

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

ORDER

NE O 422.1

Approved: August-2025

SUBJECT: CONDUCT OF OPERATIONS

1. **PURPOSE.** The objective of this Order is to define the requirements for establishing and implementing Conduct of Operations Programs at Department of Energy (DOE), facilities and projects. A Conduct of Operations Program consists of formal documentation, practices, and actions implementing disciplined and structured operations that support mission success and promote worker, public, and environmental protection. The goal is to minimize the likelihood and consequences of human fallibility or technical and organizational system failures. Conduct of Operations is one of the safety management programs recognized in the Nuclear Safety Rule [Title 10 Code of Federal Regulations (CFR) Part 830, Nuclear Safety Management], but it also supports safety and mission success for a wide range of hazardous, complex, or mission -critical operations, and some conduct of operations attributes can enhance even routine operations. It supports the Integrated Safety Management (ISM) System by providing concrete techniques and practices to implement the ISM Core Functions of Develop and Implement Hazard Controls and Perform Work Within Controls. It may be implemented through facility policies, directives, plans, and safety management systems and need not be a stand-alone program.

The term “operations” encompasses the work activities of any facility or organization, from building infrastructure, to print shops and computer centers, to scientific research, and to nuclear facilities. While many hazards can be dealt with through engineered solutions, people still have to perform operations, and they can and do make mistakes. The purpose of this Order is to ensure that management systems are designed to anticipate and mitigate the consequences of human fallibility or potential latent conditions and to provide a vital barrier to prevent injury, environmental insult or asset damage, and to promote mission success.

2. **CANCELS/SUPERSEDES.**

This Order applies in lieu of DOE O 422.1 (current version) with respect to the facilities and activities covered by Section 3 below. 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 Elements. This Order applies to all Departmental elements including NNSA, and their associated field element(s),¹ to the extent they are involved with facilities and activities described in paragraph 3.b.
- b. NE Facilities and Activities. Except as stated in paragraph 3.d., this Order applies to all facilities and activities under the responsibility of the Office of Nuclear Energy (NE), including nuclear facilities and nuclear activities authorized by NE. Such nuclear activities include the design, construction, management, operation, decontamination, decommissioning, or demolition of nuclear facilities.
- c. Contractors. Except as stated in paragraph 3.d., this Order sets forth conditions to be applied to contractors performing work that involves facilities and activities described in paragraph 3.b. The CRD must be included in contracts under which the contractor is involved with such facilities and activities.
- d. Equivalencies and Exemptions
 - (1) Exemption. In accordance with the responsibilities and authorities assigned by Executive Order 12344, codified at 50 United States Code (USC) sections 2406 and 2511 and to ensure consistency through the joint Navy/DOE Naval Nuclear Propulsion Program, the Deputy Administrator for Naval Reactors (Director) implements and oversees requirements and practices pertaining to this Directive for activities under the Director's cognizance, as deemed appropriate.
 - (2) Exemption. This Order does not apply to activities regulated by either the Nuclear Regulatory Commission (NRC) or the authorities of a State under an agreement with the NRC per the Atomic Energy Act of 1954, as amended (AEA).
 - (3) Other Equivalencies/Exemptions. Any other equivalency or exemption to this Order requires the approval of the Office of Nuclear Energy, Safety Basis Approval Authority (SBAA). Requests for equivalencies/exemptions will be adjudicated by NE's SBAA within 14 calendar days of receipt of a substantially complete request.

4. REQUIREMENTS

The general approach to implementing this Order is for contractors (or DOE organizations in the case of Government owned Government operated (GO/GO) facilities) to develop, for DOE line management approval, documentation demonstrating implementation of the requirements in the CRD (or Attachment 2 for GO/GOs). DOE line management means the federal officials such as Secretarial Officers and Heads of Field Elements responsible for DOE facilities and operations. It is not necessary to develop new documents to demonstrate implementation, but at a minimum to provide a Conduct of Operations Matrix, which is a list of CRD requirements, citing the specific documentation (e.g.,

¹ Operations offices, service centers, site offices, area offices, field offices, government-owned government-operated facilities, and regional offices of federally-staffed laboratories that report directly to a DOE Headquarters office.

procedure, manual) that implements each item, or providing justification for each item that is not implemented.

