

SUBJECT: VERIFICATION OF READINESS TO STARTUP OR RESTART NUCLEAR FACILITIES

1. PURPOSE. This Order of the Department of Energy (DOE), including the National Nuclear Security Administration (NNSA), establishes the requirements for the Department of Energy (DOE) Readiness Reviews (RRs). RR's are used to verify the readiness for startup and restart of Hazard Category (HC) 1, 2, and 3 nuclear facilities, operations, or activities as described within this Order.
2. CANCELLATION. DOE O 425.1D Chg 2 (Min Chg), *Verification of Readiness to Start Up or Restart Nuclear Facilities*, dated 10-4-2019. Cancellation of an Order does not, by itself, modify or otherwise affect any contractual or regulatory obligation to comply with the Order. Contractor Requirements Documents (CRDs) that have been incorporated into a contract remain in effect throughout the term of the contract unless and until the contract or regulatory commitment is modified to either eliminate requirements that are no longer applicable or substitute a new set of requirements.
3. APPLICABILITY.
 - a. Departmental Applicability. This Order is applicable to DOE within the provisions and restrictions of the NNSA Act, found at Title XXXII of Public Law (P.L.) 106-65, National Defense Authorization Act for Fiscal Year 2000. This Order applies to all nuclear facilities, operations or activities as defined in Title 10 of the Code of Federal Regulations (CFR), Part 830, Nuclear Safety Management, that are classified as HC 1, 2, or 3 nuclear facilities.
 - (1) Activities regulated by the Department of Transportation; and transportation of on-site transportation packages authorized by 49 CFR, Part 173, Subpart I. On-site transportation activities may be excluded with Program Secretarial Officer (PSO) or Cognizant Secretarial Officer (CSO) approval, and Central Technical Authority (CTA) concurrence, provided an alternate process is identified.
 - (2) The Administrator of the NNSA will assure that NNSA employees comply with their respective responsibilities under this Order. Nothing in this Order will be construed to interfere with the NNSA Administrator's authority under section 3212(d) of P.L. 106-65 to establish Administration-specific policies, unless disapproved by the Secretary.
 - b. DOE Contractors. The CRD in Attachment 1, CRD of this Order sets forth requirements of this Order that will apply to contracts for the operation and management of a DOE-owned or -leased facility, including NNSA facilities.

- c. Equivalencies and Exemptions for DOE O 425.1E. Equivalencies and exemptions to the requirements of this Order are processed in accordance with DOE O 251.1D Chg 1 (AdminChg), *Departmental Directives Program*. CTA (or designee) concurrence is required for both exemptions and equivalencies to this Order for nuclear facilities.
- (1) Equivalency. In accordance with the responsibilities and authorities assigned by Executive Order 12344, codified at 50 United States Code (U.S.C.) sections 2406 and 2511, and to ensure consistency throughout the joint Navy and DOE organization of the Naval Nuclear Propulsion Program, the Deputy Administrator for Naval Reactors (Director) will implement and oversee all requirements and practices pertaining to this DOE Order for activities under the Director's cognizance, as deemed appropriate.
- (2) Exemptions. This Order does not apply to the following:
- (a) Activities regulated through a license by the Nuclear Regulatory Commission (NRC) or a state under an agreement with NRC, including activities certified by NRC under section 1701 of the Atomic Energy Act.
- (b) Activities in the Transportation Safeguards System in NNSA.
- d. Government-Owned, Government-Operated Facilities. The Attachment 1, CRD of this Order sets forth requirements applicable to DOE government-owned, government-operated facilities. Government-operators must comply with the requirements in Attachment 1, CRD of this Order.

4. REQUIREMENTS.

- a. DOE Line Management must ensure that properly scoped RRs are planned and conducted to verify readiness for the startup or restart of HC 1, 2, and 3 nuclear facilities, activities, or operations.
- b. HC 1, 2, and 3 nuclear facilities, activities, or operations may be started (or restarted) only after RRs have been conducted and the approvals specified in this Order have been received.
- c. DOE Standard (STD)-3006-2010, *Planning and Conducting Readiness Reviews*, provides guidance on approaches and methods approved as acceptable for implementing the requirements of this Order. Other approaches and methods may be used provided they are documented and approved by DOE Line Management as being in accordance with the requirements of this Order.
- d. RR Process. DOE Line Management must develop procedures that define the RR Processes that will be utilized to implement this Order. The RR process must, in all cases, demonstrate there is a reasonable assurance for adequate protection of

workers, the public, and the environment from adverse consequences from the startup (or restart) of a HC 1, 2, or 3 nuclear facility, activity, or operation. The readiness process is illustrated within Attachment 2, *Readiness Review Process Flow Chart*. Additional guidance for limited circumstances where Contractor and DOE RRs are performed in parallel is included in DOE-STD-3006-2010.

- (1) Startup Notification Report (SNR). Contractor and DOE RR process must not commence until the Startup Authorization Authority (SAA) has approved the SNR. SAA determination is made in accordance with Attachment 3, *Startup Notification Report (SNR)*, *Startup Authorization Authority (SAA)*, and *Readiness Review (RR) Determination Criteria*. DOE Line Management procedures must address the contents of an SNR, and the review and approval process for the SAA:

- (a) SNR Review and Approval:

- 1 Each SNR containing new activities or changes must be reviewed and approved by the SAA.
- 2 SNRs that contain informational changes (editorial, minor edits, date changes) from the previously approved SNR do not require reapproval.
- 3 The SNR will be reviewed to ensure that the contractor has addressed the SNR requirements described within the CRD, Attachment 1, and Attachment 3, *Startup Notification Report (SNR)*, *Startup Authorization Authority (SAA)*, and *Readiness Review (RR) Determination Criteria*. The SNR must be technically accurate to justify the proposed RR.
- 4 When the SNR includes activities for which the SAA resides at Headquarters, the Field Element Management must make a recommendation regarding approval for those activities and forward the SNR to Headquarters.
- 5 Each SNR, including field element approval and/or recommendations, must be forwarded to the PSO; the site Lead PSO or CSO, as appropriate; the appropriate CTA; the Office of Environment, Health, Safety, and Security (EHSS); and Office of Enterprise Assessments (EA) for information.

- (2) Plan of Action (POA) Content and Approval.

