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

Subject: Clinton Power Station's Response to Generic Letter 92-08, "Thermo-Lag 330-1 Fire Barriers"

Dear Sir:

The Nuclear Regulatory Commission's (NRC) Generic Letter (GL) 92-08 requested information from licensees to verify that Thermo-Lag 330-1 fire barrier systems manufactured by Thermal Science, Incorporated (TSI) comply with NRC requirements. Illinois Power (IP) has reviewed GL 92-08 and responds to the "Actions Requested" section as follows:

1) Thermo-Lag fire barrier installations at Clinton Power Station (CPS) have not been qualified by representative fire endurance tests which are presently acceptable to the NRC.

2) IP cannot confirm that the ampacity derating factors for Thermo-Lag 330-1 fire barriers at CPS have been derived by valid tests.

3) Thermo-Lag 330-1 was installed at CPS with appropriate procedures and quality controls to ensure compliance with the NRC's requirements for fire barriers that were applicable at the time of installation.

As noted in previous correspondence with the NRC, IP considers all Thermo-Lag 330-1 fire barriers to be inoperable and will ultimately take corrective action to restore fire barrier operability in accordance with new guidance developed by the industry. To determine the appropriate corrective actions, IP is participating in the industry fire barrier requalification effort which is being coordinated by the Nuclear Management and Resources Council (NUMARC). Until operability of the fire barriers at CPS is restored, hourly firewatch patrols

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will continue, as discussed in IP's response to Bulletin 92-01, Supplement 1, "Failure of Thermo-Lag 330 Fire Barrier System to Perform Its Specified Fire Endurance Function."

GL 92-08 included four items in the "Reporting Requirements" section requiring a written response. IP's response to these items is provided in Attachment 1.

At this time, IP is unable to provide an accurate estimate of the time and costs of complying with this Generic Letter.

I hereby affirm that the information in this letter is correct to the best of my knowledge.

Sincerely yours,

J. S. Perry
Senior Vice President

WTD/nls

cc: NRC Clinton Licensing Project Manager
NRC Resident Inspector, V-690
NRC Region III, Regional Administrator
Illinois Department of Nuclear Safety
Nuclear Management and Resources Council
Attention: Biff Bradley

CLINTON POWER STATION RESPONSE TO THE REPORTING REQUIREMENTS SECTION OF GENERIC LETTER 92-08

Generic Letter 92-08, Item 1

"State whether Thermo-Lag 330-1 barriers are relied upon (a) to meet 10CFR50.48, 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."

Response to Item 1

In response to part (a) of this item: Thermo-Lag 330-1 was installed and is relied upon to meet 10CFR50.48 requirements for safe shutdown separation. Physical independence of electrical systems at CPS is achieved in accordance with the Institute of Electrical and Electronics Engineers (IEEE) 279-1971 and does not rely on Thermo-Lag 330-1 to maintain that independence.

In response to part (b) of this item: Thermo-Lag is not used to satisfy any specific condition of the plant's operating license; IP is required by the license to maintain an approved fire protection program as described in the Updated Safety Analysis Report for CPS.

In response to part (c) of this item: IP relies on eleven installations of Thermo-Lag 330-1 material in preformed panels and conduits at CPS to satisfy licensing commitments in the CPS Fire Protection Safe Shutdown Analysis. Nine of the eleven were intended to protect safe shutdown cables by providing a 1-hour or 3-hour barrier as required by 10CFR50 Appendix R section III.G. The installation inside the Containment Building was intended to provide a firebreak on non-safe-shutdown cables and negate their impact as an intervening combustible between separate divisions of safe shutdown cables. The installation in the fuel building was intended to provide a 3-hour rating for a vent pipe penetration in a fire area boundary wall and thereby satisfy NRC BTP 9.5-1 section c.5.a(3).

Generic Letter 92-08, Item 2(a)

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

Response to Item 2(a)

IP has not conducted any specific fire endurance tests of Thermo-Lag 330-1 fire barrier material. IP relied on Thermal Science, Incorporated (TSI)-supplied Independent Testing Laboratory (ITL) fire endurance tests conducted from 1982 through 1985 as qualifying the CPS installation details. Brand Industrial Services Inc. (BISCO), the Thermo-Lag 330-1 design and installation contractor for CPS, identified applicable ITL tests for each CPS installation detail via a program qualified to satisfy 10CFR50, Appendix B.

