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## Conduct of Operations Manual

### 1.0 PURPOSE

The purpose of this document is to describe the implementation of Conduct of Operations at Los Alamos National Laboratory (LANL or the Laboratory).

In July of 1990, the Department of Energy (DOE) issued DOE Order (O) 5480.19, *Conduct of Operations Requirements for DOE Facilities*. The Order's guidelines were designed to form a compendium of good management practices and describe key elements that support excellence in operation. In 2001, this Order was added to the [Prime Contract](#) and was a fundamental component of the Los Alamos National Security, Limited Liability Company (LANS, LLC) proposal to DOE to manage the Laboratory. In June of 2010, [DOE O 422.1](#), *Conduct of Operations*, superseded DOE O 5480.19 and was added to the Laboratory contract in January of 2011.

Conduct of Operations is a philosophy of working in a formalized, disciplined manner with an aim to achieving operational and programmatic excellence. It requires a personal commitment to maintain the highest standards of quality. Properly integrated, Conduct of Operations, Conduct of Engineering (COE), Conduct of Maintenance, Conduct of Training, and a formal method for research and development become the foundation of the Laboratory's safety culture.

This document establishes a formally documented methodology for ensuring operations and programmatic activities are performed safely and securely in accordance with applicable codes, standards, DOE directives, and sound business practices. Success of this methodology depends on implementing established requirements using approved procedures for conducting operations and programmatic activities in a systematic and prescribed manner, and ensuring that workers are trained to those procedures. It is the Laboratory's policy that workers will not compromise safety for personal, programmatic, operational, or any other reason. Applying the formality and discipline of Conduct of Operations will enable Laboratory workers to achieve enhanced safety, security, environmental compliance, quality, consistency, and excellence. In a broad sense, Conduct of Operations principles and requirements apply to all endeavors at the Laboratory. These standards comply with the requirements of [DOE O 422.1](#).

### 2.0 AUTHORITY AND APPLICABILITY

#### 2.1 Authority

This document is issued under the authority of the Laboratory Director to direct the management and operation of the Laboratory, as delegated to the Associate Director for Nuclear and High-Hazard Operations (ADNHHO) as provided in the [Prime Contract](#). This document is derived from the Laboratory [Governing Policies](#), particularly the section on Management Systems, and [DOE O 422.1](#), *Conduct of Operations*.

- Issuing Authority (IA): Associate Director for Nuclear and High-Hazard Operations (ADNHHO)
- Responsible Manager (RM): Operations Support (OS) Division Leader
- Responsible Office (RO): Operations Support–Readiness and Technical Support (OS-RTS)

## 2.2 Applicability

This document applies to all Laboratory workers performing facility or programmatic work.

This document applies to subcontractors and their employees to the degree specified in their subcontracts.

This document provides the conduct of operations program for all Laboratory facilities; facility-specific manuals are not required. Implementation of the conduct of operation program is in accordance with [P315-2](#), *Formality of Operations Change Control*, as described in Section 3.1 of this document and supported by the institutional programs described in Sections 3.2.1 through 3.2.3.

If an organization elects to use local implementing procedures for conduct of operations, those procedures may augment or complement this document, but may not conflict with it. Such conflicts must be resolved through the exception or variance process described in [P315-2](#).

## 3.0 PROCEDURE DESCRIPTION

Operating in accordance with the requirements of this document and its attachments is fundamental to the safety of employees, the public, and facilities. Compliance with these requirements provides defense-in-depth against many kinds of accidents and adverse incidents by minimizing error and confusion. Furthermore, these requirements provide a clear means to identify problems, determine underlying causes, take preventive action before adverse events occur, and bring about continuous improvement in the safety and quality of operations.

### 3.1 Graded Approach

Conduct of Operations at the Laboratory is applied using the graded approach as defined in [SD330](#), *Los Alamos National Laboratory Quality Assurance Program*. The graded approach is incorporated into all activities performed at the Laboratory as a process of ensuring that the level of analysis, documentation, and actions used to comply with requirements are commensurate with the following:

- The relative importance to safety, safeguards, and security
- The magnitude of any hazard involved
- The life cycle stage of the facility
- The programmatic mission of a facility
- The particular characteristics of a facility
- The relative importance of managing radiological and non-radiological hazards
- Any other relevant factor

The institution establishes the requirements for the Conduct of Operations Program through this document, but the implementation is the responsibility of the individual facility through the facility's Facility Operations Director (FOD) organization based on the graded approach described above and the requirements of the institutional programs described in Section 3.2, *Institutional Programs and Integration*.

## 3.2 Institutional Programs and Integration

Improving overall performance at the Laboratory requires integration of institutional documents that direct the manner in which work will be conducted at the Laboratory. These documents establish requirements for the conduct of operations, engineering, maintenance, and training.

[P315-2](#), *Formality of Operations Change Control*, describes the process for developing an implementation strategy for formality of operations and for assessing the effectiveness of the resulting program. The criteria for assessing the effectiveness of the implementation of Conduct of Operations are available from the [OS-RTS website](#).

The institutional guidelines for the formal application of scientific methodology to research and development are addressed in a companion document, [SD601](#), *Conduct of Research and Development*. Research and Development (R&D) work done in a facility (for example a nuclear or radiological facility) must be executed in a way that complies with the facility requirements including the applicable controls and formality of operations. See additional discussion in Attachment 16 of this document.

This document is intended to integrate fully with the Laboratory's Integrated Work Management Program ([P300](#), *Integrated Work Management*). See additional discussion in Attachment 16.

### 3.2.1 Conduct of Maintenance

The institutional Conduct of Maintenance program consists of policies, programs, and practices associated with the performance of maintenance, work management, and related activities. [P950](#), *Conduct of Maintenance*, establishes the formality for ensuring that the practice of maintenance at the Laboratory meets customer requirements while complying with applicable codes, standards, Code of Federal Regulations (CFR) directives, DOE directives, and efficient business practices. Maintenance program procedures are to be implemented at nuclear facilities through [DOE O 433.1B](#), *Maintenance Management Program for DOE Nuclear Facilities*. For non-nuclear facilities, the maintenance Administrative Procedures (APs) will be implemented using a graded approach. In accordance with [DOE O 430.1B](#), Chg. 1, *Real Property Asset Management*, non-nuclear facilities must implement processes supporting condition assessment surveys; work management; preventive, predictive, and corrective maintenance; configuration management; management of maintenance backlogs; and seasonal facility preservation.

The criteria for assessing the effectiveness of the implementation of Conduct of Maintenance are available from the Maintenance and Site Services (MSS) Division.

### 3.2.2 Conduct of Engineering (COE)

The COE program defines the requirements and processes for the practice of engineering at the Laboratory to ensure that engineering products and services satisfy requirements, needs, and customer expectations in a safe, secure, and environmentally-responsible manner. COE establishes formally documented procedures for ensuring that the practice of engineering at the Laboratory meets customer requirements while complying with applicable codes, standards, CFR directives, DOE directives, and efficient business practices.

Success of the COE program depends on implementing the [Prime Contract](#) engineering requirements by using approved institutional engineering programs and standards for engineering practices (e.g., the systematic application of engineering disciplines within a framework of Laboratory-developed processes that are governed by national codes and standards, recognized quality standards, DOE orders, regulations, and other contractual requirements), while ensuring that trained and qualified engineering personnel perform these activities systematically and as prescribed. The program is addressed by [PD340](#), *Conduct of Engineering for Facility Work*.

The criteria for assessing the effectiveness of the implementation of COE are available from the Conduct of Engineering Office (CENG-OFF).

### 3.2.3 Conduct of Training

The Conduct of Training program is comprised of policies, procedures, tools, and other training resources necessary to train, qualify or certify, and authorize Laboratory workers in accordance with applicable regulatory drivers and contractual requirements. [PD781](#), *Training Program Management*, serves as the overarching training Program Description document for the Laboratory. [P781-1](#), *Conduct of Training*, provides detailed requirements and guidance necessary to implement, using a graded approach, training and qualification programs at the institutional, facility, and activity (job task) levels. These documents are supplemented by other procedures that address specific aspects of training program implementation.

The Conduct of Training program is not implemented by a single organization, but is distributed to a number of organizations to best implement a specific aspect of the program. The Service Innovation Division—Institutional Training Services (SI-ITS) group is responsible for institutional training program and policy and administration of Laboratory-wide training courses. SI-ITS deploys some training professionals to Laboratory organizations. The Nuclear and High Hazard Operations—Training (NHHO-TR) group deploys training professionals to nuclear, nonnuclear and other facilities. The Software and Applications Engineering Division—Business Systems Solutions Center (SAE-4) is responsible for maintaining the Laboratory’s training data management systems.

The Responsible Associate Directors (RADs) and the ADNHHO—with the support of NHHO-TR—share responsibility for the development, implementation, and maintenance of training programs for nuclear facilities and activities that meet expectations of [DOE O 426.2](#), *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*.

Facility owners and managers are responsible for the development, implementation, and maintenance of facility-specific training. Line managers (including facility owners and managers) are responsible for development, implementation, and maintenance of training required for the safe conduct of activities within their purview. All line managers are responsible for assuring workers have completed Laboratory-wide, facility-specific, and activity-specific training required for their work location and assigned job tasks.

The criteria for assessing the effectiveness of the implementation of Conduct of Training are available from the SI-ITS group.

### 3.3 Periodic Assessment

[DOE-O-422.1](#), *Conduct of Operations*, Paragraph 2.a.(3) requires “monitoring and self-assessment of operations.” One of the methods to meet this requirement is the periodic assessment of the implementation and maturity of Conduct of Operations within the various LANL facilities and/or operating organizations. This periodic assessment will be managed by the OS-RTS organization by implementing the following requirements:

- The assessments will be performed following the requirements of [P328-3](#), *Management Assessment*.
- Develop and maintain a set of assessment criterion in the form of Criteria Review and Approach Documents (CRADs) that evaluate implementation of the requirements of this document. These CRADs will be performance based and allow for assessing maturity of the implementation.

- Develop and maintain an assessment Plan of Action (POA) that describes the purpose, scope, depth, and breath of the periodic assessments. A separate POA will be developed for nuclear and non-nuclear facilities to support the graded implementation in the non-nuclear facilities. This POA will utilize the above CRADs as the assessment criteria.
- Establish a basic schedule of every three (3) years for the nuclear facilities and every five (5) years for non-nuclear facilities. These basic assessment schedules may be waived or modified by the OS Division Leader.
- The CRADs and POAs will be posted on the [OS-RTS website](#).

#### 4.0 RESPONSIBILITIES

Specific Roles, Responsibilities, Accountabilities, and Authorities related to this document are documented in [P313](#), *Roles, Responsibilities, Authorities, and Accountability*.

#### 5.0 IMPLEMENTATION

The requirements in this document are effective on the issue date.

#### 6.0 TRAINING

There is no specific mandatory training required to implement this document. It is recommended that all personnel implementing this document complete [UTrain Course #24648](#), *OS-RTS ConOps, Conduct of Operations Overview*. This training will enhance the employee's knowledge as required and as outlined in [DOE O 422.1](#), *Conduct of Operations*. The Conduct of Operation program is one of the Safety Management Programs (SMPs) recognized in the Nuclear Safety Rule [[Title 10 Code of Federal Regulations \(CFR\) Part 830](#), *Nuclear Safety Management*]. The Conduct of Operations Program at LANL is implemented as an SMP. This document is the tool used to meet the implementing requirements as outlined in [DOE O 422.1](#). Additional, attachment-specific training to meet these requirements is identified in the individual attachments of this document.

#### 7.0 EXCEPTION OR VARIANCE

To obtain an exception or variance to the requirements of this document, follow the requirements of Section 7.0 of [P315-2](#), *Formality of Operations Change Control*.

#### 8.0 DOCUMENTS AND RECORDS

##### 8.1 Office of Record

The Policy Office is the Laboratory Office of Record for this Institutional Document and maintains the administrative record.

The FOD organizations are the Office of Record for all documents (e.g., procedures, round sheets, logs, etc.) generated using this document.

##### 8.2 Records Processing

Records, including logs, as required by the attachments or implementing programs must be managed in accordance with [P1020-1](#), *Laboratory Records Management*, and any local processes.

## 9.0 DEFINITIONS AND ACRONYMS

### 9.1 Definitions

See LANL [Definition of Terms](#).

### 9.2 Conventions

Document conventions include the following:

Term	Usage
must	Indicates a requirement. If the intent cannot or will not be met, the process described in Section 7.0, <i>Exception or Variance</i> , must be followed.
should	Indicates a recommendation.
may	Indicates an option.
supervisory titles	Titles for supervisory positions—for example, Operations Manager (OM), Associate Director, or Responsible Line Manager (RLM)—indicate the position that is ultimately accountable for the referenced action. Personnel holding these positions may delegate the performance of the work, but not the accountability for the outcome.
document references	References to other documents must be interpreted as referring to any successor documents as well.
organizational references	References to organizations must be interpreted as referring to the functional equivalents, should the organization be re-named or restructured.

### 9.3 Acronyms

See LANL [Acronym Master List](#).

ADNHHO	Associate Director for Nuclear and High-Hazard Operations
AP	Administrative Procedure
CENG-OFF	Conduct of Engineering Office
CFR	Code of Federal Regulations
COE	Conduct of Engineering
DOE	Department of Energy
FOD	Facility Operations Director
IA	Issuing Authority
IV	Independent Verification
LANL	Los Alamos National Laboratory
LANS, LLC	Los Alamos National Security, Limited Liability Company
MSS	Maintenance and Site Services
NHHO-TR	Nuclear and High Hazard Operations—Training
O	Order
OM	Operations Manager
OS	Operations Support
OS-RTS	Operations Support—Readiness and Technical Support
POA	Plan of Action
R&D	Research and Development

RAD	Responsible Associate Director
RLM	Responsible Line Manager
RM	Responsible Manager
RO	Responsible Office
SAE-4	Software and Applications Engineering–Business Systems Solutions Center
SI-ITS	Service Innovation–Institutional Training Services
SMP	Safety Management Program
USI	Unreviewed Safety Issue
USQ	Unreviewed Safety Question

**10.0 HISTORY**

<b>Revision History</b>		
10/31/08	P315 Rev. 0	Initial Issue. This document replaces and cancels P315.0, <i>Conduct of Operations Manual</i> .
06/24/10	P315, Rev. 1	The entire document has been reformatted in compliance with <a href="#">P311-1</a> , <i>Creating, Revising, and Cancelling Institutional Documents</i> . Document and organizational references have been updated. Several sections, as well as chapters (Attachments) 6 and 18 in entirety, have been replaced by reference to applicable institutional documents. Attachments 13 and 16 have been rewritten.
11/28/12	P315, Rev. 2	<p>Entire document:</p> <ul style="list-style-type: none"> <li>▪ Updated to implement <a href="#">DOE O 422.1</a>, <i>Conduct of Operations</i>.</li> <li>▪ Updated links, titles, and acronyms.</li> <li>▪ Made editorial changes to improve consistency with other institutional documents and among related requirements within this document.</li> </ul> <p>Main Body:</p> <ul style="list-style-type: none"> <li>▪ Section 5.0: Updated to reflect effective date of January 14, 2013 for nuclear, high- and moderate-hazard facilities and accelerators.</li> <li>▪ Section 7.0: Replaced the Exception and Variance process with a link to <a href="#">P315-2</a>, <i>Implementing Formality of Operations</i>;</li> </ul> <p>All Attachments:</p> <ul style="list-style-type: none"> <li>▪ Updated Records sections to link to <a href="#">P1020-1</a>, <i>Laboratory Records Management</i>, for processing any record generated by this document;</li> </ul> <p>Attachment 8:</p> <ul style="list-style-type: none"> <li>▪ Added a discussion of out of service equipment/systems linking to caution tags and control locks as potential control methods;</li> <li>▪ Changed the periodicity for the review of control locks;</li> </ul> <p>Attachment 10:</p> <ul style="list-style-type: none"> <li>▪ Added a discussion and requirements for the use of “concurrent dual verification” when performing Independent Verification (IV);</li> </ul> <p>Attachment 12:</p> <ul style="list-style-type: none"> <li>▪ Updated the turnover process and Appendix 12-A to require</li> </ul>

Revision History		
		<p>a review of shift and standing orders;</p> <p>Attachment 15:</p> <ul style="list-style-type: none"> <li>▪ Added a requirement for Safety Basis to review shift and standing orders and perform a Unreviewed Safety Question/Unreviewed Safety Issue (USQ/USI) review;</li> </ul> <p>Attachment 16:</p> <ul style="list-style-type: none"> <li>▪ Revised the section regarding document types excluded from the requirements of Attachment 16 to provide criteria and add Appendix 16-J to document the review of current excluded document types;</li> <li>▪ Revised existing and added new definitions to support specific changes to Attachment 16;</li> <li>▪ Added a note to acknowledge that the performance of a validation may result in re-invoking the Review and Comment and USQ/USI processes;</li> <li>▪ Deleted “first time use” as an approved validation method;</li> <li>▪ Clarified that the date for existing operations procedures to meet the format of Appendix 16-C is 06/24/2013;</li> <li>▪ Added an option for performing an “additional validation” as part of implementation after a procedure has been approved;</li> <li>▪ Re-wrote the entire section dealing with periodic reviews of procedures;</li> <li>▪ Clarified the expectation that validating the current version of a procedure extends to reference procedures;</li> </ul> <p>Attachment 18:</p> <ul style="list-style-type: none"> <li>▪ Limited the minimum scope to be the equipment/systems identified in Attachment 8 as requiring status control; and</li> <li>▪ Added requirements to address administrative control of component tags.</li> </ul>
02/20/13	P315, Rev. 3	<p>Section 5.0: Updated to reflect effective date of April 8, 2013 for nuclear, high- and moderate-hazard facilities and accelerators.</p> <p>Attachment 1</p> <ul style="list-style-type: none"> <li>▪ Section 1.5, clarified the requirement regarding informing workers following an event.</li> </ul> <p>Attachment 8</p> <ul style="list-style-type: none"> <li>▪ Section 8.1.2, clarified the expectation that technical procedure generated to support the status control of equipment and systems are in accordance with Attachment 16.</li> <li>▪ Section 8.1.11, clarified the requirements that the controlling temporary modifications is done in accordance with AP-341-504 and its supporting documents.</li> </ul> <p>Attachment 10</p> <ul style="list-style-type: none"> <li>▪ Section 10.1.2, clarified the scope of the requirement for components within safety-related systems that require IV.</li> </ul> <p>Attachment 15</p> <ul style="list-style-type: none"> <li>▪ Section 15.0, deleted Table 15-1 to eliminate confusion with detailed requirements of Sections 15.1 and 15.2.</li> <li>▪ Section 15.1, deleted the requirement that shift orders be reviewed by safety basis and obtain a USQ/USI as appropriate.</li> <li>▪ Section 15.1, deleted the link to Table 15-1 in Section 15.0.</li> </ul>

Revision History		
		<ul style="list-style-type: none"> <li>▪ Section 15.2, deleted the link to Table 15-1 in Section 15.0. Attachment 16</li> <li>▪ Section 16.2.3, deleted the criteria for excluding a document type.</li> <li>▪ Section 16.4, deleted the second sentence of the definition for “Expiration Date.”</li> <li>▪ Section 16.4, in the definition of a “Reference Procedure,” clarified the requirement regarding the usage designation is not to be used for IWD-equivalent procedures.</li> <li>▪ Section 16.4, clarified the definition for “Working Copy” to acknowledge an approved EDMS may also be the source for verifying the most current and approved version of a procedure.</li> <li>▪ Section 16.5.1.h, deleted the requirement that a Reference procedure cannot be used as an IWD-equivalent procedure.</li> <li>▪ Section 16.5.2.b, added a note acknowledging that the FOD may modify Appendix 16-B and 16-C for other types of technical procedures.</li> <li>▪ Section 16.5.2.b, clarified the requirement regarding the alarm response procedures to be developed to support alarms credited in Attachment 8.</li> <li>▪ Section 16.6.1.e, clarified the note requiring the RLM to have Training review the IPC for long-term training requirements.</li> <li>▪ Section 16.9.1, clarified the requirements regarding ensuring that workers are using the correct and latest procedure.</li> <li>▪ Section 16.9.2.a, clarified the expectation that validating the current version of a procedure extends to any associated reference procedures.</li> <li>▪ Section 16.9.2.a, clarified the requirement that an IWD-equivalent procedure that is a “Reference Procedure” be present at the job site.</li> <li>▪ Appendix 16-B, added the expectation that the FOD may modify Appendix 16-B for other types of technical procedures.</li> </ul>
07/17/14	P315, Rev. 4	<ul style="list-style-type: none"> <li>▪ Section 5.0: Updated language to reflect USQ/USI process and implementation dates for affected facilities.</li> <li>▪ Attachment 16: Minor update to clarify the expectations regarding the highlighting of key procedure steps and/or information, including the methods to be used for safety basis and criticality safety steps and/or information.</li> </ul>
09/23/14	P315, Rev. 4	<p>Administrative Change</p> <p>Updated language in Section 5.0 to reflect that this update was categorically excluded from the USQ/USI process.</p> <p>Corrected link to AP-341-504, Temporary Modification Control in Section 8.1.11 of Attachment 8.</p> <p>Corrected link and title change to AP-341-516, title changed from “Operability Determination and Functionality Assessment” to “Operability Determination” in Sections 8.1.13 and 8.5 of Attachment 8.</p>

Revision History		
03/03/15	P315, Rev. 5	<ul style="list-style-type: none"> <li>▪ Section 3.1: Added an acknowledgment in the main body that the institution establishes requirements, but the detailed implementation is the responsibility of the individual facility and coordinated through the facility's FOD organization.</li> <li>▪ Section 3.3: Added a new section to the main body to require the performance of periodic assessments of the implementation of the Conduct of Operations Safety Management Program (SMP) and added a reference in Section 16.1 of Attachment 16.</li> <li>▪ Added to the main body and to each attachment, a recommendation to take the associated new OS-RTS ConOps training.</li> <li>▪ Section 5.0: Updated to reflect that this document is effective on the date of issue. <b>Note:</b> This document is no longer subject to the USQ/USI process.</li> <li>▪ Section 8.1: Added an acknowledgement that FOD organizations are the Office of Record for the documents generated by this document.</li> <li>▪ Section 8.3: Added new acronyms for organizations supporting Conduct of Training.</li> <li>▪ Section 12.0: Identified in the main body the <a href="#">P300</a>, <i>Integrated Work Management</i> forms used to support procedure planning, execution, and close out.</li> </ul> <p>Attachment 1:</p> <ul style="list-style-type: none"> <li>▪ Section 1.2: Clarified that R2A2s come from <a href="#">P313</a>, <i>Roles, Responsibilities, Authorities, and Accountability</i>, and other institutional guidance documents.</li> <li>▪ Section 1.4: Clarified the expectation to believe all indications, alarms, and other process inputs until proven otherwise.</li> <li>▪ Section 1.7: Modified to reference a specific section of <a href="#">P761</a>, <i>Work Schedules</i>, for overtime requirements.</li> <li>▪ Section 1.11: Acknowledged that <a href="#">P102-3</a>, <i>Medical Evaluation for Work</i>, also supports fitness for duty.</li> </ul> <p>Attachment 2:</p> <ul style="list-style-type: none"> <li>▪ Section 2.1: Updated the reference for the Laboratory's emergency planning documents.</li> </ul> <p>Attachment 4:</p> <ul style="list-style-type: none"> <li>▪ Sections 4.2, 4.3, and 4.4: Combined into a single section, and renumbered sections accordingly.</li> <li>▪ Sections 4.3.2 and 4.6: Clarified that the scope of Attachment 4 only applies to PA Systems credited in either the Safety Basis and/or Building Emergency Plan (BEP).</li> <li>▪ Section 4.7: Modified to link to Section 12.2.2 of Attachment 12 instead of referring to <a href="#">P300</a>.</li> </ul> <p>Attachment 8:</p> <ul style="list-style-type: none"> <li>▪ Section 8.1.5: Clarified the expectation that Hazardous Energy Control (HEC) locks are only used to control hazardous energy and clarified expectations for the inspection of administrative control locks that are not routinely accessible.</li> <li>▪ Appendices 8-E and 8-H: Updated to reflect the standard</li> </ul>

Revision History	
	<p>position titles used in this document.</p> <p>Attachment 9:</p> <ul style="list-style-type: none"> <li>Section 9.0: Clarified that log keeping requirements, including the use of electronic logs, are established in <a href="#">P101-3</a>, <i>Lockout/Tagout for Hazardous Energy Control</i>.</li> </ul> <p>Attachment 10:</p> <ul style="list-style-type: none"> <li>Appendix 10-A: Updated references to reflect the current document numbers.</li> </ul> <p>Attachment 12:</p> <ul style="list-style-type: none"> <li>Section 12.2.2: Modified to link to the <a href="#">P300</a> forms for Pre-Job Brief and Post-Job Reviews.</li> </ul> <p>Attachment 13:</p> <ul style="list-style-type: none"> <li>Changed the title of the attachment and section to match DOE Order title.</li> </ul> <p>Attachment 14:</p> <ul style="list-style-type: none"> <li>Section 14.0: Clarified that Required Reading must not be included in initial training for qualifications/certifications.</li> </ul> <p>Attachment 16:</p> <ul style="list-style-type: none"> <li>Sections 16.1, 16.5.2.b, 16.6.2.b, 16.9.2.b, 16.9.2.c, 16.9.2.f, and 16.9.2.g; and Appendices 16-B, 16-C, and 16.-E: Deleted the current procedure template and all references (including DOE standard) in order to add references to the new Writer's Manual.</li> <li>Section 16.2.3: Clarified the purpose and scope of Appendix 16-J, <i>Excluded Procedure and Document Types</i>.</li> <li>Sections 16.4, 16.4.1, 16.5.1.h, 16.9, 16.9.1, 16.9.2.a, and 16.9.2.c: Deleted the definition of the terms "UET" and "Reference" and added a new "Usage Level" definition and section which details the current usage levels (currently UET and Reference). Deleted all individual UET and Reference procedure usage expectations in favor of a reference to the new section. Added a definition for the term "Immediate Actions."</li> <li>Sections 16.9.2.b, 16.9.2.c, and 16.9.2.f: Modified to link to the <a href="#">P300</a> forms for Pre-Job Brief and Post-Job Reviews.</li> <li>Sections 16.5.1.h and 16.5.1.i: Added requirements for concurrence by another, independent RLM for the usage level and reviewer decisions.</li> <li>Sections 16.5.1.i, 16.6.1.c, and Appendix 16-I: Clarified that Appendix 16-I, <i>Team Members/Review Disciplines</i>, must be used to determine review organizations for all new and changed procedures.</li> <li>Section 16.5.3.e: Updated to clarify the requirements for Training to evaluate all new and revised procedures to determine associated training requirements and the name of the associated training organizations.</li> <li>Section 16.9.2.e: Updated to clarify requirements for addressing a procedure change that occurs during an evolution.</li> <li>Appendices 16-A and 16-E: Updated to reflect the above changes.</li> <li>Appendix 16-B: Added a new procedure format and content</li> </ul>

Revision History		
		<p>appendix to provide basis for requirements in the Writer's Manual.</p> <ul style="list-style-type: none"> <li>▪ Appendix 16-I: Updated to clarify that Training is a required reviewer and provide required reviewing organizations based on procedure content.</li> </ul> <p>Attachment 17:</p> <ul style="list-style-type: none"> <li>▪ Clarified that the scope only extends to postings not covered by another SMP.</li> <li>▪ Section 17.5.1: Changed from monthly to semi-annual reviews of the Operator Aid Record Index and clarified how to document this review.</li> <li>▪ Section 17.5.2: Changed from quarterly to semi-annual audits and clarified how to document this audit.</li> <li>▪ Appendices 17-C and 17-D: Updated to reflect the standard position titles used in this document.</li> </ul>
07/08/15	P315, Rev. 6	<p>Attachment 16:</p> <ul style="list-style-type: none"> <li>▪ Clarified the minimum set of reviewing organizations for procedures to ensure that controls to address all hazards can be properly implemented.</li> <li>▪ Clarified the minimum expectations for completing a procedure's periodic review to ensure that the entire procedure is reviewed.</li> <li>▪ Updated Appendix 16-H to ensure a Verification and Validation of an entire procedure in order for it to be considered a Periodic Review.</li> <li>▪ Updated Appendix 16-I to ensure that the Waste Management Coordinator is a reviewer for all waste-related activities and Environmental Compliance is a reviewer for all environmental compliance issues.</li> </ul>

## 11.0 REFERENCES

### Prime Contract:

- [DOE O 422.1](#), *Conduct of Operations*
- [DOE O 433.1B](#), *Maintenance Management Program for DOE Nuclear Facilities*
- [DOE O 430.1B](#), Chg. 1, *Real Property Asset Management*
- [DOE O 426.2](#), *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*

## 11.1 Other References

- [P315-2](#), *Formality of Operations Change Control*
- [SD330](#), *Los Alamos National Laboratory Quality Assurance Program*
- [OS-RTS website](#)
- [SD601](#), *Conduct of Research and Development*
- [P300](#), *Integrated Work Management*
- [P950](#), *Conduct of Maintenance*

- [PD340](#), *Conduct of Engineering for Facility Work*
- [PD781](#), *Training Program Management*
- [P781-1](#), *Conduct of Training*
- [P328-3](#), *Management Assessment*
- [P313](#), *Roles, Responsibilities, Authorities, and Accountability*
- [PD110](#), *Safety Basis*
- [10 CFR 830](#), *Nuclear Safety Management*
- [P1020-1](#), *Laboratory Records Management*
- [P311-1](#), *Creating, Revising, and Cancelling Institutional Documents*

## 12.0 FORMS

[Form 2101](#), *Integrated Work Document (IWD) Part 2, FOD Requirements and Approval for Entry and Area Hazards and Controls – Non-Tenant Activity Form*

[Form 2102](#), *Integrated Work Document (IWD) Part 2, FOD Requirements and Approval for Entry and Area Hazards and Controls – Tenant Activity Form*

[Form 2103](#), *Integrated Work Document (IWD) Part 3, Validation and Work Release*

[Form 2104](#), *Integrated Work Document (IWD) Part 4, Feedback/Post-Job Reviews*

## 13.0 ATTACHMENTS

- Attachment 1. Operations Organization and Administration
- Attachment 2. Shift Routines and Operating Practices
- Attachment 3. Control Area Activities
- Attachment 4. Communications
- Attachment 5. Control of On-Shift Training
- Attachment 6. Investigation of Abnormal Events
- Attachment 7. Notifications
- Attachment 8. Control of Equipment and System Status
- Attachment 9. Lockouts and Tagouts
- Attachment 10. Independent Verification
- Attachment 11. Log Keeping
- Attachment 12. Operations Turnover
- Attachment 13. Control of Interrelated Processes
- Attachment 14. Required Reading
- Attachment 15. Timely Orders to Operators
- Attachment 16. Local Procedures
- Attachment 17. Operator Aid Postings
- Attachment 18. Equipment and Piping Labeling

## 14.0 CONTACT

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**No: P315      Conduct of Operations Manual**  
**Attachment 1. Operations Organization and Administration (Page 1 of 7)**

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## **1.0 OPERATIONS ORGANIZATION AND ADMINISTRATION**

This attachment describes the organizational structure of the operations function of Los Alamos National Laboratory (LANL or the Laboratory) facilities and provides administrative guidance and establishes criteria for using written standards to control operating activities, to monitor and assess performance, and to hold personnel accountable for their performance.

### **1.1 General**

Activities are performed in a manner to achieve facility safety in all modes of operation (e.g., normal, shutdown, standby, etc.), such that the safety of the public, workers, environment, and national security assets are paramount. Consideration for maintaining production and/or schedule is secondary.

This attachment describes the standards of excellence under which all Laboratory operations are conducted as reflected in

- clear lines of authority and responsibility for normal, off-normal, and emergency conditions;
- effective implementation and control of operating activities through the establishment and communication of high operating standards;
- encouragement and consideration of employee input on the establishment of operating standards and goals;
- periodic monitoring and assessment of operational performance;
- establishment of personal accountability for operational performance;
- team member treatment of each other with respect and dignity;
- provision of sufficient resources to accomplish work safely and efficiently; and
- personnel who are well trained and qualified for the work they perform.

### **1.2 Facility Operating Standards**

This attachment establishes the responsibilities, administrative guidelines, and requirements necessary for daily facility operations. Management will ensure that personnel are well trained, work as a team, that operating performance is properly monitored, and that employees are held accountable for their performance.

Operations management will establish high operating standards while considering input from the employees who will live by those standards.

When establishing operating standards, operations management and supervisors will refer to the following guidelines:

- Operating standards will define operating objectives, establish expected levels of performance, and clearly define responsibilities for facility operations. These are detailed in [P313, Roles, Responsibilities, Authorities, and Accountability](#), and the specific institutional guidance document (e.g., P101-3, P121, etc.).
- Employees will have input into the development of operating standards that directly affect them.

**No: P315      Conduct of Operations Manual**  
**Attachment 1. Operations Organization and Administration (Cont.) (Page 2 of 7)**

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- Standards for operating activities will be integrated into operations department procedures and programs so as to indicate acceptable levels of performance.
- Operations Management and Supervision must ensure that workers are trained to operating standards using qualifications standards or training curricula that are appropriate to their job and the "skill of the craft" in accordance with the requirements of [P781-1](#), *Conduct of Training*.
- When monitoring facility operations for overall compliance with standards, management and supervision will pay particular attention to and closely monitor operators for compliance with the established standards.

Sufficient staff, equipment, and funding will be allocated to the operations organization to permit them to effectively perform work to these standards. Adequate material, tooling, equipment, safety gear, and facilities are available for safe operation.

### **1.3 Operations Policies and Procedures**

It is the policy of the Laboratory that the primary consideration in operation of its facilities is the safety of the public, workers, environment, and national security assets and to perform its operations effectively.

When faced with an abnormal facility operating condition, operations personnel are to take the actions required to best protect safety and security interests; consideration for maintaining production is secondary.

The operations and support organizations operate by approved procedures that specify requirements needed to perform work in a safe and efficient manner.

If any person using a procedure does not understand it, feels that it is in error or needs revision, he/she is to stop and consult supervision, and, if needed, request a procedure change to get the appropriate correction made.

Personnel using procedures must clearly understand their authority, responsibility, accountability, and interface with support groups. These are detailed in [P313](#), *Roles, Responsibilities, Authorities, and Accountability*.

Personnel must meet the qualification/certification requirements for the activities they perform, including holding current certificates and/or licenses as required by state and federal agencies.

### **1.4 Principles of Conservative Operation**

Personnel must follow the Principles of Conservative Operations listed below; especially when faced with abnormal, off-normal, or emergency conditions that may threaten the health, safety, and well being of the public, employees, environment, or facilities and equipment:

- Personnel will ensure the safety of the general public, workers, environment, and national security assets and will perform operations effectively by the proper operation and frequent monitoring of their equipment and facilities.
- Operations, maintenance, testing, engineering, and other activities will be conducted in an orderly and professional manner following approved procedures and in accordance with guidance spelled out in Conduct of Operations or Conduct of Maintenance manuals.

**No: P315      Conduct of Operations Manual**  
**Attachment 1. Operations Organization and Administration (Cont.) (Page 3 of 7)**

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- Personnel will use "thinking compliance" when supervising activities, performing work, and using written procedures. Where the employee believes a procedure to be wrong, the employee will stop work and advise supervision.
- Management will conduct periodic assessments, including Management Observations and Verifications (MOVs), relating to operating standards, work activities, and facility conditions.

Believe all indications, alarms, and other process inputs; but follow up to confirm.

### **1.5 Expectations for Operations Management**

To foster an environment that encourages teamwork, open and honest communication, and employee commitment, management and supervision should perform the following actions:

- Managers and supervisors should spend sufficient time in the work spaces of their employees to understand the status of work, the condition of their work spaces, and the concerns and mood of their personnel. A minimum of 10-15% of their time is considered appropriate.
- Managers and supervisors should always respond directly and honestly.

Managers and supervisors should receive all news with consistent professionalism and make every effort to encourage subordinates to evaluate problems, provide feedback, and help resolve problems.

Following an event, workers must be appropriately informed (e.g., formal training, briefed, lessons learned, etc.).

### **1.6 Guidelines for Use of Operations Resources**

The Operations Manager (OM) (or designee, as described in Section 9.2, *Conventions* under "supervisory titles") will plan for sufficient resources, materials, and personnel to accomplish the assigned tasks based on the following guidelines:

- The OM reviews overtime for operations personnel routinely to ensure that excessive hours have not been worked.
- The Facility Operations Director (FOD) will plan for technical support personnel in sufficient numbers and with adequate technical qualifications to perform required functions (see [P313](#), *Roles, Responsibilities, Authorities, and Accountability*, Attachment A).

The Responsible Associate Director (RAD), with the support of the FOD, develops and uses a long-range staffing plan for operations to anticipate personnel losses, increased personnel needs during outages, etc. (see [P313](#), Attachment A).

### **1.7 Guidelines for the Administration of Overtime**

The following general guidelines should be applied when using overtime with operations, program, and support personnel:

- Adequate shift coverage should be maintained without the heavy use of overtime.
- The use of overtime to cover for vacationing employees should be avoided.

**No: P315      Conduct of Operations Manual**  
**Attachment 1. Operations Organization and Administration (Cont.) (Page 4 of 7)**

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**Note:** If a person is required to work in excess of 12 continuous hours, excluding shift turnover time, his/her duties should be carefully selected. It is preferable that this person not be assigned any task that could possibly endanger himself or herself, his/her crew, or the safe operation of the facility.

In the event that unforeseen problems require substantial amounts of overtime to be used (for example, emergency shutdowns, extended outages, technical problems, weather occurrences, etc.) the requirements of Section 3.2.5, *Limitations on Hours Worked*, of [P761](#), *Work Schedules*, must be followed for the administration of overtime.

The FOD or Associate Director (or designees, as described in Section 9.2, *Conventions* under “supervisory titles”) authorizes in advance any deviation from the overtime requirements on a case-by-case basis and documents the basis for granting the deviation. This may be done by making a signed entry in the operations logs. Deviations are subject to labor union restrictions.

### **1.8      Monitoring Operational Performance**

Operational performance will be monitored, documented, and trended for future reference and to make improvements in operational performance. In addition to the frequent and direct observation of operations activities by supervisors and managers (minimum of 10-15% of time in the field), various successes and performance problems will be monitored, documented, and trended on a regular basis.

### **1.9      Establishment and Use of Operating Performance Goals Program**

The RAD establishes and uses an Operational Performance Goals Program as a management tool for improving operational performance and measuring operational effectiveness (see [P313](#), *Roles, Responsibilities, Authorities, and Accountability*, Attachment A). The operational performance goals will be

- established by operations management
- measurable, auditable, realistic, and challenging

Meeting goals should require a definite set of actions or an action plan.

- The action plan should be developed with input from the facility operators and operations supervision.
- The action plan should be reviewed and approved by the OM.

Goals should be specific, measurable, achievable, relevant, and trackable. Meaningful metrics should be developed to indicate progress on goals. Operations goals in the following areas should be established:

- maximizing the availability of safety systems
- minimizing personnel errors
- minimizing the impacts of adverse events
- maintaining exposures to As Low As Reasonably Achievable (ALARA)
- minimizing lost facility capability
- minimizing the number of unscheduled facility shutdowns per year

**No: P315      Conduct of Operations Manual**  
**Attachment 1. Operations Organization and Administration (Cont.) (Page 5 of 7)**

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- timely completion of surveillances
- minimizing the amount of overtime
- achieving and maintaining complete staffing and training of operating positions
- minimizing waste and environmental impact
- minimizing causes that lead to the number of actuated alarms
- minimizing the time to resume operations after a stop work scenario

As required by [SD320](#), *Los Alamos National Laboratory Contractor Assurance System Description Document*, the RAD periodically reviews performance goals and improvement or failure to improve in operational performance and takes appropriate actions (see [P313](#), *Roles, Responsibilities, Authorities, and Accountability*, Attachment A). Progress toward completing applicable action plans should be included in this review. A significant variance from the desired progress in achieving goals requires that management review the action plan to ensure its adequacy and that it is being correctly executed.

In accordance with the requirements of [PD324](#), *LANL Metrics Program*, operating and safety goals must be set and used as motivators for improvement. Performance appraisals and promotions will be reflective of success in meeting or exceeding operational performance goals.

The RAD must report (see [SD320](#)) facility performance against established operations. Safety goals will be reported to Department of Energy (DOE) management on a periodic basis as required by [PD324](#).

Line managers and supervisors should perform routine observations of personnel performing operating activities. Any deficiencies identified should be documented, trended, and corrected as soon as possible.

### **1.10 Management, Supervisory, and Re-Qualification Training Requirements**

Managers and their deputies must meet all Laboratory-mandated training requirements as set forth in [Curriculum 9533](#), *LANL Management Qualification Standard*. The Standard, in conjunction with [P781-1](#), *Conduct of Training*, supports the training and qualification implementation of [DOE O 151.1C](#), *Comprehensive Emergency Management System*; [DOE O 414.1D](#), *Quality Assurance*; [DOE O 470.4B](#), *Safeguards and Security Program*, and [DOE O 426.2](#), *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*.

[Curriculum 9533](#) sets forth the minimum training requirements for all managers and an additional set of requirements for nuclear managers. Nuclear managers include first line managers through responsible division leaders and FODs whose assigned responsibilities include ensuring that a facility on the LANL Nuclear Facilities List is safely and reliably operated.

Position specific qualification standards (e.g., FOD, OM, Facility Coordinator, Maintenance Manager, etc.) or training requirements are available through the deployed training staff.

Additional site-specific or job-specific training may be assigned at the local level. Nuclear facilities are subject to the requirements of [DOE O 426.2](#) which includes the development of a Training Implementation Matrix that defines the selection, qualification, and training requirements of the Order.

**No: P315      Conduct of Operations Manual**  
**Attachment 1. Operations Organization and Administration (Cont.) (Page 6 of 7)**

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The training process must be documented in accordance with [P781-1](#).

**1.11 Fitness for Duty**

Fitness for duty must be administered in accordance with [P732](#), *Substance Abuse*, and [P102-3](#), *Medical Evaluation for Work*.

**1.12 Work Authorization/Work Release**

Work performed in a facility will be formally reviewed, approved, and authorized in accordance with [P300](#), *Integrated Work Management*.

**1.13 Monitoring Operating Performance**

[P328-4](#), *Management Observation and Verification*, establishes guidelines for monitoring operating performance with the primary goal of improving operations. Managers are actively involved with the work activities under their cognizance to assess performance and reinforce safety, security, and environmental standards. Monitoring of facility activities ensures that problems are promptly identified and corrected. A manager's routine must include frequent tours of the workplace. Monitoring by management also includes a program for self-assessment of facility performance through reporting and trend analysis of selected parameters. Supervisors are expected to set a professional example and to monitor and correct problems related to facility procedures and training.

