan must include the criteria and review approaches to be used based on the approved breadth given in the Plan-of-Action.

- 6.2.15 The **Cognizant AM** reviews M&O contractor documentation to ensure M&O contractor ORR Team members have technical knowledge of the area assigned for evaluation, including experience working in the technical area, knowledge of performance-based assessment processes and methods, and knowledge of facility-specific information.

**NOTE:** The ORR Team must not include as senior members individuals from offices assigned direct line management responsibility for the work being reviewed. Any exceptions require the approval of the startup or restart authority. No ORR Team member should review work for which the member is directly responsible.

6.2.16 The **DOE ORR Team Leader** selects DOE ORR Team members. Ensures and documents that team members have technical knowledge of the area assigned for evaluation, including experience working in the technical area, knowledge of performance-based assessment processes and methods, and knowledge of facility-specific information.

**NOTE:** The ORR Team must not include as senior members individuals from offices assigned direct line management responsibility for the work being reviewed. Any exceptions require the approval of the startup or restart authority. No ORR Team member should review work for which the member is directly responsible.

6.2.17 The **DOE ORR Team Leader** prepares a DOE ORR Implementation Plan following the guidelines of Attachment E that includes the criteria and review approaches to be used based on the approved breadth given in the Plan-of-Action. Approves and submits the DOE ORR Implementation Plan to the Cognizant AM.

**NOTE:** DOE-HDBK-3012-96 provides information useful to the ORR Team Leader in preparation for and conduct of the ORR.

6.2.18 The **Cognizant AM** reviews the M&O contractor ORR Implementation Plan and provides written comments to the M&O contractor ORR Team Leader as necessary.

**NOTE:** The **Cognizant AM** should coordinate with other **AM** organizations as necessary to ensure adequate verifications in matrixed areas of responsibility.

6.2.19 The **Cognizant AM** forwards the M&O contractor and DOE ORR Implementation Plans for review and comment to the approval authority, EH, and appropriate external oversight and higher-level DOE management.

6.2.20 The **Cognizant AM** verifies the M&O contractor has completed the RSA process and all defined prerequisites for commencing the M&O contractor ORR.

6.2.21 The **Cognizant AM** verifies the M&O contractor ORR Team conducts the M&O contractor ORR in accordance with the M&O contractor ORR Implementation Plan. Ensures M&O contractor ORR Team Leader prepares and approves the final M&O contractor ORR Report.

6.2.22 The **Cognizant AM** reviews the final M&O contractor ORR Report to verify adequacy in accordance with Attachment F.

6.2.23 The **Cognizant AM** verifies the M&O contractor has implemented actions to correct all deficiencies and/or comments identified by the M&O contractor ORR Team, with emphasis placed on correcting those deficiencies that are required to be addressed prior to the DOE ORR.

Reviews closure of M&O contractor ORR findings and the results of that review may be documented in the Validation Report developed in step 6.2.25.

**NOTE:** At the start of the DOE ORR, all actions required for startup or restart must be complete with the exception of a manageable list of open prestart findings. The open items should be few in number, well defined in a corrective action plan, able to be completed on a well-defined schedule for closure which is consistent with the DOE ORR schedule and not of such a nature individually or in aggregate to preclude an adequate review by the DOE ORR of any specific area. The Cognizant AM should coordinate with other AM organizations as necessary to ensure adequate verifications in matrixed areas of responsibility.

- 6.2.24 The **Cognizant AM** verifies the M&O contractor has forwarded a Readiness to Proceed Memorandum to the Manager, DOE-SR, with a copy to the Cognizant AM indicating facility readiness for operation following completion of identified open prestart items.
- 6.2.25 The **Cognizant AM** develops a Validation Report which documents the DOE line assessment of the facility readiness for startup. Ensures validations performed by other AM organizations are adequately documented in the Validation Report.
- 6.2.26 The **Cognizant AM** verifies and documents that all prerequisites in the DOE ORR Plan-of-Action for commencing the DOE ORR have been completed.
- 6.2.27 The **Cognizant AM** forwards the M&O contractor ORR Report and the Validation Report with a confirmation of facility readiness to the Manager, DOE-SR.
- 6.2.28 The **Manager, DOE-SR**, reviews the M&O contractor Readiness to Proceed Memorandum, the M&O contractor ORR Report, the SR Validation Report, and Cognizant AM's confirmation of facility readiness.
- 6.2.29 The **Manager, DOE-SR**, forwards the M&O contractor Readiness to Proceed Memorandum, the M&O contractor ORR Report, the SR Validation Report, a concurrence of the facility readiness, and a request for commencement of the DOE ORR to the approval authority. Forwards a copy of the M&O contractor ORR Report to EH-2 for review and comment.
- 6.2.30 When authorized by the approval authority, the **DOE ORR Team Leader** conducts the ORR in accordance with the DOE ORR Implementation Plan.

**NOTE:** 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, integrated equipment testing) should be reviewed by the DOE ORR Team when they are conducted.

- 6.2.31 The **Cognizant AM** acts as the primary interface between the DOE ORR Team and the M&O contractor.

**NOTE:** Primary interface responsibilities are determined on a case-by-case basis depending primarily on the scope and size of the DOE ORR. Additionally, the Cognizant AM acts as the interface for any HQ startup assessments that may be performed to verify facility operational readiness.

- 6.2.32 The **DOE ORR Team Leader** prepares an ORR Final Report in accordance with Attachment F.
- 6.2.33 The **DOE ORR Team Leader** approves the ORR Final Report and submits the report to the approval authority and provides a copy to EH for review and comment and provides a copy to the Manager, DOE-SR.
- 6.2.34 The **Manager, DOE-SR**, forwards copies of the DOE ORR Report to the M&O contractor and the Cognizant AM upon receipt from the DOE ORR Team.
- 6.2.35 The **Cognizant AM** ensures the M&O contractor reviews the deficiencies identified by the DOE ORR Team (and any other HQ reviews performed) and submits a corrective action plan to resolve the identified deficiencies to the Cognizant AM.
- 6.2.36 The **Cognizant AM** reviews and approves the corrective action plan to ensure the proposed corrective actions are acceptable and appropriate for allowing the facility to safely commence operations. Ensures the plan provides evaluation of any overall programmatic deficiencies or root causes related to a specific finding and includes actions addressing such deficiencies or root causes.

**NOTE:** On a case-by-case basis, SR and HQ determine whether the corrective action plan submitted by the M&O contractor requires review and/or approval by HQ and/or the DOE ORR Team.

