



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II**

245 PEACHTREE CENTER AVENUE NE, SUITE 1200  
ATLANTA, GEORGIA 30303-1257

February 21, 2020

Mr. Robert T. Simril  
Site Vice President  
Duke Energy Carolinas, LLC  
Catawba Nuclear Station  
4800 Concord Road  
York, SC 29745

**SUBJECT: CATAWBA NUCLEAR STATION, UNITS 1 AND 2 – NOTIFICATION OF AN  
NRC FIRE PROTECTION TEAM INSPECTION (FPTI) (NRC INSPECTION  
REPORT 05000413/2020013 and 05000414/2020013) AND REQUEST FOR  
INFORMATION (RFI)**

Dear Mr. Simril:

The purpose of this letter is to notify you that the U.S. Nuclear Regulatory Commission (NRC), Region II staff will conduct a triennial fire protection baseline inspection at the Catawba Nuclear Station in April 2020. The inspection team will be comprised of four inspectors from the NRC Region II office. 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 schedule for the inspection is as follows:

- Information gathering visit: March 23 - 25, 2020
- Week 1 of onsite inspection: April 13 – 17, 2020
- Week 2 of onsite inspection April 27 – May 1, 2020

The purpose of the information gathering visit is to obtain information and documentation needed to support the inspection and to become familiar with the fire protection program, fire protection features, post-fire safe shutdown capabilities and plant layout.

The team lead, and senior reactor analyst will participate in the information gathering visit to select the scope of structures, systems, and components for evaluation, identify additional documents needed to support the inspection, obtain unescorted access, and meet with the key personnel who will support the inspection. The inspection scope will require a walkdown of candidate fire areas/fire zones 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 copies of the documents listed in the enclosure to the NRC Region II office for team use in preparation for the inspection. Please send this information so that it will arrive in the NRC Region II office by the dates listed in the enclosure.

During the information gathering visit, the team leader will also discuss the following inspection support administrative details: (1) office space size and location; (2) specific documents requested to be made available to the team in their office spaces; (3) arrangements for reactor site access (including radiation protection training, security, safety, and fitness for duty requirements); and (4) the availability of knowledgeable plant staff and licensing organization personnel to serve as points of contact during the inspection.

We request that during the on-site inspection weeks you ensure that copies of analyses, evaluations, or documentation regarding the implementation and maintenance of the station fire protection program, including the success path necessary to achieve and maintain the nuclear safety performance criteria, be readily accessible to the team for their review. Of specific interest for the fire protection portion of the inspection 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 and stable plant conditions, including the electrical aspects of the nuclear safety capability assessment, reactor plant fire protection systems and features, and the station fire protection program and its implementation.

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.

This letter and its enclosure will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding." 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 Larry Jones, the team lead inspector, in the Region II office at (404) 997-4837 or [larry.jones@nrc.gov](mailto:larry.jones@nrc.gov) or me at (404) 997-4521.

Sincerely,

/RA/

Scott Shaeffer, Chief  
Engineering Branch 2  
Division of Reactor Safety

Docket No. 50-413 & 50-414  
License No. DPR-35 & DPR-52

Enclosures:  
Triennial Fire Protection Inspection  
Document Request

cc w/enclosure: via Listserv

SUBJECT: CATAWBA NUCLEAR STATION, UNITS 1 AND 2 – NOTIFICATION OF AN NRC FIRE PROTECTION TEAM INSPECTION (FPTI) (NRC INSPECTION REPORT 05000413/2020013 and 05000414/2020013) AND REQUEST FOR INFORMATION (RFI) dated February 21, 2020

\*See previous page for concurrence

**Adams Accession : ML20052E428**

SUNSI Rev Compl.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	ADAMS	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Reviewer Initials	
Publicly Avail	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sensitive	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sens. Type Initials	
RII:DRS/EB2	RII:DRS/EB2				
S. Shaeffer	L. Jones				
/RA/	LDJ1				
2/21/2020	2/18/2020				

**OFFICIAL RECORD COPY**

## **Triennial Fire Protection Inspection Document Request**

The documents and information requested below should generally be made available to the inspection team prior to the inspection. Electronic format is the preferred format, except where specifically noted. If electronic files are made available via a secure document management service, then the remote document access must allow inspectors to download, save, and print the documents in the NRC's regional office.

If a secure document management service is utilized, it is recommended that a separate folder be used corresponding to each item listed below. Documents should be identified by both document number and noun name. Electronic media on compact disc or paper records (hard copy) are also acceptable.

To allow review before the on-site information gathering visit, the documents requested in items A.1 thru A.22 should be made available to the team in the regional office no later than March 13, 2020.

Based on a review of the above seven items, team leader should identify a preliminary list of fire areas being considered for inspection prior to the on-site information gathering visit. During the information gathering visit, or shortly thereafter, the fire areas selected for inspection will be determined.

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.

To allow review before the on-site inspection weeks, the following documents should be made available to the team in the regional office no later than April 1, 2020.

