



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE N.E., SUITE 1200
ATLANTA, GEORGIA 30303-1200

July 9, 2020

Ernest J. Kapopoulos, Jr.
Site Vice President
H.B. Robinson Steam Electric Plant
Duke Energy
3581 West Entrance Road, RNPA01
Hartsville, SC 29550

**SUBJECT: H. B. ROBINSON STEAM ELECTRIC PLANT NOTIFICATION OF CONDUCT OF
A FIRE PROTECTION TEAM BASELINE INSPECTION -
U.S. NUCLEAR REGULATORY COMMISSION INSPECTION REPORT
NO. 05000261/2020012**

Dear Mr. Kapopoulos:

The purpose of this letter is to notify you that the U.S. Nuclear Regulatory Commission (NRC) staff will conduct a fire protection team baseline inspection at your H. B. Robinson Steam Electric Plant, Unit 2, in August and September 2020. The inspection will be conducted in accordance with Inspection Procedure 71111, Attachment 21N.05, "Fire Protection Team Inspection," the NRC's baseline fire protection inspection procedure. The inspection team will be led by Mr. William Monk, a Senior Reactor Inspector from the NRC Region II Office. The team will be composed of three other personnel from the Region II Office.

On July 7, 2020, during a telephone conversation between Mr. Tom Bardaukas of your staff and Mr. Monk, our respective staffs confirmed arrangements for a one-week remote and one-week onsite inspection. The schedule for the inspection is as follows:

- Week 1 Remote Inspection: August 24 - 28, 2020
- In-office Review: August 31 - September 04, 2020
- Week 2 Onsite Inspection: September 14 - 18, 2020

The purpose of the information gathering visit is to obtain information and documentation needed to support the inspection, to become familiar with the Robinson Plant's fire protection program, fire protection features, post-fire safe shutdown capabilities, plant layout, and, as necessary, obtain plant specific site access training and badging for unescorted site access. However, due to COVID-19 precautions and safety measures we are not conducting an information gathering visit and only one week of onsite inspection.

The types of documents the team will be reviewing during conduct of the inspection are listed in Enclosure 1. Please contact Mr. Monk at (404) 909-5298 prior to preparing copies of the materials listed in the Enclosure if there are any questions. The inspection team will try to minimize your administrative burden by specifically identifying those documents required for inspection preparation.

In preparation of the onsite week, during the in-office review week, the team lead will discuss the following inspection support administrative details: office space; specific documents to be made available to the team in their office space; arrangements for unescorted site access (including, as necessary, radiation protection training, security, safety and fitness for duty requirements); and the availability of knowledgeable plant engineering and licensing organization personnel to serve as points of contact during the inspection.

We request that during the onsite inspection week you ensure that copies of analyses, evaluations or documentation regarding the implementation and maintenance of the Robinson fire protection program, including post-fire safe shutdown capability, be readily accessible to the team for their review. Of specific interest are those documents which establish that your fire protection program satisfies NRC regulatory requirements and conforms to applicable NRC and industry fire protection guidance (i.e. fire protection compliance assessment documents). Also, personnel should be available at the site during the inspection who are knowledgeable regarding those plant systems required to achieve and maintain safe shutdown conditions from inside and outside the control room (including the electrical aspects of the relevant post-fire safe shutdown analyses), reactor plant fire protection systems and features, and the Robinson fire protection program and its implementation.

The inspection scope will require a walkdown of candidate fire areas and selected systems in company with key personnel from your staff. The enclosure to this letter provides an initial list of the documents the team will need for their review. We request that your staff transmit/upload copies of the documents listed in the enclosure to the CERTREC Portal for team use in preparation for the inspection. Please upload this information so that it will be available by the dates listed in the enclosure.

This letter does not contain new or amended information collection requirements subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing information collection requirements were approved by the Office of Management and Budget, under control number 3150-0011. The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid Office of Management and Budget control number.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Your cooperation and support during this inspection will be appreciated. If you have questions concerning this inspection, or the inspection team's information or logistical needs, please contact Mr. Monk, the team leader, in the Region II Office at (404) 909-5298, or me at (404) 997-4521.

