WOLF CREEK
NUCLEAR OPERATING CORPORATION

Forrest T. Rhodes
Vice President Engineering

April 16, 1993
ET 93-0047

U. S.. Nuclear Regulatory Commission
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Washington, D. C. 20555

Reference: 1) NRC Letter dated December 17, 1992, "Thermo-Lag 330-1 Fire Barriers (Generic Letter 92-01)"
2) Letter WM 92-0157 dated September 22, 1992, from B. D. Withers, WCNOC to USNRC
3) Letter WM 92-0126 dated July 27, 1992, from B. D. Withers, WCNOC to USNRC

Subject: Docket No. 50-482: Response to NRC Generic Letter 92-08

Gentlemen:

This letter provides Wolf Creek Nuclear Operating Corporation's (WCNOC) response to the Reference 1 letter pursuant to Section 182(a) of the Atomic Energy Act of 1954, as amended, and 10 CFR 50.54(f). The Reference required licensees to address four (4) areas regarding the use of Thermo-Lag 330-1 at each facility, and if necessary, a schedule under which responses and proposed actions will be completed.

The detailed responses are provided in the attachment to this letter. WCNOC will participate in the Nuclear Management and Resources Council (NUMARC) Thermo-Lag 330-1 barrier testing program to resolve most of the fire barrier rating and ampacity derating concerns raised by this generic letter. NUMARC will provide a schedule to the NRC for the testing program. Certain Wolf Creek Generating Station (WCGS) untested unique applications for hatch covers, access covers, cable tray fire stop, and a box enclosure will be evaluated by WCNOC for acceptability. The resolution of these WCGS unique applications will be done consistent with the NUMARC schedule on the other fire barriers.

Suitable compensatory measures, in accordance with the fire protection program, are in place for the areas where Thermo-Lag 330-1 has been used as a fire rated barrier. The analytical basis for Thermo-Lag 330-1 barriers used for physical electrical separation contains enough conservatism that no interim compensatory measures are needed for the ampacity derating concern. The ampacity derating concern is for long term aging degradation due to a potentially higher temperature environment than previously predicted.

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If you have any questions concerning this matter, please contact me at (316) 364-8831 Ext. 4002 or Mr. Kevin J. Moles of my staff at Ext. 4565.

Very truly yours,

Forrest T. Rhodes
Vice President Engineering

FTR/jad

Attachment

cc: W. D. Johnson (NRC), w/a
J. L. Milhoan (NRC), w/a
G. A. Pick (NRC), w/a
W. D. Reckley (NRC), w/a

STATE OF KANSAS)
) SS
COUNTY OF COFFEY)

Forrest T. Rhodes, of lawful age, being first duly sworn upon oath says that he is Vice President Engineering of Wolf Creek Nuclear Operating Corporation; that he has read the foregoing document and knows the content thereof; that he has executed that same for and on behalf of said Corporation with full power and authority to do so; and that the facts therein stated are true and correct to the best of his knowledge, information and belief.

By Forrest T. Rhodes
Forrest T. Rhodes
Vice President
Engineering

SUBSCRIBED and sworn to before me this 16 day of April, 1993.

Marlene Seacrest
Notary Public

Expiration Date 8-4-94

Item 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 performed panels and conduit shapes, as well as spray, trowel and brush-on applications.

Response 1

Thermo-Lag 330-1 fire barriers are relied upon to meet 10 CFR 50.48(e), which at the Wolf Creek Generating Station (WCGS), is implemented by NRC guidance provided in Branch Technical Position CMEB 9.5-1. Other Thermo-Lag 330-1 barriers, not intended to meet the 1-hour or 3-hour fire rated configurations, are used to meet Regulatory Guide 1.75 physical independence of electrical systems criteria.

Item 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 are correct and applicable to the plant design.

Response 2

(a) The Wolf Creek Nuclear Operating Corporation (WCNOC) fire barrier applications can be classified into two categories. The first category of typical fire barrier applications includes cable tray and conduit with their associated junction boxes and supports. The second category of Wolf Creek Generating Station (WCGS) unique applications includes various hatch covers, a cable tray fire stop, and a single encapsulation box.

The first category of typical fire barrier applications is qualified by vendor supplied fire endurance tests which have subsequently been identified as inadequate compared to current NRC guidance. WCNOC will participate in the NUMARC Thermo-Lag 330-1 testing program to acquire valid test reports for the WCGS specific applications.

