

U.S. Department of Energy
Washington, D.C.

ORDER

DOE O 422.1A

Approved: 08-05-2026

SUBJECT: CONDUCT OF OPERATIONS

1. PURPOSE. The United States Department of Energy (DOE) must implement a conduct of operations framework to support mission success and to protect workers, the public, and the environment by promoting disciplined and structured operations and by minimizing the likelihood and consequences of human fallibility and technical and organizational system failures.

The Department must use DOE Facility Representative programs to provide line management operational awareness and oversight consistent with DOE-STD-1063-2021, *DOE Standard Facility Representatives (Invoked)*.

2. CANCELS/SUPERSEDES. DOE O 422.1, Chg. 4 (LtdChg), *Conduct of Operations*, dated June 29, 2010. Cancellation of a directive does not, by itself, modify or otherwise affect any contractual or regulatory obligation to comply with the directive. 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contract unless and until the contract or regulatory commitment is modified to either eliminate requirements that are no longer applicable or substitute a new set of requirements.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 applies to Departmental Elements that direct, manage, oversee, or perform operations in DOE Hazard Category 1, 2, and 3 nuclear facilities.
 - b. National Nuclear Security Administration (NNSA). The Administrator of the NNSA must ensure that NNSA employees comply with their responsibilities under this Order. Nothing in this Order must be construed to interfere with the NNSA Administrator's authority under Section 3212(d) of Public Law 106-65, National Nuclear Security Administration Act, to establish Administration-specific policies, unless disapproved by the Secretary.

- c. DOE Contractors. The requirements of this Order shall be incorporated into applicable contracts, including Management and Operating (M&O) contracts. The contractor is responsible for flowing down the requirements of this CRD, if applicable. Contractors shall comply with the requirements of applicable federal, state, and local laws and regulations in carrying out the requirements of this Order unless relief has been granted in writing. Omission of any applicable law or regulation from the Order does not affect the obligation of the contractor to comply with such law or regulation. Contractors must comply with the requirements of this Order, except to the extent modified by the equivalencies or exemptions identified herein or issued to the contractor in writing by DOE utilizing the process outlined in DOE O 251.1E, *Departmental Directives Program*, including as amended or updated.

4. CONDUCT OF OPERATIONS PROGRAM REQUIREMENTS.

- a. Organization and Administration. The operator must establish policies, programs, and procedures that define an effective operations organization, including the following elements:
 - (1) Organizational roles, responsibilities, authority, and accountability;
 - (2) Adequate material and personnel resources to accomplish operations;
 - (3) Monitoring and self-assessment of operations;
 - (4) Methods for approving, posting, maintaining, and controlling access to electronic operations documents (procedures, drawings, schedules, maintenance actions, etc.) if electronic documents are used.
- b. Shift Routines and Operating Practices. The operator must establish and implement operations practices to ensure that shift operators are alert, informed of conditions, and operate equipment properly, addressing the following elements:
 - (1) Prompt notification to operating personnel and supervisors of changes in the facility status, abnormalities, or difficulties encountered in performing assigned tasks;
 - (2) Awareness by operating personnel of the status of equipment through inspection, conducting checks, and tours of equipment and work areas;
 - (3) Procedures for completing round sheets or inspection logs, responding to abnormal conditions, and periodic supervisory reviews of round sheets or inspection logs;
 - (4) Prompt response to instrument indications, including the use of multiple indications to obtain parameters;

- (5) Procedures for resetting protective devices; and
 - (6) Professional and disciplined operator performance of duties.
- c. Control Area Activities. The operator must establish and implement operations practices that promote orderly, and business-like control area operations.
- d. Communications. The operator must establish and implement operations practices that ensure accurate, unambiguous communication among operations personnel.
- e. On-Shift Training. The operator must establish and implement operations practices that control on-shift training of facility operators designed to prevent inadvertent or incorrect trainee manipulation of equipment.
- f. Control of Equipment and Systems Status. The operator must establish and implement operations practices for initial equipment lineups and subsequent changes to ensure facilities operate with known, proper configuration as designed, addressing the following elements:
 - (1) Authorization for, and awareness of, equipment and system status changes;
 - (2) Initial system alignment and maintaining control of equipment and system status through startup, operation, and shutdown, and documentation status;
 - (3) Management of equipment deficiencies, maintenance activities, post-maintenance testing, and return to service;
 - (4) Awareness and documentation of control panel and local alarm issues;
 - (5) Control of temporary equipment modifications and temporary systems; and
 - (6) Configuration control of engineering documents.
- g. Lockout/Tagout (LO/TO) and Electrical Safety. The operator must establish and implement operations practices that address the following elements for the installation and removal of LO/TO:
 - (1) When controlling hazardous energy for the protection of personnel and equipment, comply with 29 CFR § 1910, Occupational Safety and Health Standards, and/or 29 CFR § 1926, Safety and Health Regulations for Construction, requirements.

