

Approved: 3-13-03

SUBJECT: STARTUP AND RESTART OF NUCLEAR FACILITIES

1. OBJECTIVE. To establish the requirements for the Department of Energy, including the National Nuclear Security Administration (NNSA), for startup of new nuclear facilities and for the restart of existing nuclear facilities that have been shut down. Nuclear facilities are activities or operations that involve radioactive and/or fissionable materials in such form or quantity that a nuclear hazard potentially exists to the employees or the general public. The requirements specify a readiness review process that must, in all cases, demonstrate that it is safe to start (or restart) the applicable facility. The facility must be started (or restarted) only after documented independent reviews of readiness have been conducted and the approvals specified in this Order have been received. The readiness reviews are not intended to be tools of line management to achieve readiness. Rather, the readiness reviews provide an independent confirmation of readiness to start or restart operations.
2. CANCELLATION. DOE O 425.1B, STARTUP AND RESTART OF NUCLEAR FACILITIES, dated 12-21-00. Cancellation of an Order does not, by itself, modify or otherwise affect any contractual obligation to comply with such an Order. Canceled Orders incorporated by reference in a contract remain in effect until the contract is modified to delete the reference to the requirements in the canceled Orders.
3. APPLICABILITY.
 - a. DOE Elements, including the NNSA. This Order is applicable to DOE, including the NNSA. Except for the exclusions in paragraph 3c, below, this Order applies to all nuclear facilities classified as hazard categories 1, 2, or 3, including National Nuclear Security Administration (NNSA) facilities.

Whenever “operations office” appears in this directive, it should be understood to mean “operations office or other office as explicitly stipulated by appropriate Lead Program Secretarial Office guidance.”
 - b. Contractors. The Contractor Requirements Document (CRD), Attachment 1, sets forth requirements to be applied to contractors awarded contracts for the operation and management of a DOE-owned or -leased facility, including NNSA facilities. Contractor compliance with the CRD is required to the extent set forth in a contract. Contractors must be directed to continue to comply with the requirements of Orders canceled by this Order until their contracts are modified to delete the reference to the requirements of the canceled Orders.

- c. Exclusions.
- (1) 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.
 - (2) Activities conducted under the authority of the Director, Naval Nuclear Propulsion Program, pursuant to Executive Order 12344, in force under Public Laws 98-525 and 106-65.
 - (3) Activities regulated by the Department of Transportation pursuant to 49 CFR 173.7(b).
4. REQUIREMENTS. For NNSA facilities, “NNSA line management” is applied wherever “DOE line management” or similar phrases are invoked in conjunction with a requirement or action. Direction and control of requirements pertinent to NNSA facilities must fall under cognizant NNSA management, organizations, and activities, consistent with the NNSA Act. DOE-STD-3006-00, *Planning and Conduct of Operational 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 justified, documented, and approved as being in accordance with the requirements of this Order by the authorization authority for startup or restart.
- a. General.
- (1) Operational Readiness Review. DOE line management must determine (and ensure that contractor management determines) if Operational Readiness Reviews are required for startup or restart of nuclear facilities using the requirements given below. DOE must conduct (and ensure that contractors conduct) an Operational Readiness Review in accordance with this Order when any of the following conditions occur:
 - (a) Initial startup of a new hazard category 1, 2, or 3 nuclear facility.
 - (b) Restart after a DOE management official directs the unplanned shutdown of a nuclear facility for safety or other appropriate reasons.
 - (c) Restart after an extended shutdown for hazard categories 1 and 2 nuclear facilities. [Extended shutdown for a hazard category 1 nuclear facility is 6 months. Extended shutdown for a hazard category 2 nuclear facility is 12 months.]
 - (d) Restart of hazard categories 1 and 2 nuclear facilities after substantial process, system, or facility modifications. [The restart authority must determine if the modifications are substantial based on the impact of

the changes on the safety basis and the extent and complexity of changes; this would not necessarily be determined by the Unreviewed Safety Question (USQ) process.]

- (e) Restart after a nuclear facility shutdown because of operations outside the safety basis.
 - (f) When deemed appropriate by DOE management officials, including restarts of hazard category 3 nuclear facilities.
- (2) Readiness Assessment. For restarts of nuclear facilities not requiring an Operational Readiness Review, as defined in this Order, DOE line management must evaluate (and ensure that contractor management evaluates) the need for performing a Readiness Assessment prior to restart. This includes the startup or restart of program work associated with operating facilities when the new or restarted program work does not require DOE approval of changes to facility limits or requirements as stated in Operational Safety Requirements/Technical Safety Requirements (OSRs/TSRs), Basis for Interim Operations/Safety Analysis Reports (BIO/SARs), or other equivalent authorization basis documents. When a Readiness Assessment is required, operations offices must develop procedures and ensure that the contractors use these procedures to gain operations office approval of the startup or restart of nuclear facilities. If a Readiness Assessment is not to be performed, the contractor's standard operating procedures for startup or restart will be used. Other requirements for Readiness Assessments are provided in paragraph 4c, below.
- (3) Authorization Authority. For nuclear facility startup or restart actions, the authorization authority for startup or restart approval must be determined by the following.
- (a) For initial startups of new hazard categories 1 and 2 nuclear facilities, the Secretary of Energy (or designee) must approve startup. For initial startups of new hazard category 3 nuclear facilities, the cognizant Secretarial Officer (or designee) must approve startup. If other DOE Orders require a higher level of startup authorization than this Order, the official described in this Order will recommend startup to the higher-level official.
 - (b) For shutdowns directed by a DOE management official for safety or other appropriate reasons, approval to restart must be granted by an official of a level commensurate with the official ordering the shutdown, unless a higher level is designated by the cognizant Secretarial Officer.