- 6.2.37 The **Cognizant AM** verifies the M&O contractor prepares and submits closure packages to the Cognizant AM documenting the resolution of prestart findings identified by the DOE ORR Team (and any other HQ reviews performed) and the M&O contractor prestart punchlist items identified in the Readiness to Proceed Memorandum. Ensures closure packages include a brief description of actual corrective actions taken and reasons for concluding that closure has been achieved.
- 6.2.38 The **Cognizant AM** and **DOE ORR Team Leader** determine from the approval authority the organization designated to verify the closure of DOE ORR prestart findings.

If required by the approval authority, review the closure packages and perform verifications to ensure the corrective actions have been implemented and were effective in resolving the deficiencies. Document verifications of the M&O contractor implemented corrective actions as required by the approval authority.

**NOTE:** The resolutions of all findings from the ORR are maintained with the ORR Plans-of-Action, ORR Implementation Plans, and ORR final reports.

- 6.2.39 The **Cognizant AM** develops an SR corrective action plan to resolve deficiencies identified against SR by the DOE ORR Team and forwards the plan to the Manager, DOE-SR.

6.2.40 The **Manager, DOE-SR**, reviews the SR corrective action plan and forwards the plan to the approval authority for approval.

**NOTE:** The review and approval process for the SR corrective action plan is determined on a case-by-case basis by the approval authority and the Manager, DOE-SR.

6.2.41 The **Cognizant AM** implements SR corrective actions to resolve the deficiencies identified by the DOE ORR Team.

6.2.42 The **Cognizant AM** develops a closure report that includes closure packages for each identified SR deficiency and describes the activities performed by SR to resolve the deficiencies.

6.2.43 The **Cognizant AM** verifies the M&O contractor prepares a letter requesting authorization to startup and the M&O contractor forwards it to the Manager, DOE-SR, with a copy to the Cognizant AM.

6.2.44 The **Cognizant AM** drafts a letter from the Manager, DOE-SR, to the approval authority recommending startup authorization. Forwards the letter, along with documentation supporting closure of previously open punchlist items, M&O contractor prestart finding closure packages, and SR prestart finding closure packages, to the Manager, DOE-SR.

6.2.45 The **Manager, DOE-SR**, reviews the letter recommending startup, DOE and M&O contractor deficiency closure documentation, and the DOE ORR Report to ensure the facility is ready to commence operations.

6.2.46 The **Manager, DOE-SR**, forwards the letter recommending startup and deficiency closure documentation to the approval authority.

6.2.47 The **Manager, DOE-SR**, coordinates with HQ and M&O contractor management to schedule briefing(s) with the Defense Nuclear Facilities Safety Board (DNFSB) as requested by the Departmental Representative to the DNFSB.

6.2.48 The **Manager, DOE-SR**, coordinates with HQ and M&O contractor management to conduct public meeting(s) on the DOE and M&O contractor readiness review results and resolutions.

**NOTE:** This step is optional and is largely determined by the level of public concern and attention associated with the facility being started.

6.2.49 Upon receipt of startup or restart approval from the approval authority, the **Cognizant AM** prepares a Startup Authorization Memorandum and forwards it to the Manager, DOE-SR, for signature. Establishes appropriate DOE coverage for facility startups or restarts.

6.2.50 The **Manager, DOE-SR**, signs and forwards the Startup Authorization Memorandum to the M&O contractor.



### 6.3 STARTUPS OR RESTARTS REQUIRING A READINESS ASSESSMENT

**NOTE:** Using a graded approach and depending on the causes and duration of the shutdown and the modifications accomplished during the shutdown, the RA may be as short and simple as a restart check procedure, or it may approach the breadth and depth of an ORR.

- 6.3.1 For startups/restarts with the M&O contractor as the approval authority, the **Cognizant AM** verifies the M&O contractor has documented the appropriate breadth and depth, team leader designation, and prerequisites for the M&O contractor RA in action plans, as necessary, to verify readiness. The **Cognizant AM** ensures that the M&O contractor RA action plan has been approved by the authorization authority as identified in the Startup Notification Report. The **Cognizant AM** should provide a copy of the contractor RA plan of action to EH-2.

**NOTE:** The authorization authority may be DOE, therefore DOE authorization authority approval of the M&O contractor plan of action will be required.

**NOTE:** The action plan should be commensurate with the reason for, duration of, and modifications accomplished during the shutdown. Action plans can range in complexity from performance of an M&O contractor RA which meets the applicable requirements of an ORR to completion of the corrective actions in an occurrence report, or completion of a post-trip/unscheduled shutdown review in accordance with established procedures.

- 6.3.2 The **Cognizant AM** determines the breadth and depth of the DOE validation review effort. For the majority of Contractor approved RAs, the DOE validation review effort will typically consist of routine, documented FR oversight that is only formally transmitted to the contractor by the AM.

**NOTE:** Guidelines for development of a Validation Review Plan are provided in Attachment C. An example of an abbreviated Validation Review Plan is provided in Attachment G which could be used for an M&O approval authority startup/restart.

- 6.3.3 The **Cognizant AM** performs in-process oversight as necessary during the shutdown to verify adequate performance of required work.

- 6.3.4 The **Cognizant AM** performs a final review (including a review of the contractor RA) and notifies (verbally or in writing) of any issues requiring resolution before restart. These issues should be tracked, and closure should be documented in the Site Issues Management and Technical Assessment System (SIMTAS).

**NOTE:** The DOE review documentation can range from an independent validation report to a write-up in a monthly report which is formally transmitted to the contractor by the AM or a signature on a post-trip checklist.

- 6.3.5 For startups/restarts with the DOE as the approval authority, the **Cognizant AM** verifies the M&O contractor submits a letter indicating facility readiness for operation and requesting startup approval (Readiness to Proceed Memorandum).

A. When notification that the facility is ready for startup/restart and a request for startup/restart approval is received from the M&O contractor, the **Cognizant AM** performs a validation, or in some cases, a readiness assessment to verify operational readiness. If a DOE RA is performed, a formal plan of action must be developed. The DOE RA plan of action must include the breadth of the assessment, team leader designation, and prerequisites for the assessment. The DOE RA plan of action must be approved by the DOE authorization authority. The **Cognizant AM** should provide a copy of the DOE RA plan of action to EH-2.

B. The **Cognizant AM** notifies, in writing, the M&O contractor of any prestart findings discovered during the review process, as well as the method required for closure of the prestart findings.

**NOTE:** The formality of the methods used for closing prestart findings from the review process or M&O contractor prestart punchlists should be commensurate with the finding significance and could range from formal closure packages to documentation in occurrence report comments in cases such as a post-trip/unscheduled shutdown review.

C. The **DOE Team Leader** documents the results of the DOE readiness assessment in the form of a Readiness Assessment Report, signatures within a Validation Review Plan (Attachment G), or other documented DOE oversight. (i.e., write-up in a monthly report which is formally transmitted to the contractor by the AM or a signature on a post-trip checklist). Any prestart or poststart findings identified by the DOE RA should be tracked, and closure should be documented in the SIMTAS.

