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U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Subject: Catawba Nuclear Station, Units 1 and 2  
Docket Nos. 50-413 and 50-414  
Special Report Concerning Violation of License  
Conditions Regarding Fire Protection

Attached is a Special Report titled "44 Inoperable Penetration Firestops Due to Installation Deficiency and Improper Re-Work Discovered as a Result of Configuration Management Review."

The planned corrective actions stated in this report represent regulatory commitments.

This event is considered to be of no significance with respect to the health and safety of the public. If there are any questions on this report, please contact L.J. Rudy at (803) 831-3084.

Sincerely,

Gary R. Peterson

Attachment

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xc (with attachment):

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Special Report  
44 Inoperable Penetration Firestops Due to Installation  
Deficiency and Improper Re-Work Discovered as a Result of  
Configuration Management Review

ABSTRACT

On February 10, 2000, at 1850 hours, Catawba Engineering personnel determined that 37 penetration firestop seals in NRC committed fire barriers were inoperable. The affected penetration firestops were located in various areas of the auxiliary building for both Catawba units. At 1900 hours, following Engineering's recommendation to Operations that the affected penetration firestops should be considered inoperable, remedial firewatch patrols were initiated. The firewatch patrols were initiated as required by Catawba's Selected Licensee Commitments for the fire protection program. On February 29, 2000, at 1200 hours, Catawba Engineering personnel identified 7 more penetration firestop seals in NRC committed fire barriers that were considered inoperable.

The cause of the inoperable penetration firestops was a combination of installation deficiencies that have existed since the initial construction of the Catawba units, and improper re-work of existing penetration seals during modification and maintenance activities.

Corrective actions included initiating the firewatch patrols, and planned corrective actions include repairing the inoperable penetration firestops so that their configurations are consistent with approved details.

This event is reportable as a violation of the Catawba Facility Operating Licenses, which require Duke Energy Corporation to implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report, as amended, for the facility.

BACKGROUND

This event is being reported pursuant to Catawba Unit 1 License Conditions 2C(8) and F and Catawba Unit 2 License Conditions 2C(6) and F. License Conditions 2C(8)/2C(6) require Duke Energy Corporation to implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report, as amended, for the facility. License Condition F requires Duke Energy Corporation to report any violations of License Conditions 2C(8)/2C(6)

within 24 hours to the NRC Operations Center via the Emergency Notification System, with written follow-up within 30 days in accordance with the procedures described in 10 CFR 50.73(b), (c), and (e).

Catawba Selected Licensee Commitment (SLC) 16.9-5, "Fire Barrier Penetrations," is part of the fire protection [EIIIS: KP] program and is subject to the above license conditions. SLC 16.9-5 requires that all fire barriers and all sealing devices in fire barrier penetrations shall be operable such that fires would be confined or adequately retarded so that the following criteria are achieved:

1. Fire will not spread from non-safety related areas to safety related areas.
2. Fire will not damage redundant analyzed post fire safe shutdown equipment.
3. Fire will not spread from the balance of plant to the control complex (control room, cable rooms, and battery rooms).
4. Fire will not spread from non-containment areas to containment areas.

The remedial action for SLC 16.9-5 states that with one or more of the required fire barrier penetrations and/or sealing devices inoperable, within one hour either a continuous fire watch must be established on at least one side of the affected penetration, or the operability of fire detectors on at least one side of the inoperable penetration must be verified and an hourly fire watch patrol must be established.

On June 2, 1998, Catawba submitted a Special Report concerning inoperable fire barrier penetrations. The circumstances described in this report involved one degraded fire barrier in a masonry block wall in the auxiliary building and sixty inoperable penetration seals in the fire barrier in the control room floor. As a planned corrective action in this report, Catawba indicated that additional inspections of similar configurations were to continue and that repairs were to be made as necessary.

As part of this planned corrective action, Catawba established the Penetration Seal Configuration Verification Project, which involved gathering field data concerning all of the committed penetration seals. The establishment of this project was further communicated in a letter to NRC Region II dated August 4, 1998. This letter indicated that Duke Energy Corporation was developing a plan to update penetration seal design basis documentation and configuration information for all three of its nuclear sites. The plan was to include inspections to document as-built penetration seal configuration and

development of a comprehensive design basis document to include this information and to describe the qualification criteria for the penetrations.

From August through November 1999, personnel conducted a walkdown of all of the Catawba NRC committed penetration seals (approximately 1800 fire barrier penetration seals) in an effort to assign the appropriate bounding seal design for each of the penetrations. Engineering evaluations were then initiated on the data that was gathered in order to establish whether the penetration seals were configured in accordance with existing approved details and to document a conclusion regarding the operability of these penetration seals.

