UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 E. LAMAR BLVD
ARLINGTON TX 76011-4511

September 26, 2016

Mr. Oscar A. Limpias
Vice President-Nuclear and CNO
Nebraska Public Power District
Cooper Nuclear Station
72676 648A Avenue
P.O. Box 98
Brownville, NE 68321

SUBJECT: COOPER NUCLEAR STATION – NRC TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000298/2016008

Dear Mr. Limpias:

On August 26, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Cooper Nuclear Station and discussed the results of this inspection with you and other members of your staff. The NRC team documented the results of this inspection in the enclosed inspection report.

The NRC team did not identify any findings or violations of more than minor significance.

In accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC's Public Document Room or from the Publicly Available Records (PARS) component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Gregory E. Werner, Chief
Engineering Branch 2
Division of Reactor Safety

Docket No. 50-298
License No. DPR-46

Enclosure:
Inspection Report 05000298/2016008
w/Attachment: Supplemental Information

cc w/enclosure: Electronic Distribution

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Letter to Oscar A. Limpias from Gregory E. Werner, dated September 26, 2016

SUBJECT: COOPER NUCLEAR STATION – NRC TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000298/2016008

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	05000298
License:	DPR-46
Report Nos.:	05000298/2016008
Licensee:	Nebraska Public Power District
Facility:	Cooper Nuclear Station
Location:	72676 648A Ave Brownville, NE
Dates:	August 8 through August 26, 2016
Team Leader:	J. Mateychick, Senior Reactor Inspector, Engineering Branch 2
Team:	S. Alferink, Reactor Inspector, Engineering Branch 2 G. Pick, Senior Reactor Inspector, Engineering Branch 2 J. Watkins, Reactor Inspector, Engineering Branch 2 R. Deese, Senior Reactor Analyst, Plant Support Branch 2
Accompanying Personnel:	P. Lain, Senior Fire Protection Engineer, Office of Nuclear Reactor Regulation, Division of Risk Assessment
Approved By:	Gregory E. Werner Chief, Engineering Branch 2 Division of Reactor Safety

Enclosure

SUMMARY

IR 05000298/2016008; 08/08/2016 – 08/26/2016; Cooper Nuclear Station; Triennial Fire Protection Team Inspection.

The report covers a two-week triennial fire protection team inspection by specialist inspectors from Region IV. No findings were documented. The significance of inspection findings is indicated by their color (i.e., Green, White, Yellow, or Red) and determined using Inspection Manual Chapter 0609, "Significance Determination Process," dated April 29, 2015. Cross-cutting aspects are determined using Inspection Manual Chapter 0310, "Aspects within the Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated August 1, 2016. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

A. NRC-Identified and Self-Revealing Findings

None

B. Licensee-Identified Violations

None

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R05 Fire Protection (71111.05XT)

This report presents the results of a triennial fire protection team inspection conducted at Cooper Nuclear Station in accordance with NRC Inspection Procedure 71111.05XT, "Fire Protection - NFPA 805 (Triennial)," dated January 31, 2013. The team reviewed the licensee's fire protection program against the requirements of National Fire Protection Association (NFPA) Standard 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants," 2001 Edition, as incorporated by Title 10 of the *Code of Federal Regulations* (10 CFR) 50.48(c). The NFPA 805 standard establishes a comprehensive set of requirements for fire protection programs at nuclear power plants. The standard incorporates both deterministic and risk-informed, performance-based concepts. The inspection team evaluated the implementation of the approved fire protection program in selected risk-significant areas with an emphasis on the procedures, equipment, fire barriers, and systems that ensure the plant can achieve and maintain a safe and stable condition.

Inspection Procedure 71111.05XT requires the selection of three to five fire areas and one or more mitigating strategies for review. The team used the fire hazards analysis section of the Cooper Nuclear Station NFPA 805 fire probabilistic risk assessment to select the following four risk-significant fire areas (inspection samples) for review:

Fire Area	Description	Category
CB-D	Control Room, Computer Room, Cable Spreading Room, Cable Expansion Room, Auxiliary Relay Room	Performance-Based / Primary Control Station
DG-A	Diesel Generator Room 1A	Deterministic
RB-FN	Reactor Building 903' Northeast Corner	Performance-Based
RB-M	Reactor Building South West Corner, RHR Heat Exchanger Room B and RWCU Hear Exchanger Room 932'	Performance-Based

Since this was the first triennial inspection following NRC approval of the risk-informed, performance-based fire protection program, the team reviewed samples of the implementation items required to be completed in accordance with Operating License Condition 2.C.(4). The team also reviewed samples of the plant modifications credited to support the approved fire protection program.

The team evaluated the licensee's fire protection program using the applicable requirements, which included the plant Technical Specifications, Operating License Condition 2.C.(4), NRC safety evaluations, 10 CFR 50.48, and NFPA 805. The team also reviewed related documents that included the final safety analysis report, the nuclear safety capability assessment, and the fire safety analysis. Specific documents reviewed by the team are listed in the attachment.

Four fire area inspection samples and two mitigating strategy samples were completed.

.01 Protection of Safe Shutdown Capabilities

a. Inspection Scope

The team reviewed the nuclear safety capability assessment, piping and instrumentation diagrams, and fire response procedures to verify that a safe shutdown success path, free of fire damage, would be available to meet the nuclear safety goals, objectives, and performance criteria in the event of a fire under any plant operational mode or configuration.

The team reviewed applicable sections of the fire response procedures for the selected fire areas and their associated fire scenarios to verify that the shutdown methodology properly identified the components and systems necessary to achieve and maintain safe and stable plant conditions. The team performed a walkdown of the procedure to verify that recovery actions credited to achieve the nuclear safety performance criteria were feasible. The team evaluated the feasibility of the recovery actions against the criteria established in the licensee's fire protection program as approved in the safety evaluation report. Specifically, the team verified that licensee personnel credited for procedure implementation had procedures available, were trained on implementation, and were available in the event a fire occurred. The team also verified that the operators could reasonably be expected to perform the recovery actions within the time required to maintain plant parameters within specified limits.

b. Findings

No findings were identified.

.02 Passive Fire Protection

a. Inspection Scope

The team walked down accessible portions of the selected fire areas to observe the material condition and configuration of the installed fire area boundaries (including walls, fire doors, and fire dampers) and verify that the fire barriers were appropriate for the fire hazards in the area. The team compared the installed configurations to the approved construction details, supporting fire tests, and applicable license commitments.