- (c) For extended shutdowns of hazard category 1 nuclear facilities, the cognizant Secretarial Officer must approve restart. For extended shutdowns of hazard category 2 nuclear facilities, the cognizant Secretarial Officer (or designee) must approve restart.
 - (d) For shutdowns because of substantial facility modifications of hazard category 1 nuclear facilities, the cognizant Secretarial Officer must approve restart. For such shutdowns of hazard category 2 nuclear facilities, the cognizant Secretarial Officer (or designee) must approve restart.
 - (e) For facility shutdowns due to operations outside the safety basis, the official approving restart must be commensurate with the approval authority for the safety basis. If the safety basis was approved by a Headquarters official, the cognizant Secretarial Officer (or designee) must approve restart. If the safety basis was approved by a field official, the operations office manager (or designee) must approve restart.
 - (f) For startups or restarts of nuclear facilities for which Operational Readiness Reviews were required because a DOE official deemed it appropriate, the official approving startup or restart must be of a level commensurate with the official directing the review. If a Headquarters official directed an Operational Readiness Review to be performed, the cognizant Secretarial Officer (or designee) must approve the startup or restart. If a field official directed an Operational Readiness Review, the operations office manager (or designee) must approve the startup or restart.
- (4) Startup Notification Report. DOE line management procedures must require the contractor to prepare Startup Notification Reports (SNRs). SNRs must be submitted at a periodicity specified by DOE (recommended to be quarterly). Each SNR must project ahead at least 1 year and update information from previous periods for startups that have not yet occurred and add information for each startup or restart that has been identified since the last report. The SNR is to be approved by DOE. The procedures should require the following elements:
- (a) Minimum information to be included in the SNR for each startup or restart should include –
 - 1 a brief description of the facility or program work;
 - 2 reason for non-operation (e.g., maintenance or modification outage, no program work, new facility, shutdown for safety concerns, etc.);

- 3 the approximate date operations were last conducted (for restarts) and the projected date for the startup;
 - 4 proposed type of readiness review;
 - 5 basis or justification for proposed type of readiness review;
 - 6 proposed authorization authority.
- (b) Each SNR should be reviewed and approved by DOE field office management. If the startup authority resides with the Program Secretarial Officer (PSO), the field office management should comment and make a recommendation regarding approval.
- (c) Each SNR, including the field office comments and actions, must be forwarded to the PSO, the Office of Corporate Safety Assurance, and the site Lead Program Secretarial Officer and/or cognizant Secretarial Officer, as appropriate.
- (d) Contractor readiness review action to start or restart operations should not commence until the DOE authorization authority has approved the proposed readiness review process.
- (e) Every startup or restart of a nuclear operation—other than routine resumption of operations after a short, planned interruption—should be included in the SNR. These startups, requiring review, should be started or restarted using an Operational Readiness Review or properly scoped Readiness Assessment, as appropriate. Other routine resumptions of operations can be conducted without a readiness review using normal contractor operating procedures for the facility or activity. Contractor routine procedures should not be developed for the purpose of avoiding a properly scoped Readiness Assessment.
- b. Requirements Applicable to Startups or Restarts of Nuclear Facilities Involving Operational Readiness Reviews. (These requirements are listed sequentially.)
- (1) Operational Readiness Review Documentation. For Operational Readiness Reviews, DOE line management must require contractors to prepare the following documents: startup/restart notification reports, plans of action, Operational Readiness Review implementation plans, and final reports. DOE line management must prepare its plans of action, and ensure the Operational Readiness Review team leaders prepare Operational Readiness Review implementation plans and final reports. The resolution of all findings from the Operational Readiness Reviews must be documented and maintained with the plans of action, implementation plans, and final reports.

