



Northern States Power Company  
 Prairie Island Nuclear Generating Plant  
 1717 Wakonade Dr. East  
 Welch, Minnesota 55089

October 13, 1995

Generic Letter 92-08

U S Nuclear Regulatory Commission  
 Attn: Document Control Desk  
 Washington, DC 20555

PRAIRIE ISLAND NUCLEAR GENERATING PLANT  
 Docket Nos. 50-282 License Nos. DPR-42  
 50-306 DPR-60

Response to the August 30, 1995 Request for Additional  
 Information Regarding Generic Letter 92-08, "Thermo-Lag 330-1 Fire Barriers"  
 (TAC Nos. M85592 and M85593)

In a letter dated August 30, 1995, the Nuclear Regulatory Commission requested additional information regarding the fire testing of replacement fire barriers for use at Prairie Island to complete the NRC GL 92-08 review for Prairie Island. The staff requested that we respond to four questions on the Darmatt Fire Barrier Test Program. This letter provides our response to the NRC August 30, 1995 letter. Please see Enclosure 1.

In this letter we have made no new Nuclear Regulatory Commission commitments.

Please contact Jack Leveille (612-388-1121, Ext. 4662) if you have any questions related to this letter.

*Michael D Wadley*

Michael D Wadley  
 Plant Manager  
 Prairie Island Nuclear Generating Plant

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c: (see next page)

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October 13, 1995  
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NORTHERN STATES POWER COMPANY

c: Regional Administrator - Region III, NRC  
Senior Resident Inspector, NRC  
NRR Project Manager, NRC  
J E Silberg

Attachments: Enclosure 1, Response to the August 30, 1995 Request for Additional  
Information (5 pages)  
  
Affidavit (1 page)

**NRC QUESTION #1:**

Test Report FTCT/94/0060 states that the fire test was witnessed by representatives of Commonwealth Edison Company, Transco and Darchem Engineering at the Faverdale Technology Center [Centre]. The Faverdale Technology Center [Centre] and Darchem Engineering are divisions of Weir Group PLC. Provide information related to the independent verification of the construction of the test assemblies and the performance of the fire and hose stream tests for qualification of fire barriers to be installed at Prairie Island.

**RESPONSE:**

The Faverdale Engineering Group, which includes the Faverdale Technology Centre, is one of four autonomous business groups within Darchem Engineering, Ltd. (DEL), itself a wholly owned subsidiary of the Weir Group, PLC. Darchem Engineering, Inc. (DEI), the manufacturer of Darmatt Fire Barrier Material, is one of the other autonomous business groups within DEL. The Faverdale Technology Centre is required to maintain its independence from all external influence in order to attain and maintain NAMAS [National Measurement Accreditation Service] certification as a test facility from the British Government Standards Committee.

The construction of the test assemblies was performed by the Faverdale Engineering Group. The Faverdale Quality Control provided the quality verification of the construction. Transco also performed independent quality verification on several test assemblies.

DEI is an approved material supplier and the Faverdale Technology Centre is an approved material testing vendor for Transco Products, Inc. Therefore, DEI is independently subject to Transco's Quality Control program for material suppliers and Faverdale is independently subject to Transco's Quality Control program for material testing. The documentation for raw material, batching and fabrication are quality checked by DEI. Transco additionally performs periodic audits of DEI, Faverdale and their procedures.

Transco has witnessed and/or reviewed all fire and hose stream tests that were used to support the installation at the Prairie Island Nuclear Generating Plant. For each fire test, Transco has independently reviewed all the documentation for the raw material purchase, the material batching, the fabrication and the construction of the test assembly.