Sincerely,

/RA/

Scott M. Shaeffer, Chief
Engineering Branch 2
Division of Reactor Safety

Docket Nos.: 50-261
License Nos.: DPR-23

Enclosures:
Fire Protection Team Inspection
Supporting Documentation

cc: Distribution via ListServ

SUBJECT: H. B. ROBINSON STEAM ELECTRIC PLANT NOTIFICATION OF CONDUCT OF
 A FIRE PROTECTION TEAM BASELINE INSPECTION -
 U.S. NUCLEAR REGULATORY COMMISSION INSPECTION REPORT
 NO. 05000261/2020012 dated July 9, 2020

Distribution:

- W. Monk, RII
- S. Shaeffer, RII
- D. Strickland, RII
- E. Coffman, RII
- L. Jones, RII
- R. Musser, RII
- L. Pressley, RII
- M. Fannon, RII

PUBLICLY AVAILABLE NON-PUBLICLY AVAILABLE SENSITIVE NON-SENSITIVE
 ADAMS: Yes ACCESSION NUMBER: **ML20191A212** SUNSI REVIEW COMPLETE FORM 665
 ATTACHED

OFFICE	RII:DRS	RII:DRS				
NAME	MONK	SHAEFFER				
DATE	7/07/2020	7/9/2020				
E-MAIL COPY?	YES NO	YES NO	YES	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY

Fire Projection Team Inspection - Supporting Documentation

The documents and information requested below should generally be made available to the inspection team a week prior to the first inspection week for the team's use both on-site and off-site during the inspection. Electronic format is the preferred media, except where specifically noted. If electronic media is made available via an internet based remote document management system (e.g. CERTREC), then the remote document access must allow inspectors to download, save, and print the documents in the NRC's regional office. Electronic media on compact disc or paper records (hard copy) are acceptable. At the end of the inspection, the documents in the team's possession will not be retained.

Approximately three weeks before the inspection starts, the following documents should be made available to the team leader for review in the regional office:

- Post-fire Nuclear Safety Capability, Systems, and Separation Analysis (request A.1)
- Fire Hazards Analysis and/or NFPA 805 Design Basis Document (request A.2)
- Fire Probabilistic Risk Assessment (PRA) Summary Document or full PRA Document (request A.3)
- NFPA 805 Transition Report, developed in accordance with NEI 04-02 (request A.4)
- Fire Risk Evaluations (i.e., NFPA 805 Section 2.4.3) (request A.5)
- Plant Change Evaluations (i.e., NFPA 805 Section 2.4.4) (request A.6)
- Analysis that demonstrates nuclear safety performance criteria (NSPC) can be achieved and maintained for those areas that require recovery actions (request A.7)
- List of the top 25 highest CDF and LERF scenarios for each unit
- Status of committed modifications and implementation items listed in Attachment S of the NFPA 805 Transition Report
- Provide a list of structures, systems, and components subject to the 10 CFR Part 54 requirements

Based on review of the above ten documents, the team leader should identify a preliminary list of inspection samples (selected systems and programs) being considered for inspection.

This document request is based on *typical documents* that a generic plant might have. As such, this generic document request is not meant to imply that any specific plant is required to have all of the listed documents. It is recognized that some documents listed below may not be available for your plant. In addition, the document titles listed below are based on typical industry document names; your plant specific document titles may vary.