The team reviewed installation, repair, and qualification records for a sample of penetration seals to ensure that the installation met the engineering design. The team also reviewed similar records for the rated fire wraps to ensure the material possessed an appropriate fire rating and that the installation met the engineering design. The team reviewed modifications related to the conversion to a risk-informed fire protection program.

b. Findings

No findings were identified.

.03 Active Fire Protection

a. Inspection Scope

The team reviewed the design, maintenance, testing, and operation of the fire detection and suppression systems in the selected fire areas. The team verified the automatic detection systems and the manual and automatic suppression systems were installed, tested, and maintained in accordance with the National Fire Protection Association code of record or approved deviations and that each suppression system was appropriate for the hazards in the selected fire areas. The team verified that the licensee had appropriately reduced the frequencies of fire protection surveillances. The licensee implemented the process described in Electric Power Research Institute Technical Report 1006756, "Fire Protection Surveillance Optimization and Maintenance Guide for Fire Protection Systems and Features."

The team walked down accessible portions of the detection and suppression systems in the selected fire areas. The team walked down major system support equipment in other areas (e.g., fire pumps and Halon supply systems) to assess the material condition of these systems and components.

The team reviewed the flow and pressure tests for electric and diesel fire pumps to verify that the pumps met their design requirements. The team also reviewed the Halon suppression functional tests to verify that the system capability met the design requirements.

The team assessed the fire brigade capabilities by reviewing training, qualification, and drill critique records. The team also reviewed pre-fire plans and smoke removal plans for the selected fire areas to determine if appropriate information was provided to fire brigade members and plant operators to identify safe shutdown equipment and instrumentation and to facilitate suppression of a fire that could impact post-fire safe shutdown capability. In addition, the team inspected fire brigade equipment to determine operational readiness for firefighting.

The team observed an unannounced fire drill and subsequent drill critique on August 26, 2016, using the guidance contained in Inspection Procedure 71111.05AQ, "Fire Protection Annual/Quarterly," dated September 30, 2010. The team observed fire brigade members fight a simulated fire at the station startup transformer. The team verified that the licensee identified problems, openly discussed them in a self-critical manner at the drill debrief, and identified appropriate corrective actions. Specific attributes evaluated were: (1) proper wearing of turnout gear and self-contained breathing apparatus; (2) proper use and layout of fire hoses; (3) employment of appropriate firefighting techniques; (4) sufficient firefighting equipment was brought to the scene; (5) effectiveness of fire brigade leader communications, command, and control; (6) search for victims and propagation of the fire into other areas; (7) smoke removal operations; (8) utilization of pre-planned strategies; (9) adherence to the pre-planned drill scenario; and (10) drill objectives.

b. Findings

No findings were identified.

.04 Protection from Damage from Fire Suppression Activities

a. Inspection Scope

The team performed plant walk downs and document reviews to verify that redundant trains of systems required for hot shutdown, which are located in the same fire area, would not be subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems. Specifically, the team verified:

- A fire in one of the selected fire areas would not directly, through production of smoke, heat, or hot gases, cause activation of suppression systems that could potentially damage all redundant safe shutdown trains.

- A fire in one of the selected fire areas or the inadvertent actuation or rupture of a fire suppression system would not directly cause damage to all redundant trains (e.g., sprinkler-caused flooding of other than the locally affected train).

- Adequate drainage was provided in areas protected by water suppression systems.

b. Findings

No findings were identified.

.05 Shutdown from a Primary Control Station

a. Inspection Scope

Review of Methodology

The team reviewed the nuclear safety capability assessment, procedures, piping and instrumentation drawings, electrical drawings, and other supporting documents to verify that the licensee can achieve and maintain safe and stable plant conditions from the primary control station in the event a fire required evacuation of the control room.

The team verified that the nuclear safety capability assessment properly identified the components and systems necessary to meet the nuclear safety performance criteria for the fire area selected. Specifically, the team determined the adequacy of the systems selected to meet the criteria for reactivity control, inventory and pressure control, decay heat removal, vital auxiliaries, and process monitoring. For the primary control station, which was analyzed using a performance-based approach, the team verified that the analysis included a consideration of all the necessary cables and equipment associated with operation and control of both AC and DC power supplies.

The team verified that the transfer of command and control from the control room to the primary control station would be unaffected by fire-induced circuit faults (e.g., by the provision of separate fuses and power supplies for shutdown control circuits).

Review of Operational Implementation

The team verified that the training program for licensed and non-licensed operators included the procedures for achieving and maintaining safe and stable plant conditions, including any necessary recovery actions. The team also verified that sufficient personnel required to achieve and maintain safe and stable plant conditions were properly trained and were available at all times among the normal on-site staff, exclusive of the fire brigade.

The team performed a timed walkdown of Procedure 5.4FIRE-S/D, "Fire Induced Shutdown from Outside Control Room," Revision 65, with licensed and non-licensed operators to determine the adequacy of the procedure. The team verified that the recovery actions taken were feasible and that operators could reasonably be expected to implement the procedure within the applicable time requirements to achieve the nuclear safety performance criteria. The team evaluated the feasibility of the recovery actions using the criteria established in the licensee's approved fire protection program.

The team also verified that the licensee conducted periodic operational tests of the transfer and isolation capability and instrumentation and control functions used for transferring control from the main control room to the primary control station and other locations where recovery actions would be performed. The team verified that the tests were adequate to prove the functionality of the primary control stations' capability to meet performance criteria and achieve and maintain safe and stable plant conditions.

b. Findings

No findings were identified.

.06 Circuit Analysis

a. Inspection Scope

The team reviewed the nuclear safety capability assessment to verify that the licensee identified the circuits that may impact the ability to achieve and maintain safe and stable conditions. The team verified, on a sample basis, that the licensee properly identified the cables for equipment required to achieve and maintain safe and stable conditions in the event of a fire in the selected fire areas. The team verified that these cables were either adequately protected from the potentially adverse effects of fire damage or were analyzed to show that fire-induced faults (e.g., hot shorts, open circuits, and shorts to ground) would not prevent achieving safe and stable conditions. The team verified that the licensee's analysis considered potential spurious operations due to fire-induced cable faults.