- (a) DOE POA Content. DOE Line Management must develop a DOE POA that aligns with the Contractor POA. A graded approach must be used in developing the scope of the DOE POA. The DOE POA may take into consideration the maturity of the Contractor RR

program, and safety management programs that are in place to implement the Core Requirements (CRs). The level of detail should be commensurate with the complexity of the startup or restart. Contents of the DOE POA must include:

- 1 A scope and purpose that addresses all Attachment 4, *Core Requirements (CRs)*. Exclusion of any CRs must be documented and justified within the POA.
 - 2 Prerequisites, as defined in Attachment 6, that must be completed prior to the start of the RR.
 - 3 A description of the physical and administrative boundaries of the RR.
 - 4 A description of the structures, systems, and components (SSCs) covered by the RR.
 - 5 A description of individual processes, and programs to be reviewed.
 - 6 The proposed DOE RR Team Leader.
- (b) DOE POA Approval. The DOE POA must be reviewed and approved by the SAA.
- (c) Contractor POA Approval. The Contractor POA must be reviewed and approved by the SAA.
- (3) RR Team Composition. The DOE RR team leader must select the RR team members. RR Team Leader and Team Members must not be assigned to assess facilities, operations, or activities for which they have direct responsibilities. Team Leader and Members qualifications must be documented and shall address the following requirements:
- (a) Technical knowledge of the area assigned for evaluation, including experience working in the technical area.
 - (b) Knowledge of the performance-based assessment process and methods.
 - (c) Knowledge of the facility, activity, or operations-specific information.

Note: DOE-STD-3006-2010 provides additional recommendations for the training and qualification RR Team Leader and Team Member. DOE-Handbook (HDBK)-3012, *Guide to Good Practices for Operational*

Readiness Reviews, Team Leader's Guide, provides information useful to team leaders in preparing for and conducting RRs.

(4) DOE Implementation Plan (IP) Development and Approval.

(a) DOE IP Development. The RR Team must develop the IP that includes the Criteria and Review Approach Document (CRAD) used to execute the RR. The scope of the IP is bounded by the approved POA.

(b) DOE IP Review and Approval.

1 The IP must be provided to the appropriate SAA (Attachment 3, Table 1, *SAA and RR Determination Criteria*) for information.

2 The RR Team Leader must approve the IP, prior to starting the RR.

(5) Prior to starting the DOE RR:

(a) DOE Line Management must receive a Readiness to Proceed Memorandum (RTP) from the responsible Contractor certifying that the facility or process is ready for startup or restart. For parallel reviews, this is received prior to the contractor beginning their RR, and for separate DOE RRs this notification is provided when the contractor has determined they are ready for the DOE RR to begin.

(b) DOE Line Management must document their verification of the following:

1 That Contractor verification has been performed to state that the facility, activity, or operation is ready for startup or restart the facility or activity.

2 That the Contractor and DOE POA prerequisites have been met or have compensatory measures that have been documented and approved.

3 That a contractor Corrective Action Plan (CAP) has been approved and addresses the Contractor Readiness Review (CRR) pre/post start findings and any compensatory measures with a well-defined schedule for closure. For parallel reviews, this will be verified by DOE prior to finalizing the DOE RR report.

- 4 That the contractor's preparations for startup or restart have been completed with the exception of a manageable list of open prestart issues. The prestart issues must have a well-defined schedule for closure to allow the DOE RR team to review the closure process.
 - 5 That the DOE Site or Field Office programs and personal are ready to proceed with a RR.
 - (c) DOE Line Management must submit to the SAA, their documented verification of readiness with their recommendation that the RR commence.
 - (d) Specific events significant to the startup and restart process that occur prior to the formal commencement of the RR (e.g., site emergency response drills) may be reviewed by the RR team at the time they are conducted.
 - (6) Readiness to Proceed. The SAA must submit to the DOE RR team leader their authorization to commence the DOE RR.
 - (7) Commencement of DOE RR.
 - (a) Upon receipt of the SAA authorization to commence the RR, the RR Team will initiate the RR, in accordance with the approved IP.
 - (b) The DOE RR will be executed in accordance with the approved DOE IP.

(Note: DOE-HDBK-3012, *Guide to Good Practices for Operational Readiness Reviews, Team Leader's Guide*, provides information useful to team leaders in preparing for and conducting RRs).
 - (8) DOE RR Final Report. The final report must be prepared and approved by the team leader; concurred on by each team member; and each team member must approve the section for which they are responsible.
 - (a) The final report documents the results of the DOE RR and make a conclusion as to whether startup or restart of the nuclear facility, activity, or operation can proceed safely. The DOE RR final report must state whether the contractor has established the following:
 - 1 An agreed-upon set of requirements to govern safe operations of the facility, activity, or operation has been formalized with DOE through the contract or other enforceable mechanism;

- [illegible]

- (2) DOE records disposition authority (Standard Form 115, *Request for Records Disposition Authority*), as approved by NARA.

Consult the cognizant Field Element Records Officer for guidance.

- f. Implementation. Compliance of the requirements within this Order, including the Attachments, must be complete within one (1) year of the issuance date of the subsequent revision to DOE-STD-3006-2010, *Planning and Conducting Readiness Reviews*, unless a different schedule is approved by the PSO/CSO with concurrence of the CTA.

5. RESPONSIBILITIES.

a. DOE Headquarters Line Management.

- (1) DOE Headquarters Line Management must oversee DOE field methods for verifying readiness to startup and restart nuclear facilities, operations, or activities in accordance with DOE O 226.1, *Implementation of Department of Energy Oversight Policy*, current version.
- (2) Exercise delegation of authority and document all delegations of authority made under the provisions granted by this Order.

b. DOE Field Element Management.

- (1) DOE Field Element Management must review and approve Contractor procedures for implementing the requirements of the CRD.
- (2) DOE Field Element Management must ensure that the Contractor properly implements the requirements of the CRD in this Order. Establish procedures as necessary to manage the verification of readiness to startup or restart nuclear facilities, operations, or activities in accordance with the requirements of this Order.
- (3) Execute delegation of authority and document all delegations of authority delegated in accordance with DOE O 450.2, *Integrated Safety Management, Appendix A, Delegations of Authority to Perform Safety Management Functions.*

c. Office of Environment, Health, Safety and Security.

- (1) Review and comment, as requested, on the procedures developed by PSO/CSO, field element offices, and contractors for verifying readiness to start up or restart nuclear facilities, activities, or operations, and provide the results of these reviews to PSO/CSOs for information.
- (2) Review and comment, as requested, on SNRs, contractor and DOE POAs, IPs, and RR final reports for verifying readiness to startup or restart

nuclear facilities, activities, or operations, and provide the results of these reviews to PSO/CSOs for information.