- a. DOE line management must determine which facilities, other than Hazard Category 1, 2, and 3 nuclear facilities, require implementation of this Order, considering the hazards, consequences of operational mishaps, and impact of disruptions to mission. Hazard Category 1, 2, and 3 nuclear facilities are subject to this Order automatically.
- b. DOE line management must provide appropriate oversight of conduct of operations. Field organizations must assign DOE facility representatives to oversee conduct of operations in accordance with DOE-STD-1063-2021, *Facility Representatives*.
- c. For activities and programs at GO/GO facilities, DOE line management must perform the requirements in Attachment 2.

5. **RESPONSIBILITIES.**

- a. **Program Secretarial Offices (PSOs).**
 - (1) Determine the applicability of this Order to those facilities under their cognizance that are other than Hazard Category 1, 2, or 3 nuclear facilities.
 1. **Heads of Field Elements.**
 - (1) Notify contracting officers to incorporate the CRD into the affected contracts (considering the hazards and mission impact of the operations) via the Laws, regulations, and DOE directives clause (DEAR 970.5204-2) for those contracts that contain this clause. For contracts that do not contain DEAR 970.5204-2, request that the contracting officer attempt to get the CRD incorporated into the contract via a contract modification. Notify contracting officers in advance to include the requirements of the CRD in the terms and conditions of any request for proposals for any new contracts.
 - (2) Perform oversight of the contractor's conduct of operations performance.
 - (3) Review the documentation prepared by the contractor demonstrating conformance to the specific requirements stated in the CRD.
 - (4) Assign DOE facility representatives to oversee conduct of operations in accordance with DOE-STD-1063-2021, *Facility Representatives*.
 2. **Contracting Officers.** Modify contracts to incorporate the Contractor Requirements Document.

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.

DOE-STD-1063-2021, *Facility Representatives*. This DOE Technical Standard is required to be used by DOE Field Elements for the management of Facility Representative programs.

7. REFERENCES AND ACRONYMS.
8. CONTACT. Questions concerning this order should be addressed to the Office of Nuclear Energy.

BY ORDER OF THE SECRETARY OF ENERGY:



JAMES P. DANLY
Deputy Secretary

CONTRACTOR REQUIREMENTS DOCUMENT
NE O 422.1, *Conduct of Operations*

Regardless of the performer of the work, the contractor is responsible for complying with the requirements of this CRD. The contractor is responsible for flowing down the requirements of this CRD to subcontractors at any tier to the extent necessary to ensure the contractor's compliance with the requirements.

Contractors must implement the requirements set forth in Attachment 2, Conduct of Operations Program Requirements, which provides program requirements applicable to contracts in which this CRD is inserted.

CONDUCT OF OPERATIONS PROGRAM REQUIREMENTS

This Attachment provides Conduct of Operations program requirements applicable to contracts in which the CRD (Attachment 1 to NE O 422.1) is inserted. This Attachment also provides the program requirements applicable to Government Owned -Government Operated (GO/GO) facilities subject to NE O 422.1 Paragraph 4, Requirements.

In Paragraph 2, Specific Requirements, of this Attachment, each topic references the related DOE Technical Standard or a consensus standard to provide further explanatory material and examples, but not requirements. Each topical area of the specific requirements is expanded into detailed program attributes in Appendix A, Detailed Conduct of Operations Matrix. Throughout this Attachment, the term “operator” means the contractor or federal entity or organization responsible for operation of a facility.

1. GENERAL REQUIREMENTS.

- a. Conduct of Operations Program Development:
 3. For Hazard Category 1, 2, and 3 nuclear facilities, the operator must develop and implement a conduct of operations program using the specific requirements in paragraph 2 below. Implementation is demonstrated by providing, at a minimum, a Conduct of Operations Matrix, consisting of entries for each specific requirement in paragraph 2, with either a citation of the specific documentation (e.g., procedure, manual) that implements the item, or a justification for each item that is not implemented. The Conduct of Operations Matrix may be provided through direct use of Appendix A or by use of equivalent documents or electronic systems.
- b. The operator must obtain DOE Safety Basis Approval Authority review of the Conduct of Operations Matrix or other documentation demonstrating conformance with the specific requirements.
- c. The operator must review and update existing documentation when required by changes in conditions. It is not intended that minor administrative changes and corrections or routine updates to cited documents would require new DOE review.