#### EVENT DESCRIPTION

At the start of this event, both units were operating in Mode 1 at 100% power. There were no inoperable structures, systems, or components that contributed to this event.

February 10, 2000

- 1653 Based on the results of the Penetration Seal Configuration Verification Project (which included engineering evaluations of the penetration seal configuration data by a consultant), Engineering initiated discussions with Operations concerning the inoperability of 37 penetration firestops. Operations contacted Regulatory Compliance to assist with the reportability determination.
- 1823 Problem Investigation Process (PIP) C-00-00596 was initiated by Engineering to document the inoperable penetration firestops.
- 1850 Engineering made a formal recommendation to Operations to declare the 37 affected penetration firestops inoperable.
- 1900 Remedial firewatch patrols were initiated in response to the inoperable penetration firestops.
- 1910 Regulatory Compliance determined that this item was reportable as a violation of License Conditions 2C(8) for Unit 1 and 2C(6) for Unit 2. Operations began preparing the 24-hour NRC notification.
- 1945 Operations formally logged the 37 penetration firestops as inoperable in the Technical Specifications Action Item Log (TSAIL).

February 11, 2000

0059 The NRC 24-hour notification was made (NRC report number 36679).

February 29, 2000

---- Based on follow-up correspondence from the consultant, Engineering notified Operations of an additional 7 inoperable penetration seal firestops.

1300 The additional 7 inoperable penetration seals were added to the existing remedial firewatch patrols.

#### CAUSAL FACTORS

The cause of the 44 inoperable penetration firestops was a combination of installation deficiencies that have existed since the initial construction of the plant, and improper re-work of existing penetration seals during modification and maintenance activities. The inoperable penetration firestops were located in various areas of the auxiliary building for both units. The vast majority of the inoperable firestops were embedded sleeves located in 8-inch thick masonry block walls. The inoperable firestops involved both electrical and mechanical penetrations.

The approved detail for electrical penetrations in a sleeve requires 10 inches of foam with 1-inch thick damming on each side. Many of these inoperable firestops were configured with 8 inches of foam (i.e., the full depth of the wall), with no build-out to achieve the additional 2 inches of required foam. Additionally, most of these firestops did not have any damming material. The approved detail for mechanical penetrations in a sleeve requires 12 inches of foam without damming material, or 10 inches of foam with 1 inch of damming material on each side. Many of these inoperable firestops were again configured with 8 inches of foam within the full wall depth. It appears that at the time these firestops were installed and/or modified, there was a trend toward installing foam to only the depth of the wall in masonry block wall sleeves.

There were also some isolated instances among the 44 inoperable penetration firestops that involved sleeves or core drills in concrete walls which were configured with less than the minimum required foam depth. Also, there were three instances of floor block-outs that had the bottom side damming board recessed too far into the opening, thus not allowing for adequate foam depth.

The inspections that led to the discovery of the inoperable penetration firestops were conducted as part of the corrective actions described in the Special Report submitted to the NRC on June 2, 1998. In this sense, the 44 additional inoperable penetration firestops described in this report does not constitute a recurring event.

There are no EPIX reportable equipment failures associated with this report.

#### CORRECTIVE ACTIONS

##### Immediate

1. Firewatch patrols were initiated according to the remedial actions of SLC 16.9-5 in response to the 44 inoperable penetration firestops.

##### Subsequent

1. The 24-hour NRC notification was made as required by the Catawba Facility Operating Licenses.

##### Planned

1. The inoperable penetration firestops described in this report will be repaired so that their configurations are consistent with approved details.
2. As Catawba continues its efforts associated with the Penetration Seal Configuration Verification Project, any additional inoperable penetration firestops discovered will be reported in a supplement to this report.

#### SAFETY ANALYSIS

While the inoperable penetration firestops were not configured in accordance with approved details, they were nevertheless capable of performing their fire retardant function to a large degree. In addition, the "defense-in-depth" philosophy concerning fire prevention and mitigation requires other measures to be in place to help prevent a fire from occurring and to mitigate its effects should one occur. These measures include the control of combustible materials, the control of ignition sources, fire detection systems, and fire suppression systems. These measures would have helped to prevent a fire from occurring and to mitigate its consequences had one occurred for the duration that the penetration firestops were

in an inoperable condition. Therefore, the health and safety of the public were unaffected by this event.