



January 31, 1997

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Mail Station P1-137  
Washington, DC 20555-001

Gentlemen:

ULNRC-03527

DOCKET NUMBER 50-483  
CALLAWAY PLANT  
THERMO-LAG FIRE BARRIER SYSTEMS

Reference: 1. ULNRC-3384, dated May 31, 1996  
2. ULNRC-3477, dated October 22, 1996

This letter provides closure notification of Thermo-Lag issues for Callaway Plant. These items were completed as of December 31, 1996.

For Thermo-Lag installed to meet conditions of the plant's operating license and to satisfy licensing commitments to 10CFR50, Appendix R, the following has been completed:

1. An Appendix R, Section III.G.2 re-analysis was performed which documented raceways where the barrier was not required (i.e., the cables were not needed for safe shutdown). Thermo-Lag was removed from these raceways.
2. Modifications were performed which re-routed one conduit and added local manual control to the "B" and "C" Atmospheric Steam Dump Valves, thereby eliminating the need for a fire barrier. Thermo-Lag was removed from these raceways.
3. In areas where a barrier was required, Thermo-Lag was removed and a replacement material (Darmatt KM-1) was installed for compliance with commitments to Appendix R. This included the radiant energy heat shields used inside containment.

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Calculations were performed to demonstrate: 1) the weight of the Darmatt material would not adversely affect the seismic design of the raceways on which it is installed, and 2) the installed material is not a seismic II/I concern. Testing of the Darmatt material in accordance with ASTM E-136 has shown that the material is non-combustible. The vendor supplied ampacity derating factors for the Darmatt material were based upon IEEE Standard P848 (Draft 16) testing results. These ampacity derating factors for the Darmatt material were evaluated and the ampacity margins found to be acceptable. Based on the request from the NRC Staff during our January 9, 1997 telecon, a copy of these test reports will be provided to the NRC. We will provide this information as soon as practical after arrangements are made with the vendor, Darchem Engineering Ltd., of England. These test reports contain proprietary information and will be submitted under the provisions of 10CFR2.790.

4. Non-combustible separation zones were established or modified as required to support elimination of the Thermo-Lag material.

As a result of the above actions no Thermo-Lag is installed in the plant to satisfy Appendix R requirements. Attachment 1 provides information on the resolution of barriers that previously utilized Thermo-Lag.

For Thermo-Lag installed to achieve physical independence between electrical systems associated with the Class IE power system, the following has been completed:

1. A field examination was performed to assure that the installations met the separation requirements.
2. We verified that the existing Thermo-lag satisfies the requirements of IEEE-384-74.
3. Calculations were performed to verify that the Thermo-Lag material will: 1) not adversely affect the seismic design of the raceways on which it is

installed, and 2) the material does not present a seismic II/I concern.

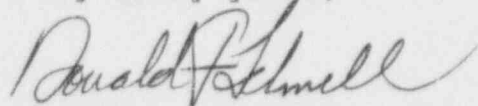
4. The Thermo-Lag that remains in the plant has been treated as a combustible material and added to the Combustible, Electrical Fire Hazards Analysis Program in accordance with plant procedures.
5. Ampacity derating was evaluated for the Thermo-Lag material and adequate ampacity margin exists, as documented in Reference 2.

The raceways originally wrapped with Thermo-Lag to satisfy IEEE-384-74 requirements are listed in Attachment 2. The list provides information with regard to the method of resolution for the protection of raceways, as well as pertinent configuration data.

Based on the above actions, Union Electric is now in full compliance with our commitments to Appendix R and the separation criteria of IEEE-384-74. We will therefore terminate our compensatory measures outlined in ULNRC-2792, dated April 15, 1993, upon issuance of this letter. We consider Thermo-Lag fire barrier issues to be resolved at Callaway Plant.

Should you have any questions or need additional information concerning this matter please contact us.

Very truly yours,

  
Donald F. Schnell

JMC/jdg

Attachments: 1) Appendix R Barriers  
2) IEEE-384-74 Barriers

STATE OF MISSOURI )  
 ) S S  
CITY OF ST. LOUIS )

Donald F. Schnell, of lawful age, being first duly sworn upon oath says that he Senior Vice President-Nuclear and an officer of Union Electric Company; that he has read the foregoing document and knows the content thereof; that he has executed the same for and on behalf of said company 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 Donald F. Schnell  
Donald F. Schnell  
Senior Vice President  
Nuclear

SUBSCRIBED and sworn to before me this 31st day  
of January, 1997.

