WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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April 13, 1993
G02-93-085

Docket No. 50-397

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

Gentlemen:

Subject: **WNP-2, OPERATING LICENSE NPF-21**
RESPONSE TO GENERIC LETTER 92-08, "THERMO-LAG 330-1 FIRE BARRIERS"

References:
1) NUMARC Letter dated February 17, 1993, "1. Status Report on Thermo-Lag Issue 2. Information for Response to NRC Generic Letter 92-08"
2) Letter, G02-92-179 dated July 28, 1992, GC Sorensen (SS) to NRC, "Response to IEB 92-01"
3) Letter, G02-92 228 dated September 2, 1992, GC Sorensen (SS) to NRC, "Response to IEB 92-01, Supplement 1"

The attached is in response to the reporting requirements contained in Generic Letter 92-08.

Sincerely,

GC Sorensen

G. C. Sorensen, Manager
Regulatory Programs (Mail Drop PE20)

MGE/bk
Attachment

cc: JB Martin - NRC RV
NS Reynolds - Winston & Strawn
JW Clifford - NRC
DL Williams - BPA/399
NRC Site Inspector - 901A
PP Narbut - NRC RV

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1/1

STATE OF WASHINGTON)
)
COUNTY OF BENTON)

Subject: Response to GL 92-08
Thermo-Lag 330-1 Fire Barriers

I, G. C. SORENSEN, being duly sworn, subscribe to and say that I am the Manager, Regulatory Programs for the WASHINGTON PUBLIC POWER SUPPLY SYSTEM, the applicant herein; that I have the full authority to execute this oath; that I have reviewed the foregoing; and that to the best of my knowledge, information, and belief the statements made in it are true.

DATE 13 April, 1993

G. C. Sorensen, Manager
Regulatory Programs

On this date personally appeared before me G. C. SORENSEN, to me known to be the individual who executed the foregoing instrument, and acknowledged that he signed the same as his free act and deed for the uses and purposes herein mentioned.

GIVEN under my hand and seal this 13 day of April 1993.

Notary Public in and for the
STATE OF WASHINGTON

Residing at Kennewick, Washington

My Commission Expires April 28, 1994

ATTACHMENT

1. *State whether Thermo-Lag 330-1 barriers are relied upon (a) to meet 10 CFR 50.48, to achieve physical independence of electrical systems, (b) to meet a condition of a plant's operating license, or (c) to satisfy a licensing commitment. If applicable, state that Thermo-Lag 330-1 is not used at the facility. This generic letter applies to all 1-hour and all 3-hour Thermo-Lag 330-1 materials and barrier systems assembled by any assembly method such as by assembling preformed panels and conduit shapes, as well as spray, trowel and brush-on applications.*

SUPPLY SYSTEM RESPONSE

Thermo-Lag 330-1 was relied upon at WNP-2 for all three of the conditions discussed above. Thermo-Lag 330-1 is used for Appendix R, 1 and 3-hour fire barrier separation for conduits, cable trays and their supports, fire barrier walls, and instrument supports. Thermo-Lag 330-1 is used as a noncombustible 1-hour rated encapsulation to justify a 20' noncombustible zone separating two 3-hour fire areas. Thermo-Lag 330-1 was also utilized, for certain applications, as a 15 minute fire barrier to achieve physical independence (electrical separation) of redundant electrical systems whose function is to mitigate the effects of design basis events.

2. *If Thermo-Lag 330-1 barriers are used at the facility,*

   (a) *State whether or not the licensee has qualified the Thermo-Lag 330-1 fire barriers by conducting fire endurance tests in accordance with the NRC's requirements and guidance or licensing commitments.*

   (b) *State (1) whether or not the fire barrier configurations installed in the plant represent the materials, workmanship, methods of assembly, dimensions, and configurations of the qualification test assembly configurations; and (2) whether or not the licensee has evaluated any deviations from the tested configurations.*

   (c) *State (1) whether or not the as-built Thermo-Lag 330-1 barrier configurations are consistent with the barrier configurations used during the ampacity derating tests relied upon by the licensee for the ampacity derating factors used for all raceways protected by Thermo-Lag 330-1 (for fire protection of safe shutdown capability or to achieve physical independence of electrical systems) and (2) whether or not the ampacity derating test results relied upon by the licensee are correct and applicable to the plant design.*

SUPPLY SYSTEM RESPONSE

2.(a) Fire endurance tests were performed by Thermal Science (TSI) and Industrial Testing Laboratories (ITL) in accordance with BTP 9.5-1 to qualify the Thermo-Lag 330-1 barriers for use at WNP-2. These tests and results were submitted to the NRC as part of the operating license review.