A. DESIGN AND LICENSING BASIS DOCUMENTS

- A.1 Post-fire Nuclear Safety Capability, Systems, and Separation Analysis.
- A.2 Fire Hazards Analysis and/or NFPA 805 Design Basis Document.
- A.3 Fire PRA Summary Document or full PRA Document (if summary document not available).
- A.4 NFPA 805 Transition Report, developed in accordance with NEI 04-02.
- A.5 Fire Risk Evaluations (i.e., NFPA 805 Section 2.4.3).
- A.6 Plant Change Evaluations (i.e., NFPA 805 Section 2.4.4).
- A.7 Analysis that demonstrates nuclear safety performance criteria can be achieved and maintained for those areas that require recovery actions.
- A.8 Fire Protection Program and/or Fire Protection Plan.
- A.9 LIST of post-fire safe shutdown components (i.e., safe shutdown equipment list).
- A.10 Fire Protection System Design Basis Document.
- A.11 LIST of applicable NFPA codes and standards and issuance dates (i.e., codes of record).
- A.12 LIST of deviations from (a) NFPA codes of record, or (b) NFPA 805 fundamental fire protection program and design elements (i.e., NFPA 805, Chapter 3).
- A.13 NFPA 805 Compliance Review Report.
- A.14 Copy of the Quality Assurance Program Manual (including specific fire protection QA manual, if applicable)
- A.15 COPY of licensee submittals and NRC safety evaluation reports that are specifically listed in the facility operating license for the approved fire protection program.
- A.16 COPY of NRC Safety Evaluation Reports that form the licensing basis for:
 - Fire Protection Program; and
 - Post-fire Nuclear Safety Capability.
- A.17 COPY of NRC approved exemptions for plant fire protection and post-fire nuclear safety capability features.
- A.18 COPY of exemption requests submitted but not yet approved for plant fire protection and post-fire nuclear safety capability features.
- A.19 LIST of nuclear safety capability design changes completed in the last three years (including their associated 10 CFR 50.59 and NFPA 805 plant change evaluations).
- A.20 Facility Operating License.

- A.21 Technical Specifications (electronic format only).
- A.22 Technical Requirements Manual (electronic format only).
- A.23 Updated Final Safety Analysis Report (electronic format only).

B. GENERAL PLANT DESIGN DOCUMENTS

- B.1 Piping and instrumentation diagrams (P&IDs) and legend list for systems used to achieve and maintain nuclear safety performance criteria for systems used for reactor coolant system makeup, reactor coolant system pressure control, decay heat removal, and reactivity control, including the essential support systems. (C-size paper drawings & electronic format)
- B.2 P&IDs and legend list for fire protection systems, including fire water supply, water suppression sprinklers & deluge, and CO2 and Halon systems (C-size paper drawings & electronic format).
- B.3 Yard layout drawings for underground fire protection buried piping (C-size paper drawings & electronic format).
- B.4 AC and DC electrical system single line diagrams, from off-site power down to the highest safety-related bus level (typically 4kV, EDG bus) (C-size paper drawings & electronic format).
- B.5 Single line diagrams for motor control centers (MCCs) that supply post-fire nuclear safety component loads (only for selected inspection samples) (C-size paper drawings & electronic format).
- B.6 Equipment location drawings which identify the physical plant locations of post-fire nuclear safety capability equipment (electronic format).
- B.7 Plant layout drawings which identify: (electronic format)
 - Plant fire area boundaries;
 - Combustible control zone drawings;
 - Areas protected by automatic fire suppression and detection;
 - Locations of fire protection equipment.

C. CLASSIC FIRE PROTECTION

- C.1 COPY of fire protection program implementing procedures (e.g., administrative controls, surveillance testing, fire brigade).
- C.2 LIST of calculations and engineering analyses, studies, or evaluations for the fire protection system, including the fire water system.
- C.3 Hydraulic calculation or analysis for fire protection water system.
- C.4 Last two completed surveillances of fire protection features in the selected fire areas (detection, suppression, damper inspections, damper tests, penetration inspections, barrier inspections, etc.).