Barbara J. Pfaff  
BARBARA J. PFAFF  
NOTARY PUBLIC—STATE OF MISSOURI  
MY COMMISSION EXPIRES APRIL 22, 1997  
ST. LOUIS COUNTY

cc: M. H. Fletcher  
Professional Nuclear Consulting, Inc.  
19041 Raines Drive  
Derwood, MD 20855-2432

Regional Administrator  
U.S. Nuclear Regulatory Commission  
Region IV  
611 Ryan Plaza Drive  
Suite 400  
Arlington, TX 76011-8064

Senior Resident Inspector  
Callaway Resident Office  
U.S. Nuclear Regulatory Commission  
8201 NRC Road  
Steedman, MO 65077

Kristine M. Thomas (2)  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
1 White Flint, North, Mail Stop 13E16  
11555 Rockville Pike  
Rockville, MD 20852-2738

Manager, Electric Department  
Missouri Public Service Commission  
P.O. Box 360  
Jefferson City, MO 65102

bcc: J. Brandt/A160.761  
/QA Record (CA-758)

E210.01  
DFS/Chrono  
D. F. Schnell  
J. V. Laux  
G. L. Randolph  
R. J. Irwin  
P. M. Barrett  
J. D. Blosser  
A. C. Passwater  
D. E. Shafer  
W. E. Kahl  
S. Wideman (WCNOC)  
F. C. Wilks, PE (Bechtel)  
H. D. Bono  
NSRB (Patty Reynolds)  
J. M. Chapman  
L. H. Kanuckel  
G. A. Gilbert  
A160.412 (92-08)

NOTE: Sort by barrier ID

### Thermolag 330-1 Resolution (Appendix R Barriers)

Attachment 1  
Page 1 of 6

Barrier I.D.	Drawing	Floor Elev.	Room	Fire Area	Location Description	Orig Fire Rate	Intended Purpose	Type	Length*	Width/ Diameter	Depth	Notes	Method of Resolution
1J1E2A	E-2R1917 E-2R1444B	2026'	1408	A-16	North of Dress Out Area	3	Fire Barrier	Conduit	0 ft.	1.5 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595072.
1J1L01	E-2R1341	2000'	1127	A-6	North Stairwell	3	Fire Barrier	Tray	12 ft.	24 in.	4 in.		3-hr Thermo-Lag replaced with 3-hr Darnat per RFR# 16916C. Work performed under A586331A & C586331.
1J1L1B	E-2R1353B	2000'	1331	A-15	Area 5: T/D Aux Feed Pump Room	3	Fire Barrier	Conduit	0 ft.	1 in.	N/A	Thermo-Lag not required per RFR# 16916A.	Thermo-Lag removed per RFR# 16916F. Work performed under C595113.
1J2027	E-2R2512A, 2412A, 2512B	2059' 2043'	Rx	RB-10	Outside Southwest Wall Pressurizer Area	3	Radiant Energy Heat Shield	Conduit	50 ft.	1.5 in.	N/A	1-hr Darnat satisfies requirements of 10CFR Part 50, Appendix R, paragraph III.G.2.f. i.e., wrap functions as a non-combustible radiant energy shield.	3-hr Thermo-Lag replaced with 1-hr Darnat per RFR# 16916C. Work performed under A585960A & C585960.
1J2070	E-2R2512B	2058'	Rx	RB-10	Outside West Wall Pressurizer Area	3	Radiant Energy Heat Shield	Conduit	1.5 ft.	2 in.	N/A	Thermo-Lag not required per RFR# 16916A. Wrap provided to prevent thermal shorts.	3-hr Thermo-Lag replaced with 1-hr Darnat per RFR# 16916C. Work performed under A585960A & C585960.
1J3C1A	E-2R1917 E-2R1444B	2026'	1408	A-16	North of Dress Out Area	3	Fire Barrier	Conduit	0 ft.	1.5 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595072.
1U1037	E-2R1153	1989'	1206 1207	A-1	Area 5/ Basement	3	Fire Barrier	Conduit	41.25 ft.	3 in.	N/A	Only 1-hr barrier required as detection and suppression added to area under CMP#s 91-1060A & 89-1047A.	3-hr Thermo-Lag replaced with 1-hr Darnat per RFR# 16916C. Work performed under A586109A & C586109.
1U1038	E-2R1153	1989'	1207	A-1	Area 5/ Basement	3	Fire Barrier	Conduit	0 ft.	1.5 in.	N/A	Thermo-Lag not required per RFR# 16916A.	Thermo-Lag removed iaw RFR# 16916C. Work performed under A586109A.
1U1039	E-2R1153	1989'	1207	A-1	Area 5/ Basement	3	Fire Barrier	Conduit	0 ft.	1.5 in.	N/A	Thermo-Lag not required per RFR# 16916A.	Thermo-Lag removed iaw RFR# 16916C. Work performed under A586109A.
1U1040	E-2R1153	1989'	1207	A-1	Area 5/ Basement	3	Fire Barrier	Conduit	0 ft.	1.5 in.	N/A	Thermo-Lag not required per RFR# 16916A.	Thermo-Lag removed iaw RFR# 16916C. Work performed under A586109A.
1U1041	E-2R1153	1989'	1207	A-1	Area 5/ Basement	3	Fire Barrier	Conduit	0 ft.	1.5 in.	N/A	Thermo-Lag not required per RFR# 16916A.	Thermo-Lag removed iaw RFR# 16916C. Work performed under A586109A.
1U1042	E-2R1153	1989'	1206	A-1	Area 5/ Basement	3	Fire Barrier	Conduit	1.5 ft.	1.5 in.	N/A	Fire wrap provided to prevent thermal shorts	3-hr Thermo-Lag replaced with 1-hr Darnat per RFR# 16916C. Work performed under A586109A & C586109.
1U1043	E-2R1153	1989'	1206	A-1	Area 5/ Basement	3	Fire Barrier	Conduit	1.5 ft.	1.5 in.	N/A	Fire wrap provided to prevent thermal shorts	3-hr Thermo-Lag replaced with 1-hr Darnat per RFR# 16916C. Work performed under A586109A & C586109.
1U1044	E-2R1153	1989'	1206	A-1	Area 5/ Basement	3	Fire Barrier	Conduit	1.5 ft.	1.5 in.	N/A	Fire wrap provided to prevent thermal shorts	3-hr Thermo-Lag replaced with 1-hr Darnat per RFR# 16916C. Work performed under A586109A & C586109.

