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SUBJECT: Responds to 931222 RAI re GL 92-08, "Thermo-Lag 330-1 Fire Barriers,per 10CFR50.54(f).

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NIAGARA MOHAWK

NIAGARA MOHAWK POWER CORPORATION/301 PLAINFIELD ROAD, SYRACUSE, N.Y. 13212/TELEPHONE (315) 474-1511

February 10, 1994
NMP1L 0801

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

Re: Nine Mile Point Unit 1
Docket No. 50-220
DPR-63
TAC No. M85574

Gentlemen:

SUBJECT: *REQUEST FOR ADDITIONAL INFORMATION REGARDING GENERIC LETTER 92-08, "THERMO-LAG 330-1 FIRE BARRIERS", PURSUANT TO 10 CFR 50.54(f) - NINE MILE POINT NUCLEAR STATION, UNIT 1 (TAC NO. M85574)*

By letter dated December 22, 1993, the Staff requested further information regarding Nine Mile Point Unit 1's letter, dated August 13, 1993 (NMP1L 0774). The Nine Mile Point Unit 1 letter was in response to the staff's request for additional information of the June 16, 1993 letter regarding Generic Letter 92-08. The information the Staff requested concerned the configurations and amounts of Thermo-Lag fire barriers installed in the plant and the cable loadings within particular Thermo-Lag configurations. The staff also requested the plans and schedules for resolving the technical issues identified in Generic Letter 92-08 for those configurations that are outside the scope of the NUMARC test program or for those configurations that the Licensee deems impractical to upgrade. The requested information is attached.

Niagara Mohawk's previous response for Thermo-Lag information, dated August 13, 1993 (NMP1L 0774), provided information which was extracted from a cable management database. This database was under development at that time. Updated information now includes additional cables which are enclosed in Thermo-Lag barriers. The newly identified cables listed have been verified to be a complete account of Nine Mile Point Unit 1 cabling enclosed in Thermo-Lag. All enclosed cables are associated with circuits related to providing Appendix R, III.G.2 segregation of Emergency Diesel Generator 103 support equipment from the redundant Emergency Diesel Generator 102 fire area.

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1/1

If you have any questions or need more information, please contact Mike Carson at 315-428-7470.

Very truly yours,

C. D. Terry
Vice President
Nuclear Engineering

CDT/MC/ksj

Attachment

pc: Mr. T. T. Martin, Regional Administrator, Region I
Mr. B. S. Norris, Senior Resident Inspector
Mr. R. A. Capra, Director, Project Directorate I-1, NRR
Mr. D. S. Brinkman, Senior Project Manager, NRR
Mr. L. J. Callan, Acting Associate Director for Projects, NRR
Records Management

UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
Niagara Mohawk Power Corporation	)	
	)	
Nine Mile Point Unit 1	)	
	)	**Docket No. 50-220** .

C. D. Terry, being duly sworn, states that he is Vice President - Nuclear Engineering of Niagara Mohawk Power Corporation; that he is authorized on the part of said Corporation to sign and file with the Nuclear Regulatory Commisssion the document attached hereto; and that the document is true and correct to the best of his knowledge, information, and belief.

C. D. Terry
Vice President
Nuclear Engineering

Subscribed and Sworn before me, a Notary Public in and for the State of New York and the County of Wayne, this 10th day of February, 1994.