2. SPECIFIC 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 management and worker accountability for the safe performance of work;
- (4) management training, qualification, succession, and, when appropriate, certification;
- (5) methods for the analysis of hazards and implementation of hazard controls in the work planning and execution process; and
- (6) 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) adherence by operating personnel and other workers to established safety requirements;
- (3) awareness by operating personnel of the status of equipment through inspection, conducting checks, and tours of equipment and work areas;
- (4) procedures for completing round sheets or inspection logs, responding to abnormal conditions, and periodic supervisory reviews of round sheets or inspection logs;
- (5) procedures for protecting operators from personnel hazards, e.g. chemical, radiological, laser, noise, electromagnetic, toxic, or nano-scale materials;
- (6) prompt response to instrument indications, including the use of multiple indications to obtain parameters;
- (7) procedures for resetting protective devices;
- (8) authorization to operate facility equipment;
- (9) designating shift operating bases and providing equipment for them; and
- (10) professional and disciplined operator performance of duties.

c. Control Area Activities.

The operator must establish and implement operations practices that promote orderly, business-like control area operations and address the following elements:

- (1) Control -area access;

- (2) formality and discipline in the control areas;
- (3) surveillance of control panels and timely response to determine and correct the cause of abnormalities/out -of -specification conditions;
- (4) limitation of the number of concurrent evolutions and duties, and
- (5) authorization to operate control area equipment.

d. Communications. The operator must establish and implement operations practices that ensure accurate, unambiguous communications among operations personnel and address the following elements:

- (1) provision of communications systems for emergency and normal operations;
- (2) administrative control of communications equipment, including authorization to use the public address system and allowable locations and purposes for radio use;
- (3) methods for control areas to contact operators and supervisors;
- (4) use of abbreviations and acronyms; and
- (5) use of oral instructions and communications, including use of repeat -backs and sender/receiver identifications.

e. On-shift Training. The operator must establish and implement operations practices that control on-shift training of facility operators, prevent inadvertent or incorrect trainee manipulation of equipment, and address the following elements:

- (1) on-shift training program;
- (2) authorization and documentation of training activities;
- (3) supervision and control of personnel under instruction by qualified personnel; and
- (4) facility conditions and controls for conducting training during operational activities, including suspension of training during unanticipated or abnormal events.

f. Investigation of Abnormal Events, Conditions, and Trends. The operator must establish and implement operations practices for investigating events to determine their impact and prevent recurrence, addressing the following elements:

- (1) specific events requiring investigation, and criteria for identifying other events or conditions to be investigated;
- (2) designation of investigators and their training and qualification;

- (3) investigation process and techniques;
- (4) causal analysis and corrective action determination;
- (5) event investigation reporting, training, and trending; and
- (6) response to known or suspected sabotage.

g. Notifications. The operator must establish and implement operations practices to ensure appropriate event notification for timely response, addressing the following elements.

- (1) procedures for internal, DOE, and external notifications, including events, persons to be notified, persons responsible to make notifications, contact information, and recordkeeping; and
- (2) communications equipment for notifications.

h. Control of Equipment and System 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) use and approval of lockouts and tagouts for administrative control of equipment status (see also paragraph 2.i);
- (4) operational limits compliance and documentation;
- (5) management of equipment deficiencies, maintenance activities, post--maintenance testing, and return to service;
- (6) awareness and documentation of control panel and local alarm issues;
- (7) control of temporary equipment modifications and temporary systems; and
- (8) configuration control and distribution of engineering documents.

- i. Lockout and Tagouts.
 - (1) The operator must establish and implement operations practices that address the following elements for the installation and removal of caution tags for equipment protection or operational control:
 - (a) roles and responsibilities associated with the development, documentation, review, installation, and removal of caution tags to convey operational information or equipment alignments for protection of equipment;
 - (b) description and control of the tags; and
 - (c) measures to prevent relying on caution tags for personnel protection.
- j. Independent 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.
- k. Log keeping. The operator must establish and implement operations practices to ensure thorough, accurate, and timely recording of equipment information for performance analysis and trend detection, 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.
- l. 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, addressing the following elements:

- (1) definitions for all key positions requiring a formal turnover process;
- (2) turnover of equipment/facility status, duties, and responsibilities that results in the safe and effective transfer of equipment status and in--progress or planned activities from one shift or workgroup to the next; and
- (3) process for reliefs during a shift.

m. Control of Interrelated Processes. The operator must establish and implement operations practices to ensure that interrelated processes do not adversely affect facility safety or operations, addressing the following elements:

- (1) defined responsibilities with respect to the control of interrelated processes (processes or activities that can affect operations, but are under the control of persons other than the affected operators, such as shared support systems or special testing);
- (2) operator training and qualification to understand interrelated processes, to interpret instrument readings, and provide timely corrective action for process -related problems; and
- (3) establish lines of communication between operating personnel, process support personnel, and other interrelated process operators for coordination of activities.

n. Required Reading. The operator must establish and implement operations practices for an effective required reading program to keep operators updated on equipment or document changes, lessons learned, or other important information, addressing the following elements:

- (1) identification of material to be distributed via required reading;
- (2) identification of which personnel are required to read specific required reading items; and
- (3) distribution of required reading to appropriate personnel and documentation of their timely completion.

o. Timely Instructions/Orders. The operator must establish and implement operations practices for timely written direction and guidance from management to operators, addressing the following elements:

- (1) appropriate circumstances for the use of timely instructions/orders;
- (2) designated levels of review and approval prior to issuance;
- (3) configuration control of timely instructions/orders; and

- (4) distribution of timely instructions/orders to appropriate personnel and documentation of their receipt and understanding.
- p. Technical Procedures. The operator must establish and implement operations practices for developing and maintaining accurate, understandable written technical procedures that ensure safe and effective facility and equipment operation.
- q. Operator Aids. (DOE-STD-1043-93) The operator must establish and implement operations practices to provide accurate, current, and approved operator aids, addressing the following elements:
 - (1) technical evaluation and management approval of operator aids;
 - (2) operator aids do not obscure equipment;
 - (3) administrative control of installed operational aids; and
 - (4) periodic review for adequacy and correctness.
- r. Component Labeling. The operator must establish and implement operations practices for clear, accurate equipment labeling, addressing the following elements:
 - (1) components that require a label;
 - (2) label information that uniquely identifies components and is consistent with regulations, standards, and facility documents;
 - (3) durable and securely attached labels that do not interfere with controls or equipment; and
 - (4) 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.

APPENDIX A. CONDUCT OF OPERATIONS DETAILED CONDUCT OF OPERATIONS MATRIX

This Appendix consists of a series of tables comprising a Conduct of Operations Matrix for documenting implementation of conduct of operations requirements at Hazard Category 1, 2, and 3 nuclear facilities, plus others as designated by DOE Line Management. Each of the topics in the specific requirements in Attachment 2, Conduct of Operations Program Requirements, is expanded to list program attributes that implement that Conduct of Operations Program topic. The Paragraph 2-specific requirements are listed in Column 1, and detailed attributes of these high--level requirements are listed in Column 2. Column 3 is for entering the document citation where the item is implemented, or for entering the justification for its non-applicability, or, if the item is partially applicable, both a citation and a justification.

Instructions for filling out the Matrix:

Use the boxes in Column 1 and on the right of Column 2 to indicate whether the item is Applicable (A), Not Applicable (N) or Partially Applicable (P).

If an entire topic (top item of each topic's Column 1) is deemed Not Applicable, mark it and enter the justification only once. Otherwise, leave the box blank and address the remaining items in Column 1 since it is assumed they could have different citations in Column 3.

If an item is marked Applicable in Column 1, all items in Column 2 are to be implemented, and the implementing document(s) are entered in Column 3. It is not necessary to repeatedly list the same implementing document for the detailed attributes under a higher--level item.

For items marked Partially Applicable in Column 1, indicate in Column 2 whether each item is Applicable, Not Applicable, or Partially Applicable in the same manner as for Column 1.

For items marked Applicable or Partially Applicable, enter the operator's implementing document citation in Column 3.

For items marked Partially Applicable or Not Applicable, enter the justification for this determination in Column 3.

If an entire Column 1 item is marked Applicable, enter the document citation only once, unless different attributes are in different documents.

If an entire Column 1 item is marked Not Applicable, enter the justification only once.

Organization and Administration, Attachment 2 Paragraph 2.a		
1 Requirements, Attachment 2 ¶ 2.a	2 Detailed Attributes	3 Doc Citation /Justification
2.a. The operator must establish policies, programs, and procedures that define an effective operations organization, including the following elements: <input type="checkbox"/>		
2.a.(1) Organizational roles, responsibilities, authority, and accountability <input type="checkbox"/>		
2.a.(2) Adequate material and personnel resources to accomplish operations <input type="checkbox"/>		
2.a.(3) Monitoring and self -assessment of operations <input type="checkbox"/>		
2.a.(4) Management and worker accountability for the safe performance of work <input type="checkbox"/>		

Organization and Administration, Attachment 2 Paragraph 2.a		
1 Requirements, Attachment 2 ¶ 2.a	2 Detailed Attributes	3 Doc Citation /Justification
2.a.(5) Management training, qualification, succession, and, when appropriate, certification		
2.a.(6) Methods for the analysis of hazards and implementation of hazard controls in the work planning and execution process		
2.a.(7) Methods for approving, posting, maintaining, and controlling access to electronic operations documents (procedures, drawings, schedules, maintenance actions, etc.) if electronic documents are used.		