- d. Office of Enterprise Assessments. In coordination with the PSO/CSO, performs independent reviews of startup and restart activities as appropriate and provide results of these reviews to PSO/CSOs for information.
6. INVOKED TECHNICAL STANDARDS. This Order does not invoke any DOE technical standards or industry standards as required methods. Any technical standard or industry standard that is mentioned in or referenced by this Order is not invoked by this Order. Note: DOE O 251.1, current version, provides a definition for “invoked technical standard.”
7. REFERENCES.
 - a. Title 10 CFR Part 830, *Nuclear Safety Management*.
 - b. 10 CFR Part 835, *Occupational Radiation Protection*
 - c. 10 CFR Part 851, *Worker Safety and Health Program*.
 - d. 49 CFR, Part 173, Subpart I, Class 7 (Radioactive Materials)
 - e. DOE O 151.1, *Comprehensive Emergency Management System*, current version.
 - f. DOE O 226.1, *Implementation of Department of Energy Oversight Policy*, current version.
 - g. DOE O 243.1, *Records Management Program*, current version.
 - h. DOE O 251.1, *Departmental Directives Program*, current version.
 - i. DOE O 420.1, *Facility Safety*, current version.
 - j. DOE O 422.1, *Conduct of Operations*, current version.
 - k. DOE O 433.1, *Maintenance Management Program for DOE Nuclear Facilities*, current version.
 - l. DOE O 450.2, *Integrated Safety Management*, current version
 - m. DOE O 460.1, *Hazardous Materials Packaging and Transportation Safety*, current version.
 - n. DOE-STD-1027-2018 Chg Notice 1, *Hazard Categorization of DOE Nuclear Facilities*.
 - o. DOE-STD-1073-2016, *Configuration Management*.

- p. DOE-STD-1189-2016, *Integration of Safety into the Design Process*.
 - q. DOE-STD-3006-2010, *Planning and Conducting Readiness Reviews*.
 - r. DOE-STD-3007-2007, *Guidelines for Preparing Criticality Safety Evaluations at Department of Energy Non-Reactor Nuclear Facilities*.
 - s. DOE-HDBK-3012-2015, *Guide to Good Practices for Operational Readiness Reviews, Team Leader's Guide*.
8. DEFINITIONS. See Attachment 6.
9. CONTACT. Questions concerning this Order should be referred to the Director, Office of Nuclear Safety Policy and Assistance, at 301-903-3331.

BY ORDER OF THE SECRETARY OF ENERGY:



DAVID M. TURK
Deputy Secretary

ATTACHMENT 1
CONTRACTOR REQUIREMENTS DOCUMENT
DOE O 425.1E, *VERIFICATION OF READINESS TO STARTUP OR RESTART NUCLEAR FACILITIES*

In addition to the requirements set forth in this CRD, contractors are responsible for complying with Attachments 3, 4, and 5 this Order., referenced in and made a part of this CRD, which provide program requirements and/or information applicable to contracts in which this CRD is inserted.

1. Department of Energy (DOE), including the National Nuclear Security Administration (NNSA), Contractor Responsibilities. This Contractor Requirements Document (CRD) applies to all nuclear facilities, activities, and operations classified as Hazard Categories 1, 2, or 3 as defined in 10 CFR Part 830. Regardless of the performer of the work, the contractor is responsible for complying with the requirements of this Contractor Requirements Document (CRD) and flowing down CRD requirements to subcontractors at any tier to the extent necessary to ensure contractor compliance.
2. Contractor Requirements. Contractor Line Management must develop procedures to define the processes that will be used to implement the responsibilities of this CRD. These procedures must be submitted to DOE Field Element Management for concurrence.

DOE Standard (STD)-3006-2010, *Planning and Conducting Readiness Reviews*, provides guidance on approaches and methods approved as acceptable for implementing the requirements of this Order. Other approaches and methods may be used, provided they are documented and approved by DOE Line Management as being in accordance with the requirements of this Order.

The Contractor must not develop RR processes similar to RRs that exempt facilities, activities, or operations from following the RR process described in this Order.

- a. RR Process. The RR process must, in all cases, demonstrate there is a reasonable assurance for adequate protection of workers, the public, and the environment from adverse consequences from the start (or restart) of a HC 1, 2, or 3 nuclear facility, activity, or operation. The readiness process is described under Attachment 2, *Readiness Review Process Flow Chart*, and Attachment 6, *Definitions*. For a RR the contractor must prepare: a startup notification report, a plan of action, an implementation plan, a readiness to proceed memoranda, and a final report.
- b. Startup Notification Report (SNR). Contractor Line Management must evaluate and formally document, within the SNR, the need to perform a RR. Contractor and DOE RRs must not commence until the SAA has approved the SNR. Every startup or restart determined to require a RR is included in the SNR. Contractor procedures must address the contents of an SNR, the frequency of SNR submittals, and the process used to review and approve SNRs:

- (1) Minimal Contents of a SNR. The SNR must include, at a minimum:
 - (a) A brief description of the facility, activity, or operation (including the facility nuclear Hazard Categorization) that is to be started or restarted.
 - (b) A narrative that justifies the RR Determination Criteria (see Attachment 3) that was used to determine that a RR is needed:
 - 1 reason for non-operation (e.g., maintenance or modification outage, no program work, new facility, shutdown for safety concerns, etc.); and
 - 2 the approximate date operations were last conducted (for restarts) and the projected date for the startup, or restart.
 - (c) A narrative that justifies the proposed SAA (reference Attachment 3, *Startup Notification Report (SNR)*, *Startup Authorization Authority (SAA)*, and *Readiness Review (RR) Determination Criteria*).
 - (d) The projected schedule for the proposed RR (date for the submittal of the associated Plan of Action (POA), RR, etc.).
 - (e) Under limited circumstances the Contractor and DOE RRs may need to be performed in parallel. Circumstances where parallel reviews are not permitted are noted under Attachment 3, Table 1, *SAA and RR Determination Criteria*. If this is necessary, the SNR must describe and justify why the Contractor and DOE RRs should not be executed in series and describe how they will be performed independently of one another.
- (2) Frequency of SNR Submittals:
 - (a) SNRs must be submitted to DOE semi-annually (for review and approval), or on a periodicity as defined by the PSO/CSO, or on a frequency greater than semi-annual (e.g. quarterly) at the direction of the field element manager (or designee).
 - (b) SNRs must project at least one year; must include updates from previously approved SNRs; and any new proposed restart or startups.
 - (c) SNRs that contain informational changes (editorial, minor edits, date changes) from the previously approved SNR do not require DOE field element management reapproval.
 - (d) The SNR must include all startup or restart activities.

c. Contractor Plan of Action (POA) Content and Approval.