REBECCA F. PURDUM
Notary Public, State of New York
No. 4956405
Qualified in Wayne County
Commission Expires August 28, 1995

Rebecca F Purdum

Notary Public in and for

Wayne County, New York

My Commission Expires:

August 28, 1995

REBECCA F. PURDUM
Notary Public, State of New York
No. 4858405
Qualified in Wayne County
Commission Expires August 29, 19__

NINE MILE POINT UNIT 1 RESPONSE TO NRC GENERIC LETTER 92-08

REQUEST FOR ADDITIONAL INFORMATION
TAC NO. M85574

I. THERMO-LAG FIRE BARRIER CONFIGURATIONS AND AMOUNTS

A. N/A

B. Required Information

1. The following fire-rated barriers constructed of TSI Thermo-Lag 330-1 material are installed at NMP1 to meet 10CFR50.48 or Appendix R to 10CFR50:

- Conduit Enclosed Cables 171-73, 171-71, 171-151, 171-64, 171-68, 171-74, 171-72, 171-81, and 171-66 are located in the missile barrier enclosure within Diesel Generator 103 Room. All are within 1.5 inch conduits.

  Fire Rating - 3 Hours

  Intended Purpose - Provide separation of Diesel Generator 102 and 103 control cables located within missile shield. The missile shield is located within Diesel Generator 103 Room.

  Type Enclosure and Dimensions - TSI Thermo-Lag 330-1 pre-shaped conduit covering, 1" thick combination panels and sections, trowel grade finish coat, covering approximately 20 square feet (six linear feet).

- HVAC duct protection in the Turbine Building running from the Control Room to the Auxiliary Control Room.

  Fire Rating - 3 Hours

  Intended Purpose - This configuration provides separation between Fire Areas FA11 and FA5.

  Type Enclosure and Dimensions - Prefabricated 1" thick Thermo-Lag 330-1 panels were utilized. Joints and exposed surfaces were filled or covered with Thermo-Lag 330-1 subliming trowel grade material. This configuration is approximately 6' x 6' x 4'.

NMP1 has no Thermo-Lag 330-1 constructed fire barriers installed to support Appendix R exemptions, achieve physical independence of electrical systems, or to meet a condition of the operating license. Conduit 12B-26A to pull box 19717Y, located in the screenhouse, had its Thermo-Lag protection removed and is no longer at issue.

2. Barrier Quantity Approximations

a. Cable Tray Barriers

NMP1 has no cable tray fire barriers constructed of TSI Thermo-Lag 330-1 material.

b. Conduit Barriers

- One Hour Barriers

  None

- Three Hour Barriers

  Approximately six feet of Thermo-Lag conduit barriers are installed.

c. All Other Fire Barriers

- One Hour Barriers

  None

- Three Hour Barriers

  Total square footage of three hour fire barriers constructed of TSI Thermo-Lag 330-1 material at NMP1 is approximately 120 square feet.

d. All Other Barriers and Radiant Energy Shields

No barriers in this category applicable to Item I.B.1 and constructed of TSI Thermo-Lag 330-1 material are installed at NMP1.

II. IMPORTANT BARRIER PARAMETERS

A. N/A

B. Required Information

1. See attached summary sheets for parameters NMPC has obtained and verified pertaining to installed Thermo-Lag 330-1 fire barrier systems at NMP1. Parameters indicated as N/A are not pertinent to NMP1's barriers. Parameters indicated as not specified have not been obtained or verified to date.

2. Parameters indicated as not specified will be evaluated for their impact to installed configurations based on relative importance as indicated by NUMARC's Industry Application Guide when it is made available. In the event the unknown parameters are determined to be critical to a barrier's installation, field verification of barrier reconstruction in conformance with updated parameters will be pursued.

III. THERMO-LAG FIRE BARRIERS OUTSIDE THE SCOPE OF THE NUMARC PROGRAM

A. N/A

B. Required Information

1. The NUMARC Test Program is considered to bound the conduit protection applications. At present, test data would have to be applied to the HVAC enclosure from tests concerned primarily with electrical circuit integrity which is consistent with past industry practice. Should NUMARC's proposed expanded Phase 2 testing include the "large box" enclosure, more direct correlation could be achieved.

2. Upgrades/rework of existing installations will be pursued as indicated appropriate based on NUMARC test information and upon guidance provided by the Industry Application Guide. No plant specific tests are anticipated. Should NUMARC test data and application guide be considered insufficient to qualify NMP1's Thermo-Lag fire barriers, it is anticipated that alternative installations will be pursued as opposed to expanded or plant specific testing.