Shift Routines and Operating Practices, Attachment 2 Paragraph 2.b			
1 Requirements, Attachment 2 ¶ 2.b	2 Detailed Attributes	3 Doc Citation / Justification	
2.b. The operator must establish and implement operations practices to ensure shift operators are alert, informed of conditions, and properly operate equipment, addressing the following elements: <input type="checkbox"/>			
2.b.(1) Prompt notification to operating personnel and supervisors of changes in the facility status, abnormalities, or difficulties encountered in performing assigned tasks. <input type="checkbox"/>			
2.b.(2) Adherence by operating personnel and other workers to established safety requirements <input type="checkbox"/>			
2.b.(3) Awareness by operating personnel of the status of equipment through inspection, conducting checks, and tours of equipment and work areas <input type="checkbox"/>			

Shift Routines and Operating Practices, Attachment 2 Paragraph 2.b			
1 Requirements, Attachment 2 ¶ 2.b	2 Detailed Attributes		3 Doc Citation / Justification
2.b.(8) Authorization to operate facility equipment <input type="checkbox"/>			
2.b.(9) Designating shift operating bases and providing equipment for them <input type="checkbox"/>			
2.b.(10) Professional and disciplined operator performance of duties <input type="checkbox"/>			

Control Area Activities, Attachment 2 Paragraph 2.c.			
1 Requirements, Attachment 2 ¶ 2.c	2 Detailed Attributes	3 Doc Citation /.Justification	
2.c. The operator must establish and implement operations practices that promote orderly, business-like control area operations and address the following elements: <input type="checkbox"/>			
2.c.(1) Control -area access <input type="checkbox"/>			
2.c.(2) Formality and discipline in the control --area <input type="checkbox"/>	-		
2.c.(3) Surveillance of control panels and timely response to determine and correct the cause of abnormalities/out -of -specification conditions <input type="checkbox"/>			
2.c.(4) Limitation of the number of concurrent evolutions and duties <input type="checkbox"/>			

Control Area Activities, Attachment 2 Paragraph 2.c.		
1 Requirements, Attachment 2 ¶ 2.c	2 Detailed Attributes	3 Doc Citation /.Justification
2.c.(5) Authorization to operate control area equipment <input type="checkbox"/>		

Communications, Attachment 2 Paragraph 2.d			
1 Requirements, Attachment 2 ¶ 2.d	2 Detailed Attributes	3 Doc Citation / Justification	
2.d. The operator must establish and implement operations practices that ensure accurate, unambiguous communications among operations personnel and address the following elements: <input type="checkbox"/>			
2.d.(1) Provision of communications systems for emergency and normal operations <input type="checkbox"/>			
2.d.(2) Administrative control of communications equipment, including authorization to use the public address system and allowable locations and purposes for radio use <input type="checkbox"/>	-- - <input type="checkbox"/>		
2.d.(3) Methods for control areas to contact operators and supervisors <input type="checkbox"/>			
2.d.(4) Use of abbreviations and acronyms <input type="checkbox"/>			

Communications, Attachment 2 Paragraph 2.d			
1 Requirements, Attachment 2 ¶ 2.d	2 Detailed Attributes		3 Doc Citation / Justification
2.d.(5) Use of oral instructions and communications, including use of repeat -backs and sender/receiver identifications			

On-shift Training, Attachment 2 Paragraph 2.e			
1 Requirements, Attachment 2 ¶ 2.e	2 Detailed Attributes		3 Doc Citation / Justification
2.e. The operator must establish and implement operations practices that control on-shift training of facility operators, prevent inadvertent or incorrect trainee manipulation of equipment, and address the following elements: <input type="checkbox"/>			
2.e.(1) On-shift training program <input type="checkbox"/>	--		
	-		
2.e.(2) Authorization and documentation of training activities <input type="checkbox"/>	-		
2.e.(3) Supervision and control of personnel under instruction by qualified personnel. <input type="checkbox"/>	-		
	--		
	-		

On-shift Training, Attachment 2 Paragraph 2.e			
1 Requirements, Attachment 2 ¶ 2.e	2 Detailed Attributes		3 Doc Citation / Justification
2.e.(4) Facility conditions and controls for conducting training during operational activities, including suspension of training during unanticipated or abnormal events.			

