50-336

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 12, 1997

LICENSEE: Northeast Nuclear Energy Company (NNECO)

FACILITY: Millstone Nuclear Power Station, Unit No. 2

SUBJECT: MEETING SUMMARY REGARDING THE APRIL 24, 1997, MEETING HELD TO DISCUSS THERMO-LAG FIRE BARRIER ISSUES - MILLSTONE NUCLEAR POWER STATION, UNIT NO. 2

PURPOSE

The meeting was convened to provide representatives of NNECO an opportunity to discuss, with members of the Nuclear Regulatory Commission's (NRC's) Office of Nuclear Reactor Regulation, its ongoing efforts and schedules for resolution of Thermo-Lag fire barrier issues at the Millstone Nuclear Power Station, Unit No. 2. The meeting was a followup of a telephone conference call on April 14, 1997.

The meeting was held at the NRC's One White Flint North office in Rockville, Maryland. A list of attendees is attached as Enclosure 1 and the reference material provided by NNECO is attached as Enclosure 2.

SUMMARY

NNECO indicated that approximately 700 linear feet of 1-hour and 3-hour Thermo-Lag material is installed over conduits, cables, and cable trays at the Millstone Nuclear Power Station, Unit No. 2. NNECO acquired the services of Duke Energy and Services to perform a study on fire barrier configurations outside of the scope of Nuclear Energy Institute (NEI) Application Guide and provide recommendations for resolving outstanding Thermo-Lag issues. Based on preliminary results of the study, NNECO is considering (individually or in combinations) the following corrective actions: Justify or upgrade existing installations, reroute cables, replace cables with 1-hour rated cables, add suppression, credit operator action, request exemptions, or use alternate safe shutdown approaches. NNECO further indicated that it would finalize its corrective action plans by June 15, 1997, initiate design change packages by July 15, 1997, and would complete the required modifications prior to restart from the current extended outage. The NRC staff will meet with NNECO in mid-June 1997, to discuss its final corrective action plans, including any required reviews and approvals that might be necessary depending on the final corrective actions chosen by NNECO.

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The NRC staff indicated that, based on the information provided during the meeting (as detailed in Enclosure 2), NNECO is making progress toward the overall resolution of the Thermo-Lag issues at the Millstone Nuclear Power Station, Unit No. 2, and that the proposed completion of the corrective actions prior to restart from the current outage is reasonable.

Daniel G. McDonald Jr., Senior Project Manager
Special Projects Office - Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-336

Enclosures: 1. List of Attendees
2. Reference Material

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Original signed by:

Daniel G. McDonald Jr., Senior Project Manager
Special Projects Office - Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-336

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TE	05/05/97		05/01/97		05/9/97		05/12/97			

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ATTENDANCE LIST

04/24/1997 MEETING

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NAME	ORGANIZATION
Daniel G. McDonald	*NRR/SPO*
Steve West	*NRR/SPLB*
Linh Tran	*NRR/DRPW*
Daniele Oudinot	*NRR/SPLB*
Phil McKee	*NRR/SPO*
Raymond Necci	*Northeast Utilities/MP2*
Harry Miller	*Northeast Utilities/MP2*
Martin L. Bowling	*MP2 Recovery Officer*
Bohdan M. Pokora	*MP2 Design Engineering*
L.B. Marsh	*NRR/SPLB*

Enclosure 1

Millstone Unit No. 2
Thermo-Lag Resolution Effort

Martin L. Bowling
Raymond P. Necci
Harry L. Miller
Bohdan M. Pokora

April 24, 1997

Enclosure 2

Background

- NRC Bulletin 92-01, Supplement 01 to GL 86-10, and GL 92-08 identify Thermo-Lag fire rating and ampacity problems.
- NUMARC and NEI conduct Thermo-Lag fire endurance test program.
- NU responds to NRC request for information regarding Thermo-Lag installations at Millstone Unit No. 2 (March, 1995) .
- NU submits schedule for resolution of Thermo-Lag issues at Millstone Unit No. 2 (February, 1996).

Accomplishments to Date

- Chemical and Physical Analysis of Thermo-Lag Material for Quality Assurance (March 1995)
- Thermo-Lag Assessment Report Prepared (August 1995, revised April 1996) - compared MP2 installations to NEI Application Guide
- Issued generic Thermo-Lag specifications for installation, inspection, and maintenance as well as for procurement and storage (March, 1997)
- Thermo-Lag Resolution Study underway (February, 1997)

Work Remaining To Be Done

- Complete NU review of study (June 1, 1997)
- Review and select proposed fixes (June 15, 1997)
- Identify proposed fixes and provide implementation schedule to NRC (July 1, 1997)
- Initiate design change packages to implement fixes (July 1, 1997)
- Implement necessary design fixes (Prior to startup)