- (2) Breadth of Operational Readiness Review. DOE line management must develop (and ensure the contractor develops) the breadth of the Operational Readiness Review and document it in each plan of action. A minimum set of core requirements, as defined in paragraph 4d, below, must be addressed when developing the breadth of the Operational Readiness Review. The plan of action may reference a timely, independent review that addressed the requirement in a technically satisfactory manner to justify not performing further evaluation of a core requirement or portion thereof. During the Operational Readiness Review, the breadth may be expanded by the Operational Readiness Review team, if appropriate.
- (3) Operational Readiness Review Plan of Action, Approval, and Content. The contractor and DOE Operational Readiness Review plans of action must be approved by the authorization authority defined in paragraphs 4a(3)(a) through 4a(3)(f). DOE line management must ensure the contractor's plan of action specifies the prerequisites for starting the responsible contractor's Operational Readiness Review. The prerequisites must address each minimum core requirement of paragraph 4d determined to be applicable when developing the scope of the Operational Readiness Review. The DOE plan of action must specify additional prerequisites, such as certification of readiness to oversee facility operations by operations office and Headquarters management. The DOE and contractor plan of action must be provided to the Deputy Assistant Secretary for Corporate Safety Assurance for review and comment.
- (4) Operational Readiness Review Teams.
- (a) DOE line management must appoint (and ensure that contractor management appoints) Operational Readiness Review teams in accordance with the following qualifications and training requirements:
- 1 technical knowledge of the area assigned for evaluation, including experience working in the technical area;
 - 2 knowledge of performance-based assessment processes and methods; and
 - 3 knowledge of facility-specific information.
- (b) The Operational Readiness Review teams must not include as senior members (including team leader) individuals from offices assigned direct line management responsibility for the work being reviewed; any exceptions require approval of the authorization authority. Additionally, no Operational Readiness Review team member should review work for which he or she is directly responsible.

- (c) The Operational Readiness Review team leaders must determine and document qualifications of Operational Readiness Review team members.

- (5) Criteria and Review Approaches. DOE line management requires that the DOE Operational Readiness Review team to determine (and ensures that the contractor's Operational Readiness Review team determines) the criteria and review approaches to be used for their review based on the approved breadth given in their plan of action. DOE line management must also ensure that the team (both DOE and contractor) documents the criteria and review approaches in their Operational Readiness Review Implementation Plan.

- (6) Approve and Use Implementation Plans. DOE line management requires that the DOE Operational Readiness Review team leader approves (and ensures that the contractor's Operational Readiness Review team leader approves) their respective implementation plans and use the implementation plans to conduct the Operational Readiness Reviews. DOE line management requires that the DOE Implementation Plan be provided to the Deputy Assistant Secretary for Corporate Safety Assurance for review and comment. DOE line management must also require the contractor to provide its Operational Readiness Review Implementation Plan to the Deputy Assistant Secretary for Corporate Safety Assurance for review and comment.

- (7) Certification and Verification.
 - (a) The prerequisites for starting the DOE Operational Readiness Review are the following.
 - 1 DOE line management has received correspondence from the responsible contractor certifying that the facility is ready for startup or restart and this has been verified by the contractor Operational Readiness Review.
 - 2 DOE line management has verified that the contractor's preparations for startup or restart have been completed.
 - 3 DOE line management has certified that it meets the DOE plan of action that includes, as a minimum, the applicable DOE-specific core requirements given in paragraph 4d, below.
 - (b) At the start of the DOE Operational Readiness Review, all actions required for startup or restart must be complete, with the exception of a manageable list of open prestart findings. The prestart findings must have a well-defined schedule for closure to allow the DOE Operational Readiness Review team to review the results of the closure process. In the certification and verification process, DOE operations office line management must document their actions to

verify operations office and contractor readiness, including review of closure of contractor Operational Readiness Review findings, assessments of completion of defined prerequisites, and other assessments performed to ascertain readiness. Specific events significant to the startup and restart process that occur prior to the formal commencement of the DOE Operational Readiness Review (e.g., site emergency response drills, integrated equipment testing, etc.) may be reviewed by the DOE Operational Readiness Review team when they are conducted.

(8) Final Report.

- (a) Upon completion of the contractor or DOE Operational Readiness Review, DOE line management must ensure the DOE Operational Readiness Review team leader prepares and approves a final report. The final report must document the results of the Operational Readiness Review and make a conclusion as to whether startup or restart of the nuclear facility can proceed safely. Each Operational Readiness Review final report must state whether the facility has established the following: an agreed-upon set of requirements to govern safe operations of the facility; that this set of requirements has been formalized with DOE through the contract or other enforceable mechanism; that these requirements have been appropriately implemented in the facility, or appropriate compensatory measures, formally approved, are in place during the period prior to full implementation; and that, in the opinion of the Operational Readiness Review team, adequate protection of the public health and safety, worker safety, and the environment has been maintained.

This conclusion must be based on—

- 1 review of the program to document conformance with the agreed-upon set of requirements, including a process to address new requirements and
 - 2 extensive use of references to the established requirements in the Operational Readiness Review documentation.
- (b) Additionally, there must be a “lessons learned” section of the final report that may relate to design, construction, operation, and decommissioning of similar facilities and future Operational Readiness Review efforts.
- (c) The core requirements, in aggregate, address many of the core functions and guiding principles of an integrated safety management system. The final report should include a statement regarding the team leader's assessment of the adequacy of the implementation of

those functions and principles, already addressed by the Operational Readiness Review, at the facility undergoing the review.