The team's evaluation focused on the cables of selected components from the high pressure core injection system, the residual heat removal system, the automatic depressurization system, motor-operated valves, the alternate shutdown panel, isolation and transferring control equipment and the local alternate shutdown panels. For the sample of components selected, the team reviewed process and instrumentation drawings and electrical elementary and block diagrams, and the team identified power, control, and instrument cables necessary to support their operation. In addition, the team reviewed cable and conduit routing information to verify that fire protection features

were in place as needed to satisfy the separation requirements specified in the fire protection license basis. Specific components reviewed by the team are listed in the attachment.

b. Findings

No findings were identified.

.07 Communications

a. Inspection Scope

The team inspected the contents of designated emergency storage lockers and reviewed the procedure for shutdown from outside of the control room to verify that portable radio communications and fixed emergency communications systems were available, operable, and adequate for the performance of designated activities. The team verified the capability of the communication systems to support the operators in the conduct and coordination of their required actions. The team also verified that the design and location of communications equipment, such as repeaters and transmitters, would not cause a loss of communications during a fire. The team discussed system design, testing, and maintenance with the system engineer.

b. Findings

No findings were identified.

.08 Emergency Lighting

a. Inspection Scope

The team reviewed the emergency lighting provided, both in fixed and portable form, along access routes and egress routes and at control stations, plant parameter monitoring locations, and recovery action locations. The team verified that the emergency lighting was adequate for operators to perform the required recovery actions during a walkdown of the procedure for shutdown from outside of the control room. Specifically, the team verified:

- The distribution system contained protective devices so that a fire in the area will not cause a loss of emergency lighting in any unaffected area needed to achieve and maintain safe and stable plant conditions.

- The battery power supplies had a capacity sufficient to support recovery actions necessary to meet the nuclear safety performance criteria.

- The illumination was sufficient for operators to perform the required recovery actions for a shutdown from outside the control room.

- The operability testing and maintenance of the emergency lighting followed licensee procedures and accepted industry practice.

- The emergency lighting batteries were maintained consistent with the manufacturer's recommendations.

b. Findings

No findings were identified.

.09 Cold Shutdown Repairs

a. Inspection Scope

The team determined that the licensee did not credit cold shutdown repairs to meet the nuclear safety performance criteria. The team reviewed the nuclear safety capability assessment and interviewed licensee personnel and determined that the licensee does not require transitioning to cold shutdown to achieve a safe and stable plant condition.

b. Findings

No findings were identified.

.10 Compensatory Measures

a. Inspection Scope

The team verified that compensatory measures were implemented for out-of-service, degraded, or inoperable fire protection and success path equipment, systems, or features (e.g., detection and suppression systems and equipment; passive fire barriers; or pumps, valves, or electrical devices providing nuclear safety functions or capabilities for meeting performance criteria) necessary to achieve and maintain safe and stable plant conditions. The team also verified that the short-term compensatory measures compensated for the degraded function or feature until appropriate corrective action could be taken and that the licensee was effective in returning the equipment to service in a reasonable period of time.

b. Findings

No findings were identified.

.11 Control of Transient Combustibles and Ignition Sources

a. Inspection Scope

The team reviewed the licensee's approved fire protection program, implementing procedures, and programs for the control of ignition sources and transient combustibles. The team assessed the licensee's effectiveness in preventing fires and in controlling combustible loading within limits established in the fire hazards analysis. The team performed plant walk downs to independently verify that transient combustibles and ignition sources were being properly controlled in accordance with the administrative controls.

b. Findings

No findings were identified.

.12 Radiological Release

a. Inspection Scope

The team verified that the licensee provided reasonable assurance that a fire would not result in a radiological release that adversely affects the public, plant personnel, or the environment. The team also verified that the licensee evaluated that any radiation release to any unrestricted area resulting from fire suppression activities (but not involving fuel damage) were as low as reasonably achievable and would not exceed applicable 10 CFR Part 20 limits. The team verified that the licensee analyzed the radioactive release on a fire area basis. The team walked down the selected fire zones and verified that the pre-fire plan tactics and instructions were consistent with the potential radiological conditions identified in the analyses.

b. Findings

No findings were identified.

.13 Non-Power Operations

a. Inspection Scope

The plant did not enter an outage during the inspection. However, the team verified that the licensee performed the following activities:

- Defined higher risk evolutions that are performed during outages.
- Defined the key safety functions required to maintain the plant in a safe and stable condition during non-power operational modes.
- Performed the nuclear safety capability assessment during non-power operations and defined specific pinch points where one or more key safety functions could be lost.
- Established additional fire protection defense-in-depth actions to be taken during higher risk evolutions in the locations of the pinch points where key safety functions could be lost.

b. Findings

No findings were identified.

.14 Monitoring Program

a. Inspection Scope

The team verified that the licensee established a monitoring program to ensure that the availability and reliability of the fire protection systems, structures, and components credited in the performance-based analyses are maintained and to assess the performance of the fire protection program in meeting the nuclear safety performance criteria. The team verified that the monitoring program ensured the assumptions in the engineering analysis remain valid. The team also verified that the licensee was maintaining acceptable levels of availability, reliability, and performance per its license condition. When the established levels of availability, reliability, and performance were not met, the team verified that the licensee took appropriate corrective actions to return fire protection systems and features to the established acceptable levels.

b. Findings

Introduction. The team identified an unresolved item associated with the licensee's implementation of the monitoring program required in Section 2.6 of National Fire Protection Association (NFPA) Standard 805, "Performance-Based Standard for Fire Protection for Light-Water Reactor Electric Generating Plants." Specifically, the team required additional information to determine whether the licensee's actions to set the action levels for the availability of some plant components at the components' maintenance rule monitoring values and the licensee's performance of a risk-informed sensitivity analysis to ensure that the assumptions in the engineering analysis remained valid were acceptable.

Description. As part of the transition to a performance-based, risk-informed fire protection program, the licensee adopted the requirements of NFPA 805. NFPA 805 requires the following in Section 2.6:

> **Monitoring.** A monitoring program shall be established to ensure that the availability and reliability of the fire protection systems and features are maintained and to assess the performance of the fire protection program in meeting the performance criteria. Monitoring shall ensure that the assumptions in the engineering analysis remain valid.

The team reviewed selected samples of equipment monitored by the licensee using Procedure 3-CNS-DC-357, "NFPA 805 Monitoring Program," Revision 0, to ensure that the licensee's program properly implemented the requirements of NFPA 805, Section 2.6. The team also reviewed Engineering Report Number ER2015-002, "NFPA 805 Fire Protection Monitoring Program," Revision 2.