**NRC QUESTION #2:**

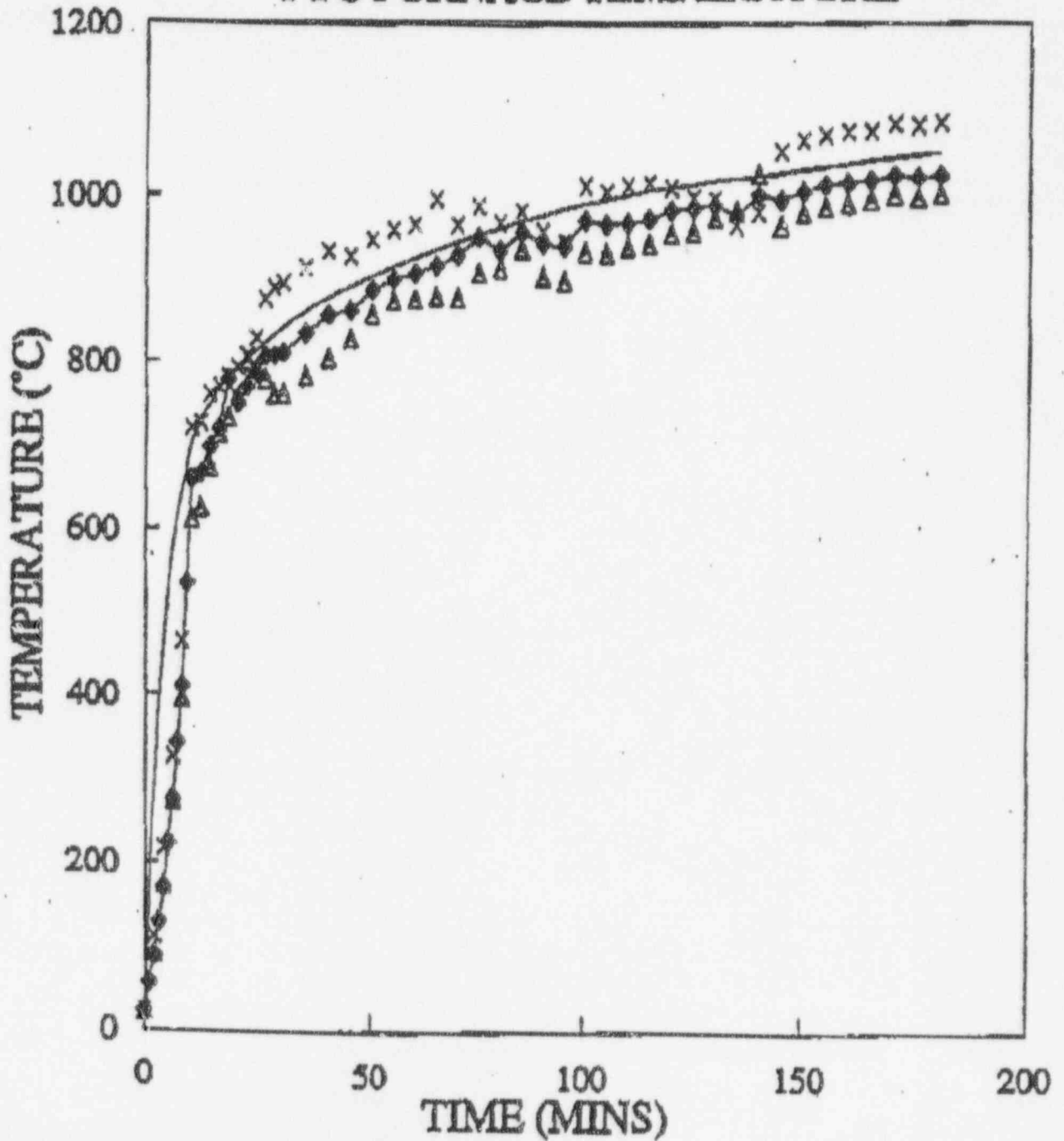
**Section 4.2 of the test report states that ASTM [American Society for Testing and Materials] thermocouples provided by Underwriters Laboratories were used for reference, and positioned next to the controlling thermocouples. Please provide the thermocouple temperature data, and a comparison of the temperature data recorded by both the ASTM thermocouples and the controlling thermocouples related to the ASTM E-119 standard time temperature curve.**

**RESPONSE:**

All the thermocouple temperature data, including the ASTM and the British thermocouples, is located in Appendix D of Fire Test Report FTCT/94/0060. The data for the British Standard thermocouples is on Pages 32 to 47 of the report and are listed under channels 145 to 152. The data for the ASTM (UL) thermocouples is on Pages 48 to 63 of the report under channels 93 to 100. The attached graph shows the average furnace temperature derived from the ASTM thermocouples. The graph also shows the minimum and maximum temperature readings from the ASTM thermocouples (the maximum and minimum temperature readings were not always the same thermocouple, at different time periods different thermocouples produced the maximum or the minimum).

