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Subject: Response to NRC Request for Information on Fire Barrier Penetrations
(TAC No. M94335)

Ladies and Gentlemen:

The enclosure provides Toledo Edison's (TE) response to the December 28, 1995 (TE Log Number 4666) Nuclear Regulatory Commission (NRC) request for information on fire barrier penetrations at the Davis-Besse Nuclear Power Station (DBNPS).

If you have any questions, please contact Mr. James L. Freels, Manager - Regulatory Affairs, at (419) 321-8466.

Very truly yours,

A handwritten signature in dark ink, appearing to read 'John P. Stetz'.

MKL/llh

Enclosure

cc: L. L. Gundrum, NRC/NRR DB-1 Project Manager
H. J. Miller, Regional Administrator, NRC Region III
S. Stasek, NRC Region III, DB-1 Senior Resident Inspector
Utility Radiological Safety Board

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RESPONSE TO REQUEST FOR INFORMATION ON FIRE BARRIER PENETRATIONS

FOR

DAVIS-BESSE NUCLEAR POWER STATION

UNIT NUMBER 1

NRC Request for Information Section 1:

1. Are or have there ever been additives or filler materials (e.g., lead or iron oxide) used to impart special properties (e.g., radiation protection) in the fire barrier penetration seals installed at Davis-Besse? If so, provide answers to the following questions:
 - a. What materials were used and in what types of seals?
 - b. Were controls and specifications in place to ensure that the materials were of sufficient quality (e.g., free of sulphur contamination) to preclude seal curing and cold flow problems?
 - c. How was the amount of material added to a seal controlled during installation?
 - d. Was the amount and distribution of material within the seal verified following installation? If so, how?
 - e. Would the fire barrier penetration seal inspection and surveillance procedures identify possible seal curing problems and/or cold flow conditions?
 - f. Have any cold flow conditions or seal curing problems been identified? If so, to what extent, in what types of seals, and what corrective actions were taken?

Toledo Edison Response to Section 1:

1. The fire penetration seals at the DBNPS were originally installed by Brand Industrial Services Company (BISCO), now Brand Incorporated. Additives were used in selected fire barrier penetration seals to enhance radiation protection properties. Additional information is provided as follows:
 - a. In the 1970's, for penetration seals where radiation protection was a desired enhancement, powdered lead (200 mesh) was added to the seal material during installation. In the early 1980's, BISCO changed the additive to a proprietary material referred to as "NH" (non-hazardous) aggregate.

Toledo Edison Response to Section 1 (continued):

- b. BISCO had an extensive procedural and quality assurance program in place to ensure that materials were of sufficient quality and were installed properly. Records of the material shipped and their lot numbers were maintained. In addition, documentation of the density and cell structure was kept, as well as records indicating that the pour was made full depth.
- c. BISCO had procedures to control the preparation and installation of the seal material.
- d. Installation of the seals was checked per BISCO Quality Control Procedure QCP-007 and logged in the Traceability Log. Log entries were initialed by the quality control inspector.
- e. Since the time of the original installation of the fire barrier penetration seals in the 1970's, there have been several 100% inspections of the seals. In accordance with the DENPS Fire Hazards Analysis Report, the current surveillance requirement is to visually inspect at least a ten percent sample of each type of sealed penetration at least once per 18 months, with samples selected such that each penetration seal will be inspected at least once per 15 years.

The seal details used at the DENPS generally have the damming board removed, which leaves the seal face exposed and allows a detailed examination of the seal materials during inspections. In this case, cracks or gaps in the seal materials, should they exist, would be more readily visible.

Based on the above, there is high confidence that any seal curing problems or cold flow conditions would have been identified.

- f. Interviews of personnel involved with the inspection, rework and replacement of many of the seals during the mid to late 1980's, were conducted. No known cases of cold flow conditions or seal curing problems were identified.

NRC Request for Information Section 2:

- 2. Do the large combination fire and pressure penetration seals that were installed by Brand Industrial Services Company (BISCO) at Davis-Besse during the late 1970's still exist? If so, provide the following information:
 - a. Describe the seals and verify whether or not they consist of silicone elastomer sandwiched between silicone foam.
 - b. Provide the design information and installation documentation that verifies the material composition (i.e., silicone foam, silicone elastomer, or combination) of the seals.

- c. Verify that the seal designs were qualified as fire rated assemblies and adequate pressure seals by appropriate tests and describe the test methods and test acceptance criteria.

Toledo Edison Response to Section 2:

2. Large combination fire and pressure penetration seals still exist at the DBNPS. Additional information is provided as follows:

- a. The types of seal details used at the DBNPS that are qualified as both fire and negative pressure include low density foam seals, high density elastomer seals, and flexible boot seals. A "sandwich" design was not an allowed detail. Brand Incorporated indicated in a recent discussion that they are not aware of such a design being an allowed detail.

Interviews of personnel involved with the inspection, rework and replacement of many of the seals during the mid to late 1980's, were conducted. No instances were recalled of a "sandwich" design being encountered at the DBNPS.

Plant Condition Adverse to Quality (PCAQ) reports generated to document various problems involving foam blockouts were reviewed. Although several of these reports indicated that there was foreign material found in the blockouts, elastomer material was not indicated to be one of the foreign materials. Based on the review, there were approximately 250 foam blockouts repaired or reworked in the 1987 to 1988 time frame.

Based on the above, there is no indication that the "sandwich" design exists at the DBNPS.

- b. As noted above, the allowable seal types for the combination fire and pressure penetration seals installed by BISCO include low density foam seals, high density elastomer seals, and flexible boot seals. The response to Section 1 above encompasses these seal types.
- c. The combination fire and pressure penetration seals installed by BISCO were qualified by appropriate tests. Information on fire penetration seal testing, including test summaries and test reports, was previously provided to the NRC by letter dated February 12, 1987 (TE letter Serial Number 1352). A detailed summary of fire barrier penetration testing issues is provided in the May 30, 1991 NRC Safety Evaluation Report (TE Log Number 3480).