The team observed that for components used in the fire probabilistic risk assessment, the unavailability time for those components was monitored using the existing maintenance rule monitoring program. These components included the:

- Control rod drive pumps
- Core spray pumps
- Emergency diesel generators

- Emergency station service transformer
- Startup station service transformer
- High pressure core spray pump
- Instrument air compressors
- Residual heat removal pumps
- Standby liquid control pumps
- Service water pumps

The team noted that the action levels for availability in the maintenance rule monitoring program were greater than the assumptions in the fire probabilistic risk assessment. With this observation, the team questioned the licensee as to whether this met the requirement in NFPA 805 to maintain the assumptions in the engineering analysis. The licensee informed the team that they had performed a sensitivity analysis to determine the significance of monitoring at a higher level of unavailability via the maintenance rule. This analysis determined an increase in core damage frequency for the additional unavailability time that could be accrued above the assumption for availability in the fire probabilistic risk assessment and up to the maintenance rule monitoring value for unavailability. This increase in core damage frequency was then determined to be acceptable if it did not exceed 1.0E-6/year. The team noted that for an individual component this screening criterion would not exceed more than 2 percent of the licensee's baseline fire core damage frequency.

The team was aware that some particular aspects of the monitoring program were being discussed between the industry and the NRC's Office of Nuclear Reactor Regulation during periodic public meetings which discussed Frequently Asked Question 10-0059, "NFPA 805 Monitoring." The monitoring program and the sensitivity analysis approach used by the licensee are enveloped in these discussions.

The team determined that additional information is required to determine if a performance deficiency exists. Specifically, the team needed to determine if the licensee's action to set the action levels for the availability of some plant components at the components' maintenance rule monitoring values and the performance of a risk-informed sensitivity analysis in an attempt to ensure that the assumptions in the engineering analysis remained valid would be an acceptable approach. Judgment on the suitability of this approach is pending further resolution of the monitoring program during discussions of Frequently Asked Question 10-0059, "NFPA 805 Monitoring."

The licensee entered this issue of concern into the corrective action program as Condition Report CR-CNS-2016-05109. This issue of concern is being treated as Unresolved Item 05000298/2016008-01, "Possible Failure to Ensure that the Assumptions in the Engineering Analysis Remain Valid."

.15 Plant Change Evaluation

The team reviewed plant change evaluations to verify that, where performance-based methods were applied, the methods adequately represented plant design and conditions in the fire area, were performed by qualified people, were acceptable for the application,

and met the requirements of the fire protection license condition for self-approved changes to the fire protection program.

b. Findings

No findings were identified.

.16 Alternative Mitigation Strategy Inspection Activities

a. Inspection Scope

The team reviewed the licensee's implementation of guidance and strategies intended to maintain or restore core, containment, and spent fuel pool cooling capabilities under the circumstances associated with the potential loss of large areas of the plant due to explosions or fire as required by 10 CFR 50.54(hh)(2).

The team verified that the licensee maintained and implemented adequate procedures, maintained and tested equipment necessary to properly implement the strategies, and ensured station personnel were knowledgeable and capable of implementing the procedures. The team performed a visual inspection of portable equipment used to implement the strategy to ensure the availability and material readiness of the equipment, including the adequacy of portable pump trailer hitch attachments, and verified the availability of on-site vehicles capable of towing the portable pump. The team assessed the off-site ability to obtain fuel for the portable pump and foam used for firefighting efforts. The strategies and procedures selected for this inspection sample included:

- Fire protection water supply to the residual heat removal subsystem using either the existing fire protection system or using the onsite portable pump

- Using direct current power supplies to depressurize the reactor pressure vessel using the safety relief valves.

The team completed two samples.

b. Findings

No findings were identified.

.17 Implementation of Risk-Related Implementation Items

a. Inspection Scope

The team verified that the licensee had appropriately implemented risk-related items in the establishment and early operation of their NFPA 805 program. The team reviewed changes to the configuration risk management program, the risk assessment program, and a performance-based fire protection surveillance frequency program. The team reviewed the licensee's qualification standard used by plant personnel performing fire probabilistic risk assessment work. The team also reviewed the quality assurance program auditing requirements for completeness. Finally, the team reviewed the licensee's probabilistic risk assessment to ensure the basic event data in the fire

probabilistic risk assessment matched the internal events probabilistic risk assessment basic events, which included a verification of multiple spurious operation and human reliability analysis treatment.

The team reviewed samples from the NFPA 805 Transition Report, Tables S-2, "Plant Modifications Committed," and S-3, "Implementation Items," to verify the implementation of the licensee's risk-related implementation items. The items reviewed are listed in the attachment.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES [OA]

4OA2 Identification and Resolution of Problems

Corrective Actions for Fire Protection Deficiencies

a. Inspection Scope

The team selected a sample of condition reports associated with the licensee's fire protection program to verify that the licensee had an appropriate threshold for identifying deficiencies. The team reviewed the corrective actions proposed and implemented to verify that they were effective in correcting identified deficiencies. The team evaluated the quality of recent engineering evaluations through a review of condition reports, calculations, and other documents during the inspection.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

The team presented the inspection results to Mr. O. Limpias, Vice President-Nuclear and Chief Nuclear Officer, and other members of the licensee staff at an exit meeting on August 26, 2016. The licensee acknowledged the findings presented.

The team verified that no proprietary information was retained by the team or documented in this report.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

T. Barker, Manager, Engineering Programs and Components
J. Bebb, Manager, Security
M. Bergmeier, Supervisor, Operations Support Group
D. Buman, Director, Engineering
W. Chapin, Manager, Maintenance
L. Connor, Specialist, Operations Support Group
L. Dewhirst, Manager, Corrective Action and Assessment
K. Dia, Manager, System Engineering Department
M. Dickerson, Engineer, Electrical
J. Ehlers, Supervisor, Electrical Instrument and Control
T. Forland, Engineer, Licensing
D. Goodman, Manager, Operations/Acting General Manager, Plant Operations
J. Houston, Manager, Production
B. Howard, Technician, Radiation Protection
R. Jensen, Electrical Engineer
J. Keithley, Electrician
B. Kirkpatrick, Specialist, Licensing Specialist
O. Limpias, Vice President-Nuclear and Chief Nuclear Officer
T. Mertes, Electrician
M. Neddenreip, Engineer, Fire Protection
S. Nelson, Supervisor, Risk and Fire Programs Supervisor
K. Newcomb, Fire Marshall
O. Olson, Engineer, Probabilistic Risk Assessment Engineer
B. Parker, Electrician
R. Penfield, Director, Nuclear Safety Assurance
R. Schultz, Engineer, Quality Assurance Engineer
A. Seeba, Electrician
J. Shaw, Manager, Licensing Manager
J. Shrader, Corporate Fire and Safety Lead
T. Shudak, Engineer, Fire Protection Program
K. Tom, Assistant to Director of Engineering