2.(b) 1) The fire barrier configurations installed in the plant have deviated from the fire tested configuration. Technical direction was provided by TSI for the deviations. However, the Supply Systems does not have documentation of evaluations for all of the deviations. 2) A summary of the deviations and preliminary evaluations have been documented on a Problem Evaluation Report 292-026. This PER initiated a revision to the Thermo-Lag installation procedure and to the ampacity derating revisions discussed below. The closure of this document, and others written as a result of the investigation, will be dependent of the resolutions reached for the Thermo-Lag issue. Until resolution of the issue by the NUMARC test program, all Thermo-Lag installations are considered inoperable.

2.(c) 1) The ampacity derating test configurations utilized by TSI, in reports ITL Report No. 82-5-355 for 3 hour cable tray barriers, ITL Report No. 84-10-5 for 3 hour conduit barriers, ITL Report No. 82-355-F-1 for 1 hour cable tray barriers and TSI Technical Note 111781 for 1 hour conduit barriers, envelope the WNP-2 as-built Thermo-Lag configurations. 2) The original WNP-2 cable ampacity derating calculations were performed using derating factors provided in the reports listed above. In October 1991, the Supply System received information from TSI regarding the results of later UL ampacity derating tests (UL Project 86NK23826, File R6802) which indicated that approximately 32% cable derate was necessary for a 3 hour Thermo-Lag tray envelope. Following evaluation of this issue, the Supply System discovered that the derating factor identified in ITL Report 82-5-355 (for 3 hour tray barriers) was in conflict with the UL report due to mathematical errors in the ITL report calculations. Correcting the mathematical errors resulted in 3 hour barrier derating factors consistent with the values identified by UL. This resulted in the necessity to revise the derating factors used in the original WNP-2 calculations. Specifically, derating factors were revised from 17.7% to 33% for the 3 hour tray barriers, from 9.7% to 17% for both 3 hour and 1 hour conduit barriers and from 12.5% to 23% for 1 hour tray barriers. To provide some calculation margin, an additional 5% was added to each derating factor resulting in final factors of 38%, 23% and 28%, respectively. Where barrier ratings are greater than 1 hour but less than 3 hour, the 3 hour barrier derating factor is used. Using the revised Thermo-Lag derating factors, the Supply System is recalculating ampacity derating for each safety related power cable. To date, preliminary results of those cables that have had recalculated cable ampacities indicate that no cable rerouting or resizing is required.

3. *With respect to any answer to items 2(a), or 2(c) above in the negative, (a) describe all corrective actions needed and include a schedule by which such actions shall be completed and (b) describe all compensatory measures taken in accordance with the technical specifications or administrative controls. When corrective actions have been completed, confirm in writing their completion.*

SUPPLY SYSTEM RESPONSE

3.(a) The Supply System is participating in the Thermo-Lag Test Program being conducted by NUMARC for the nuclear industry. The Thermo-Lag Test Program will provide upgraded installation configuration, test reports, procedures, and fire barrier operability. Specific test schedules will be provided to the NRC by NUMARC.

3.(b) The compensatory measures taken were described in letters to the NRC, References 2 and 3. The formal revision to the power cable ampacity derating calculation will be completed and issued by July 1,1993.

4. *List all Thermo-Lag 330-1 barriers for which answers to item 2 cannot be provided in the response due within 120 days from the date of this generic letter, and include a schedule by which such answers shall be provided.*

SUPPLY SYSTEM RESPONSE

The NUMARC Thermo-Lag Test Program is intended to encompass all the Thermo-Lag 330-1 barrier rework.