D. The **Cognizant AM** notifies the M&O contractor of the startup/restart approval.

**NOTE:** Notification of startup/restart authorization may be made by memorandum to the M&O contractor, by signature of a DOE official within the cognizant AM's organization in an M&O contractor document (logs, memorandum, startup authorization form, procedure, etc.), or as otherwise required in accordance with an established post-trip/unscheduled shutdown assessment process.

6.3.6 The **Cognizant AM** establishes appropriate DOE coverage for facility startup/restart.

## 7.0 **RECORDS**

7.1 The following records generated by this procedure will be controlled and maintained according to the requirements established in SRIP 200, Chapter 241.1.

7.1.1 Recommendation to HQ on Startup Notification Report.

7.1.2 Approval of M&O contractor Startup Plan.

7.1.3 SR Validation Review Plan.

7.1.4 DOE ORR Plan-of Action.

- 7.1.5 Recommendation to HQ on approval of ORR Plans-of-Action.
- 7.1.6 Notification of approval of M&O contractor Plan-of-Action.
- 7.1.7 DOE ORR Implementation Plan.
- 7.1.8 Comments on M&O contractor ORR Implementation Plan.
- 7.1.9 SR Validation Report.
- 7.1.10 Correspondence on request for commencement of DOE ORR.
- 7.1.11 ORR Final Report.
- 7.1.12 Approval of M&O contractor Corrective Action Plan for ORR deficiencies.
- 7.1.13 Verification of M&O contractor corrective actions.
- 7.1.14 SR Corrective Action Plan for ORR deficiencies.
- 7.1.15 SR Closure Packages for ORR deficiencies.
- 7.1.16 Recommendation to Approval Authority for startup authorization.
- 7.1.17 Records of public meetings on Readiness Review results and resolutions.
- 7.1.18 Startup Authorization Memorandum.
- 7.1.19 Approval of M&O contractor action plan for RA.
- 7.1.20 SR notification to M&O contractor of prestart findings.
- 7.1.21 SR documentation of DOE Validation results.

**ATTACHMENT A**  
**Facility Startup Approval Authorities<sup>1,8</sup>**

	Hazard Category					
	1		2		3	
Basis for Shutdown <sup>2</sup>	Review Type	Approval Authority	Review Type	Approval Authority	Review Type	Approval Authority
Initial Startup of New Facility	ORR	Secretary of Energy or Designee	ORR	Secretary of Energy or Designee	ORR	Secretarial Officer or Designee <sup>3</sup>
Unplanned Shutdown directed by DOE Management for Safety or other appropriate reasons	ORR	Shutdown Official or Commensurate Level	ORR	Shutdown Official or Commensurate Level	ORR	Shutdown Official or Commensurate Level
Extended Shutdown (6 months for category 1, 12 months for category 2 or 3)	ORR	Secretarial Officer	ORR	Secretarial Officer or Designee <sup>4</sup>	RA	M&O Contractor <sup>7</sup>
Substantial Facility Modifications <sup>5</sup>	ORR	Secretarial Officer	ORR	Secretarial Officer or Designee <sup>4</sup>	RA	M&O Contractor <sup>7</sup>
Operations outside Safety Basis <sup>6</sup>	ORR	Safety Basis Approval Authority or Commensurate Level	ORR	Safety Basis Approval Authority or Commensurate Level	ORR	Safety Basis Approval Authority or Commensurate Level

- Note 1: If other DOE Orders require a higher level of startup authorization than this table, the Order requirements shall take precedence, and the official identified using this table will recommend startup to the higher level official.
- Note 2: A DOE management official may deem an ORR necessary for a facility even if an ORR is not required. In this case, the startup authority level is commensurate with that of the official directing that an ORR be performed. For an HQ official, this is the Secretarial Officer or designee. For a field official, this is the site operations manager or designee.
- Note 3: Delegated to the Manager, DOE-SR, for hazard category 3 per reference 2.1.3.
- Note 4: Delegated to the Manager, DOE-SR, for hazard category 2 per reference 2.1.3.
- Note 5: Substantial modification shall normally be defined as changes that modify the fundamental process, increases the bounding risk already approved by DOE for the activity, or exceeds \$100M in costs (major project). For determination of increased risk, no new controls (engineered and administrative) shall be included in the new accident evaluation unless the control strategy is extremely simplistic or nearly identical to already existing controls.
- Note 6: Operations Outside the Authorization Basis is defined as actually exceeding a Safety Limit, or discovery of a condition where controls had broken down such that continued operations could have exceeded the bounding risk approved for that activity. If the Safety Basis was approved by a Headquarters official, the Secretarial Officer (or designee) must approve restart. If Safety Basis was approved by a field official, the Manager, DOE-SR (or designee) must approve restart.
- Note 7: If the Shutdown was for serious safety reasons, the restart must be approved by the Manager, DOE-SR. The approval authority is the M&O contractor unless deemed otherwise by the cognizant AM, SR.
- Note 8: Delegated startup authorities for NNSA-SR facilities will be per reference 2.1.4.

## **ATTACHMENT B**

### **Startup Plan Review Guidelines**

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The Startup Plan received by the cognizant SR AM should be reviewed to ensure that it contains, as a minimum, the following information:

1. **Purpose.** This section of the startup plan should adequately identify the methodologies, standards, startup acceptance criteria, and all activities associated with the startup process for the facility, from design (if applicable) through startup authorization.
2. **Facility and/or Process Description.** A brief description of the major functions and operations of the facility and its processes should be provided in the startup plan. The description should define the boundaries of the facility addressed by the startup approval plan. Also, a brief history of the facility, the conditions associated with the shutdown (if applicable), and the current status of the facility should be provided.
3. **Startup Approval Authority.** The startup approval authority is identified and justified.
4. **Definition of Startup Phases.** If facility operations are to be achieved and demonstrated in phases, the startup plan should provide discussion of these phases and how they impact and demonstrate facility operational readiness.
5. **Definition of Major Milestones.** The startup plan should define the major milestones associated with the facility startup such as system or project turnovers, completion of startup testing, and completion of the M&O contractor self-assessments and ORR. If startup phases are used, milestones associated with these phases should also be provided.
6. **Major Documents or Plans.** The startup plan should discuss documents or plans that exist or will be prepared that support and apply directly to the startup approval plan, such as a Startup Test Plan, an M&O contractor ORR Plan-of-Action, a Configuration Management Plan, an upgraded Safety Analysis Report (SAR), a Justification for Continued Operation, or a Master Equipment List.
7. **M&O Contractor Management and Organization.** The startup plan should discuss the management and organization responsible for the startup activities.
8. **Startup Approval Mechanics.** The startup plan should identify all documents required for startup and the level of approval required for those documents. It should demonstrate that this information has been previously agreed to by both SR and the M&O contractor.