- (9) Submit Final Report. The final report must be submitted to the authorization authority to be used as a basis to grant approval of the startup or restart of the nuclear facility. A copy of the final report must be provided to the Deputy Assistant Secretary for Corporate Safety Assurance for review and comment.
 - (10) Closure of Findings. The mechanism for closure of DOE Operational Readiness Review findings must include the following:
 - (a) Development of plans of action approved by DOE to correct the findings. Action plans must provide evaluation of any overall programmatic deficiencies and root causes.
 - (b) Documentation of completion of response actions responding to the findings in a closure package. Closure packages must include a brief description of actual corrective actions taken and reasons for concluding that closure has been achieved.
 - (c) DOE verification of closure of prestart findings. The organization verifying the closure will be designated by the authorization authority.
 - (11) Approval. DOE line management must ensure the contractor has satisfactorily resolved all prestart findings of the DOE Operational Readiness Review prior to startup or restart of the facility. The authorization authority may approve startup or restart after prestart findings are resolved.
- c. Requirements Applicable to Startups or Restarts of Nuclear Facilities Involving Readiness Assessments.
- (1) Readiness Assessment Procedures. Operations offices must establish procedures for their offices (and ensure the contractor establishes procedures) that specify when a Readiness Assessment is required and that provide requirements for conducting readiness assessments, including procedures by which contractors will gain operations office approval for the startup or restart of nuclear facilities. The procedures must require submittal of a startup notification report to obtain approval to use a Readiness Assessment and preparation of a formal plan of action that includes, as a minimum, the breadth of the assessment, team leader designation, and prerequisites for the assessment; the startup notification report and plan of action must be approved by the authorization authority. A copy of the plan of action should also be provided to the Deputy Assistant Secretary for Corporate Safety Assurance. For shutdowns directed by contractor management, these procedures may indicate that, except for serious safety reasons, the contractor management may be the authorization authority.

- (2) Graded Approach. The operations offices Readiness Assessment procedures must specify (and DOE line management must ensure the contractor's Readiness Assessment procedures specify) a graded approach to the tenets of operational readiness requirements specified in this Order. The procedures should indicate that the Readiness Assessment may be as short and simple as a restart check procedure, or that it may approach the breadth and depth of an Operational Readiness Review, depending on the causes and duration of the shutdown and the modifications accomplished during the shutdown. In view of the flexibility to fit the rigor of the Readiness Assessment to the circumstances of the startup situation, it should not be necessary for contractors to develop readiness review processes similar to Readiness Assessments but called something different.
- (3) Approval. The authorization authority, the operations office manager, or the manager's designee, may approve startup or restart after prestart findings are corrected.
- d. Minimum Core Requirements. Each of the minimum core requirements listed below must be addressed when developing an Operational Readiness Review to achieve the necessary breadth. Justification must be provided in the plan of action, which must be prepared in accordance with paragraphs 4b(2) and (3), above, if it is determined that a particular core requirement will not be reviewed. The plan of action may reference a timely, independent review that addressed the requirements in a technically sound manner to justify not performing further evaluation of a core requirement during an Operational Readiness Review. An appropriate set of the core requirements should be selected when developing the breadth of a Readiness Assessment. The purpose of these core requirements is to assess the readiness of facility personnel, programs, and equipment to conduct work safely; hence these core requirements are directly related to the seven guiding principles of integrated safety management. The core requirements apply to both DOE and the contractor as appropriate, unless otherwise noted.

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. (CR #8) (CR #14)¹

¹ The italicized numbers in parentheses following each core requirement [e.g., (CR#3)] are the numbers of the core requirements as they appeared in the previous version of this Order, DOE O 425.1A.

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. (CR #11)

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.) (CR #2)(CR#19)
- (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. (CR #3) (CR #19)
- (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. (CR #18b)

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). (CR #8) (CR #13)

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 is established. (CR #4)
- (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. (CR #5)
- (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. (CR #15)

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. (CR #1) (CR #18a)
- (11) A routine drill program and emergency operations drill program, including program records, have been established and implemented. (CR #9)
- (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. (CR #10)

- (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). (CR #12)

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. (CR #7)
- (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) (CR #6)

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 Readiness Review only). (CR #16)
- (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). (CR #17)
- (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). (CR #20)
- e. Exemptions. Requirements for exemptions are provided in DOE M 251.1-1A, DIRECTIVES SYSTEM.
- f. Information Management Program. Requirements for maintenance and disposition of Federal records, such as those pertaining to Operational Readiness Reviews or Readiness Assessments, are provided under the general guidance of DOE O 200.1,

INFORMATION MANAGEMENT PROGRAM, dated 9-30-96. 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 schedules (Standard Forms 115) as approved by NARA.