- C.5 LIST of routine tests, surveillances, and preventive maintenance on fire pumps, including pump controllers and batteries.
- C.6 Last two completed annual fire pump pressure and flow tests.
- C.7 Last two completed monthly and/or quarterly fire pump tests.
- C.8 Last two completed fire loop flow tests and loop flushes.
- C.9 CO2 and Halon initial discharge testing or calculation that determined appropriate concentrations and soak or hold times can be achieved (only for selected inspection samples).
- C.10 Last five hot work permits (at power).
- C.11 Last five transient combustible permits (at power).
- C.12 For Fire Brigade Drills, provide the following:
- Last five fire brigade drill critiques;
 - Last drill critique for a drill with off-site fire department support;
 - Last unannounced drill critique;
 - Last back-shift drill critique;
 - Dates, shifts, and locations of unannounced drills for last three years;
 - Summary of any unsatisfactory drill performance items for last three years; and
 - Last unannounced drill critique by a qualified individual independent of the licensee's staff.
- C.13 For fire brigade equipment provide the following:
- Procedure for inventory and inspection; and
 - Most recent inspection and inventory results.
- C.14 Fire Brigade Qualifications, including self-contained breathing apparatus (SCBA) and training lesson plans.
- C.15 COPY of the mutual aid agreement for the “first-due” local fire department that is currently in effect.
- C.16 COPY of the evaluation or analysis of the effects of fire suppression activities on the ability to achieve the nuclear safety performance criteria (only for selected inspection samples), including:
- An automatic or manually actuated suppression system, due to a fire in a single location, will not indirectly cause damage to the success path; and
 - inadvertent actuation or rupture of a suppression system will not indirectly cause damage to the success path; and
 - demonstration of adequate drainage for areas protected by water suppression systems;
 - hydrostatic rating of any floor penetration seals installed within the fire areas that are credited with keeping water from leaking into fire areas below.

- C.17 Pre-fire plans for all site fire areas.
- C.18 For Emergency Lighting Units (ELU), provide the following:
- COPY of performance based emergency light assessments;
 - LIST of Preventive Maintenance tasks, frequencies, and bases;
 - Most recently performed monthly or quarterly functional test;
 - Most recently performed battery discharge performance test;
 - ELU battery loading analysis;
 - Vendor manual(s) for on-site inspector use;
 - Results of black-out testing (if performed);
 - Maintenance Rule program information related to the ELU; and
 - Compensatory measures taken when ELU are out of service
 - Drawings showing emergency light locations and lamp orientation
- C.19 Impairment Log (at start of inspection), for fire protection features that are out of service.
- C.20 Three Fire Protection screening reviews for recent design changes, modifications, or temporary modifications (i.e., NFPA 805 plant change evaluation that screened out).
- C.21 LIST of penetration seal work, re-work, or installation activities, in the last three years.
- C.22 LIST of fire wrap work, re-work, or installation activities, in the last three years.
- C.23 Fire protection system health reports for the two most recent quarters.
- C.24 Fire protection program health report for the two most recent quarters.
- C.25 Emergency lighting system health reports for the two most recent quarters.
- C.26 LIST of fire protection system design changes completed in the last three years (including their associated 10 CFR 50.59 and NFPA 805 plant change evaluations).
- C.27 LIST of fire protection system NFPA 805 engineering equivalency evaluations completed in the last three years.
- C.28 Licensee evaluation of industry operating experience concerning fire protection issues in the last five years.
- C.29 List of fire event analysis reports for the last three years.
- C.30 Fire protection program requirements (e.g., limiting conditions for operation, surveillance test requirements) covered by technical specifications, the technical requirements manual, the updated final safety analysis report, procedures or similar documents.
- C.31 Organization charts of site personnel down to the level of fire protection staff personnel and a contact list of key site personnel who will be supporting this inspection, giving the office location and phone number onsite.

C.32 The team would like to observe an unannounced fire brigade drill in the plant, if possible, during the week of onsite inspection. If one is planned, please provide the contact information for the personnel planning the fire brigade drills during the first week of inspection.

D. ELECTRICAL

D.1 Identify whether the cables in the selected fire areas are predominantly Thermoset or Thermoplastic. Specifically identify any Thermoplastic cable in the selected inspection samples.

D.2 Nuclear safety circuit coordination analysis for fuse and breaker coordination of nuclear safety capability components.

D.3 Administrative or configuration control procedures that govern fuse replacement (e.g., fuse control procedures).

D.4 Maintenance procedures that verify breaker over-current trip settings to ensure coordination remains functional, for post-fire nuclear safety capability components.

D.5 Electrical system health reports for the two most recent quarters.

D.6 Last surveillance demonstrating operability of those components operated from the primary control stations.

D.7 LIST of post-fire nuclear safety capability system and component design changes completed, in the last three years.

D.8 LIST of identified fire induced circuit failure configurations (only for selected inspection samples).

D.9 Cable routing for components and equipment credited for post-fire safe shutdown systems and components (samples to be identified by the inspector).