\* Length shown refers to how much Darnat material is installed after implementation of RFR# 16916C. Appendix R Thermo-Lag removed by documents listed in "Method of Resolution" column.

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NOTE: Sort by barrier ID

## Thermolag 330-1 Resolution (Appendix R Barriers)

Attachment 1  
Page 2 of 6

Barrier I.D.	Drawing	Floor Elev.	Room	Fire Area	Location Description	Orig Fire Rate	Intended Purpose	Type	Length*	Width/ Diameter	Depth	Notes	Method of Resolution
1U1045	E-2R1153	1989'	1206	A-1	Area 5/ Basement	3	Fire Barrier	Conduit	1.5 ft.	1.5 in.	N/A	Fire wrap provided to prevent thermal shorts	3-hr Thermo-Lag replaced with 1-hr Darnat per RFR# 16916C. Work performed under A586109A & C586109.
1U1E6N	E-2R3412	2016'	3401	C-35	In Hallway Just Inside Missile Door	3	Fire Barrier	Conduit	6 ft.	3 in.	N/A		3-hr Thermo-Lag replaced with 3-hr Darnat per RFR# 16916C. Work performed under A586336A & C586336.
1U1K01	E-2R1341	2000'	1127	A-6	North Stairwell	3	Fire Barrier	Tray	12 ft.	24 in.	4 in.	Air drop from conduit 211U1K5N enters top of tray as shown on E-2R1343C. Air drop also wrapped with Darnat.	3-hr Thermo-Lag replaced with 3-hr Darnat per RFR# 16916C. Work performed under A586331A & C586331.
1U1K5C	E-2R1153	1989'	1206	A-1	West wall, above J-Box 1UJ029	3	Fire Barrier	Conduit	1 ft.	4 in.	N/A	Only 1-hr barrier required as detection and suppression added to area under CMP#s 91-1060A & 89-1047A	3-hr Thermo-Lag replaced with 1-hr Darnat per RFR# 16916C. Work performed under A586109A & C586109.
1UJ029	E-2R1153	1989'	1206	A-1	Area 5	3	Fire Barrier	Jct. Box	12 in.	8 in.	24 in.	Only 1-hr barrier required as detection and suppression added to area under CMP#s 91-1060A & 89-1047A	3-hr Thermo-Lag replaced with 1-hr Darnat per RFR# 16916C. Work performed under A586109A & C586109.
2J1019	E-2R1353B	2000'	1325	A-13	Area 5/Aux. Feed Pump B Rm/ From ceiling	3	Fire Barrier	Conduit	0 ft.	1.5 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595112.
2J1035	E-2R1444C	2026'	1408	A-16	North Electrical Penetration Room	3	Fire Barrier	Conduit	0 ft.	3 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595072.
2J1036	E-2R1444B E-2R1444C	2026'	1408	A-16	North of Dress Out Area	3	Fire Barrier	Conduit	0 ft.	3 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595072.
2J1037	E-2R1444A E-2R1444B	2026'	1408	A-16	North of Dress Out Area	3	Fire Barrier	Conduit	0 ft.	3 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595072.
2J1040	E-2R1444A	2026'	1408	A-16	North of Dress Out Area	3	Fire Barrier	Conduit	0 ft.	4 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595072.
2J1042	E-2R1444B E-2R1444C	2026'	1408	A-16	North of Dress Out Area	3	Fire Barrier	Conduit	0 ft.	4 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595072.
2J1043	E-2R1444A E-2R1444B	2026'	1408	A-16	North of Dress Out Area	3	Fire Barrier	Conduit	0 ft.	4 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595072.