(1) Contractor POA Content. Contractor Line Management must develop a Contractor POA. A graded approach must be used in developing the scope of the POA, exclusion of any CRs must be documented and justified within the Contractor's POA. The level of detail should be commensurate with the complexity of the startup or restart. Contents of the Contractor POA must include:

- (a) The scope and purpose that addresses all Attachment 4, *Core Requirements (CRs)*. Exclusion of any CRs must be documented and justified within the POA.
- (b) Prerequisites, as defined in Attachment 6, must be completed prior to the start of the RR.
- (c) A description of the physical and administrative boundaries of the RR.
- (d) A description of the structures, systems, and components (SSCs) covered by the RR.
- (e) A description of individual processes, and programs to be reviewed.
- (f) The proposed Contractor RR team leader.

(2) Contractor POA Approval.

- (a) Contractor Line Management must forward the POA to DOE Line Management.
- (b) The Contractor POA must be reviewed and approved by the SAA prior to the start of the review.

d. Contractor RR Team Composition. The Contractor RR team leader must select the RR team members. RR Team Leader and Team Members must not be assigned to assess facilities, operations, or activities for which they have direct responsibilities. Team Leader and Members qualifications must be documented and shall address the following requirements:

- (1) Technical knowledge of the area assigned for evaluation, including experience working in the technical area.
- (2) Knowledge of the performance-based assessment process and methods.
- (3) Knowledge of the facility, activity, or operations-specific information.

Note: DOE-HDBK-3012-2015, *Team Leader's Good Practices for Readiness Reviews*, provides information useful to team leaders in preparing for and conducting RRs.

e. IP Development and Approval.

- (1) IP Development. The RR Team must develop the IP that includes the CRAD used to execute the RR. The scope of the IP is bounded by the approved POA.
- (2) IP Review and Approval.
 - (a) The IP must be provided to the Contractor Line Management.
 - (b) Contractor Line Management must forward the IP to the DOE Line Management.
 - (c) The CRR Team Leader must approve the IP, prior to starting the RR.
- (3) Prior to starting the Contractor RR:
 - (a) Contractor Line Management has received a Readiness to Proceed Memorandum that:
 - 1 Certifies that the facility, activity, or operation is ready for startup or restart.
 - 2 The Contractor POA prerequisites have been met or compensatory measures have been documented and approved.
 - 3 The contractor CAP has been approved and addresses the pre/post start findings and any compensatory measures with a well-defined schedule for closure.
 - 4 The contractor's preparations for startup or restart have been completed, with the exception of a manageable list of open prestart issues. The prestart issues must have a well-defined schedule for closure to allow the CRR Team to review the closure process.
 - (b) Specific events significant to the startup and restart process that occur prior to the formal commencement of the RR (e.g., site emergency response drills) may be reviewed by the RR team at the time they are conducted.
 - (c) For parallel reviews, the Readiness to Proceed Memorandum must also be submitted to the DOE SAA.

- (4) Contractor Line Management directs the CRR Team to commence the Contractor RR. For parallel reviews, the DOE SAA must be notified simultaneously of this direction.
- (5) CRR Team Leader will conduct the CRR as described by the approved Contractor IP.
- (6) CRR Final Report. The final report must be prepared and approved by the team leader; concurred by each team member; and each team member must approve the section for which they are responsible.
 - (a) The final report documents the results of the CRR and makes a conclusion as to whether startup or restart of the nuclear facility, activity, or operation can proceed safely. The CRR final report must state whether the contractor has established the following:
 - 1 An agreed-upon set of requirements to govern safe operations of the facility, activity, or operation has been formalized with DOE through the contract or other enforceable mechanism;
 - 2 That these requirements have been appropriately implemented in the facility, activity or operation, or appropriate compensatory measures, formally approved by DOE, are in place during the period prior to full implementation; and that,
 - 3 In the opinion of the CRR team, adequate protection of the public health and safety, of worker safety, and the environment will be maintained.
 - (b) If needed, the final report will include a Minority Opinion section that will give a means for team members to convey diverging opinions to the SAA.
 - (c) Any lessons learned during the CRR must be documented in a lessons learned section of the final report.
- (7) Final Report Submittal. The final report must be submitted to the Contractor Line Management.
- (8) Closure of Findings. Contractor Line Management closure of Contractor RR findings must be consistent with the Issues Management Process in DOE O 226.1, *Implementation of Department of Energy Oversight Policy*, current version and must include:
 - (a) A causal analysis.

- (b) Corrective action plan that addresses the causes and any programmatic deficiencies.
 - (c) Closure package used to address all corrective actions (including evidence of action completion).
- (9) Contractor Line Management RTP Memorandum to DOE Line Management.¹
- (a) A RTP Memorandum must be submitted to DOE Line Management from Contractor Line Management. The RTP must certify that the facility, activity, or operation is ready for startup or restart, indicating that readiness to startup or restart nuclear operations has been achieved.
 - (b) The RTP must include the:
 - 1 CRR Final Report
 - 2 Contractor CAP(s)
 - 3 Contractor Closure Package(s)
 - 4 Manageable list of any open pre-start issues that have compensatory measures and a well-defined schedule for closures.
 - 5 Evidence that all CPOA prerequisites have been addressed.
- (10) Contractor Line Management Closure of RR Findings. Contractor Line Management must satisfactorily:
- (a) Obtain DOE approval of corrective action plans for DOE RR findings.
 - (b) Resolve all prestart findings from the DOE and Contractor RRs prior to startup or restart of the facility, activity, or operation.
 - (c) Ensure compensatory measures (if needed) and approved corrective action plans (DOE and Contractor) are in place to address any open pre-start and the post-start findings.
 - (d) Submit corrective action closure packages that include a brief description of actual corrective actions taken and the rationale concluding that closure has been achieved.

¹ If the SAA resides with the Contractor, then the RTP will be transmitted to Contractor Line Management instead of DOE Line Management.

- (11) The SAA may approve startup or restart only after prestart findings are resolved, compensatory measures (if needed) are in place; and approved corrective action plans (DOE and Contractor) are in place to address any open pre-start and the post-start findings.

