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**CONDUCT OF MAINTENANCE (P950)
 OPERATIONS AND MAINTENANCE MANUAL
 OPERATIONS & MAINTENANCE CRITERION**

TITLE: FIRE DOORS

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RECORD OF REVISIONS

Revision No.	Date	Description
0	04/30/98	Initial Issue
1	05/31/01	This revision reflects the conversion from a WordPerfect document into a Microsoft Word document and additional clarification on how to develop criteria. This revision includes: <ul style="list-style-type: none"> • The addition of a Table of Contents, • The use of basis statements in Sections 6, 7, and 9, • Revision to Section 9, "Required Documents," and • Further clarification in the use of references. • Changes to Section 4.4 per Writer's Guide change.
	7/29/02	Incorporation of wording changes from FM Council in Section 6.0
	6/22/07	Revised document to incorporate updated references and align requirements to current standards in NFPA 80, 2007 Edition. Reviewed Lessons Learned Database from 7/31/03 to 02/01/07 for relevant information.
2	2/23/10	Updated Criterion to reflect current information from adopted references including: <ul style="list-style-type: none"> • NFPA 80, <i>Standard for Fire Doors and Other Opening Protectives</i>. 2010 Edition. • NFPA 72, <i>National Fire Alarm and Signaling Code</i>, 2010 Edition. • PD 1220, <i>Fire Protection Program</i> • P 315, <i>Conduct of Operations Manual</i> • P 950, <i>Conduct of Maintenance</i>

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CRITERION 732

FIRE DOORS

1.0 PURPOSE

This document addresses the requirements of P 315, *Conduct of Operations Manual*, and P 950, *Conduct of Maintenance*, by defining the minimum operations and maintenance criteria for structures, systems, and components that it covers. The criterion lists requirements that are based on codes, standards, contract commitments, lessons learned, or business case. It also lists recommendations based on industry practices, operational experience, or business case. Guidance for implementation of the requirements and recommendations is also provided.

Implementation of this Criterion satisfies LANL PD 1220, *Fire Protection Program*, 10 CFR 851, *Worker Safety and Health Program*, Appendix A.2 "Fire Protection," and DOE Order 420.1B, *Facility Safety*, Chapter II "Fire Protection" ITM requirements for the subject equipment / system. Compliance with 10 CFR 851 and DOE Order 420.1B are required by the LANL Prime Contract (DOE Contract No. DE-AC52-06NA25396).

2.0 SCOPE

This Criterion addresses the routine inspection, testing and preventive and predictive maintenance of fire doors.

3.0 ACRONYMS AND DEFINITIONS

3.1 Acronyms

AHJ	Authority Having Jurisdiction
CFR	Code of Federal Regulations
DOE	Department of Energy
FOD	Facility Operations Director
DSA	Documented Safety Analysis
FP-DO	Fire Protection – Division Office
ITM	Inspection, Testing, and Maintenance
LANL	Los Alamos National Laboratory
MM	Maintenance Manager
MSS	Maintenance and Site Services
NRTL	Nationally Recognized Testing Laboratory
OM	Operations Manager
O&M	Operations and Maintenance
TSR	Technical Surveillance Requirement

3.2 Definitions

Management Level (ML1, ML2, ML3, ML4)- ML designation is used to grade the structures, systems, equipment, and components and associated activities based on their importance to the protection of the public, environment, and workers, security, and the Laboratory mission. See AP 341-502 for definitions of each ML level.

Fire Door Assembly - Any combination of a fire door, a frame, hardware, and other accessories that together provide a specific degree of fire protection to the opening. Types of fire doors typically used at LANL include swinging fire doors, horizontal and vertical sliding fire doors, elevator doors, and rolling fire doors (other approved types of fire doors may be used).

4.0 RESPONSIBILITIES

4.1 MSS-Division Leader (MSS-DL)

Receives and approves or rejects, in conjunction with the AHJ, requests for variances from this criterion. Maintains the record of decision for all variance requests.

4.2 MSS- Maintenance Programs (MP)

Responsible for the administrative content, and for monitoring applicability and implementation status of this Criterion. MSS-MP will assist organizations that are not applying or meeting the implementation expectations contained herein or will elevate their concerns to the appropriate level of LANL management.

4.3 Fire Protection Division Office (FP-DO)

FP-DO is responsible for the technical content, monitoring the applicability and the implementation status of this Criterion. FP-DO will assist organizations that are not applying or meeting implementation expectations or will elevate concerns to the appropriate level of LANL management.