3. As discussed in Item III.B.2, a plant specific fire endurance test program is not anticipated.

IV. AMPACITY DERATING

A. N/A

B. Required Information

At NMP1, Thermo-Lag enclosed cables 171-71, 171-151, 171-73 and 171-81 are power cables to which ampacity considerations apply. (Note: Cables 171-73 and 171-81 are additions to the April 13, 1993 submittal). These cables draw 11.9, 16.0, 11.9 and 0.7 amperes, respectively, under cyclic duty. All cables are #10 AWG quadraplex rated for 38 amperes when routed in conduit. TSI Form 1082 (500), which recommends a 10.9% ampacity derating, would result in a 33.9 ampere rating. Generic Letter 92-08 quotations of Underwriter Laboratories derating factor of 38.9% would result in a 23 ampere rating. Even with UL's conservative derating factor, none of the listed power cables approach the 23 ampere rating indicating sufficient margin exists to allay any ampacity concerns.

1. Based on the above information, ampacity derating does not apply for cables routed through the applicable TSI Thermo-Lag 330-1 protected conduit described in Item I.B.1. Since the HVAC duct applications do not involve electrical cables, ampacity derating is also not applicable.

V. ALTERNATIVES

A. N/A

B. Required Information

1. No upgrades of the existing in-plant barriers using other materials are deemed appropriate in lieu of the relatively few barriers involved.

2. Replacement of Thermo-Lag barriers with other fire barrier materials or systems appears feasible and is under active evaluation. Potential replacement material presently under consideration is 3M Interam E-50A series wrap and/or Eternit Promat for duct, conduit and enclosure applications.

3. Re-routing of cable and relocation of components is not considered feasible due to space constraints and the prohibitive expense associated with overcoming them.

4. Requalification of three hour barriers as one hour barriers and/or re-installation of one hour barriers in conjunction with suppression and detection is considered a possible alternative.

Although not requested, additional alternative actions such as exemption requests based upon the use of fire modeling or probabalistic risk assessment as an exemption basis and re-evaluation of licensing commitments that are in excess of pertinent regulations may also be pursued.

VI. SCHEDULES

A. N/A

B. Required Information

NMPC expects to finalize the schedule for resolution of Thermo-Lag 330-1 fire barrier issues at NMP1 by the end of December 1994. This is to allow contingency for evaluation of alternatives and review of final information on the NUMARC testing. The final completion date is expected to be in 1995 based on the potential financial, manpower, procurement and scheduling implications of upgrades/alternatives presently being evaluated. See enclosed summary schedule for ongoing activities.

VII. SOURCES AND CORRECTNESS OF INFORMATION

The following reference documents provided information for the response to this request for information.

1. TSI Technical Note 20684

2. NMPC Cable and Raceway Schedule

3. IPCEA Publication P-46-426 (IEEE S-135), 1984

The accuracy and validity of the information was verified by Engineering review and field inspection of installed configurations.

NMP1 TSI THERMO-LAG 330-1
FIRE BARRIER PARAMETER SUMMARY

THERMO-LAG BARRIER PARAMETER	DIESEL GENERATOR CONTROL CABLES	HVAC DUCT
Number of Enclosures	1	1
Raceway Orientation	Vertical	N/A
Conduit	Yes	N/A
J Box/Lateral Bends	N/A	N/A
Ladder Bk CT w sl Cable	N/A	N/A
Raceway Material	100% Rigid Steel	N/A
Support Protection/T Shorts	Yes	No
Air Drops	N/A	N/A
Baseline FP Panel Thickness	1" Minimum	1" Minimum
Preformed Conduit Panels	Yes	N/A
Panel Rib Orientation	Not Specified	Not Specified
Unsupported Span	N/A	72" x 48"
Stress Skin Orientation	Integral with Panel, Outside	Integral with Panel, Outside
Stress Skin Over Joints	Not Specified	No
Stress Skin Ties	Not Specified	No
Joint Buttered/Dry Fit/etc.	Dry Fit	Dry Fit
Joint Gap Width	0	0
Butt Joints/Groved & Scored	Perpendicular/Staggered	Staggered
Steel Bands/Tie Wires	½" Width Bands	½" Width Bands
Band/Wire Spacing	Not Specified	Not Specified
Band/Wire Spacing to Joints	12" From Joints	Not Specified
Internal Bands in Trays	N/A	N/A
Additional Trowel Material	Yes	Yes
Edge Guards	No	No