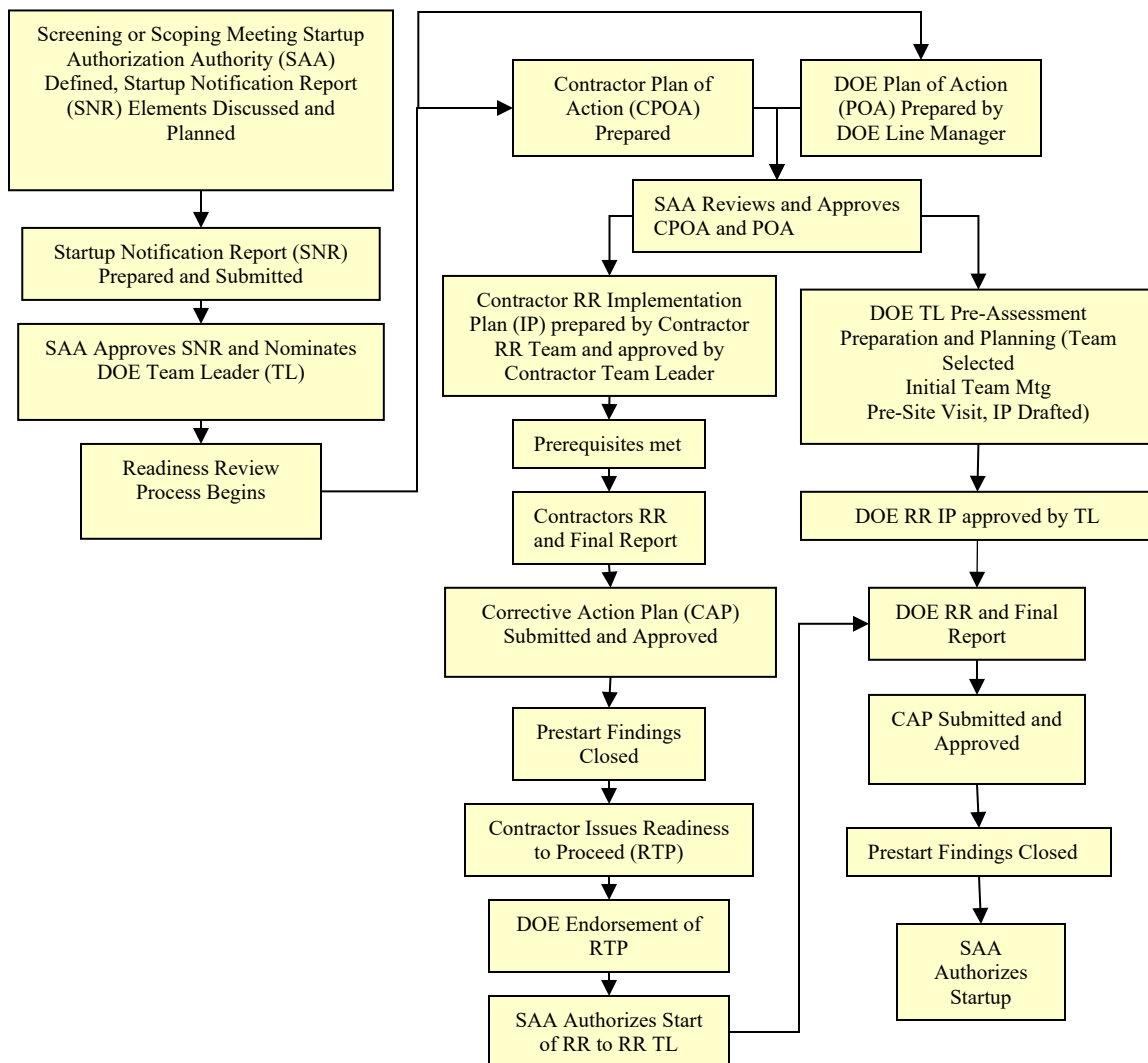
f. Records Management Program. Requirements for maintenance and disposition of Federal records, such as those pertaining to RRs, are provided under the general guidance of DOE O 243.1, *Records Management Program*, current version. The disposition, including destruction, of Federal records must be in accordance with:

- (1) The General Records Schedules, as published by the National Archives and Records Administration (NARA), or
- (2) DOE records disposition authority (Standard Form 115, Request for Records Disposition Authority), as approved by NARA.

Consult the cognizant Field Element Office Records Officer for guidance.

ATTACHMENT 2 READINESS REVIEW FLOWCHART

This Attachment provides information associated with this Order as well as information applicable to contracts in which the associated Attachment 1, CRD is inserted. The flow chart describes the RR process as it relates to a Contractor and DOE RR. There may be circumstances where a CRR is performed without a DOE RR for occasions not covered by the RR determination criteria of Attachment 3, *Startup Notification Report (SNR)*, *Startup Authorization Authority (SAA)*, and *Readiness Review (RR) Determination Criteria*.



Note: Parallel reviews will deviate from this flow chart and follow local procedures accordingly.

ATTACHMENT 3
STARTUP NOTIFICATION REPORT (SNR), STARTUP AUTHORIZATION
AUTHORITY (SAA), AND READINESS REVIEW (RR) DETERMINATION CRITERIA

This Attachment provides information and/or requirements associated with this Order as well as information and/or requirements applicable to contracts in which the associated Attachment 1, CRD is inserted.

1. For nuclear facility, activity, or operation startups or restarts the SAA must be determined using the criteria in Attachment 3, Table 1, *SAA and RR Determination Criteria*. Determining the level of authority (SAA) must be commensurate with RR Criteria.
2. DOE line management must ensure that a properly scoped Readiness Review is planned and conducted to verify readiness for the restart of Hazard Category 1, 2, and 3 nuclear facilities, activities, or operations, unless both of the following conditions are met:
 - a. The restart is a resumption of routine operations after a short interruption (such as maintenance activities governed by existing maintenance procedures and processes) as defined in local procedures; and
 - b. The restart is conducted using contractor approved operating procedures that provide specific direction for operating systems and equipment during normal conditions.
3. Justification for the SAA and RR determination must be documented in writing and referenced in the SNR with a copy sent to the PSO/CSO and CTA. If a RR is not to be performed, the contractor's standard operating procedures for startup or restart will be used.
4. If any of the following conditions occur a RR must be conducted in accordance with this Order. Additional criteria are included in Attachment 3, Table 1 *SAA and RR Determination Criteria*:
 - a. Initial startup of a newly constructed nuclear facility. For the purpose of this criterion, a newly constructed nuclear facility refers to a new facility (not operation or activity) with a new Safety Basis (SB) Documentation (new Safety Evaluation Report (SER), Documented Safety Analysis (DSA), and Technical Safety Requirements (TSRs)).
 - b. Initial startup after conversion of an existing facility to a new nuclear mission with a new Safety Basis Documentation (new SER, DSA and TSRs).
 - c. Restart of nuclear facility, activity, or operation that has upgraded its hazard categorization to HC 1, 2, or 3.
 - d. Restart after a DOE management official directs the shutdown of a nuclear facility, activity, or operation for safety reasons.