If the facility has adopted the NFPA 805 licensing basis, approximately three weeks before the on-site information gathering visit, 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
- Fire Hazards Analysis and/or NFPA 805 Design Basis Document
- Fire Probabilistic Risk Assessment (PRA) Summary Document
- NFPA 805 Transition Report, developed in accordance with NEI 04-02
- Plant Change Evaluations (i.e., NFPA 805 Section 2.4.4)
- Analysis that demonstrates nuclear safety performance criteria can be achieved and maintained for those areas that require recovery actions
- Provide a list of structures, systems, and components subject to the 10 CFR 54.4 requirements

Based on review of the documentation, the team leader will identify the scope for the inspection prior to the end of the on-site information gathering visit or in-office review of the information obtained.

Enclosure

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 The current version of the Fire Protection Program and Fire Hazards Analysis or Post-fire Nuclear Safety Capability, Systems, and Separation Analysis Fire if NFPA 805 licensing basis
- A.2 Post-fire safe shutdown analysis and the supporting calculations that demonstrate acceptable plant response.
- A.3 The fire probabilistic risk assessment or portions of the plant's individual plant examination for external events (IPEEE) report addressing fire events. Also, include the results of any post-IPEEE reviews and listings of actions taken/plant modifications conducted in response to IPEEE information that relate to fire risk or Fire PRA Summary Document/full PRA Document (if summary document not available) if NFPA 805 licensing basis.
- A.4 Licensing basis documents for fire protection (safety evaluation reports, pertinent sections of the final safety analysis report, exemptions, deviations, letters to/from the NRC regarding fire protection/fire safe shutdown, etc.) or NFPA 805 Transition Report, developed in accordance with NEI 04-02 if NFPA 805 licensing basis.
- A.5 List of post-fire safe shutdown systems and components (i.e., safe shutdown equipment list).
- A.6 List of fire areas with automatic fire suppression systems
- A.7 A list, with descriptions, of design change packages performed since the last fire protection team inspection associated with fire protection or post-fire safe shutdown systems.
- A.8 A list, with descriptions, of any fire protection program changes and evaluations (not limited to Generic Letter 86-10 evaluations) performed since the last fire protection team inspection or 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) if NFPA 805 licensing basis.
- A.9 Fire Protection System(s) Design Basis Document.
- A.10 List of applicable NFPA codes and standards and issuance dates (i.e., codes of record).
- A.11 A list or document identifying any deviations from the NFPA codes of record.
- A.12 Facility Operating License.

- A.13 Technical Specifications (electronic format only).
- A.14 Updated Final Safety Analysis Report (electronic format only).
- A.15 COPY of NRC Safety Evaluation Reports that form the licensing basis for:
- Fire Protection Program; and
  - Post-fire Nuclear Safety Capability.
- A.16 COPY of NRC approved exemptions for plant fire protection and post-fire nuclear safety capability features.
- A.17 COPY of exemption requests submitted but not yet approved for plant fire protection and post-fire nuclear safety capability features.
- A.18 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.19 List of the top 25 highest fire CDF scenarios for each unit
- A.20 List of the top 25 highest fire LERF scenarios for each unit
- A.21 From your most recent PRA including external events and fires:
- a. Two risk rankings of components from your site-specific PRA: one sorted by Risk Achievement Worth (RAW), and the other sorted by Birnbaum Importance
  - b. A list of the top 500 cut-sets
- A.22 Copy of the Quality Assurance Program Manual (including specific fire protection QA manual, if applicable)

**B. GENERAL PLANT DESIGN DOCUMENTS**

- B.1 Piping and instrumentation diagrams (P&IDs) and legend list for components used to achieve and maintain post-fire safe shutdown. These should include the systems used for reactor coolant system makeup, reactor coolant system pressure control, decay heat removal, and reactivity control, including the essential support systems.
- B.2 Piping and instrumentation diagrams and legend list for fire protection systems, including the fire water supply; water suppression sprinklers; and deluge, CO<sub>2</sub>, and Halon systems (electronic format and C-size paper drawings).
- B.3 Yard layout drawings for underground fire protection buried piping (electronic format and C-size paper drawings).
- 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) (electronic format and C-size paper drawings).

- B.5 Single line diagrams for motor control centers (MCCs) that supply post-fire nuclear safety component loads (only for selected fire areas) (electronic format and C-size paper drawings).
- B.6 Equipment location drawings which identify the physical plant locations of post-fire safe shutdown equipment (electronic format and C-size paper drawings).
- B.7 Plant layout drawings which identify: (electronic format and C-size paper drawings)
  - 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, and 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 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.4 List of routine tests, surveillances, and preventive maintenance on fire pumps, including pump controllers and batteries.
- C.5 Last two completed annual fire pump pressure and flow tests.
- C.6 Last two completed monthly and/or quarterly fire pump tests.
- C.7 Last two completed fire loop flow tests and loop flushes.
- C.8 Last five hot work permits (at power).
- C.9 Last five transient combustible permits (at power).
- C.10 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
  - Last unannounced drill critique by a qualified individual independent of the licensee's staff