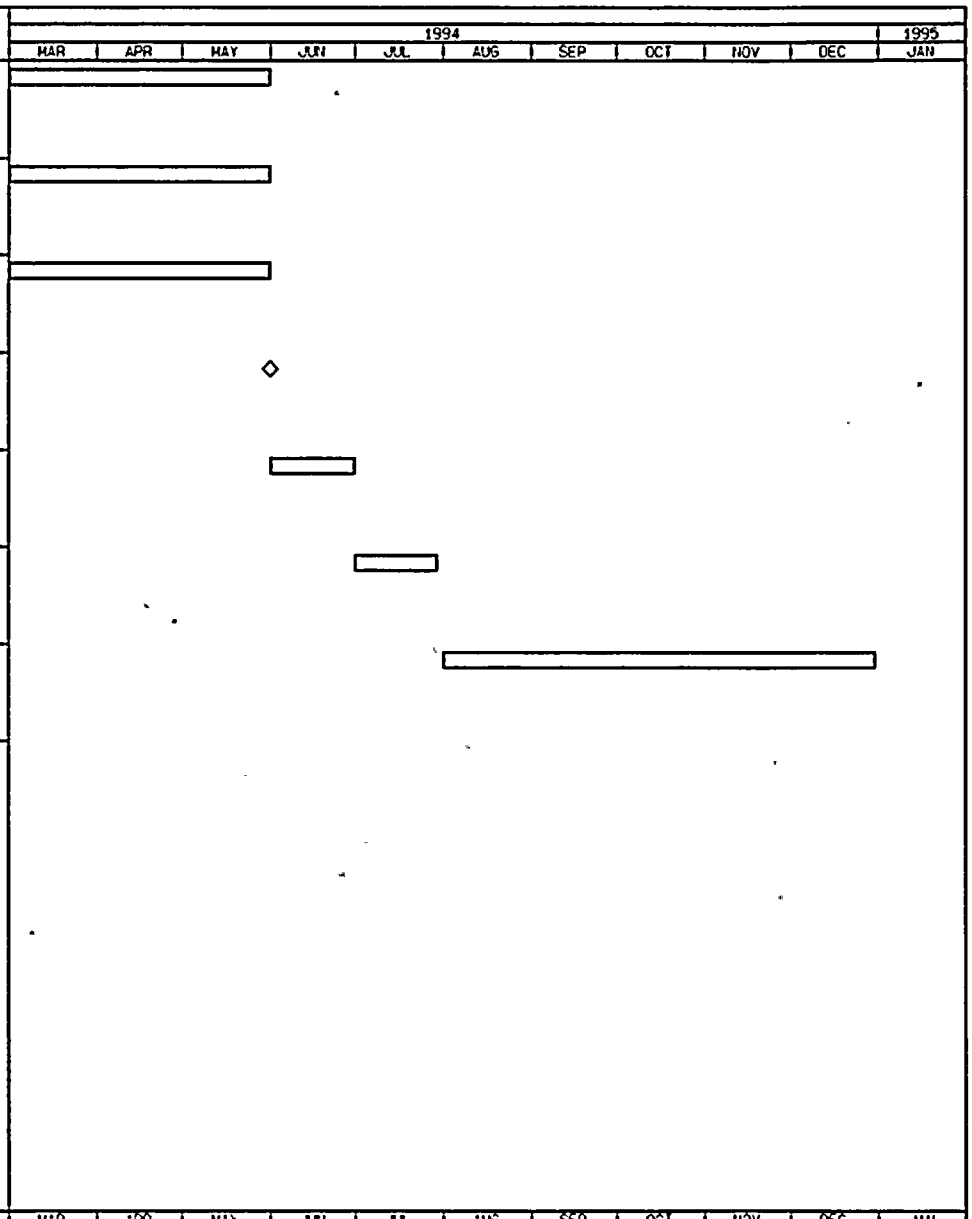
NMP1 TSI THERMO-LAG 330-1
FIRE PROTECTED CABLE PARAMETER SUMMARY

Conduit Cable Identification Parameter	171-71	171-81	171-73	171-151
Cable Type	Power	Power	Power	Power
Cable Size	#10 AWG	#10 AWG	#10 AWG	#10 AWG
Cable Jacket Material	PVC	PVC	PVC	PVC
Cable Conductor Insulation	Vulkene	Vulkene	Vulkene	Vulkene
Cable Fill & Distribution	Conduit 171-71-1½ - 32.5% Fill			Conduit 171-151-1½ - 10.8% Fill
Prox. of Cable to Inside of Conduit	In Contact	In Contact	In Contact	In Contact
Intervening Material in Conduit	None	None	None	None
Cable Operating Temperature	Ambient	Ambient	Ambient	Ambient
Temperature at Which Cable Cannot Perform Intended Function	>340°F	>340°F	>340°F	>340°F

Conduit Cable Identification Parameter	171-64	171-72	171-74	171-68	171-66
Cable Type	Control	Control	Control	Control	Control
Cable Size	#12 AWG	#12 AWG	#12 AWG	#12 AWG	#12 AWG
Cable Jacket Material	PVC	PVC	PVC	PVC	PVC
Cable Conductor Insulation	Vulkene	Vulkene	Vulkene	Vulkene	Vulkene
Cable Fill & Distribution	Conduit 171-64A-1½ - 37.5% Fill			Conduit 171-66-1½ - 25% Fill	