Consult the cognizant site records officer or cognizant DOE operations office records officer for guidance.

5. RESPONSIBILITIES.

a. DOE and NNSA Line Management.

- (1) Establish procedures (and ensure contractors establish procedures) as necessary to manage startup and restart actions in accordance with the requirements of this Order.
- (2) Exercise the delegation authority and document all delegations of authority made under the provisions granted by this Order.

b. Heads of DOE Elements/Deputy Administrator for Defense Programs, NNSA must ensure that initiators of procurement requests must identify in procurement requests if the requirements in the CRD (Attachment 1) are to be applied to the award or subawards resulting from the procurement request.

c. Assistant Secretary for Environment, Safety and Health. In addition to the general Departmental responsibilities specified in DOE M 411.1, SAFETY MANAGEMENT FUNCTIONS, RESPONSIBILITIES, AND AUTHORITIES MANUAL (the FRAM); the Assistant Secretary for Environment, Safety and Health assigns the Deputy Assistant Secretary for Corporate Safety Assurance to review and comment on the startup and restart process for nuclear facilities. This responsibility specifically entails the following:

- (1) In coordination with the PSO, perform independent reviews of startup and restart activities as appropriate and provide results of these reviews to DOE Operational Readiness Review team leaders, cognizant operations office managers, and cognizant Secretarial Officers for resolution.
- (2) Review and comment on the PSO, operations office, and contractor procedures for startup or restart of nuclear facilities and provide results of these reviews to cognizant operations office managers, and cognizant Secretarial Officers for resolution.

- (3) In coordination with the PSO and the field office, perform independent review of contractor SNRs and provide results of these reviews to cognizant operations office managers and cognizant Secretarial Officers for resolution.
 - (4) Review and comment on contractor and DOE plans of action and implementation plans for startup or restart of nuclear facilities for both readiness assessment and Operational Readiness Reviews, including specification of involvement in startup or restart activities proposed by the Office of Corporate Safety Assurance.
 - (5) Review and comment on the Operational Readiness Review final report recommendations regarding startup or restart to the DOE authorization authority.
 - (6) Provide any dissenting opinion on the readiness of a facility to startup or restart to DOE line management or the Secretary if a significant safety concern is not being properly corrected.
 - (7) If requested by the Secretary, concur in the final decision to startup or restart a nuclear facility.
6. CONTACT. Questions concerning this Order should be referred to the Director, Office of Nuclear and Facility Safety Policy, at 301-903-3465.

BY ORDER OF THE SECRETARY OF ENERGY:



KYLE E. MCCLARROW
Deputy Secretary

CONTRACTOR REQUIREMENTS DOCUMENT

DOE O 425.1C, STARTUP AND RESTART OF NUCLEAR FACILITIES

1. DEPARTMENT OF ENERGY (DOE) AND NATIONAL NUCLEAR SECURITY ADMINISTRATION (NNSA) CONTRACTOR RESPONSIBILITIES. Contractors must establish procedures as necessary to manage startup and restart actions in accordance with this Contractor Requirements Document (CRD).
2. CONTRACTOR REQUIREMENTS. DOE-STD-3006-00, *Planning and Conduct of Operational Readiness Reviews*, provides guidance on approaches and methods approved as acceptable for implementing the requirements of this CRD. Other approaches and methods may be used provided they are justified, documented, and approved as being in accordance with the requirements of this CRD by the authorization authority for startup or restart.
 - a. General.
 - (1) Operational Readiness Review. Contractor management must determine if Operational Readiness Reviews are required for startup or restart of nuclear facilities using the requirements given below. Contractors must conduct an Operational Readiness Review when any of the following conditions occur.
 - (a) Initial startup of a new hazard category 1, 2, or 3 nuclear facility.
 - (b) Restart after a DOE management official directs the unplanned shutdown of a nuclear facility for safety or other appropriate reasons.
 - (c) Restart after an extended shutdown for hazard categories 1 and 2 nuclear facilities. [Extended shutdown for a hazard category 1 nuclear facility is 6 months. Extended shutdown for a hazard category 2 nuclear facility is 12 months.]
 - (d) Restart of hazard categories 1 and 2 nuclear facilities after substantial process, system, or facility modifications. [The restart authority must determine if the modifications are substantial based on the impact of the changes on the safety basis and the extent and complexity of changes; this would not necessarily be determined by the Unreviewed Safety Question (USQ) process].
 - (e) Restart after a nuclear facility shutdown because of operations outside the safety basis.
 - (f) When deemed appropriate by DOE management officials, including restarts of hazard category 3 nuclear facilities.