- C.11 For fire brigade equipment provide the following:
- Procedure for inventory and inspection
  - Most recent inspection and inventory results
- C.12 Fire Brigade Qualifications, including self-contained breathing apparatus, (SCBA) and training lesson plans.
- C.13 Copy of the mutual aid agreement for the “first-due” local fire department that is currently in effect.
- C.14 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 fire areas) demonstrating:
- The automatic or manually actuation of a suppression system, due to a fire in a single location, will not indirectly cause damage to the success path
  - The inadvertent actuation or rupture of a suppression system will not indirectly cause damage to the success path
  - Adequate drainage for areas protected by water suppression systems
  - The 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.15 Pre-fire plans for all fire areas.
- C.16 Impairment Log (at start of inspection) for fire protection features that are out of service.
- C.17 List of penetration seal work, re-work, or installation activities, in the last three years.
- C.18 List of fire wrap work, re-work, or installation activities, in the last three years.
- C.19 Fire protection system health reports for the two most recent quarters.
- C.20 Fire protection program health reports for the two most recent quarters.
- C.21 Emergency lighting system health reports for the two most recent quarters.
- C.22 List of fire protection system design changes completed in the last three years.
- C.23 List of fire protection system engineering equivalency evaluations completed in the last three years.
- C.24 Licensee evaluations of industry operating experience concerning fire protection issues completed in the last three years.
- C.25 List of fire event analysis reports for the last three years.



- C.26 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.27 Organization charts of site personnel down to the level of fire protection staff personnel.
- C.28 A contact list of key site personnel who will be supporting this inspection, giving the office location and phone number onsite.
- C.29 The team would like to observe an unannounced fire brigade drill in the plant, if possible, during the weeks of the inspection. If one is planned, please provide the contact information for the personnel planning the fire brigade drills during the onsite information gathering trip.

D. ELECTRICAL

- D.1 Administrative or configuration control procedures that govern fuse replacement (e.g., fuse control procedures).
- D.2 Maintenance procedures that verify breaker over-current trip settings to ensure coordination remains functional for post-fire nuclear safety capability components.
- D.3 Electrical system health reports for the two most recent quarters.
- D.4 Surveillance procedures and last surveillance demonstrating operability of components required for alternative shutdown.
- D.5 Schematic or elementary diagrams for circuits to be reviewed (samples to be identified by the inspector) (C-size paper drawings).
- D.6 Cable routing for components and equipment credited for post-fire safe shutdown systems and components (samples to be identified by the inspector).
- D.7 For emergency lighting units, provide the following:
- List of Preventive Maintenance tasks, frequencies, and bases
  - Most recently performed monthly or quarterly functional test
  - Most recently performed battery discharge performance test or conductance measurement test
  - Emergency lighting unit 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 emergency lighting system
  - Compensatory measures taken when emergency lighting units are out of service
  - Drawings showing emergency light locations and lamp orientation

## E. OPERATIONS

- E.1 The team would like to perform a walkthrough of a sample of post-fire safe shutdown procedures with qualified operators in the plant during the weeks of inspection. Please put us in contact with the appropriate personnel for planning the walkthroughs during the onsite information gathering trip.
- E.2 List of licensed operator Job Performance Measures (JPMs) for operator actions required to achieve and maintain post-fire safe shutdown.
- E.3 List of non-licensed operator training associated with non-licensed operator actions to achieve and maintain post-fire nuclear safe shutdown (including JPMs, in-field training walkdowns, simulations, or initial qualification).
- E.4 Lesson plans for post-fire safe shutdown training for licensed and non-licensed operators.
- E.5 For local manual operator actions (Recovery Actions), provide the following:
- Manual Action Feasibility Study
  - Operator Time Critical Action Program
  - Time lines for time-critical manual actions
  - Time line validations
- E.6 Thermal hydraulic calculation or analysis that determines the time requirements for time-critical manual operator actions.
- E.7 Operating procedures to achieve and maintain post-fire safe shutdown with a postulated fire in the selected fire areas.
- E.8 For safe shutdown equipment and tools, provide the following:
- Procedure for inventory and inspection
  - Most recent inspection and inventory results
- E.9 List of procedures that implement cold shutdown repairs.
- E.10 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.11 For radio communications, provide the following:
- Communications Plan for firefighting and post-fire safe shutdown manual actions
  - Repeater locations
  - Cable routing for repeater power supply cables
  - Radio coverage test results
  - Radio Dead Spot locations in the plant

E.12 For telephone, plant pager or sound powered phone systems, if relied upon to achieve and maintain post-fire safe shutdown, provide the following:

- Communications Plan for firefighting and post-fire safe shutdown manual actions
- Locations of phone, pager units, sound powered phone jacks and sound powered phone headsets
- Cable routing including power supply cables

E.13 Environmental and habitability evaluations for post-fire safe shutdown operator 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 condition reports 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 condition reports 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.

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.