- e. Restart after an extended shutdown for a HC 1, 2, or 3 nuclear facility, activity, or operation. Extended shutdown for a HC 1, 2, or 3 nuclear facility, activity, and operation is defined as twelve months. An extended shutdown may be adjusted up to a maximum of eighteen months with adequate justification and PSO/CSO approval and CTA concurrence. Additional guidance is provided within DOE-STD-3006-2010 for this justification.
- f. Restart of a HC 1, 2, or 3 nuclear facility, activity, or operation after substantial modification (determination of “substantial modifications” is made per Attachment 5).
- g. Initial startup of a new HC 1, 2, or 3 activity or operation after substantial modification (determination of “substantial modifications” is made per Attachment 5) within a HC 1, 2, or 3 nuclear facility.
- h. Startup or Restart of facility, activity, or operation as directed by DOE Line Management.
- i. For all other cases as approved in the SNR.

Table 1: SAA and RR Determination Criteria

Activity	Startup Authorization Authority		
	Hazard Category 1	Hazard Category 2	Hazard Category 3
Initial startup of a newly constructed nuclear facility. ¹ For the purpose of this criterion, a newly constructed nuclear facility refers to a new facility (not operation or activity) with a new Safety Basis Documentation (new SER, DSA, and TSRs).	PSO/CSO	PSO/CSO	PSO/CSO or designee
Initial startup after conversion of an existing facility to a new nuclear mission with a new Safety Basis Documentation (new SER, DSA and TSRs). ^{1, 2}	PSO/CSO	PSO/CSO	PSO/CSO or Designee
Restart of nuclear facility, activity, or operation that has upgraded its hazard category to Hazard Category 1, or 2, or 3. ¹	PSO/CSO	PSO/CSO or Designee	PSO/CSO or Designee

Activity	Startup Authorization Authority		
	Hazard Category 1	Hazard Category 2	Hazard Category 3
Restart after a DOE management official directs the shutdown of a nuclear facility, activity, or operation for safety reasons. ¹	DOE official with level commensurate with directing shutdown official, unless higher level designated by PSO/CSO	DOE official with level commensurate with directing shutdown official, unless higher level designated by PSO/CSO	DOE official with level commensurate with directing shutdown official, unless higher level designated by PSO/CSO
Restart after extended shutdown for a Hazard Category 1,2, or 3 nuclear facility, activity, or operation. ^{1,3, 5}	>12 months PSO/CSO	>12 months PSO/CSO or designee	>12 months PSO/CSO or Designee – may be further delegated to a senior Contractor official if designated in the SNR
Restart of a Hazard Category 1, 2, or 3 nuclear facility, activity, or operation after substantial modification. ^{4, 5}	PSO/CSO or Designee	PSO/CSO or Designee	PSO/CSO or Designee - may be further delegated to a senior Contractor official if designated in the SNR
Initial startup of a new Hazard Category 1, 2, or 3 activity or operation after substantial modification within a Hazard Category 1, 2, or 3 facility. ^{4, 5}	DSA Approval Authority or official of commensurate level	DSA Approval Authority or official of commensurate level	DSA Approval Authority or official of commensurate level
Startup or Restart of facility, activity, or operation as directed by DOE Line Management. ¹	DOE official with level commensurate with directing official	DOE official with level commensurate with directing official	DOE official with level commensurate with directing official

Activity	Startup Authorization Authority		
	Hazard Category 1	Hazard Category 2	Hazard Category 3
For all other cases as approved in the SNR:	PSO/CSO or Designee – may be further delegated to a senior Contractor official if designated in the SNR	PSO/CSO or Designee - may be further delegated to a senior Contractor official if designated in the SNR	PSO/CSO or Designee - may be further delegated to a senior Contractor official if designated in the SNR

Note 1: Parallel reviews are not permitted.

Note 2: New includes “New Construction.”

Note 3: Extended shutdown for a HC 1, 2, or 3 nuclear facility, activity, and operation is defined as twelve months. An extended shutdown may be adjusted up to a maximum of eighteen months with adequate justification and PSO/CSO approval and CTA concurrence.

Note 4: Determination of “substantial modifications” is made per Attachment 5 of this Order.

Note 5: Based on the complexity and risk of the Hazard Category 3 activity or operation, the SAA may waive the requirement for a DOE RR.

ATTACHMENT 4: CORE REQUIREMENTS (CRs)

This Attachment provides information and/or requirements applicable to contracts in which the Attachment 1, CRD is inserted. This Attachment defines the Core Requirements (CRs) used in this Order.

1. Core requirements verify the readiness of personnel, procedures, programs, and equipment within the scope of the RR to safely startup or restart a nuclear facility, activity, or operation. The CRs are aligned according to specific Functional Areas (FAs) or Safety Management Programs (SMPs) that are developed and implemented across DOE sites to ensure activities are performed in a manner that adequately protects workers, the public, and the environment. Cross-cutting requirements are applicable to each of these programs and need to be evaluated to ensure their success.
 - a. Each CR listed as applicable in the POA must be evaluated against the following cross-cutting requirements (cross-cutting requirements may be excluded and documented in the POA with appropriate justifications):
 - (1) FA or SMP documents have been approved by DOE, if required by DOE Order, CFRs, or direction.
 - (2) FA or SMP implementing procedures have been effectively implemented in support of the facility and clearly define roles, responsibilities, and reporting relationships.
 - (3) A sufficient number of qualified personnel are available to effectively implement the FA or SMP in support of the facility.
 - (4) Adequate facilities and equipment are available to ensure that the FA or SMP can be performed adequately for safe facility operation.
 - (5) Line Management and Personnel level of knowledge is adequate based on examination results, direct observation during performance demonstrations, and interviews.
 - (6) Line Management and Personnel exhibit an awareness of public and worker safety and health and environmental protection requirements and, through their actions, demonstrate a high-priority commitment to comply with these requirements.
 - (7) Periodic assessments (independent and/or self) of FA or SMPs are performed to verify continued robust performance. Issues (e.g., findings, deficiencies, observations, or recommendations) from assessments, both internal and external are effectively resolved.
 - (8) The scope, planning and execution of the contractor RR including corrective action development and implementation, was adequate to verify

the readiness of hardware, personnel, and programs to support nuclear operations (DOE only).

b. The CRs are as follows:

- (1) Conduct of Operations, Procedures, and Work Control. A conduct of operations program meets the requirements of DOE O 422.1, *Conduct of Operations*. The formality and discipline of operations are adequate to conduct work safely, and programs are in place to maintain this formality and discipline for site/facility processes in accordance with the approved Conduct of Operations Implementation Matrix.

Procedures are approved and in place for operating the facility and systems. The procedures reflect all modifications that have been made to the facility systems. Only the most current revision to each procedure is in use.

- (2) Contractor Assurance. An effective Contractor Assurance System (CAS) meets the requirements of DOE O 226.1B, *Implementation of Department of Energy Oversight Policy*. A CAS has been established to identify, evaluate, and resolve deficiencies and recommendations made by Contractor Line Management and independent contractor audit and assessment groups. The process also provides for resolution of issues and recommendations by external official review teams and audit organizations.