- (2) Readiness Assessment. For restarts of nuclear facilities not requiring an Operational Readiness Review, contractor management must evaluate the need for performing a Readiness Assessment prior to restart. This includes the startup or restart of program work associated with operating facilities when the new or restarted program work does not require DOE approval of changes to facility limits or requirements as stated in Operational Safety Requirements/Technical Safety Requirements (OSRs/TSRs), Basis for Interim Operations/Safety Analysis Reports (BIO/SARs), or other equivalent authorization basis documents. When a Readiness Assessment is required, the contractor must use procedures developed by the operations offices to gain operations office approval of the startup or restart of nuclear facilities. If a Readiness Assessment is not to be performed, the contractor's standard procedures for startup or restart will be used. Other requirements for Readiness Assessments are provided in paragraph 2c, below.
- (3) Authorization Authority. For nuclear facility startup or restart actions, the contractor must determine the authorization authority for startup or restart approval by the following.
 - (a) For initial startups of new hazard categories 1 and 2 nuclear facilities, the Secretary of Energy (or designee) must approve startup. For initial startups of new hazard category 3 nuclear facilities, the cognizant Secretarial Officer (or designee) must approve startup. If other DOE Orders require a higher level of startup authorization than this CRD, the official described in this CRD will recommend startup to the higher level official.
 - (b) For shutdowns directed by a DOE management official for safety or other appropriate reasons, approval to restart must be granted by an official of a level commensurate with the official ordering the shutdown unless a higher level is designated by the cognizant Secretarial Officer.
 - (c) For extended shutdowns of hazard category 1 nuclear facilities, the cognizant Secretarial Officer must approve restart. For extended shutdowns of hazard category 2 nuclear facilities, the cognizant Secretarial Officer, or designee, must approve restart.
 - (d) For shutdowns because of substantial facility modifications of hazard category 1 nuclear facilities, the cognizant Secretarial Officer must approve restart. For such shutdowns of hazard category 2 nuclear facilities, the cognizant Secretarial Officer (or designee) must approve restart.
 - (e) For facility shutdowns due to operations outside the safety basis, the official approving restart must be commensurate with the approval

authority for the safety basis. If the safety basis was approved by a Headquarters official, the cognizant Secretarial Officer (or designee) must approve restart. If the safety basis was approved by a field official, the operations office manager (or designee) must approve restart.

- (f) For startups or restarts of nuclear facilities for which Operational Readiness Reviews were required because a DOE official deemed it appropriate, the official approving startup or restart must be of a level commensurate with the official directing the review. If a Headquarters official directed an Operational Readiness Review be performed, the cognizant Secretarial Officer (or designee) must approve the startup or restart. If a field official directed an Operational Readiness Review, the operations office manager (or designee) must approve the startup or restart.
- (4) Startup Notification Report. The contractor procedures must provide for Startup Notification Reports (SNRs). SNRs must be submitted at a periodicity specified by DOE (recommended to be quarterly). Each SNR must project ahead at least 1 year and update information from previous periods for startups that have not yet occurred and add information for each startup or restart that has been identified since the last report. The SNR is to be approved by DOE. The procedures should require the following elements:
 - (a) Minimum information to be included in the SNR for each startup or restart should include –
 - (1) a brief description of the facility or program work;
 - (2) reason for non-operation (e.g., maintenance or modification outage, no program work, new facility, shutdown for safety concerns, etc);
 - (3) the approximate date operations were last conducted (for restarts) and the projected date for the startup;
 - (4) proposed type of readiness review;
 - (5) basis or justification for proposed type of readiness review;
 - (6) proposed authorization authority.
 - (b) Contractor readiness review action to start or restart operations should not commence until the DOE authorization authority has approved the proposed readiness review process.

- (c) Every startup or restart of a nuclear operation other than routine resumption of operations after a short, planned interruption should be included in the SNR. These startups, requiring review, should be started or restarted using an Operational Readiness Review or properly scoped Readiness Assessment as appropriate. Other routine resumptions of operations can be conducted without a readiness review using normal contractor operating procedures for the facility or activity. Contractor routine procedures should not be developed for the purpose of avoiding a properly scoped Readiness Assessment.
- b. Requirements Applicable to Startups or Restarts of Nuclear Facilities Involving Operational Readiness Reviews. (These requirements are listed sequentially.)
- (1) Operational Readiness Review Documentation. For Operational Readiness Reviews, contractors must prepare the following documents: startup/restart notification reports, plans of action, Operational Readiness Review Implementation Plans, and final reports. The contractor's line management must prepare the plan of action, and the Operational Readiness Review team leader must prepare the implementation plan and final report. The resolution of all findings from the Operational Readiness Review must be documented and maintained with the plan of action, implementation plan, and final report.
 - (2) Breadth of Operational Readiness Review. The contractor must develop the breadth of the Operational Readiness Review and document it in the plan of action. A minimum set of core requirements, as defined in paragraph 2d, below, must be addressed when developing the breadth of the Operational Readiness Review. The plan of action may reference a timely, independent review that addressed the requirement in a technically satisfactory manner to justify not performing further evaluation of a core requirement, or portion thereof, during the Operational Readiness Review. The breadth may be expanded at a later time by the Operational Readiness Review team, if appropriate.
 - (3) Operational Readiness Review Plans of Action, Approval, and Content. The contractor's Operational Readiness Review plan of action must be approved by the appropriate authorization authority. The contractor's plan of action must specify the prerequisites for starting the responsible contractor's Operational Readiness Review; the prerequisites must address each core requirement of paragraph 2d, below, determined to be applicable when developing the scope of the Operational Readiness Review. The contractor plan of action must be provided by the contractor to its respective field office for transmittal to the Deputy Assistant Secretary for Corporate Safety Assurance for review and comment.