**1.14 Training**

There is no specific mandatory training or qualification required to implement this attachment. It is recommended that all personnel implementing this document complete [UTrain Course #24650](#), *OS-RTS ConOps, Attachment 1, Operations Organization and Administration*. This training will enhance the employee's knowledge as required and as outlined in [DOE O 422.1](#), *Conduct of Operations*.

**1.15 Acronyms**

ALARA	As Low As Reasonably Achievable
DOE	Department of Energy
FOD	Facility Operations Director
LANL	Los Alamos National Laboratory
MOV	Management Observation and Verification
OM	Operations Manager
RAD	Responsible Associate Director

**1.16 References**

- [P313](#), *Roles, Responsibilities, Authorities, and Accountability*
- [P781-1](#), *Conduct of Training*
- [P761](#), *Work Schedules*
- [SD320](#), *Los Alamos National Laboratory Contractor Assurance System Description Document*
- [PD324](#), *LANL Metrics Program*

**No: P315      Conduct of Operations Manual**  
**Attachment 1. Operations Organization and Administration (Cont.) (Page 7 of 7)**

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- [Curriculum 9533](#), LANL Management Qualification Standard
- [DOE O 151.1C](#), Comprehensive Emergency Management System
- [DOE O 414.1D](#), Quality Assurance
- [DOE O 470.4B](#), Safeguards and Security Program
- [DOE O 426.2](#), Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities
- [P732](#), Substance Abuse
- [P102-3](#), Medical Evaluation for Work
- [P300](#), Integrated Work Management
- [P328-4](#), Management Observation and Verification
- [DOE O 422.1](#), Conduct of Operations

**No: P315      Conduct of Operations Manual**  
**Attachment 2. Shift Routines and Operating Practices (Page 1 of 17)**

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## **2.0      SHIFT ROUTINES AND OPERATING PRACTICES**

The purpose of this attachment is to describe the facility shift routines and operating practices that will be observed by Los Alamos National Laboratory (LANL or the Laboratory) personnel. The attachment includes standards for professional conduct, good watch-standing practices, equipment monitoring, and management responsibilities, which are fundamental to operating a facility that meets Department of Energy (DOE) expectations.

### **2.1.      Facility Operating Practices**

- Personnel must take appropriate emergency actions if there is an immediate threat to health, the facility, or the environment. Personnel who are trained in accordance with SEO-DO-PLAN-100, *The Los Alamos National Laboratory and Los Alamos Site Office Hazardous Materials Program Emergency Plan*, the facility-specific Building Emergency Plan, or local emergency procedures must take the actions described in those documents. Personnel should report actions taken to the Operations Manager (OM) at the earliest possible time.

**Note:** For facilities with a centralized operations area, e.g., an Operations Center or Control Room, management notifications may be routed through this function. Adequate equipment for making notifications must be available at the Operations Center, Control Room, and/or other appropriate locations.

- The OM and the qualified operators on shift must authorize the operation of mechanisms and apparatus that may indirectly affect the system operation.
- Facility personnel performing functions that may affect process operations or control area indications (in the form of alarms, signal light indications, or instrumentation response) obtain permission from the Control Area and cognizant operator of the affected process before initiating such action.
- Operations personnel respond to instrument indications and alarms until such indications and alarms are proven to be false. The first response to an alarm should be a verification of system status (level, flow, temperature, etc.). Appropriate actions should then be taken toward restoring normal status.
- Operators must verbally announce alarms so that others in the control area or near the vicinity of the alarm know the alarm has been acknowledged and what the alarm is.
- All operations activities (e.g., operating logs, round sheets, turnover sheets, verbal communications, etc.) should be recorded in 24-hour time (e.g., 0823 for 8:23 A.M., 1956 for 7:56 P.M., etc.).
- Personnel mark recorder charts with the date, time, recorder identification number, and initials upon installation of a new chart and removal of a completed chart. Recorders are inspected for proper operation daily with date, time, and operator's initials annotated on the chart. When significant events or unusual trends in parameters occur, the resulting recorder traces are marked as to the time and event to assist in operation analysis.
- The OM will be promptly notified of all changes in facility status, abnormalities, or difficulties encountered in performing assigned tasks.
- Operators must adhere to all posted personnel protection requirements and observe proper practices and precautions.

**No: P315      Conduct of Operations Manual**  
**Attachment 2. Shift Routines and Operating Practices (Cont.) (Page 2 of 17)**

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- Operations supervisors ensure that operators' primary duties are not compromised by distracting materials and devices.

## 2.2 Operation During Abnormal Conditions

Operators believe instrument indications and alarms unless proven to be false.

When process operations are not as expected, operators establish a known safe condition, ensuring that any Technical Safety Requirement (TSR) requirements are maintained (see [P313](#), *Roles, Responsibilities, Authorities, and Accountability*, Attachment A).

**Note:** This could entail returning to a previous state, moving forward in the process, or taking no action.

Cognizant supervisors must be informed promptly of these actions. If conditions warrant, operators discontinue operations until the cause of the condition has been determined and safe conditions restored.

Operators manually shut down the process using approved procedures if system parameters for trips or safety systems exceed their actuation set point and automatic actuation does not occur. Operators promptly inform the appropriate supervisors of these actions.

## 2.3 Authority to Operate Equipment

The OM directs the overall operation of the facility. In general, Control Area operators (where assigned) and OMs should be aware of all activities affecting facility equipment. However, activities that do not affect safety, regulatory requirements, or operating capability could be performed without informing the Control Area operator or OM, if decided on in advance of the activity and documented. Routine activities are controlled through the facility work planning and authorization process (e.g., plan of the day, plan of the week, etc.). The OM specifies and documents those general activities that normally can be performed without informing the Control Area or OM, and OMs should amplify these specifications as appropriate. Examples of such activities are pumping certain uncontaminated sumps and the routine minor adjusting of systems in manual control. The performance of these types of activities is documented in the operator's narrative log. In addition, during emergencies, operators are expected to take necessary immediate actions required to ensure personnel, facility, environment, and general public safety without prior approval; however, appropriate supervisors must be informed promptly of these actions.

## 2.4 Operator Rounds and Tours

Operators conduct a thorough tour of all areas within their responsibility following the instructions given in Section 2.5, and make inspections specified by the appropriate round sheet.

Operator tours must be of sufficient detail to ensure that the status of equipment is known. Each operator conducts a thorough tour of all areas within the operator's responsibility, making appropriate equipment inspections at designated times at least once per shift. However, the OM may designate specific locations to be inspected less frequently because of adverse radiological or equivalent personnel safety conditions, or more frequently if problems have been encountered. In these cases, the OM specifies an alternate inspection schedule. Facility security concerns must not stop the operator from completing appropriate equipment inspections. Initial operator tours normally should be made early in the shift, before the operator attends to other duties, so that the operator can become familiar with the condition and status of equipment for which the

**No: P315      Conduct of Operations Manual**  
**Attachment 2. Shift Routines and Operating Practices (Cont.) (Page 3 of 17)**

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operator is responsible. During tours, equipment is inspected to ensure that it is operating properly or, in the case of standby equipment that it is fully operable. In addition, operators conduct the following activities in conjunction with the tours:

- Determine the status of equipment (e.g., operating, standby, work in progress, or out-of-service) so that the operator will be best able to respond to problems that may occur during the operator's shift.
- Inspect components, such as electrical panels, alarm panels, autostart standby equipment, and breakers for abnormal or unusual conditions. Report unexpected conditions such as equipment vibrations, unusual equipment noises or smells, or excessive temperatures to the Control Area so that supervision will be aware of the conditions and be able to direct repairs, troubleshooting, or additional operator action, as necessary.
- Periodically check equipment panel alarm light bulbs and enunciators to ensure satisfactory operations of visual and audible abnormal condition indicators.
- Inspect all areas for which the operator is responsible and note any deficiencies that may be present. These deficiencies may include steam, oil, or water leaks; fire and safety hazards or radiological problems; seismic concerns such as open electrical panels and mobile objects; clogged floor drains; housekeeping or cleanliness problems; and building deficiencies such as inoperative lighting, roof leaks, or doors that do not close properly.

Operators take appropriate action to correct and report deficiencies noted during tours. Equipment deficiencies also are documented in accordance with the facility maintenance work control system.

Each OM reviews and initials round sheets and log books for those key positions under his/her supervision at least once per shift. For facilities where no direct supervision is present on a given shift, the log books and round sheets are reviewed during the next regular shift when supervision is present.

The OM ensures appropriate corrective action has been initiated for each abnormal condition noted in round sheets and log books.

## **2.5 Round Sheet Preparation and Use**

This section provides instructions for the preparation and use of round sheets, the review of completed round sheets, and the performance of operator rounds.

### **2.5.1 General**

Round sheets provide operators with guidance on the extent to which equipment and areas should be inspected during routine tours. The recording of key equipment parameters during tours provides a record of equipment performance and can be used to reconstruct events leading up to abnormal operating occurrences or system malfunctions. This record permits short-term trending by operators and supervisors so that undesirable trends and equipment problems can be identified and corrected. In addition, this record also permits long-term trending by maintenance and system engineers so that corrective, preventive, and/or predictive maintenance programs may be adapted to maximize equipment reliability. The system engineers analyze data from round sheets for system health reports.

**No: P315      Conduct of Operations Manual**  
**Attachment 2. Shift Routines and Operating Practices (Cont.) (Page 4 of 17)**

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Round sheets also facilitate operator turnover of equipment status and aid in the training and qualification of new operators. Therefore, it is critical that the operators frequently tour their area of responsibility and understand the significance of all parameters observed.

### **2.5.2 Preparation of Round Sheets**

**Note:** The bullets below are examples of general requirements. Safety Basis requirements take precedence.

- The OM approves the development of round sheets for each facility under his/her cognizance. Round sheet content should be limited to necessary parameters needed to baseline facility (equipment) operations.
- The blank round sheet should be treated as a controlled document in accordance with [P1020-2](#), *Laboratory Document Control*, and any local procedures.
- The Engineering Manager or designated representative must concur with the contents of round sheets and round sheet revisions.
- Personnel should develop round sheets for specific key positions, and not to specific areas to be monitored (e.g., a round sheet would be developed for the TA 50-1 Surveillance Operator and would include parameters for all areas and equipment that the TA 50-1 Surveillance Operator monitors). Areas and equipment to be monitored should be listed in the same sequence that they would be normally encountered during the round.
- Each round sheet (sample shown in Appendix 2-A) is uniquely identified, including a descriptive title, document number, revision number, and approval or effective date.
- The period of time covered by a round sheet will be dependent upon the frequency of data collection required to achieve the trending objectives. Normally, round sheets should cover a period of no less than 24 hours and no greater than 7 days.
- Each round sheet includes a space on each page to identify the actual time period covered by the round sheet. (See Appendix 2-A)
- The round sheet specifies the frequency for recording all parameters. Each round sheet includes a space for the operator to record the specific start and completion times for each round as shown on the sample in Appendix 2-A. Personnel should use 24-hour time (e.g., 0823 for 8:23 A.M., 1956 for 7:56 P.M., etc.).
- When determining the frequency for the recording of parameters, the OM and the system engineers ensure recording of parameters should be frequent enough to recognize trends in order that equipment may be protected from damage (e.g., taking readings once per hour for operating equipment versus once every eight hours).
- The OM may designate specific areas to be inspected less frequently because of adverse radiological or equivalent personnel safety conditions, or more frequently if problems have been encountered.
- Personnel should include on each round sheet spaces to record all important parameters for equipment and areas within the responsibility of the key position. Personnel should do the following:
  - Keep in mind that important equipment parameters include, but are not limited to, operating limits as specified by equipment manufacturers, TSR limits, Technical Standard/Process Requirement limits, Resource Conservation and Recovery Act (RCRA) or New Mexico Environment Department (NMED) requirements, etc.

**No: P315      Conduct of Operations Manual**  
**Attachment 2. Shift Routines and Operating Practices (Cont.) (Page 5 of 17)**

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- Designate round sheet parameters derived from TSR limits or Technical Standard/Process Requirement limits by a dollar sign (\$) or other designator defined by the facility (such as highlighting) in order that these parameters may be easily recognized as requiring special attention. Review the TSR and Safety Analysis Report (SAR), Safety Assessment Document (SAD), or Transportation Safety Document (TSD) and the appropriate manager's document before making any revision to the parameters or limits. Changes to steps marked with (\$) require Engineering approval of the change.
- Assign each operating parameter appearing on a round sheet an item number.
- Group parameters for a particular piece of equipment together on the round sheet to facilitate trending on that particular equipment (e.g., parameters for the pump bearing cooling water temperature and the pump discharge pressure should be grouped together rather than placing the pump bearing cooling water temperature parameter among other equipment cooling water parameters). Areas and equipment to be monitored should be listed in the same sequence that they would be normally encountered during the round.
- Sufficiently describe operating parameters, including specific equipment identification number, to permit a clear identification of the instrument being used to obtain the data for the parameter being recorded. The system engineer furnishes a list of process instruments that are to be used for the collection of operating parameters for round sheets.
- Ensure that each parameter includes the units of measurement of the data, where applicable. Make the units of measurement to be recorded on the round sheet the same as the units indicated on the instrument, except when an operator aid or controlled conversion chart is provided.
- In those instances where parameters are not measured using specific units of measurement as indicated on an instrument (e.g., measuring an oil level with a dipstick), specify specific measurement values (e.g., full, three-quarter full, half full, one-quarter full) rather than the use of "OK" or a check mark on the round sheet.
- Where appropriate, provide maximum and/or minimum acceptable values to allow quick identification of out-of-specification parameters.
- Provide a narrative section on each round sheet unless an operating log is maintained by the operator affected.
- Provide a separate block(s) as necessary to document each required supervisory review of completed round sheets in accordance with the requirements of this attachment.

### **2.5.3 Performance of Rounds**

- Personnel performing rounds must comply with all facility safety rules and exercise caution around rotating equipment and in other hazardous environments so as not to place themselves in a situation in which they may be exposed to personal injury.
- Data must be recorded at the time(s) or frequency specified on the round sheets. When round sheet data is not obtained within one hour from the time(s) or frequency specified on the round sheet, the actual time the data was obtained should be noted on the round sheet. Notify the OM of the missed round and an explanation entered in the narrative section of the round sheet or logbook. Evaluate the data as soon as possible for potential out-of-limit conditions that may have occurred during the period missed. Rounds should be completed prior to the scheduled start of the next set of readings.

**No: P315      Conduct of Operations Manual**  
**Attachment 2. Shift Routines and Operating Practices (Cont.) (Page 6 of 17)**

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- When used, the operator making the entries completes and signs narrative section of the round sheet in accordance with the guidelines in Attachment 11, *Log Keeping*. The narrative section entries should include a description of significant events occurring, major evolutions, causes of abnormal conditions, actions taken to correct abnormal conditions, and indications that supervisors have been notified where appropriate.
- Personnel performing rounds must be continuously alert for fire hazards, smoke or unusual odors, improper storage of flammables, improperly barricaded radiological controlled areas, improperly barricaded tripping and bumping hazards, oil and grease spills, water and steam leaks or other discharges, exposed rotating equipment and electrical wiring, equipment making unusual noises, etc. Personnel must notify supervision immediately of any such hazards and take immediate steps to eliminate or barricade these hazards whenever possible. If any equipment deficiencies are found, they should be recorded in the narrative section, reviewed with supervision and documented in accordance with the facility maintenance Work Control System. Additionally, operators will periodically inspect equipment and areas not included on the round sheets, but within their work station.
- Maintain equipment operating parameters within limits in accordance with the specific instructions for each round sheet. Personnel performing rounds must be aware of the rate at which parameters are changing or should be changing such that action can be taken prior to a limit being reached.
- Whenever equipment is started, immediately begin continuous visual monitoring of its associated data points until the data points stabilize. Note the equipment starting time in the narrative section of the round sheet. After the data points have stabilized, record the specified parameters on the round sheets. If data points appear to be heading out of limits, if necessary to prevent equipment damage, shut down the equipment and notify supervision immediately.
- Personnel performing rounds replace defective bulbs as soon as possible (if authorized) or ensure (through approved work control practices) that they are replaced as soon as possible, and service chart recorders as required, or ensure (through approved work control practices) that they are serviced as required. Personnel follow up to ensure that defective bulbs are replaced and are serviced as required, ideally, prior to the next scheduled readings.
- Personnel practice good housekeeping while performing rounds. Keep the facility in as good or better condition than found. Each operator keeps his/her areas of responsibility clean and orderly. Personnel must attempt to correct any minor housekeeping deficiencies noted while performing rounds. Report major deficiencies to supervision.
- During the performance of rounds, personnel will have available (in their possession or at their shift operating base) completed round sheets which allow for identification of trends. The number of completed round sheets in their possession should cover a time period sufficient to obtain a genuine trending period, e.g., during the performance of rounds using a weekly round sheet, the operator should have available, in their possession or at their shift operating base, the completed round sheet for the previous week in addition to the current weekly round sheet or for daily round sheets, the previous day's round sheet.
- When round sheets are commenced for a "new" time period, then the oldest completed round sheet(s) is forwarded to the OM for filing in accordance with facility requirements.

#### **2.5.4 Taking and Recording Data**

- Avoid, where possible, recording process values from chart recorders onto round sheets unless the recorder is the only available monitoring instrument. Chart recorders provide a

**No: P315      Conduct of Operations Manual**  
**Attachment 2. Shift Routines and Operating Practices (Cont.) (Page 7 of 17)**

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quick indication of changes in a parameter and the rate of change. They are generally not designed for precise measurement.

- Record data taken during the performance of rounds onto round sheets in the following manner:
  - Personnel enter the actual data value obtained for those parameters that require recording specific units of measurement. If the reading is outside the specified minimum or maximum allowed values, the data is highlighted according to the facility's practice for marking abnormal readings.
  - If parameter units listed on a round sheet are not the same as indicated on an instrument (e.g., the instrument is calibrated in units other than required by the round sheet -- a differential pressure cell with a voltage output and the round sheet parameter is tank level in feet), personnel stop, notify the OM, and follow the appropriate change control process to revise the round sheet.
- Personnel promptly report to the OM or appropriate supervisor those highlighted data points that are identified as critical by a facility-designated system such as asterisks or dollar signs. Personnel report all other highlighted data points at the completion of the rounds, but before the end of the shift in which they were recorded.
- Personnel initiate prompt corrective action, as appropriate, in accordance with facility operating procedures, for out of specification data.
- The causes of abnormal readings are promptly investigated with supervisors becoming involved as appropriate.
- All highlighted items must have a corresponding entry in the appropriate narrative log or the narrative section of the round sheet, referencing the round sheet item number, indicating the probable cause and action taken.
- Operators should believe their instrument readings and treat them as "accurate" unless proven otherwise. Operators should check other indications, if possible, when unexpected readings are observed. Prompt action should be taken to investigate the cause of abnormal or unexpected indications so prompt corrective action can occur.
- When malfunctioning or inaccurate instruments are discovered or process instruments are found to be out of calibration or past calibration due dates, they should be appropriately identified to prevent subsequent confusion and instrument and control personnel should be notified to effect repairs.
- Enter "Standby" (STBY) for data points or equipment that is not operating and is available for operation if required. Data limits are not applicable for equipment in standby.
- Enter "Out of Service" (OOS) for data points or equipment that is not operating and is not available for operation (e.g., shutdown for maintenance) if required. Data limits are not applicable for equipment OOS. Highlight all OOS entries according to the facility system for marking. Explain all OOS entries in the narrative section and notify the appropriate supervisor.
- Enter "No Reading Taken" (NRT) for data points that are inaccessible for monitoring. Highlight all NRT entries as required by the facility marking system. Explain all NRT entries in the narrative section and notify the appropriate supervisor.

**No: P315      Conduct of Operations Manual**  
**Attachment 2. Shift Routines and Operating Practices (Cont.) (Page 8 of 17)**

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### **2.5.5 Supervisory Review of Round Sheets**

- Each supervisor, if applicable, on shift reviews the round sheets for positions under his/her cognizance before the end of each shift. This review is to ensure that all out-of-limit data and abnormal or unexplained conditions and/or trends have been properly identified, that proper actions have been taken, and that adequate descriptions have been entered in the narrative section of the round sheet. For facilities without 24-hour/day supervision, supervisors review round sheets on the next shift worked.
- Supervisors document the review by entering their initials, the date, and time directly on the data portion of the round sheet (the date and time are not required for daily reviews performed the same day as the performance of rounds) either in the margin above the last reading reviewed or in a separate block (if provided) on the round sheet (as shown in Appendix 2-A). The supervisor's initial on the data portion of the round sheet implies that the entire round sheet (both data portion and narrative section) have been reviewed.
- If a narrative section is not included as part of a round sheet but appears in a separate log, then the supervisor initials the last entry reviewed in accordance with the guidelines established in Attachment 11, *Log Keeping*.
- Supervisors request OM assistance as necessary to correct out-of-limits data and other deficiencies found by the data takers as required.
- The OM makes periodic tours of facilities and random reviews of facility round sheets to ensure that round sheets are being properly executed. The OM may accompany the operators during the performance of the rounds to accomplish this task. The reviews are documented in accordance with the requirements of this attachment.
- Supervisory personnel periodically monitor operator rounds to ensure that comprehensive tours are being conducted and to ensure that the round sheets reflect any changed facility conditions.
- Other managers (e.g., maintenance, engineering, etc.) conducting random reviews of facility round sheets document their review in accordance with bullet 2 of this Section (2.5.5) of this attachment.

### **2.5.6 Operations Manager (OM) Review**

- Round sheets should be maintained in the facility for as long a period as necessary to allow for identification of long-term trends. For example: retain daily round sheets for 120 days, weekly round sheets for 6 months, etc., to allow sufficient data to be available to support the OM review as noted below.
- The OM periodically reviews completed round sheets in sufficient detail to ensure that the round sheets are being completed in accordance with the guidelines of this attachment and to identify any long-term trends of operating equipment parameters (e.g., slowly increasing bearing temperature, slowly unexplained decreasing tank level, etc.) which could indicate future potential problems. The Engineering Manager must be consulted when negative trends are identified in Structures, Systems, and Components (SSCs) performance. Following completion of the review, file the appropriate round sheets as records in accordance with the guidelines of this attachment. This review is documented by the OM's initial and date in the margin of the round sheet or in a formal log as appropriate to the facility.

**No: P315      Conduct of Operations Manual**  
**Attachment 2. Shift Routines and Operating Practices (Cont.) (Page 9 of 17)**

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## **2.6 Personnel Protection**

Operations personnel must be appropriately qualified to follow good personnel protection practices to minimize exposure to radiation, chemicals, electromagnetic fields, toxic materials, and other personnel hazards. In particular, operations personnel must observe the following requirements:

- adhere to the requirements of the facility safety program;
- adhere to all posted personnel protection requirements and observe proper practices and precautions;
- correctly use appropriate monitoring instruments when required;
- be cognizant of their own exposure and take appropriate action to minimize their exposure;
- be knowledgeable in the proper use of radiation work permits and other permits;
- promptly report protection deficiencies and hazards to supervision and appropriate protection personnel. In addition, operators take appropriate immediate actions to reduce or correct the hazards;
- notify appropriate protection personnel (e.g., Radiological Control Technician [RCT], Industrial Hygienist, Fire Department personnel, etc.) prior to evolutions or activities that have a potential to significantly change conditions in the facility;
- wear proper hearing, eye, head, foot and respiratory protection in designated areas to reduce the potential for injury;
- use ladders, or other approved means, to access equipment located in the overhead when permanent steps or catwalks are not available;
- do not routinely climb or walk on facility components and insulation;
- exercise appropriate precautions when entering or working in or around energized panels or equipment.

Supervisory personnel periodically review exposure trends of operations personnel to detect and correct adverse factors that contribute to personnel exposure.

## **2.7 Shift Operating Bases**

Facility Operations Directors (FODs) may establish an area where an operator returns when the operator is not performing in-facility duties. An operating base is designated for each shift position. A single base may be common to several positions. The base should be located at a convenient place within the operator's area of responsibility and appropriately equipped with the office equipment necessary for the operator(s) to maintain necessary procedures and references to conduct administrative duties and maintain adequate communications equipment.

Shift turnovers should typically be conducted at the operating base. This requirement is not intended to preclude group shift turnover briefings at a central location as part of the turnover process.

**No: P315      Conduct of Operations Manual**  
**Attachment 2. Shift Routines and Operating Practices (Cont.) (Page 10 of 17)**

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## **2.8      Resetting of Alarms or Protective Devices**

Personnel must not reset any protective device unless such action is specifically authorized by approved procedures (e.g., institutional documents, Authority Having Jurisdiction [AHJ] interpretation, guidance document, etc.). Devices are reset only after an attempt is made to determine the cause of the trip and assuring that no abnormal condition exists that would cause a trip, and if authorized by the aforementioned process.

Personnel must not adjust or operate any alarm, interlock, or equipment operating set points unless such action is specifically authorized by approved procedures and the person is qualified to perform the action.

Operating or resetting electrical breakers must be performed in accordance with AHJ Interpretation No. 010, *LANL Policy for Operating Circuit Breakers on 120V – 480V Systems*, available from the Laboratory [Electrical Safety](#) website.

## **2.9      Potentially Distractive Written Material and Devices**

Written materials that do not relate to operation, and entertainment devices such as radios, televisions, tape players, and computer games are prohibited from use by operations personnel to minimize distractions from their responsibilities. Do not bring non-work related written material and entertainment devices to work stations. However, operators may read training bulletins, technical manuals, or operating experience information or review other written, audible, or visual materials that relate to operator duties.

## **2.10     Key Control**

To facilitate control over keys that are used in the day to day operations, there is a key accountability log in place to record what keys are being used by which individuals. The key storage cabinet contains an inventory list to expedite location of keys. Key accountability is maintained by conducting routine inventories. The periodicity of routine inspections is based on the facility and considers the number of keys and the risk associated with losing inventory control, but the periodicity must not exceed annually. Additionally, keys that are inventoried through another institutional program (e.g., Lockout/Tagout, Security, etc.) are excluded from this inventory. The key accountability log should be maintained in the control area.

### **2.10.1   KNOX™ Key Box Operation and Control**

#### *2.10.1.a   Definitions*

**KNOX™ Key Box**—Also known as an access box, is an approved secure box, accessible by the AHJ's master key or control, containing entrance keys or other devices to gain access to a structure or area (National Fire Protection Association [NFPA] 1, *Uniform Fire Code™ 2006*). At the Laboratory, this consists of a weatherproof black steel plate box with an integral alarm tamper switch; the box uses a high-security Medco lock and key series controlled by the LANL Fire Protection Group.

**Supervisory Alarm**—A signal/alarm indicating the need for action in connection with the supervision of guard tours, fire suppression system or equipment, and/or maintenance features of related systems (NFPA 72, *National Fire Alarm Code®*)

**Trouble Alarm**—A signal/alarm initiated by the Fire Alarm Control Panel (FACP) or fire alarm system device indicative of a fault condition in a monitored circuit or component (NFPA 72).

**No: P315      Conduct of Operations Manual**  
**Attachment 2. Shift Routines and Operating Practices (Cont.) (Page 11 of 17)**

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### 2.10.1.b Operations

KNOX™ key boxes are located throughout the Laboratory and are used to house facility keys in support of LANL emergency response operations (i.e., Los Alamos Fire Department [LAFD], LANL Security and Emergency Operations Division [SEO], LANL Fire Protection Group, and the Facility Supervisors and Fire Protection Maintenance Department). The KNOX™ key box is electronically supervised by a building FACP, which initiates a supervisory or trouble alarm condition on the FACP and transmits a supervisory or trouble signal to the Lab-wide proprietary fire alarm supervising station system when tampered with.

Level I, II and III security keys (see [NNSA Policy Letter NAP-70.2](#), *Physical Protection*, Chapter V “Locks and Keys,” for security key definitions) must not be placed within LANL KNOX™ key boxes.

The KNOX™ key box tamper switch is routinely tested as part of the Inspection, Testing and Maintenance (ITM) program for the facility fire detection and alarm system (see *Operations and Maintenance [O&M] Manual Criterion 720*, “Fire Alarm Systems”).

Upon receipt of an unanticipated fire alarm supervisory or trouble alarm signal associated with a KNOX™ key box, the Central Alarm Station (CAS) must notify the LANL Trouble Desk (during normal working hours) or the Facility Night Supervisor (during non-working hours).

If facility keys are identified as missing and/or a KNOX™ key box is found open, contact the FOD immediately.

### 2.10.1.c Roles and Responsibilities:

#### 2.10.1.c(1) Facility Operations Directors

- Notify the LANL Fire Protection Group KNOX™ Box Program Core Custodian for access to a KNOX™ key box, the addition or deletion of facility keys within a KNOX™ key box, and the return of any KNOX™ key box keys; and
- Prepare and execute design change documentation in accordance with the Conduct of Engineering program (see [PD340](#), *Conduct of Engineering for Facility Work*, and [P341](#), *Facility Engineering Processes Manual*) for the installation, upgrade, relocation or removal of KNOX™ key boxes at Laboratory facilities.

#### 2.10.1.c(2) LANL Fire Protection Group KNOX™ Box Program Core Custodian

- Manages the KNOX™ box program in accordance with LANL requirements for Key Custodians and applicable security requirements;
- Establishes and maintains a database with the location of all LANL KNOX™ key boxes, facility keys retained within each KNOX™ key box, and assignment of KNOX™ key box key recipients and/or key holders;
- Provides design criteria to organizations requesting the installation, upgrade, relocation or removal of KNOX™ key boxes at LANL facilities;
- Review and approve design submittals for KNOX™ key box installations, upgrades, relocations and removals, and associated modifications to fire alarm systems, at LANL facilities;

**No: P315      Conduct of Operations Manual**  
**Attachment 2. Shift Routines and Operating Practices (Cont.) (Page 12 of 17)**

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- Witness acceptance/commissioning testing of KNOX™ key box installations, upgrades, relocations and removals, and associated fire alarm system post-modification testing, at LANL facilities;
- Orders new KNOX™ key boxes to be installed at LANL facilities;
- Retains removed KNOX™ key boxes from LANL facilities;
- Informs LAFD and the LANL SEO Division of new, relocated or removed KNOX™ key boxes at LANL facilities;
- Completes a documented annual self-assessment of the KNOX™ box management and key control program, and provides a copy of the assessment report to the LANL Fire Protection Group Leader; and
- Provides a copy of this process and a briefing on requirements for safeguarding KNOX™ key box keys to recipients of KNOX™ key box keys, which includes the following elements –
  - Expectations for reporting lost, misplaced or broken KNOX™ key box keys;
  - Prohibition on loaning a KNOX™ key box key to another individual;
  - Prohibition on the unapproved opening of a KNOX™ key box for the purpose of removing or adding facility keys for emergency or maintenance use; and
  - The return of KNOX™ key box keys.

**2.10.1.c(3) Authorized Maintenance and Site Services (MSS) Personnel**

- Perform post-modification testing of modified facility fire detection and alarm systems in support of KNOX™ key box installations, upgrades, relocations or removals;
- Perform periodic ITM activities for facility fire detection and alarm systems and associated with KNOX™ key boxes in accordance with O&M [Criterion 720](#), “Fire Alarm Systems;” and
- Update the FACP Zone Sheets to reflect the installation relocation or removal of KNOX™ key boxes at LANL facilities.

**2.11 Training**

There is no specific mandatory training or qualification required to implement this attachment. It is recommended that all personnel implementing this document complete [UTrain Course #24652](#), *OS-RTS ConOps, Attachment 2, Shift Routines and Operating Practices*. This training will enhance the employee’s knowledge as required and as outlined in [DOE O 422.1](#), *Conduct of Operations*.

**2.12 Records**

The following are considered records generated by this attachment and must be managed in accordance with [P1020-1](#), *Laboratory Records Management*, and any local procedures:

- KNOX™ key box database
- Annual KNOX™ Box Program Core Custodian self-assessment reports
- LANL Fire Protection Maps
- Facility FACP Zone Sheets
- Completed Round sheets

**No: P315      Conduct of Operations Manual**  
**Attachment 2. Shift Routines and Operating Practices (Cont.) (Page 13 of 17)**

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### 2.13 Acronyms

AHJ	Authority Having Jurisdiction
CAS	Central Alarm Station
DOE	Department of Energy
FACP	Fire Alarm Control Panel
FOD	Facility Operations Director
ITM	Inspection, Testing and Maintenance
LAFD	Los Alamos Fire Department
LANL	Los Alamos National Laboratory
MSS	Maintenance and Site Services
NFPA	National Fire Protection Association
NMED	New Mexico Environment Department
NRT	No Reading Taken
O&M	Operations and Maintenance
OM	Operations Manager
OOS	Out Of Service
RCRA	Resource Conservation and Recovery Act
RCT	Radiological Control Technician
SAD	Safety Assessment Document
SAR	Safety Analysis Report
SEO	Security and Emergency Operations
SSC	Structure, System, and Component
STBY	Standby
TSD	Transportation Safety Document
TSR	Technical Safety Requirement

### 2.14 References

- SEO-DO-PLAN-100, *The Los Alamos National Laboratory and Los Alamos Site Office Hazardous Materials Program Emergency Plan*
- [P1020-2](#), *Laboratory Document Control*
- AHJ Interpretation No. 010, *LANL Policy for Operating Circuit Breakers on 120V – 480V Systems*, available from the Laboratory [Electrical Safety](#) website
- National Fire Protection Association [NFPA] 1, *Uniform Fire Code™, 2006*
- NFPA 72, *National Fire Alarm Code®*
- [NNSA Policy Letter NAP-70.2](#), *Physical Protection*, Chapter V “Locks and Keys”
- *Operations and Maintenance [O&M] Manual [Criterion 720](#)*, “Fire Alarm Systems”
- [PD340](#), *Conduct of Engineering for Facility Work*
- [P341](#), *Facility Engineering Processes Manual*
- [P1020-1](#), *Laboratory Records Management*
- [DOE O 422.1](#), *Conduct of Operations*

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**No: P315      Conduct of Operations Manual**  
**Attachment 2. Shift Routines and Operating Practices (Cont.) (Page 14 of 17)**

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**2.15    Appendices**

Appendix 2-A. *Sample Round Sheet*

**No: P315      Conduct of Operations Manual**  
**Attachment 2. Shift Routines and Operating Practices (Cont.) (Page 15 of 17)**

**Appendix 2-A. Sample Round Sheet (Page 1 of 3)**

TA-XX-X SURVEILLANCE OPERATOR ROUNDSHEET						Document No.: _____					
						Revision: _____					
						Approval Date: _____					
						Page 1 of 3					
PERIOD COVERED: From 0001 4May 2006 To 2400 4May 2006						0200	0800	1400	2000	**	**
SHIFT SUPERVISOR REVIEW											
TIME ROUND COMMENCED											
ITEM	EQUIPMENT/ID #	UNIT	MIN	NORM	OPER LIMIT						
LOCATION: TA XX-XX PUMPHOUSE											
1	Process Air Compressor #1 Discharge Pressure PI-719	PSIG	95	115 to 130	165						
2	Process Air Compressor #1 Discharge Dew Point TI-719	°C	-10	-30 to -10	0.0						
3	Process Air Compressor Lube Oil Level	#1	Add	_____	Full						
		#2	Add	_____	Full						
4	Cooling Water Inlet Pressure PI-529	PSIG	25	30 to 35	42						
LOCATION: TA XX-X COOLING TOWERS											
5	Cooling Tower In Service	#1	Run/ Stby	_____	_____						
		#2	Run/ Stby	_____	_____						
		#3	Run/ Stby	_____	_____						
6	Cooling Tower Basin Level	#1	Feet	_____	_____						
		#2	Feet	_____	_____						
		#3	Feet	_____	_____						
7	Cooling Tower Basin Pump Discharge Pressure	#1	PSIG	25	30 to 35	50					
		#2	PSIG	25	30 to 35	50					
		#3	PSIG	25	30 to 35	50					
\$ Denotes an Operational Limit derived from an Technical Safety Requirement, Technical Standard or Process Limit											

**Note:** The attached sample Round Sheet is compressed to illustrate the movement from area to area during rounds.

\*\* Additional columns should be provided on round sheets to accommodate the trending objectives in Section 2.5.2 of this attachment.

**No: P315 Conduct of Operations Manual  
Attachment 2. Shift Routines and Operating Practices (Cont.) (Page 16 of 17)**

**Appendix 2-A. Sample Round Sheet (Cont.) (Page 2 of 3)**

TA XX-X SURVEILLANCE OPERATOR ROUNDSHEET						Document No.: _____ Revision: _____ Approval Date: _____ Page 2 of 3					
PERIOD COVERED: From 0001 4 May 2006 To 2400 4 May 2006						0200	0800	1400	2000	**	**
SHIFT SUPERVISOR REVIEW											
TIME ROUND COMMENCED											
ITEM	EQUIPMENT/ID #	UNIT	MIN	NORM	OPER LIMIT						
LOCATION: TA X DIESEL GENERATOR											
8	Battery Charger	Amps	0.5	1.0 to 1.5	2.0						
9	Diesel Generator Start Selector Switch Position SS-156	Auto/Manual	—	Auto	—						
10	Lube Oil Level		Add	—	Full						
11	Generator Breaker Position	Closed/Open	—	Closed	—						
LOCATION: WASTE STORAGE TANK 1											
12	Chromate Water Inlet TI-221	°C	5	10 to 30	35 \$						
13	Chromate Water Outlet TI-222	°C	5	10 to 50	55						
14	Chromate Water Inlet PI-221	PSIG	20	35 to 50	70						
15	Demister ΔP PI-375	In. H2O	0.2	0.5 to 1.5	2.0						
16	Purge Filter ΔP PI-490	In. H2O	0.1	1.0 to 5.0	5.2 \$						
17	Purge Exhaust Flow PI-495	In. H2O	0.16	.25 to .75	1.0						
18	Sample Flow to H2 Monitor FI-139	cfh	1.5	1.75 to 2.25	2.5						
19	Outside Temperature	°C	—	N/A	—						
TIME ROUND COMPLETED											
\$ Denotes an Operational Limit derived from an Technical Safety Requirement, Technical Standard or Process Limit											

**Note:** The attached sample Round Sheet is compressed to illustrate the movement from area to area during rounds.

\*\* Additional columns should be provided on round sheets to accommodate the trending objectives in Section 2.5.2 of this attachment.

**No: P315 Conduct of Operations Manual  
Attachment 2. Shift Routines and Operating Practices (Cont.) (Page 17 of 17)**

**Appendix 2-A. Sample Round Sheet (Cont.) (Page 3 of 3)**

TA XX-X SURVEILLANCE OPERATOR ROUNDSHEET			Document No.: _____
			Revision: _____
			Approval Date: _____
			Page 3 of 3
NARRATIVE SECTION			
SHIFT #:			SHIFT HOURS:
Date	Time	Item # <small>(if applicable)</small>	
4 MAY 06	0700		ASSUMED POSITION DUTIES/s/I.M. Cool
	0830	7	STARTED #2 CCW PUMP. SECURED #1 CCW PUMP
	1400	3	ITEM 3 OUT OF SPECIFICATION. NOTIFIED OPERATIONS MANAGER. OUT OF SPECIFICATION READING DUE TO LOW OIL LEVEL
	1430		ADDED OIL TO #1 PROCESS AIR COMPRESSOR. CORRECTED PREVIOUS OUT OF SPECIFICATION READING
	1500		NIM ALARM AT RBOF
	1630		NIM ALARM AT RBOF SPURIOUS. SECURED FROM SECURITY LOCKDOWN
	1900		RELIEVED BY W.C. CLARK/s/I.M. Cool
SHIFT #:			SHIFT HOURS:
SHIFT #:			SHIFT HOURS:
SHIFT #:			SHIFT HOURS:
SHIFT #:			SHIFT HOURS:

**No: P315      Conduct of Operations Manual**  
**Attachment 3. Control Area Activities (Page 1 of 5)**

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### **3.0 CONTROL AREA ACTIVITIES**

Control Areas (CAs) are defined by [DOE-STD-1042-93](#), *Guide To Good Practices For Control Area Activities*, as “the physical area (e.g., room, booth, desk) where the facility or portions of the facility operations are monitored and controlled.” An At-the-Controls (ATC) area is “a designated area where special access and controls are necessary.” For example, an area adjacent to a control panel might be designated as an ATC area. The Facility Operations Director (FOD) or Responsible Line Manager (RLM) (or designee, as described in Section 9.2, *Conventions* under “supervisory titles”) designates the areas that will be managed as CAs or ATC areas.

The purpose of this attachment is to establish guidelines and requirements for the performance of CA activities, and to ensure that CA activities are conducted in a business-like manner in a professional atmosphere that is conducive to safe and efficient operation.

The attachment also ensures that CA operators are not overburdened with administrative responsibilities and that other distractions, such as CA access, are minimized so that operators may properly monitor facility parameters.

Adequate equipment for making notifications is available at the Operations Center, Control Room, and/or other appropriate locations.

#### **3.1 General**

- Each FOD or RLM (or designee, as described in Section 9.2, *Conventions* under “supervisory titles”) identifies the need for, and clearly defines the CAs and ATC areas within the facility. The CA and ATC area must be physically identified by visible means such as floor markings, signs, barrier ropes or chains.
- Designated CA personnel grant entry into the CA.
- Entry postings will provide notification of the entry requirements at the entrance to the CA.
- Personnel desiring entry must state the purpose and request permission for entry.
- The presence of personnel in the CA, other than assigned shift complement and other personnel as designated by facility policies, procedures or instructions, is limited to individuals with official business and a need to know.
- The senior operations staff individual controls specific limits for the number of personnel allowed in the CA at any time. The intent is to limit the number of personnel not assigned in the CA to an absolute minimum at all times, consistent with operational requirements. The senior operations individual present has the responsibility and authority to restrict access or remove nonessential personnel from the CA if, in that individual's opinion, the presence of those personnel jeopardizes the safe operation of the process.
- During periods of abnormal or emergency operations, the Operations Manager (OM) or senior person present should normally direct nonessential personnel to exit the CA. Only the OM or a designated alternate gives permission to enter.
- In addition, within the CAs, the ATC areas will be identified as restricted access areas. Note: Some ATC areas may not have an associated CA. Only assigned operations personnel may enter the ATC area without obtaining permission. Permission for others to enter the ATC area is obtained from the CA supervisor or designated operator/clerk.