Prox. of Cable to Inside of Conduit	In Contact	In Contact	In Contact	In Contact	In Contact
Intervening Material in Conduit	None	None	None	None	None
Cable Operating Temperature	Ambient	Ambient	Ambient	Ambient	Ambient
Temperature at Which Cable Cannot Perform Intended Function	>340°F	>340°F	>340°F	>340°F	>340°F

(005885jj)

ACTIVITY DESCRIPTION	EARLY START	EARLY FINISH
EVALUATE DIESEL GEN CONTROL CABLE ALTERNATIVE	1MAR94	31MAY94
EVALUATE HVAC DUCT ALTERNATIVE	1MAR94	31MAY94
REVIEW NUMARC THERMOLAG PHASE I TEST REPORTS	1MAR94	31MAY94
GET NUMARC APPLICATION GUIDE & PHASE II TEST RPT		31MAY94
EVAL THERMOLAG UPGRADE POTENTIAL	1JUN94	30JUN94
REQUEST FUNDING AUTHORIZATION	1JUL94	29JUL94
ESTABLISH FINAL DESIGN & INSTALL SCHEDULE	1AUG94	30DEC94



Plot Date 10FEB94
Data Date 1MAR94
Project Start 1MAR94
Project Finish 20JAN95

Activity Bar/Early
Critical Activity
Progress Bar
Milestone/Flag Activity

Sheet 1 of 1

NIAGARA MOHAWK POWER CORPORATION
UNIT 1 - STATUS AS OF 02/03/94
THERMOLAG 330-1 FIRE BARRIER ISSUE

PROJ ENGR: C. GRIPPO

Date	Revision	Checked	Approved