NRC Personnel

P. Voss, Senior Resident Inspector
C. Henderson, Resident Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000298/2016008-01	URI	Possible Failure to Ensure that the Assumptions in the Engineering Analysis Remain Valid (Section 1R05.05.14)

LIST OF DOCUMENTS REVIEWED

Calculations

Number	Title	Revision Date
GE-NE-T23-00742-01	Fire Event Analyses for Cooper Nuclear Station	March 1997
MDE-37-0286	Safe Shutdown Appendix R Analyses for Cooper Nuclear Station	February 1986
NEDC 09-101	EPM Report R1906-711-RB – Detailed Fire Modeling Report for Fire Compartment RB	3
NEDC 09-098	EPM Report R1906-711-CB-E – Detailed Fire Modeling Report for Fire Compartment CB-E	2
NEDC 10-024	Scientech Calculation 17712-009 Task 7.11c Multi-Compartment (Zone)	3
NEDC 10-041	NFPA 805 Recovery Action Feasibility Assessment (EPM Report R1906-004-005)	1
NEDC 10-062	EPM Report R1906-003-01, NFPA 805 Radioactive Release Review	1
NEDC 10-071	CNS Acceptance of EPM Report R1906-002-002, NFPA Code Conformance Review	1
NEDC 10-085	Scientech Calculation 17712-018-04 Task 8 Fire Risk Evaluation Area CB-D	1
NEDC 11-088	Fire Safety Analysis for Fire Area CB-D EPM Report R1906-008-CBD	1
NEDC 11-090	Fire Safety Analysis for Fire Area DG-A EPM Report R1906-008-DGA	3
NEDC 10-091	Scientech Calculation 17712-018-05 Task 8 Fire Risk Evaluation Area RB-FN	1
NEDC 10-094	Scientech Calculation 17712-018-03 Task 8 Fire Risk Evaluation Area RB-M	2
NEDC 11-003	Non-Power Operation Modes Transition review of EPM Report R1906-006-001	2
NEDC 11-019	Nuclear Safety Capability Assessment	2

Calculations

Number	Title	Revision Date
NEDC 11-020	Recovery Action Transition Report Review EPM Report R1906-004-004	3
NEDC 11-088	Fire Safety Analysis for Fire Area CB-D EPM Report R1906-008-CBD	3
NEDC 11-090	Fire Safety Analysis for Fire Area DG-A EPM Report R1906-008-DGA	1
NEDC 11-097	Fire Safety Analysis for Fire Area RB-FN EPM Report R1906-008-RBFN	2
NEDC 11-100	Fire Safety Analysis for Fire Area RB-M EPM Report R1906-008-RBM	3
NEDC 11-105	Fire Safety Analysis for Fire Area TB-A EPM Report R1906-008-TBA	3
NEDC 14-043	Fire Safety Analysis for Entire Power Block, EPM Report R1906-008-GEN	1

Condition Reports

2016-00492	2013-05471	2016-02234	2016-05057*
2012-05088	2013-07772	2016-04976*	2016-04685*
2012-05134	2013-05960	2016-04694*	2016-05017*

*Issued as a result of inspection activities.

Drawings

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2016, Sheet 1C	Flow Diagram – Fire Protection, Reactor Building	3
2016, Sheet 2	Flow Diagram – Fire Protection for Pumphouse and Storage Tanks	36
2016, Sheet 4	Flow Diagram – Halon and Cardox Systems	7
2016, Sheet 7	Flow Diagram – Fire Protection System Site Plan	11

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2040, Sheet 1	Flow Diagram Residual Heat Removal System	N82
2040, Sheet 2	Flow Diagram Residual Heat Removal System Loop “B”	19
2041	Flow Diagram Reactor Building Main Steam System	N87
2043	Flow Diagram Reactor Core Isolation Coolant and reactor Feed Systems	56
2044	Flow Diagram High Pressure Injection and Reactor Feed Systems	75
2045, Sheet 1	Flow Diagram Core Spray System	N58
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3002, Sheet 1	Auxiliary One Line Diagram MCC Z, SWGR 1A, 1B, 1E, & Critical SWGR 1F, 1G	AE52
3003, Sheet 2	Auxiliary One Line Diagram Motor Control Centers A, B, F and G	AE50
3004, Sheet 3	Auxiliary One Line Diagram Motor Control Centers C, D, H, J, DG1 and DG2	N2
3005, Sheet 4	Auxiliary One Line Diagram Motor Control Centers M, N, P, U, V and W	AP69
3006, Sheet 5	Auxiliary One Line Diagram; Starter Racks LZ and TZ; Motor Control Centers K, L, LX, RA, RX, S, T, TX, X	AE84
3007, Sheet 6	Auxiliary One Line Diagram; Motor Control Centers E, Q, R, RB, & Y	N83
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3058	DC One Line Diagram	AI66

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3059, Sheet 7	EE-PNL-BB3 125 VDC Load and Fuse Schedule	AH16
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791E261 Sheet 4	Elementary Diagram Residual Heat Removal System	AB25
791E261 Sheet 5	Elementary Diagram Residual Heat Removal System	N23
791E261 Sheet 6	Elementary Diagram Residual Heat Removal System	N08
791E261 Sheet 7	Elementary Diagram Residual Heat Removal System	AD21
791E261 Sheet 8	Elementary Diagram Residual Heat Removal System	AC24
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791E261 Sheet 13	Elementary Diagram Residual Heat Removal System	N09
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791E271 Sheet 4A	HPCI System Elementary Diagram	N05