**Investigation of Abnormal Events, Conditions, and Trends,
Attachment 2 Paragraph 2.f**

1 Requirements, Attachment 2 ¶ 2.f	2 Detailed Attributes	3 Doc Citation / Justification
<p>2.f.</p> <p>The operator must establish and implement operations practices for investigating events to determine their impact and prevent recurrence, addressing the following elements:</p> <p style="text-align: center;"><input type="checkbox"/></p>		
<p>2.f.(1) Specific events requiring investigation, and criteria for identifying other events or conditions to be investigated</p> <p style="text-align: center;"><input type="checkbox"/></p>		
<p>2.f.(2) Designation of investigators and their training and qualification</p> <p style="text-align: center;"><input type="checkbox"/></p>		
<p>2.f.(3) Investigation process and techniques</p> <p style="text-align: center;"><input type="checkbox"/></p>		

Investigation of Abnormal Events, Conditions, and Trends, Attachment 2 Paragraph 2.f			
1 Requirements, Attachment 2 ¶ 2.f	2 Detailed Attributes	3 Doc Citation / Justification	
2.f.(4) Causal analysis and corrective action determination <input type="checkbox"/>			
2.f.(5) Event investigation reporting, training, and trending <input type="checkbox"/>			
2.f.(6) Response to known or suspected sabotage <input type="checkbox"/>			

Notifications, Attachment 2 Paragraph 2.g			
1 Requirements, Attachment 2 ¶ 2.g	2 Detailed Attributes	3 Doc Citation / Justification	
2.g. The operator must establish and implement operations practices to ensure appropriate event notification for timely response, addressing the following elements: <input type="checkbox"/>			
2.g.(1) Procedures for internal, DOE, and external notifications, including events, persons to be notified, persons responsible to make notifications, contact information, and recordkeeping <input type="checkbox"/>			
2.g.(2) Communications equipment for notification <input type="checkbox"/>			

Control of Equipment and System Status, Attachment 2 Paragraph 2.h			
1 Requirements, Attachment 2 ¶ 2.h	2 Detailed Attributes	3 Doc Citation / Justification	
2.h. 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: <input type="checkbox"/>			
2.h.(1) Authorization for, and awareness of, equipment and system status changes <input type="checkbox"/>			
2.h.(2) Initial system alignment, maintaining control of equipment and system status through startup, operation, and shutdown, and documentation of status <input type="checkbox"/>			
	-		
2.h.(3) Use and approval of lockouts and tagouts for administrative control of equipment <input type="checkbox"/>			

Control of Equipment and System Status, Attachment 2 Paragraph 2.h		
1 Requirements, Attachment 2 ¶ 2.h	2 Detailed Attributes	3 Doc Citation / Justification
2.h.(8) Configuration control and distribution of engineering documents <input type="checkbox"/>		

Lockouts and Tagouts, Attachment 2 Paragraph 2.i			
1 Requirements, Attachment 2 ¶2.i	2 Detailed Attributes	3 Doc Citation / Justification	
2.i.(2) The operator must establish and implement operations practices that address the following elements for the installation and removal of caution tags for equipment protection or operational control. <input type="checkbox"/>			
2.i.(2)(a) Roles and responsibilities associated with the development, documentation, review, installation, and removal of caution tags to convey operational information or equipment alignments for protection of equipment <input type="checkbox"/>			
2.i.(2)(b) Description and control of the tags <input type="checkbox"/>			

Lockouts and Tagouts, Attachment 2 Paragraph 2.i		
1 Requirements, Attachment 2 ¶2.i	2 Detailed Attributes	3 Doc Citation / Justification
2.i.(2)(c) Measures to prevent relying on caution tags for personnel protection		
<input type="checkbox"/>		

Independent Verification, Attachment 2 Paragraph 2.j		
1 Requirements, Attachment 2 ¶ 2.j	2 Detailed Attributes	3 Doc Citation / Justification
2.j. The operator must establish and implement operations practices to verify that critical equipment configuration is in accordance with controlling documents, addressing the following elements: <input type="checkbox"/>		
2.j.(1) Structures, systems, components, operations, and programs requiring independent verification <input type="checkbox"/>		
2.j.(2) Situations requiring independent verification <input type="checkbox"/>		
2.j.(3) Methods for performing and documenting independent verification <input type="checkbox"/>		