4.4 Facility Operations Director (FOD)

Responsible for implementation of this O&M Criterion for identified systems/equipment within their facility boundaries.

4.5 Operations Manager (OM)

Responsible to the FOD for implementing operations portions of this Criterion and for coordinating the transfer of systems/equipment to the Maintenance Manager for maintenance activities. The OM with concurrence from the FOD will prioritize implementation within budget allocations.

4.6 Maintenance Manager (MM)

Responsible to the FOD and the MSS-DL for implementing the maintenance portions of this Criterion and for coordinating the transfer of systems/equipment to the Operations

Manager at the conclusion of maintenance activities. The MM with concurrence from the FOD will prioritize implementation within budget allocations.

4.7 Authority Having Jurisdiction (AHJ)

The AHJ (LANL Fire Marshal) is responsible for providing a decision on specific technical questions regarding the systems or equipment relevant to this Criterion.

The LANL Fire Marshal is an approval authority for all exceptions and variances to this Criterion. The LANL Fire Marshal cannot approve deviations or exemptions to CFR, DOE Orders or NFPA Codes and Standards – the fire protection AHJ for these matter is the LASO Manager per DOE O 420.1B (see PD 1220).

5.0 PRECAUTIONS AND LIMITATIONS

5.1 Precautions

This section is not intended to identify all applicable precautions necessary for implementation of this Criterion. However, all applicable precautions should be contained in the implementing procedure(s) or work control authorization documents. The following precautions are intended only to assist the author of a procedure or work control document in the identification of hazards and precautions that may not be immediately obvious.

5.2 Limitations

The intent of this Criterion is to identify the minimum requirements and recommendations for SSC operation and maintenance across the Laboratory. Each Criterion user is responsible for the identification and implementation of additional facility specific requirements and recommendations based on their authorization basis and unique equipment and conditions, (e.g., equipment history, manufacturer warranties, operating environment, manufacturer O&M requirements and guidance, etc.).

Nuclear facilities and moderate to high hazard non-nuclear facilities will typically have additional facility-specific requirements beyond those presented in this Criterion. Nuclear facilities should implement the requirements of DOE Order 433.1A as the minimum programmatic requirements for a maintenance program. Additional requirements and recommendations for SSC operation and maintenance may be necessary to fully comply with the current DOE Order or the Code of Federal Regulations (CFR) as applicable.

Nuclear facilities, certain high hazard facilities, and explosives facilities may have additional facility specific requirements beyond those presented in this Criterion which are contained in the Documented Safety Analysis (DSA), Technical Safety Requirements (TSR), or facility safety plans, as applicable.

Automatic fire detectors (smoke or heat detectors) used with automatic closing fire doors are subject to inspection, testing and maintenance (ITM) requirements defined by

	<p style="text-align: center;">Operations and Maintenance Manual Criterion 732: Fire Doors</p>	<p style="text-align: right;">Criterion 732, R2 Page 8 of 14</p>
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NFPA 72, *National Fire Alarm and Signaling Code*, and described within O&M Criterion 720, *Fire Alarm Systems*, and are outside the scope of this Criterion.

6.0 REQUIREMENTS

Minimum requirements for all users are specified in this section. Requested variances to these requirements shall be prepared and submitted to MSS-MP for review and approval. The MSS Division Leader approves or denies variances. The Criterion users are responsible for analysis of operational performance and SSC replacement or refurbishment based on this analysis. Laws, codes, contractual requirements, engineering judgment, safety matters, and operations and maintenance experience drive the requirements contained in this section.

Note: Discovery of SSC with a degraded or non-conforming condition is a triggering input to the Operability Determination and Functional Assessment process defined in AP-341-516. Degraded or non-conforming conditions include, but are not limited to, failed equipment or components, unsatisfactory readings, code or standard violations and fire protection impairments. Personnel performing tests or inspections under this O&M Criterion are not responsible nor authorized to perform the Operability Determination. Any degraded or non-conforming condition discovered under this O&M Criterion shall be communicated to the FOD Representative for input to the AP-341-516 process. While that process may not apply in Low Hazard Non-Nuclear and Office facilities, the same concept applies. The FOD organization is responsible to determine the response (taking equipment out of service, establishing fire watches, limiting operations, etc.) to SSC degraded and non-conforming conditions

6.1 Operations Requirements

Operations Checklist

Fire doors must remain operable at all times. Fire doors shall be deemed operable when the following conditions are met:

- All fire doors and related hardware are in the required locations and in good physical condition.
- Each fire door is equipped with nationally recognized testing laboratory (NRTL) listed/approved hardware as required.
- Opening and closing hardware is operational.
- Fire doors are closed unless provided with automatic releasing and closing devices.
- Fire doors securely latch in the closed position.