- (3) Criticality Safety. A Criticality Safety Program (CSP) that meets the requirements of DOE O 420.1, *Facility Safety*, including DOE approval of the CSP document, have been developed, implemented, and maintained.

Criticality safety evaluations conducted in accordance with DOE-STD-3007-2017, *Guidelines for Preparing Criticality Safety Evaluations at Department of Energy Non-Reactor Nuclear Facilities*, or by other documented methods approved by DOE, must show that entire processes involving fissionable materials will remain subcritical under normal and credible abnormal conditions, including those initiated by design basis events. Implementation of the Criticality Safety Evaluation credited controls is reviewed annually for all operations.

Facilities that conduct operations using fissionable material in a form that could inadvertently accumulate in significant quantities must include procedures for detecting and characterizing accumulations.

- (4) Emergency Planning and Preparedness, and Operational Drills. A routine operations drill program and an emergency management drill and exercise program have been established and implemented. Records for each program are adequate to demonstrate the effectiveness of completed drills and exercises as well as planning for future drills and exercises.

- (5) Conduct of Engineering. Structures, systems, and components (SSCs) required for safe and compliant operations have been identified, and programs are in place to ensure adequate maintenance, operations, and modifications. These programs include requirements for demonstrating compliance with the design requirements, verifying operability of SSCs, availability of replacement and spare parts, and configuration management of documents and equipment.
- (a) The facility has implemented a maintenance program compliant with DOE O 433.1, *Maintenance Management Program* for DOE Nuclear Facilities. A program is in place to confirm and periodically assess the condition and operability of SSCs. This includes examinations of records of tests and calibration of these systems. A documented evaluation of maintenance items open before the declaration of readiness (if any) has been conducted to determine if the failure to complete the maintenance item could adversely influence operations.
 - (b) Provisions have been established for storage, issuance, and availability of an adequate and readily available supply of tools and replacement/repair parts.
 - (c) Equipment being started up or restarted meets the requirements of DOE O 420.1, *Facility Safety*, for the safety functions and process controls credited in the safety documentation, the design has been analyzed to demonstrate compliance with the design inputs, and design outputs provide specific limits, controls, and technical directions for structures, systems and components to the constructor, operator, or modifier.
 - (d) A configuration management program in accordance with DOE-STD-1073, *Configuration Management* is defined and implemented to control facility modifications with emphasis on SSCs. Authorized modifications within the scope of the RR have been completed and fully closed or evaluated and determined not to affect the ability to safely startup or restart nuclear operations.
- (6) Fire Protection. A documented fire protection program in accordance with DOE O 420.1, *Facility Safety*, that includes the elements and requirements identified in the Order for design, operations, emergency response, fire analysis and assessments, wildland fire, and specific fire protection program criteria has been developed, implemented, and maintained by the contractor.
- (7) Nuclear Safety. Facility/process safety basis (SB) documentation (Documented Safety Analysis (DSA)/Hazard Analysis Report (HAR) and Technical Safety Requirements (TSRs)) characterizes the hazards/risks associated with the facility/process; identifies preventive and mitigating

measures to adequately protect workers, the public, and the environment from those hazards/risks; describes the safety envelope of the facility/process; is approved and controls implemented as required by 10 CFR Part 830, Subpart B, *Nuclear Safety Management*.

A DOE approved Unreviewed Safety Question procedure has been effectively implemented.

Offsite and onsite shipments of hazardous and/or radioactive materials meets applicable requirements as cited in SB documents.

- (8) Personnel and Management Training and Qualifications. The selection, training, and qualification programs for personnel performing work at or managing the facility, activity or operation that is starting or restarting have been established, documented, and effectively implemented, and meets the requirements of DOE O 426.2, *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*. Training and qualification requirements for each position encompass the range of assigned duties and activities.

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

- (9) Quality Assurance. A contractor Quality Assurance Program (QAP) meeting the requirements of 10 CFR Part 830, *Nuclear Safety Management*, is in place and has been approved by DOE. The Quality Assurance (QA) criteria described in the QAP have been implemented via the contractor's QA program and integrated with other SMPs. If applicable, the contractor has submitted to DOE their basis of the graded approach used to implement nuclear safety requirements.
- (10) Radiation Protection. A Radiation Protection Program compliant with 10 CFR Part 835, *Occupational Radiation Protection* regulations has been documented, approved by DOE, and implemented.
- (11) Startup/Restart Startup Plan. An adequate startup plan 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, compensatory measures required during the approach to full operations are described, 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.
- (12) Safety and Health. Other SMPs identified in the SB or FAs deemed important to the safety and protection of workers, the public, and the environment are documented, implemented, and maintained. This may

include, but is not limited to, areas such as Environmental Protection; Safeguards and Security; Waste Management; and Transportation and Packaging.

- (13) Federal Qualifications (DOE Only). The personnel at the DOE Field Element assigned responsibilities for providing direction and guidance to the contractor and those individuals assigned oversight responsibilities (including facility representatives) within the scope of the RR, possess appropriate qualification, knowledge and competence to perform those functions.
- (14) DOE Management System (DOE Only). DOE Field Element management systems for oversight of facility operations, such as oversight and assessment programs, facility representatives, technical qualification program, corrective action management system, and quality assurance programs, are adequate.

Note: The performance of a parallel review does not eliminate the requirement for DOE to evaluate CRs 13 and 14.

ATTACHMENT 5

SUBSTANTIAL MODIFICATION DETERMINATION

This Attachment provides information and/or requirements associated with this Order as well as information and/or requirements applicable to contracts in which the associated Attachment 1, CRD is inserted.

1. Contractor procedures must provide a process for determining when a modification is substantial based on the impact of the changes to the Safety Basis and the extent and complexity of changes, whether or not these changes resulted in a positive Unreviewed Safety Question.
2. A change may be substantial, whether or not it meets the Major Modification definition within DOE-STD-1189-2016, *Integration of Safety into the Design Process*.
3. A change or modification that meets one or more of the following criteria should be evaluated to determine whether it is a substantial modification to a facility, activity, or operation:
 - a. The change alters the footprint of an existing HC 1, 2, or 3 facility with the potential to adversely impact one or more credited safety functions of the existing facility.
 - b. The change introduces a new hazard not previously analyzed that requires new safety class/significant control(s) or changes to existing safety class or safety significant control(s).
 - c. The change requires the expansion of work into an existing area of a facility that is not currently within the Safety Basis for that facility.
 - d. The change requires a structural addition to an existing building or structure that is designed to house hazardous activities or operations and that requires a new or revised Safety Basis.
 - e. The change involves environmental remediation activities in a new geographic area, structure, or building, provided that the work can reasonably be expected to encounter quantities of nuclear materials that would require designation as a HC 2 nuclear facility per DOE-STD-1027-2018 Chg Notice 1, *Hazard Categorization of DOE Nuclear Facilities*.
 - f. Requires deactivation, decommissioning, or demolition of a facility or activity within a facility.