E. OPERATIONS

E.1 LIST of calculations and engineering analyses, studies, or evaluations for the nuclear safety capability methodology.

E.2 LIST of licensed operator Job Performance Measures (JPMs) for operator actions required to achieve and maintain post-fire nuclear safety performance criteria.

E.3 LIST of non-licensed operator training associated with non-licensed operator actions to achieve and maintain post-fire nuclear safety performance criteria (including JPMs, in-field training walkdowns, simulations, or initial qualification).

E.4 Lesson plans for post-fire nuclear safety capability training for licensed and non-licensed operators.

- E.5 For recovery actions and defense-in-depth actions, provide the following:
- Manual Action Feasibility Study;
 - Operator Time Critical Action Program;
 - Time lines for time-critical recovery actions; and
 - Time line validations.
- E.6 If applicable, thermal hydraulic calculation or analysis that determines the time requirements for recovery actions and defense-in-depth actions.
- E.7 Operating procedures to achieve and maintain nuclear safety performance criteria from the control room, with a postulated fire affecting the selected inspection samples.
- E.8 Operating procedures to achieve and maintain nuclear safety performance criteria from outside the control room, with a postulated fire in the control room, cable spreading room, or any area requiring recovery actions (other than recovery actions performed in the control room or primary control stations).
- E.9 For safe shutdown equipment and tools, provide the following:
- Procedure for inventory and inspection; and
 - Most recent inspection and inventory results.
- E.10 LIST of procedures that implement Cold Shutdown Repairs (if applicable).
- E.11 For Cold Shutdown Repairs, provide the following:
- Procedure for inventory and inspection (i.e., needed tools, material, etc.)
 - Most recent inspection and inventory results.
- E.12 For credited safe shutdown communications, provide the following:
- Communications Plan for firefighting and post-fire recovery actions and defense-in-depth actions;
 - Repeater, phone, pager units, sound powered phone locations;
 - Cable routing including repeater power supply cables;
 - Radio coverage test results; and
 - Radio Dead Spot locations in the plant.
- E.13 Environmental and habitability evaluations for post-fire recovery actions and defense-in-depth actions (temperature, smoke, humidity, SCBAs, etc.).

F. ADMINISTRATIVE CONTROL, OVERSIGHT, AND CORRECTIVE ACTION PROGRAMS

- F.1 Copies of procedures that control the configuration of the fire protection program, features, and post-fire safe shutdown methodology and system design. Also, copies of procedures that govern the implementation of plant modifications, maintenance, and special operations and their impact on fire protection.
- F.2 List of open and closed CRs for the fire protection systems for the last three years.
- F.3 List of open and closed condition reports associated with the post-fire safe shutdown analysis for the last three years.

- F.4 List of open and closed condition reports associated with operator actions to achieve and maintain post-fire safe shutdown for the last three years.
- F.5 List of open and closed condition reports associated with the fire protection program including plant change evaluations, post-fire operating procedures and/or training, timeline evaluations for operator actions, and supporting engineering evaluations, analysis, or calculations for the last three years.
- F.6 List of open and closed CRs for emergency lighting units for the last three years.
- F.7 Self-assessments, peer assessments, and audits of fire protection activities for the last three years.
- F.8 Self-assessments, peer assessments, and audits of post-fire nuclear safety capability methodology for the last three years.
- F.9 Provide administrative procedures that control temporary modifications, permanent plant changes, design changes, procedure changes, ageing management changes, equivalency evaluations, suitability analyses, calculations, commercial grade dedication, safety-security interface, and repairs.
- F.10 Provide procedures that control the following: combustible controls, hot work, monitoring, compensatory measures, work-around, and operability determination.
- F.11 Site procedure governing the NFPA 805 Monitoring Program.

G. Aging Management Program

- G.1 Copies of the aging management programs applicable to fire protection including but not limited to the following:
 - Fire Protection
 - Fire Water System
 - Aboveground Metallic Tanks
 - Buried and Underground Piping and Tanks
- G.2 Copies of procedures, work orders, preventive maintenance tasks, or other documents which implement the commitments made as part of the license extension related to fire protection.
- G.3 List of aging management activities related to fire protection performed to date.