As a result of the reevaluation of test acceptance criteria for the fire barriers, IP now considers the ITL test results to be indeterminate and the performance of Thermo-Lag 330-1 to be questionable.

Generic Letter 92-08, Item 2(b)

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

Response to Item 2(b)

(1) Thermo-Lag fire barriers utilized at Clinton Power Station resemble, but do not exactly replicate, fire-tested configurations. With one exception, Thermo-Lag 330-1 installed at CPS appears to represent the materials, workmanship, methods of assembly, dimensions, and configurations of the CPS installation details and TSI Technical Note 20864. The exception is two depressions (for interferences) in the top panel of Thermo-Lag 330-1 installed on a cable tray in the Auxiliary Building. Due to insufficient detail in the ITL test reports which form the basis for TSI Technical Note 20864, IP has no conclusive evidence that the Thermo-Lag 330-1 barriers installed at CPS do not represent the materials, workmanship, methods of assembly, dimensions, and configurations of the ITL test reports.

(2) During Thermo-Lag 330-1 installation, IP evaluated and resolved several deviations from CPS installation details by issuing design changes. It is noted that in 1986, NRC guidance (GL 86-10 item 3.2.2) for fire barriers did not require consideration of all attributes in comparison of tested-to-installed configurations, but rather required consideration of barrier thickness and continuity, nature of supports, and "end-use" application.

Generic Letter 92-98, Item 2(c)

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

Response to Item 2(c)

(1) For power cables in 1-hour Thermo-Lag 330-1 enclosures, IP relied upon a TSI-supplied ampacity derating value; for power cables in 3-hour Thermo-Lag 330-1 enclosures, IP calculated a worst-case ampacity derating value based in part on TSI-supplied thermal conductivity and emissivity values. IP's initial review of the Thermo-Lag 330-1 ampacity derating basis and its applicability to CPS installations was commensurate with the knowledge and guidance of the industry at the time of installation. TSI's ampacity derating basis has insufficient detail to satisfy requirements proposed in the IEEE P848 Draft 11 for determining fire barrier ampacity derating effects. Therefore, IP has no conclusive evidence that the Thermo-Lag 330-1 barriers installed at CPS are not consistent with the configurations used as that basis.

(2) IP has no evidence that the ampacity derating, thermal conductivity, or emissivity test results are not applicable to CPS design. Ampacity derating is considered by IP to be a cable temperature qualification problem that should be addressed, but not in the same urgent manner as fire barrier endurance qualification. IP believes that any actions to address power cable ampacity derating before completion of fire endurance corrective actions would be of limited benefit due to the likelihood of changes in barrier configuration.

Generic Letter 92-08, Item 3

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

Response to Item 3(a)

Specific corrective actions and a schedule for their completion will be determined after test data is available from the Nuclear Utilities Management and Resources Council (NUMARC) industry test program and after NRC guidance on qualification test acceptance criteria is issued in final form.

IP will work with NUMARC and other utilities to the extent possible to develop an acceptable generic solution to the issues addressed in Generic Letter 92-08. Unique applications of Thermo-Lag 330-1 at CPS will be reviewed for adequacy and corrective actions will be taken as applicable.

Response to Item 3 (b)

Interim compensatory measures consisting of hourly firewatch patrols for all CPS Thermo-Lag 330-1 installations were established in response to NRC Bulletin 92-01 and its Supplement 1. The hourly firewatch patrols are consistent with requirements of CPS Procedure 1893.01, "Fire Protection Impairment Reporting," and will remain in effect until CPS safe shutdown capability is ensured by completion of all necessary corrective actions (including implementation of any necessary modifications). Other interim measures include briefing the CPS Fire Brigade members concerning the inoperable Thermo-Lag 330-1 fire barriers and conducting fire drills at the barriers. In addition, hotwork and transient combustibles are being strictly controlled in the areas with Thermo-Lag 330-1 installations.

Generic Letter 92-08, 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 to Item 4

IP has answered items 2 (a), 2 (b), and 2 (c) for all Thermo-Lag 330-1 installations at CPS; therefore, item 4 does not apply.