OCT 0 8 1985

Docket Nos.: STN 50-454, STN 50-455
and STN 50-456, STN 50-457

Mr. Dennis L. Farrar
Director of Nuclear Licensing
Commonwealth Edison Company
Post Office Box 767
Chicago, Illinois 60690

Dear Mr. Farrar:

Subject: Acceptance of Criteria for Firecode CT Gypsum Fire Stops - Byron/Braidwood

By letter dated July 30, 1985, you requested the staff's concurrence on use of certain revised acceptance criteria for Firecode CT gypsum fire stops for Byron Station, Units 1 and 2, and Braidwood Station, Units 1 and 2. As you pointed out, we have already approved these criteria for La Salle County Station, Units 1 and 2, in our July 16, 1985, letter from Walter R. Butler to Dennis L. Farrar (Enclosed). Since the gypsum and thermafiber fire penetration seals at Byron/Braidwood are similar in configuration to those at La Salle, we conclude that use of these revised criteria are acceptable on Byron Station, Units 1 and 2, and Braidwood Station, Units 1 and 2.

Sincerely,

(5)

B. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing

Enclosure: As stated

cc: See next page

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Out of office until 10/14/85. Kubicki had previously agreed on 10/4/85

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

OCT 0 8 1985

Docket Nos.: STN 50-454, STN 50-455
and STN 50-456, STN 50-457

Mr. Dennis L. Farrar
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Commonwealth Edison Company
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Sincerely,

J. A. Olshan
for

B. J. Youngblood, Chief
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Enclosure: As stated

cc: See next page

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Enclosure

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUL 16 1985

Docket Nos: 50-373/374

Mr. Dennis L. Farrar
Director of Licensing
P.O. Box 767
Chicago, Illinois 60690

Dear Mr. Farrar:

SUBJECT: ACCEPTANCE OF CRITERIA FOR FIRECODE CT GYMPSUM FIRE STOPS-
LA SALLE COUNTY STATION, UNITS 1 & 2

By letter dated May 28, 1985, you requested the staff's concurrence on use of certain revised acceptance criteria and separations based on newly obtained test data for Firecode CT Gympsum Fire Stops for La Salle County Station, Units 1 and 2.

Based on our review, we find that the tested seal configuration bounds the La Salle configuration and that the proposed criteria are acceptable. A copy of the related Safety Evaluation is enclosed.

Sincerely,

Walter R. Butler

Walter R. Butler, Chief
Licensing Branch No. 2
Division of Licensing

Enclosure: As stated

~~8507300199~~

2pp

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
OF PROPOSED ACCEPTANCE CRITERIA FOR FIRECODE CT GYPSUM FIRE STOPS
COMMONWEALTH EDISON
LASALLE COUNTY STATION UNITS 1 AND 2
DOCKETS NOS. 50-373 AND 50-374

Introduction

By memorandum dated February 10, 1984, the licensee committed to the NRC to revise their Firecode CT Gypsum Fire Stop surveillance and installation procedures to incorporate a 1/32 inch acceptance criteria for cracks and separations. This criteria was established based on a lack of test data supporting less stringent acceptance criteria. On May 28, 1985 the licensee submitted revised acceptance criteria for cracks and separations based on newly obtained test data and requested NRC concurrence on the new criteria.

This Safety Evaluation documents the NRC review of the revised acceptance criteria and their impact on the operation and administration of plant activities.

Summary of Evaluation

The evaluation of the licensee's revised criteria consisted of a comparison of the test methodology and results that form the basis for the revised criteria and the specifications contained in Branch Technical Position CMEB 9.5-1 Section C.5a(3) including ASTM E110-81 as endorsed by Standard Review Plan Section 9.5-1.

The staff found the proposed changes acceptable.

Evaluation of Proposed Change to Crack and Separation Criteria

Description of Change

Existing criteria require cracks and separations greater than 1/32 inch wide to be repaired. Wider cracks would cause the affected seal to be declared inoperable. The following revised criteria are proposed.

a. Following initial seal installation or repair:

Crack Width	Corrective Action
< 3/32 inch	None
≥ 3/32 inch	Seal unacceptable - repairs required

b. Periodic surveillance acceptance criteria:

Crack Width	Corrective Action
< 5/32 inch	None
≥ 5/32 inch and < 1/4 inch	Seal is operable but must be repaired on an orderly schedule
≥ 1/4 inch	Seal inoperable - repairs required

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Evaluation

The basis for the revised criteria is a test performed by Transco Products Inc. on November 20, 1984 and documented in Transco Test Report No. TR-161. Two test configurations were used to demonstrate seal performance with cracks. Each configuration consisted of an opening 14 1/2 inches by 9 inches in a 12 inch thick concrete slab. Each opening, containing a 2 inch conduit, was filled with 5 inches of CT Thermafiber covered with 5 inches of Firecode CT Gypsum. A 1/4 inch crack 14 1/2 inches long with full thickness penetration was induced in each seal. One seal was exposed to the test fire on the Firecode CT Gypsum side. The second seal was exposed to the test fire on the CT Thermafiber side.