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791E271 Sheet 6	HPCI System Elementary Diagram	AB20
791E271 Sheet 6A	HPCI System Elementary Diagram	AC5
791E271 Sheet 7	HPCI System Elementary Diagram	N25
791E271 Sheet 8	HPCI System Elementary Diagram	N20
791E271 Sheet 9	HPCI System Elementary Diagram	N19
791E271 Sheet 10	HPCI System Elementary Diagram	N21
791E271 Sheet 11	HPCI System Elementary Diagram	N00
791E271 Sheet 1	HPCI System Elementary Diagram	AD51
791E271 Sheet 1A	HPCI System Elementary Diagram	NO7
944E689 Sheet 1	Elementary Diagram (MOD) Low – Low Set	N13
85B-70008 Sheet 50	Motor Control Center K	AB09
85B-70008 Sheet 86	Motor Control Center S	N08
85B-70008 Sheet 148	Motor Control Center Wiring Diagrams WD-1A, WD-1B, WD-2, and WD-3	N00
85B-70008 Sheet 152	Motor Control Center Wiring Diagrams WD-3AC, WD-3AD and WD-3AE	N00
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E501 Sheet 11B	Integrated Control Circuit Diagram SW-MOV-37MV SW Pumps Cross Tie Header Isolation Valve	AC02
E501 Sheet 27A	Integrated Control Circuit Diagram CS-MOV-MO12B Core Spray Inboard Injection Valve	AC02
E501 Sheet 33A	Integrated Control Circuit Diagram HPCI-MOV-MO58 HPCI Pump Suction from Suppression Pool	N01
E501 Sheet 35D	Integrated Control Circuit Diagram SW-MOV-887MV SW Supply to REC Critical Loop	AC02
E501 Sheet 35E	Integrated Control Circuit Diagram SW-MOV-889MV SW Return from REC Critical Loop	AC02
E501 Sheet 44B	Integrated Control Circuit Diagram RHR-MOV-MO16B Minimum Flow Bypass, RHR Pump B and D	AC02
E501 Sheet 44D	Integrated Control Circuit Diagram HPCI-MOV-MO15 Steam Supply to HPCI Turbine	AC02
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E501 Sheet 44J	Integrated Control Circuit Diagram HPCI-MOV-MO17 HPCI Pump Suction from ECST	N01
E501 Sheet 45A	Integrated Control Circuit Diagram RHR-MOV-MO25B RHR Loop B Injection Outboard Isolation	AC03
E501 Sheet 45B	Integrated Control Circuit Diagram HPCI-MOV-MO25 Minimum Flow Recirculation Valve	N01
E501 Sheet 47A	Integrated Control Circuit Diagram RHR-MOV-MO27B RHR Loop B Injection Outboard Isolation	AC02
E501 Sheet 47C	Integrated Control Circuit Diagram RHR-MOV-MO26B Drywell Spray Loop B Outboard Isolation	AC02
E501 Sheet 48A	Integrated Control Circuit Diagram RHR-MOV-MO89B RHR HX B Service Water Outlet	AC04
E501 Sheet 52A	Integrated Control Circuit Diagram SW-MOV-651MV REC Heat Exchanger B Outlet Valve	AC02

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NC43456	Cooper 161 KV Substation One-Line Diagram	AI13
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NCO 2161	One-Line Switching Diagram 345/161KV/4160V	AD31
CNS-FP-2	Piping Isometric – Cable Expansion Room Fire Protection Wet Sprinkler System No. 29	5
CNS-FP-5	Piping Isometric – MG Set Oil Cooler Fire Protection Wet Sprinkler System, Elevation 931'-6" Reactor Building No. 27	5
CNS-FP-8	Piping Isometric – Wet Sprinkler System Electrical Trays in Northeast Corner Reactor Building – Elev 903'-6"	4
CNS-FP-218	Fire Protection Pre-Fire Plan, Reactor Building – Second Floor Elevation 931'-6"	11
CNS-FP-224	Fire Protection Pre-Fire Plan, Control Building – Basement Floor Elevation 882'-6"	AC6
CNS-FP-225	Fire Protection Pre-Fire Plan, Control Building – Auxiliary Relay Room Elevation 903'-6"	AC6
CNS-FP-229	Fire Protection Pre-Fire Plan, Control Building – Cable Spreading Room Elevation 918'-0"	AC5
CNS-FP-230	Fire Protection Pre-Fire Plan, Control Building – Control Room and Computer Room Elevation 932'-6"	AD9
CNS-FP-236	Fire Protection Pre-Fire Plan, Diesel Generator Building – Diesel Generator No. 1 Elevation 917'-6" and 903'-6"	AB7
CNS-FP-238	Fire Protection Pre-Fire Plan Turbine Building Heating Boiler Room Elevation 903'-6"	AD7
CNS-FP-243	Fire Protection Pre-Fire Plan, Turbine Building – Reactor Feed Pump Area Elevation 882'-6"	6
CNS-FP-257	Fire Protection Pre-Fire Plan, Radioactive Waste Building – Basement Floor Elevation 877'-6"	9
CNS-FP-266	Fire Protection Pre-Fire Plan, Multi-Purpose Facility – Elevation 903'-6"	8

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CNS-FP-338, Sheet 1	Cable Spreading Room Radiant Energy Heat Shield Elevation 918’-0”	0
CNS-FP-338, Sheet 2	Cable Spreading Room Radiant Energy Heat Shield Elevation 918’-0”	0
CNS-FP-338, Sheet 3	Cable Spreading Room Radiant Energy Heat Shield Elevation 918’-0”	0
CNS-FP-389, Sheet 1	Reactor Building Radiant Energy Shield Elevation 931’-6”	0
CNS-FP-389, Sheet 2	Reactor Building Radiant Energy Shield Elevation 931’-6”	0
CNS-FP-389, Sheet 3	Reactor Building Radiant Energy Shield Elevation 931’-6”	0
CNS-FP-390, Sheet 1	Reactor Building Radiant Energy Shield Elevation 931’-6”	0
CNS-FP-390, Sheet 2	Reactor Building Radiant Energy Shield Elevation 931’-6”	0
CNS-FP-390, Sheet 3	Reactor Building Radiant Energy Shield Elevation 931’-6”	0
FH-16282, Sheet 2	Cylinder Bank Elevation and Manifold Detail	5
IN08-1232	Equipment Layout – 1301 System NPPD Computer Room	3
SK-172 Sheet 12	Conduit Layout Turbine Building	5

Engineering Evaluations

Number	Title	Revision
EE 09-040	Evaluation of Auxiliary Relay Room and RPS Room 1B Appendix R Fire Barriers	0

Engineering Evaluations

Number	Title	Revision
10-064	Evaluation of MSIV Closure and Securing RFP Lube Oil Pumps During Appendix R Alternate Shutdown (GL 86-10)	0