## ATTACHMENT B Cont'd

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9. **Startup Acceptance Criteria.** The startup plan should describe the development of the acceptance criteria that must be met in order to start the subject facility. The acceptance criteria should be derived from the applicable minimum core requirements (MCR) listed in Attachment H. Specific individual inspection and acceptance criteria that will constitute inspection checklists are not required to be included in the startup plan. The acceptance criteria forms the basis for the prerequisites for starting the M&O contractor ORR required in the ORR Plan-of-Action.

**NOTE:** The establishment of adequate startup criteria is one of the most crucial parts of the entire process. The startup criteria set the standards that the readiness review process is intended to verify. If proper startup criteria are established on the front end, it enables the readiness review process to truly be a verification process.

10. **Startup Related Activities.** A compilation of all startup activities necessary to meet all startup acceptance criteria are provided with identified measurable deliverables.
11. **Program Schedule.** The startup plan should include a program schedule that, at a minimum, addresses all items discussed in 5, 6, 7, 8, 9, and 10, above. Once approved by DOE, this program schedule is the basis of the detailed integrated schedule that is prepared by the M&O contractor for new facilities or facilities that have been substantially modified, and is used to plan and schedule all activities related to operational readiness and startup authorization for the facility.

## **ATTACHMENT C**

### **SR Validation Review Plan Guidelines**

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The SR Validation Review Plan is a document developed by SR which outlines an optional assessment used to verify facility readiness by DOE line management prior to a DOE ORR. The validation review plan may also be used as documentation of DOE's oversight of the contractor's RA when an ORR is not required. The assessment results provide assurance that the actions performed by the M&O contractor and SR to establish an acceptable condition of operational readiness are adequate. For restarts of existing facilities, a graded approach commensurate with the reason for the shutdown, activities performed during the shutdown, and whether an ORR will be performed should be used in the development of the Validation Review Plan. For new facility startups, a graded approach commensurate with the hazard classification and complexity of the facility should be used. Techniques such as use of assessment objectives, checklists, and sampling are described in sufficient detail to ensure a thorough assessment of the state of readiness. For startups performed in phases or where startup preparations are in progress for an extended period of time, a combination of Validation Review Plans covering different phases or milestones may be used. Example: For a reactor startup, one Validation Review Plan may be issued for charge back (fuel load) and another issued for actual startup readiness.

The Cognizant AM of the facility is responsible for developing the SR Validation Review Plan. However, previous experience has shown that close coordination with the other AM organizations in development of the plan and performance of the validations is essential for a smooth, successful startup process. For example, validation of areas dealing with order compliance or emergency preparedness should be performed in close coordination with the OESH and OSSES, respectively. Other areas requiring matrix/specialist support from other organizations include radiation protection and waste minimization. Early development of the plan and real time validations as the work is being performed in addition to validations performed at the end greatly simplify the process.

Another important aspect of the development and performance of the SR Validation Review Plan is the coordination between SR and HQ elements and/or other external organizations. Lines of communication should be established early and plans for the validation effort should be thoroughly discussed to identify potential issues and avoid addition of previously unidentified expectations late in the startup process.

Typically, the M&O contractor performs startups in accordance with an M&O contractor startup plan as well as an ORR Plan-of-Action when an ORR is required. Other startups typically do not use a startup plan, and performance of a DOE Validation Review Plan constitutes the DOE oversight.

The following topics are provided for use in the development of a Validation Review Plan. Validations which address the ORR Plan-of-Action MCRs listed in Attachment H are annotated by the MCR number. Topics not applicable to the startup or facility should be disregarded.

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1. Verify an adequate startup or restart test program has been developed that includes adequate plans for graded operations testing to simultaneously confirm the operability of equipment, the viability of procedures, the training of operators, and the confirmation of resolution of associated issues. (MCR 12)
2. Verify a realistic master schedule is developed that reflects all issues required for startup. The schedule should reflect ancillary work (such as required safety analyses and associated documentation, order compliance and Compliance Schedule Approval commitments, DNFSB meetings and other DNFSB interface requirements, and public meetings) as well as the milestones associated with work in the facility.
3. Verify a program is established and implemented to promote a sitewide culture in which personnel exhibit an awareness of public and worker safety, health, and environmental protection requirements and, through their actions, demonstrate a high priority commitment to comply with these requirements. (MCR 1)
4. Verify the M&O contractor ORR Plan-of-Action is complete and acceptable (reference Attachment D).
5. Develop validations of implementation of issues, actions, and programs identified in the M&O contractor Startup Plan and/or ORR Plan-of-Action. Detailed vertical slice validation techniques on a sample of the actions are recommended.
6. Verify the M&O contractor has performed readiness review activities in accordance with M&O contractor RSA plans. Periodic real time assessments of the performance of the RSA should be included in the Validation Review Plan. Assessment activities include the following:
  - a. Independent inspections in subject areas.
  - b. Field inspections accompanying RSA Team members.
  - c. Review of RSA Team reviews, reports, and issues.
  - d. Review of the RSA Team issue closure process.

The above activities should be performed using sampling techniques, not 100% verifications. There should be at least one field review with each RSA Team.
7. Verify the M&O contractor ORR Team has been adequately staffed and has developed and approved an ORR Implementation Plan in accordance with approved M&O contractor procedures.



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8. Verify the M&O contractor ORR Team has performed readiness review activities in accordance with the M&O contractor ORR Implementation Plan. Periodic real time oversight of ORR Team activities should be included in the Validation Review Plan. Oversight activities include the following:
  - a. Independent inspections in subject areas.
  - b. Field inspections accompanying ORR personnel.
  - c. Attendance at ORR Team meetings.
  - d. Review of ORR Team reports and issues.
  - e. Review of the ORR issue closure process.

The above activities should be performed using sampling techniques, not 100% verifications.