The WCGS unique fire barrier applications are:

1. Tendon Surveillance Access Hatches in the Auxiliary Building at Elev. 2026'-0" (2 hatches) and 2047'-6" (2 hatches).

2. Residual Heat Removal and Containment Spray Encapsulation Access Covers in the Auxiliary Building at Elev. 2000'-0" (2 access covers).

3. Box type enclosure of motor operated valve AL-HV-32 supplying Essential Service Water to the Turbine Driven Auxiliary Feedwater Pump in the Auxiliary Building at Elev. 1989'-0".

4. Radiological Control Area 5 Personnel Escape Hatch in the Auxiliary Building at Elev. 1989'-0".

5. Cable Tray Fire Stops in the Corridor between the Component Cooling Water Pumps in the Auxiliary Building at Elev. 2026'-0".

The above unique fire barrier applications were not qualified by fire endurance testing. However, a fire protection evaluation was performed by WCNOC and the specifics of each application are described in the Fire Hazards Analysis Report. The NRC reviewed and approved Items 2 and 5 in NUREG-0881, Supplement No. 5, during plant licensing review. Applications, described in listings 1 through 4 above, relied upon the tested thickness to provide a 3-hour barrier. Listing 5 does not rely on a fire barrier rating, but as a fire stop is required to stop the spread of a cable tray fire.

Recent fire endurance tests at other licensee facilities have invalidated the earlier fire rated barrier test results. Therefore, further engineering review of the above configurations will be performed by WCNOC. The WCGS unique fire barrier applications will then either be justified as acceptable configurations by a qualified fire protection engineer or design changes will be made to adequately protect the subject components.

(b) The typical fire barrier applications, as defined above, were installed in accordance with vendor instructions to ensure appropriate configuration to match tested configurations. The installed configurations represent the materials, workmanship, methods of assembly, dimensions, and configurations of the qualification test assembly as interpreted by the vendor. As a result, no deviations were identified for evaluation of the typical fire barrier applications. However, since some minor variations from tested configurations have been shown to invalidate the acceptability of installed configurations at other licensee facilities, the acceptability of WCGS configurations is also questionable. Therefore, WCNOC will participate in the NUMARC Thermo-Lag 330-1 testing program and implement needed changes, as appropriate.

(c) WCNOC ampacity derating factors for conduit and cable trays covered with Thermo-Lag 330-1 are based on vendor supplied heat transfer coefficient values for Thermo-Lag 330-1. During original design, WCNOC performed heat transfer calculations to address the specific applications and provide the basis for ampacity derating. The ampacity derating values are not based on ampacity derating tests. Conservatism was used in the

assumptions made to bound operating parameters. The generic concern with the acceptability of ampacity derating factors is that long term life of the cable insulation may be degraded due to a potentially higher operating temperature for the cable. WCGS Class 1E electrical cables are qualified for a 40 year life and have been in service less than one-quarter of the qualified life. The analytical conservatism and limited operating time ensures cable integrity in the near term until additional testing information can be obtained. WCNOC will participate in the NUMARC program for testing Thermo-Lag 330-1 to determine ampacity derating values and implement changes as appropriate.

Item 3

With respect to any answer to items 2(a),(b), or (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.

Response 3

WCNOC will participate in the NUMARC industry Thermo-Lag 330-1 testing program to resolve any applicable fire barrier configuration and ampacity derating concerns on the WCGS applications of Thermo-Lag 330-1. The schedule for the NUMARC test program will be provided to the NRC by NUMARC.

The five (5) identified WCGS unique applications will be re-evaluated by WCNOC consistent with the NUMARC schedule for the fire barrier testing. If any modifications are required, they will be completed based on the safety significance priority established by WCNOC at that time.

As identified in the Reference 1 and 2 WCNOC responses to NRC Bulletin 92-01 and it's Supplement, the operability of all fire barrier related Thermo-Lag 330-1 applications has been conservatively declared indeterminate. Suitable compensatory measures have been previously established in accordance with the NRC approved WCGS fire protection program and will remain in place until the concerns raised about Thermo-Lag 330-1 material applications have been adequately resolved by WCNOC, NUMARC and the NRC.

The electrical physical separation applications of Thermo-Lag 330-1 at WCGS are supported by conservative calculations that ensure acceptability in the near term. The concern is for long term aging degradation of the cable jacketing material due to a potentially higher heat buildup than predicted by these calculations. Therefore, no compensatory measures are necessary at this time for ampacity derating factors of Thermo-Lag 330-1 applications at WCGS.

WCNOC will confirm to the NRC in writing the completion of the corrective actions identified above, as they occur.

Item 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.

Response 4

Answers are provided for all aspects of item 2 above.