Basis: NFPA 80, *Standard for Fire Doors and Other Opening Protectives*, 2010 Edition. Compliance with this *Code* is required per 10 CFR 851, Appendix A.2, and DOE O 420.1B Chapter II "Fire Protection," both of which are required per the LANL Prime Contract as part of implementing a comprehensive fire protection program.

6.2 Inspection, Testing, and Maintenance Requirements

General Inspection Criteria

6.2.1.1 Fire door assemblies are inspected and tested not less than annually. A written record of the inspection shall be signed and kept for inspection by the AHJ.

6.2.1.2 Tinclad and Kalamein doors are inspected annually for dry rot of the wood core.

6.2.1.3 Chains, ropes or cables employed on suspended doors are inspected annually for excessive wear and stretching.

6.2.1.4 Door openings and the surrounding areas shall be kept clear of anything that could obstruct or interfere with the free operation of the door. Blocking or wedging a door in the open position is prohibited.

6.2.1.5 Fusible links or other heat-actuated devices and release devices shall not be painted.

6.2.1.6 Fire detection devices (heat or smoke detectors) for automatic closing fire door assemblies are in-service, and the control panel is clear of any faults, alarms, supervisory signals, and trouble conditions that would affect automatic operation of the fire door(s) – see O&M Criterion 720, Fire Alarm Systems.

Basis: All of the requirements listed in Section 6.2.1 are based upon NFPA 80, *Standard for Fire Doors and other Opening Protectives*, 2010 Edition. Compliance with this Code is required per 10 CFR 851, Appendix A.2, and DOE O 420.1B Chapter II "Fire Protection," both of which are required per the LANL Prime Contract as part of implementing a comprehensive fire protection program.

Inspection and Functional Testing

6.2.1.7 Functional testing of fire door assemblies are performed by individuals with knowledge and understanding of the operation components of the type of door being tested.

6.2.1.8 Swinging doors with Builders Hardware or Fire Door Hardware.

Fire door assemblies are visually inspected from both sides to assess the overall condition of door assembly, and the following shall be verified.

- (1) No open holes or breaks exist in surfaces or either the door or frame.
- (2) Glazing, vision light frames, and glazing beads are intact and securely fastened in place, if so equipped.

- (3) The door, frame, hinges, hardware, and noncombustible threshold are secured, aligned, and in working order with no visible signs of damage.
- (4) No parts are missing or broken.
- (5) Door clearances do not exceed clearances listed in NFPA 80, Chapter 4.8.4 and 6.3.1.7 2010 Edition.
- (6) The self-closing device is operational; that is, the active door completely closes when operated/released from the full open position.
- (7) If a coordinator is installed, the inactive leaf closes before the active leaf.
- (8) Latching hardware operates and secures the door when it is in the closed position.
- (9) Auxiliary hardware items that interfere or prohibit operation are not installed on the door or frame.
- (10) No field modifications to the door and frame assembly have been performed that void the original listing and installation criteria (e.g., installation of security and access control equipment).
- (11) Gasketing and edge deals, where required, are inspected to verify their presence and integrity.
- (12) Panic and Fire Exit Hardware are in working order with no visible signs of damage.
- (13) Fire detection devices (heat or smoke detectors) for automatic closing fire door assemblies are in-service, and the control panel is clear of any faults, alarms, supervisory signals, and trouble conditions that would affect automatic operation of the fire door(s).

6.2.1.9 Horizontally Sliding, Vertically Sliding, and Rolling Doors.

Fire door assemblies shall be visually inspected from both sides to assess the overall condition of door assembly, and the following shall be verified

- (1) No open holes or breaks exist in surfaces or either the door or frame.
- (2) Slats, endlocks, bottom bar, guide assembly, curtain entry hood, and flame baffle are correctly installed and intact.
- (3) Glazing, vision light frames, and glazing beads are intact and securely fastened in place, if so equipped.
- (4) Curtain, barrel, and guides are aligned, level, plumb, and true.
- (5) Expansion clearance is maintained in accordance with manufacturer's listing.
- (6) Drop release arms and weights are not blocked or wedged.