**No: P315      Conduct of Operations Manual**  
**Attachment 3. Control Area Activities (Cont.) (Page 2 of 5)**

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### 3.2 Professional Behavior

- Display professional behavior in the CA at all times. Only activities essential to supporting operation and activities authorized by management are conducted in the CA.
- Conduct all CA activities in a disciplined, formal, businesslike, and professional manner. Keep the noise level in the CA at a minimum. Formality and professionalism in the conduct of operations is required. (Leaning on control consoles or panels and/or having one's back to the control board being monitored is not considered professional.)
- Potentially distracting activities (such as radio listening, game playing, reading of non job-related literature, and horseplay) is prohibited. Minimize non job-related discussions so as not to interfere with the conduct of the shift or monitoring of key parameters.
- Conduct facility business, such as work order or lockout approval, at a location and in such a manner that will not distract on-duty control personnel nor compromise the professional atmosphere of the CA.
- Personal phone calls are prohibited in the CA except as authorized by the FOD or RLM.
- Eating meals in the CA is not allowed. Exception: Where manpower or skills shortages do not allow for CA operators/supervisors lunch relief, one operating person at a time may eat their meal in the CA. The supervisor will control this activity. This exception does not supersede prohibitions imposed for other reasons, for example, health physics concerns.
- Water and beverages are allowed in the CA, but do not place cups and containers upon or adjacent to consoles, panels, or other control system or computer keyboards. Liquids should not be consumed in ATC areas. This exception does not supersede prohibitions imposed for other reasons, for example, health physics concerns.
- Do not wear hard hats/bump hats in CA unless specifically required for maintenance or other special conditions. (Experience has shown that a falling hard hat can inadvertently actuate or de-energize equipment.)

### 3.3 Monitoring the Main Control Panels

- Operators must be alert and attentive to control panel indications and alarms. Monitor control panel indications frequently, and take prompt action to determine the cause of and correct abnormalities. Place emphasis on closely monitoring and trending to detect problem situations early.
- Operator response to alarms must be timely and actions must be taken to address the cause of the alarm and clear alarming conditions. Do not disable alarms and enunciators without formal authorization.

The proper response to an alarm is to verbally announce the alarm, if other operators are present, so that other operators are made aware of the alarming condition and can take appropriate action to correct the cause of the alarm.

Expected alarms will be announced with a description of why it is expected, e.g., "High XYZ alarm due to calibration of XYZ instrument."

- Attempt to verify the alarm condition by use of independent instrumentation.
- Take appropriate action to correct the cause of the alarm. (Alarm Response Procedures [ARPs], Emergency Operating Procedures [EOPs], etc.).
- If corrective actions are required, record the corrective action and results.

**No: P315      Conduct of Operations Manual**  
**Attachment 3. Control Area Activities (Cont.) (Page 3 of 5)**

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- Inform the OM.
- Make log entries as required.
- Limit the number of evolutions that are performed concurrently so that the operator's ability to detect and respond to abnormal conditions will not be compromised as the result of excessive control panel indications.
- Computerized or automated systems may be used to control processes. Develop procedures using manually controlled and operated backup equipment to include a loss of system control due to a single mode failure (i.e., loss of computerized or automated controls). Operators must be proficient in the use of manual/backup controls.

### 3.4 Control Area (CA) Operator Ancillary Duties

- Duties assigned to operators must not interfere with their ability to monitor facility parameters. Activities such as preparation of tagouts, reviews of operating procedures, Required Reading, review of maintenance work activities, etc., must not interfere with the operator's primary responsibilities.
- Minimize the administrative workload of operators responsible for monitoring and operating the control board. If one operator is involved in administrative tasks, other operators should assume, by formal relief procedures, the responsibility to monitor the process. Some administrative activities are better performed away from the ATC area by an operator who is not responsible for operating the control panel.

### 3.5 Operation of Control Area (CA) Equipment

- Only operations and support personnel specifically authorized by facility procedures, and as defined by the qualification process, must operate CA equipment. When trainees operate this equipment, they are supervised and controlled by the qualified operator, who normally would perform the operations.
- No operator must attempt any operational activity they do not feel qualified to perform.
- Personnel must demonstrate ownership of facility areas. This ownership includes not only maintaining systems and equipment operating within specified limits, but also maintenance of the material condition of the spaces for which the operator is responsible. This includes wiping up fluid leaks, initiating corrective action for deficient equipment, and other like activities.

### 3.6 Training

There is no specific mandatory training or qualification required to implement this attachment. It is recommended that all personnel implementing this document complete [UTrain Course #24654](#), *OS-RTS ConOps, Attachment 3, Control Area Activities*. This training will enhance the employee's knowledge as required and as outlined in [DOE O 422.1](#), *Conduct of Operations*.

### 3.7 Acronyms

ARP	Alarm Response Procedure
ATC	At-the-Controls
CA	Control Area
EOP	Emergency Operating Procedure
FOD	Facility Operations Director

**No: P315      Conduct of Operations Manual**  
**Attachment 3. Control Area Activities (Cont.) (Page 4 of 5)**

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OM                      Operations Manager  
RLM                     Responsible Line Manager

**3.8      References**

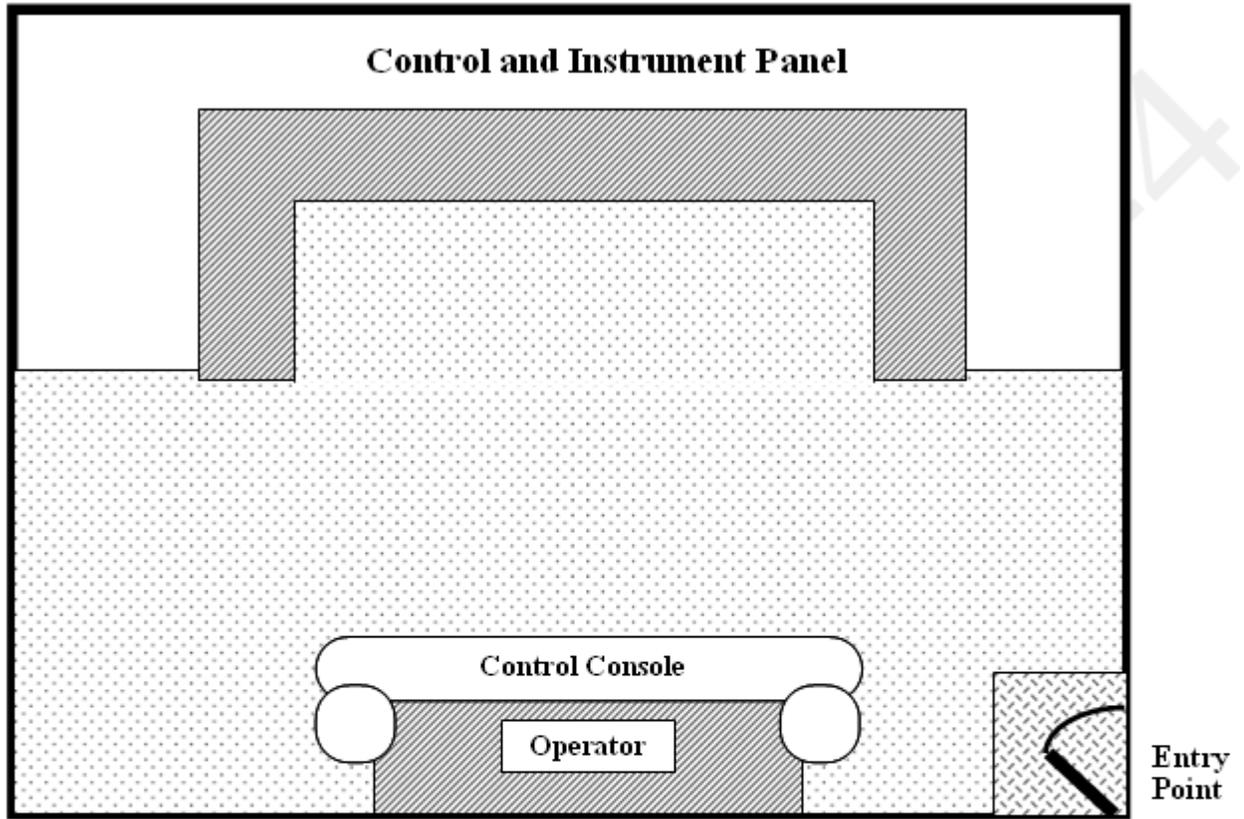
- [DOE-STD-1042-93](#), *Guide To Good Practices For Control Area Activities*
- [DOE O 422.1](#), *Conduct of Operations*

**3.9      Appendices**

Appendix 3-A. *Control Room Access Sketch*

No: P315      Conduct of Operations Manual  
Attachment 3. Control Area Activities (Cont.) (Page 5 of 5)

Appendix 3-A. Control Room Access Sketch (Page 1 of 1)



Entry Point  
Obtain permission  
prior to proceeding  
beyond this point



Control Area  
Limited Access Only  
Obtain permission  
prior to entry



"At -the-Controls Areas"  
Access restricted  
without prior  
authorization

**No: P315      Conduct of Operations Manual  
Attachment 4. Communications (Page 1 of 9)**

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**4.0      COMMUNICATIONS**

This attachment establishes the methods to ensure reliability and accuracy of information through both verbal and written means. A subsection also describes the restrictions on the use of wireless communication devices.

**4.1      Conducting Written Communications**

Written communication consists of formalized, controlled documents and informal written material. Examples of formal written communications include

- Procedures
- Integrated Work Documents (IWDs)
- Facility standing orders
- Shift orders
- Narrative logs
- Shift turnover checklists
- Data sheets
- Lockouts
- Work instructions
- Round sheets

Handling, reviewing, and approving formal written communication is processed in accordance with Laboratory and facility administrative procedures.

**4.2      Conducting Verbal Communications****4.2.1    Processing Verbal Communications**

Verbal communication is the most common form of communication and may range from the formal, such as performing the notifications required for an unusual event, to routine face-to-face communications.

Operating directions are verbal instructions given to an operator that involve the operation of a system or piece of equipment. These instructions must be brief and straight forward; otherwise written instructions must be used. Operating directions may be given face-to-face, by telephone, by radio, or through use of the Public Address (PA) system. When communications are not face-to-face, point-to-point communications are the preferred method for giving operating directions. Point-to-point communications use dedicated links between participants (e.g., telephones, etc.). When communicating verbally, the sender and receiver should use the phonetic alphabet (see Appendix 4-A, *Phonetic Alphabet*). If acronyms are used they should come from a standardized list. The [Policy Office website](#) contains the Laboratory Definition of Terms and Acronyms lists.

Operating directions are to be explicit, understandable, and include the following:

- who is giving the direction
- who is to perform the action

**No: P315      Conduct of Operations Manual**  
**Attachment 4. Communications (Cont.) (Page 2 of 9)**

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- what is to be done, and if time allows, why
- when it is to be done
- what procedure applies
- when to report back

All operating directions given verbally are to be acknowledged by the receiver. The acknowledgment is accomplished by verbatim repeat back, or paraphrasing the directions, followed by the sender indicating that the instructions were properly understood. The operator performing an operating directive reports back the completion of the activity, and if possible, the results. If an individual is assigned an action that the individual cannot or believes should not be completed as directed, the individual is to communicate those concerns to the sender. Resolution is necessary prior to proceeding. Supervision and/or management reviews those concerns and takes the appropriate actions. The person originating an operating direction is to observe any parameters available for confirmation that the activity is proceeding as intended.

**4.2.2 Defining Attributes of Good Verbal Communications**

Since verbal communication is the most common form of communication, the following attributes should be considered when performing verbal communications:

- Ensure that the identity of the two people is clearly understood by both.
- Use clear, precise terminology. Do not use slang terms. Avoid words that sound alike (e.g., avoid the use of "increase" and "decrease," instead use "raise" and "lower"). Use commonly agreed upon terms.
- Use both the noun name and number of equipment.
- Speak distinctly and deliberately.
- Acknowledge all communications.
- When issuing multiple actions, take care to structure the message so that the actions will not be confused or misunderstood.

During transients or lengthy evolutions during which facility conditions can change, conduct frequent briefings to ensure that all personnel are knowledgeable of facility status and planned activities. When receiving or giving directions or information verbally, write down the information for easy reference. Do not rely on memory for data, operating parameters, infrequently used equipment numbers, sequential actions and actions to be performed at a later time.

- Example:** (a) valve numbers
- (b) number of turns to open a valve
- (c) parameters during a facility transient

When communicating equipment numbers or other designators that include individual letters, the phonetic alphabet should be used in conjunction with the normally used letter to avoid confusion when necessary.

**Example:** "Start the B - Bravo - pump"

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**No: P315      Conduct of Operations Manual**  
**Attachment 4. Communications (Cont.) (Page 3 of 9)**

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Note that "B" could be easily confused with "C" or "D." When using commonly used acronyms, the phonetic alphabet is not required.

#### **4.2.3 Performing Verbal Communications**

To ensure accurate and timely verbal communications by telephone, the following communication practices are used. These practices are to be used both during normal and emergency operation communications.

RECEIVER: Answer telephone with your position, or preferably with your name and position and location (if needed).

**Example:** "Tom Moore, Tank Farm Operator,"

CALLER: Begin the communication by stating your name and position, followed by the first communication statement.

**Example:** "Tom, this is Bill Jones, Control Room Operator. Perform step 3.2 to line up to transfer from the 75K to 100K tank. Call the Control Room when the valve lineup is complete."

**Note:** After the identity of individuals is established, beginning of subsequent statements with name and position is not required.

Make a positive statement of the desired action. Specify the required timeframe for completion of the action. Do not leave the required time open-ended.

**Example:** "Close the discharge valve on the No. 1 Cooling Water Pump immediately so that I can restart the pump. Call me back when the valve is closed."

The receiver of the information must repeat back the message.

**Example:** "I will close the No. 1 Water Pump discharge valve right now. I'll call you back as soon as the valve is closed."

Following the repeat back of the message by the receiver, the sender must acknowledge that the receiver understands the information correctly.

**Example:** "That is correct."

Face-to-face communications are to be completed in the same format as telephone communications with the following differences:

- Begin communication statements with the name of the person being addressed. Use of names at the beginning of statements is especially important during periods of high activity, such as transients and facility shutdowns. Titles and identification of the person providing the information is not necessary.
- If the communication is not interrupted by other activities, formal use of names is not required.

**No: P315      Conduct of Operations Manual**  
**Attachment 4. Communications (Cont.) (Page 4 of 9)**

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When contacting the control area by telephone to report an emergency, it is permissible to allow the phone to ring until answered (normally the phone should only be allowed to ring five times). When reporting an emergency always include the following:

- your name
- type of emergency
- facility area of emergency
- other pertinent information

**4.3 Performing Public Address (PA) Communications**

The following requirements apply to normal and emergency use of the PA system.

**4.3.1 Conducting Normal Use of Public Address (PA) System**

Facility operations personnel are to abide by the following restrictions during normal use of the PA system.

- The noise, volume, and distraction associated with the PA system require that its use be minimized.
- It is proper to use the PA system to establish communication with an individual or a location (for example, the Control Room) when such communication is important to the conduct of operations or to personnel safety. It is not proper use of the PA system for routine communication when telephones are available.
- When communication is established on the PA system, the instruction, or data is to be announced in a clear voice and concise manner that minimizes the amount of time the PA system is busy.
- Because the PA system is essential to operations, vital to personnel safety, and an integral part of emergency actions, use of the system is restricted to these purposes. Facility Safety Basis (SB) Documents should clearly designate the PA system as either credited or not credited as a safety system.
- Control room personnel should make PA system announcements prior to or at the time of significant activities such as changes in the ventilation system, or activities involving starting of equipment or changes of status where personnel safety is concerned.

Information concerning the status of the major equipment is announced using the PA system.

Examples of such uses are as follows:

- startup or shutdown of major equipment
- unexpected startups or shutdowns of equipment
- diesel generator starts

The PA system may only be used by facility operations personnel to transmit directives or instructions to personnel when direct voice or telephone communication cannot be established. To the extent possible, preliminary direct communication should establish that the directive will be given over the PA system, what the directive will be, and the nature of the directive.

**No: P315      Conduct of Operations Manual**  
**Attachment 4. Communications (Cont.) (Page 5 of 9)**

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**Note:** If it is necessary to pass a directive over the PA system, the individual delivering the directive will require an acknowledgment from the individual to whom the directive was given. This acknowledgment is necessary to be certain that the directive was received.

The PA system is the normal means of quickly contacting operators or supervisory personnel when they are not near telephones or other direct communications devices such as "pagers" or walkie-talkies (when authorized).

**4.3.2 Conducting Emergency Use of the Public Address (PA) System**

**Note:** If the Facility SB Documents or the Building Emergency Plan (BEP) credit the PA system, then this sub-section is required; if it is not credited in either the SB Documents or the BEP, then this sub-section is recommended, but not required.

The PA system is used to announce emergency conditions, and should include directions for personnel to report to specific locations, as applicable. The control area should have the capability of overriding other users of the PA system for emergency announcements. The PA system is used to instantly pass information to site personnel in the event of emergency or unusual situations.

The PA system is used to announce the following types of situations:

- emergency conditions (e.g., fire, spill, or injury) are announced, including the direction of personnel to go to particular locations;
- unexpected events are announced and instructions for personal safety are given; and
- in the event of actuation of the Emergency Plan, the PA system is used to convey directions to site personnel.

**4.4 Performing Radio and Wireless Communications**

Personnel must observe restrictions on communications devices on Laboratory property and in Security Areas. [P202-5, Prohibited Articles](#), includes requirements for two-way radios, cellular phones, and two-way pagers, among others. Additional requirements are stated in [P217, Controlled Articles](#). Work areas where radios may interfere with equipment operation must be properly controlled (e.g., postings, work packages, etc.).

**4.5 Conducting Normal Communications**

Communications systems (e.g., radios, pagers, PA system, cell phones, land lines, etc.) are available to conduct normal operations. These systems are tested periodically to ensure that they are functioning properly.

**4.6 Performing Emergency Communications**

**Note:** If the Facility SB Documents or the BEP credit the PA system, then the PA system requirements of this sub-section apply; if not credited in either the SB or the BEP, then the PA system requirements of this sub-section are recommended, but not required.

Emergency communication systems are required to ensure that all individuals working in a facility can be promptly alerted to all facility emergencies. The emergency communication systems are tested periodically to ensure that they are functioning properly. Any faults found during testing are

**No: P315      Conduct of Operations Manual**  
**Attachment 4. Communications (Cont.) (Page 6 of 9)**

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repaired on a high priority basis. To ensure that the proper notifications are made, the control area has the authority to override all other users of the PA system.

Personnel working in areas where emergency communications cannot be heard must make their presence known to the Operations Manager (OM) so that in the event of an emergency alternate means of notification may be made. When alternate methods of communication for emergency conditions are required, they are typically identified in procedures and work documents or as part of the facility work planning and authorization process (e.g., IWD, plan of the day, plan of the week, etc.). If the facility has made provision for "area sweeps" or other formal means of notifying personnel in areas not reached by emergency communications, this notification need not be made. More information can be found in [P1201-4](#), *LANL Emergency Procedures and Protective Actions*.

#### 4.7 Conducting Briefings on Planned Evolutions

When non-routine procedures or complex evolutions are planned, management must conduct briefings on the evolution in advance. The briefing should include all personnel involved in the upcoming evolution or procedure in accordance with Attachment 12, *Operations Turnover*, Section 12.2.2, *Pre-Job Briefs (PJBs)*.

The purpose of the briefing is to ensure that all applicable personnel clearly understand the work to be performed, have an opportunity to ask questions or raise concerns, and have the information required to prevent personnel error due to misunderstandings or inadequate communications. Listed below are some generic items that should be discussed during the briefing:

- Emergency egress plan and assembly areas identified
- scope of the work to be performed, including physical or nonphysical boundaries
- expected automatic action or equipment/system response
- conservative action to be taken to place the facility in a known safe condition when unexpected conditions occur or expected actions do not occur
- types of communication to be used throughout the evolution and what action is to be taken if communications are lost
- who to contact when problems arise
- safety precautions and safety equipment needed
- known equipment problems, high radiation areas, high noise areas, etc.
- types of tools to be used to accomplish specific tasks
- procedure to be used during the evolution
- data to be recorded

Provide an opportunity for personnel to voluntarily self-identify physical and or medical limitations (including prescription and non-prescription medication) that could impair their ability to safely perform assigned tasks

**Note:** This discussion should offer the opportunity for individuals to make such disclosures privately.

**No: P315      Conduct of Operations Manual**  
**Attachment 4. Communications (Cont.) (Page 7 of 9)**

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The use of reverse briefings, where the actual workers lead the brief and discuss their activities, should be encouraged when appropriate.

**Note:** Industry operating experience has proven that even the most routine evolutions can rapidly degenerate into major mishaps due to poor communications. Briefings are a useful tool to help improve communications and teamwork.

#### **4.8 Drill and Exercise Communications**

It is recognized that during the performance of a drill or exercise, “drill” communications can actually hinder clear, concise transfers of information. Therefore, the following tools and guidelines should be used for communications during the performance of a drill or exercise:

##### **4.8.1 Electronic Communications (PA systems, telephones, faxes, computers, radios, etc.)**

When advising personnel with information relevant to the drill or exercise, announcements and notifications will be prefaced with the sentence “This is a drill.”

##### **4.8.2 Face to Face Communications**

The initial communication with personnel involved in a drill or exercise will be prefaced with the sentence “This is a drill.”

Subsequent communications will not require the use of “This is a drill.” However, if this communication could be overheard by persons not involved in the drill or exercise, the sentence “This is a drill” should be used to prevent confusion for those not involved in the scenario.

If during the drill or exercise an actual condition occurs that requires communication to personnel involved, the announcement must be prefaced with “This is **not** a drill.”

#### **4.9 Training**

There is no specific mandatory training or qualification required to implement this attachment. It is recommended that all personnel implementing this document complete [UTrain Course #24655](#), *OS-RTS ConOps, Attachment 4, Communications*. This training will enhance the employee’s knowledge as required and as outlined in [DOE O 422.1](#), *Conduct of Operations*.

#### **4.10 Acronyms**

BEP	Building Emergency Plan
IWD	Integrated Work Document
OM	Operations Manager
PA	Public Address
SB	Safety Basis

#### **4.11 References**

- [Policy Office website](#)
- [P202-5](#), *Prohibited Articles*
- [P217](#), *Controlled Articles*
- [P1201-4](#), *LANL Emergency Procedures and Protective Actions*

**No: P315      Conduct of Operations Manual**  
**Attachment 4. Communications (Cont.) (Page 8 of 9)**

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- [DOE O 422.1](#), *Conduct of Operations*

**4.12 Appendices**

Appendix 4-A. *Phonetic Alphabet*

**No: P315      Conduct of Operations Manual**  
**Attachment 4. Communications (Cont.) (Page 9 of 9)**

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**Appendix 4-A. Phonetic Alphabet (Page 1 of 1)**

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Use the phonetic alphabet when alpha-numeric information is being communicated to minimize misinterpretation.

A - Alpha	N - November
B - Bravo	O - Oscar
C - Charlie	P - Papa
D - Delta	Q - Quebec
E - Echo	R - Romeo
F - Foxtrot	S - Sierra
G - Golf	T - Tango
H - Hotel	U - Uniform
I - India	V - Victor
J - Juliet	W - Whiskey
K - Kilo	X - X-Ray
L - Lima	Y - Yankee
M - Mike	Z - Zulu

**No: P315      Conduct of Operations Manual**  
**Attachment 5. Control of On-Shift Training (Page 1 of 4)**

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## **5.0 CONTROL OF ON-SHIFT TRAINING**

The purpose of this attachment is to provide requirements for control of on-shift training. This guideline requires that operation of equipment by trainees must be carefully supervised and controlled and that the trainee satisfactorily meets the training objectives and receives maximum benefit from the experience.

### **Discussion**

On-shift training is commonly conducted using the instructional method of On-the-Job Training (OJT). This form of training has proven very effective in qualifying trainees. OJT addresses the steps necessary to successfully train an individual in the performance of a task, but does not specifically address the controls of the training process and their relationship to the operation of the facility. For information concerning the OJT process, refer to the Department of Energy (DOE) guideline, [DOE-HDBK-1206-98](#), *Guide to Good Practices for On-the-Job Training* (hereafter referred to as OJT Guide to Good Practices). This attachment addresses the formal, disciplined controls that are required in the operating environment to ensure that on-shift training is conducted safely and efficiently.

On-shift training includes activities that a trainee performs in the operating environment under supervision, as well as training activities that are performed in the operating environment as part of the operator continuing training program. The primary purpose of on-shift training is to allow personnel to acquire first-hand experience by performing or observing operations, special processes, tests, inspections, and other work activities.

### **5.1 Identify Requirements for On-Shift Training**

[P781-1](#), *Conduct of Training*, discusses the requirements for conducting Job/Activity/Task-Specific training.

### **5.2 On-Shift Training Program Development**

Each facility ensures that on-shift training programs are developed for its supervisors, operators, and trainees seeking qualification. [P781-1](#), *Conduct of Training*, contains the administrative requirements for on-shift training.

### **5.3 Adherence to Programs**

On-shift training is conducted in accordance with qualification programs that specifically identify items the trainee must accomplish on-shift. The knowledge requirements for each item are defined, as well as what actions the trainee must do (perform, simulate, or discuss). Both the Trainer/Evaluator (T/E) and the trainee must understand what is required for each item.

### **5.4 Trainer/Evaluator Qualification**

**Note:** If the T/E is not currently qualified/certified, any vital equipment operation must be performed under the direction of a qualified/certified operator.

**No: P315      Conduct of Operations Manual**  
**Attachment 5. Control of On-Shift Training (Cont.) (Page 2 of 4)**

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T/Es, who are qualified in both on-shift instructional techniques as specified in the site training requirements manual and currently or previously qualified in the duty area to be taught in accordance with facility training requirements, conduct on-shift training. The T/Es are specifically selected, taking into account communication skills, technical knowledge, and ability to provide trainees with hands-on experience. A thorough knowledge of the system or equipment is also essential to prevent system or process damage. If possible, the T/E should not perform the evaluation of an operator for whom he/she trained. If it can't be avoided the evaluation should take place at least 24 hours after the training.

**5.5 Control of Trainees**

Whenever a trainee operates equipment, the T/E observes the trainee to ensure the trainee does not make an error. Until the trainee has demonstrated proficiency in an operation, the trainee discusses the procedure steps, cautions, and notes with the T/E prior to operation of the system or equipment. The trainee will demonstrate actions to be performed by pointing to the control switch, valve, breaker, etc., that will be manipulated.

When trainees record entries on official documents (round sheets, logs, etc.), the Qualified Operator co-signs to verify that the recorded information is correct. The trainee and T/E discuss any out-of-specification readings and the consequences of allowing any observed trends to continue.

The T/E and/or the Qualified Operator closely monitor the trainee and remain in a position to intervene, if necessary, or assume control. T/E must not become complacent with trainees. Just because trainees have performed a task once does not mean they are aware of all the problems that can occur.

Trainees may be used to support operations work activities only when approved by the Operations Manager (OM) and with a qualified operator present. Trainee participation in production functions is limited to those duties for which they have been qualified.

Satisfactory completion of a single performance item does not necessarily qualify a trainee for performing that function. The potential interrelationship of any function with other systems and equipment requires that a trainee must be fully qualified for a position before being allowed to operate without a supervisor or trainer present.

The T/E and/or the Qualified Operator is responsible for any actions taken by the trainee.

The T/E must receive control room approval from the OM or the appropriate supervisor, if applicable, prior to beginning any job performance measures that involve actual operation of equipment. Prior to actually performing activities that affect production or facility safety, the evaluator informs examinee and the Control Room Supervisor (CRS)/OM of the planned task and checks for changed conditions (e.g., changes in radiological conditions, availability of system for training, etc.). Training activities must be coordinated through the work planning process (e.g., plan of the day, plan of the week, etc.).

**5.6 Operator Qualification Program Approval**

The OM or other person designated by the Facility Operations Director (FOD), or the Responsible Line Manager (RLM) approves the operator qualification program. Deployed training personnel will coordinate changes to the program.

**No: P315      Conduct of Operations Manual**  
**Attachment 5. Control of On-Shift Training (Cont.) (Page 3 of 4)**

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### 5.7 Training Documentation

Completion of the trainee qualification program must be formally documented. A qualified instructor documents classroom requirements and written examination results. On-shift training and system checkouts must be conducted in accordance with [P781-1](#), *Conduct of Training*, and documented by T/Es. Job performance evaluation results must be documented by the facility training coordinator. It is recommended that training (e.g. classroom, OJT, etc.) supporting a qualification is documented in a timely fashion following completion.

### 5.8 Suspension of Training

Trainee operation of equipment is immediately suspended during unanticipated or abnormal events, accident conditions, or whenever qualified operations personnel or the T/E believe suspension is necessary to ensure safe and reliable facility operation. During abnormal or accident conditions, trainees do not participate in facility operations unless specifically directed to do so by the qualified operations personnel responsible for the equipment.

### 5.9 Maximum Number of Trainees

A maximum limit for the trainee-to-instructor ratio ensures that the trainee is provided with effective instruction and that the instructor is not distracted by having too many trainees. The OM normally limits the number of trainees to no more than three trainees for each T/E. The RLM may specify changes to this ratio in accordance with [P781-1](#), *Conduct of Training*.

When an increase in the trainee-to-instructor ratio for particular training evolution is approved, it must be specified on the qualification record for that evolution. Factors used to determine the maximum number include accessibility of equipment, visibility of instrumentation, space limitations, ambient noise, safety concerns, training effectiveness, and potential adverse effects on facility operation.

Operations positions requiring certification must be based on one-to-one instruction on that position/work station.

OMs/supervisors ensure that the required trainee-to-instructor ratio is maintained.

### 5.10 Updating On-Shift Training Requirements

Training procedures provide for periodic review and update of on-shift training program content, materials, and administration. Revisions may be required because of changes in a task, system configuration, records, or equipment. Reviews are conducted at least biennially (every two years).

### 5.11 Training

There is no specific mandatory training or qualification required to implement this attachment. It is recommended that all personnel implementing this document complete [UTrain Course #24656](#), *OS-RTS ConOps, Attachment 5, Control of On-Shift Training*. This training will enhance the employee's knowledge as required and as outlined in [DOE O 422.1](#), *Conduct of Operations*.

### 5.12 Acronyms

CRS	Control Room Supervisor
DOE	Department of Energy
FOD	Facility Operations Director

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**No: P315      Conduct of Operations Manual**  
**Attachment 5. Control of On-Shift Training (Cont.) (Page 4 of 4)**

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OJT	On-the-Job Training
OM	Operations Manager
RLM	Responsible Line Manager
T/E	Trainer/Evaluator

**5.13 References**

- [DOE-HDBK-1206-98](#), *Guide to Good Practices for On-the-Job Training*
- [P781-1](#), *Conduct of Training*
- [DOE O 422.1](#), *Conduct of Operations*

**No: P315      Conduct of Operations Manual**  
**Attachment 6. Investigation of Abnormal Events (Page 1 of 1)**

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## **6.0      INVESTIGATION OF ABNORMAL EVENTS**

Identifying, investigating, and analyzing abnormal events is an important component of process improvement and safety management. Abnormal events must be managed in accordance with the applicable Laboratory policies and procedures:

- [P102-2](#), *Occupational Injury and Illnesses Reporting and Investigation*
- [P141](#), *Price Anderson Amendments Act (PAAA) Worker Safety and Health (WSH), and Classified Information Security (CIS) Enforcement Procedure*
- [P214](#), *Information Security Incident Management*
- [P322-3](#), *Performance Improvement from Abnormal Events*
- [P322-4](#), *Laboratory Performance Feedback and Improvement Process*
- [QPA-PA-FSD-003](#), *Abnormal Events Handbook*

## **6.1      Training**

There is no specific mandatory training or qualification required to implement this attachment. It is recommended that all personnel implementing this document complete [UTrain Course #24657](#), *OS-RTS ConOps, Attachment 6, Investigating Abnormal Events*. This training will enhance the employee's knowledge as required and as outlined in [DOE O 422.1](#), *Conduct of Operations*.

**No: P315      Conduct of Operations Manual**  
**Attachment 7. Notifications (Page 1 of 1)**

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## **7.0      NOTIFICATIONS**

A defined and formal process must be used to report events requiring notification to the Department of Energy or external agencies. These notifications must be conducted in accordance with the applicable Laboratory policies and procedures:

- [P102-2](#), *Occupational Injury and Illnesses Reporting and Investigation*
- [P141](#), *Price Anderson Amendments Act (PAAA) Worker Safety and Health (WSH), and Classified Information Security (CIS) Enforcement Procedure*
- [P214](#), *Information Security Incident Management*
- [P322-3](#), *Performance Improvement from Abnormal Events*
- [PD1200](#), *Emergency Management*

## **7.1      Training**

There is no specific mandatory training or qualification required to implement this attachment. It is recommended that all personnel implementing this document complete [UTrain Course #24658](#), *OS-RTS ConOps, Attachment 7, Notifications*. This training will enhance the employee's knowledge as required and as outlined in [DOE O 422.1](#), *Conduct of Operations*.

**No: P315      Conduct of Operations Manual**  
**Attachment 8. Control of Equipment and System Status (Page 1 of 24)**

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## **8.0      CONTROL OF EQUIPMENT AND SYSTEM STATUS**

### **8.1      Control of Equipment and System Status**

This attachment provides direction for the control of equipment and system status to ensure that facility configuration control is maintained in accordance with procedural and design requirements and the operating shift personnel know the status of facility equipment and systems.

#### **8.1.1    General**

It is imperative that facility equipment and systems be properly controlled. Not only must the operating shift be aware of how equipment and systems will function for operational purposes, but in order to satisfy the design bases and the operational limits, the proper component, equipment, and system configurations must be established and maintained.

Each facility is required to control configuration changes resulting from maintenance, modifications, and testing activities. Changes in equipment and system configuration are communicated from shift to shift through the shift turnover process. Turnover checklists, equipment status boards, and system composite schematics or system alignment checklists are used as aids for compiling and transmitting status information efficiently and accurately during the shift turnover process.

Each facility is required to establish a system to track deviations from the normal alignment (normal configuration). One system commonly used for this purpose is the status board. Status boards typically contain a graphic or schematic representation of the system, and/or a listing of system components. When status changes are made, the status board (schematic representation and/or listing of components) is promptly annotated to indicate the current status of equipment. An alternate system contains a file of system folders that include system alignment checklists with deviation sheets or other annotations of deviations by which status changes are documented. Each facility must identify by Standing Order, administrative procedure, or other suitable written description the system (including specific facility details) in use to maintain system status. Note that when using the status board method, alignment checks may be needed to establish initial conditions.

#### **8.1.2    Identification of Equipment and Systems**

The Facility Operations Director (FOD) is responsible for identifying equipment and systems that require formal status control in accordance with this attachment.

Document facility equipment and system operating conditions that require status control in accordance with this attachment on a form similar to Appendix 8-A, *Template for Identification of Equipment and System Operating Conditions Requiring Status Log*. This document must be approved by the FOD. Maintain the approved form as part of the system alignment status file.

All technical procedures (e.g., Operating Procedures [OPs], Abnormal Operating Procedures [AOPs], Alarm Response Procedures [ARPs], etc.) generated to support the status control for the equipment and systems identified in this section are developed, controlled, and used in accordance with Attachment 16 of this document.

**No: P315      Conduct of Operations Manual**  
**Attachment 8. Control of Equipment and System Status (Cont.) (Page 2 of 24)**

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### **8.1.3 Status Change Authorization and Reporting**

#### *8.1.3.a Authorities and Reporting*

The Operations Manager (OM) is responsible for maintaining proper facility configuration. The OM maintains a broad overview of facility operations. The OM's perspective of status must necessarily be the focal point of operations.

Authorization of status changes to equipment and systems of lesser importance may be delegated by the OM to other cognizant operators. Delegation does not relieve the OM of the responsibility for maintaining an overview of facility operations. The OM periodically is advised of changes in status of equipment and systems delegated to other cognizant operators.

Facility operators must be aware of equipment and system status. The OM ensures that changes in status to equipment and systems are communicated to the facility operators. Typically, facility operators are in the line of information flow to and from the OM.

Report changes in the status of facility equipment and systems to the governing station (e.g., control area) or to the individual (or relief) who authorized the change. Obtaining the authorization for the performance of the procedure and reporting the completion of the procedure constitutes status change reporting.

The OM authorizes changes in status of safety-related equipment and systems. Such changes are reported to the control area.

#### *8.1.3.b Status Control Process*

Authorization by the OM is required before any change that affects system status outside of normal shift activities using approved procedures.

All personnel notify the OM or designee before performing tasks that will result in a change to normal configuration or when conditions are observed that are not in accordance with the established normal configuration.

Systems are considered in normal configuration unless an annotation has been made on the status board and/or system composite schematic or an annotation for that system is entered into the system folder (unless covered by procedure.) (Log entries should be made as appropriate).

The OM reviews components or equipment aligned in a configuration different than normal configuration to ensure that the condition does not impact safety requirements such as Safety Analysis Reports (SARs), Technical Safety Requirements (TSRs), technical specifications, etc.

### **8.1.4 Component and System Alignments**

#### *8.1.4.a General*

Individual components for facility equipment and systems are properly aligned or checked for proper alignment before the initial placement of equipment or systems into operation. An initial alignment of valves, switches, and breakers establishes a baseline configuration upon which further operations may be based. Once the equipment or system is properly aligned and is operating in accordance with the operating procedures, frequent complete alignments of all individual components may not be necessary.

**No: P315      Conduct of Operations Manual**  
**Attachment 8. Control of Equipment and System Status (Cont.) (Page 3 of 24)**

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Use alignment checklists, or procedures which contain the same degree of control, to establish the initial correct component positions. The alignment checklists or procedures provide a component name that matches the nomenclature placed on the component, a component number, the required component position, and documentation for performance and verification. An example alignment checklist is shown on Appendix 8-B, *Template for System Alignment Checklist*.

Typical situations that may require equipment and systems to be aligned include startup from major outages, changes in operational mode, and special alignments for portions of systems affected by maintenance or lockout/tagout activities. Following maintenance or other shutdown situations, safety-related equipment is functionally tested, in accordance with TSR surveillance requirements, before the equipment or system is considered operable.

Control of component and system alignment may be temporarily relaxed with approval of the FOD. Approval is documented by a suitable means such as by Standing Order, Shift Order, or notation in the equipment and system status file. Upon restoration of system status control, an alignment must be performed on the system to ensure proper configuration.

Equipment and system alignments are only required for equipment and systems required to be operational.

#### *8.1.4.b Alignment Checklists*

##### General Instructions

- The scope of the alignment checklists will be determined by facility operations, concurred with by technical support, and approved by the facility operations.
- The alignment checklist defines the component configuration required to ensure operability of identified equipment and systems, as well as required instrumentation and support systems.
- Component listings for each system should be grouped by location to facilitate performance of the checklist. The checklist may be divided into sections to allow simultaneous completion of several sections. If a checklist is divided into sections, each section has a signature block for the operator completing that section of the checklist.
- Treat alignment checklists as procedures. Performers comply with the requirements of this document Attachment 10, *Independent Verification*, and Attachment 16, *Local Procedures*, Section 16.9, *Procedure Use*.
- Document those components that are not to be placed in the "REQUIRED POSITION" and are NOT under control of an approved document, procedure, work package, lockout, etc., by means of deviation sheets similar to Appendix 8-C, *Template for Component Deviation Sheet*, or by annotations in the lineup checklist. As a minimum, documentation should identify the deviated component(s) and basis/cause of deviation and OM approval of deviation. If using the system folder method of status control, documentation will also include eventual return to normal, and OM approval for return to normal.
- Alignment checklists are not considered complete until reviewed and signed by the OM.
- Place completed alignment checklists in the appropriate system alignment status file following approval by the OM. Completed checklists remain in the status file until superseded by a subsequent performance. Status files may be electronic.

**No: P315      Conduct of Operations Manual**  
**Attachment 8. Control of Equipment and System Status (Cont.) (Page 4 of 24)**

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#### Initial Full or Partial System/Component Alignments

- Complete alignment checklists as assigned by the OM. The OM may decide to perform a complete checklist or only a partial checklist.
- When only a portion of a system has been affected by the maintenance, modification, or test, the OM may specify that the system conditions be established in accordance with specific parts of a checklist. In those cases, the OM stamps or writes the word "PARTIAL" on the first page of the checklist, and marks "N/A" (not applicable) for those steps, or portions of the checklist that are not required to be performed.
- Personnel performing alignment checklists have the checklist with them when performing the duties of the positioner or independent verifier.
- The OM reviews and approves the completed alignment checklist.

#### System/Component Alignment Verification Checks

- A complete verification of alignment of equipment and systems should be performed as needed to ensure proper system alignment, as determined by operations management.
- Alignment checklists may be used to perform partial or full system/component alignment verification checks. During these checks compare the "AS FOUND POSITION" with the "REQUIRED POSITION" specified by the alignment checklist.
- If the "AS FOUND POSITION" and the "REQUIRED POSITION" are the same, then leave the "AS LEFT POSITION" column blank and enter initials in the "INITIALS" column. If the "AS FOUND POSITION" is different from the "REQUIRED POSITION" and this condition is unexpected (i.e., no existing deviation sheet or Do Not Operate [DNO] tag, etc.), notify the OM.
- The OM must assess the out of position condition for impact on system operability and consider the safety and environmental consequences prior to directing operator action. The component may not be repositioned without the OM's authorization. If repositioning is authorized, the operator must place the component in the "REQUIRED POSITION" and record this position in the "AS LEFT POSITION" column. Repositioning must be performed prior to performance of independent verification.
- Following the performance of alignment checklists, the OM
  - reviews completed checklists to identify components in other than required positions;
  - evaluates condition of the identified components and provides resolution, as required;
  - authorizes component repositioning as required;
  - if using the status board method of status control, causes status boards to be updated, and approves the completed lineup checklist; and
  - if using the system folder method of status control, initiates any necessary deviation sheets, and approves completed alignment checklist after all authorized component repositioning and necessary deviation sheets have been completed.

**No: P315      Conduct of Operations Manual**  
**Attachment 8. Control of Equipment and System Status (Cont.) (Page 5 of 24)**

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### **8.1.5    *Equipment Locking for Administrative Control***

Control locks may be used to provide special administrative controls for equipment that, if inadvertently operated, could cause an undesirable result such as damage to equipment or compromised quality of a product.

**Note:** For equipment locking for Hazardous Energy Control (HEC), see [P101-3](#), *Lockout/Tagout for Hazardous Energy Control*. HEC (red) locks are not to be used for any purpose other than the control of hazardous energy in accordance with [P101-3](#).

For locks installed for administrative control, the OM is considered the safety and environmental line manager and will maintain and control the keys in accordance with the key control requirements described in Attachment 2, *Shift Routines and Operating Practices*.

Control locks provide some security that a component will be operated only by qualified facility personnel performing required evolutions in a controlled fashion. Additionally, locks should alert the operator of the importance of the component and remind the operator that special controls over repositioning are to be maintained. All operations personnel must be trained or briefed regarding their responsibilities concerning the manipulation of administratively locked components.