9. Verify the M&O contractor's readiness review is complete and acceptable. Ensure the results of the M&O contractor ORR are adequate to verify the readiness of hardware, personnel, and management programs for operations. This verification should include a review of all completed RSA documentation and the M&O contractor ORR Report, as well as selected field verification reviews. (MCR 17)
10. Ensure unplanned shutdowns and surrounding events were properly classified in accordance with DOE M 231.1-2 and facility procedures. Review the M&O contractor's investigation of the shutdown (including post-trip/unscheduled shutdown investigation documentation when applicable) to ensure the root causes of the shutdown have been identified and corrected.
11. Verify training and qualification programs for operations and operations support personnel have been established, documented, and implemented. Ensure the training and qualification program encompasses the range of duties and activities required to be performed. (MCR 3)
12. Verify the level of knowledge of operations and operations support personnel is adequate based on reviews of examinations and examination results, and selected interviews of operating and operations support personnel. (MCR 4)

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13. Verify facility safety documentation is in place that describes the "safety envelope" of the facility. The safety documentation should characterize the hazards/risks associated with the facility and should identify mitigating measures (systems, procedures, administrative controls, etc.) that protect workers and the public from those hazards/risks. Ensure safety systems and systems essential to worker and public safety are defined and a system to maintain control over the design and modification of facilities and safety-related utility systems is established. (MCR 7)
14. Verify management programs are established, sufficient numbers of qualified personnel are provided, and adequate facilities and equipment are available to ensure operational support services (e.g., training, maintenance, waste management, environmental protection, industrial safety and hygiene, radiological protection and health physics, emergency preparedness, fire protection, quality assurance, criticality safety, and engineering) are adequate for operations. (MCR 1 and 6)
15. Verify functions, assignments, responsibilities, and reporting relationships are clearly defined, understood, and effectively implemented with line management responsible for control of safety. (MCR 2)
16. Ensure facility systems and emergency equipment are operable and in a satisfactory operating condition in accordance with an approved configuration management system.
  - a. Verify a program is in place to confirm and periodically reconfirm the condition and operability of safety systems, including safety-related process systems and safety-related utility systems. Ensure prestartup, special test, Technical Safety, and operating procedure requirements have been met. Include system walkdowns and reviews of the system alignment procedures. Also include examinations of records of tests and calibration of safety system and other instruments which monitor limiting conditions of operation or satisfy TSRs. Verify no plant conditions exist which result in a violation of or conflict with the TSRs or the SAR. (MCR 8)
  - b. Verify required shutdown maintenance, inspection, and surveillance/test activities have been completed. Include a review of the list of backlog work items. The list should primarily be recently emerging work items and should be trending downward. Perform random assessments of individual backlog work items to assess safety implications and justification for being backlogged. Determine if any backlogged work is required to be accomplished prior to startup.

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- c. Evaluate any open NCRs for potential impact on startup. Ensure NCRs generated during the shutdown and/or preparations for startup have been adequately dispositioned.
17. For reactors, verify the reactor is properly loaded with components specified in the charge design document.
18. For nonreactor nuclear facilities, verify feed materials or other materials required for the process are properly staged and within specification.
19. Verify criticality safety surveillances, requirements, and controls are satisfactory.
20. Verify required SAR, TSR, and procedures associated with facility operations have been approved and issued. Spot check the documentation associated with the procedure approvals for adequate technical reviews, safety reviews, and documented procedure walkdown validations. For selected procedures, perform a field walkdown to verify technical adequacy, correct component labeling, and compatibility. Where possible, observe M&O contractor field utilization of procedures. (MCR 10)
21. Verify the qualification requirements of the facility management, technical, and operations staff are satisfied and staffing levels are adequate. Include reviews of operator qualification/certification examinations, training records, and required reading documentation. Where possible, observe plant drills. (MCR 3, 4, and 6).
22. Verify the implementation status for DOE 5480.19 is adequate for operations. (MCR 13)
23. Review disposition of any positive Unreviewed Safety Question Determinations. Sample negative Unreviewed Safety Question Determinations to verify adequacy of the process.
24. Verify a process has been established to identify, evaluate, and resolve deficiencies and recommendations made by HQ elements, independent review groups, official review teams, audit organizations, and the M&O contractor. Ensure all startup commitments to external organizations (DNFSB; Office of Nuclear Safety; Office of Environment, Safety and Health; General Accounting Office; etc.) have been adequately addressed. (MCR 15)

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25. Verify no environmental concerns are outstanding which may impact startup. Verify an adequate Waste Certification Program has been implemented and all waste streams identified. Ensure all required environmental permits are established/issued and an adequate sampling program is in place. Selectively perform interviews of facility staff members to verify an adequate knowledge of inadvertent release procedures and to verify an adequate level of environmental sensitivity.
26. Verify no emergency planning concerns are outstanding which may impact startup. Ensure an emergency plan has been established and implemented. Verify facility emergency drills/scenarios are up to date and accountability systems are in place. If possible, observe a facility emergency drill.
27. Verify a routine and emergency operations drill program, including program records, has been established and implemented. Verify all required drills have been performed. If possible, observe an operations drill. (MCR 11)
28. Verify no radiation protection concerns are outstanding which may impact startup. Perform facility walkthroughs to verify appropriate radiological postings and barricades are established to support startup. Ensure required radiological surveys are complete and current.
29. Verify all safeguards and security requirements have been met in accordance with DOE Order 470.1. Verify all safeguards and security plans, procedures, vulnerability analyses are in place and all required reviews have been performed. Verify appropriate access restrictions for facility start-up have been implemented.
30. Verify the SR self-assessment has been performed which ensures appropriate SR oversight programs such as Occurrence Reporting, Facility Representative, Corrective Action, and Quality Assurance Programs are adequate. Ensure associated procedures have been approved and implemented to support oversight of startup and subsequent operations. Verify the SR technical and managerial staff (including Facility Representatives) for the facility is adequately trained, qualified, and staffed to provide direction and guidance to the M&O contractor and to support oversight of the startup and subsequent operations in accordance with applicable SR procedures. (MCR 16 and 18)
31. Verify a systematic review of the facility's conformance to applicable DOE Orders has been performed, any nonconformances have been identified, and schedules for gaining compliance have been justified in writing and formally approved. Spot check implementation status versus scheduled dates of Compliance Schedule Agreements, Order implementation plans, occurrence report corrective actions, and other selected issues such as monthly report findings, surveillance findings, etc. (MCR 14)

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32. In cases where modifications have been made to the facility, verify the modifications are complete.
  - a. Verify affected facility systems and procedures are consistent with the description of the facility, procedures, and accident analyses included in the safety basis. If changes to the safety basis are required, verify required changes to the SAR, TSR, and procedures have been approved and implemented. (MCR 9)
  - b. Verify modifications have been reviewed for potential impacts on procedures, training, and qualification. Ensure procedures have been revised to reflect these modifications and training has been performed to these revised procedures. (MCR 5 and 10)
33. Housekeeping, seismic verification, and other unique issues directly related to the shutdown or plant readiness should be addressed.

## **ATTACHMENT D**

### **ORR Plan-of-Action Guidelines**

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The ORR Plan-of-Action describes the breadth and the prerequisites of the ORR and what will be evaluated by the ORR, based on the extent of the activities involved in the resumption or startup. The amount of detail in each ORR Plan-of-Action varies with the complexity of the facility and the situation. The M&O-contractor-recommended ORR Plan-of-Action or approved project startup plan provides a starting point for the DOE ORR Plan-of-Action.