- (7) Mounting and assembly bolts are intact and secured.
- (8) Attachments to jambs are with bolts, expansion anchors, or as otherwise required by the listing.
- (9) Fire detection devices (heat or smoke detectors) for automatic closing fire door assemblies are in-service, and the control panel is clear of any faults, alarms, supervisory signals, and trouble conditions that would affect automatic operation of the fire door(s).
- (10) No parts are missing or broken.
- (11) Fusible links, if equipped, are in the location; chain/cable, s-hooks, eyes, and so forth, are in good working condition (i.e., no kinked or pinched cable, no twisted or inflexible chain); and links are not painted or coated with dust or grease.
- (12) Auxiliary hardware items that interfere or prohibit operation are not installed on the door or frame.
- (13) No field modifications to the door assembly have been performed that void the original listing and installation criteria.

Basis: All of the requirements listed in Section 6.2.2 are based upon NFPA 80, *Standard for Fire Doors and Other Opening Protectives*, 2010 Edition. Compliance with this *Code* is required per 10 CFR 851, Appendix A.2, and DOE O 420.1B Chapter II "Fire Protection," both of which are required per the LANL Prime Contract as part of implementing a comprehensive fire protection program.

6.3 Maintenance

6.3.1 Guides and bearings are kept well lubricated to facilitate operation.

6.3.2 Chains, ropes or cables on bi-parting counterbalanced doors are checked at least annually and adjustments made to ensure proper latching and to keep the doors in proper relation to the opening.

6.3.3 When holes are left in a door or frame due to changes or removal of hardware or plant-ions (e.g., kick-plates, signs, or security features), the holes shall be repaired by the one of following methods:

- (1) Install steel fasteners that completely fill the holes.
- (2) Fill the screw or bolt holes with the same material as the door or frame.

6.4 Impairments and Modifications

6.4.1 If one or more of the operability requirements listed in Section 6.1.1 are not maintained, follow the actions outlined in Criterion 733, Fire Protection System Impairment Control Program.

6.4.2 Visually inspect the door before returning it to service following an impairment, maintenance, or modification.

6.4.3 Conduct an operational test of the door after completing any repairs or modifications.

Basis: All of the requirements listed in this section are based upon NFPA 80, Standard for Fire Doors and Other Opening Protectives, 2010 Edition. Compliance with this Code is required per 10 CFR 851, Appendix A.2, and DOE O 420.1B Chapter II "Fire Protection," both of which are required per the LANL Prime Contract as part of implementing a comprehensive fire protection program.

7.0 RECOMMENDED AND GOOD PRACTICES

The information provided in this section is recommended based on acceptable industry practices and should be implemented by each user based on the unique application and operating history of the subject systems/equipment.

7.1 Operations Recommendations

There are no operational recommendations for this Criterion.

7.2 Maintenance Recommendations

There are no maintenance recommendations for this Criterion.

8.0 GUIDANCE

8.1 Operations Guidance

There are no maintenance recommendations for this Criterion.

8.2 Maintenance Guidance

There are no maintenance recommendations for this Criterion.

9.0 REQUIRED DOCUMENTATION

Table 9-1 Documentation Parameters

MAINTENANCE HISTORY DOCUMENTATION PARAMETERS				
PARAMETER	ML 1	ML 2	ML 3	ML 4
Fire Doors Maintenance Activities				
Repair / Adjustments	X	X	X	X
PM Activities	X	X	X	X
Fire Doors Equipment Problems				
Failure Dates	X	X	X	X
Failure Root Cause	X	X	X	X
Fire Doors Inspection Results (per this Criterion)				
Inspection Date	X	X	X	X
SSC Condition	X	X	X	X

Basis: Documentation of the parameters listed in Table 9-1 above satisfies the requirements of P 950, Section 3.5.15 which states, "A maintenance history and trending program is maintained to document data, provide historical information for maintenance planning, and support maintenance and performance trending of facility systems and components"

10.0 REFERENCES

The following references, and associated revisions, were used in the development of this document.

- 10.1 P 315, *Conduct of Operations Manual*
- 10.2 P 950, *Conduct of Maintenance*
- 10.3 AP-341-502, *Management Level Determination*
- 10.4 NFPA 80, *Standard for Fire Doors and Other Opening Protectives*, 2010 Edition
- 10.5 PD 1220, *Fire Protection Program*
- 10.6 10 CFR 851, *Worker Safety and Health Program*, Appendix A.2 "Fire Protection."
- 10.7 DOE Order 420.1B, *Facility Safety*
- 10.8 DOE, Order 433.1, *Maintenance Management Program for Nuclear Facilities*
- 10.9 O&M 720, *Fire Alarm Systems*

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10.10 O&M 733, *Fire Protection System Impairment Control Program*