If a component which is normally locked is found without a control lock or locked in the wrong position, notify the OM immediately. Place the process in a safe condition. The OM initiates investigation and corrective action to restore proper configuration of the component. Alignments on all other effected components should be completed prior to resuming operations.

The OM develops a list of equipment that requires control locks. Use a Control Lock Checklist similar to Appendix 8-D, *Template for Administrative Control Lock Checklist*, and include component Identification (ID) number, component name, component location, required position, documentation of performance and whether Independent Verification (IV) is required. Electronic checklists are permitted.

Update and evaluate the checklist as necessary to ensure all critical components are included. The OM evaluates and approves changes to the Control Lock Checklist before implementation.

Inspect the Control Lock Checklist equipment semi-annually (every six months) to verify that the locks are still installed properly, unless the associated locks are located in an inaccessible area (e.g., high radiation, requires scaffolding or fall protection, etc.). Those locks in an inaccessible area must be inspected either when accessing the location for other reasons (e.g. maintenance) or annually. The semi-annual inspection of administrative control locks should not be performed in conjunction with any review or inspection of HEC locks (see [P101-3](#)) as the inspection criteria are different. Document the inspection in the appropriate log. If, during the inspection, a lock is missing or other evidence exists that a component is in a position other than the position specified in the Control Lock Checklist, the performer reports the deviation to the OM who initiates the appropriate corrective action. Verification methods other than a physical check, such as the use of System Alignment Checklists, are allowed, when the method is documented and approved by the OM.

The lock placement provides a physical restraint on the operation of the equipment.

The OM authorizes removal of control locks and the repositioning of control locked equipment before manipulation. OM authorization is not required if the removal is performed in accordance

**No: P315      Conduct of Operations Manual**  
**Attachment 8. Control of Equipment and System Status (Cont.) (Page 6 of 24)**

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with an OM-approved procedure. Document the repositioning of locked equipment on log sheets similar to Appendix 8-E, *Template for Administrative Control Lock Log Sheet*. As a minimum, the log sheet documents the component ID, authorization by OM, new position, return to normal, and performer.

### **8.1.6 Operational Limits Compliance**

Establish administrative controls (e.g., procedures, round sheets, etc.) to document compliance with requirements of operational limits. The OM documents, investigates and reports any noncompliance.

The OM must be aware of actions taken to comply with operational limit requirements and ensures that appropriate actions are taken to correct or mitigate any adverse consequences.

Make entries on logs, round sheets, turnover checklists, or other appropriate documentation to record the initial facility conditions that existed prior to actions that were taken in response to exceeding operational limits requirements.

Operating personnel must be knowledgeable of operational limits and actions for which they are responsible. The OM ensures that operations personnel are trained in the significance of and the general basis for the establishment of operational limits and actions to take if operational limits are exceeded.

OMs and other designated supervisory personnel must review and maintain cognizance of the operational limits and action statements for operations under their cognizance. Review existing Operational Limit Status Sheets (see Appendix 8-F, *Template for Operational Limit Status Sheet*) as part of the shift turnover process.

### **8.1.7 Equipment Deficiency Identification and Documentation**

Notify the OM of all equipment deficiencies or system malfunctions, and log, investigate, initiate corrective action, and report such information through the line organization up to the OM as deemed necessary.

When a piece of equipment or a system is not fully functional, it is the responsibility of operations personnel to take prompt action to identify the deficiency and ensure corrective action is initiated. Obtain system engineer support for determining functionality, as necessary. Such deficiency corrections may include adjustments, replacements, or other actions within the duties of operations personnel.

In situations where operations personnel cannot complete corrective actions, operations personnel identify the defective component, log the deficiency, and notify the OM. Document deficiencies that result in the inoperability of equipment and systems required by established TSR limits on a sheet similar to Appendix 8-F, *Template for Operational Limit Status Sheet*. To aid in tracking, multiple non-compliances against a single system should be documented on a log similar to Appendix 8-G, *Template for Operational Limit Status Log*.

Identify equipment deficiencies by facility personnel through the use of a uniquely numbered and controlled tag. When found, operations personnel record equipment deficiencies by the use of logs, round sheets, and shift turnover checklists. Deficiencies falling under the guidelines of nonconformance reporting are controlled in accordance with [P330-6](#), *Nonconformance Reporting*.

**No: P315      Conduct of Operations Manual**  
**Attachment 8. Control of Equipment and System Status (Cont.) (Page 7 of 24)**

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Identify equipment classified as Out Of Service (OOS) or inoperable on applicable equipment status boards.

**8.1.8 Work Authorization and Documentation**

The OM or designee gives initial written authorization on the document controlling the work and continuing authorization for all shift activities performed on facility areas under his/her cognizance. As a minimum, this indicates confirmation that equipment important to safety, equipment that affects operations, and equipment that changes control area indications or alarms are operable.

Documentation of the status of work in progress, in the form of log entries, turnover checklists, etc., is available in the control area or Operations Center for review by operations personnel.

**8.1.9 Equipment Post-Maintenance Testing and Return to Service**

Test equipment following maintenance to demonstrate that it is capable of performing its intended function. Conduct post-maintenance tests under conditions that represent normal operating parameters, such as flow, differential pressure, temperature, input signal values, and fluid type unless covered by specific approved procedures (e.g., relief valve testing or diesel over speed testing).

Conduct tests in accordance with written instructions or formal procedures. The instruction/procedure should measure performance and allow for documentation and review of test data for the equipment and/or system.

Testing of equipment following maintenance includes performance of all functions that may have been affected by the maintenance.

Testing of equipment following maintenance verifies that the maintenance performed corrected the original problem and no new problems were introduced. If the original problem was not corrected or new problems were introduced, then stop all testing, evaluate the situation, and notify supervision.

Specify any testing following maintenance on the maintenance work order or accompanying documentation. If a test fails, a thorough test evaluation should be performed by the group responsible for the test instructions and, if necessary, make a revision to the test. Re-evaluate maintenance work and new work instructions issued to correct the problem.

Enter requirements for returning equipment to service into the applicable work controlling document.

The OM, or designee, ensures that testing appropriately proves equipment operability. Prior to returning equipment to service, the OM ensures proper housekeeping and condition of the equipment and system, tags (Nonconformance Reports [NCRs], deficiencies, etc.) have been properly resolved, active lockouts/tagouts which would affect equipment or system operability have been cleared, alignments have been completed in accordance with this attachment, and surveillance tests have been completed as required.

Operations provide the final review of equipment/system return to service before equipment/system operation.

**No: P315      Conduct of Operations Manual**  
**Attachment 8. Control of Equipment and System Status (Cont.) (Page 8 of 24)**

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### **8.1.10 Alarm Status**

The status of control area or local panel alarms must be readily available to operating personnel and included in the shift turnover process. Alarms expected during normal operations, such as those resulting from system startup or load changes, etc., are typically identified in procedures or work documents, or identified through the work planning process (e.g., plan of the day, plan of the week, etc.).

Information readily available to operating personnel in logs or on status boards should include alarms that are totally disabled, alarms with individual inputs disabled, alarms with temporarily changed set points, alarms that are normally illuminated during operation, and multiple input alarms that do not re-indicate (i.e., re-flash) when more than one input is activated.

The OM must ensure appropriate actions are taken to monitor equipment parameters for abnormal conditions that would be masked by deficient or non-reindicating (i.e., non-reflashing) visual or audible alarms.

**Note:** Alarms that will be illuminated or activated greater than one shift, or at shift change, should be considered "locked-in" for the purpose of tracking in the Alarm Matrix or electronic equivalent.

Impaired alarms (i.e., alarms which have one or more inputs disabled, have temporarily changed set points, have multiple input alarms and are "locked-in" due to one or more input conditions, etc.) must be tracked using an Alarm Matrix (Appendix 8-H, *Template for Alarm Matrix*). At a minimum, the Alarm Matrix will uniquely identify alarm by number and/or name, will provide a reason for the alarm condition, and will specify any additional monitoring or corrective actions required.

Impaired alarms must be identified by an Alarm Status Tag (Appendix 8-I) or other unique identifier. Status tag should identify alarm, work request number (if required), and the installer's initials. At a minimum, status tags should be placed on impaired alarms prior to the end of the shift on which alarm became impaired.

When an impaired alarm condition is corrected, it must be indicated on the Alarm Matrix and the Status Tags must be removed.

Nuisance alarms should be corrected as soon as possible.

**Note:** Prior to pushing a "test" button, ensure that the function of the button is alarm test or light test and does not cause actual component system realignment unless the effects are known and acceptable for the status of the facility.

Perform testing as needed to demonstrate operability.

### **8.1.11 Temporary Modification Control**

Temporary modifications to configuration items of facility equipment, components, and systems must be controlled in accordance with [AP-341-504](#), *Temporary Modification Control*, and its supporting documents.

### **8.1.12 Distribution and Control of Equipment and System Documents**

Make appropriate operations personnel aware of all changes to identified documents through the use of either the Required Reading Program or Shift Orders.

**No: P315      Conduct of Operations Manual**  
**Attachment 8. Control of Equipment and System Status (Cont.) (Page 9 of 24)**

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The OM ensures that a controlled file of appropriate engineering drawings (e.g., single-line and Piping and Instrumentation Diagrams [P&IDs]), specifications, and vendor technical manuals are available to operations personnel at all times to ensure operations personnel receive and use the latest revisions of these documents.

The document distribution includes all operations related activities such as procedures review groups, maintenance, engineering, facility safety analysis groups, and testing groups. The control and distribution of the documents must be accomplished in accordance with [P1020-2](#), *Laboratory Document Control*.

### **8.1.13 Out-of-Service Equipment and Systems**

Equipment and/or systems that are not operating and are not available for operation are defined as OOS. Equipment may be declared OOS for planned events, such as maintenance or modification, or unplanned events, such as equipment failure. In either case the status of the equipment is to be identified and tracked in accordance with the requirements of this attachment. Additionally, OOS equipment should be tagged to prevent inadvertent operation. An accepted method is the use of a caution tag and, if additional control is required, the addition of control locks.

Execution of defined surveillance requirements and In-Service Inspections (ISIs) are used to evaluate operability of credited OOS equipment before return to service. For other equipment, the operability or functionality of OOS equipment before return to service, use of the process described in [AP-341-516](#), *Operability Determination*, should be considered.

## **8.2 Caution Tags Use and Control**

This attachment provides requirements for the use and control of caution tags (Appendix 8-J, *Example Caution Tag*) in all Los Alamos National Laboratory (LANL) facilities. Additionally, this attachment provides instructions and sets requirements for tag application, control, traceability, and tracking.

### **8.2.1 General**

The OM or designee must approve the installation and removal of all caution tags applied within the facility.

The OM may request an accounting of tags installed in the facility.

### **8.2.2 Instructions for Caution Tag Use, Application, and Control**

#### **8.2.2.a Caution Tag Use**

A caution tag is used to convey information about the status of equipment and to prevent equipment damage and inadvertent use. It may also be used in conjunction with administrative locks.

Caution Tags are NOT to be used to protect personnel from equipment hazards. Red locks are to be used for that purpose. Refer to [P101-3](#), *Lockout/Tagout for Hazardous Energy Control*. The OM or designee determines when caution tags provide the appropriate level of control, and assures that caution tags are not used instead of more appropriate administrative controls or lockout/tagout.

**No: P315      Conduct of Operations Manual**  
**Attachment 8. Control of Equipment and System Status (Cont.) (Page 10 of 24)**

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A caution tag is also used as a precautionary measure to provide temporary special instructions or to indicate that unusual caution must be exercised to operate equipment. These instructions are not to violate existing procedures, the safety basis, or other existing requirements.

When Tagout systems are used, personnel must be trained or briefed in the limitations of tags:

- Tags are essentially warning devices and do not provide physical restraint on those devices as are provided by a lock.
- When a Tag is attached, it is not to be removed without authorization of the person responsible for it, it must not be bypassed, ignored, or otherwise defeated.
- Tags must be legible and understandable by all personnel.
- Tags and their means of attachment should be able to withstand the environmental conditions encountered in the workplace.
- Tags may evoke a false sense of security and their meaning needs to be understood.
- Tags must be securely attached so they cannot be inadvertently or accidentally detached during use.

**8.2.2.b    Caution Tag Application**

Caution Tags must be applied directly to the article that requires ID.

Caution Tags must not be applied in a manner that obscures visibility of alarms, instrumentation, or controls.

Caution Tags must not be applied to Distributive Control System (DCS) screens or any other type of monitors in a manner that would inhibit direct visual observation of the information on the screen.

Caution Tags may be held in place with a cable tie or other suitable fastener.

**8.2.3    Caution Tag Numbering**

Each tag must have a unique number assigned to it before the tag is installed and be easily distinguishable from other tags.

The unique number must have the following minimum format:

XX-####

Where:

XX      =      The current calendar year

####   =      The sequential number (This number resets to "0001" at the beginning of a new calendar year)

The unique number must be written in the space provided with indelible ink.

The Caution Tag must be filled out completely and all pertinent information recorded in the spaces provided.

**No: P315      Conduct of Operations Manual**  
**Attachment 8. Control of Equipment and System Status (Cont.) (Page 11 of 24)**

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The front of the Caution Tag must include the OM or designee signature and a contact number.

#### **8.2.4 Recording**

Each numbered tag that is applied must be immediately recorded in the appropriate Caution Tag Log (Appendix 8-K).

Electronic Caution Tag logs may be used if authorized by OM or designee.

Caution Tag Logs must be maintained in a central location easily accessible by personnel.

Each Caution Tag Log must be filled out completely and legibly.

- Assign the next sequential number from the Log to a tag and install the tag
- Record the following on the Caution Tag Log:
  - Caution Tag #
  - Description/Location
  - Reason for tag
  - Initials of person installing tag
  - Date tag installed

#### **8.2.5 Caution Tag Replacement**

If a tag requires replacement while it is installed, then the OM must perform the following:

- Make an entry in the Caution Tag Log noting the reason for tag replacement, Date the tag was replaced, and the installer's initials.
- Obtain a replacement tag, duplicate all information from the Caution Tag Log or old tag onto the new tag, including the original date and install it in accordance with Section 8.2.2.b of this attachment.

#### **8.2.6 Caution Tag Removal**

Caution Tags must only be removed when the condition that required the tag has been corrected.

When conditions are acceptable to remove the tag, it must be removed and destroyed.

Make an entry in the log that includes the initials of person removing tag and the date the tag was removed.

Once the tag is removed ensure that equipment or system status is updated as appropriate in status logs, status boards, etc.

#### **8.2.7 Inspections**

Regularly scheduled inspections must be conducted by the OM for all installed tags and for all logs in each active facility. The inspection must encompass a physical inspection of all installed tags and an inspection of each log. The inspection must be documented and submitted to the FOD.

**No: P315      Conduct of Operations Manual**  
**Attachment 8. Control of Equipment and System Status (Cont.) (Page 12 of 24)**

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The reviewer should make a log entry to indicate, at a minimum, the identity of the reviewer and the date completed.

*8.2.7.a Inspection Frequency*

Semi-annual inspections are recommended unless otherwise specified by the FOD.

The FOD must determine the frequency of inspections for inactive or surplus facilities.

Random inspections may be performed as directed by the OM.

*8.2.7.b Inspection Criteria*

Inspections should verify that the tags are still needed and that actions are in progress to correct deficiencies. At a minimum, tags and logs must be inspected for the following:

- Verification that all active tags logged into each log are installed on their respective alarm or component. If a tag is missing, then the tag must be replaced if the conditions still warrant the tag, or the log must be revised. Investigate the cause and include the findings in the report to the FOD.
- Verification that all installed tags are legible, in good condition, and are not applied in a manner that obscures visibility of alarms, enunciator, instrumentation, or controls.
- Verification that each log in use is in compliance with this attachment.
- Verification that there are no unauthorized tags installed. If an installed tag is not listed in the log, then investigate the cause and include the findings in the report to the FOD.

### **8.3 Training**

There is no specific mandatory training or qualification required to implement this attachment. It is recommended that all personnel implementing this document complete [UTrain Course #24660](#), *OS-RTS ConOps, Attachment 8, Control of Equipment and System Status*. This training will enhance the employee's knowledge as required and as outlined in [DOE O 422.1](#), *Conduct of Operations*.

### **8.4 Records**

The following are considered records generated by this attachment and must be managed in accordance with [P1020-1](#), *Laboratory Records Management*, and any local procedures:

- System Alignment Checklist
- Component Deviation Sheet
- Control Lock Checklist
- Control Lock Log Sheet
- Operational Limit Status Sheet
- Operational Limit Status Log
- Alarm Matrix
- Caution Tag Log

**No: P315      Conduct of Operations Manual**  
**Attachment 8. Control of Equipment and System Status (Cont.) (Page 13 of 24)**

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### 8.5 Acronyms

DCS	Distributive Control System
DNO	Do Not Operate
HEC	Hazardous Energy Control
ID	Identification
ISI	In-Service Inspection
IV	Independent Verification
LANL	Los Alamos National Laboratory
N/A	Not Applicable
NCR	Nonconformance Report
OM	Operations Manager
OOS	Out of Service
P&ID	Piping and Instrumentation Diagram
SAR	Safety Analysis Report
TSR	Technical Safety Requirement

### 8.6 References

- [P101-3](#), *Lockout/Tagout for Hazardous Energy Control*
- [P330-6](#), *Nonconformance Reporting*
- [AP-341-504](#), *Temporary Modification Control*
- [AP-341-516](#), *Operability Determination*
- [P1020-2](#), *Laboratory Document Control*
- [DOE O 422.1](#), *Conduct of Operations*
- [P1020-1](#), *Laboratory Records Management*

### 8.7 Appendices

Appendix 8-A.	<i>Template for Identification of Equipment and System Operating Conditions Requiring Status Log</i>
Appendix 8-B.	<i>Template for System Alignment Checklist</i>
Appendix 8-C.	<i>Template for Component Deviation Sheet</i>
Appendix 8-D.	<i>Template for Administrative Control Lock Checklist</i>
Appendix 8-E.	<i>Template for Administrative Control Lock Log Sheet</i>
Appendix 8-F.	<i>Template for Operational Limit Status Sheet</i>
Appendix 8-G.	<i>Template for Operational Limit Status Log</i>
Appendix 8-H.	<i>Template for Alarm Matrix</i>
Appendix 8-I.	<i>Template for Alarm Status Tag</i>
Appendix 8-J.	<i>Example Caution Tag</i>
Appendix 8-K.	<i>Caution Tag Log Template</i>

**No: P315      Conduct of Operations Manual  
Attachment 8. Control of Equipment and System Status (Cont.) (Page 14 of 24)**

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**Appendix 8-A. Template for Identification of Equipment and System Operating Conditions  
Requiring Status Log (Page 1 of 1)**

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<u>Equipment/System</u>	<u>Operating Condition Which Requires Status Control</u>

**Approval:**

\_\_\_\_\_

**Facility Operations Director Signature/Name**

\_\_\_\_\_

**Date/Time**

**No: P315      Conduct of Operations Manual**  
**Attachment 8. Control of Equipment and System Status (Cont.) (Page 15 of 24)**

**Appendix 8-B. Template for System Alignment Checklist (Page 1 of 1)**

Approval:	Location	Equip. ID Number	As-Found Position	Required Position	As Left Position	Init.	Independent Verification
System:							
Facility Operations Director Signature/Name							
Date/Time							
Approval:							
_____							
_____							
Facility Operations Director Signature/Name							
Date/Time							
Approval:							
_____							
_____							
_____							

FOD Name Print:

Signature:

Date: / /

**No: P315      Conduct of Operations Manual  
Attachment 8. Control of Equipment and System Status (Cont.) (Page 16 of 24)**

**Appendix 8-C. Template for Component Deviation Sheet (Page 1 of 1)**

<h2>Component Deviation Sheet</h2>				
<b>Part I</b>				
System Title:				
Reviewed and Approved Prior to Implementation				
Description of Deviation -- (include equipment affected, "as-left" position, "required" position, reason such as work plan, etc.)				
<b>Part II</b>				
Approval for Return to Normal				
Operations Manager signature:		Date:	Time:	
Component	Number	As-Found Position	Required Position	As-Left Position





**No: P315      Conduct of Operations Manual  
Attachment 8. Control of Equipment and System Status (Cont.) (Page 19 of 24)**

**Appendix 8-F. Template for Operational Limit Status Sheet (Page 1 of 1)**

<b>Operational Limit Status Sheet</b>		
(1) Limit #:        -        -	(2) Work Request #:	(3) NCR #:
<b>Section I - Initiation</b>		
(4) Inoperable Equipment:	(5) Limit Not Met:	Time/Date:
(6) Limit Title:		
(7) Applicability:		
(8) Required Action:		
Required Completion: Time/Date:        /        /	Actual Completion: Time/Date:        /        /	
Required Action:		
Required Completion: Time/Date:        /        /	Actual Completion: Time/Date:        /        /	
Required Action:		
Required Completion: Time/Date:        /        /	Actual Completion: Time/Date:        /        /	
(9) Effect on Equipment/Safety System Function:		
(10) Redundant Safety Equipment Verified Operable/Required Contingency:		
(11) Operations Manager review		
Signature: _____	Date: _____	Time: _____
<b>Section II - Restoration</b>		
(12) Corrective Action Taken:		
(13) Operability Determined:	Procedure Number	Section(s)
<div style="text-align: center;"> <input type="checkbox"/> SAT      <input type="checkbox"/> UNSAT                 </div>		
(14) Operability Testing Complete:	Date: _____	Time: _____
Limit Compliance Restored		
(15) Operations Manager Acceptance		
Signature: _____	Date: _____	Time: _____





No: P315      Conduct of Operations Manual  
Attachment 8. Control of Equipment and System Status (Cont.) (Page 22 of 24)

Appendix 8-I. Template for Alarm Status Tag (Page 1 of 1)

<b>Date:</b> / ____ / ____	<b>Number:</b> _____
<b>Work Request #:</b> _____	
<b>Installer:</b> _____	<b>ALARM TAG</b>

No: P315 Conduct of Operations Manual  
Attachment 8. Control of Equipment and System Status (Cont.) (Page 23 of 24)

Appendix 8-J. Example Caution Tag (Page 1 of 1)





**No: P315      Conduct of Operations Manual**  
**Attachment 9. Lockouts and Tagouts (Page 1 of 1)**

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## **9.0      LOCKOUTS AND TAGOUTS**

Lockout/tagout provides control of energetic systems for protection of personnel, equipment, and processes.

Lockouts and tagouts are conducted in accordance with [P101-3](#), *Lockout/Tagout for Hazardous Energy Control*.

The log keeping requirements for the lockout/tagout program, including approved electronic systems, are defined in [P101-3](#).

## **9.1      Training**

There is no specific mandatory training or qualification required to implement this attachment. It is recommended that all personnel implementing this document complete [UTrain Course #24661](#), *OS-RTS ConOps, Attachment 9, Lockout/Tagout*. This training will enhance the employee's knowledge as required and as outlined in [DOE O 422.1](#), *Conduct of Operations*.

**No: P315      Conduct of Operations Manual**  
**Attachment 10. Independent Verification (Page 1 of 16)**

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## **10.0 INDEPENDENT VERIFICATION**

The purpose of this attachment is to provide uniform requirements for the Los Alamos National Laboratory (LANL) Independent Verification (IV) program. This program provides the requirements for achieving a high degree of reliability in ensuring correct facility operation and correct positioning of components such as valves, switches, and circuit breakers. IV recognizes the human element of component operation; that is, any individual, no matter how proficient and conscientious, can make a mistake. This concept should be stressed in an IV program so that the individual's confidence in the ability of his/her peers will not cause a relaxation of attentiveness with respect to verification tasks. Personnel should understand the importance of the IV program and address this task with a high level of personal integrity and discipline.

IV is the act of checking an operation, the status of equipment, a calculation, or the position of a component to ensure that it conforms to established criteria by two qualified persons, separated by time and distance, to provide an extra measure of safety and reliability. IV only checks for conformance with the criteria; it does not alter the status of equipment or the position of components (see [DOE-STD-1036-93, Chg. 1, Guide to Good Practices for Independent Verification](#)).

IV will be performed in those cases where a reasonable potential exists for component mispositioning or the consequence of error is great. The application of the program is dependent upon the safety and operations considerations of each process, system or activity.

Because the possibility of mispositioning may be quite remote, or because the effect of a mispositioning may not be significant to safe and reliable operation, not all components require IV. Therefore, it is important to identify those components that must be independently verified. Systems or components that require IV must be documented by each facility.

Systems or components that are critical to ensuring safe and reliable operation must be identified by the Facility Operations Director (FOD) and must receive IV of their position.

### **10.1 Components Requiring Independent Verification (IV)**

#### **10.1.1 General Guidelines Independent Verification (IV)**

The Operations Manager (OM) prepares and maintains a facility-specific list, similar to the one shown in Appendix 10-A, *Sample Operations Manager Independent Verification List*, of systems and components requiring IV. Consider the criteria listed in Sections 10.1.2 and 10.1.3 of this attachment.

#### **10.1.2 Components in Safety-Related Systems**

The FOD must designate which components in Safety Basis safety-related systems and other systems that require IV. Where doubt exists, an accepted safety analysis method (e.g., fault-tree analysis, probability risk analysis) and/or expert opinion (e.g., engineering evaluation, Emergency Preparedness) must be used to determine if a component should be included in the list of systems and components.

**No: P315      Conduct of Operations Manual**  
**Attachment 10. Independent Verification (Cont.) (Page 2 of 16)**

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The need for IV of specific components in safety related systems may be evaluated if any of the following conditions apply:

- Significant radiation exposure would be received by the person(s) performing the IV and alternate means for IV which do not involve radiation exposure (e.g., observing remote position indicators, process parameters, etc.) are available.
- Mispositioning of a component would not affect system performance. For example, if an engineering analysis has shown that mispositioned vent or drain valves do not affect system performance, they may not require IV.
- The mispositioning of a component would be immediately known to an operator. For example, resetting a steam supply trip valve might not require IV if an alarm in the control room were available to alert personnel to an improperly reset valve. However, such alarms should be independent from the valve position lights associated with main control board valve operation switches. Valve position lights alone should not warrant exemption from IV requirements, because these lights may not alert personnel to a mispositioned valve. Mispositionings have occurred when main control board indication was available.

### **10.1.3 Components in Systems Not Related to Safety**

Certain non-safety-related components, if mispositioned, could lead to challenges to safety systems or inadvertent radioactive or toxic material release. The FOD must identify those non-safety-related components and systems that require IV.

In addition, OMs should consider IV for non-safety related components that, if mispositioned, could lead to unplanned shutdowns, component loss or extraordinary cost (e.g., high dollar value, or irreplaceable part/component or rare element of negative consequence to critical mission completion, etc.). The cost of the loss of production may justify the expenditure of the time taken to perform IV versus not performing IV.

## **10.2 Occasions Requiring Independent Verification (IV)**

### **10.2.1 General Guidelines**

Components receive IV when the equipment they serve must be available and a possibility exists that the components may have been mispositioned.

### **10.2.2 Removing Equipment from Service**

Systems/Equipment are removed from service utilizing the appropriate procedure for shutdown of the systems/equipment. If additional system realignment is necessary to support establishment of a lockout/tagout, realign the system utilizing IV, as appropriate. A lockout/tagout, if needed, should be installed.

To ensure that only the specific items of process equipment intended to be removed from service are affected, verifications of equipment isolation should be performed. For example, when isolating a pump, verification that the redundant pump was not inadvertently affected should be performed. This might be accomplished by checking for correct alignment of components on the redundant equipment using the system alignment checklist, or when using a lockout/tagout, checking that all locks have been placed on the correct components.

Following completion of maintenance activities and after the lockout/tagout has been removed, return the systems/equipment to a normal shutdown status in accordance with this attachment.

**No: P315      Conduct of Operations Manual**  
**Attachment 10. Independent Verification (Cont.) (Page 3 of 16)**

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### **10.2.3 Returning Equipment to Service Following Maintenance or Testing**

Following maintenance or testing activities, realign the systems/equipment to the normal shutdown configuration, using the system alignment checklist and IV, as appropriate.

The OM or designee should select for verification, on a case-by-case basis, additional components inside the isolation boundary that could have been mispositioned during maintenance. Components to be considered are those that have been worked on and should include instrument isolation valves, bypass valves, switches, and system isolation valves located within the work boundary.

Failure to properly restore systems following surveillance testing has resulted in mispositionings. Selected components should be independently verified during or after surveillance tests. Surveillance tests are normally performed in strict adherence to detailed procedures that specifically address each operating component. Components not addressed by the test procedure would not likely be mispositioned as a result of the test, and IV would be necessary only for components that had been positioned during tests.

Systems/Equipment are restored to service utilizing the appropriate procedure(s) for startup and operation of the systems/equipment.

### **10.2.4 Equipment and System Lineups**

During extended shutdowns or when major maintenance is performed, it may be impractical to restore equipment and systems to their normal operating alignment immediately after maintenance is completed. Therefore, most facilities delay restoration of equipment and systems not needed for shutdown activities until shortly before startup. All equipment and systems whose status is questionable are then checked at that time.

When system lineups are performed, IV is performed for those components of the affected system. The system lineups to be performed are documented (i.e., startup prerequisite list, facility schedule, etc.) and approved by the OM.

### **10.2.5 Periodic Checks During Facility Operation**

In order to verify that all associated equipment is fully functional, facilities must, as appropriate, perform routine periodic verifications of certain critical components during normal operations. These checks are normally performed outside the guidance of this attachment, and may or may not involve the use of an IV.

If a mispositioning is discovered during the performance of a periodic check, then the component position would be corrected after review, investigation, and/or approval by the OM and an IV of this action would be expected.

**No: P315      Conduct of Operations Manual**  
**Attachment 10. Independent Verification (Cont.) (Page 4 of 16)**

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### **10.3    Verification Techniques**

#### **10.3.1    General Verification Techniques**

Each facility must ensure that personnel are trained in the appropriate techniques for verifying the positions of all facility components requiring IV. IV techniques (Appendix 10-B) provide an explanation of what individuals should do when verifying the position of the more commonly installed components. Because of the large variety of components in use in the various facilities, it is not feasible to provide position verification instructions for all installed components. Instructions for these components must be provided in facility-specific training or procedures.

Self-checking techniques (Appendix 10-C) provide a list of expectations related to individuals performing actions and independently verifying those actions. These expectations should be clearly understood by all personnel involved in the IV program and included in IV training.

The methods for IV of process system components (which includes generic component listing and method of verification) are defined in Appendix 10-B. The methods in Appendix 10-B should normally be used; however, design differences in components or components not covered by Appendix 10-B should be addressed in facility-specific training.

Each facility, using its most experienced personnel, manufacturers' recommendations, and Appendix 10-B as a basis, develops additional instructions, if required. These instructions will help to ensure that individuals use approved methods when verifying component positions and provide uniform performance of IV.

#### **10.3.2    Valve Position Verification Techniques**

Equipment should not be positioned during the performance of the IV. If the potential exists that the component position was changed during the IV, stop and notify the supervisor. It will be necessary to repeat the entire process again to ensure the component is positioned and properly independently verified.

Pay particular attention to the type of valve to be verified. Some of the individual techniques may not be appropriate for a particular type, make, or model of valve due to the physical construction of the valve (Appendix 10-B).

Do not use observation of the relative height of a valve stem as the sole determinant of a valve's position.

Special consideration is necessary during the IV of throttled valves:

- Do not verify throttled valves by closing and reopening the valve a prescribed number of turns because this practice has the potential to create valve mispositionings. Instead, position indicators, scribe marks, or other officially recognized and designated indicators should normally be used to determine throttled valve positions.
- When operation of a throttled valve is necessary to determine its position, the Independent Verifier may base the verification on observing the initial positioning of the valve. Repositioning the valve for IV would effectively nullify the initial positioning, and would therefore serve no purpose.
- Some throttled valves and ventilation dampers in facility systems have been positioned during system flow balance testing and these valves and dampers control vital system

**No: P315      Conduct of Operations Manual**  
**Attachment 10. Independent Verification (Cont.) (Page 5 of 16)**

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operating parameters. These valves and dampers are not to be manipulated, but may be visually verified to be in the correct position by using facility-specific identification methods (e.g., colored tie wraps, crimped seals, etc.).

Complete the equipment and system lineups for all locked throttled valves and dampers completed by ensuring the component is in its required position and the locking device is properly installed.

### **10.3.3 Position Indicator Verification Techniques**

Direct local position checks, where appropriate and safe to employ, must be used for verification. Some equipment failures have caused valve position indicating lights on control room indicating panels to be incorrect, and some of these failures were undetected for a significant length of time. Since the failure may be in the sensor or transmitter, IV should be performed locally (at the component).

Position indicators are subject to equipment failures that could result in display of the incorrect status of a component. When position indicators are used for IV, personnel use one local (at the component) position indicator and one remote position indicator, if available.

When remote position indicators are tested on a periodic basis in accordance with approved procedures, remote position indicators may be used for IV.

The use of remote position indicators is acceptable for both verifications when surveillance testing proves the remote indicators are accurate. However, if possible, one check should be performed locally at the component to avoid common failure mode problems.

When remote position indication is being used to verify the position of a component, verify control power or motor power to stop erroneous remote position indication due to loss of supply power.

### **10.3.4 Verification Using Process Parameters**

In some situations a component position may be verified by observing process parameters such as pressure, flow, or voltage. The observation of process parameters, combined with a physical check of a component's position, may constitute an IV.

Exercise care when observing process parameters because alternate flow paths or other factors could cause them to be misleading indicators of component position. For example, voltage on a bus would prove that a particular supply breaker was shut only when there was no alternate power supply. Additionally, flow and pressure do not necessarily indicate that a valve is fully open.

For the reasons stated above, process parameters should normally be avoided as a means for IV and must not be used as the only indication of a component's position. Facility procedures must specify where and when process parameters are acceptable as indicators of component position.

**No: P315      Conduct of Operations Manual**  
**Attachment 10. Independent Verification (Cont.) (Page 6 of 16)**

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### **10.3.5 Surveillance Testing as a Substitute for Independent Verification (IV)**

In some cases surveillance testing may be substituted for normal verification techniques. A notable example would be a full-flow test to prove the correct positioning of flow controlling valves. However, surveillance tests frequently will not serve to verify the position of all components that are important to subsequent system operation. For example, running a pump in recirculation would not prove that all main flow-path valves were properly positioned or that support functions such as external cooling or backup oil pumps are aligned properly.

Do not use surveillance testing as IV unless it can be shown that the test conclusively proves the position of the components in question. The OM approves the applicability of surveillance testing to satisfy IV requirements before performance of the test.

### **10.3.6 Concurrent Dual Verification**

The OM must approve the use of concurrent dual verification (i.e., verification performed at the same time as the original adjustment or reading). Concurrent dual verification will be used sparingly and the parameters of the verification documented in a procedure or Integrated Work Document (IWD). When using concurrent dual verification, independence is maintained to the maximum extent possible. (As an example, for a throttled valve: the operator shuts the valve and the verifier confirms the valve is shut. The operator opens the valve the specified number of turns while the verifier counts silently. The operator and verifier do not influence each other.) Upon completion of the verification of the adjustment or reading, the operator and the verifier communicate and agree that the adjustment or reading is correct.

## **10.4 Guidelines for Personnel Performing Independent Verification (IV)**

- Positioning of system components, unless specifically approved in written procedures, is limited to operators as defined in this attachment.
- There must be no doubt as to the determination of the actual position of a component. Both the positioner and verifier determine the actual position (e.g., open, shut, throttled, test position, or racked out) of the component based upon experience, training, and if needed, vendor information for specific devices encountered. The cognizant system engineer should be consulted any time technical help is needed. Personnel contact management to resolve any uncertainty.
- Conduct IVs in a manner such that each check constitutes an actual identification of the component and determination of both its required and actual positions.
- Unless otherwise specified in this attachment (e.g., throttled valves), individuals performing the initial action and those performing the IVs (verifier) must be physically separated in location and time in order to ensure independence.
- The individual performing the IV normally must not rely upon the observed actions of the individual performing the initial alignment and installation to determine the correct component identification, position, or condition. Verifier independence must be maintained to ensure the integrity of the IV by minimizing interactions between individuals. However, when operation of a throttled valve is necessary to determine its position, the Independent Verifier may base the verification on observing the initial positioning of the valve. Repositioning the valve for IV would effectively nullify the initial positioning, and would therefore serve no purpose.

**No: P315      Conduct of Operations Manual**  
**Attachment 10. Independent Verification (Cont.) (Page 7 of 16)**

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- Unless otherwise specified in this attachment (e.g., throttled valves), when IV of component/condition is required and special circumstances require the two individuals performing the task to work together (e.g., a high temperature environment requiring the "buddy system"), the act of performing the IV must be completely separate and independent of the initial alignment, installation, or verification.
- If the actual position of a component cannot be verified due to unfamiliarity with the device, then the independent verifier seeks assistance from the OM and/or appropriate manager or supervisor to resolve the uncertainty.
- If a component cannot be located after spending a reasonable amount of time looking for it, then seek help from management. In order to maintain complete independence, the individual looking for the component must not seek assistance from the individual who initially positioned the component.
- Consider the process specifications relating to the required open or closed positions of certain components on all component manipulation. If the act of verifying the position of a component violates the designated position of the component required by the process specifications for the facility operating condition, then positive control of the operability of the component must be maintained at all times during the component manipulation. Review process specification requirements for applicability (e.g., entering a limiting condition of operation) prior to component manipulation.
- If excessive radiation exposures would result, IV may be waived with the approval of the FOD (documented in the OM's operating log). In excessive radiation exposure situations, an alternate means of IV (such as observing process parameters) should be considered. Actual situations should be evaluated on a case-by-case basis by the OM for those components not previously exempted on the system procedure or checklist.
- If the component is not in the required position, then the independent verifier must not initial that step nor reposition the component. The independent verifier stops and notifies the OM of the discrepancy and awaits further instructions from the OM. The OM determines the proper corrective action and documents it on the appropriate procedure or operating log.
- If the independent verifier discovers a lockout on a component, then the independent verifier must not manipulate the component. The position stated on the tag is considered the actual component position, and the lockout number noted on the controlled document and the controlled document is initialed. Further guidance must be obtained from the OM. Additionally, the actual physical position of the component is verified (if possible) without manipulation of the component.
- If the actual position of a component cannot be verified due to component design (solenoid valves, for example) the system engineer or OM should be consulted. Completion of [Form 2121](#), *Request for Alternate Implementation (Formality of Operations)* may be required as defined in [P315-2](#), *Formality of Operations Change Control*.

### 10.5 Additional Independent Verification (IV) Guidance

IV of technical and administrative processes and programs may be specified. IV may be applied to a variety of processes and documents, including procedures, calculations, implementation of regulatory requirements, and training.

**No: P315      Conduct of Operations Manual**  
**Attachment 10. Independent Verification (Cont.) (Page 8 of 16)**

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**10.6 Training**

There is no specific mandatory training or qualification required to implement this attachment. It is recommended that all personnel implementing this document complete [UTrain Course #24662](#), *OS-RTS ConOps, Attachment 10, Independent Verification*. This training will enhance the employee's knowledge as required and as outlined in [DOE O 422.1](#), *Conduct of Operations*.

**10.7 Records**

The following are considered records generated by this attachment and must be managed in accordance with [P1020-1](#), *Laboratory Records Management*, and any local procedures:

- Operations Manager Independent Verification List

**10.8 Acronyms**

FOD	Facility Operations Director
ID	Identification
IV	Independent Verification
IWD	Integrated Work Document
LANL	Los Alamos National Laboratory
MCC	Motor Control Center
OM	Operations Manager

**10.9 References**

- [DOE-STD-1036-93, Chg. 1](#), *Guide to Good Practices for Independent Verification*
- [P315-2](#), *Formality of Operations Change Control*
- [DOE O 422.1](#), *Conduct of Operations*
- [P1020-1](#), *Laboratory Records Management*
- [P101-3](#), *Lockout/Tagout for Hazardous Energy Control*

**10.10 Appendices**

Appendix 10-A.	<i>Sample Operations Manager Independent Verification List</i>
Appendix 10-B.	<i>Independent Verification Techniques</i>
Appendix 10-C.	<i>Self-Checking Techniques</i>

**No: P315      Conduct of Operations Manual  
Attachment 10. Independent Verification (Cont.) (Page 9 of 16)**

**Appendix 10-A.      Sample Operations Manager Independent Verification List (Page 1 of 1)**

<b>Equipment/Systems Requiring Independent Verification (IV)</b>	
<p>The following systems/components in the _____ facility require independent verification:</p> <p><b>NOTE:</b> Independent verification (IV) for Lockout/Tagout is controlled by P 101-3, <i>Lockout/Tagout for Hazardous Energy Control</i>.</p> <ul style="list-style-type: none"><li>• Emergency Diesel Generators &amp; associated breakers</li><li>• Instrument Air System</li><li>• Glove Box Exhaust System</li><li>• Stack radioactive release monitoring system</li><li>• Nuclear Incident Monitors</li><li>• Fire protection systems</li><li>• Emergency Lighting</li><li>• Safe Shutdown System</li></ul>	
<b>Reviewed:</b>	<b>Approved:</b>
_____ Engineering Manager	_____ Operations Manager

**No: P315      Conduct of Operations Manual  
Attachment 10. Independent Verification (Cont.) (Page 10 of 16)**

**Appendix 10-B.      Independent Verification Techniques (Page 1 of 6)**

Independent verification techniques for typical components are described in the following sections:

- Valves, Manual Unlocked.....1.0
- Valves, Manual Locked.....2.0
- Valves, Manual Throttled.....3.0
- Valves, Motor Operated.....4.0
- Valves, Air Operated.....5.0
- Summary of verification techniques to determine valve position.....6.0
- Blank Flanges/Spectacle Flanges/Spool Pieces.....7.0
- Circuit Breakers (480V or less only).....8.0
- Circuit Breakers 4160V.....9.0
- Direct Current Circuit Breakers.....10.0
- Fuse Installation.....11.0
- Lead Termination.....12.0
- Fuse Removal.....13.0
- Lifting Leads.....14.0

1.0 Valves, Manually Operated (Unlocked)

1.1 To verify open, manipulate in the closed direction only as necessary to remove any slack from the operating mechanism and verify valve stem movement. Return valve to original position subject to the normal precautions on back-seating valves.

1.2 To verify closed, manipulate in the closed direction only as necessary to verify the valve is fully closed, and not just binding or difficult to operate. Care should be exercised to avoid over torquing the valve operator and damaging the valve seat. Certain valves can “stick” when fully opened, giving the appearance of being closed when they are actually fully open. The Facility should provide operators with appropriate information (procedures, Standing Orders, training, operator aids, etc.) regarding these unique circumstances.

2.0 Valves, Manually Operated (Administrative Lock Program)

**Note:** Steps 2.1 through 2.3 apply to those valves which are locked for administrative control and not for those locked for Hazardous Energy Control in accordance with [P101-3](#), *Lockout/Tagout for Hazardous Energy Control*.