The ORR Plan-of-Action contains the following elements:

1. **Notice of the Intent to Conduct an ORR.**
2. **Name of the Facility Being Started.** The name must be specific to what is being evaluated and started. If a single process within a building is to be restarted, the facility name would be the process name. If the process encompasses several buildings and an area, the name would be the encompassing process name.
3. **Description of Facility.** This includes buildings, systems, and processes included within the startup authority and should define the boundaries and scope of the ORR.
4. **Identification of the Responsible Contractor.** This is the contractor who certifies readiness of the facility to operate and is normally the contractor who submits the M&O contractor ORR Plan-of-Action.
5. **Designation of Action as a New Start or Restart.** This is the identification of whether the facility is being started for the first time or being restarted. For a new start of a facility or process, the discussion should include the following elements:
  - a. Hazard categorization for the new facility and basis for the designation (criticality, explosive, chemical, environmental, etc.).
  - b. Safeguards and security categorization requirements and any radiological/sabotage concerns.
  - c. Acquisition costs for new facility or process.
6. For restart of an existing facility or process, the discussion should include the following elements:
  - a. Hazard categorization for the existing facility and basis for the designation (criticality, explosive, chemical, environmental, etc.). In the event no formal hazard categorization has been made, a discussion of the relative hazard is appropriate.

## ATTACHMENT D Cont'd

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- b. Cause for shutdown.
  - c. Duration of shutdown.
  - d. Repairs accomplished during the shutdown period.
  - e. Modifications accomplished during shutdown period and effect on the approved safety basis.
  - f. Any anticipated process changes following restart.
6. **Proposed Breadth for the ORR.** The breadth is the top tier core requirements. The breadth should be derived starting with the MCRs listed in Attachment H. The discussion should support the decision to eliminate any core requirements based on recent, independent appraisals in the excluded areas. The DOE ORR Plan-of-Action breadth considers the M&O contractor ORR as well as DOE management and oversight programs. During conduct of the ORR, the breadth may be expanded by the ORR Team, if appropriate.
7. **ORR Prerequisites.** The process by which the M&O contractor separates gaining readiness through management actions, and verifying readiness through the ORR process should be reflected in the prerequisite requirements. The M&O contractor ORR Plan-of-Action prerequisites must address each core requirement in Attachment H. The DOE ORR Plan-of-Action prerequisites will include readiness of DOE management and SR programs and assigned personnel to monitor facility operations. Adequate detail should be included to permit an understanding of exactly which programs and personnel are considered essential to adequate oversight of the facility or process for start or restart. The prerequisite section of both the M&O contractor and DOE ORR Plans-of-Action should refer to specific items such as a project management plan, an RSA plan, a compliance assessment program, safety documentation such as SAR, TSR, etc., or environmental assessments or impact studies. The prerequisites should be described in terms of specific measurable items.
8. **Estimated ORR Start Date and Duration.** The date is for planning purposes only and should be the best estimate. Identification of a date is not to imply that the ORR start is schedule-driven rather than readiness-driven. The DOE ORR estimated start dates, as well as the M&O contractor ORR schedule, should be provided for information in the M&O contractor ORR Plan-of-Action to assist DOE management in planning for the DOE ORR.

**ATTACHMENT D Cont'd**

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9. **Proposed ORR Team Leader.** The individual must have the necessary independence with the required experience and technical background consistent with the complexity of the facility and the specific ORR. The individual must meet the following criteria:
  - a. Technical familiarity with the activities and functional areas being reviewed.
  - b. Previous performance-based review experience or training.
  - c. Demonstrated leadership and managerial skills.
  - d. ORR experience or formal training.
10. **Requirement for Senior Advisors.** Senior advisors are only required for DOE ORRs. In many instances senior advisors may not be required, particularly if the team leader has significant ORR experience. For particularly complex or controversial ORRs of high hazard facilities, as many as three senior advisors may be advisable.
11. **Official to Approve Start of DOE ORR.** In most circumstances, this will be the approval authority designated in the approved startup notification report.
12. **Official to Approve Startup or Restart of the Facility.** This is the individual specified in the startup notification report .
13. **Reviewers and Approver.** List the individuals by name and title who prepare and will review this document. The signature indicates that they have reviewed the document and recommend approval by the approval authority listed above.
14. **Distribution.** This is a listing of the individuals and organizations who receive copies of the ORR Plan-of-Action following approval. Individuals and organizations are listed who have either responsibilities or interests in the new start or restart process.



## **ATTACHMENT E**

### **ORR Implementation Plan Guidelines**

The ORR Implementation Plan documents not only the process by which the team conducts the ORR, but also defines the rationale for that process. The documentation includes the selection of criteria and review approaches and the procedures by which the team develops findings and conclusions and the criteria to be applied to categorize findings as prestart and poststart. The ORR Implementation Plan is the document that provides for the depth of evaluation of the ORR breadth and execution of other details in the approved ORR Plan-of-Action. The ORR Implementation Plan should provide sufficient detail to serve as both information to management and guidance to the ORR Team members.

The following outline provides a suggested format for the ORR Implementation Plan.

1. **Introduction/Background.** Describes the activity that will be reviewed and the reason for shutdown (if a restart). This section provides background information concerning the basic process, hazards, and issues associated with the activity to be reviewed.
2. **Purpose.** Describes the reasons why the review will be conducted, and provides the basic insights for the defined scope of the review.
3. **Scope.** The scope defines the physical and administrative boundaries of the facility, and justifies those defined boundaries and support function reviews relative to each of the following items:
  - a. Plant and equipment (hardware) readiness.
  - b. Management and personnel readiness.
  - c. Management programs (procedures, plans, etc.) readiness.

The scope section of the ORR Implementation Plan describes the approved breadth from the approved ORR Plan-of-Action. Each breadth element required by the Plan-of-Action must be incorporated into the ORR Implementation Plan. The depth to which each scope element is evaluated is specified and quantified by the Implementation Plan criteria and review approaches.

The scope section should define the major objectives of the review. These objectives define the discipline or areas which are selected for review and define the approach and guidelines which must be implemented for an organization to achieve a state of operational readiness.