Fire Drill Reports

March 18, 2016	May 4, 2016	May 6, 2016	June 21, 2016

Frequently Asked Questions (FAQ)

Number	Title	Revision
07-0033	Transition of Existing Engineering Equivalency Evaluations	1c
07-0040	Non-Power Operations Clarifications	4
08-0054	Demonstrating Compliance with Chapter 4 of NFPA 805	1
09-0056	Radioactive Release Transition	2
10-0059	NFPA Monitoring	5

Implementation Items Reviewed

Number	Title
S-2.4	Install incipient detection in Panel 9-32 and 9-33 in the auxiliary relay room (Fire Zone 8A) to allow for shutdown from the control room with minimal field actions
S-2.5	Install conduit shields to prevent damage to conduit banks from transient fires in Fire Area RB-M/Fire Zone 3C
S-2.6	Install tray covers to prevent damage to cable tray risers in Fire Area RB-M/Fire Zone 3C
S-2.7	Install board shields for cable trays and conduit to prevent damage from fires involving panel PMIS-MUX-LNK6 and PMIS-MUX-LNK7 in the cable spreading room (Fire Zone 9A)
S-3.1	Establish performance-based surveillance frequencies and evaluate in the monitoring program

Implementation Items Reviewed

Number	Title
S-3.2	Establish enhanced transient and combustible control zones in Fire Zones 8A, 9A, 2C (above Tip Room), and Fire Zones 3C and 3D (around instrument racks 25-5 and 25-6)
S-3.3	Post-fire operating procedures will be updated to reflect new NSCA strategies and training performed as necessary
S-3.4	Technical, operations, and administrative procedures and documents that relate to non-power modes of plant operating states will be revised as needed for implementation of NFPA 805
S-3.6	Perform a confirmatory demonstration (field verification walk-through) of the feasibility for the credited NFPA 805 recovery actions
S-3.7	CNS calculations will be reviewed and updated based on the results of the field walkdowns of the recovery actions from Implementation Item S-3.6.
S-3.9	Revise Procedure 0.23, “CNS Fire Protection Plan” to identify the Authority Hold Jurisdiction for the various areas of the Fire Protection Program
S-3.11	Update procedures to allow use of service water pumps alone to provide cooling to residual heat removal heat-exchangers
S-3.13	Revise Procedure 0.7.1, “Control of Combustibles” to not allow bulk gas storage inside structures housing systems, equipment, or components important to nuclear safety
S-3.15	Develop and maintain qualification requirements for individuals assigned performing fire modeling or Fire PRA development and evaluation
S-3.18	Update the fire brigade training program with guidance to ensure fire drills are conducted in various plant areas, especially in those areas identified to be essential to plant operation and to contain significant fire hazards.
S-3.19	The Fire PRA analysis will be updated, prior to performing self-approval evaluations using the Fire PRA, to incorporate the model changes identified in Supplement 3 of the response to PRA RAI 40.
S-3.20	Revise pre-fire plans and training materials to address radioactive release requirements of NFPA 805
S-3.24	The Fire PRA database will be controlled as an electronic document in the same way the Internal Events PRA model (CAFTA model) is controlled.
S-3.25	Designate Fire Zone 9A (Cable Spreading Room) and Fire Zone 8A (Auxiliary Relay Room) as enhanced transient and hot work controlled fire zones

Implementation Items Reviewed

Number	Title
S-3.26	The CNS Updated Safety Analysis Report will incorporate the applicable subject matter described in FAQ 12-0062, at a level of detail consistent with NEI 98-03, "Guidelines for Updating Final Safety Analysis Reports."
S-3.29	System level Design Criteria Documents will be revised to reflect the NFPA 805 role that the system components now play.

Miscellaneous Documents

Number	Title	Revision Date
6.ADS.202	ADS Manual Valve Circuit Continuity from ASD-ADS Panel	October 31, 2014
6.HPCI.202	HPCI Motor Operated Valve Operability Test from ASD-HPCI Panel	November 1, 2014
CNS-PSA-007	Cooper Nuclear Station Probabilistic Risk Assessment (PRA) Deterministic Calculations Notebook	2
DCD-02	High Pressure Coolant Injection System (HPSI) Design Criteria Document	January 14, 2016
DCD-03	Service Water (SW) and residual Heat Removal Service Water Booster System (RHRSW) Design Criteria Document	January 18, 2016
DCD-12	Core Spray System Design Criteria Document	April 4, 2016
DCD-13	Residual Heat Removal System (RHR) Design Criteria Document	April 4, 2016
DCD-16	Reactor Equipment Cooling System Design Criteria Document	December 3, 2014
DCD-18	Reactor Core Isolation Cooling System Design Criteria Document	March 3, 2016
Engineering Evaluation 10-064	Evaluation of MSIV Closure and Securing RFP Lube Oil Pumps During Appendix R Alternate Shutdown (GL 86-10)	0
LBDCR 2009-008	Revision of Technical Requirements Manual Surveillance Requirement 3.11.2.14	July 22, 2009

Miscellaneous Documents

Number	Title	Revision Date
Lesson Plan OTH015-92-02	Post Fire and Shutdown Outside the Control Room Procedures (5.4POST-FIRE, 5.4FIRE-S/D, 5.1ASD)	13
LO 2011-0159	NFPA 805 tracking document	
Letter NLS2013011	Response to Request For Additional Information Regarding License Amendment Request To Adopt National Fire Protection Association Standard 805 Cooper Nuclear Station, Docket No. 50-298, DPR-46	January 14, 2013
NRC Letter ML12312A281	Cooper Nuclear Station - Request for Additional Information Re: License Amendment Request to Adopt National Fire Protection Agency Standard NFPA 805 (TAC No. ME8551)	November 14, 2012
NRC Letter ML14055A023	Cooper Nuclear Station -Issuance of Amendment Regarding Transition to a Risk-Informed, Performance-Based Fire Protection Program in Accordance With 10 CFR 50.48(c) (TAC NO. ME8551)	April 29, 2014
NUMARC 93-01	Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants	4A
PSA-ES-115	Reactor Recirculation Pump Seal Leakage	0
Regulatory Guide 1.160	Monitoring the Effectiveness of Maintenance at Nuclear Power Plants	3
Technical Requirements Manual Section 3.11	Fire Protection Systems	July 5, 2016
TQD 9006	Training Qualification Description – Fire Modeling for Probabilistic Risk Assessment	April 30, 2014
USAR Chapter X Section 9.0	Fire Protection System	April 28, 2016
USAR Chapter XIII Section 10.0	Fire Protection Program	November 14, 2015
	Closure of National Fire Protection Association 805 Frequently Asked Question 08-0042 Fire Propagation from Electrical Cabinets	August 4, 2009