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**No: P315      Conduct of Operations Manual**  
**Attachment 10. Independent Verification (Cont.) (Page 11 of 16)**

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**Appendix 10-B.      Independent Verification Techniques (Cont.) (Page 2 of 6)**

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- 2.1 The independent verifier verifies that the component Identification (ID) and name are the same as specified on the equipment, then independently verifies the component position and installs the lock.
- 2.2 Ensure that the locking device is mounted securely to prevent the movement of the valve and that the padlock is in a locked position.
- 2.3 Undue slack in the locking device that permits excessive movement must be immediately reported to the Operations Manager.
- 3.0 Valves, Manually Operated (Throttled)
- 3.1 The initial position of a throttled valve normally is determined by observing position indicator's scribe marks or other officially recognized and designated indicators. Then secure the valve in position in accordance with the approved facility-specific method. The independent verifier observes the positioning of the valve and the installation of device used to secure the valve in position. No valve movement must be attempted by the independent verifier.
- 3.2 Verify throttled valves as being throttled by verifying that the facility-specific device used to secure the valve in position is intact.
- 3.3 When operation of a throttled valve is necessary to determine its position, the independent verifier may base the verification on observing the initial positioning of the valve. Having both persons independently open and close the valve would nullify the initial positioning.
- 4.0 Valves, Motor Operated
- Valve position verified by one of the following:
- 1) Local Position Indication
- by a dial indicator driven off a gear in the valve stem assembly (butterfly valves)
  - observation of stem position (on certain valves, but not as sole means)
- 2) Verification of Motor Operated Valve Position (Summary)
- by remote indication lights open or closed, both lights illuminated indicate an intermediate position
  - by local dial indicator
- 5.0 Valves, Air Operated
- Verification is achieved by one of the following:
- 1) Position Indication (Remote)
- indicator lights, open, closed

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**No: P315      Conduct of Operations Manual**  
**Attachment 10. Independent Verification (Cont.) (Page 12 of 16)**

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**Appendix 10-B.      Independent Verification Techniques (Cont.) (Page 3 of 6)**

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## 2) Position Verification (Local)

- mechanical position indicator on the valve stem, open or closed

## 6.0 Summary of Verification Techniques to determine valve position.

Verification techniques fall into two broad categories. These are direct verification or indirect verification.

## 1) Direct Verification includes:

- manipulating the valve in the closed direction only to verify both closed and open position
- observation of the valve stem to aid in the determination of valve position
- observation of mechanical position indicator activated by valve stem travel

## 2) Indirect Verification includes:

- observation of remote position indicators (lights)
- use of process parameters
- observation of a mechanical position indicator actuated by gears off a motor driver (e.g., Limit Torque)

## 7.0 Blank Flanges/Spectacle Flanges/Spool Pieces

Verification is achieved by observing that the required fixture, as described below, is properly installed:

- 1) The placement of Blank Flange in a line to ensure positive isolation is acceptable
- 2) Spectacle Flange is a double flange, blank at one end and the other with an opening equal to the pipeline diameter. Verification must be made that flange is properly positioned.
- 3) A Spool Piece is a section of piping with flanges at both ends.
  - It may be installed to permit temporary operation of a system.
  - It is verified by checking that it is properly bolted in place.

## 8.0 Circuit Breakers (480V or less only)

(Load Center Circuit Breakers - Draw-out type air magnetic)

Verification is achieved by observing one or more of the following:

- 1) open or closed as shown by indicating lights on panel
- 2) open or closed as shown by indicator on breaker itself

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**No: P315      Conduct of Operations Manual**  
**Attachment 10. Independent Verification (Cont.) (Page 13 of 16)**

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**Appendix 10-B.      Independent Verification Techniques (Cont.) (Page 4 of 6)**

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- 3) racked out to test or disconnect position
- 4) racked in,
- 5) completely removed from cubicle
- 6) locking device properly installed on locking hasp (locks breaker open).

**9.0      4160V Circuit Breakers**

Verification may be achieved by observing one or more of the following:

- 1) Local Indication
  - open or closed as shown by indicating light(s) on panel
  - open or closed as shown by indicator on breaker itself.
- 2) Inside Cabinet for "Racked In" (off floor)
  - breaker fully inserted
  - control power available
- 3) Inside Cabinet for "Racked Out" (on the floor)
  - breaker fully withdrawn
  - control power off
- 4) Inside Cabinet for "Racked Out" (Test Position)
  - breaker racked to test

**10.0      DC Circuit Breakers**

(This is generally a switch on the front of a breaker cubicle)

Verification may include determining:

- 1) switch position ON, OFF
- 2) locking device is properly installed

**11.0      Fuse Installation**

The verifier ensures that the fuse is installed in the proper location by verifying it is installed in the correct:

- Facility (some facilities have two steam facilities for example)

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**No: P315      Conduct of Operations Manual**  
**Attachment 10. Independent Verification (Cont.) (Page 14 of 16)**

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**Appendix 10-B.      Independent Verification Techniques (Cont.) (Page 5 of 6)**

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- Building
- Fuse Enclosure: Motor Control Center (MCC), Load Center, Panel, etc.
- Fuse Holder
- Correct rating for application as defined by facility drawings (e.g., schematics, electrical, etc.)

**12.0    Lead Termination**

The verifier ensures that the Lifted Lead which was terminated, was terminated in the proper location by verifying it is installed in the correct

- Facility
- Building
- Terminal Block Enclosure: MCC, Load Center, panel, etc.
- Terminal Block Number
- Terminal
- Lead Number(s)

**13.0    Fuse Removal**

To verify that the correct fuse has been removed, the verifiers ensure the fuse location agrees with the required:

- Facility
- Building
- Fuse Enclosure: MCC, Load Center, Panel, etc.
- Fuse Holder

Ensure the fuse removed is properly identified and stored.

**14.0    Lifting Leads**

To verify that the Lifted Lead is the correct one, the verifiers ensure the lead location agrees with the required:

- Facility
- Building
- Lead Enclosure: MCC, Load Center, Panel, etc.
- Lead Number

Determine that the Lifted Lead is the correct one by matching the required Lead number to the actual Lifted Lead.

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**No: P315      Conduct of Operations Manual**  
**Attachment 10. Independent Verification (Cont.) (Page 15 of 16)**

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**Appendix 10-B.      Independent Verification Techniques (Cont.) (Page 6 of 6)**

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Ensure that the Lifted Lead is properly identified and taped.

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**No: P315      Conduct of Operations Manual**  
**Attachment 10. Independent Verification (Cont.) (Page 16 of 16)**

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**Appendix 10-C.      Self-Checking Techniques (Page 1 of 1)**

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The following self-checking techniques should be practiced to ensure an ingrained work ethic where individuals positively identify the correct unit, train, and/or component, and review the intended action and expected response before performing a task:

- Stop - Read the procedure carefully. Understand all steps from start to finish before proceeding. Take time to pause and consider the intended action.
- Locate - Identify the correct component/train/unit by visual, audible, and tactile senses.
- Sense - Touch, or in the case of energized electrical wires or circuits, observe the component/train/unit, but do not operate.
- Verify - Reconfirm the component's identity.
- Anticipate - Consider the expected results from the actions about to be taken (e.g., indications, alarms, noise, heat, vibration, etc.). Consider what actions to take if the expected responses are not received.
- Perform – Manipulate the component in question (e.g., lift the electrical wire, place the jumper, cycle the valve, etc.) and place in the desired position.
- Observe - Ensure that the action taken has resulted in the expected response. Be ready to react to unexpected results.

**No: P315      Conduct of Operations Manual**  
**Attachment 11. Log Keeping (Page 1 of 5)**

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**11.0 LOG KEEPING**

This attachment provides the requirements for establishing and maintaining operating logs for all key operations positions in order to fully record the data necessary to provide an accurate history of facility operations. As used in this context, logs are defined as a narrative sequence of events or functions performed by a specific shift position, as opposed to operator round sheets.

**11.1 General**

The requirements of this attachment provide guidance for properly and consistently documenting the sequence of events or functions performed at a specific key position using an operating log. Operating logs provide a system for ensuring that pertinent information is passed from one shift to the next, allows the history of a key position to be reviewed to aid in event reconstruction, and supports trending analysis.

Logs may be in the form of conventional paper logs or an electronic equivalent. Electronic logs must incorporate the same change and annotation requirements of a paper log.

Operating logs must be maintained by all key positions (including positions which are manned on a part time basis) to ensure that pertinent information is passed from operator to operator. The narrative section of the round sheet(s) may serve as the operating log.

On-coming operators review and become familiar with operating log entries made during the previous 48 hours or since their last shift, whichever is less. Operating logs must be maintained available to support operator review.

The Operations Manager (OM) defines key positions within the facility.

The operating log entries should be made in such a manner that they provide sufficient detail to be understood by personnel who were not present during the shift. Entries should adequately describe the situation or event, its significance and cause, and any corrective or follow-up actions taken or required.

Entries must contain only facts and pertinent data. Speculation, conjecture, opinion, and unrelated information are not acceptable. When complete facts are not known, entries are required to indicate whether or not the event is being investigated.

Narrative entries made in all operating logs must be easily read and understood, and be reproducible with a standard photocopy machine.

When using paper logs, make all entries using indelible black or blue ink.

Avoid excessive use of acronyms.

Do not keep a separate "rough" log.

Logs are not to be rewritten to make late entries appear timely.

**11.2 Operating Log Control**

Clearly identify (titled) logs using the key position's title that shows who will make entries in it (e.g., Radioactive Liquid Waste [RLW] Control Room Operators Log).

**No: P315      Conduct of Operations Manual  
Attachment 11. Log Keeping (Cont.) (Page 2 of 5)**

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Sequentially number all log pages.

Identify the beginning and ending dates (the ending date must be entered when the log is filled) of logs.

At the end of each shift, the person assigned to the key position associated with the operating log reviews logs for completeness, accuracy, legibility, and authenticity in accordance with Section 11.3 of this attachment.

**11.3 Operating Log Entry Control**

Each oncoming shift should start their entries on a new unmarked page. For facilities which make few log entries per shift and for the narrative section of Round Sheets, it is permissible to continue the entries on the same page, providing a clear distinction is made between shifts.

Entries made during the shift must be consecutive and chronological with the time entered in the left margin and no lines left blank.

Promptly record information regarding activities or events for each key position throughout the shift in order to ensure the accuracy of the entry, as delaying the recording of activities or events often leads to incomplete or inaccurate entries.

Only assigned watchstanders (i.e., qualified operations personnel assigned to the position for a given shift) for key positions, personnel in training and under the direct supervision of the assigned watchstander are authorized to make entries in operating logs for that position. (Exception: Others may be designated to record information in emergency/casualty situations.)

Anyone requesting a log entry may do so with the approval of the assigned watchstander. Such entries are signed by the person making the entry. The assigned watchstander also signs beneath the entry to signify permission was granted to make the entry but not necessarily agreement with the entry.

Corrections: When a correction to an existing entry is required, draw a single line through the incorrect entry. Do not use correction fluid, do not erase information, and do not scribble out or otherwise mask the incorrect entry. Enter the correct information, the date the change is made, and the initials of the person making the correction. Make all corrected entries as near as possible to the lined-out entry.

Late Entries: If an entry is to be made that is not in chronological sequence, enter the time the late entry is made followed by "Late Entry." Write the entry narrative to include the time the entry described occurred. The person making the entry places his/her initials at the end of the late entry.

- Example: 1621 Late Entry - The #2 tunnel sump overflowed at 1538. - (ABC)

**11.4 Information To Be Recorded**

Each facility provides guidance to its operating personnel, who will define the type and scope of information unique to each key position's operating log. This may be described in standing orders.

**No: P315      Conduct of Operations Manual**  
**Attachment 11. Log Keeping (Cont.) (Page 3 of 5)**

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Personnel making entries in operating logs need to fully document all data necessary to provide an accurate shift history. All entries must include the time the event or statement is entered. This is to aid in event reconstruction when necessary.

To prevent confusion between day and night shifts, use 24-hour time (e.g., 0823 for 8:23 a.m., and 1956 for 7:56 p.m., etc.).

The last entry by the off-going shift consists of the time and date followed by "Relieved by (printed name)" followed by the off-going operator's/supervisor's signature. If facility operations are not continuous, the "Relieved by" statement is not required. However, a statement in the log "Process shut down for this position" (or similar appropriate statement, such as "Position duties secured") plus the time, date, and signature is entered in the operating log. When the process is restarted or the shift is resumed for this key position, normal log keeping as described in this attachment is resumed.

The first entry by the oncoming shift personnel will be the time and date, followed by "Assumed position duties" (or similar statement), followed by his/her signature.

Any unused portion of a page, such as after the last entry by the off-going shift, must have a diagonal line drawn across the page after the last signature with the words "NO FURTHER ENTRIES THIS PAGE" written on the line.

Entries in operating logs should also include specific qualifying information. For example, when recording temperatures, specify Fahrenheit (°F) or Celsius (C).

The following types of information must be included in operating logs:

- Facility mode or condition changes.
- Criticalities and criticality information.
- Abnormal facility configurations.
- Status changes to safety related and other major facility equipment.
- Occurrence of any reportable events.
- Initiation and completion of surveillance tests.
- Shift reliefs.
- Entering and exiting operational limit actions.
- Out-of-specification chemistry or process results.
- Emergencies, abnormal or unexpected events and operating conditions that occur during each shift must be fully documented. Entries will include as much significant information as possible. However, log keeping will not take precedence over controlling and monitoring the facility. When conditions permit, make a late entry to update the log. Examples of the type of information that is recorded include actions taken to correct the conditions, and any notifications to supervision and/or other organizations.
- Security incidents and personnel accidents or injuries.

**No: P315      Conduct of Operations Manual**  
**Attachment 11. Log Keeping (Cont.) (Page 4 of 5)**

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The following are examples of other types of information that should be included in operating logs:

- Changes in the status of major processes in each area during the shift, including abnormal or unusual system lineups or operating parameters, and the startup or completion of operations/jobs.
- Changes in the status of the area, process, or monitoring/detection equipment (e.g., radiation detection equipment, constant air monitor, hydrogen monitors, heating and ventilation systems, etc.).
- Alarms activated, locked out, bypassed, or off normal settings (if not separately recorded in other logs; e.g., alarm status logs). Unusual variations or fluctuations, malfunctions, suspect readings, and repaired/replaced equipment should also be recorded.
- Major equipment or system problems encountered during the shift, along with action taken to report or correct the problem and any results of those actions. This could include out-of-specification chemistry results, problems with evaporators, pumps, generators, motors, etc., and outages or restrictions on power, steam, chemical, air, or water system.
- Progress of work efforts within facility areas. The OM may specify the scope of work efforts to be recorded. This includes documenting any new, completed, or scheduled work for Maintenance, Construction, Quality Assurance, etc. Also provide information on testing activities (e.g., functional testing of particular system or equipment, emergency tests, routine production tests, test performed in accordance with a Test Authorization, etc.) that are started, ongoing or completed.
- Special procedures that are required to support operations during the shift.
- Significant changes in radiological conditions/levels are recorded in operating logs. Entries must include the areas, system, or equipment affected, the results of any surveys, and any actions taken or underway to decontaminate or barricade the affected areas.
- Drills, exercises, tours or other events that could impact normal facility operations or could involve, directly or indirectly, facility operations personnel.

**11.5 Document Relief During the Shift**

Document relief for lunch, breaks, meetings, etc. occurring during a shift. Any time operators/supervisors are relieved of responsibility for a key shift position, the time of relief is recorded in the operating log followed by "Relieved by (printed name)" followed by the signature of the operator/supervisor that has been relieved.

The relieving operator/supervisor's first entry is the time, followed by "Assumed position duties" (or similar statement), followed by his/her signature.

Likewise, when the relieving operator/supervisor returns responsibility for a key position to the primary operators/supervisors, the same information is recorded.

**11.6 Operating Logbook Reviews**

The OM reviews the log of the senior individual on shift (e.g., OM, senior control area operator, or other applicable operating log), daily (except weekends, holidays, and other absences when the review is completed on the next work day). This review is documented by initialing and dating the log.

**No: P315      Conduct of Operations Manual**  
**Attachment 11. Log Keeping (Cont.) (Page 5 of 5)**

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Logs kept by operators/supervisors are reviewed at least once each shift by the next level of supervision. Support personnel (designated as key positions per facility management) logs are reviewed routinely as designated by facility management. These reviews should ensure that entries are accurate and adequate, and that no adverse trends are developing. All reviews are documented by initialing in the log margin nearest the last entry reviewed.

For positions staffed on a part-time basis, relief operators, or personnel newly staffing a position, the review of the position log is as directed by the OM.

Logs kept by operators outside the control area should be reviewed by the appropriate supervision responsible for the area to ensure entries are accurate and adequate.

**11.7 Training**

There is no specific mandatory training or qualification required to implement this attachment. It is recommended that all personnel implementing this document complete [UTrain Course #24663](#), *OS-RTS ConOps, Attachment 11, Log Keeping*. This training will enhance the employee's knowledge as required and as outlined in [DOE O 422.1](#), *Conduct of Operations*.

**11.8 Records**

The following are considered records generated by this attachment and must be managed in accordance with [P1020-1](#), *Laboratory Records Management*, and any local procedures:

- Operations Logs

**11.9 Acronyms**

C	Celsius
F	Fahrenheit
OM	Operations Manager
RLW	Radioactive Liquid Waste

**11.10 References**

- [DOE O 422.1](#), *Conduct of Operations*
- [P1020-1](#), *Laboratory Records Management*

**No: P315      Conduct of Operations Manual**  
**Attachment 12. Operations Turnover (Page 1 of 14)**

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## **12.0 OPERATIONS TURNOVER**

### **12.1 Shift Turnover**

The Los Alamos National Laboratory (LANL or the Laboratory) shift turnover process is established to ensure that relief personnel are provided the knowledge required to accomplish their shift assignment responsibilities. This attachment describes the controls necessary for conducting an orderly and accurate transfer of information regarding the facility's overall status at shift turnover.

Shift turnover is a critical period during which it is essential that the oncoming shift or relief personnel are provided with a complete and accurate transfer of information regarding the facility's overall status.

The requirements in this attachment have been generated to provide shift personnel with a standard format for documenting shift turnovers using the Facility Turnover Checklist Template (Appendix 12-A). Facility-level implementation may be an electronic- or paper-based system.

#### **12.1.1 Shift Turnover Responsibilities**

Test information must be a part of the shift turnover whenever testing is in progress.

Individual operator turnovers should take place at their normal shift station.

All turnovers are conducted in a professional manner.

Only qualified personnel assume responsibilities for shift turnover/relief.

Personnel should not assume operational duties unless they are physically and mentally fit to do so and until they and the off-going personnel have a high degree of confidence that an appropriate information transfer has taken place.

During the turnover period, the off-going shift must remain responsible for the assigned area.

The facility allots an appropriate amount of time (normally 30 minutes) dependent upon the shift position, to allow for document review, the walk down of control boards, and to discuss important items specified on the turnover checklist.

The oncoming shift personnel must report to their respective supervisors/managers when they have assumed the responsibility for the shift, or report if there is a problem in turnover.

In the event of abnormal operating conditions at turnover, the off-going shift must retain responsibility until the facility can be placed in a stable, safe status. At such time that facility conditions are stable, the off-going supervision or operator explains all items noted on the turnover checklist, and the on-coming supervision or operator asks any pertinent questions.

When critical work is in progress, turnover must generally occur at the work location. This applies to operators and support personnel alike. This requirement does not apply when conditions such as As Low As Reasonably Achievable (ALARA) principles preclude turnover at the work location.

**No: P315      Conduct of Operations Manual**  
**Attachment 12. Operations Turnover (Cont.) (Page 2 of 14)**

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### **12.1.2 Document Review**

Before shift turnover, the off-going shift reviews those process activities and documents specified in the off-going shift section of the turnover checklist, and enters their initials/signatures in the spaces provided to indicate completion.

Before assuming responsibility for their shift position, the on-coming shift reviews all process activities and documents specified on the on-coming shift section of the turnover checklist, and enters their signature in the space provided, acknowledging that they have read and understand. The review is as intensive as necessary for on-coming personnel to understand important history, present status, and planned events.

On-coming shifts review and become familiar with operating log entries made during the previous 48 hours or since their last shift, whichever is less.

Each Operations Manager (OM) checklist includes a documented review of the applicable status documents for that position (e.g., operating logs, system status logs, lockout logs, etc.).

**Note:** The purpose of the operating log review is to ensure that the operators and managers are aware of current facility conditions and changes that have occurred since their last shift.

### **12.1.3 Walkdowns**

**Note:** The purpose of a walkdown is to determine a facility's current status through observation of the system control indicators (e.g., Distributive Control System, status board, alarm panels), and to verify that equipment is tagged/locked as indicated by the appropriate logbooks.

Control area walkdowns must be made by on-coming personnel accompanied by off-going personnel to allow for discussion and exchange of information.

Manager walkdowns of the facility must be made before, during, or shortly after shift turnover.

On-coming OMs/Supervisors must perform a walkdown of the control area.

Operators responsible for support systems conduct a walkdown of all equipment in their area of responsibility shortly after their shift begins and report any abnormalities to their manager immediately.

Walkdowns of appropriate control panels must be conducted by each oncoming operator.

### **12.1.4 Discussion and Exchange of Information**

**Note:** Sufficient time must be allotted at turnover to allow the off-going shift to discuss and explain any important items that affect facility operations and safety with the on-coming shift/relief personnel.

On-coming and off-going shift personnel conduct a discussion, which includes, but is not limited to, the following items:

- safety equipment/critical equipment status
- status of individual systems
- equipment in operation at turnover

**No: P315      Conduct of Operations Manual**  
**Attachment 12. Operations Turnover (Cont.) (Page 3 of 14)**

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- inoperable or tagged equipment, including instrumentation and alarms
- surveillance or equipment work in-progress at turnover
- reportable events
- special procedures or temporary procedure changes generated during the shift

On-coming personnel ask questions at this time to satisfy the need for a complete understanding of their responsibilities.

**Note:** The off-going operator is relieved only when the on-coming personnel verbally accept responsibility of the shift position and in writing as documented in the appropriate operating log.

When both the on-coming and off-going shifts are satisfied that the oncoming personnel are aware of facility conditions, the on-coming personnel verbally states that they are assuming responsibility for the shift position. An entry to that effect must be made in the appropriate log.

During facility testing, the off-going worker reports his/her relief and the status of current testing to the OM.

**12.1.5 Shift Turnover Checklist Use**

**Note:** Requirements for Supervisors and Key Positions in non-continuous operations are addressed in Section 12.1.7 of this attachment.

Each facility develops and maintains turnover checklists that are specific to the control areas and work stations that have been identified by the Responsible Line Manager (RLM) or Facility Operations Director (FOD) as requiring operations turnover formality.

As a minimum, supervisory and key positions designated by the RLM or FOD, as applicable, must have a turnover checklist to be used in the turnover process.

A facility-specific turnover checklist is present and in use during the turnover period.

All entries documented on shift turnover checklists are made using permanent black or blue ink. In those cases where no information is needed, then the spaces are marked "None." In most cases, sections should not be left blank.

When a correction is to be made to an existing entry, it must be made as follows:

- Draw a single line through the incorrect entry.
- Enter the correct information.
- Enter the date the change is made.
- Enter the initials of the person making the correction.
- Make all new entries as near as possible to the lined-out entry. Do not use correction fluid or highlighters, do not erase information, and do not scribble out or otherwise mask the incorrect entry.

When completed, shift turnover checklist are reviewed for completeness, accuracy and legibility, and authenticated (signed and dated) by the person that completes it.

**No: P315      Conduct of Operations Manual**  
**Attachment 12. Operations Turnover (Cont.) (Page 4 of 14)**

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The information used for shift turnover checklists consists of the following (as applicable):

- off-going shift review responsibilities checklist
- critical equipment status
- process status
- controlled key status
- work in-progress/scheduled/and completed
- special procedure/temporary procedure status
- new/continuing abnormal operating conditions
- changes in radiological conditions or Radiological Control Technician (RCT) and Industrial Hygiene (IH) activities
- on-coming shift review responsibilities checklist
- safety and environmental problems
- operational limits in effect
- required chemistry or process sample times
- changes in radiological or hazardous material conditions

**12.1.6 Reliefs Occurring During the Shift**

Reliefs occurring during the shift as a result of meetings, lunch breaks, etc., must have a turnover that ensures the on-coming person is at least as knowledgeable of the facility conditions as he would have been had the complete shift turnover process been conducted.

Document and log reviews, control board walkdowns, and discussion may or may not be necessary depending upon the on-coming person's familiarity with the current facility conditions. It is the responsibility of both the person being relieved and the on-coming relief person to determine the amount of turnover necessary for relief.

Document reliefs occurring during the shift in the applicable operating log.

**12.1.7 Non-continuous Operations**

The Turnover Checklist and Shift Turnover requirements may be revised for non-continuous operations.

As a minimum, the FOD should specify the Shift Turnover requirements for all key positions that are not continuously operated.

Consideration should be given to the following when tailoring these requirements

- new or emergent conditions
- long delays (weekends, vacations, etc.) between manning of the positions
- the number of personnel who operate the equipment
- unique conditions involving facility operations

**No: P315      Conduct of Operations Manual**  
**Attachment 12. Operations Turnover (Cont.) (Page 5 of 14)**

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## **12.2 Shift Briefings**

This attachment outlines the basic process and defines the responsibilities for performing shift briefings.

A detailed shift briefing is essential to ensure that the operating organization fully understands the status of the facility, which activities are in progress, and which activities are to start during the shift. Successful operating organizations routinely conduct structured, well organized shift briefings. This also includes organizations that do not have routine, around-the-clock shift work.

Good shift briefings are dependent on a variety of details such as

- required attendees for the briefing, as defined by the FOD or RLM
- amount and detail of information provided at the briefing
- how the information is collected and by whom
- the formality and consistency of the briefing
- management support

For those organizations that are not on rotating shift work, the shift briefing and Plan of the Day (POD) meeting may be one and the same. In any event, the requirements of this attachment will be followed to the extent that they apply.

### **12.2.1 The Plan of the Day (POD)**

The POD is used to schedule, authorize, and control activities in the facility. It is an important forum for resolving conflicts in scheduling work, and providing for discussion about planned activities in order to understand and resolve interfaces, interferences, and impacts of concurrent/sequential work activities. Participants typically include representatives of organizations needing to coordinate activities and resources, for example, facility operations, support groups such as Radiation Protection, and programs that interact with facility systems or rely on their availability. Personnel requesting non-routinely conducted activities to be placed on the POD schedule should attend the POD meeting to provide information about the activities.

Each facility should plan and schedule work activities with about a 3-month horizon, refine the planning about a week in advance, and translate detail into the POD schedule. The POD schedule lists operations, maintenance, tests, surveillances, Decontamination and Decommissioning (D&D) and other activities authorized by the FOD. In order to maximize effectiveness of the POD for accurate planning, items should not be scheduled on the POD schedule until they are ready to be performed. The POD meeting should be held each workday unless scheduled less frequently by the FOD, or held at the frequency specified in the facility Authorization Basis (AB). The FOD or designee approves the POD schedule. Specific requirements are as follows:

- The POD must cover all periods of operation in the facilities and areas it serves.
- The POD must cover at least a 24-hour period in detail, and should provide for a 7-day period for planning. A POD and a Plan of the Week may be used to satisfy this, or a POD covering seven days may be used.
- The POD schedule should indicate which items require a Pre-Job Brief (PJB).

**No: P315      Conduct of Operations Manual**  
**Attachment 12. Operations Turnover (Cont.) (Page 6 of 14)**

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POD meetings are conducted to schedule and coordinate activities for the next day, or for some other period if held less frequently than daily, and to discuss upcoming work for about seven days. The meeting agenda should include the following items as applicable:

- Discussion by the manager conducting the POD meeting of facility status (facility availability for work, suspensions affecting work, major activities ongoing, etc.).
- Discussion of the non-routinely conducted items scheduled on the POD.
- Discussion of planned and/or potential interfaces, interferences, and impacts of concurrent sequential work activities, focusing on understanding and de-conflicting concurrent sequential activities in the same or nearby work areas, concurrent/sequential activities on a particular system, etc.
- Discussion of need for security escorts, or escorts for training.
- Discussion by attendees on items within their area of responsibility as necessary to achieve coordination and improved productivity.
- Discussion of upcoming activities which will impact scheduling of work, and resolution of potential conflicts.

The OM must approve additions and other changes to the POD and maintain the master copy of the POD schedule. The OM must be notified if scheduled POD activities cannot be conducted, and the OM should notify functional managers to shift personnel to other assignments if appropriate.

**12.2.2 Pre- Job Briefs (PJBs)**

PJBs must be conducted in accordance with Section 3.2.3, *Part 3 – Validation and Work Release Information*, of [P300](#), *Integrated Work Management*, using [Form 2103](#), *Integrated Work Document (IWD) Part 3, Validation and Work Release*. The RLM or designee must, at a minimum, discuss the issues listed on the form and have all workers sign to acknowledge that they have been briefed, allowed to ask questions, and that any questions asked were answered to their satisfaction.

**12.2.3 Attendance**

It is extremely important that the shift briefing be attended by the appropriate representatives; each work station and support group should be represented.

The OM should be present to "conduct" the briefing. The briefing may be conducted after the OM has accepted responsibility for the shift.

Representatives from each of the support organizations will also attend the briefing. The following organizations should be represented (as applicable):

- Maintenance
- LANS craft personnel
- Security
- RCT/IH
- Quality Assurance/Quality Control (QA/QC)

**No: P315      Conduct of Operations Manual**  
**Attachment 12. Operations Turnover (Cont.) (Page 7 of 14)**

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- Startup
- Technical Support (system engineers, Subject Matter Experts [SMEs], etc.)
- Work Control
- Other organizations or support groups necessary to support shift activities

The shift briefing is an important part of the facility status communications program. As such, it should be routinely attended and participated in by senior managers from both the operations and support organizations, up to and including OMs.

Senior management (FODs, as well as support organization department-level managers) should attend periodically (e.g., three to five times per month).

**12.2.4 Information to Be Presented**

The amount and detail of information provided at the shift briefing is critical to the success of the briefing.

Prior to the shift briefing, operations and members of each support organization should meet their "off-going" counterparts to get a detailed briefing of the status of activities in accordance with Section 12.1.

For operations, the briefing should be conducted using turnover checklists.

Support groups also should use turnover checklists for consistency. The minimum information required should include:

- status of any ongoing activities
- new activities to be started
- need for operator support during the shift
- ability or inability to support planned shift activities
- any other information of interest to the operators or other support groups

**12.2.5 Conducting the Shift Briefing**

Normally, the shift briefing should be conducted in three phases, as described below. It is important that operators and support organizations attend all three phases. Other interested personnel and senior managers should attend the third phase of the meeting, as a minimum.

*Phase 1*

Each operator (or work station) should provide a complete status report. This status briefing should be of sufficient detail that every other operator and support group understands the impact of ongoing and anticipated activities, and what they must do to support them. Any deficiencies or out-of-service equipment which requires timely corrective action will be identified to the appropriate organization. Any safety or environmental issues should also be identified at this time.

**No: P315      Conduct of Operations Manual**  
**Attachment 12. Operations Turnover (Cont.) (Page 8 of 14)**

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*Phase 2*

Each support organization should provide the status of activities for which they are responsible. Sufficient detail should be provided to ensure each operator and affected support organization clearly understands the impact of the work and any support requirements. Lengthy briefings such as startup "pre-test" briefings, which may only affect selected operators or organizations, should not be given at this time. Rather, a brief description of the test and its anticipated support requirements and impact to other activities should be given. Detailed "pre-test" or other briefings should be given just prior to the start of the activity and should only include those operators and organizations affected by the activity.

Each support organization should pay close attention to the information presented to ensure they understand what is expected with regard to their own organization involvement and support of the proposed shift activities.

*Phase 3*

The OM (or senior operation representative on shift) should conclude the briefing by setting the goals and priorities for the shift. They should be based on all the information provided in Phases 1 and 2 of the briefing and the current shift schedule.

The OM should call upon affected support organizations to make sure they understand and are capable of supporting the shift priorities and goals.

Inconsistencies or support difficulties should be identified and resolved at this time.

At the conclusion of the briefing, the OM should provide any new training or "lessons learned" of immediate concern to the operators. Related Conduct of Operations principles should be included in this discussion, as applicable. The discussion material is provided by the OM as part of ongoing shift training. Relevant safety-related messages should also be provided at this time.

**12.3 Training**

There is no specific mandatory training or qualification required to implement this attachment. It is recommended that all personnel implementing this document complete [UTrain Course #24664](#), *OS-RTS ConOps, Attachment 12, Operations Turnover*. This training will enhance the employee's knowledge as required and as outlined in [DOE O 422.1](#), *Conduct of Operations*.

**12.4 Records**

The following is considered a record generated by this attachment and must be managed in accordance with [P1020-1](#), *Laboratory Records Management*, and any local procedures:

- Facility Turnover Checklist

**12.5 Acronyms**

AB	Authorization Basis
ALARA	As Low As Reasonably Achievable
CAM	Continuous Air Monitor
D&D	Decontamination and Decommissioning

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**No: P315      Conduct of Operations Manual**  
**Attachment 12. Operations Turnover (Cont.) (Page 9 of 14)**

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FOD	Facility Operations Director
IH	Industrial Hygiene
LANL	Los Alamos National Laboratory
LCO	Limiting Condition for Operations
OM	Operations Manager
PJB	Pre-Job Brief
POD	Plan of the Day
QA/QC	Quality Assurance/Quality Control
RCT	Radiological Control Technician
RLM	Responsible Line Manager
SME	Subject Matter Expert

**12.6 References**

- [P300](#), *Integrated Work Management*
- [DOE O 422.1](#), *Conduct of Operations*
- [P1020-1](#), *Laboratory Records Management*

**12.7 Appendix**

Appendix 12-A. *Template for Facility Turnover Checklist*

**No: P315      Conduct of Operations Manual**  
**Attachment 12. Operations Turnover (Cont.) (Page 10 of 14)**

**Appendix 12-A.      Template for Facility Turnover Checklist (Page 1 of 5)**

<b>FACILITY TURNOVER CHECKLIST</b>			
Page 1 of 2			
SHIFT:	0630-1900	OR	1830-0700
	(circle one)		DATE :
			(at start of shift)
Sections 1-8 are to be completed by the off-going personnel just prior to turnover. :			
<b>SECTION #1 -- REVIEWS</b>			
INITIALS			
A. Facility Lockout Logbook _____			
B. Lockouts installed/removed during the past shift _____			
C. Shift / Standing Orders _____			
D. Control Room Status Boards and Alarm Summary _____			
Other : _____			
<b>SECTION #2 -- SAFETY/ENVIRONMENT/IMPORTANT CONCERNS FOR FOLLOW-UP</b>			
<b>SECTION #3 -- FACILITY CRITICAL EQUIPMENT STATUS</b>			
(ON = Online      STBY = Standby      Ready to Operate      OOS = Out of Service)			
REMARKS			
A. Supply Fans :	1	2	
B. Exhaust Fans :	1	2	3
C. Stripper (P1) :			
D. Stripper (P2) :			
E. Stripper (SS) :			
F. Stripper (Purge) :			
G. DCS :			
H. Fire Alarms Bypassed :			
In Process Status:			
Other			
<b>SECTION #4 -- WORK/TESTING COMPLETED</b>			
(List all major tests, maintenance work, etc., completed during the shift)			

**No: P315      Conduct of Operations Manual  
Attachment 12. Operations Turnover (Cont.) (Page 11 of 14)**

**Appendix 12-A.      Template for Facility Turnover Checklist (Cont.) (Page 2 of 5)**

<b>FACILITY TURNOVER CHECKLIST</b>	
Page 2 of 2	
<b>SECTION #5 -- WORK/TESTING IN PROGRESS or DUE TO START</b> (List all work to be turned over to the on-coming shift )	
<b>SECTION #6 -- ISSUE MANAGEMENT REPORTS GENERATED</b>	
<b>SECTION #7 -- NEW OR CONTINUING ABNORMAL OPERATING CONDITIONS</b>	
<b>SECTION #8 -- CHANGES IN RADIOLOGICAL CONDITIONS or IH/IS ISSUES</b>	
<b>SECTION #9 -- ON-COMING Manager/Designee DOCUMENT REVIEW</b> (To be completed by the on-coming Manager/Designee prior to assuming the shift )	
A. Turnover Checklist & Operating Log B. Lockouts installed/removed during the past shift C. Shift / Standing Orders D. Control Room Status Boards and Alarm Summary Other : _____	
Manager/Designee _____	Z# _____ DATE : _ ____
<b>SECTION #10 -- FORMAL SHIFT TURNOVER OF ALL RESPONSIBILITIES</b>	
OFF-GOING SHIFT (same person as section #1-8): I have fully turned over my responsibilities to the on-coming shift. I have completed all documentation and the process is in satisfactory condition (or as noted within this checklist) for turnover. _____	
SIGNATURE : _____	Z# _____ DATE : _____
ON-COMING SHIFT (same person as section #9): By signoff below I acknowledge the completion of all turnover review items and properly assume full responsibility for control of the shift facility. _____	
SIGNATURE : _____	Z# _____ DATE : _____
<b>APPROVAL :</b> Operations Manager : _____ Z# _____ DATE : _____	

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**No: P315      Conduct of Operations Manual  
Attachment 12. Operations Turnover (Cont.) (Page 12 of 14)**

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**Appendix 12-A.      Template for Facility Turnover Checklist (Cont.) (Page 3 of 5)**

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***Instructions for Using Example Turnover Checklist***

**Note:** The Checklist may be modified to reflect facility-specific attributes.

***Section #1—Reviews***

Off-going shift personnel sign the checklist after a review of the entire completed checklist and any other applicable documents listed.

- Review of lockouts installed/removed during the past shift.
- Review of Shift and Standing Orders.
- Review of Control Room Status Boards and Alarm Summary.

Examples of document types necessary to obtain relevant shift turnover checklist information include, but are not limited to

- operating logs
- lock/tag logs (out of service, locked out, etc.)
- equipment logs (out of service, locked out, and Limiting Condition for Operations [LCO] Logs, etc.)
- temporary modification logs
- interlock/bypass logs
- run books (control area, process equipment, diesel/engines, etc.)
- building service equipment logs
- nonconformance reports
- shift and standing orders
- required reading

Provide a space for off-going personnel to enter their initials that they have reviewed each item prior to completion of the turnover checklist.

***Section #2—Safety/Environment/Important Concerns for Follow-Up***

The off-going shift enters in this section any safety, environmental or other important concerns that require follow-up.

Examples of these concerns include, but are not limited to, the following:

- unusual or unexplained variations in performance
- emergent waste (hazardous, toxic, etc.) management issues
- new safety incident reports that may affect assignments in the area
- any personnel or equipment safety problems or concerns that have occurred or that still exist

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**No: P315      Conduct of Operations Manual**  
**Attachment 12. Operations Turnover (Cont.) (Page 13 of 14)**

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**Appendix 12-A.      Template for Facility Turnover Checklist (Cont.) (Page 4 of 5)**

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*Section #3—Facility Critical Equipment Status*

**Note:** In this section, the turnover checklist would contain critical devices and equipment for the overall facility. Work station turnover checklists would contain critical devices and equipment applicable to the work station. Critical equipment listed on local status boards may be omitted from turnover checklist providing status board is reviewed during turnover.

Enter in this section the status of critical devices in each area that are used to monitor a process and/or provide other safety related information. Examples include the following:

- Major equipment such as compressors, motors, pumps, valves, tank levels, steam system, etc.
- radiation detection equipment alarming or malfunctioning
- Continuous Air Monitors (CAMs) alarming or malfunctioning
- heating and ventilation system problems existing
- hydrogen and/or oxygen monitors alarming or malfunctioning
- public address system problems existing (emergency signals)
- loading or unloading in progress
- support systems status
- status of strippers, mass spectrometer, etc.
- glovebox activity levels
- any other information considered important to the oncoming operator

*Sections #4 and #5—Work/Testing Completed, In Progress, or Due To Start*

Enter in Section 4 a listing of all major work activities which were completed during the off-going shift. Include in this list all major tests, procedures, maintenance activities, etc.

Enter in Section 5 a listing of work activities which are planned for the on-coming shift. For each activity, indicate if work is in progress or scheduled to start during the oncoming shift.

*Section #6—Special Procedures*

In this section, list the latest status of any special procedures in use in the on-coming shift relief area. Examples may include

- special operating procedures
- procedure changes
- issue management reports

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**No: P315      Conduct of Operations Manual**  
**Attachment 12. Operations Turnover (Cont.) (Page 14 of 14)**

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**Appendix 12-A.      Template for Facility Turnover Checklist (Cont.) (Page 5 of 5)**

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*Section #7—New or Continuing Abnormal Operating Conditions*

**Note:** Abnormal conditions noted on local status boards do not have to be included on checklist provided the status board is reviewed during turnover.

**Note:** Any new or continuing abnormal conditions from the previous shift(s), and any actions taken or planned.

*Section #8—Changes in Radiological Conditions or Industrial Hygiene Issues*

As applicable, enter the latest status of any significant changes in radioactive or hazardous material levels since the previous shift. Include the areas affected, the results of any Radiological Control Technician (RCT) or Industrial Hygiene (IH) surveys, and any other actions taken or activities that are underway to decontaminate or barricade the areas.

*Section #9—On-Coming Manager/Designee Review Responsibilities*

**Note:** This section will serve as a guide to ensure that all required review/sign-offs have been documented.

Examples of document types that may be listed in this section include, but are not limited to:

- round sheets
- lock/tag logs (e.g., out of service, locked out)
- equipment logs (e.g., out of service, locked out, LCO Logs, etc.)
- temporary modification logs
- interlock/bypass logs
- run books (control area, process equipment, diesel generators, etc.)
- nonconformance reports
- required reading
- shift and standing orders

The on-coming Manager/Designee signs to denote that a review is complete.

*Section #10—Formal Shift Turnover of All Responsibilities*

Off-going shift personnel signs the checklist turning over responsibilities to the on-coming shift documenting the process is in satisfactory condition for turnover.

On-coming shift personnel sign acknowledging the completion of all turnover review items and properly assume full responsibility for control of the shift facility or work station.

**No: P315      Conduct of Operations Manual**  
**Attachment 13. Control of Interrelated Processes (Page 1 of 3)**

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### **13.0 CONTROL OF INTERRELATED PROCESSES**

This attachment describes the approach for ensuring that interrelated processes are understood, monitored, and controlled to avoid adverse impacts on operations.