Approximate Amount Of Thermo-Lag At The Millstone Point Unit 2 Station

- Conduit 300 linear feet
- Single cable tray 160 linear feet
- Cables wrapped in tray 170 linear feet
- Wireways (i.e. tray) 90 linear feet

Areas Where Thermo-Lag Is Installed

- Auxiliary Building Cable Vault (R-1)
  - 1 hour requirement
- Z1 Cable Vault (R-14)
  - 1 hour requirement
- Z1 Switchgear Room (R-14)
  - 3 hour requirement
- Charging Pump Cubicle Area (R-4)
  - 3 hour requirement
- Turbine Building (R-3)
  - 3 hour requirement

Approach To Thermo-Lag Resolution Considered In Study

- Review existing Thermo-Lag installations for overprotection
- Credit operator actions
- Identify adequate Thermo-Lag installations
- Review Installations for possible upgrade
- Review for alternate methods to accomplish shutdown function
- Identify possible cable reroutes

Proposed Thermo-Lag Resolution At Millstone Consists Of:

- Justification of existing installations
- Upgrades of existing installations
- Cable Reroutes
- Alternate shutdown approaches

Resolution Of Ampacity Issues

- Remove Thermo-Lag
  - Alternative methods of protection
  - Cable Reroutes
  - Alternate Shutdown Methods
- Remove conservatisms from Ampacity Calculations

Thermo-Lag Fixes For Auxiliary Building Cable Vault (R-1)

Components

- Power Feeder Cables to Z2 480V MCC B61
- Power Feeder Cables to Z2 Battery Charger
- DC1 120 vac and 125 vdc power cables for Fire Shutdown Panel C09 and C10

Proposed Fix

- Upgrade existing Thermo-Lag installations to 1 hour rating using NEI Application Guide

Thermo-Lag Fixes For Auxiliary Building Cable Vault (R-1)

Components

- Power Cables for Charging Pumps P18B, P18C

Proposed Fix

- Reroute cables directly from MCC to West Penetration Area

Thermo-Lag Fixes For Charging Pump Cubicle Area (R-4)

- Reroute Z2 power cables for Charging Pump P18B and P18C through 'A' SI Pump Room (R-5)

or

- Replace existing charging pump power cables with 1 hour rated cables. Provide sprinkler protection for common cable tray

Thermo-Lag Fixes For Z1 Switchgear Room (R-14)

- Install Thermo-Lag overlay material on Z1 instrument and control raceway to achieve 3 hour rating

or

- Credit operator actions for local reading of instruments and manipulation of valves

Thermo-Lag Fixes For Z1 Cable Vault (R-14)

- Upgrade existing Thermo-Lag installations on Z2 instrument and control cables to 1 hour rating using NEI Application Guide

Thermo-Lag Fixes For Turbine Building (R-3)

Component

- Control Cable for Turbine Driven Auxiliary Feedwater Pump

Proposed Fix

- Reroute cable through West Penetration Area (R-2)

or

- Upgrade existing Thermo-Lag installation to 3 hour rating

Thermo-Lag Fixes For Turbine Building (R-3)

Components

- Backfeed Power Cables

Proposed Fix

- Provide hard piped connection to cool EDG with Firewater

or

- Reroute cables with ampacity problems and provide 3 hour rated wrap for remainder

Summary of Recommended Options

- Upgrade the Thermo-Lag on all raceways in Fire Area R-1 and the Cable Vault portion of Fire Area R-14 to provide a full 1-hour fire barrier. Reroute Charging Pump Power Cable in R-1.
- Upgrade the Thermo-Lag on the wireways and junction boxes in the Switchgear Room portion of Fire Area R-14 to provide a full 3-hour fire barrier.
- Install valves and a 6" line that will provide a cross connect between the Fire Water and Service Water Systems. This modification will provide an alternate cooling water source to the Emergency Diesel Generators when the Service Water Pumps are not available.
- Reroute cables associated with the Charging Pumps and Turbine Driven Auxiliary Feedwater Pump.