- (4) Operational Readiness Review Teams.
- (a) Contractor management must appoint Operational Readiness Review teams in accordance with the following qualifications and training requirements:
- 1 technical knowledge of the area assigned for evaluation, including experience working in the technical area;
 - 2 knowledge of performance-based assessment processes and methods; and
 - 3 knowledge of facility-specific information.
- (b) The Operational Readiness Review team must not include as senior members (including team leader) individuals from offices assigned direct line management responsibility for the work being reviewed; any exceptions require approval of the authorization authority. Additionally, no Operational Readiness Review team member should review work for which he or she is directly responsible.
- (c) The Operational Readiness Review team leader must determine and document qualifications of Operational Readiness Review team members.
- (5) Criteria and Review Approaches. The contractor's Operational Readiness Review team must determine the criteria and review approaches to be used for the review based on the approved breadth given in the plan of action and document the criteria and review approaches in the Operational Readiness Review Implementation Plan.
- (6) Approve and Use Implementation Plans. The contractor's Operational Readiness Review team leader must approve the Implementation Plan and use it to conduct the Operational Readiness Review. The implementation plan must be provided by the contractor to its respective field office for transmittal to the Deputy Assistant Secretary for Corporate Safety Assurance for review and comment.
- (7) Certification of Readiness. The contractor Operational Readiness Review procedures (also applicable to Readiness Assessments) should include a provision that prior to starting the independent Readiness Review (Operational Readiness Review or Readiness Assessment), line management must certify that all prerequisites specified in the plan of action have been met. (A manageable list of open items may exist, as discussed in DOE O 425.1B, paragraph 4b(7)(b), at the time the contractor readiness review starts).

- (8) Certification and Verification. The responsible contractor must certify by correspondence to DOE line management that the facility is ready to start or restart and that this has been verified by the contractor Operational Readiness Review.
- (9) Final Report.
- (a) Upon completion of the Operational Readiness Review, DOE line management must ensure the Operational Readiness Review team leader prepares and approves a final report. The final report must document the results of the Operational Readiness Review and make a conclusion as to whether startup or restart of the nuclear facility can proceed safely. Each Operational Readiness Review final report must state whether the facility has established the following: an agreed-upon set of requirements to govern safe operations of the facility; that this set of requirements has been formalized with DOE through the contract or other enforceable mechanism; that these requirements have been appropriately implemented in the facility, or appropriate compensatory measures, formally approved, are in place during the period prior to full implementation; and that, in the opinion of the Operational Readiness Review team, adequate protection of the public health and safety, worker safety, and the environment has been maintained.
- This conclusion must be based on –
- 1 review of the program to document conformance with the agreed-upon set of requirements, including a process to address new requirements, and
 - 2 extensive use of references to the established requirements in the Operational Readiness Review documentation.
- (b) Additionally, there must be a “lessons learned” section of the final report that may relate to design, construction, operation, and decommissioning of similar facilities and to future Operational Readiness Review efforts.
- (c) The core requirements, in aggregate, address many of the core functions and guiding principles of an integrated safety management system. The final report should include a statement regarding the team leader’s assessment of the adequacy of the implementation of those functions and principles, already addressed by the Operational Readiness Review, at the facility undergoing the review.

- (10) Submit Final Report. The final report must be submitted to the authorization authority to be used as a basis to grant approval of the startup or restart of the nuclear facility. A copy of the final report must be provided by the contractor to its respective field office for transmittal to the Deputy Assistant Secretary for Corporate Safety Assurance for review and comment.
 - (11) Closure of Findings. The mechanism for closure of DOE Operational Readiness Review findings must include the following:
 - (a) Development of action plans, approved by DOE, to correct the findings. Action plans must provide evaluation of any overall programmatic deficiencies and root causes.
 - (b) Documentation of completion of response actions responding to the findings in a closure package. Closure packages must include a brief description of actual corrective actions taken and reasons for concluding that closure has been achieved.
 - (12) Approval. The contractor must satisfactorily resolve all prestart findings of the DOE Operational Readiness Review prior to startup or restart of the facility. The authorization authority may approve startup or restart after prestart findings are resolved.
- c. Requirements Applicable to Startups or Restarts of Nuclear Facilities Involving Readiness Assessments.
- (1) Readiness Assessment Procedures. The contractor must establish procedures that specify when a Readiness Assessment is required and that provide requirements for conduct of readiness assessments including procedures by which contractors will gain operations office approval of the startup or restart of nuclear facilities. The procedures must require submittal of a startup notification report to obtain approval to use a Readiness Assessment and preparation of a formal plan of action that includes, as a minimum, the breadth of the assessment, team leader designation, and prerequisites for the assessment; the startup notification report and plan of action must be approved by the authorization authority. For shutdowns directed by contractor management, these procedures may indicate that, except for serious safety reasons, the contractor management may be the authorization authority.
 - (2) Graded Approach. Contractor Readiness Assessment procedures must specify a graded approach to the tenets of operational readiness requirements specified in this CRD. The procedures should indicate that the Readiness Assessment may be as short and simple as a restart check procedure, or that it may approach the breadth and depth of an Operational Readiness Review,