Interrelated processes are defined by [DOE O 422.1](#), *Conduct of Operations*, as “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.” The processes may be facility-maintained systems that support research and operations needs, or operations activities that can impact facility systems or activities. Interrelated processes can be routine, such as providing chilled water or ventilation, or one-time, such as a special test or maintenance activity. Examples of interrelated processes include the following:

- Planned testing or operations that will activate alarms requiring response from personnel performing unrelated work in the area
- Discharges to waste systems, particularly involving unusual volumes or constituents
- Material movements that could challenge Technical Safety Requirement (TSR) limits
- Maintenance activities that affect availability of equipment or protective systems
- Programmatic activities affecting utility or support system demands such as electricity or compressed gas

Interrelated processes must be recognized and managed to ensure that affected personnel understand the interactions and limits of these processes and their roles in communications and response.

The Facility Operations Director (FOD) and Responsible Line Manager (RLM) must identify their systems and activities that either depend upon or could impact processes that they do not manage. After initial identification of routine operations meeting these criteria, continued evaluation is required as changes occur or as new activities are scheduled, including one-time events.

The FOD and RLM define the parameters of acceptable performance for these interrelated processes and develop the programs for ensuring these parameters are communicated, monitored, and maintained.

Controlling interrelated processes has three major elements: defined responsibilities, training, and communication.

#### **13.1 Defined Responsibilities**

The FOD and RLM must clearly define and communicate the responsibilities for ensuring that interrelated process are controlled. Both facility and program personnel may be assigned. Defined responsibilities may include the following:

- monitoring
- surveillances
- response to adverse trends or abnormal conditions
- notifications

**No: P315      Conduct of Operations Manual**  
**Attachment 13. Control of Interrelated Processes (Cont.) (Page 2 of 3)**

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### 13.2 Process Training Requirements

Personnel responsible for interrelated processes must be provided the training necessary to understand the interactions affecting these processes and to perform the appropriate actions related to their control. Training topics may include the following:

- system dependencies and interactions with related processes
- basic concepts of chemistry and physics related to the assigned systems, for example, pH, pressure differential, conductivity, chemical interactions, or potential energy
- limits established for specific processes, including TSR- and permit-related parameters
- methods for monitoring gauges and readouts and performing surveillances
- procedures for reviewing and interpreting data to identify trends
- appropriate responses to alarms and abnormal conditions
- communications protocols

A formal analysis of training needs and development of the requisite qualification standards are based on the requirements of [P781-1](#), *Conduct of Training*.

### 13.3 Process Communication Requirements

The FOD and RLM must establish lines of communication between their personnel responsible for interrelated processes. Communication processes should support the following goals:

- Activities that can impact related processes are effectively coordinated with the owners of those processes
- Adverse trends and abnormal conditions are effectively and promptly communicated to affected organizations
- Personnel from different organizations cooperate effectively in responding to abnormal and emergency situations.

The Plan of the Day process (see Attachment 12, Section 12.2.1) can be an effective tool for communications between owners of interrelated processes.

### 13.4 Training

There is no specific mandatory training or qualification required to implement this attachment. It is recommended that all personnel implementing this document complete [UTrain Course #24665](#), *OS-RTS ConOps, Attachment 13, Control of Interrelated Processes*. This training will enhance the employee's knowledge as required and as outlined in [DOE O 422.1](#), *Conduct of Operations*.

### 13.5 Acronyms

FOD	Facility Operations Director
RLM	Responsible Line Manager
TSR	Technical Safety Requirement

### 13.6 References

- [DOE O 422.1](#), *Conduct of Operations*

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**No: P315      Conduct of Operations Manual**  
**Attachment 13. Control of Interrelated Processes (Cont.) (Page 3 of 3)**

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- [P781-1](#), *Conduct of Training*

**No: P315      Conduct of Operations Manual  
Attachment 14. Required Reading (Page 1 of 5)**

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## **14.0    REQUIRED READING**

**Note:** Required reading by itself is not a measurable learning method and must not be included in an initial formal training program that results in qualification or certification.

The purpose of this attachment is to ensure that designated individuals are given the opportunity to read, understand, and be kept informed of important information that will enhance their ability to effectively perform their job assignment. This purpose will be achieved by implementing a system of formal instructions and requirements as detailed in this attachment. The Required Reading Program (RRP) is required for all operations personnel and those organizations that provide direct support (i.e., direct communication) to operation organizations. Other support and service organizations may implement an RRP to enhance business performance. This may also include information contained in video and audio media, as well as written materials.

### **14.1    Content**

The required reading material may include, but not be limited to, the following:

- Los Alamos National Laboratory (LANL) Lessons Learned Bulletin
- applicable occurrence reports
- critique reports
- new procedures and/or revisions, as applicable
- Safety Newsletters
- appropriate facility/equipment configuration and design changes
- changes to the Design Basis Authorization documentation for the facility
- related industry and Laboratory operating experience information
- videos of tests, incidents, tasks, etc., that would prove beneficial
- any other pertinent information, such as current facility activities, so designated by management to be included as required reading

Only information that needs documentation indicating an individual has read and understood the material should be included in the RRP. Care must be exercised to prevent subversion of the system by including information which can be disseminated by less formal means. It is the responsibility of the reader to question his/her immediate supervisor when subject matter is not understood. An individual will only be held accountable for material specially designated for that selected individual to read.

Any and all personnel may recommend material to be included in the RRP.

**Note:** Electronic systems for administering the RRP are an acceptable alternative to a paper-based system, provided the functionality meets or exceeds the requirements of this attachment.

If an electronic system is utilized to distribute and track the completion of required reading, Sections 14.2 and 14.3 can be accomplished electronically.

**No: P315      Conduct of Operations Manual**  
**Attachment 14. Required Reading (Cont.) (Page 2 of 5)**

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## 14.2 Log Sheet

A Required Reading Log Sheet (Appendix 14-A) is maintained that, at a minimum, details the following for each discrete piece of required reading material:

- unique, sequential Required Reading Identification (ID) number
- unique document ID number (if available)
- title and/or description of specific material
- designated readers, by full name
- date material was provided
- required date for required reading to have been completed
- individuals' signature/initials after completing and understanding the material provided
- actual date completed by designated reader
- name of issuing supervisor/manager

**Note:** Required Reading completion dates should be based on the nature and urgency of the information. Certain documents may be designated for "immediate reading." These should be read before assuming the shift or work station. Completion of "immediate reading" should be documented and retained in accordance with Section 14.3.

Each Required Reading Log Sheet should be sequentially maintained in a binder and kept in a central location for each distinct facility or support organization.

## 14.3 Process

Recommended material is forwarded to either the Operations Manager (OM) or Responsible Line Managers (RLMs) and designated by the OM/RLM to be screened for inclusion in the RRP.

Once approved, the document is registered on the Required Reading Log Sheet (Appendix 14-A), the Required Reading File Index (Appendix 14-B), and then filed in the Required Reading Active File by the Required Reading Coordinator.

- Registration of the document on the Required Reading Log Sheet requires that the issuing supervisor/manager complete the necessary document ID items in black or blue ink or typewritten.
- Registration of the document in the Required Reading File Index database requires that the issuing supervisor/manager input document ID, title and/or description, and date material was provided from Required Reading Log Sheets.
- The Required Reading Active File must be readily available to those individuals required to read the prescribed documents. The Required Reading Active File should be strategically located to ensure accessibility and timely completion.
- The issuing organization/facility may have more than one Required Reading Active File and there may be multiple copies of the document to ensure timely completion by all designated readers.

**No: P315      Conduct of Operations Manual**  
**Attachment 14. Required Reading (Cont.) (Page 3 of 5)**

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Each individual whose name appears on the Required Reading Log Sheet as a designated reader signs and enters the date completed on the Required Reading Log Sheet. This section indicates that the designated reader has acknowledged and understood the required reading material. If any question about the required reading material should arise, then it must be resolved before completing this step.

Routinely (at least once per week) the Required Reading Coordinator reviews the Required Reading Log Sheets to ensure timely completion by all designated readers. This review is not required to be documented.

When all designated readers for a specific document have signed and dated the Log Sheet, then the required reading material is removed from the Required Reading Active File and placed in sequential order by Required Reading ID number in the Required Reading Inactive File by the issuing supervisor/manager with its associated Required Reading Log Sheets attached. This file should be maintained as a reference.

The issuing supervisor/manager then enters the "Date Completed" for that specific Required Reading File material in the Required Reading File Index database.

**14.4 Training**

There is no specific mandatory training or qualification required to implement this attachment. It is recommended that all personnel implementing this document complete [UTrain Course #24666](#), *OS-RTS ConOps, Attachment 14, Required Reading*. This training will enhance the employee's knowledge as required and as outlined in [DOE O 422.1](#), *Conduct of Operations*.

**14.5 Records**

The following are considered records generated by this attachment and must be managed in accordance with [P1020-1](#), *Laboratory Records Management*, and any local procedures:

- Required Reading Log Sheet
- Required Reading File Index

**14.6 Acronyms**

ID	Identification
LANL	Los Alamos National Laboratory
OM	Operations Manager
RLM	Responsible Line Manager
RRP	Required Reading Program

**14.7 References**

- [DOE O 422.1](#), *Conduct of Operations*
- [P1020-1](#), *Laboratory Records Management*

**14.8 Appendices**

Appendix 14-A.	<i>Template for Required Reading Log Sheet</i>
Appendix 14-B.	<i>Template for Required Reading File Index</i>





**No: P315      Conduct of Operations Manual**  
**Attachment 15. Timely Orders to Operators (Page 1 of 6)**

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## **15.0    TIMELY ORDERS TO OPERATORS**

The purpose of this attachment is to provide requirements for the administration of timely orders.

**Note:** Information and policies intended as permanent should be incorporated in administrative procedures or as addenda to this document.

**Note:** The Timely Orders program must not be used to change operating procedures because the changes noted in the operator orders might be missed by a procedure user.

Do not use timely orders in lieu of approved operating procedures.

Do not use timely orders as a means to circumvent necessary procedure changes.

### **15.1    Shift Orders**

Operations Managers (OMs) and other managers who have a need, approve shift orders to communicate short-term information and administrative instructions to shift personnel. Information such as special operations, performance of specific evolutions or tests, work priorities, policy information, increased frequency in monitoring certain parameters, classification of administrative instructions, etc. should be conveyed in shift orders. The Facility Operations Director (FOD), OM, or the Responsible Line Manager (RLM), or their respective designees, review and approve shift orders.

Shift orders should be brief, normally one or two pages in length, and provide the OM the means to communicate instructions and information of short-term nature that is considered to be of importance to the manager's personnel.

Shift orders should be clearly written and dated and include the following identifying information:

- document title—"Shift Orders"
- facility or organization identification
- period (time/date) covered by the order (i.e., from—to)
- reference to any new or revised standing orders

Appendix 15-A, *Template for Shift Orders*, should be used as a template for shift order form format.

Subheadings may be used for dividing shift orders into specific categories for easy reference, when feasible. Each organization should develop subheadings specific to its group.

Shift orders are normally effective from 1600 to 1600, except weekends, which cover the 72-hour period from 1600 Friday to 1600 Monday, or where the coverage extends beyond the 72-hour period (e.g., 120-hour period due to the Thanksgiving holiday falling on a weekend).

Shift orders should be replaced or updated daily.

If information in the Shift Orders will be retained for a number of days, the entries can be time-dated to ensure they are appropriately removed.

**No: P315      Conduct of Operations Manual**  
**Attachment 15. Timely Orders to Operators (Cont.) (Page 2 of 6)**

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When shift orders cannot be followed or completed as written, make changes or deviations only after approval by the issuing authority or designated alternate.

Each issuing authority should develop a list for distribution of shift orders that ensures availability of the information to all affected personnel.

The OM designates the location to maintain the master copy of Shift Orders.

Shift Orders may be generated, transmitted, and maintained electronically.

Appropriate personnel review the shift orders as early in the shift as possible. The OM reviews the shift orders at shift turnover. Other work groups may review the shift orders at work group meetings held early in the shift. Document the review by completing the "Reviewed With/By" section of the Shift Order Template (see Appendix 15-A).

Expired shift orders should be retained in accordance with the Records section of this attachment.

Shift orders that are postponed or remain effective past their expiration date should have daily review or update.

## **15.2 Standing Orders**

OMs, and other managers who have a need, approve standing orders to communicate long-term information and administrative instructions to shift personnel. Special instructions such as minimum shift manning requirements for all facility conditions may be included in standing orders. The FOD, OM, or the RLM, or their respective designees, review and approve standing orders.

Standing orders that could potentially impact safety basis requirements (e.g., surveillances, in-service inspections, etc.) must be reviewed by Safety Basis and an Unreviewed Safety Question/Unreviewed Safety Issue (USQ/USI) review performed as appropriate.

Standing orders provide the OM the means to communicate instructions and information of a long-term nature that is considered to be of importance to the manager's personnel.

Standing Orders may be developed and maintained electronically.

Standing orders should include the following identifying information:

- document title—"Standing Orders"
- facility or organization identification
- approval date
- issuing authority signature

Appendix 15-B, *Template for Standing Orders*, should be used as a template for standing order format.

**Note:** A system of uniquely numbering the Standing Order subheadings will facilitate the tracking of revisions to the Orders and the personnel review of the Orders.

**No: P315      Conduct of Operations Manual**  
**Attachment 15. Timely Orders to Operators (Cont.) (Page 3 of 6)**

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Subheadings may be used for dividing standing orders into specific categories for easy reference, when feasible. Each organization should develop subheadings specific to its group.

Standing orders should be maintained in the same location as the shift orders.

When standing orders cannot be followed or completed as written, make changes or deviations only after approval by the issuing authority or designated alternate.

The OM determines the distribution list for Standing Orders.

Personnel designated by the OM should remain current on the content of assigned standing orders through a documented refresher training whenever the content changes or on an annual basis, at a minimum. The refresher training may consist of re-reading the standing order and may be administered through the Required Reading program.

The OM reviews the standing orders active file on a quarterly basis to ensure that only applicable and current orders remain effective. This review should be documented.

Consider standing orders active until superseded. Place superseded standing orders in an inactive file and retain in accordance with the Records section of this attachment. Standing orders which are outdated or no longer applicable must be handled the same as superseded standing orders.

**15.3 Training**

There is no specific mandatory training or qualification required to implement this attachment. It is recommended that all personnel implementing this document complete [UTrain Course #24667](#), *OS-RTS ConOps, Attachment 15, Timely Orders to Operators*. This training will enhance the employee's knowledge as required and as outlined in [DOE O 422.1](#), *Conduct of Operations*.

**15.4 Records**

The following are considered records generated by this attachment and must be managed in accordance with [P1020-1](#), *Laboratory Records Management*, and any local procedures:

- Shift Orders
- Standing Orders

**15.5 Acronyms**

FOD	Facility Operations Director
OM	Operations Manager
RLM	Responsible Line Manager
USI	Unreviewed Safety Issue
USQ	Unreviewed Safety Question

**15.6 References**

- [DOE O 422.1](#), *Conduct of Operations*
- [P1020-1](#), *Laboratory Records Management*

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**No: P315      Conduct of Operations Manual**  
**Attachment 15. Timely Orders to Operators (Cont.) (Page 4 of 6)**

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**15.7    Appendices**

Appendix 15-A. *Template for Shift Orders*

Appendix 15-B. *Template for Standing Orders*

No: P315 Conduct of Operations Manual  
Attachment 15. Timely Orders to Operators (Cont.) (Page 5 of 6)

Appendix 15-A. Template for Shift Orders (Page 1 of 1)

**Shift Order**

(Facility)

		Period Covered	
Order Number	USQ/USI No.	From (Date and Time)	To (Date and Time)

Purpose:

Instructions:

_____ Approved By	_____ Date	_____ Responsible Manager	_____ Date
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Distribution:

**No: P315      Conduct of Operations Manual  
Attachment 15. Timely Orders to Operators (Cont.) (Page 6 of 6)**

**Appendix 15-B.      Template for Standing Orders (Page 1 of 1)**

**Standing Order**

(Facility)

		Period Covered	
Order Number	USQ/USI No.	From (Date and Time)	To (Date and Time)

Purpose:

Instructions:

Approved By	Date	Responsible Manager	Date
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Distribution:

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Page 1 of 51)**

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## **16.0 TECHNICAL PROCEDURES**

### **16.1 Purpose**

This attachment describes the fundamental elements of a program for developing, maintaining, and using technical procedures for activities at Los Alamos National Laboratory (LANL or the Laboratory). It addresses the requirements of paragraph 2.p, *Technical Procedures*, of Department of Energy [DOE O 422.1](#), *Conduct of Operations*, and complements [PD311](#), *Requirements System and Hierarchy*, and [P300](#), *Integrated Work Management*.

An effective program for managing technical procedures promotes document quality and consistency, which are key components of worker success. The purpose of this attachment is to assist local organizations in implementing a procedure program that accomplishes these goals.

The guidelines are written to be flexible so that they encompass a range of technical activities, from nuclear operations to facility processes. It is expected that implementation will vary from organization to organization in order to accommodate the diversity of activities and environments at the Laboratory. The attachment may be implemented as written, or it may be used as guidance for evaluating existing programs or developing new programs tailored to the individual organization's needs. Facility-specific programs must meet the intent of this attachment; exceptions must be approved by the Associate Director for Nuclear and High-Hazard Operations (ADNHOO) using the exception/variance process described in Section 7.0 of this document. The implementation of the requirements of this attachment will be assessed through the periodic assessment process described in Section 3.3, *Periodic Assessment*, in the body of this document.

The guidelines in this attachment may, as noted, be applied to Research and Development (R&D) activities, but it is important to understand the specific ways it is intended to be used when appropriate. [SD601](#), *Conduct of Research and Development*, is the guiding requirement document for conduct of R&D, and explicitly supports the application of Integrated Work management to R&D. In addition, [SD601](#) notes that other institutional or local requirements appropriate to the individual work activity may also apply: For example, if R&D involves explosives, hoists, lasers, or pressure vessels, relevant procedures will apply. Similarly, R&D work done in a facility (for example a nuclear or radiological facility) must be executed in a way that complies with the facility requirements including the applicable controls and formality of operations. It is not, therefore, the intent that Technical Procedures as described in this attachment would supersede the planning, analysis, etc. of R&D as described in [SD601](#); instead, where appropriate (as described below), they *may* be used to prescribe operational technical procedures that are intended to ensure that the necessary envelope is maintained during the execution steps taken to conduct the R&D.

For example, for research on fundamental properties of plutonium conducted in a glovebox in a nuclear/high hazard facility, a Technical Procedure following the guidelines in this attachment would NOT be used to define the scientific goals and functional steps of the R&D activity—but one MAY be developed to define the operational execution steps and controls for the sequence of events that would be performed in the glovebox to realize the steps in the R&D activity. Similarly [P300](#), *Integrated Work Management*, notes “During the hazard analysis for either moderate or high hazard/complex work, teams should *consider whether* the R&D involves or can affect the facility or facility operations beyond the bounds of existing analyses or agreements/controls.” In such cases, when appropriate to the operational and hazard environment (as described below) a Technical Procedure following the guidelines in this attachment may be developed to define the

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 2 of 51)**

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steps and controls for the sequence of events that would directly affect the facility or facility operations; again, this Technical Procedure would NOT prescribe the overall planning of the R&D activity, which would follow [SD601](#).

**Note:** Technical Procedure as used here is intended to mean only those specific procedures developed for P315, *Conduct of Operations*, under this attachment, and not to the general use of the term “technical procedure” as it may be used in a variety of other applications.

**Note:** Instructions for Records Management and Document Control are addressed in the requirements of [P1020-2](#), *Laboratory Document Control*, and [P1020-1](#), *Laboratory Records Management*, respectively.

**Note:** References to documents, organizations, and functional titles must be interpreted as equivalent to succeeding designations.

## 16.2 Scope and Applicability

### 16.2.1 Scope

This attachment applies to technical procedures in the Local Documents group as defined in [PD311](#), *Requirements System and Hierarchy*, Table 1, "Hierarchy of Requirements System Documents." Local Documents are work procedures that do not apply to the institution as a whole, but are limited in applicability, for example, to a specific organization or type of work.

All operational and facility technical procedures at the Laboratory (including technical procedures that control the operational or facility environment and constraints for R&D activities) are subject to the requirements of this attachment. It should be noted that the intent is not to require that all R&D plans be rewritten as technical procedures to meet Attachment 16 requirements, but rather to provide those involved with R&D guidance to apply good judgment in determining when it is appropriate to use technical procedures in addition to (or instead of) Integrated Work Documents (IWDs), even if they are not listed as specific exclusions in Section 16.2.3. In addition, Section 16.2.2 clarifies that, for many activities, IWDs will suffice, in which case an IWD will be completed following [P300](#), *Integrated Work Management* rather than a technical procedure following this attachment. All questions related to the proper application of this attachment versus [SD601](#), *Conduct of Research and Development* (as integrated with [P300](#)) must be resolved by those responsible for [SD601](#).

This attachment must be used to develop procedures for all anticipated operations, evolutions, tests, and abnormal or emergency situations involving the equipment and/or systems designated as requiring formal status control (see Section 8.1.2, *Identification of Equipment and Systems*).

**Note:** Although not required and outside the scope of Conduct of Operations, the principles of this attachment may be applied to other Local Document types. The development of a unified approach to document processing is encouraged.

### 16.2.2 Relationship to Integrated Work Documents (IWDs)

This attachment complements [P300](#), *Integrated Work Management*.

**Note:** Classified information must not be entered into the Job Hazard Analysis (JHA) tool. IWDs with classified information must be written according to [P300](#) requirements, but must be generated separate from the JHA tool.

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 3 of 51)**

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All work at the Laboratory is subject to [P300](#), including the development of IWDs where so indicated. Those IWDs may, in cases where appropriate, have aspects that are constrained to, or otherwise take into account, operational and facility controls. Other activities (specifically, operational and facility activities) or processes may more appropriately follow in their entirety a Technical Procedure developed following this attachment, which will be an "IWD-equivalent" procedure.

The Responsible Line Manager (RLM) for an activity determines if elements of an activity (or an activity as a whole) will be subject solely to [P300](#) or should follow a Technical Procedure as described in this attachment, by evaluating the activity against the [P300](#) Hazard Grading Matrix, as required by [P300](#) and also below in Section 16.5.1.f. If the activity is moderate hazard or high-hazard/complex, the RLM, in consultation with the Facility Operations Director (FOD), may do either of the following:

- a. Exit this document and develop an IWD in compliance with [P300](#), or
- b. Develop a procedure according to this attachment, ensuring compliance with [P300](#). This creates an "IWD-equivalent" procedure.

**Note:** Many Laboratory organizations use IWDs for some work packages and IWD-equivalents for others. IWDs are often preferred for one-time work packages or short-term activities, whereas IWD-equivalents are more commonly prepared for processes that are repeated, complex, or long-term. A series of related procedures, e.g., facility-, function-, and task-level, may apply to a single process.

An IWD-equivalent procedure may function as the activity-specific information (Part 1) of an IWD provided it meets the seven requirements of [P300](#). In addition to the activity-specific procedure, all other requirements of [P300](#) must be met as well including, but not limited to, the JHA, facility-specific information, work release processes, and feedback requirements. To meet the Parts 2, 3, and 4 requirements, [Form 2101](#), *Integrated Work Document (IWD) Part 2, FOD Requirements and Approval for Entry and Area Hazards and Controls-Non-Tenant Activity Form*, or [Form 2102](#), *Integrated Work Document (IWD) Part 2, FOD Requirements and Approval for Entry and Area Hazards and Controls-Tenant Activity Form*, [Form 2103](#), *Integrated Work Document (IWD) Part 3, Validation and Work Release*, and [Form 2104](#), *Integrated Work Document (IWD) Part 4, Feedback/Post Job Reviews* from [P300](#) must be used, unless the IWD-equivalent procedure includes the functional equivalents of these forms. In this case, the procedure may function as the full IWD.

The basis for the determination of hazard class for moderate and high-hazard/complex activities should be documented and included in the Document History File (DHF).

### 16.2.3 Exclusions

Although many types of procedures and other documents are critical to the safe operation of a facility and execution of individual work activities, not all of these are within the scope of this attachment. Some types of procedures and other documents have their own drivers that provide sufficient requirements for the development, format and content, control, and use such that application of this attachment is redundant. Therefore, these types of procedures and other documents may be formally excluded from the requirements of this attachment.

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 4 of 51)**

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To be excluded from this attachment, Operations Support–Readiness and Technical Support (OS-RTS) must evaluate and concur.

The types of procedures and other documents that OS-RTS has reviewed and, where justified, excluded are identified in Appendix 16-J, *Excluded Procedure and Document Types*.

Requests for exclusion from the requirements of this attachment must be made to the Operations Support (OS) Division Leader. After evaluation by OS-RTS, the OS Division Leader will provide a written response with the results of the evaluation.

### **16.3 Overview**

An effective, comprehensive document development and maintenance program promotes safe and efficient operations by ensuring that work is performed to the most current, reliable, and approved methodologies. The program ensures that documents are systematically developed, reviewed, and approved for use. The progress of a document from initiation to cancellation conforms to a defined process, and related records are preserved in a DHF.

### **16.4 Definitions and Terms**

The following list defines terms as they are used in this document. Whenever possible, local implementation procedures should use this terminology. Where local terms vary, the functions must be consistent with the definitions presented here.

Acronyms are listed in Section 16.12.

**Note:** The positions listed below are functional titles rather than organizational position titles, and they describe functional responsibilities. The RLM may select a qualified individual to fill any of these roles. One person may be assigned to more than one function, and assignment may vary from document to document.

#### **ROLES AND FUNCTIONS**

**Document Control**—The designated document control authority within the Issuing Organization.

**Issuing Organization**—The organization that accepts ownership of the procedure's development, maintenance, and cancellation.

**Originator**—Individual who identifies the need for a new or revised procedure and initiates the formal request to proceed.

**Records Management**--The designated records management authority within the Issuing Organization.

**Responsible Line Manager**— Line manager (not the FOD) having the responsibility, authority, and accountability to plan, validate, coordinate, approve, execute, and close out R&D/Programmatic work activities. The RLM is specifically responsible and accountable for the safe execution of work associated with R&D/Programmatic procedures. The RLM will coordinate activities with the FOD to ensure the facility safety envelopes are maintained, collocated hazards have been addressed, and facility availability has been maximized.

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 5 of 51)**

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Actions assigned to the RLM may be performed by a representative. Where designated representatives are authorized to perform tasks on behalf of the RLM, the RLM will determine the method used to make that designation. In all cases, the RLM remains accountable for the designee's action.

**Reviewer**—An individual who evaluates a procedure for accuracy and quality in the areas related to the reviewer's expertise.

**Subject Matter Expert (SME)**—Any individual recognized for technical expertise in a particular subject area or discipline.

**Preparer**—The worker responsible for preparing the procedure and for coordinating SME review and comment resolution.

**Facility Operations Director (FOD)**—The manager responsible and accountable for facility-related maintenance; operations; Environment, Safety, and Health (ES&H); waste services; and engineering. The FOD establishes and maintains the facility safety and security envelopes and serves as the RLM for facility-related work in accordance with [P300, Integrated Work Management](#). The FOD reviews procedures for other work within the facility to ensure the activity/facility interface is appropriately addressed. The FOD is responsible for releasing all work governed under [P300](#).

As used in this attachment, responsibilities and authorities assigned to the FOD may be assigned to a representative. Where designated representatives are authorized to perform tasks on behalf of the FOD, the FOD will determine the method used to make that designation. In all cases, the FOD remains accountable for the designee's action.

### **PROCESS**

**Approval Date**—The date on which an approval authority signifies acceptance that the procedure development process has been satisfactorily completed.

**Document Action Request (DAR)**—A form used to document and track the initiation, modification, or cancellation of a procedure. (See Appendix 16-A, *Document Action Request*)

**Note:** Local equivalents may be paper or electronic, but must be functionally comparable.

**Document History File (DHF)**—Records that document the development, review, concurrence, and approval of a procedure in accordance with this attachment.

**Document Status**—An indication of the use or limitations in the use of a document. See the definition of Document Status in Section 9.1 of [P1020-2, Laboratory Document Control](#), for a listing of common document statuses.

**Effective Date**—The earliest date that any element of a procedure is authorized for use.

**Expiration Date**—The date on which a procedure is no longer authorized for use.

**Immediate Procedure Change (IPC)**—A change to an issued procedure made to address urgent operational needs that require expedited processing. Sometimes referred to as a Field Change.

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 6 of 51)**

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**Implementation Plan**—The timeline for a phased implementation of procedure requirements.

**Major Revision**—Substantive modifications to a procedure that change the actual performance of the activity. Examples include changes in the hazard analysis or controls, the content or order of steps, the assignment of functional responsibilities, or the values of process parameters.

**Note:** Changes in the order of performance that correct obvious administrative errors may be processed as minor revisions with OM approval.

**Minor Revision**—Nonsubstantive modifications to a procedure that change format, correct grammatical errors, update references or organizational names, or clarify without changing original intent. Minor revisions enhance usability but do not change the actual performance of the activity. Minor Revisions

- must not increase risk,
- must not alter implementation of a source requirement,
- must not alter the purpose or scope,
- must not eliminate any required reviews or approvals, or
- must not alter the operating, technical, design, process, regulatory, or quality requirements.

Minor revisions are limited to the following:

- Correction of typographical, spelling, punctuation, or grammatical errors providing the meaning or intent does not change.
- Changes to acronyms, definitions, references.
- Updates to position titles, individual names, organizational names, and contact information to reflect current responsibilities, changes to identified position titles with similar qualifications.
- Addition of clarifying text or notes to provide additional information or improve the procedure's readability (e.g., procedure readability such as adding descriptive language or example, deleting extraneous text, removing redundant text) as long as the work process is not technically changed. Steps cannot be added or deleted, the sequence cannot be changed, and the intent of the step cannot be changed.

**Periodic Review Date**—The date that a currently active procedure requires review to ensure that that it is still required and that it accurately implements current technical and administrative requirements and guidelines. It should be understood that this is not an expiration date.

**Validation**—A field review, usually performed as a walkdown or simulation, to confirm that a procedure can be used as written in the environment where the task is to be performed.

**Verification**—A table-top review performed to ensure that a procedure is technically accurate and meets editorial standards.

#### **PROCEDURE CATEGORIES**

**Note:** Exclusions from the scope of technical procedures may be required for procedures created in support of major DOE mandated programs, provided the process used to support their development and use has been reviewed and meets a minimum set of requirements to ensure

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 7 of 51)**

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that Conduct of Operations concerns have been addressed. Those processes that have been exempted are listed in Appendix 16-J, *Excluded Procedure and Document Types*.

**Technical Procedures—**

Technical procedures are a formalized approach or set of instructions required to execute a specific work activity, which includes operation of equipment or systems, controls the design basis and configuration of the facility and its equipment or systems, and the management of the facility within its safety, security, and environmental envelope. Therefore, scope of technical procedures could include, but is not limited to:

- Administrative procedures that define the specific steps used to comply with requirements to maintain the facility safety, security, and environmental envelope. This includes process (e.g., safety management programs, administrative controls, etc.) defined in the facility safety basis document and institutional requirements documents. An example would be the development of procedures used in the facility, which could fail to force critical, mandatory reviews (e.g., classification, safety basis, etc.). Another example would be the administrative process for performing surveillances in support of the safety basis, which may detail the performance periodicity standards and the actions to take for a missed surveillance.
- Technical procedures that detail the specific steps required to complete a work activity, which includes steps to avoid, mitigate, or respond to hazards associated with the work activity or work environment. This would include any Emergency Response Procedures (ERPs) (e.g., Alarm Response Procedures [ARPs], Emergency Operating Procedures [EOPs], etc.). The IWD described in [P300](#) incorporates this same concept and, in fact, allows for the use of procedures if they include specific elements. In many DOE and commercial facilities, procedures would be developed for ongoing or repetitive work activities, while the IWD would typically be used for work activities performed only once or very infrequently.

**Emergency and Alarm Response Procedures—**Describe the steps to be taken in response to abnormal conditions. Specific types include the following:

**Alarm Response Procedures (ARPs)—**Direct the response of personnel to visible and audible alarms.

**Abnormal Operating Procedures (AOPs)—**Provide instructions for responding to events that affect several systems, threaten the safety envelope, or require action to mitigate damage.

**Emergency Operating Procedures (EOPs)—**Provide instructions for responding to events that result in operation outside the safety envelope.

**Emergency Response Procedures (ERPs)—**Provide instructions for responding to an emergency in progress. ERPs include steps or reference other procedures that define the response to additional casualties that could result from the initial event.

**PROCEDURE USE**

**Note:** Procedures may have both Use Every Time (UET) and Reference sections. For example, the body of the procedure could be Reference and the checklists could be UET.

**Usage Level—**A usage designation for a procedure or procedure section that defines the management expectations for its use. See Section 16.4.1, *Usage Levels*, for more information.

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 8 of 51)**

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**Reader-worker**—A method of executing procedure steps where one worker reads the step from the procedure while another worker executes the action. This method is used in situations where the worker performing the action needs his/her hands available, such as when working off of a ladder.

**Emergency Response**—A method of executing selected procedure steps from memory in an Emergency and Alarm Response procedure. This is only used for designated steps and requires the worker to return to the procedure and execute the procedure as written after the emergency has been stabilized.

**Fill-Out-Steps (or checklist)**—A procedure writing technique where steps require a sign-off or initial to document completion of the step. This procedure writing technique may be incorporated into the body of the procedure or as an appendix to the procedure with a step within the procedure body directing its completion.

**Critical Steps**—Those procedure steps that directly impact, either positively or negatively, some safety, environmental, equipment, or operational limit or commitment. Examples include but are not limited to steps that support a Technical Safety Requirement (TSR); an environmental permit; an equipment technical limit; a location entry requirement; and a procedure ‘hold point.’

**Miscellaneous Term and Definitions**

**Immediate Actions**—When an abnormal event requires actions to be taken as quickly as possible, such as shutting down the ventilation system to prevent exhausting potentially hazardous material to the environment, these actions are called “immediate actions” and may be required to be memorized (see Section 16.9.5.a, *Preparing for Use of Abnormal, Emergency and Alarm Response Procedures*).

**Multiple Equipment Trains**—Identical systems designed to be used independently or concurrently. For example, facility HEPA filtration and exhaust fan sub-systems.

**Working Copy**—As defined in [P1020-2](#), *Laboratory Document Control*, a working copy is a copy of a procedure that has been verified by the user as being the most current and approved version. Working copies are frequently used by field personnel, and field personnel must verify through the Document-Control Coordinator (DCC) or approved Electronic Document Management System (EDMS) that the working copy is the most current, approved version before its use. Working copies are also referred to as “convenience copies.”

**16.4.1 Usage Levels**

The management expectations, called “usage expectations,” for using procedures, sections, or attachments vary depending upon a variety of characteristics, including complexity of the work activity, frequency of execution, and potential for negative impact of improper execution. To determine the appropriate usage level, “determination criteria” has been established.

**Use Every Time (UET):**

If one or more of the following determination criterion are true, then the correct usage level for the procedure, section, or attachment is UET:

- has potential high consequence of error
- is complex

**No: P315      Conduct of Operations Manual  
Attachment 16. Local Procedures (Cont.) (Page 9 of 51)**

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- is infrequently performed
- has stringent quality or regulatory documentation requirements
- is used to capture data
- is used as a record
- requires placekeeping or sign-off (see Section 5.13, *Placekeeping and Sign-off Steps*, of FSD-315-16-001, *Technical Procedure Writer's Manual*)

The following are the usage expectations for UET procedures, sections, or attachments. All are to be applied.

- The procedure revision, including IPCs, must be confirmed to be the latest approved version prior to execution of the procedure.
- The procedure must be at the jobsite and open to the page containing the step being performed.
- The procedure must be executed as written and in the sequence written, unless the procedure allows otherwise (see Section 5.3, *Non-sequence Steps*, of FSD-315-16-001).
- The completed procedure must be reviewed by the worker to confirm that all steps were executed and appropriately documented.

**Reference:**

If none of the determination criterion for the UET usage level is true, then the correct usage level for the procedure, section, or attachment is Reference.

All of the following usage expectations for Reference procedures, sections, or attachments must be applied.

- The procedure revision, including IPCs, must be confirmed to be the latest approved version prior to execution of the procedure.

**Note:** For purposes of this attachment, “readily available” means a copy can be obtained within 15 minutes.

- The procedure must be readily available to workers at the jobsite.
- The procedure must be executed as written and in the sequence written, unless the procedure allows otherwise (see Section 5.3, *Non-sequence Steps*, of FSD-315-16-001).
- The individual step may be executed from memory, but frequent confirmation is recommended.
- The completed procedure must be reviewed by the worker to confirm that all steps were executed and appropriately documented.

**Mixed Usage Levels:**

For some procedures it may be appropriate to have “mixed” usage levels.” For example, the procedure instructions could be one usage level while the attachment used to collect data or submit as a record is a higher usage level. The “determination criteria” must be used when determining the usage level to apply to a procedure section and/or attachment.

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 10 of 51)**

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In this situation, the individual sections and/or attachments are marked with the corresponding usage level (see Section 4.1, *Page Headers, Footers, and Numbering*, of FSD-315-16-001), and the associated “usage expectations” are applied to each section and/or attachment.

**16.5 Procedure Development**

**Note:** Throughout the procedure development process, participants should remain aware of potential classification issues related to the forms, documents, and media generated. Classified working papers and drafts must be marked and controlled in accordance with Laboratory requirements. Guidance can be obtained from the organization's Security Specialist or Classification (SAFE-1).

The procedure development process provides a controlled and documented methodology that ensures a well-researched, accurate, and usable tool for workers.

**16.5.1 Initiation***16.5.1.a Identification of Need*

The Originator identifies the need for a new procedure or other procedure action (modification, deactivation, or cancellation). Triggers may include new or changed processes, facilities, or requirements; new information; an event; or an assessment.

*16.5.1.b Action Request*

**Note:** The Originator may also be the RLM.

**Note:** When completing the Document Action Request (DAR), the Originator should avoid placing classified information in any of the fields, with attention to content in the Title and Description fields. If the DAR is potentially classified, it must receive the requisite reviews and be marked and handled as indicated.

The Originator records the following information on a DAR:

- Originator's name, Z number, organization, and date. If the Originator is deployed or subcontracted, the organization should be the name of the entity for whom the action is being requested. (Example: The Originator is from a core safety organization but is requesting a revision to a procedure owned by the group that he/she is supporting).
- Type of action requested (e.g., new, revised, deactivated, or cancelled).
- For new procedures, document and revision number blocks are left blank. The Originator may optionally fill in the title block. Note: Subsequent changes should be initialed by the RLM.
- For existing procedures, the number, title, and revision number of the affected procedure. For Major or Minor Revisions, the Revision No. field should be the next sequential identifier. For Deactivations and Cancellations, the revision identifier of the current version is entered.
- Description of the requested action. This should include a summary of the proposed content or changes, and an explanation of why it is needed.

The Originator forwards the DAR to the RLM.

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 11 of 51)**

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*16.5.1.c Response to Request*

**Note:** This step allows the RLM to evaluate the need for the proposed procedure and to control the allocation of time and effort resources.

**Note:** The RLM (or the FOD when serving as an RLM) can authorize initiation of the procedure scoping (Section 16.5.2) at any time, to be performed in parallel with the remaining actions in Section 16.5.1. Scoping activities may include process development, including procedure development, walkdowns and simulations of the task being described, but without the actual use of hazardous materials or equipment for which hazards have not been fully analyzed nor controls developed.

The RLM denies or approves the request, recording the decision on Section 2 of the DAR.

- a. If denied, the RLM records the reason for the decision, initials the DAR, and returns it to the Originator. If additional pages are used, the Comment field may simply reference them (e.g., "see attached pages"). The process is terminated.
- b. If approved, the RLM enters his/her name and Z number, and signs and dates the DAR, indicating acceptance of responsibility for the procedure and authorizing continued processing.

The RLM indicates the action type (e.g., major or minor revision) on the DAR.

If the action type is a revision, the RLM may indicate that the Periodic Review is to be fulfilled concurrent with the revision.

*16.5.1.d Document Type Determination (New Documents only)*

**Note:** This attachment focuses on the two procedure categories described in Section 4, Definitions and Terms, specifically, technical procedures and alarm response and emergency procedures. Most organizations will have a number of designated procedure types that fall under these categories.

**Note:** If the activity to be documented fits the hazard grading criteria of [P300](#), *Integrated Work Management*, it must be an IWD or IWD equivalent as allowed by [P300](#). If functioning as Part 1 or more of an IWD, the technical procedure must meet the requirements of [P300](#) and this attachment.

For new procedures, the RLM or representative determines the document type, a decision that influences content and periodic review requirements.

*16.5.1.e Document Identifiers*

For new procedures, the RLM contacts Document Control to obtain a unique document identifier, and enters the designation on the DAR.

The RLM may record a title or may alter the working title entered by the Originator. Changes should be initialed and dated.

For revised procedures, the RLM ensures that the number and title fields are appropriately completed.

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 12 of 51)**

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16.5.1.f *Hazard Grading and Analysis*

**Note:** Individual entries into the Work Management System (WMS) are assigned a WMS Entry Number to serve as the unique identifier within WMS.

As noted in Section 16.2.2, *Relationship to Integrated Work Documents (IWDs)*, of this attachment, all LANL work activities are subject to the requirements of [P300](#), *Integrated Work Management*. In accordance with Section 3.1, *Integrated Work Management (IWM) Requirements*, of [P300](#), the RLM must enter the activity for which a technical procedure will be developed into the [Work Management System \(WMS\)](#). For the initial development of a technical procedure, the RLM must identify the activity and complete the Primary Hazard Screen (PHS) questions in the "Stage 1: Identify Activity" portion of the WMS. For a major revision to a technical procedure, the RLM must update the responses to the PHS questions appropriately.

The RLM ensures that the activity or process being described is graded for hazard level according to [P300](#), Attachment B, *Hazard Grading Table*; the [P121](#), *Radiation Protection*, radiological hazard grading table; or the explosive hazard classes of [DOE-STD-1212-2012](#), *Explosives Safety*. The result is documented on the DAR and in the WMS. Related records are retained in the DHF.

If the activity is classified as Moderate Hazard or High Hazard/Complex, the procedure must meet the attributes for an IWD as described in [P300](#), including a documented hazard analysis. The RLM can choose to exit this attachment and develop an IWD according to [P300](#), or may develop an IWD-equivalent using this attachment. (See Section 16.2.2, *Relationship to Integrated Work Documents*, for more information.) If the procedure will be an IWD-equivalent, the RLM indicates on the DAR whether it will serve as Part 1 only, or if it should be developed to be a full IWD. If it will not be an IWD equivalent, he/she may check "N/A."

16.5.1.g *Validation Determination*

**Note:** IWD-equivalents must meet the validation requirements of [P300](#), *Integrated Work Management*.

**Note:** The results of this validation process may require re-invoking the Review and Comment Resolution process (see Section 16.5.3) and/or entry into the Unreviewed Safety Question/Unreviewed Safety Issue (USQ/USI) process (see Section 16.5.3.f).