Independent Verification, Attachment 2 Paragraph 2.j			
1 Requirements, Attachment 2 ¶2.i	2 Detailed Attributes	3 Doc Citation / Justification	
2.j.(4) Situations, if any, allowing concurrent dual verification <input type="checkbox"/>			
2.j.(5) Methods for performing concurrent dual verification, if used. <input type="checkbox"/>			

Log keeping, Attachment 2 Paragraph 2.k

1 Requirements, Attachment 2 ¶ 2.k	2 Detailed Attributes	3 Doc Citation / Justification
<p>2.k.</p> <p>The operator must establish and implement operations practices to ensure thorough, accurate, and timely recording of equipment information for performance analysis and trend detection, addressing the following elements:</p> <p style="text-align: center;"><input type="checkbox"/></p>		
<p>2.k.(1) Narrative logs at all key positions, as defined by management, for the recording of pertinent information</p> <p style="text-align: center;"><input type="checkbox"/></p>		
<p>2.k.(2) Prompt and accurate recording of information</p> <p style="text-align: center;"><input type="checkbox"/></p>		
<p>2.k.(3) Type, scope, and format for log entries</p> <p style="text-align: center;"><input type="checkbox"/></p>		

Log keeping, Attachment 2 Paragraph 2.k			
1 Requirements, Attachment 2 ¶ 2.k	2 Detailed Attributes	3 Doc Citation / Justification	
2.k.(4) Method for recording late entries and correcting erroneous entries without obscuring the original entry <input type="checkbox"/>			
2.k.(5) Periodic supervisory reviews for accuracy, adequacy, and trends <input type="checkbox"/>			
2.k.(6) Document retention requirements <input type="checkbox"/>			

Turnover and Assumption of Responsibilities, Attachment 2 Paragraph 2.I			
1 Requirements, Attachment 2 ¶ 2.I	2 Detailed Attributes	3 Doc Citation / Justification	
2.I. 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, addressing the following elements: <input type="checkbox"/>			
2.I.(1) Definitions for all key positions requiring a formal turnover process <input type="checkbox"/>			
2.I.(2) Turnover of equipment/facility status, duties, and responsibilities that results in the safe and effective transfer of equipment status and in--progress or planned activities from one shift or workgroup to the next <input type="checkbox"/>			
2.I.(2) Shift turnover procedures (continued)			

Turnover and Assumption of Responsibilities, Attachment 2 Paragraph 2.I		
1 Requirements, Attachment 2 ¶ 2.I	2 Detailed Attributes	3 Doc Citation / Justification
2.I.(3) Process for reliefs during a shift <input type="checkbox"/>		

Control of Interrelated Processes, Attachment 2 Paragraph 2.m			
1 Requirements, Attachment 2 ¶ 2.m	2 Detailed Attributes	3 Doc Citation / Justification	
2.m. The operator must establish and implement operations practices to ensure interrelated processes do not adversely affect facility safety or operations, addressing the following elements: <input type="checkbox"/>			
2.m.(1) Defined responsibilities with respect to the control of interrelated processes (Processes or activities that can affect operations, but are under the control of persons other than the affected operators, such as shared support systems or special testing) <input type="checkbox"/>			
2.m.(2) Operator training and qualification to understand interrelated processes, to interpret instrument readings, and provide timely corrective action for process -related problems <input type="checkbox"/>			

Control of Interrelated Processes, Attachment 2 Paragraph 2.m			
1 Requirements, Attachment 2 ¶ 2.m	2 Detailed Attributes	3 Doc Citation / Justification	
2.m.(3) Establish lines of communication between operating personnel, process support personnel, and other interrelated process operators for coordination of activities <input type="checkbox"/>			

Required Reading, Attachment 2 Paragraph 2.n			
1 Requirements, Attachment 2 ¶ 2.n	2 Detailed Attributes	3 Doc Citation / Justification	
2.n. The operator must establish and implement operations practices for an effective required reading program to keep operators updated on equipment or document changes, lessons learned, or other important information, addressing the following elements: <input type="checkbox"/>			
2.n.(1) Identification of material to be distributed via required reading <input type="checkbox"/>			
2.n.(2) Identification of which personnel are required to read specific required reading items <input type="checkbox"/>			
2.n.(3) Distribution of required reading to appropriate personnel and documentation of their timely completion <input type="checkbox"/>			