Challenges Associated With Thermo-Lag Resolution

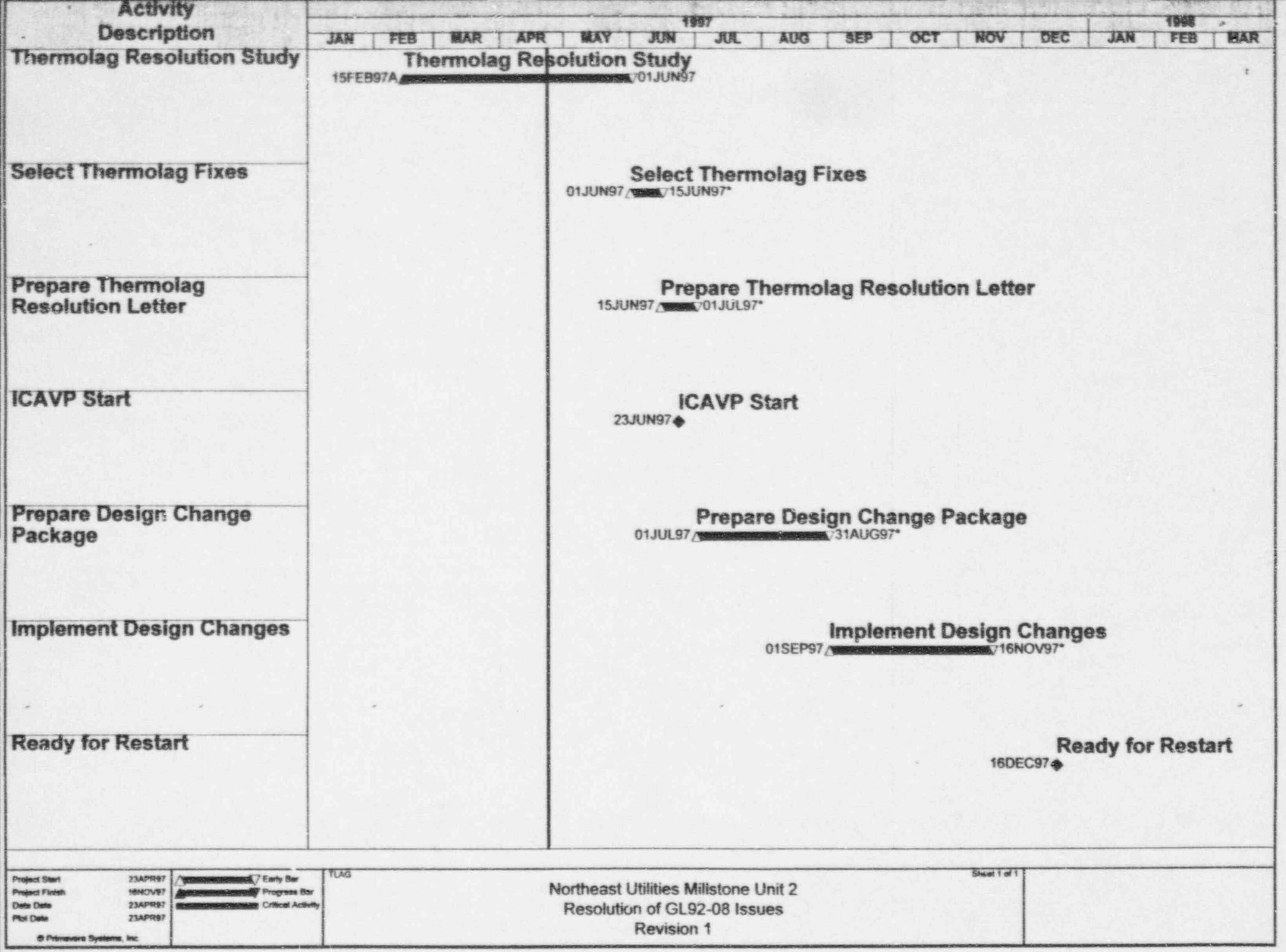
- Parallel Appendix R re-analysis, Appendix R Procedure Upgrade and IN92-18 work
- Changes to SER, clarification of exemptions

Thermo-Lag Related Work Which Could be Conducted With Plant On-Line

- Prefabricate Fire Water to Diesel Cooler piping and hangers
- Pre-install rerouted cables and conduit

Summary Of Remaining GL 92-08 Work

- Complete Thermo-Lag Resolution Study to identify potential fixes (June 1, 1997)
- Review study and select Thermo-Lag fixes (June 15, 1997)
- Identify proposed fixes to NRC (July 1, 1997)
- Initiate design change packages to implement fixes (July 1, 1997)
- Implement design changes (Prior to startup)


Activity Description
1997
1998
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FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
JAN
FEB
MAR
Thermolag Resolution Study
Thermolag Resolution Study
15FEB97A
01JUN97
Select Thermolag Fixes
Select Thermolag Fixes
01JUN97
15JUN97*
Prepare Thermolag Resolution Letter
Prepare Thermolag Resolution Letter
15JUN97
01JUL97*
ICAVP Start
ICAVP Start
23JUN97
Prepare Design Change Package
Prepare Design Change Package
01JUL97
31AUG97*
Implement Design Changes
Implement Design Changes
01SEP97
16NOV97*
Ready for Restart
Ready for Restart
16DEC97
Project Start 23APR97
Project Finish 16NOV97
Data Date 23APR97
Plot Date 23APR97
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Early Bar
Progress Bar
Critical Activity
TLAG
Sheet 1 of 1
Northeast Utilities Millstone Unit 2
Resolution of GL92-08 Issues
Revision 1