depending on the causes and duration of the shutdown and the modifications accomplished during the shutdown. In view of the flexibility to fit the rigor of the Readiness Assessment to the circumstances of the startup situation, it should not be necessary for contractors to develop readiness review processes similar to Readiness Assessments but called something different.

- (3) Approval. The authorization authority, the operations office manager, or the manager's designee, may approve startup or restart after prestart findings are corrected.

- d. Minimum Core Requirements. Each of the minimum core requirements listed below must be addressed when developing the breadth of an Operational Readiness Review. Justification must be provided in the plan of action, which must be prepared in accordance with this CRD, paragraphs 2b(2) and (3), above, if it is determined that a particular core requirement will not be reviewed. The plan of action may reference a timely, independent review that addressed the requirements in a technically sound manner to justify not performing further evaluation of a core requirement during an Operational Readiness Review. An appropriate set of the core requirements should be selected when developing the breadth of a readiness assessment. The purpose of these core requirements is to assess the readiness of facility personnel, programs, and equipment to conduct work safely; hence these core requirements are directly related to the seven guiding principles of integrated safety management.

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. *(CR #14) (CR #8)*²

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

¹ The italicized numbers in parentheses following each core requirement [e.g., *(CR#3)*] are the numbers of the core requirements as they appeared in the previous version of DOE O 425.1A.

- (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. (CR #11)

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 assures competence commensurate with responsibilities. (The training and qualification program encompasses the range of duties and activities required to be performed.) (CR #2) (CR#19)
- (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. (CR #3) (CR #19)
- (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. (CR #18b)

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 persons 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). (CR #8) (CR #13)

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 (e.g., 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. (CR #4)
- (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. (CR #5)
- (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. (CR #15)

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. (CR #1) (CR #18a)
- (11) A routine drill program and emergency operations drill program, including program records, have been established and implemented. (CR #9)
- (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. (CR #10)
- (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). (CR #12)

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 on 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 contractor 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. (CR #7)
- (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). (CR #6)
- e. Exemptions. Requirements for exemptions are provided in DOE M 251.1-1A, DIRECTIVES SYSTEM.
- f. Information Management Program. Requirements for maintenance and disposition of Federal records, such as those pertaining to Operational Readiness Reviews or Readiness Assessments, are provided under the general guidance of DOE O 200.1, INFORMATION MANAGEMENT PROGRAM, dated 9-30-96. 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 schedules (Standard Form 115) as approved by NARA. Consult the cognizant site records officer or cognizant DOE operations office records officer for guidance.

**DOE ORGANIZATIONS TO WHICH
DOE O 425.1C IS APPLICABLE**

This Order is applicable to the following DOE organizations and their associated Federal field elements:

Office of the Secretary
Office of Civilian Radioactive Waste Management
Office of Environment, Safety and Health
Office of Environmental Management
Office of Independent Oversight and Performance Assurance
National Nuclear Security Administration
C Office of the Deputy Administrator for Defense Programs
C Office of the Deputy Administrator for Defense Nuclear Nonproliferation
C Office of Emergency Operations
C Office of the Associate Administrator for Facilities and Operations
C Office of the Associate Administrator for Management and Administration
Office of Nuclear Energy, Science and Technology
Office of Science
Office of Security

**DOE ORGANIZATIONS TO WHICH
DOE O 425.1C IS NOT APPLICABLE**

Chief Information Officer
Office of Congressional and Intergovernmental Affairs
Office of Counterintelligence
Departmental Representative to the Defense Nuclear Facilities Safety Board
Office of Economic Impact and Diversity
Office of Energy Efficiency and Renewable Energy
Energy Information Administration
Office of Fossil Energy
Office of General Counsel
Office of Hearings and Appeals
Office of Inspector General
Office of Intelligence
Office of Management, Budget and Evaluation and Chief Financial Officer
Office of Policy and International Affairs
Office of Public Affairs
Secretary of Energy Advisory Board
Office of Worker and Community Transition
Office of Energy Assurance
Bonneville Power Administration
Southeastern Power Administration
Southwestern Power Administration
Western Area Power Administration