For new or revised procedures, the RLM determines the validation requirements and records the decisions on the DAR. Decisions include need, scope, and method. The results should be documented on Appendix 16-F, *Procedure Validation Checklist*, or a local equivalent.

**Need.** Validation is required for all new technical procedures and recommended for major revisions to technical procedures. Considerations include complexity, hazard level, mission significance, quality requirements, human factors, or compliance impacts. If the RLM elects to waive validation for a technical procedure, the justification should be entered in the "Comment" box.

**Scope.** New procedures should be validated in entirety. For Revisions, the RLM determines whether to validate the entire procedure or only those sections affected by the changes.

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 13 of 51)**

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*Method.* The RLM designates the method for performing the validation. Validation should include the intended user as well as the support groups (RadCon, IH/Safety, etc.) that will be involved in the performance of the procedure.

- a. Walkdown. A walkdown is a field review performed with a user, at the actual work site, with the procedure in hand. The procedure is enacted in the field, but components are not manipulated or operated. Each step is reviewed to ensure it is correct and usable as written.
- b. Simulation. If a simulator or mock-up is available, the validation can be accomplished by practicing the steps in that environment.
- c. Tabletop. This validation is an analytical review independent from the work site and not involving actual performance. This type of review relies heavily on the knowledge and experience of the validators. Tabletop validation may be sufficient for minor changes, low-consequence activities, simple processes, or highly experienced workers, or may be the most viable option when safety or exposure considerations preclude field reviews or when the work site is unavailable or the work conditions do not yet exist, as with emergency procedures.

#### 16.5.1.h Usage Determination

The RLM specifies the usage level of the procedure using the criteria of Section 16.4.1, *Usage Levels*. Assigning the correct usage level is fundamental to ensuring safe performance and successful outcome of the activity, for which the RLM remains accountable.

In nuclear facilities, another RLM, independent of the operation, must concur with the usage level determination. In non-nuclear facilities, this concurrence is only a recommendation. The concurring RLM may engage other organizations (e.g., Engineering, Radiation Protection, etc.) to aid in making this decision and must sign the DAR to document their concurrence.

The usage requirements for the assigned usage level should be clearly communicated to the user. Methods include user training, making usage requirements integral to the organization's definition of document type or marking the requirements directly on the procedure, either on the cover page, or in each page's header or footer information.

#### 16.5.1.i Reviewer Assignments

The RLM documents the required reviews on the DAR. Appendix 16-I, *Team Members/Review Disciplines*, must be used to determine organizations that are to review the draft procedure. At a minimum, the RLM must have the organization(s) responsible for each hazard associated with the procedure (see Section 16.5.1.f) perform a technical review. It is the responsibility of the reviewing organization to determine if they have input.

Assigning a review on the DAR is a commitment to obtain and resolve comments from the reviewer and to have supporting documentation. The RLM may also assign optional reviews; these can be managed according to the Issuing Organization's local policy or as specified by the RLM. If optional reviews are entered on the DAR, they should be clearly designated as such.

To record required reviews on the DAR, the RLM fills in the "Discipline" column with the name of the organization or function whose review is needed, e.g., "Group ABC-4" or "electrical safety."

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 14 of 51)**

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If the RLM knows the name of the specific person to perform the review, he/she may enter that information in the "Name" column at this time. Alternatively, the name may be entered when the review is completed. The signature and date columns are not used at this time.

Extra pages may be attached as needed.

In nuclear facilities, another RLM, independent of the operation, must concur with the reviewer determination to ensure that all appropriate organizations have input to the new or revised procedure. In non-nuclear facilities, this concurrence is only a recommendation. The concurring RLM must sign the DAR to document their concurrence.

*16.5.1.j Selection of Preparer*

The Preparer is an individual knowledgeable in the subject area with experience in the development of procedures. The Preparer may be the RLM or a person selected by the RLM.

*16.5.1.k Document History File*

For new procedures and for each revision to a procedure, a DHF is established and maintained. Records related to the generation of the version are collected in the DHF during the procedure development phase.

The DHF is the repository for official forms and references related to the procedure. At a minimum, the DHF contains

- the DAR
- a copy of the completed, approved procedure
- review and comment resolution records for required reviews
- validation documents, when validation is required
- hazard analyses, when required
- background for critical steps as appropriate

Additional recommended content includes

- other forms and documents generated during development
- references to technical bases used. The relationship of these sources to the procedure content should be as specific as possible.
- explanations to aid future preparers maintain the intent and integrity of the content
- corrective actions addressed

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 15 of 51)**

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### **16.5.2 Document Preparation**

#### *16.5.2.a Identify Related Documents*

Assigned SMEs conduct a search to identify existing documents that (a) address or (b) impact the intended content of the proposed procedure. For revisions, the DHF for previous versions is consulted.

- a. If the search identifies a document that duplicates all or portions of the scope, the Issuing Organization should investigate incorporating the needed content into a revision of that document. If the identified need warrants a new procedure, the Preparer ensures that the new procedure is effectively coordinated with existing documents to minimize overlaps and prevent conflicts.
- b. The document search should identify related documents or requirements that impact the new procedure's content or that the new procedure should reference. The search should include Laboratory directives, external requirements referenced in Appendix G of the [Prime Contract](#), and corrective actions in the Laboratory Performance Feedback and Improvement Tracking System (PFITS) database.

#### *16.5.2.b Document Drafting*

**Note:** A template for an Operating Procedure is available on the [OS-RTS website](#) and is designed to work with FSD-315-16-001, *Technical Procedure Writer's Manual*. Until a template is provided for the other types of technical procedures (e.g., administrative, Emergency Procedures, Alarm Response Procedures, etc.), the FOD may modify the template to create other types of technical procedures as required.

The Preparer drafts the procedure content according to the guidance provided in Appendix 16-B, *Procedure Format and Content Requirements*, FSD-315-16-001, and using the template provided on the [OS-RTS website](#).

The Preparer and/or RLM must engage the organization(s) responsible for each hazard associated with the procedure (see Section 16.5.1.f). Additionally, Appendix 16-I, *Team Members/Review Organizations*, provides a breakdown of operational concerns and their associated responsible organization(s).

The FOD must designate ARPs to be developed as part of the designation of equipment and systems requiring status control as required by Attachment 8, Section 8.1.2.

If the procedure is an IWD or equivalent, the appropriate hazard analyses must be performed and documented in accordance with [P300](#) prior to completing the procedure.

#### *16.5.2.c Verification*

The completed document is verified for technical accuracy and to ensure it meets editorial standards. The Procedure Verification Checklist (Appendix 16-E) may be used to guide and document the evaluation.

### **16.5.3 Review and Comment Resolution**

**Note:** Potentially classified procedures should be reviewed by a Derivative Classifier prior to distribution. For all reviews, including the Training Determination and Safety Basis reviews, the RLM ensures that reviewers have the appropriate clearance level.

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 16 of 51)**

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**Note:** A typical turn-around time for a procedure review is two weeks, but the RLM must consider other contributing factors (e.g., the complexity of the procedure, current work load, facility/mission schedule, etc. ) when determining the due date for review comments. It is expected that the RLM will make all reasonable efforts to gather review comments, but if comments are not provided by the due date it is acceptable to consider the lack of response as “no comments.”

The Preparer routes the procedure, clearly marked as a draft, to the reviewers identified on the DAR by the RLM. The distribution includes any necessary background information and a due date for receipt of comments. The Preparer should specify acceptable formats for comments (e.g., electronic or hardcopy, direct mark-up, or separate pages).

Appendix 16-D, *Document Review and Concurrence*, may be used for documentation.

#### *16.5.3.a Technical Content Reviews*

Reviewers evaluate the procedure content related to their area of expertise for accuracy, clarity, and compliance with established requirements. The reviewer should include justification with each comment, referencing source documents when possible. Comments are returned to the Preparer in an approved format.

If the reviewer has no comments, that assessment must also be documented and returned to the Preparer. The Review and Concurrence (Appendix 16-D) may be used, or another method approved by the Issuing Organization.

All responses – comments or "no comment" – are retained in the DHF.

#### *16.5.3.b Comment Resolution*

The Preparer, with assistance from the RLM and SMEs as needed, negotiates resolution of each reviewer comment. The Preparer documents the disposition of each comment and provides this documentation to the reviewer. The reviewer indicates concurrence by signature or other method approved by the Issuing Organization and returns the concurrence to the Preparer for inclusion in the DHF.

When comments are resolved, the Required Reviews section of the DAR is completed. Reviewer names are filled in as needed. Reviewers may sign and date the DAR, or a notation may be made that those records are on file in the DHF.

#### *16.5.3.c Post-Comment Revision*

The Preparer incorporates accepted comments into the procedure.

The RLM assesses whether the changes merit repeat reviews and documents the decision on the DAR. If indicated, the Preparer re-enters the SME Review process.

#### *16.5.3.d Validation*

If the procedure requires validation, it is evaluated as indicated by the RLM (see Section 16.5.1.g). The validators should use Appendix 16-F, *Procedure Validation Checklist*, or a local equivalent.

The validation is documented and maintained in the DHF.

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 17 of 51)**

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The Preparer updates the procedure as indicated by the validation outcome.

*16.5.3.e Training*

Both new and revised procedures must be evaluated by an appropriate Training Specialist for the user training and qualification that will be required. When the procedure will require formal training or qualification, it must be reviewed by the appropriate training specialist, who determines the needed level of training based upon the Systematic Approach to Training (SAT) and in compliance with the requirements of [P781-1](#), *Conduct of Training*.

If the procedure addresses formal compliance training or affects workers outside of the Issuing Organization's Division, [P781-1](#) requires that the procedure be validated by the Service Innovation–Institutional Training Services (SI-ITS) group, and submitted to the Service Innovation Division Leader for approval, prior to implementation.

If no determination is needed, the appropriate box ("N/A") on the DAR is checked.

When a Training Determination is completed, the applicable box on the DAR is checked, and the name of the person who performed the determination is filled in.

Training is responsible for the records related to the Training Determination.

*16.5.3.f Review by Safety Basis Personnel*

**Note:** A procedure must not be issued until safety basis personnel have completed their review of the procedure and any resultant issues are resolved.

For procedures that may impact safety basis, the final draft procedure must be routed to the appropriate Safety Basis personnel for assessment against the authorization basis. The Safety Basis personnel advise the Preparer on any changes or actions needed to remain within the approved facility safety documentation. The procedure must not be issued until the safety basis organization concurs that all issues are addressed.

If a USQ or USI is prepared, the number is recorded on the DAR.

When the review phase is completed, the Preparer forwards the procedure and the DAR for approval.

**16.5.4 Approval**

If the procedure is an IWD-equivalent, the FOD or FOD representative approval signature is required on the related [P300](#), *Integrated Work Management*, forms or the facility-specific equivalents.

The RLM reviews the final procedure and accompanying records.

If disapproved, the RLM returns the file to the Preparer with an explanation of the decision and the actions needed.

**Note:** The FOD/FOD representative and RLM signatures are a declaration that the procedure is accepted for use, but are not equivalent to a work release.

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 18 of 51)**

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If approved, the RLM continues with the following actions.

- a. The RLM determines if a formal implementation plan is warranted and, if so, develops one, with concurrence from affected managers.
- b. The RLM specifies on the DAR and/or Approval page whether the procedure can be released for immediate use or must be held pending other actions. If "Release" is selected, the procedure is both approved and effective as of the signature date. If "Hold" is selected, the procedure content is approved, but is not effective until the conditions in the Details box are satisfied. Examples are a designated effective date, actions that must be completed, approvals that must be obtained, or the need for an additional validation (see Section 16.5.4.a). Although effective, a procedure may not be used until the work is released following the applicable work authorization process.

The RLM signs and dates the DAR and/or the Approval page.

**16.5.4.a Additional Validation**

When the RLM deems that additional validation of the procedure is warranted, he/she may request that a "first time use" validation be performed. This validation is an actual performance of the procedure at the job site. It does not constitute a validation as described in Section 16.5.1.g of this attachment. The results should be documented on Appendix 16-F, *Procedure Validation Checklist*, or a local equivalent.

A hazard analysis must be performed and documented, evaluating the associated risks and defining the controls to compensate for them. FOD approval and restrictions must be documented on the approval page of the procedure.

Care should be taken that the user is attentive to the task, is familiar with the hazard analysis results, and knows the actions to take if a procedure deficiency is noted. The RLM may assign an additional observer to assist the user-validator.

**16.5.4.b Derivative Classifier Review**

The RLM is responsible for determining the appropriate Derivative Classifier reviews for Local Documents (see [PD311](#), *Requirements System and Hierarchy*). A potentially classified procedure must be reviewed for classification before it is transmitted electronically or provided to uncleared personnel. The procedure must be appropriately marked with the classification determination.

**16.5.5 Issue****16.5.5.a Submission to Document Control**

The completed procedure and related documentation are submitted to Document Control. Document Control performs a quality check to ensure all of the required forms and information are in the DHF.

**16.5.5.b Distribution**

Document Control processes the procedure for publication in the appropriate media (e.g., electronic or paper) and establishes any required controls. Controlled copies of procedures (e.g., electronic or paper) must be maintained at control areas for operator reference and at appropriate areas outside the control area for operator use. Controlled copies of alarm and

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 19 of 51)**

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annunciator response procedures must be maintained and readily accessible to operators for alarm response.

## **16.6 Changes and Revisions – Process**

Once issued, a procedure must be changed or revised only in accordance with an approved procedure.

"Change" refers to an IPC that is marked directly on an issued procedure. An IPC number is assigned, but the procedure revision number is not affected. "Revision" constitutes a new, renumbered, re-issued edition of the procedure. Revisions are designated as minor or major, a distinction that affects the review and validation requirements.

### **16.6.1 Immediate Procedure Changes**

**Note:** The use of IPCs should be infrequent. If a series of IPCs have been proposed for a procedure, the RLM should consider expediting the review process according to Section 16.6.2.b.

**Note:** For IPCs, the RLM role may be formally delegated to the on-shift manager, such as the Operations Manager (OM), or Person-In-Charge (PIC).

**Note:** Content that is safety-basis related cannot be changed without required Safety Basis reviews. Unique markings, such as a dollar sign or asterisk, can help identify such content.

An IPC should be limited to changes required to continue work in progress, support temporary modifications, or for critical activities, as identified by the RLM. The RLM (or designee) evaluates a proposed change to verify the need and to assess whether it is major or minor. In general, more rigor in change control is expected when consequence of error is higher.

#### *16.6.1.a IPC Numbering*

IPC numbering must be sequential and specific to the affected revision number. The revision number does not change (e.g., SOP 123.R2, IPC-1). The next sequential number should be readily available to potential originators. This may be accomplished by an IPC Log, a Master Document List, or other controlled and accessible record of IPC numbers.

#### *16.6.1.b IPC Initiation*

The Originator marks the procedure to be changed as follows:

- Draw a single line through content to be deleted or changed.
- Enter the proposed content legibly, ensuring that reproduced copies will be clear. If additional pages are needed, attach them as insertable pages. Mark the added pages with the appropriate procedure header information and number them to indicate the insertion point (e.g., following page 13, an inserted page would be 13A). Clearly mark the procedure at the specific location where the additional pages should be inserted.
- Place a vertical line (revision bar) in the margin, running the length of all changes. The IPC revision bar should be separate and distinct from any existing revision bars within the procedure.
- Enter the IPC number next to each revision bar.
- Record the IPC number (e.g., IPC-1, IPC-2) next to the revision number on the title page.

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 20 of 51)**

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The Originator completes Section 1 of the Immediate Procedure Change Cover (Appendix 16-G) or equivalent and forwards the Cover Sheet, marked-up procedure, and any additional pages to the RLM.

*16.6.1.c IPC Review*

The RLM reviews the IPC and obtains SME review and validation as deemed necessary. This ensures the need, technical accuracy, and completeness of the proposed procedure modification. The RLM must use Appendix 16-I, *Team Members/Review Disciplines*, to determine the organizations that are to review the IPC changes. At a minimum, the RLM must invite the organization(s) responsible for each hazard within the scope of the IPC change.

If the changes may be safety-basis related, Safety Basis must review and concur with the changes.

*16.6.1.d IPC Approval*

If the procedure is an IWD-equivalent, the FOD or FOD representative must approve a major revision by signature, as required by the [P300](#), *Integrated Work Management* section on *Changes*.

If the RLM approves of the proposed change, he/she completes Section 3 of the Cover Sheet, entering the effective date and indicating the duration of the IPC. If the IPC will be incorporated into the next procedure revision, the checkbox for "Permanent" is marked. If it is for short-term use, the RLM marks "Limited Use" and enters the expiration date, and time if applicable. Further explanation may be entered in the Comments field. If an IPC Log is being used, the duration may be noted in it.

The RLM signs and dates final approval on the IPC Cover Sheet (Appendix 16-G).

As needed, the RLM obtains a Derivative Classifier review of the procedure and IPC Cover Sheet.

*16.6.1.e IPC Implementation*

**Note:** For permanent IPCs, the RLM must obtain a review by a Training Specialist to determine long-term training requirements and impact to other training courses and qualifications. This can be achieved through the IPC Roll-Up, but the RLM should consider coordination at the time of IPC issuance.

If work was paused contingent on the procedure change, the RLM notifies the Originator and ensures affected personnel are briefed on the changes prior to resuming the work according to the changed procedure. Copies of the IPC Cover Sheet are attached to the front of marked-up copies of the procedure until the procedure is processed and issued by Document Control.

*16.6.1.f IPC Control*

If the shift ends before the IPC can be processed by Document Control, the RLM ensures that the IPC is included in the shift turnover, as applicable. A previously established IPC Log, or equivalent, may be used to facilitate tracking and communication of approved IPCs.

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 21 of 51)**

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As soon as practicable, and not to exceed three working days, the RLM forwards the changed procedure and associated IPC Cover Sheet to Document Control for processing. Document Control ensures that the IPC is incorporated into all controlled copies of the procedure.

*16.6.1.g IPC Roll-Ups*

Procedure revisions (Section 16.6.2, *Revisions*) should be initiated when an IPC has been outstanding for an extended period (e.g., greater than 6 months), when a procedure has been affected by several changes (e.g., more than five), or when the changes obscure the interpretation of the instructions. All currently effective IPCs should normally be incorporated when the procedure is revised.

**16.6.2 Revisions**

Minor and major revisions are defined in Section 4, *Definitions and Terms*. The following steps apply to both revision types, unless specifically noted otherwise. Procedure revisions to incorporate IPCs follow these same steps. Permanent and temporary equipment modifications may necessitate the need for procedure revision.

If the requested revision meets the definition of a minor revision and does not affect the safe performance of work, the procedure-owning RLM must authorize in writing the changes to be annotated in the procedure and may continue with performance of the procedure.

As soon as practicable, and not to exceed three working days, the RLM forwards the revised procedure and the associated DAR to Document Control. In the interim, the RLM must ensure that the revision is effectively communicated to other procedure users, if any.

*16.6.2.a Initiate a Revision*

The Originator may be anyone who identifies the need to revise a procedure. He/she initiates the process by filling out Section 1 of the DAR or local equivalent, with adequate attention to the description of and justification for the requested action.

The Originator forwards the DAR to the RLM. Optionally, the Originator may include a marked copy of the procedure to be processed.

The RLM denies or approves the request, recording the decision on the DAR.

- a. If denied, the RLM records the reason for the decision, initials the DAR, and returns it to the Originator. The process is terminated.
- b. If approved, the RLM completes Part 2 of the DAR as described in Section 16.5.1.c, *Response to Request*.

The RLM signs and dates Part 2, indicating approval to proceed.

The RLM obtains the revision number from Document Control and enters it on the DAR. (See Section 16.5.1.e, *Document Identifiers*.) Validation is indicated in accordance with Section 16.5.1.g, *Validation Determination*.

The RLM assigns personnel for procedure processing as described in Section 16.5.1.i, *Reviewer Assignments*. **Major** Revisions receive the same types and level of review and validation as the

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 22 of 51)**

latest version of the procedure, or the RLM documents the justification for removing any of these reviews. **Minor** Revisions should be reviewed by a second person as a minimum.

*16.6.2.b Revise the Document*

The assigned preparers revise the procedure as described in Section 16.5.2, *Document Preparation*. For **Minor** Revisions, Section 16.5.2.a, *Identify Related Documents*, may be omitted.

For **Major** Revisions, any existing hazard analysis should be reviewed and updated as necessary.

Changes, other than formatting and editorial changes, should be clearly communicated to the user. Vertical lines in the margin (revision bars) adjacent to revised content are often used for this purpose. Only the marks for the most recent revision should appear in the revision.

A summary of changes is documented in the Revision History table (see FSD-315-16-001, *Technical Procedure Writer’s Manual*, and the [procedure template](#)).

*16.6.2.c Review and Comment Resolution*

**Note:** The RLM must ensure Derivative Classifier review for potentially classified procedures prior to distribution for review.

**Major** revisions follow the process described in Section 16.5.3, *Review and Comment Resolution*.

For revised procedures, reviewers should limit comments to the content that was changed, unless safety issues or the technical accuracy of the procedure is in question. Other comments may be documented, but will be addressed at the RLM's discretion.

*16.6.2.d Approval and Issue*

Approval and distribution are performed in accordance with Sections 16.5.4, *Approval*, and 16.5.5, *Issue*. Implementation plans are not required to be considered for **Minor** Revisions.

**16.7 Periodic Review**

Periodic review is conducted at predetermined intervals to ensure that the procedure is still required and that it accurately implements current technical and administrative requirements and guidelines.

**16.7.1 Frequency**

Maximum review cycles are determined by document type, as detailed in Table 16-1. The review period is calculated from the procedure's effective date or the date of the last Periodic Review. A Periodic Review for scheduling purposes, at a minimum, consists of a verification (see Section 16.5.2.c) and a validation (see Section 16.5.3.d) of the entire procedure. Document Control tracks the next required review date.

Table 16-1. Maximum Review Cycles	
Procedure Category	Maximum Review Cycle
Technical Procedures	3 years
Emergency and Alarm Response Procedures	1 year

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 23 of 51)**

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The RLM may direct a Periodic Review at any time before the required date. A review may be considered if changes have occurred in the process, the facility, or related requirements, after a significant event (either human error or equipment upset), or if the procedure is a technical procedure that has not been used in six months. The complexity of the operation, maturity of operations, and the facility life cycle should also be considered.

The RLM may also elect to complete the Periodic Review concurrent with other actions, such as a revision or a self-assessment. For a revision, the RLM may use the optional checkbox on the DAR to direct the Preparer to perform a concurrent Periodic Review.

If the Maximum Review Cycle defined in Table 16-1 cannot be met, or has been exceeded, the RLM may authorize a 60-day extension to allow for completion of the periodic review and the initiation of any required changes. Extensions beyond 60 days must be approved by the RLM's Associate Director or designee. For an IWD-equivalent procedure (see Section 16.2.2), the FOD must concur with the extension. This authorization must be documented in an e-mail, or equivalent documentation, to Document Control and a copy attached to any procedure receiving an extension that is being used in the field. If a procedure has a defined expiration date, the use of an extension is not authorized beyond that date. To return a procedure to compliance that is beyond its periodic review cycle, perform a periodic review in accordance with Section 16.7.2.

#### **16.7.2 Process and Documentation**

Document Control notifies the RLM of the upcoming review, allowing adequate time to complete the revision before the review date.

For any IWD-equivalent procedure, the RLM must engage the FOD or FOD Representative to review the related [P300](#), *Integrated Work Management*, information.

The RLM reviews the procedure or ensures that qualified personnel conduct the review, evaluating the following attributes:

- current need for the procedure
- technical accuracy
- compliance with relevant requirements
- need to incorporate outstanding IPCs
- effect of Lessons Learned on procedure content
- accurate references
- editorial correctness
- human factors

The reviewer determines one of three possible outcomes:

1. The procedure is needed and remains accurate.

If an IWD-equivalent procedure, the FOD or FOD Representative must concur and sign the Appendix 16-H, *Documentation of Periodic Review*.

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 24 of 51)**

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2. The procedure is needed but requires revision.

The RLM determines the level of revision (Minor or Major) and initiates the appropriate process.

3. The procedure is obsolete and should be cancelled.

The RLM initiates the cancellation process (Section 16.8, *Deactivation/Cancellation*).

Documentation of the review is retained in the DHF. Appendix 16-H, *Documentation of Periodic Review*, or facility specific equivalent must be used.

## **16.8 Deactivation/Cancellation**

Deactivation is the temporary withdrawal of a procedure from authorized use. For example, a procedure might be deactivated for the duration of an activity suspension or during temporary unavailability of a facility. Deactivated procedures are exempt from periodic review requirements, but should be reviewed before reactivation.

Cancellation is the permanent removal of a procedure from active status. Cancelled procedures are archived and cannot be reactivated.

Both processes require a careful evaluation of the continued need for the procedure and the potential impact of its removal from active use.

### **16.8.1 Process**

Requests to deactivate or cancel a procedure are initiated using the process for major revisions, Section 16.6.2.a, omitting the instructions for a new revision number.

The RLM ensures that the request is reviewed by the disciplines listed on the latest DAR as required reviews. As applicable, these reviews should ensure that deactivation or cancellation will not affect safety basis, quality, or regulatory requirements. This review period should also seek to identify any current users of the procedure and, if found, coordinate with their line management to ensure that removal of the procedure will not impact safety, security, or performance.

When concurrence is obtained from all assigned reviewers, the RLM signifies approval by signature on the DAR and forwards related forms and documentation to Document Control for inclusion in the DHF.

### **16.8.2 Reactivation**

The requirements for Periodic Review (Section 16.7.2, *Process and Documentation*) must be followed to return a deactivated procedure to service.

## **16.9 Procedure Use**

Procedure usage is a fundamental component of an effective procedure program. Usage both realizes the purpose of the procedure and provides the opportunity to evaluate and improve the procedure.

Successful performance of this component of the procedure program relies largely on the individual user. The user must:

- use the procedure as intended

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 25 of 51)**

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- know the actions to take if performance cannot or should not be completed as described
- provide feedback and lessons learned to be used in improvement initiatives

Personnel must be trained in procedure use requirements, including the concept of the reader-worker method, usage levels, and the expectations for ERPs.

**16.9.1 Preliminary Actions**

**Note:** For purposes of this attachment, “readily available” means a copy can be obtained within 15 minutes.

Before placing a procedure into use, Work Supervisors/PICs (see [P313](#), *Roles, Responsibilities, Authorities, and Accountability*, Attachment A) should ensure that, as required,

- the controlled copy of the procedure is readily available
- the workers are working to the most current version of the procedure, regardless of usage level, in effect, including IPCs, if any
- the current version of any procedures, IWDs, or other documents referenced in the procedure, also called Performance Documents, if it is to be used during the evolution
- the procedure is specific to that equipment train being worked
- workers are trained and qualified
- workers are aware of the usage requirements for the procedure
- site-specific considerations are addressed
- all affected managers, including the FOD or representative, have authorized the work
- required permits are obtained
- needed resources are available

**16.9.2 General Performance Principles****16.9.2.a Procedure Validity**

The worker verifies that he/she is working to the most current version of the procedure, regardless of usage level, in effect, including IPCs, if any. Additionally, the current version of any procedures, IWDs, or other documents referenced in the procedure, also called Performance Documents, must be verified if it is to be used during the evolution. If working on systems with multiple equipment trains, the worker verifies he/she is working to the procedures and procedure steps specific to that train. The worker may take credit for the verifications performed by the Work Supervisor/PIC in Section 16.9.1.

**Note:** For purposes of this attachment, “readily available” means a copy can be obtained within 15 minutes.

The worker either has the procedure in hand or readily available as required by the procedure usage level (see Section 16.4.1, *Usage Levels*).

The worker complies with applicable Document Control procedures concerning copying, marking, and final disposition of the procedure.

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 26 of 51)**

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*16.9.2.b Work Prerequisites*

The worker verifies that all actions identified in the procedures Prerequisite Actions section of the procedure (see Section 4.5.6, *Prerequisite Actions*, of FSD-315-16-001, *Technical Procedure Writer's Manual*) are completed and that the work is properly authorized through the facility work planning and authorization process (e.g., plan of the day, plan of the week, etc.).

If the procedure is an IWD-equivalent procedure, a pre-job brief, must be held (see Section 12.2.2, *Pre-Job Briefs (PJBs)*).

*16.9.2.c Work Performance*

For complex or infrequently performed procedures, a review of the procedure's content is advisable before beginning work. This can be part of the pre-job briefing (see Section 12.2.2, *Pre-Job Briefs (PJBs)*).

The user performs the work as described in the procedure and in accordance with the usage expectations defined in Section 16.4.1, *Usage Levels*, and the procedure's usage level.

The Reader-Worker Method may be used for situations in which it is impracticable for the primary worker to have the procedure in their possession. Examples include glovebox work, work encumbered by Personal Protective Equipment (PPE), or work in adverse environments.

In the Reader-Worker Method, the Reader has possession of the procedure. The Reader clearly communicates each step verbatim to the Worker, either by direct voice contact or by alternate means such as radio or two-way intercom. The Worker repeats each step, paraphrasing as appropriate, before performing the action. The Worker reports completion of each step to the Reader. The Reader marks the procedure as required. Refer to Section 4.2, *Conducting Verbal Communications*, and its sub-sections of this document for guidance on verbal communications.

*16.9.2.d Turning Over Procedures in Use*

**Note:** Consult Attachment 12 of this document for shift turnover procedures.

If a procedure is in process during a change in personnel, the following actions ensure a smooth turnover to the on-coming shift:

- Off-going personnel
  - document the point at which the procedure was interrupted. Examples are marking the procedure or noting the last completed step in a logbook.
  - as needed, document any information relevant to successful completion of the procedure, and
  - brief oncoming personnel on the status of procedure performance.
- Oncoming personnel
  - review any notes made by the off-going shift,
  - verify that prerequisites are still satisfied (for example, permits remain in effect and required materials are available),
  - verify that conditions affecting performance have not changed,

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 27 of 51)**

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- verify that the procedure is still the most current version, including IPCs, and
- ensure the process is resumed at the proper point.

*16.9.2.e Procedure Modifications During Work Performance*

If a procedure change or revision is issued while procedure performance is in progress, the RLM or designee will evaluate the impact on the work and will provide direction for either suspending or completing the work. Options include the following:

- Complete the work with the current procedure being used
- Transcribe applicable data to the new version, with explanatory text
- Suspend performance of the previous version, begin the new version at the appropriate step, and provide explanatory text

The RLM may direct steps to be repeated as necessary.

The RLM must document his/her decision regarding how an in-progress operation is to respond to a change in the associated technical procedure in the appropriate operating log (see Section 11.1, *General*). At a minimum, the RLM must document the impact of safety (e.g., safety basis, criticality safety, industrial safety, etc.), security, and compliance with regulatory requirements as part of this log entry.

*16.9.2.f Work Close-Out*

Personnel ensure that close-out actions as described in the Post Performance Activity section of the procedure (see Section 4.5.9, *Post-Performance Activity*, of FSD-315-16-001, *Technical Procedure Writer's Manual*) are completed, including notifications, waste management activities, storage of equipment and unused materials, records processing, and leaving the work area in an approved configuration.

A post-job review may be performed for any procedure execution, but is mandatory for any "IWD-equivalent" procedure involving a Moderate-Hazard or High-Hazard/Complex operation as defined in Attachment B, *Hazard Grading Tool*, of [P300](#), *Integrated Work Management*. The Post-Job Review is to capture lessons learned and evaluate potential improvements (e.g., procedure revision, additional materials, etc.). The post-job review must be performed in accordance with Section 3.2.4, Part 4 – *Post Job Review*, of [P300](#).

If required, the work supervisor documents the post-job review using [Form 2104](#), *Integrated Work Document (IWD) Part 4, Feedback/Post Job Reviews*, and ensures that recommendations are effectively communicated to affected workers.

If required in the Post Performance Activity section of the procedure (see Section 4.5.9, *Post Performance Activity*, FSD-315-16-001), management reviews and signs the procedure.

*16.9.2.g Retention or Disposal per Requirements*

The completed procedure, records, and any associated documentation are dispositioned in accordance with the requirements of the Records section of the procedure (see Section 4.5.12, *Records*, of FSD-315-16-001, *Technical Procedure Writer's Manual*).

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 28 of 51)**

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### **16.9.3 Data Collection and Sign-off Practices**

**Note:** For use of Round Sheets, see Attachment 2 of this document. For Independent Verification, see Attachment 10.

#### *16.9.3.a Data Entry*

Procedures often require recorded responses by the user. These entries may be a description of the data observed, or initials or signatures indicating completion of a step. The notations may be recorded in digital media or on printed copy. Official markings on printed copy should be permanent and legible and should comply with records management requirements.

See Attachment 2, *Round Sheets*, Section 2.5.4, *Taking and Recording Data*, for guidance on notations.

#### *16.9.3.b Abnormal Data*

When a reading is outside the acceptable limits stated by the procedure, the user should

- take the actions specified within the procedure,
- record the data and identify it as out-of-range using red ink or another accepted protocol for marking abnormal data, and
- immediately report the abnormal data to supervision.

Supervision evaluates the data and directs the actions to be taken, as necessary.

#### *16.9.3.c Correcting Data Errors*

If the procedure user discovers an incorrect data entry, he/she first determines if the error may have affected subsequent steps.

If subsequent steps were not affected, the user

- draws a single line through the entry,
- records the correct information, and
- initials and dates next to the entry.

If subsequent steps may have been affected, the user notifies supervision. Supervision evaluates the effect of the error and directs the actions to be taken.

### **16.9.4 Suspending Procedure Performance**

Suspension of procedure performance may be planned or unplanned. Planned suspensions are normally schedule-related, such as break periods or end of the workday, and the work is often resumed by the same personnel. Unplanned suspension can result from external events or recognition that the work can no longer be completed within the defined scope.

#### *16.9.4.a Planned Suspension of Procedure Performance*

1. Workers and supervision ensure that the activity or task is in a safe and secure condition. Additional actions may be initiated to place the activity in a safe condition, e.g., stopping a pump or meeting security requirements.

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 29 of 51)**

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2. Supervision provides direction to document the last step completed and any actions taken to place the activity in a safe and secure condition.

Work is resumed in accordance with Section 16.9.4.d.

#### *16.9.4.b Unplanned Suspension of Procedure Performance*

**Note:** Procedures should, to the extent practicable, anticipate and describe potential deviations from the norm and the correct responses to them. This section addresses unexpected situations for which a response is not described.

The user should suspend procedure performance under any of the following circumstances:

- work conditions or hazards have changed from those described in the approved work document
- continued work would no longer be bounded by the work document
- An unexpected result occurs
- A procedure deficiency, inaccuracy, or conflict is identified
- The user is unsure of the actions required

The user suspends performance and notifies supervision. Supervision provides direction to document the performance status of the procedure (i.e., the step at which the procedure was interrupted).

If an IPC is required, it must be processed in accordance with Section 16.6.1.

Work is resumed in accordance with Section 16.9.4.d.

#### *16.9.4.c Safety or Emergency Issues*

**Note:** Every worker is authorized to pause or stop work in accordance with [P101-18](#), *Procedure for Pause/Stop Work*.

If at any time the user believes it is unsafe to continue performance, the user must suspend the activity, taking reasonable actions to place it into a safe configuration, and must immediately notify supervision.

In an emergency, the worker may deviate from the procedure to take the actions necessary to place the work or the facility in a safe configuration or to protect personnel, the public, environment, or equipment.

#### *16.9.4.d Resuming Procedure Performance*

If work was suspended due to an emergency or off-normal situation, supervision, referencing Laboratory and organization-specific requirements, determines the actions needed and the level of management authorization required to resume work. Supervision may direct the user to repeat steps performed before suspension of the activity, or to start over from the first step.

Before resuming the procedure, the user

- reviews any notes on status made by the off-going personnel

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 30 of 51)**

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- verifies that he/she is using the most current version of the procedure, including IPCs
- verifies that prerequisite conditions are satisfied (for example, permits remain in effect and required materials are available)
- verifies that conditions affecting performance have not changed

The user resumes the procedure at the point indicated by off-going personnel, unless directed otherwise by supervision.

**16.9.5 Abnormal, Emergency and Alarm Response Procedures**

**Note:** This section applies to ARPs, AOPs, EOPs, and ERPs.

Using procedures to respond to an abnormal condition requires methods that differ from many of the general performance principles. Entry into the procedure is usually unanticipated, being driven by an event or as-found condition. Time-critical responses may not accommodate normally routine steps such as confirming the procedure version or performing a lengthy set of prerequisites. Certain steps, or entire procedures, may need to be performed without the procedure in hand.

**16.9.5.a Preparing for Use of Abnormal, Emergency and Alarm Response Procedures****Supervision**

- identifies the procedures or procedure steps that should be memorized for immediate execution.
- ensures that potential users memorize their required immediate actions.
- trains potential users to recognize entry conditions for the procedures.
- ensures that controlled copies of procedures are available, for example, at the alarm panel referenced by the procedure or outside an area that may need to be evacuated.

**16.9.5.b Performing Abnormal, Emergency and Alarm Response Procedures**

**Note:** Workers should apply the Conduct of Operations principle that indications such as alarms and instrument readings should be treated as accurate unless proven otherwise.

**The worker**

- confirms the entry condition
- performs any memorized immediate actions
- obtains the procedure
- performs the procedure as written

When the situation is sufficiently stabilized, the user should consult the procedure to verify that any memorized steps, or other actions taken independent of the procedure, were appropriately completed.

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 31 of 51)**

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### 16.10 Training

There is no specific mandatory training or qualification required to implement this attachment. It is recommended that all personnel implementing this document complete [UTrain Course #24668](#), *OS-RTS ConOps, Attachment 16, Technical Procedures*, to enhance their knowledge of the development, control, and use of procedures and [UTrain Course #27366](#), *OS-RTS Technical Procedure Writer's Manual*, to enhance their knowledge regarding the structure, format and content of procedures. This training will enhance the employee's knowledge as required and as outlined in [DOE O 422.1](#), *Conduct of Operations*.

### 16.11 Records

The DHF is the repository for records related to individual procedures. The DHF is established when the RLM approves a procedure action. See 16.5.1.k, *Document History File*.

The DHF must be managed in accordance with [P1020-1](#), *Laboratory Records Management*, and any local procedures.

### 16.12 Acronyms

ADNHOO	Associate Director for Nuclear and High-Hazard Operations
AOP	Abnormal Operating Procedure
ARP	Alarm Response Procedure
CS	Criticality Safety
DAR	Document Action Request
DCC	Document-Control Coordinator
DHF	Document History File
DOE	Department of Energy
DSA	Documented Safety Analysis
ENV-CP	Environmental Compliance Programs
EOP	Emergency Operating Procedure
ERP	Emergency Response Procedure
ES&H	Environment, Safety, and Health
FOD	Facility Operations Director
IPC	Immediate Procedure Change
IWD	Integrated Work Document
JHA	Job Hazard Analysis
LANL	Los Alamos National Laboratory
MSA	Management Self-Assessment
NMED	New Mexico Environment Department
OM	Operations Manager
OS	Operations Support
OS-RTS	Operations Support–Readiness and Technical Support
PFITS	Performance Feedback and Improvement Tracking System
PHS	Primary Hazard Screen
PIC	Person-In-Charge

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 32 of 51)**

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PPE	Personal Protective Equipment
PSA	Preliminary Safety Analysis
QA	Quality Assurance
R&D	Research and Development
RLM	Responsible Line Manager
SAFE-1	Classification
SAT	Systematic Approach to Training
SBP	Safety Basis Procedure
SI-ITS	Service Innovation–Institutional Training Services
SME	Subject Matter Expert
SSC	Structure, System, and Component
TSR	Technical Safety Requirement
UET	Use Every Time
USI	Unreviewed Safety Issue
USQ	Unreviewed Safety Question
WMS	Work Management System

### 16.13 References

- [DOE O 422.1](#), *Conduct of Operations*
- [PD311](#), *Requirements System and Hierarchy*
- [P300](#), *Integrated Work Management*
- [SD601](#), *Conduct of Research and Development*
- [P1020-2](#), *Laboratory Document Control*
- [P1020-1](#), *Laboratory Records Management*
- FSD-315-16-001, *Technical Procedure Writer's Manual*
- [Work Management System \(WMS\)](#)
- [P121](#), *Radiation Protection*
- [DOE-STD-1212-2012](#), *Explosives Safety*
- [P781-1](#), *Conduct of Training*
- [P313](#), *Roles, Responsibilities, Authorities, and Accountability*
- [P101-18](#), *Procedure for Pause/Stop Work*
- [PD110](#), *Safety Basis*
- [P1040](#), *Software Quality Management*
- [DOE G 433.1-1A](#), *Nuclear Facility Maintenance Management Program Guide for Use with DOE O 433.1B*

### 16.14 Appendices

- Appendix 16-A. *Document Action Request*
- Appendix 16-B. *Procedure Format and Content Requirements*

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P315, Rev. 6  
 Effective Date: 07/08/15

162 of 190

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 33 of 51)**

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- Appendix 16-C. *DELETED*
- Appendix 16-D. *Document Review and Concurrence*
- Appendix 16-E. *Procedure Verification Checklist*
- Appendix 16-F. *Procedure Validation Checklist*
- Appendix 16-G. *Immediate Procedure Change Cover*
- Appendix 16-H. *Documentation of Periodic Review*
- Appendix 16-I. *Team Members/Review Disciplines*
- Appendix 16-J. *Excluded Procedure and Document Types*

**No: P315      Conduct of Operations Manual  
Attachment 16. Local Procedures (Cont.) (Page 34 of 51)**

**Appendix 16-A.      Document Action Request (Page 1 of 2)**

Document Action Request			
Section 1 – Originator Request			
Document No.:		Revision No.:	
Title:			
Description of requested action (Attach numbered additional sheets if needed.)			
Originator Name (print)		Z#	Organization
Date			
Section 2 – Responsible Manager Approval for Processing (see P315, Att. 16, Section 16.5.1.e)			
<input type="checkbox"/> New Document		<input type="checkbox"/> Minor Revision	
<input type="checkbox"/> Major Revision		<input type="checkbox"/> Deactivation	
<input type="checkbox"/> Approved		<input type="checkbox"/> Cancellation	
<input type="checkbox"/> Disapproved (return to originator)		<input type="checkbox"/> Perform Concurrent Periodic Review?	
Comment:			
Signature		Print Name, Title	Z#
Date		Date	
RLM Concurrence Signature		Print Name, Title	Z#
Date		Date	
Section 3 – Hazard Grading (see P315, Att. 16, Section 16.5.1.f)			
Hazard Determination: <input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High/Complex			
Document is authorized to serve as IWD? <input type="checkbox"/> Part I only <input type="checkbox"/> Full IWD			
Section 4 – Required Reviews (see P315, Att. 16, Section 16.5.3)			
Discipline	Name	Signature	Date
Validation Required? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Waive    Comment:			
Scope of Validation: <input type="checkbox"/> Entire Procedure <input type="checkbox"/> Change Only			
Validation Method: <input type="checkbox"/> Walkdown <input type="checkbox"/> Simulation <input type="checkbox"/> Tabletop			
Training Determination Completed: <input type="checkbox"/> Yes <input type="checkbox"/> N/A    Completed By:			
USQ/USI Number (if needed):		Signature	Z#
Date		Date	
Section 5 – Final Approvals (see P315, Att. 16, Section 16.5.4)			
<input type="checkbox"/> Release		Details:	
<input type="checkbox"/> Hold			
Responsible Manager Signature		Print Name, Title	Z#
Date		Date	
Additional Approval Signature		Print Name, Title	Z#
Date		Date	

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 35 of 51)**

**Appendix 16-A.      Document Action Request (Cont.) (Page 2 of 2)**

<b>DAR Continuation</b>			
<b>Description of Requested Action (continued from Section 1)</b>			
<b>Approval/Disapproval Comment (continued from Section 2)</b>			
<b>Required Reviews (Continued from Section 4)</b>			
Discipline	Name	Signature	Date
<b>Validation Comment (continued from Section 4)</b>			
<b>Release/Hold Details (continued from Section 5)</b>			

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**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 36 of 51)**

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**Appendix 16-B.      Procedure Format and Content Requirements (Page 1 of 2)**

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The following order and Laboratory requirements for procedure format and content are captured in FSD-315-16-001, *Technical Procedure Writer's Manual*, and the associated procedure template found on the [OS-RTS website](#).