ATTACHMENT 6: DEFINITIONS

This Attachment provides information applicable to contracts in which the Attachment 1, CRD is inserted. This Attachment defines the terms used in and pertinent to this Order. Additional definitions can be found in DOE-STD-3006-2010, *Planning and Conducting Readiness Reviews*.

1. Core Requirement (CR). A fundamental area or topic evaluated during a RR. CRs verify the readiness of personnel, procedures, programs, and equipment within the scope of the RR to safely startup or restart a nuclear operations, facility, or activity. The CRs are aligned according to specific Functional Areas (FAs)/Safety Management Programs (SMPs). See Attachment 4 for a detailed description of CRs.
2. Criteria and Review Approach Document (CRAD). This document lists the criteria that the technical experts (team members) plan to use to evaluate and describes the objective evidence that is gathered to determine whether the criteria have been met. The review approach consists of evaluating a sampling of documents, hardware/systems, people, and performance. CRADs are a key component of the Implementation Plan (IP) for the RR.
3. Line Management. Refers the unbroken chain of responsibility that extends from the Secretary of Energy to the Deputy Secretary, to the Secretarial Officers who set program policy and plans and develop assigned programs, to the program and Field Element Managers, and to the contractors and subcontractors who are responsible for execution of these programs.
4. Finding. Nonconformance with a stated requirement that represents either: (1) a systematic failure to establish or implement an adequate program or control; or (2) a significant failure that could result in unacceptable impact on the safety of personnel, the facility, the general public, or the environment during nuclear operations. Findings are categorized as either pre-start or post-start (DOE-STD-3006-2010, *Planning and Conducting Readiness Reviews* includes pre/post start finding screening criteria):
 - a. Pre-start finding. A finding that reflects a programmatic or implementation weakness that is of concern and requires corrective action to ensure operations are conducted safely when started.
 - b. Post-start finding. A finding that requires corrective action to mitigate longer-term concerns or programmatic deterioration.
5. Implementation Plan (IP). The formal review plan that describes the execution of the RR. This implements the scope and direction approved in the POA; defines the depth of the review by providing the performance-based CRADs that are used to execute the RR.
6. New Nuclear Facility. This is a reactor or a nonreactor nuclear facility where an activity is initiated for or on behalf of DOE that includes any related area, structure, facility, or process to the extent necessary to ensure proper implementation of the requirements established in 10 CFR 830. The term refers to an entire new facility (or conversion of an existing non-nuclear facility to a nuclear mission) devoted to the operation and maintenance of a new program activity, which is generally covered by a unique DSA.

7. Nuclear Operations. As used in this Order, Nuclear Operations means nuclear facilities, operations, and/or activities that fall within the scope of this Order.
8. Parallel Review. A Parallel Review is an optional, collaborative effort that is intended to reduce the time for restart without compromising safety or the independence of the Contractor and DOE RRs. A parallel review allows both entities to review information and activities concurrently, rather than sequentially. If utilized, the parallel review scope would be described in the SNR and have a DOE official as the SAA. Circumstances where parallel reviews are not permitted are noted under Attachment 3, Table 1, SAA and RR Determination Criteria.
9. Plan of Action (POA). The document prepared by Line Management that describes the scope of the RR, the prerequisites to be met to begin the RR, and the proposed Team Leader for the RR. The contractor and DOE both prepare POAs for their respective RRs. Both contractor and DOE POAs are submitted to the Startup Authorization Authority (SAA) for approval.
10. Prerequisites. A set of specific, measurable actions or conditions, that are identified for each of the applicable CRs that the POA has included as part of the scope of the RR. The prerequisites when completed provide assurance that readiness has been achieved for each applicable CR. The prerequisites are to be completed prior to the start of the respective RR.
11. Program Work. Work in a reactor or non-reactor nuclear facility that is accomplished to further the goals of the facility mission or the program for which the facility is operated. Program work may include D&D or Environmental Restoration activities when that is the mission of the facility. Program work is not accomplished when an operational facility is shut down. Program work does not include work that would be required to maintain the facility in a safe shutdown condition, minimize radioactive material storage, or accomplish modifications and correct deficiencies required before program work can resume.
12. Readiness to Proceed (RTP) Memorandum. The formal document submitted to Contractor Line Management prior at the start of the CRR or submitted to the DOE Line Management prior to the start of the DOE RR, certifying and verifying that the facility, activity, or operation is prepared to start the RR. The RTP enclosures are presented in the CRD.
13. Restart. The resumption of program work. Restarts requiring an RR can occur in operating facilities if the activity or operation to be resumed meets RR requirements. A restart may be required even if the same program work is ongoing in another portion of the operating facility.
14. Scope. The overall magnitude of the RR, as defined by the physical breadth and depth of the facilities, activity, or operation to be started/restarted, the breadth of CRs selected, and the depth of evaluation of these CRs during the RR.

15. Shutdown. (1) A situation in which a reactor is taken subcritical, either manually or automatically, to a safe shutdown condition; (2) a condition in which a nonreactor nuclear facility, operation or activity ceases; or (3) a condition in which a programmatic nuclear operation or activity ceases, but the structure containing the process may remain operational (i.e., not shut down). In a shutdown condition, a facility must still meet all applicable technical safety requirements and environmental, safety, and health requirements.
16. Startup Authorization Authority (SAA). The line manager who is designated in accordance with Attachment 3 of this Order to authorize the start of nuclear operations when all requirements of the Order have been met. The SAA may range from a senior contractor line manager to the Secretary of Energy. For each startup or restart, the SAA is designated in the SNR. DOE O 450.2, *Integrated Safety Management*, Appendix A, describes how designations are executed.
17. Startup Notification Report (SNR). A semi-annual report (or at a periodicity as designated by the PSO/CSO) by each responsible contractor to identify nuclear y startups and restarts scheduled in the next year. The report identifies the facility, activity, or operation and specifies whether a RR is required. The SNR also identifies the SAA and updates previously provided information.
18. Substantial Modification. Major changes to the facility, activity, or operation that impact the facility footprint, safety basis, or mission such that a RR is required. Attachment 5, *Substantial Modification Determination*, provides criteria to help determine if a “substantial modification” exists.