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4. **ORR Prerequisites.** The ORR Implementation Plan should summarize the prerequisites specified in the approved Plan-of-Action. It is not the responsibility of the ORR Team to develop the prerequisites, but they must understand them and be prepared to verify that the prerequisites have been achieved at the start of the ORR.
5. **Overall Approach.** Defines the generic approach by which the review will be conducted, and provides an introduction to the ORR process. The ORR Criteria and Review Approach (CRA) are defined by the processes described in this section. The definition of the criteria by which findings are classified as prestart and poststart should be defined here, as should the method for report preparation, finding resolution, and methods of closure.
6. **ORR Preparations.** Describes any preparations, including team pre-review site visits, document reviews, etc., that are undertaken prior to the on-site review. A discussion of qualifications and training considerations for ORR Team members could appear here.
7. **ORR Process.** Describes the actual CRAs that are used to review the defined core requirements of the review. These CRAs should be developed in a format to include the following items:
  - a. Core Requirement/Core Objective - Identification of the requirement which is verified as having been achieved by the readiness process.
  - b. Criteria - The specifics by which the core requirements/core objectives are measured, which may include regulatory requirements, etc.
  - c. Review Approach - A definition of what combination of review of documentation, interviews of personnel, walkdown of systems, and observation of exercises and/or drills that are conducted to derive objective evidence by which the team measures the defined criteria and assesses the readiness of the particular objective or sub-objective.
  - d. References - Those requirements or regulatory standards that apply to this core requirement and safety documentation that contains the requirements associated with a particular core requirement. This section may be unnecessary if the information is contained in the overall approach discussion and the appendices.
8. **Administration.** Describes the mechanism for the ORR-related meetings, correspondence, communications, team structure, etc., of the review. The ORR Team composition/organization, interface requirements, any oversight groups, and DOE organizations to be involved in the review should be discussed in this section.

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9. **Reporting and Resolutions.** This section should detail the methods that the ORR Team uses to report review results.
10. **Schedule.** A discussion of the proposed schedule for any preparation, pre-review site visits, on-site review, conduct of review, report preparation, and closeout.
11. **Appendices.** The appendices should include the checklists or other specific criteria evaluation and review documents to be used by the team members to conduct the individual assessments. They may also include reporting forms, writing guides, and other sections appropriate to stand alone in an appendix.

## ATTACHMENT F ORR Final Report Guidelines

The ORR Final Report documents the results of the ORR and makes a conclusion as to whether startup or restart of the nuclear facility can proceed safely. The final report must document the logic of the review, relating any findings to the core requirements in the Implementation Plan. The report must detail the core requirements of the review, explain how the review addressed those core requirements, what criteria were used, and the methods by which those criteria were assessed. Finally, the report should describe the findings of the review, and explain how these findings relate to the conclusions of the team for each area and the review as a whole.

There must be a statement in each ORR Final Report as to whether all identified nonconformances or schedules for gaining compliance with applicable DOE Orders, Secretary of Energy Notices, and Standards/Requirements Identification Documents within the scope of the ORR have been justified in writing, have been formally approved, and in the opinion of the ORR Team maintain adequate protection of the public health and safety, worker safety, and the environment. This conclusion will be based on the following items:

- a. Review of the program to document conformance with applicable DOE requirements, including a process to address new requirements.
- b. Extensive use of references to DOE requirements in the ORR documentation.

The ORR Final Report should provide opportunity for team members to include differing professional opinions, nonjudgmental general comments, observations, and dissenting opinions, which should be documented and attached to the report.

The following is a suggested format for the DOE ORR Final Report. A synopsis of each section is contained in the following paragraphs.

- |                       |                    |
|-----------------------|--------------------|
| 1. Title Page (Cover) | 5. Introduction    |
| 2. Signature Page     | 6. ORR Evaluation  |
| 3. Table of Contents  | 7. Lessons Learned |
| 4. Executive Summary  | 8. Appendices      |

1. **Title Page (Cover).** The cover and title page state the subject and the date of the review or evaluation. The report cover should be as clean as possible, and should not contain any extraneous information, data, graphics, or pictures.

## ATTACHMENT F Cont'd

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2. **Signature Page.** A signature page should be provided. The signatures on the final report should include all team members. Signatures by individual team members signify their agreement on the report content and conclusion in the areas to which they were assigned. If all team member signatures cannot be obtained due to logistical considerations, the team leader should gain their concurrence via fax or telecom and sign for them.
3. **Table of Contents.** A table of contents should be provided to facilitate review of the report. The table of contents should identify, with page numbers, all sections and subsections of the report, illustrations, charts, and appendices.
4. **Executive Summary.** An executive summary is recommended. This summary is a one to three page synopsis of the review, findings, and readiness determination. The executive summary should introduce information and direct the reader to those portions of the report that provide more detail concerning the information. Some suggested points for the executive summary include the following:
  - a. A brief synopsis of the review activity, which provides information concerning the team's evaluation of readiness.
  - b. The readiness of the activity to proceed.
  - c. The management system adequacy to oversee the operation.
  - d. A summary evaluation of the adequacy of the ORR preparation (and possibly the ORR program).
  - e. A synopsis of the significant problems, and significant strengths.
5. **Introduction.** An introduction should provide information and background regarding the facility being reviewed, the reason(s) for shutdown (if a restart), the purpose of the review/evaluation, and the scope of the activity evaluation. Other information that should be provided include a brief discussion of the following:
  - a. The overall objectives of the evaluation.
  - b. The review process and methodologies used in the review.
  - c. The team composition.
  - d. Definitions applicable to the review.

**ATTACHMENT F** Cont'd

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6. **ORR Evaluation.** For each core requirement, the report should discuss the core requirement and provide conclusions on the readiness for each major area. Conclusions on the readiness of hardware, personnel, procedures, and the management system that controls each review area should be addressed, including key issues concerning the review area. The evaluation should discuss the prestart and poststart findings associated with the review and provide a conclusion on the readiness of the facility to begin operation.

Any deviations from the Implementation Plan should be discussed, along with the reasons for the deviation(s), and what alternative actions were taken to compensate, if required. As the evaluation section provides the bases for the determination of readiness for each core requirement, it should discuss not only the deficiencies found during the review, but also those positive aspects that affected the determination. In addition, the ORR Final Report should also identify as "Observations" those items which are not findings, but if addressed, would lead to excellence in operations. The detailed documentation to support the conclusions may be included in an appendix which consists of the individual check lists with the accompanying appraisal and issue forms.

7. **Lessons Learned.** The report should identify lessons learned that may be applied to design, construction, operation, and decommissioning of similar facilities and to future ORRs. The ORR Final Report should address the problems and the successes encountered in the review and evaluation process (what worked, what did not work). These activities should be documented to provide guidance on future ORRs.
8. **Appendices.** Appendices should be provided for data that support the actual report. The following data should be considered for appendices:
  - a. Implementation Plan.
  - b. Criteria and Review Approaches.
  - c. ORR Activities Plan.
  - d. Team List and Resumes.
  - e. Evaluation of Criteria.
  - f. Prestart Findings Summary.
  - g. Poststart Findings Summary.