The temperatures recorded by the British Standard controlling thermocouples were so close to the ASTM E119-88 Standard curve that only a single line is shown. The temperature data is shown on Page 25 of the report

## ASTM E119.88 STANDARD CURVE FTC FURNACE TEMPERATURE



— E119-88 STANDARD CURVE ◆ AVE. FURNACE TEMP.

▲ MIN. THERMOCOUPLE

× MAX. THERMOCOUPLE

NRC QUESTION #3:

The test report states that a hose stream test was performed on a "short section of 36" x 6" cable tray." Please provide information comparing the "short section" cable tray to the tray tested for temperature rise, and information regarding the hose stream performance of the 12-inch wide cable tray and the 3/4-inch diameter conduit.

RESPONSE:

A separate 36" x 6" tray was constructed for the hose stream test. The construction of the new tray was identical to the tray used for the maximum temperature rise test. The new 36" x 6" cable tray was fire tested using the ASTM E119 Fire Curve. Immediately following the fire test, the tray was subjected to the hose stream test.

The 36" x 6" section was chosen to be hose streamed as being the largest unsupported area of the fire barrier exposed to the hose stream. This is more likely to fail a hose stream test than the small unsupported area of a 12" wide cable tray.

The 3/4" diameter conduit was not hose streamed during this test, but it has since been hose streamed as reported in FTCCR/94/0060 Issue B and FTCCR/95/0059 Issue A.

It must be pointed out that on all the tests carried out on the Darmatt KM1 systems to date, not a single piece of the fire barrier material has been damaged, dislodged or detached during the hose stream test.

NRC QUESTION #4:

Supplement 1 to Generic Letter 86-10, "Fire Endurance Test Acceptance Criteria For Fire Barrier Systems Used to Separate Redundant Safe Shutdown Trains Within The Same Fire Area," March 25, 1994, specifies that thermocouple placement on conduits should be opposite the test deck, on the exterior of the conduit, closest to the furnace fire source. Drawing No. 310076-DSKS of the test report, which depicts the thermocouple positions on the 3/4-inch diameter conduit, indicates that the thermocouples are located away from the fire source, on the exterior surface of the conduit, adjacent to the test deck. Please clarify the thermocouple locations on the 3/4-inch diameter conduit and identify any deviations from the staff guidance contained in Supplement 1 to Generic Letter 86-10.

RESPONSE:

The thermocouple placement satisfies the NRC GL86-10, Supplement 1 requirement to position the thermocouples on the raceway so that they face the Furnace Fire Source

a. Horizontal Leg

Page 72 of Fire Test Report FTCT/94/0060 shows the position of the burners in the furnace are above the horizontal leg of the conduit and the flues positioned near the floor of the furnace ensuring an even distribution of heat. This being the case, the thermocouples were positioned on the top inner surface of the conduit to face the furnace flames not the lower outer surface which faces away from the flames.

b. Vertical Leg

The burners are distributed along the four furnace walls. The center of the furnace receives heat from all directions by the burners. Thermocouples, placed on the vertical conduit leg facing the wall, are shadowed from the majority of burners in the furnace. Therefore, the thermocouples on the vertical legs of the conduit were placed against the conduit inner surface to the swirling flames from the majority of the furnace burners.

UNITED STATES NUCLEAR REGULATORY COMMISSION

NORTHERN STATES POWER COMPANY

PRAIRIE ISLAND NUCLEAR GENERATING PLANT

DOCKET NO. 50-282

DOCKET NO. 50-306

GENERIC LETTER 92-08, "THERMO-LAG 330-1 FIRE BARRIERS"

Northern States Power Company, a Minnesota corporation, by this letter dated October 13, 1995 hereby submits information required by Generic Letter 92-08, Thermo-Lag 330-1 Fire Barriers, pursuant to 10 CFR 50.54(f), for the Prairie Island Nuclear Generating Plant.

This letter contains no restricted or other defense information.

NORTHERN STATES POWER COMPANY

By Michael D. Wadley  
Michael D Wadley  
Plant Manager  
Prairie Island Nuclear Generating Plant

On this 13 day of October 1995 before me a notary public in and for said County, personally appeared Michael D Wadley, Plant Manager of Prairie Island Nuclear Generating Plant and being first duly sworn acknowledged that he is authorized to execute this document on behalf of Northern States Power Company, that he knows the contents thereof, and that to the best of his knowledge, information, and belief the statements made in it are true and that it is not interposed for delay.

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