Timely Instructions/Orders, Attachment 2 Paragraph 2.o			
1 Requirements, Attachment 2 ¶ 2.o	2 Detailed Attributes	3 Doc Citation / Justification	
2.o. The operator must establish and implement operations practices for timely written direction and guidance from management to operators, addressing the following elements: <input type="checkbox"/>			
2.o.(1) Appropriate circumstances for the use of timely instructions/orders <input type="checkbox"/>			
2.o.(2) Designated levels of review and approval prior to issuance <input type="checkbox"/>			
2.o.(3) Configuration control of timely instructions/orders <input type="checkbox"/>			

Timely Instructions/Orders, Attachment 2 Paragraph 2.o		
1 Requirements, Attachment 2 ¶ 2.o	2 Detailed Attributes	3 Doc Citation / Justification
2.o.(4) Distribution of timely instructions/orders to appropriate personnel and documentation of their receipt and understanding		
<input type="checkbox"/>		

Technical Procedures, Attachment 2 Paragraph 2.p

1 Requirements, Attachment 2 ¶ 2.p	2 Detailed Attributes	3 Doc Citation / Justification
<p>2.p.</p> <p>The operator must establish and implement operations practices for developing and maintaining accurate, understandable written technical procedures that ensure safe and effective facility and equipment operation, addressing the following elements:</p> <p style="text-align: center;"><input type="checkbox"/></p>		
<p>2.p.(1) Expectations for the use of procedures to perform operations.</p> <p style="text-align: center;"><input type="checkbox"/></p>		
<p>2.p.(2) A process for procedure development</p> <p style="text-align: center;"><input type="checkbox"/></p>		
<p>2.p.(3) Procedure content, including consistent format and use of terms (prerequisites, warnings, cautions, notes, hold points, etc.), detail sufficient for accomplishing the operation,</p>		

Technical Procedures, Attachment 2 Paragraph 2.p

1 Requirements, Attachment 2 ¶ 2.p	2 Detailed Attributes		3 Doc Citation / Justification
technically accurate procedures capable of performance as written, and procedure conformance with the facility design and manufacturer documentation			
<input data-bbox="365 633 427 682" type="checkbox"/>			
2.p.(3) Procedure content (continued)			

Technical Procedures, Attachment 2 Paragraph 2.p			
1 Requirements, Attachment 2 ¶ 2.p	2 Detailed Attributes		3 Doc Citation / Justification
2.p.(6) A process for approval of new, revised, or changed procedures <input type="checkbox"/>			
2.p.(7) Initial -issue and periodic review and testing of procedures <input type="checkbox"/>			
2.p.(8) Availability and use of the latest revisions of procedures <input type="checkbox"/>			

Technical Procedures, Attachment 2 Paragraph 2.p		
1 Requirements, Attachment 2 ¶ 2.p	2 Detailed Attributes	3 Doc Citation / Justification
2.p.(9) Specified and defined procedure use requirements: i.e., reader worker method, reference use only, use each time, and emergency response <input type="checkbox"/>		
2.p.(9) Specified and defined procedure use requirements: i.e., reader worker method, reference use only, use each time, and emergency response <input type="checkbox"/>		

Operator Aids, Attachment 2 Paragraph 2.q			
1 Requirements, Attachment 2 ¶ 2.q	2 Detailed Attributes	3 Doc Citation / Justification	
2.q. The operator must establish and implement operations practices to provide accurate, current, and approved operator aids, addressing the following elements: <input type="checkbox"/>			
2.q.(1) Technical evaluation and management approval of operator aids <input type="checkbox"/>			
2.q.(2) Operator aids serve as conveniences, not operational requirements. <input type="checkbox"/>			
2.q.(3) Operator aids do not obscure equipment, <input type="checkbox"/>			

Operator Aids, Attachment 2 Paragraph 2.q		
1 Requirements, Attachment 2 ¶ 2.q	2 Detailed Attributes	3 Doc Citation / Justification
2.q.(4) Administrative control of installed operator aids <input type="checkbox"/>		
2.q.(5) Periodic review for adequacy and correctness <input type="checkbox"/>		

Component Labeling, Attachment 2 Paragraph 2.r		
1 Requirements, Attachment 2 ¶ 2.r	2 Detailed Attributes	3 Doc Citation / Justification
2.r.(4) 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		
	-	