- (2) When performing electrical work, comply with National Fire Protection Association Standard (NFPA) 70E, Standard for Electrical Safety in the Workplace, electrical safety requirements using LO/TO.
 - (3) LO/TO training and qualification.
- h. Interdependent Verification and Concurrent Dual Verification. The operator must establish and implement operations practices to verify that critical equipment configuration is in accordance with controlling documents, addressing the following elements:
 - (1) Structures, systems, components, operations, and programs requiring independent verification;
 - (2) Situations requiring independent verification;
 - (3) Methods for performing and documenting independent verification;
 - (4) Situations, if any, allowing concurrent dual verification; and
 - (5) Methods for performing concurrent dual verification, if used.
- i. Log Keeping. The operator must establish and implement operations practices to ensure thorough, accurate, and timely recording of equipment information, addressing the following elements:
 - (1) Narrative logs at all key positions, as defined by management, for the recording of pertinent information;
 - (2) Prompt and accurate recording of information;
 - (3) Type, scope, and format for log entries;
 - (4) Method for recording late entries and correcting erroneous entries without obscuring the original entry;
 - (5) Periodic supervisory reviews for accuracy, adequacy, and trends; and
 - (6) Document retention requirements.
- j. Turnover and Assumption of Responsibilities. The operator must establish and implement operations practices for thorough, accurate transfer of information and responsibilities at shift or operator relief to ensure continued safe operation.
- k. Control of Interrelated Process. The operator must establish and implement operations practices to ensure that interrelated processes do not adversely affect facility safety or operations.

- l. Timely Instructions/Order. The operator must establish and implement operations practices for timely written direction and guidance from management to operators.
- m. Operator Aids. The operator must establish and implement operations practices to provide accurate, current, and approved operator aids, addressing the following element:
 - (1) Technical evaluation and management approve of operator aids;
 - (2) Operator aids serve as conveniences, not operational requirements;
 - (3) Operator aids do not obscure equipment;
 - (4) Administrative control of installed operational aids is maintained; and
 - (5) Periodic reviews determine adequacy and correctness.
- n. Component Labeling. The operator must establish and implement operations practices for clear, accurate equipment labeling, addressing the following elements:
 - (1) Durable and securely attached labels that do not interfere with controls or equipment; and
 - (2) Administrative control of labels, including a process for promptly identifying and replacing lost or damaged labels, preventing unauthorized or incorrect labels, and control of temporary labels.

5. RESPONSIBILITIES.

- a. Program Secretarial Offices.
 - (1) Determine applicability of this Order to facilities under their cognizance that are other than Hazard Category 1, 2, or 3 nuclear facilities.
 - (2) For government-owned/government-operated activities under their cognizance, approve or designate the approval authority for conduct of operations documentation prepared to implement this Order.
- b. Office of Environment, Health, Safety and Security.
 - (1) Conduct training as necessary to support implementation of this Order.
- c. Office of Enterprise Assessments. Plan and conduct assessments to determine compliance with the requirements of this Order.

d. Heads of Field Elements.

- (1) Ensure contracts are managed such that applicable requirements of this Order are incorporated into affected contracts via the laws, regulations, and DOE Directives clause (Department of Energy Acquisition Regulation 970.5204-2, Laws, Regulations, and DOE Directives) when present, or via other appropriate contract actions when not present.
- (2) Must provide direction and oversight for implementation of conduct of operations programs consistent with this Order and must oversee contractor conduct of operations performance.
- (3) Must assign DOE Facility Representatives to oversee conduct of operations in accordance with DOE-STD-1063-2021.

e. Contracting Officer.

For all applicable contracts and upon notification that a site/facility management contract is affected by this Order, the contracting officer(s) shall incorporate the requirements into the affected contract(s) via the “Laws, Regulations, and DOE Directives” clause of the contract, or through negotiation and modification, as appropriate.

6. INVOKED STANDARDS.

The following DOE technical standards and industry standards are invoked as required methods in this Order in accordance with the applicability and conditions described within this Order. Any technical standard or industry standard that is mentioned in or referenced by this Order, but is not included in the list below, is not invoked by this Order. Note: DOE O 251.1D, *Departmental Directives Program*, Appendix J, provides a definition for “invoked technical standard.”

- a. DOE-STD-1063-2021, facility representatives are required to be implemented by DOE Field Elements for the management of the Facility Representative programs.

7. REFERENCES.

- a. Public Law 106-65, Title XXXII, National Nuclear Security Administration Act, as amended.
- b. 10 CFR § 830, *Nuclear Safety Management*
- c. 29 CFR § 1910, *Occupational Safety and Health Standards*
- d. 29 CFR § 1926, *Safety and Health Regulations for Construction*
- e. NFPA 70E, *Standard for Electrical Safety in the Workplace.*

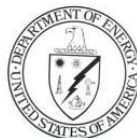
- f. Department of Energy Acquisition Regulation (DEAR) 970.5204-2, “Laws, Regulations, and DOE Directives”
- g. Institute of Nuclear Power Operations (INPO) 15-002, “Conduct of Operations”
- h. DOE O 251.1D and 251.1E, *Departmental Directives Program*.
- i. DOE-STD-1063-2021, *DOE Standard Facility Representatives (Invoked)*.
- j. DOE-HDBK-1226-2019, *Conduct of Operations Implementation*.

8. DEFINITIONS.

- a. Concurrent Dual Verification. Method of checking an operation or calculation where the verifier independently observes and/or confirms the operation or calculation.
- b. Conduct of Operations Program. Formal documentation, practices, and actions implementing disciplined and structured operations that support the safe performance of work and mission success.
- c. Control Area. Physical area (e.g., room, booth, desk) where facility operations are monitored and controlled.
- d. Facility Representative. Individual assigned by the DOE field element manager (or designee) for monitoring safe and efficient performance of the site/facility and operations.
- e. Independent Verification. Act of checking, by a separate qualified person, that a given operation or component position conforms to established criteria.
- f. Interrelated Processes. Processes or activities that can affect operations but are under control of people other than the affected operators.
- g. Operations. General term for work activities accomplished by the facility or project, including but not limited to operating, maintenance, technical, and laboratory analysis activities.

9. CONTACT. Questions concerning this Order should be addressed to the Office of Nuclear Safety at (301) 903-3331.

BY ORDER OF THE SECRETARY OF ENERGY:



JAMES P. DANLY
Deputy Secretary