The test fire was provided by a natural gas-fired furnace measuring 4 feet by 4 feet at its support points. Furnace atmosphere temperatures were monitored by three thermocouples 12 inches below the test seal. Average pressure during the test was .08 inches of water negative.

Thermocouples were placed on the side of the seal away from the fire as follows:

a. Seal with CT Thermafiber exposed to the fire:

   1. Two thermocouples slightly depressed into the CT Gypsum surface.
   2. One thermocouple suspended in the 1/4 inch crack slightly below the CT Gypsum surface.
   3. One thermocouple at the conduit exit - seal interface.

b, Seal with CT Gypsum exposed to the fire:

   1. One thermocouple slightly depressed into the CT Thermafiber surface.
   2. One thermocouple on the CT Thermafiber surface directly over the 1/4 inch crack in the CT Gypsum.
   3. One thermocouple at the conduit exit - seal interface.

Additional thermocouples were installed to monitor seal performance inside the conduits.

Seal temperatures were recorded at 5 minute intervals for the first two hours of the test and at 10 minute intervals for the last hour of the test.

At the conclusion of the fire exposure test the seals were subjected to three separate hose stream tests. The first two tests consisted of a 75 psi hose stream delivered from a distance of 10 feet through a 1 1/2 inch hose equipped with fog nozzles with discharge angles of 30° and 15°. The third test consisted of a 30 psi solid stream delivered through a 2 1/2 inch hose equipped with a 1 1/8 inch tip set on a playpipe from a distance of 20 feet. Each test lasted 24 seconds.

The following test results were obtained:

a. The maximum temperature attained over the crack in the seal with the CT Gypsum exposed to the fire was 140° at 20 minutes into the test. The maximum seal surface temperature attained was 129° F at 25 minutes into the test. The maximum conduit exit-seal interface temperature attained in this configuration was 272° F at the 3 hour point.

b. The maximum temperature attained over the crack in the seal, with CT fiberfill exposed to the fire was 80° F at the 3 hour point. The maximum seal surface temperature attained was 118° F at the 3 hour point. The maximum conduit exit - seal interface temperature attained was 205° F at the three hour point.

c. The seal with the CT Gypsum side exposed to the fire passed all three hose stream tests with no water penetration.

d. The seal with the CT fiberfill side exposed to the fire passed the first two hose stream tests without water penetration. Water penetration was observed on the third test.

e. No flame penetrated either seal nor did any penetrating cables ignite on the unexposed side of the seal.

Standard Review Plan Section 9.5-1 references Section C.5.a(3) of the Branch Technical Position (BTP) CMEB 9.5.1, "Fire Protection for Nuclear Power Plants", which specifies testing requirements for fire seals installed in openings through fire barriers. The BTP specifies that seals be tested using the time temperature exposure curve of ASTM E-119. The acceptance criteria specified are:

a. The fire barrier penetration has withstood the fire endurance tests without passage of flame or ignition of cables on the unexposed side.

b. The maximum temperature reached on the unexposed side of the seal is 325°F.

c. The penetration seal remains intact and does not allow penetration of water beyond the unexposed surfaces during one of the following three tests:

   1. Stream delivered at a distance of 5 feet from the exposed surface through a 1 1/2 inch nozzle set at a discharge angle of 30° with a nozzle pressure of 75 psi and a minimum flow of 75 gpm or

   2. Stream delivered at a distance of 10 feet from the exposed surface through a 1 1/2 inch nozzle set at a discharge angle of 15° with a nozzle pressure of 75 psi and a minimum flow of 75 gpm or

   3. Stream delivered at a distance of 20 feet from the exposed surface through a 2 1/2 inch playpipe equipped with a 1 1/8 inch tip with a nozzle pressure of 30 psi.

Review of the Transco Products, Inc. test results and methodology against the acceptance criteria of the Standard Review Plan showed the following:

a. The time temperature curve utilized for the test conformed to ASTM E-119 specifications.

b. The flame through and cable ignition criteria were satisfied.

c. The maximum unexposed surface temperatures remained below the 325° specified value.

d. Temperature recording requirements were satisfied.

e. The tested configuration is representative to the as-installed configurations at LaSalle.

f. Hose stream tests performed in accordance with Items 1 and 2 above were successfully completed. A single successful test would have been sufficient. Thus, minimum hose stream test requirements were met or exceeded.

Given that the tested seal configuration with a 1/4 inch crack passed all required tests and bounds the seal configuration at LaSalle and the licensee's proposed crack and separation criteria, the staff finds the proposed criteria acceptable.

Environmental Consideration

The proposed changes involve a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the changes involve no significant increase in the amounts, and no significant change in the types of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the proposed changes.

Conclusion

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations and will not be inimical to the common defense and security or to the health and safety of the public.

Dated: _____

Principal Contributor

W. G. Guldemond