- Directives include a written process for procedure development, including format, clear language standards, and configuration control. Refer to FSD-315-16-001 for format and clear language requirements.
- Procedures must provide administrative and technical direction to effectively conduct the work activity, using detail appropriate to the complexity of the task, the experience and training of the operators, the frequency of performance, and the significance of the consequences of error.
- The procedure DHF must contain documentation of the reason for key steps so they are not inadvertently deleted or changed in revisions and changes. Refer FSD-315-16-001, Section 3.2, *Identifying Source Documents*, for more information.
- The scope and applicability of the procedure are readily apparent. Refer to FSD-315-16-001, Section 4.5.4, *Introduction*, for more information.
- Procedures for multiple equipment trains (see Section 16.4, *Definitions*) are clearly distinguishable from each other.
- Emergency procedures (see Section 16.4, *Definitions*) are clearly distinguishable from normal operating procedures.
- Procedures incorporate appropriate information from applicable source documents, including design basis, safety basis, and vendor technical documents. Refer to FSD-315-16-001, Section 3.2, *Identifying Source Documents*, for more information.
- Prerequisites and initial conditions are clearly specified. Refer to FSD-315-16-001, Section 4.5.6, *Prerequisite Actions*, for more information.
- Tools, equipment, and materials are specified and procedures provide measures to document their calibration or condition before use. Refer to FSD-315-16-001, Section 4.5.6, *Prerequisite Actions*, for more information.
- Hold points requiring IV (see Attachment 10) or other approval are clearly indicated. Refer to FSD-315-16-001, Sections 5.9, *Verification, Determination, Notification, and Data Recording Steps*, and 5.13.2, *Sign-offs*, for more information.
- The procedure language is clear, definitions are explained, and the level of detail is appropriate for the operators' skill, experience, and training.
- Only one action per step.
- Warnings, Notes, and Cautions are clear, do not contain actions, and precede the applicable step. Refer to FSD-315-16-001, Section 5.10, *Warnings, Cautions, and Notes*, for more information.

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 37 of 51)**

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**Appendix 16-B.      Procedure Format and Content Requirements (Cont.) (Page 2 of 2)**

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- Warnings, Notes, Cautions, and headings appear on the same page as the applicable step. Refer to FSD-315-16-001, Section 5.10, *Warnings, Cautions, and Notes*, for more information.
- Procedures are technically and administratively accurate.
- Instructions and information are correct.
- Referenced documents are correctly identified. Refer to FSD-315-16-001, Section 5.11, *Branching and Referencing Steps*, for techniques to refer to other procedures, sections, or steps.
- Instructions for transferring between procedures are clear. Refer to FSD-315-16-001, Section 5.11, *Branching and Referencing Steps*, for techniques to branch to other procedures, sections, or steps.
- Critical steps include signature/initial/checkoff blocks, with only one action per block. Refer to FSD-315-16-001, Section 5.13, *Placekeeping and Sign-offs Steps*, for placekeeping and sign-off techniques.
- Instrument readings and tolerances are specified and conform to instrument scales or readability in the field.
- Procedures contain explicit parameters and units, and do not require mental arithmetic to determine acceptability.
- Any calculations are clearly explained and space is provided in the procedure to record them.
- The procedure step sequence conforms to normal operational sequence.
- Procedures reflect human factors' considerations such as procedure callouts exactly matching equipment labels, units in procedures match instrument markings, charts and graphs are easily read, and important steps or information are highlighted. Refer to FSD-315-16-001, Section 6.0, *Key Information/Steps*, for highlighting techniques.
- Emergency procedures (see Section 16.4, *Definitions*) provide guidance for both single and multiple casualties, as appropriate.
- When procedures use or refer to other procedures or steps, they are clearly identified with the exact identification to prevent confusion in transferring to or from them. Refer to FSD-315-16-001, Section 5.11, *Branching and Referencing Steps*, for techniques to branch or refer to other procedures, sections, or steps.
- Procedures specify the restoration or shutdown steps for equipment following tests or other operations. Refer to FSD-315-16-001, Section 4.5.9, *Post Performance Activity*, for documenting testing and restoration requirements.
- "IWD-Equivalent" procedures for Moderate-Hazard and High-Hazard/Complex work activities must contain a requirement for a Pre-Job Brief (PJB) in accordance with Attachment 12, Section 12.2.2, *Pre-Job Briefs (PJBs)*, of this document. Refer to FSD-315-16-001, Section 4.5.6, *Prerequisite Actions*, (Planning and Coordination) for more information.
- "IWD-Equivalent" procedures for Moderate-Hazard and High-Hazard/Complex work activities must contain a requirement for a Post-Job Review.

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 38 of 51)**

**Appendix 16-D.      Document Review and Concurrence (Page 1 of 2)**

Document Title			Number:	Revision:	Draft:
Document Action: <input type="checkbox"/> New <input type="checkbox"/> Revision <input type="checkbox"/> Deactivation <input type="checkbox"/> Cancellation					
Comments due by:			Concurrence due by:		
Reviewer Name:			Z#:	Discipline:	
Instructions: Number comments sequentially. Designate as essential (E) or suggested (S). Only essential comments require concurrence with the disposition. Use extra sheets as needed, including the document information in the header and numbering the pages. For revisions, limit comments to the content that has changed. For no comments, check the applicable box and sign the form. Return the completed form to the Point of Contact listed below.					
<input type="checkbox"/> No comments <input type="checkbox"/> Waive (Document has no impact or relevance to our discipline or organization.)					
No.	E/S	Document Section	Comment	Disposition	
Reviewer Signature:			Print Name:	Z#:	Date:
Dispositioner Signature:			Print Name:	Z#:	Date:
Concurrence Signature:			Print Name:	Z#:	Date:
Return to Point of Contact:				Z#:	Organization:

**No: P315      Conduct of Operations Manual  
Attachment 16. Local Procedures (Cont.) (Page 39 of 51)**

**Appendix 16-D.      Document Review and Concurrence (Cont.) (Page 2 of 2)**

Document Title			Number:	Revision:	Draft:
No.	E/S	Document Section	Comment	Disposition	
Reviewer Signature:			Print Name:	Z#:	Date:
Dispositioner Signature:			Print Name:	Z#:	Date:
Concurrence Signature:			Print Name:	Z#:	Date:
Return to Point of Contact:				Z#:	Organization:

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 40 of 51)**

**Appendix 16-E.      Procedure Verification Checklist (Page 1 of 2)**

Procedure Verification Checklist					
Title:	No.:	Revision:	Draft:		
			Yes	No	N/A
1.	Applicable guidelines of FSD-315-16-001, <i>Technical Procedure Writer's Guide</i> , have been addressed.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Purpose adequately presents the intent of the procedure.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	Scope describes the major activities, and identifies the boundaries of the procedure.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	Punctuation and spelling are correct.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	Specific safety requirements are provided.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	Radiation and contamination requirements listed when required.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	Applicable references are listed.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	Prerequisites are specified, such as plant conditions, valve lineups, LO/TO, RadCon, etc.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	A.	Identifies all portable material and test equipment required and calibration requirements.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	B.	Identifies special equipment requirements required to perform the activity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	C.	Includes requirement to be on plan-of-the-day, minimum staffing, and pre-job briefing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	D.	Identifies required support systems and personnel permits.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	Locations where readings are taken are clearly identified.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	Include unique equipment identifiers, including noun name (labels).		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.	Ensure consistency among equipment labels, drawings (as applicable), and document nomenclature.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.	Identifies alarms that could be expected to be activated as a result of performing this document.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.	Identifies the performer (functional or organizational title) for each action, if more than one performer.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14.	Steps involving criticality safety implications, safety basis implications, technical limits, or process requirements are identified by a dollar sign (\$), asterisk (*), circle CS, or other defined designator and the requirement source is identified in brackets at the end of the step.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.	Instrument tolerances are within the given range.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 41 of 51)**

**Appendix 16-E.      Procedure Verification Checklist (Cont.) (Page 2 of 2)**

	Yes	No	N/A
16. User is told what to do if tolerances, limits, or acceptance criteria are not satisfied.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Space is provided to initial/check each critical action step within the text or on an attachment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. When other steps, attachments, or procedures are referenced, the procedure step reference is correct.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Cautions, Warnings, and Notes are easily distinguishable from performance steps.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Cautions, Warnings, and Notes proceed the step to which they apply and on the same page.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Cautions, Warnings, and Notes provides the needed information and do not include an action.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Only one action per step unless closely related.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Sign-off space for both the performer and verifier are available if Independent Verification is required.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. The applicable attachments are included in the procedure, pages of each attachment sequentially numbered, each page of attachment has method to uniquely identify the page in order to reassemble pages if separate (e.g., date and time, container number, or other attachment unique identifier).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. All attachments have steps that direct the user to the attachments.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. All changes are identified with change bar and previous change bars have been removed (unless a total rewrite).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Records generated by the performance of the document have been identified; in-process records instructions include actions to protect/store the in-process records, and processing instructions for the disposition of the records.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>			
<b>Verifier:</b>			
_____			
Signature	Z Number	Date	

**No: P315      Conduct of Operations Manual  
Attachment 16. Local Procedures (Cont.) (Page 42 of 51)**

**Appendix 16-F.Procedure Validation Checklist (Page 1 of 2)**

<b>Procedure Validation Checklist</b>			
<b>Part # 1 – To Be Completed by the Issuing Organization</b>			
Title:	Number:	Rev:	Draft:
Preparer:	Z No.	Phone:	
Initial Validation Method (Sect. 16.5.1.g): <input type="checkbox"/> Walkdown <input type="checkbox"/> Simulation <input type="checkbox"/> Tabletop			
Additional Validation (Sect. 16.5.4 Only): <input type="checkbox"/>			
<b>Part # 2 – To Be Completed by the Validator(s)</b>			
Instructions: From each “No” answer, provide comment(s) on comment sheet or mark up the procedure to reflect necessary changes.			
<b>Part 2, Section A – User Compatibility</b>			
	Yes	No	N/A
Can the instructional steps be performed in sequence as written?			
Does each step provide sufficient detail to complete the activity?			
Have steps or information been omitted that are needed to perform the activity?			
Are steps sequential?			
Are steps limited to one action per step where possible?			
Are steps easily read & understood?			
Are required actions and responsibilities clearly defined?			
Are references to other steps within the procedure correct?			
Are instructions to branch to other procedures correct?			
Are tolerances and units of measure provided where needed?			
For time-critical actions, can steps be performed with time limits?			
If an activity is performed by more than one person, is adequate direction provided for communication and coordination?			
Are stop action limits provided for steps that specify adjustment to accomplish a task?			
Does the document match the actual work or process sequence?			
Can all steps be performed without inadvertently isolating or defeating safety systems?			
Can the steps be performed with the required staffing?			
Are spaces for recording entries adequate?			
<b>Part 2, Section B – Facility Compatibility</b>			
	Yes	No	N/A
Are locations specified by the procedure consistent with field installation?			
Do specified units of measure match those indicated on the instrumentation?			
Are equipment/components identified clearly and reflect the exact equipment field nomenclature?			
Are tools, instruments, or material needed to complete the task specified?			
Is necessary personnel protective clothing or equipment specified?			
Can steps be performed safely (hazards to personnel & equipment identified)?			
Are protective measures adequate to protect personnel?			
Does information provided in figures and tables matches the field installation?			
Does the document identify major symptoms and automatic equipment associated with an abnormal condition that could be expected to occur as a result of performing the activity?			
Are steps that involve or may affect safety limits (e.g., TSR) clearly identified and communicated to the user?			
Are potential emergency actions adequately defined?			

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 43 of 51)**

**Appendix 16-F.Procedure Validation Checklist (Cont.) (Page 2 of 2)**

<b>Part #2, Section C – ARP/AOP/EOP Validation</b> (Mark N/A if this section is not applicable.)		Yes	No	N/A
<i>User Compatibility</i>				
Are appropriate corrective actions to alarms specified?				
Are entry and exit points clearly specified?				
<i>Facility Compatibility</i>				
Is the correct alarm identification provided (matches the panel alarm window CRT/PLC display screen exactly)?				
<b>Part #3 – To Be Completed by the Validator</b>		Yes	No	N/A
The user feels that the document adequately reflects the ability of the least experienced, yet qualified user?				
Validator's Signature:		Validator's Printed Name:		
Z No.	Phone:	Date:		
<b>Part #4 – To Be Completed by the Responsible Line Manager</b>				
Responsible Line Manager Signature:		Responsible Line Manager Printed Name:		
Z No.	Phone:	Date:		

**No: P315      Conduct of Operations Manual  
Attachment 16. Local Procedures (Cont.) (Page 44 of 51)**

**Appendix 16-G.      Immediate Procedure Change Cover (Page 1 of 1)**

<b>Immediate Procedure Change (IPC) Cover</b>			
<b>Section 1 – Originator Request</b>			
Document No.:	Revision No.:	IPC No.:	
Title:			
Description of need and requested action (Attach procedure mark-up and numbered additional sheets if needed.):			
Originator Name (print)	Organization	Z#	Date
<b>Section 2 – Reviews</b>			
Discipline	Name	Signature	Date
USQ/USI Number:		<input type="checkbox"/> N/A	
<b>Section 3 – Final Approvals</b>			
FOD Concurrence Signature	Print Name and Title	Z#	Date
<input type="checkbox"/> Permanent      Effective Date:		<input type="checkbox"/> Limited Use      Expiration Date:	
Comments:			
Responsible Line Manager Signature	Print Name and Title	Z#	Date

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 45 of 51)**

**Appendix 16-H.      Documentation of Periodic Review (Page 1 of 1)**

Documentation of Periodic Review			
Document Number: _____		Revision: _____	
Title: _____			
Due Date for Review: ____		Responsible Line Manager: _____ Z#: _____	
<u>Evaluation</u>			
1. Perform a Verification of the entire procedure.			
2. Perform a Validation of the entire procedure.			
<u>Evaluation Results</u>			
3. Is the document, in its entirety, still need for operations at the facility? (If No, skip questions 4-7 and select "Cancellation" or "Revision.")		<u>YES</u>	<u>NO</u>
4. Is the document technically accurate?		<input type="checkbox"/>	<input type="checkbox"/>
5. Is the document usable in its current form?		<input type="checkbox"/>	<input type="checkbox"/>
6. Are the references current and complete? (If No, a Minor Revision should be considered.)		<input type="checkbox"/>	<input type="checkbox"/>
7. Does the document satisfy the current format requirements?		<input type="checkbox"/>	<input type="checkbox"/>
<u>IWD-Equivalent Evaluation Results</u>			
8. Is the P300 Hazard Grading Matrix for this document still accurate?		<u>YES</u>	<u>NO</u>
9. Is this document still acceptable as P300 Part 1, <i>Activity Specific Information</i> ?		<input type="checkbox"/>	<input type="checkbox"/>
10. Is this document still acceptable as P300 Part 2, <i>Work-Area Information</i> ?		<input type="checkbox"/>	<input type="checkbox"/>
11. Is this document still acceptable as P300 Part 3, <i>Validation and Work Release Information</i> ?		<input type="checkbox"/>	<input type="checkbox"/>
12. Is this document still acceptable as P300 Part 4, <i>Post-Job Review</i> ?		<input type="checkbox"/>	<input type="checkbox"/>
13. Based on this evaluation, the following actions is required.			
<input type="checkbox"/> None	The document is extendable in accordance with its periodic review cycle.		
<input type="checkbox"/> Revision	Initiate a revision in accordance with the governing procedure.		
<input type="checkbox"/> Cancellation	Initiate cancellation in accordance with the governing procedure.		
14. Periodic Review Evaluation Performed By:			
_____ /	_____ /	_____ /	_____ /
Name (print)	Signature	Z number	Date
Comments: _____			
_____			
_____			
Responsible Line Manager (RLM) Approval:			
_____ /	_____ /	_____ /	_____ /
RLM/Representative (print)	Signature	Z number	Date
Facility Operations Director (FOD) Concurrence (if required):			
_____ /	_____ /	_____ /	_____ /
FOD/Representative (print)	Signature	Z number	Date

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 46 of 51)**

**Appendix 16-I. Team Members/Review Disciplines (Page 1 of 3)**

<b>Initial Development</b>	<b>Revision</b>	<b>IPC</b>	<b>Organization that must Review</b>	<b>Condition for Review and Comment (i.e., does the procedure do the following?)</b>
S	S	R	Operations (FOD)	Describe operation of facility equipment, systems, or administrative processes; or describe a work activity performed within the facility.
R	R	See Note 1	Training	All procedures must be evaluated to determine training requirements and potential impact to existing training courses (see P315, Attachment 16, Section 16.5.3.e).
S	S	S	Training	Involve the planning or performance of training activities.
R	R	R	Safety Basis	<ul style="list-style-type: none"> <li>▪ Implement or affect the facility safety basis documents.</li> <li>▪ Describe or affect aspects of the facility design basis and operational requirements relied upon for authorization (e.g., safety analyses, hazard classification documents, or system evaluation reports).</li> </ul>
S	S	S	Facility System Engineering and Management	<ul style="list-style-type: none"> <li>▪ Involve equipment and systems under Configuration Management.</li> <li>▪ Describe or affect aspects of the facility design basis and operational requirements relied upon for authorization (e.g., safety analyses, hazard classification documents, or system evaluation reports).</li> </ul>
R	R	R	Nuclear Criticality Safety	Describe the handling, processing, use, storage, transfer, measurement, or inventory of fissile material.
S	S	S	Emergency Planning and Preparedness	Involve emergency response, emergency operations, or emergency planning.
S	S	S	Fire Protection	Affect fire safety, including fire protection engineering, fire response, fire prevention, and fire system inspection, testing, and maintenance.
R	R	R	Waste Management Coordinator Program	Describe waste-related activities.
S	S	S	Procurement	Describe procurement activities.
S	S	S	Institutional Quality	Potentially impact quality assurance requirements.

**No: P315      Conduct of Operations Manual**  
**Attachment 16. Local Procedures (Cont.) (Page 47 of 51)**

**Appendix 16-I. Team Members/Review Disciplines (Page 2 of 3)**

Initial Development	Revision	IPC	Organization that must Review	Condition for Review and Comment (i.e., does the procedure do the following?)
S	S	S	Radiological Engineering	Affect radiological or radioactive systems/processes or alter systems or components that monitor/mitigate the consequences of a radiological accident. Also, documents that involve packaging, transfer, or shipment of radioactive materials.
S	S	S	Health Physics Operations	Direct activities involving monitor/survey for radioactive contamination, or direct activities that could potentially breach systems/components and result in the release of radioactive material. Also, documents that involve packaging, transfer, or shipment of radioactive materials.
R	R	R	Nuclear Materials Control and Accountability	Describe the handling, processing, use storage, transfer, measurement, or inventory of nuclear material.
S	S	S	Standards and Calibration Laboratory	Involve the use and control of calibrated measurement and test equipment, or the calibration of field instrumentation.
S	S	S	Security	Address: <ul style="list-style-type: none"> <li>▪ Protection of or access to classified matter</li> <li>▪ Physical or administrative access controls or boundaries of security areas</li> <li>▪ The installation, modification or removal of door or motion alarms</li> <li>▪ Access or work performed by foreign nationals</li> </ul>
S	S	S	Industrial Hygiene and Safety	Concern issues associated with industrial hygiene and occupational safety.
S	S	S	Software Quality Management	Require the use and control of any software.
R	R	R	Packaging and Transportation	Involve packaging, onsite transfer, or off-site shipment of hazardous material.
S	S	S	Affected Organization	Affect the operation of an organization either residing or performing work activities within the facility.

**No: P315      Conduct of Operations Manual  
Attachment 16. Local Procedures (Cont.) (Page 48 of 51)**

**Appendix 16-I. Team Members/Review Disciplines (Page 3 of 3)**

Initial Development	Revision	IPC	Organization that must Review	Condition for Review and Comment (i.e., does the procedure do the following?)
R	R	R	Environmental Compliance Programs (ENV-CP)	<ul style="list-style-type: none"> <li>▪ Involve activities that may generate, process, store or dispose of waste for the Laboratory.</li> <li>▪ Activities conducted within New Mexico Environment Department (NMED) Hazardous Waste Facility permitted or interim status units must meet specific permit requirements including:                             <ul style="list-style-type: none"> <li>– Permit-required equipment (e.g., eye wash, non-sparking tools for certain waste streams, etc.)</li> <li>– Infrastructure (e.g., fire suppression, dikes and berms, specific secondary containment, etc.)</li> <li>– Site configuration (e.g., fencing, secured access, buffer areas, specific waste container clearances, etc.)</li> </ul> </li> </ul>
<p><b>Note 1:</b> Per Attachment 16, Section 16.6.1.e, the Responsible Line Manager (RLM) is to provide a briefing on the IPC to workers with a follow-up review by the Training organization to determine long term training requirements and impact to other training courses and qualifications.  <b>R</b> – Require Review and Comment from this organization  <b>S</b> – Suggest Review and Comment from this organization</p>				

**No: P315      Conduct of Operations Manual  
Attachment 16. Local Procedures (Cont.) (Page 49 of 51)**

**Appendix 16-J. Excluded Procedure and Document Types (Page 1 of 3)**

<b>Table 16-J-1. Excluded Procedure and Document Types</b>		
<b>Procedure/Document Type</b>	<b>Requirements Document</b>	<b>Justification for Exclusion</b>
Integrated Work Document (IWD)	<a href="#">P300</a> , <i>Integrated Work Management</i>	An IWD directs the performance of an individual work activity, and <a href="#">P300</a> contains the minimum set of development and change control, format and content, document control, and usage requirements to be a stand-alone process. Additionally, IWDs are required to be reviewed by the Safety Basis organization and an Unreviewed Safety Question/ Unreviewed Safety Issue (USQ/USI) performed as required.  IWDs <b>are</b> excluded from the requirements found in Attachment 16 of this document.
Safety Basis Documents [e.g., Documented Safety Analysis (DSA), Preliminary Safety Analysis (PSA), etc.]	<a href="#">PD110</a> , <i>Safety Basis and the Safety Basis Procedures (SBPs)</i>	These documents do not direct the performance of individual work activities or the facility or its equipment/system. But these documents are the basis for which all facility operations flow. The SBPs series defined in <a href="#">PD110</a> contains the minimum set of development and change control, format and content, document control, and usage requirements to be a stand-alone process. These documents are generated by the Safety Basis organization.  These Safety Basis documents <b>are</b> excluded from the requirements found in Attachment 16 of this document.
Software Documentation (e.g., software design documentation, software verification and validation documentation, etc.)	<a href="#">P1040</a> , <i>Software Quality Management</i>	These documents do not direct the performance of individual work activities or the facility or its equipment/system. Typically they provide some of the basic controls like a “technical procedure,” such as configuration management, due to the potential for this software to impact the design and/or operations of the facility and its equipment/systems. <a href="#">P1040</a> provides a basic description of the different document types that may be required for a given software application, including expected content and requirements for Safety Basis review and potential USQ. Additionally, it links to <a href="#">P1020-2</a> , <i>Laboratory Document Control</i> for document control requirements.  These Software documents <b>are</b> excluded from the requirements found in Attachment 16 of this document.

**No: P315      Conduct of Operations Manual  
Attachment 16. Local Procedures (Cont.) (Page 50 of 51)**

**Appendix 16-J. Excluded Procedure and Document Types (Cont.) (Page 2 of 3)**

<b>Table 16-J-1. Excluded Procedure and Document Types (Cont.)</b>		
<b>Procedure/Document Type</b>	<b>Requirements Document</b>	<b>Justification for Exclusion</b>
Maintenance Procedures	<a href="#">DOE G 433.1-1A</a> , <i>Nuclear Facility Maintenance Management Program Guide for Use with DOE O 433.1B</i> , Section III.F, <i>Maintenance Procedures</i>	<p>A maintenance procedure provides the instructions for the performance of an individual maintenance work activity, and <a href="#">DOE G 433.1-1A</a> provides the minimum set of development and change control, format and content, and usage requirements to be a stand-alone process. Additionally, the DOE Guide requires any maintenance procedure that could affect safety Structures, Systems, and Components (SSCs) be reviewed by the Safety Basis organization and an USQ performed as required.</p> <p>Maintenance procedures <b>are</b> excluded from the requirements found in Attachment 16 of this document.</p>
Training Documents (i.e., training material and qualification standards)	<a href="#">P781-1</a> , <i>Conduct of Training</i>	<p>These documents are developed as a result of the Systematic Approach to Training (SAT) analysis and do not direct the performance of individual work activities or the facility and its equipment/system. But these documents typically provide some of the basic controls as a “technical procedure,” such as configuration management, due to the potential impact on the training of workers operating the facility and its equipment/systems. <a href="#">P781-1</a> acknowledges the need for a review by Safety Basis and a USQ/USI as required.</p> <p>These training documents <b>are</b> excluded from the requirements found in Attachment 16 of this document.</p>
Local Management Control Documents (e.g., policies, plans, etc.)	Local Requirements	<p>Management control documents created locally may impact the execution of work activities or the operation of the facility and its equipment/systems. Lacking a specific requirement document, it must be assumed that insufficient development, format and content, and configuration controls are established.</p> <p>These documents <b>are not</b> excluded from the requirements found in Attachment 16 of this document.</p>

**No: P315      Conduct of Operations Manual  
Attachment 16. Local Procedures (Cont.) (Page 51 of 51)**

**Appendix 16-J. Excluded Procedure and Document Types (Cont.) (Page 3 of 3)**

<b>Table 16-J-1. Excluded Procedure and Document Types (Cont.)</b>		
<b>Procedure/Document Type</b>	<b>Requirements Document</b>	<b>Justification for Exclusion</b>
Classified Procedures	Local Requirements	<p>Classified procedures may impact the execution of work activities or the operation of the facility and its equipment/systems. Any requirements resulting from being classified, such as storage and access requirements, are in addition to those identified in Attachment 16 of this document.</p> <p>These documents <b>are not</b> excluded from the requirements found in Attachment 16 of this document.</p>

**No: P315      Conduct of Operations Manual**  
**Attachment 17. Operator Aid Postings (Page 1 of 9)**

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## **17.0 OPERATOR AID POSTINGS**

The purpose of this attachment is to provide guidance for operator aids by achieving the major objectives of 1) ensuring that the number of aids are limited to only those considered essential; 2) issue and posting of aids are controlled by requiring facility management review and approval; 3) once issued/posted, the aids are maintained in good physical condition, their technical content is current and correct; and 4) aids are removed when no longer required.

This attachment describes the requesting, authorization, documentation, placing, and reviewing required to ensure operator aids are current, complete, and necessary. Information used in the operation of facility systems must be properly controlled. Operator aids provide an important function in the safe operation of the facility. Operator aids may come in many forms: copies of procedures (portion or pages thereof), system drawings, handwritten notes, curves, and graphs, etc.

The scope of the Operator Aid Program does not include postings controlled through another established safety management program, such as radiological postings that are controlled by [P121, Radiation Protection](#). Direct any questions regarding the applicability of this attachment to [OS-RTS](#).

### **17.1 General Requirements**

Facility operator aids (information posted for personnel use) should provide general information useful to operators in performing their duties. An operator aid program should be established to ensure that operator aids that are posted are current, correct and useful.

Do not post operator aids (sample topics and types in Appendix 17-A) in a manner that will obscure controls, indications, or indicating lights. They should be firmly attached in close proximity to where they would be expected to be used and suitably protected from the environment.

Any person finding an unauthorized operator aid must take appropriate steps to notify the Operations Manager (OM). The OM either authorizes the operator aid in accordance with this attachment or has the aid removed.

Personnel must not independently label components or systems in the facility through the use of operator aids. Requests for labeling of components or systems should be directed to the applicable OM and be controlled by the equipment and piping labeling program described in Attachment 18, *Equipment and Piping Labeling*.

The requester/department originating the operator aid notifies the OM when the need for the operator aid no longer exists, and ensures the operator aid is disposed.

Do not use operator aids in the place of the lockout/tagout process used for the protection of personnel, equipment, and the environment.

Do not use operator aids in place of the administrative lock process.

Do not use operator aids to bypass the normal procedure review and approval process. Do not approve operator aids that alter or contradict procedures. Instead, appropriate procedures should be changed to incorporate the necessary information.

**No: P315      Conduct of Operations Manual**  
**Attachment 17. Operator Aid Postings (Cont.) (Page 2 of 9)**

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Operator aids may supplement approved procedures, but are not used in place of approved procedures. Operator aids should be viewed as a convenience to the individual using them, not as a requirement.

During routine facility inspections, operations personnel should review operator aids to ensure that they are approved. Report unapproved postings to the OM for approval in accordance with this attachment or remove the operator aids.

Update operator aids that are derived from approved procedures when the "parent" procedure is revised.

Documents that are posted in accordance with other approved site programs, such as Confined Space Entry Permits, Radiation Work Permits, Safety Notices, Personal Protective Equipment (PPE) donning/doffing instructions and Personal Contamination Monitor (PCM) monitoring instructions, etc., are not considered to be operator aids.

Operators, maintenance staff, and other facility staff are trained on the operator aids process, as appropriate.

Any facility that has a single control area does not require duplicate tracking of Operator Aids using Appendix 17-D, *Template for Control Area Information Book Index Sheet*.

**17.2 Request and Approval of Operator Aids**

Any facility employee may develop an operator aid; however, the operator aid must be approved before posting or use. All facility personnel should be informed of the importance of controlling posted information and the procedure to be followed for posting information.

Submit operator aids to the OM for approval in a professional format on a suitable medium; e.g., graph on laminated paper or Bakelite conversion chart. (See the template in Appendix 17-B, *Template for Operator Aid Request*). Each operator aid request submitted contains the signature of the originator. Supply information listed in Section I of Operator Aid Request. Submit the Operator Aid Request with the attached proposed operator aid. The OM signs in the "Responsible Manager" space for aids requested by operations department personnel. Operator aids also may include a sketch of the location of the aid in conditions where the signature block would create congestion or approved media does not allow for signature (e.g., Bakelite). For example, control board labeling, NOT on a controlled drawing, would require the use of an operator aid. Due to control board congestion, signatures on all aids are not required as long as they are indicated on the sketch. Operator aids may be used on electronic systems provided they do not interfere with the intended function.

The OM reviews each proposed operator aid submitted and verifies the aid's technical content, preparation and approval are correct and that the aid is necessary. The OM documents approval or disapproval in a manner similar to Appendix 17-B, *Template for Operator Aid Request*, Section III, and then signs and dates the request, and determines training requirements for implementation of the aid. Notify the training department of any training requirements. If the operator aid request is disapproved, return to the requester.

The OM:

- reviews and approves each operator aid submitted,

**No: P315      Conduct of Operations Manual**  
**Attachment 17. Operator Aid Postings (Cont.) (Page 3 of 9)**

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- completes an Operator Aid Record Sheet (Appendix 17-C provides a template) in accordance with instructions below and enters the sequential serial number on the bottom right corner of the operator aid, and
- places a copy of the operator aid in the file log binder and has the original posted or placed in the Control Area Information Book as appropriate.

Changes to operator aids must receive the same level of review and approval as the original posting.

**17.3 Operator Aid File**

Maintain the Operator Aid File in the Control Area or the OM's office. This file may be generated and maintained electronically. The operator aid file includes an Operator Aid Record Sheet and a copy of each operator aid either posted or contained in a Control Area Information Book. Use this file to support periodic reviews and to provide a reference copy should the posted copy be damaged or lost.

The Operator Aid Record Sheet includes the following information:

- Serial number—The number should indicate the facility, year and the next consecutive number of the operator aid to be issued. For example, 54E-06-27 would indicate the 27th operator aid issued for the year 2006.
- Requester/department—Name of the individual wishing to post the operator aid and the department represented.
- Date posted—The date the OM authorizes the operator aid to be posted (or placed in the Control Area Information Book).
- Title/Reference—The title of the operator aid or a brief description of the topic addressed within the aid. The primary reference(s) used to develop the operator aid should be listed here including the revision number where applicable.
- Location—Area where the operator aid is to be posted. This location should be specific enough to be easily found by the information contained in the Operator Aid File. "Auxiliary Building," for example, is not specific; "Unit 1 Waste Monitoring Panel," however, is more complete.
- OM Posting Approval—The OM indicates his/her authorization to post the operator aid.
- Removal Approval Initial/Date—When the operator aid is no longer current, correct, complete, or necessary, the OM recommends its removal. The OM initials and dates this column on the index and has the operator aid removed. In the case of operator aids originated by a department other than Operations, the OM should notify the originating department to remove the operator aid. The OM will dispose of the aid as appropriate.

**17.4 Control Area Information Book**

Control Area Operators frequently make use of information such as tables or graphs of tank volumes, chemical concentrations, etc. All such information must be controlled to ensure that the information is the latest revision. Rather than posting operator aids in Control Areas, it may be more convenient to file the aids in a Control Area Information Book. The Control Area Information Book is optional. The Operator Aid File is still required.

**No: P315      Conduct of Operations Manual**  
**Attachment 17. Operator Aid Postings (Cont.) (Page 4 of 9)**

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If the organization opts to use a Control Area Information Book, all operator aids contained within it must be approved and controlled as specified in this section.

The OM files the operator aid by entering on the Control Area Information Book Index Sheet (Appendix 17-D) the serial number assigned to the aid, the title of the operator aid, his/her signature, and the date the operator aid is effective. The operator aid should then be filed in the Control Area Information Book in the same sequential order as listed on the index sheet.

When the need for the Control Area Information Book operator aid no longer exists or it is superseded, the OM will recommend its removal. The OM removes the aid from the book, initials, and enters the removal date on the Control Area Information Book Index Sheet and also removes the aid from the Operator Aid Log as specified above.

**17.5 Periodic Reviews and Audits of Operator Aids****17.5.1 Reviews**

The OM directs a review of the Operator Aid Record Index periodically, but at a minimum semi-annually (every six months) in conjunction with the audit. This review is a "book review" only. Physical verification of posted material is not required. The review should confirm the continued need for each aid, that no procedure changes have been made that affect the aids, and that the Operator Aid Record Index is correct and up-to-date. The reviewer documents the review by writing below the last index entry "Reviewed by (name) on (date)."  
If maintaining via an electronic system, the audit will be noted within the electronic system or a memo to the file.

**17.5.2 Audits**

The OM directs an audit of all aids listed in the Operator Aid Record (both posted operator aids and aids contained in the Control Area Information Book).

Perform audits semi-annually and include the following (for those operator aids not initiated by the operations department, the initiating department is contacted to perform the review):

- A continuing need exists.
- Information contained in operator aids is current and applicable.
- Unauthorized operator aids are removed.
- The physical location of each operator aid is verified. Operator aids no longer posted should be removed from the index or replaced, as needed.
- Each operator aid is legible and in good condition, and no unapproved pen-and-ink changes exist.
- Drawings or controlled documents that are approved and posted as operator aids are confirmed as the correct revision.
- The use of operator aids is minimized.

Document the audit by writing below the last entry in the Operator Aid Record Index " Audit performed by (name) on (date)." If maintaining via an electronic system, the audit will be noted within the electronic system or a memo to the file. List any operator aids not audited due to inaccessibility.

**No: P315      Conduct of Operations Manual**  
**Attachment 17. Operator Aid Postings (Cont.) (Page 5 of 9)**

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At the end of each audit, results of that audit will be submitted to the OM. The report should include a short description of any problems found and the actions taken to resolve the problems. In addition, a list of those operator aids that the OM recommends be made permanent. For instance, a permanent procedure change may be required or a fabricated label may need to be produced.

The possible need for permanent information should be addressed if the operator aid has been in the operator aid log for two or more quarters. The OM approves all information that is to be permanently posted and ensures an adequate review of the information is completed. In some cases, a design change may need to be initiated to correct an abnormal or hazardous condition that may not be acceptable on a permanent basis.

**17.6 Training**

There is no specific mandatory training or qualification required to implement this attachment. It is recommended that all personnel implementing this document complete [UTrain Course #24669](#), *OS-RTS ConOps, Attachment 17, Operator Aids*. This training will enhance the employee's knowledge as required and as outlined in [DOE O 422.1](#), *Conduct of Operations*.

**17.7 Records**

The following are considered records generated by this attachment and must be managed in accordance with [P1020-1](#), *Laboratory Records Management*, and any local procedures:

- Operator Aid Request
- Operator Aid Record Sheet

**17.8 Acronyms**

LANL	Los Alamos National Laboratory
OM	Operations Manager
PCM	Personal Contamination Monitor
PPE	Personal Protective Equipment

**17.9 References**

- [P121](#), *Radiation Protection*
- [DOE O 422.1](#), *Conduct of Operations*
- [P1020-1](#), *Laboratory Records Management*

**17.10 Appendices**

- Appendix 17-A. *Sample Topics and Types of Operator Aids*
- Appendix 17-B. *Template for Operator Aid Request*
- Appendix 17-C. *Template for Operator Aid Record Sheet*
- Appendix 17-D. *Template for Control Area Information Book Index Sheet*

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**No: P315      Conduct of Operations Manual**  
**Attachment 17. Operator Aid Postings (Cont.) (Page 6 of 9)**

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**Appendix 17-A.      Sample Topics and Types of Operator Aids (Page 1 of 1)**

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Operator Aids should include, but are not limited to, the following:

1. Pages from procedures posted on bulletin boards, under desk glass, etc.
2. Conversion charts or formulas maintained in the Control Area Information Book.
3. Plaques, conversion charts, formulas posted in vicinity of operating equipment indicating devices (e.g., gages, meters, recorders, etc.).
4. Set points on posted instructions for setting tank level indicator set points.
5. Set points on various instrument nameplates in the field.
6. Instructions or set points on where to set equipment or component operation (e.g., Glovebox air monitor flows).
7. Tables or charts used by operators that are not in a procedure and are not controlled by some other method.
8. Notes (permanent or temporary) that instruct operators to use specific instrumentation points for Logbook, Run book or round sheet readings.
9. Motor Control Center load lists if not controlled by a procedure or the Configuration Management System.

**No: P315      Conduct of Operations Manual  
Attachment 17. Operator Aid Postings (Cont.) (Page 7 of 9)**

**Appendix 17-B. Template for Operator Aid Request (Page 1 of 1)**

OPERATOR AID REQUEST FORM				
OA #	-	-	REV.	
<b>SECTION I</b>				
TYPE OF AID : (check one)	Drawing Sketch	Graph Chart	List	Other
TITLE :		LOCATION OF AID :		
SOURCE DOCUMENT:		REV. NO.	DATE :	
REASON :				
REQUESTER SIGNATURE :			DATE:	
PRINT NAME :			PHONE NUMBER :	
<b>SECTION II</b>				
RECOMMENDED FOR (check one):		APPROVAL	DISAPPROVAL*	
COMMENTS OR REASONS FOR DISAPPROVAL :				
RESPONSIBLE MANAGER SIGNATURE : _____ DATE : .				
PRINT NAME :				
* Requester document reasons why approval should still be required				
<b>SECTION III</b>				
(check one)	APPROVAL	DISAPPROVAL*		
COMMENTS OR REASONS FOR DISAPPROVAL :				
REQUIRED TRAINING?				
(check one)	REQUIRED READING	SHIFT BRIEFING	NONE	OTHER
<b>SECTION IV</b>				
POSTED BY SIGNATURE :			DATE :	
PRINT NAME :				
<b>SECTION V</b>				
REASON FOR REMOVAL :				
OPERATIONS MANAGER SIGNATURE :			DATE :	
PRINT NAME :				
<b>SECTION VI</b>				
OPERATOR AID REMOVED BY (signature) :			DATE :	
PRINT NAME :				





**No: P315      Conduct of Operations Manual**  
**Attachment 18. Equipment and Piping Labeling (Page 1 of 1)**

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## **18.0    EQUIPMENT AND PIPING LABELING**

### **18.1    Equipment and Piping Labeling**

Equipment and piping labeling must be managed in accordance with the applicable Laboratory policies and procedures. See the [LANL Engineering Standards Manual](#), Chapter 1, Section 200, *Equipment Numbering and Labeling*.

The minimum scope of this attachment must be the equipment and systems credited in accordance with the requirements of Attachment 8, Section 8.1.2.

### **18.2    Equipment and Piping Labeling Administration**

The use of informal labels is not authorized. Instead, a new label must be generated and installed in accordance with established engineering standards. In the period between discovery of a missing or damaged label and its formal replacement, a facility approved and controlled temporary label should be used.

Personnel must identify damaged or missing labels during routine operations (e.g., following maintenance, during facility rounds and/or tours, executing alignment checklists, etc.) and, if a new label is required, a new label must be generated and installed in accordance with established engineering standards. It is recommended that a separate review of labels for safety related systems or components be performed on a periodic basis.

The installation of any new or replacement labels is documented through the facility maintenance work control system or other facility specific process.

The application and content of a temporary label must be approved by the Operations Manager (OM) or designee.

Temporary labels to replace a damaged label must contain the same information as the original label. Otherwise, personnel must acknowledge that detailed information was unavailable and formally request engineering to provide the data.

### **18.3    Training**

There is no specific mandatory training or qualification required to implement this attachment. It is recommended that all personnel implementing this document complete [UTrain Course #24670](#), *OS-RTS ConOps, Attachment 18, Equipment and Piping Labeling*. This training will enhance the employee's knowledge as required and as outlined in [DOE O 422.1](#), *Conduct of Operations*.

## IMPORTANT

If you wish to receive credit for the preceding document you **must** enter the course through [UTrain](#) **not** the Policy Office website.