Miscellaneous Documents

Number	Title	Revision Date
	Closure of National Fire Protection Association 805 Frequently Asked Question 08-0046 Incipient Fire Detection Systems	November 23, 2009
	Incipient Detector Maintenance Plans	
	NEI 06-12, “B.5.b Phase 2 & 3 Submittal Guideline” cross reference matrix	
	2015 Mutual Aid Group FP Refresher - Tour	
	Technical Requirements Manual, Section T3.11, Fire Protection Systems	

Modifications (Change Evaluation Document)

Number	Title	Revision
CED 6034801	NFPA 805 Cable Tray Radiant Energy Heat Shields	0
CED 6034803	Incipient Fire Detection System for Cabinets 9-32 and 9-33	0
CED 6036040	NFPA 805 Mechanical Latches Upgrade	0

Procedures

Number	Title	Revision
0-Barrier-Maps	Barrier Maps	8
0-CNS-LI-102	Corrective Action Process	4
0-CNS-OE-100	Operating Experience Program	4
0-CNS-WM-104A	On-Line Fire Risk Management Actions	3
0.7.1	Control of Combustibles	37 and 40
0.7.1.1	Control of Flammable Material Lockers	9
0.23	CNS Fire Protection Plan	74
0.39	Hot Work	51

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Number	Title	Revision
0.39.1	Fire Watches and Fire Impairments	14
0.50.5	Outage Shutdown Safety	35
2.2.72	Smoke, Temperature, and Flame Detection	19
2.2.72A	Smoke, Temperature, and Flame Detection Component Checklist	8
2.3_FP-5	Fire Protection – Annunciator 5	13
2.4RR	Reactor Recirculation Abnormal	42
3.47	License Renewal Implementation Program	2
3.49	Fire Protection Performance Based Surveillance Test Process	0
3-CNS-DC-179	Fire Protection Engineering Evaluations	0
3-CNS-DC-357	NFPA 805 Monitoring Program	1
5.1INCIDENT	Site Emergency Incident	35
5.3ALT-STRATEGY	Alternate Core Cooling Mitigating Strategies	48 and 49
5.4FIRE-S/D	Fire Induced Shutdown From Outside Control Room	65
5.4Post-Fire-Control	Control Building Post-Fire Operational Information	2
5.4Post-Fire-Reactor	Reactor Building Post-Fire Operational Information	0
5.4Post-Fire-Turbine	Turbine Building Post-Fire Operational Information	1
5.7COMMUN	Communications	28
5.8, Attachment 1	Emergency Operation Procedure – 1A	19
5.8, Attachment 1	Emergency Operation Procedure – 2A	18
5.8, Attachment 1	Emergency Operation Procedure – 3A	16
6.FP.101	Fire Pump 31 Day Operability Test	35
6.FP.101	Fire Pump Operability Test	37 and 38
6.FP.102	Annual Testing of Fire Pumps	33

Procedures

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6.FP.102	Station Fire Pump Surveillance Testing	34
6.FP.203	Fire Damper Assembly Examination (Fire Protection System 24-Month Examination)	10
6.FP.301	Operations Power Block Sprinkler System Testing	18 and 20
6.FP.302	Automatic Deluge and Pre-Action Systems Testing	26
6.FP.306	Fire Detection Systems Semi-Annual Examination	16 and 17
6.FP.306	Fire Detection Systems Examination	18
6.FP.313	Control Room HVAC Smoke Detector Testing	0
6.FP.314	Panel 9-32 and 9-33 Incipient Smoke Detector Testing	0 and 1
6.FP.610	Yard Hydrant Flow Check and Fire Protection System Flow Test	27
6.1FP.301	Diesel Generator CO2 Operability Test (Div 1)	15 and 16
6.1FP.302	Fire Detection System 184-Day Examination (Div 1)	10 and 12
6.1FP.601	High Pressure CO2 Cylinder Examination (Div 1)	21 and 22
6.ADS.202	ADS Manual Valve Circuit Continuity from ASD-ADS Panel	11
6.HPCI.106	FCU FC-R-1G Operability Test from ASD-HPCI Panel	8
6.HPCI.202	HPCI Motor Operated Valve Operability Test from ASD-HPCI Panel	4
6.HPCI.321	HPCI Turbine Trip and Operability Test from ASD-HPCI Panel	4
6.RHR.201	RHR Motor Operated Valve Operability Test from ASD-RHR Panel	7
15.FP.201	Fire Pump Discharge Check Valve Inspection	12
15.FP.307	Halon 1301 Computer Room Fire Suppression Surveillance Checks	7
15.FP.311	Control Room HVAC Smoke Detector Testing	7

Procedures

Number	Title	Revision
EPIP 5.7.1	Emergency Classifications	54
SOP 2.2.99	Supplemental Diesel Generator System	7
SOP 2.2.17	Emergency Station Service Transformer	64
SOP 2.2.13	345 KV and 161 KV Power System	38
TPP 206	Fire Brigade	22
TPP 207	Fire Brigade Drills and Techniques	0
TPP 227	Fires Involving Radioactive Materials	0

Vendor Documents

Number	Title	Revision Date
10256_08	Xtralis VESDA Maintenance Guide Number 30010	0
10257_05	Xtralis VESDA Troubleshooting Guide Number 30011	0
10194_05	Xtralis VESDA LCD Programmer Product Guide Number 30004	0
10193_07	Xtralis VESDA Pipe Network Design Guide Number 30009	September 2012

Work Orders

4637115	4678007	4678008	4849626	4896032	4907476
4940085	4943650	4943651	4943654	4943655	4943659
4943662	4943917	4943953	4944019	4945761	4946655
4946657	4946872	4946877	4946884	4946968	4947018
4947041	4947503	4951627	4962765	4973415	4975682
4995776	4995777	4995778	4996690	4996772	4996881
5022433	5022449	5022450	5022454	5022456	5022458
5022549	5022705	5022759	5022969	5023100	5026581
5027672	5028113	5028698	5029424	5056848	5069828
5072806	5085086	5085087	5102729	5103180	