**ATTACHMENT G**  
**Sample SR Validation Review Plan for Cognizant AM or M&O Approval Startups**

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**U.S. DEPARTMENT OF ENERGY**  
**SAVANNAH RIVER OPERATIONS OFFICE**  
**ASSISTANT MANAGER FOR *name***

**DOE VALIDATION PLAN FOR A RESTART OF THE *name of facility***

APPROVED BY: \_\_\_\_\_ Date: \_\_\_\_\_  
Assistant Manager





**ATTACHMENT G Cont'd**

6. Verify that open work items related to the facility have been reviewed and determined not to impact startup.

\_\_\_\_\_  
Signature Date

7. Perform an operations assessment of the systems that were affected during the period of shutdown. Perform an operations assessment of all related systems if the shutdown is greater than 90 days.

\_\_\_\_\_  
Signature Date

8. Verify that the M&O contractor has performed a system walkdown. Ensure that any identified deficiencies have been adequately dispositioned.

\_\_\_\_\_  
Signature Date

9. Verify that appropriate radiological controls are implemented and adequate Health Protection coverage is in place.

\_\_\_\_\_  
Signature Date

10. Verify that the M&O contractor's readiness assessment plan has been completed. Ensure that any identified deficiencies have been adequately dispositioned.

\_\_\_\_\_  
Signature Date

**Note:** *The following signature is not required if the approval authority documents approval elsewhere in accordance with an established post-trip/unscheduled shutdown assessment process.*

Restart of the *named* Facility is authorized.

\_\_\_\_\_  
Approval Authority Signature

\_\_\_\_\_  
Date

## ATTACHMENT H ORR Minimum Core Requirements

Each of the core requirements must be addressed when developing the breadth of an ORR. Justification must be provided in the ORR Plan-of-Action if it is determined that a particular core requirement is not applicable or will not be reviewed. A graded approach will be used to determine the level of analysis, documentation, and actions necessary to evaluate the core requirements listed below or other core requirements in the defined breadth of the ORR.

***Guiding Principle #1*** – *Line management is responsible for the protection of employees, the public, and the environment. Line management includes those contractor and subcontractor employees managing or supervising employees performing work.*

(1) Line management has established programs to ensure safe accomplishment of work (the authorization authority should identify in the plan of action those specific infrastructure programs of interest for the startup or restart). Personnel exhibit an awareness of public and worker safety, health, and environmental protection requirements and, through their actions, demonstrate a high-priority commitment to comply with these requirements.

***Guiding Principle #2*** – *Clear and unambiguous lines of authority and responsibility for ensuring ES&H are established and maintained at all organizational levels.*

(2) Functions, assignments, responsibilities, and reporting relationships [including those between the line operating organization and Environment, Safety and Health (ES&H) support organizations] are clearly defined, understood, and effectively implemented with line management responsibility for control of safety.

***Guiding Principle #3*** – *Personnel possess the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities.*

(3) The selection, training, and qualification programs for operations and operations support personnel have been established, documented, and implemented. The selection process and applicable position-specific training for managers ensures competence commensurate with responsibilities. (The training and qualification program encompasses the range of duties and activities required to be performed.)

(4) Level of knowledge of managers, operations, and operations support personnel is adequate based on reviews of examinations and examination results and selected interviews of managers, operating, and operations support personnel.

(5) 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.

## ATTACHMENT H Cont'd

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**Guiding Principle #4** – Resources are effectively allocated to address ES&H, programmatic, and operational considerations. Protecting employees, the public, and the environment is a priority whenever activities are planned and performed.

(6) Sufficient numbers of qualified personnel are available to conduct and support operations. Adequate facilities and equipment are available to ensure operational support services are adequate for operations. (Such support services include operations, training, maintenance, waste management, environmental protection, industrial safety and hygiene, radiological protection and health physics, emergency preparedness, fire protection, quality assurance, criticality safety, and engineering).

**Guiding Principle #5** – Before work is performed, the associated hazards are evaluated and an agreed-upon set of standards and requirements is established which, if properly implemented, provide adequate assurance that employees, the public, and the environment are protected from adverse consequences.

(7) Facility safety documentation is in place and has been implemented that describes the “safety envelope” of the facility. The safety documentation should characterize the hazards/risks associated with the facility and should identify preventive and mitigating measures (systems, procedures, administrative controls, etc.) that protect workers and the public from those hazards/risks. Safety structures, systems, and components (SSCs) are defined and a system to maintain control over their design and modification is established.

(8) A program is in place to confirm and periodically reconfirm the condition and operability of safety SSCs. This includes examinations of records of tests and calibration of these systems. The material condition of all safety, process, and utility systems will support the safe conduct of work.

(9) The facility systems and procedures, as affected by facility modifications, are consistent with the description of the facility, procedures, and accident analysis included in the safety basis.

**Guiding Principle #6** – Administrative and engineering controls to prevent and mitigate hazards are tailored to the work being performed and associated hazards. Emphasis should be on designing the work and/or controls to reduce or eliminate the hazards and to prevent accidents and unplanned releases and exposures.

(10) Adequate and correct procedures and safety limits are in place for operating the process systems and utility systems that include revisions for modifications that have been made to the facility.

(11) A routine drill program and emergency operations drill program, including program records, have been established and implemented.

(12) 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.

(13) The formality and discipline of operations is adequate to conduct work safely, and programs are in place to maintain this formality and discipline (e.g., DOE 5480.19).

## ATTACHMENT H Cont'd

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**Guiding Principle #7** – *The conditions and requirements to be satisfied for operations to be initiated and conducted are established and agreed-upon by DOE and the contractor. These agreed-upon conditions and requirements are requirements of the contract and binding upon the contractor. The extent of documentation and level of authority for agreement shall be tailored to the complexity and hazards associated with the work and shall be established in a Safety Management System.*

(14) Formal agreements between the operating contractor and DOE have been established via the contract or other enforceable mechanism to govern the safe operations of the facility. 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 and formally agreed to during the period of implementation. The compensatory measures and the implementation period are approved by DOE.

(15) A feedback and improvement process has been established to identify, evaluate, and resolve deficiencies and recommendations made by independent review groups, official review teams, audit organizations, and the operating contractor (e.g., DOE P 450.5). Additional DOE Oversight Requirements include the following.

(16) 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 (DOE Operational Readiness Review only).

(17) The breadth, depth, and results of the responsible contractor Readiness Review are adequate to verify the readiness of hardware, personnel, and management programs for operations (DOE Operational Readiness Review only).

(18) DOE operations office oversight programs, such as occurrence reporting, Facility Representative, corrective action, and quality assurance programs, are adequate (DOE Operational Readiness Review only).