\* Length shown refers to how much Darnat material is installed after implementation of RFR# 16916C. Appendix R Thermo-Lag removed by documents listed in "Method of Resolution" column.

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NOTE: Sort by barrier ID

## Thermolag 330-1 Resolution (Appendix R Barriers)

Attachment 1  
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Barrier ID	Drawing	Floor Elev.	Room	Fire Area	Location Description	Orig Fire Rate	Intended Purpose	Type	Length*	Width/ Diameter	Depth	Notes	Method of Resolution
2/J1046	E-2R1353B	2000'	1325	A-13	Area 5 / Aux. Feed Pump B Rm/Ceiling	3	Fire Barrier	Conduit	0 ft.	3 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595112.
2/J1047	E-2R1353B	2000'	1325	A-13	Area 5 / Aux. Feed Pump B Rm/Ceiling	3	Fire Barrier	Conduit	0 ft.	3 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595112.
2/J1049	E-2R1423C	2026'	1406	A-16	North of Dress Out Area	3	Fire Barrier	Conduit	0 ft.	4 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595110.
2/J1050	E-2R1423C	2026'	1406	A-16	North of Dress Out Area	3	Fire Barrier	Conduit	0 ft.	4 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595110.
2/J1052	E-2R1354	2000'	1325	A-13	Area 5/Aux. Feed Pump B Rm/ From wall	3	Fire Barrier	Conduit	0 ft.	1.5 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595112.
2/J181F	E-2R1423C	2026'	1406	A-16	North of Dress Out Area	3	Fire Barrier	Conduit	0 ft.	4 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595110.
2/J181G	E-2R1423A E-2R1423C	2026'	1406	A-16	North of Dress Out Area	3	Fire Barrier	Conduit	0 ft.	4 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595110.
2/J181H	E-2R1423A E-2R1423C	2026'	1406	A-16	North of Dress Out Area	3	Fire Barrier	Conduit	0 ft.	4 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595110.
2/J1051	E-2R1423C E-2R1444A	2026'	1406	A-16	North of Dress Out Area	3	Fire Barrier	Jct. Box	0 in.	N/A	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595110.
2/J1052	E-2R1444B	2026'	1408	A-16	North of Dress Out Area	3	Fire Barrier	Jct. Box	0 in.	N/A	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595072.
2/J1053	E-2R1444B	2026'	1408	A-16	North of Dress Out Area	3	Fire Barrier	Jct. Box	0 in.	N/A	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595072.

\* Length shown refers to how much Darnat material is installed after implementation of RFR# 16916C. Appendix R Thermo-Lag removed by documents listed in "Method of Resolution" column.

NOTE: Sort by barrier ID

## Thermolag 330-1 Resolution (Appendix R Barriers)

Attachment 1

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Barrier I.D.	Drawing	Floor Elev.	Room	Fire Area	Location Description	Orig Fire Rate	Intended Purpose	Type	Length*	Width/ Diameter	Depth	Notes	Method of Resolution
2JJ054	E-2R1444C	2026'	1408	A-16	North of Dress Out Area	3	Fire Barrier	Jct. Box	0 in.	N/A	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595072.
2JJ056	E-2R1353B	2000'	1325	A-13	Area 5/ Aux. Feed Pump B Rm.	3	Fire Barrier	Jct. Box	0 in.	N/A	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595112.
2JJ013	E-2R1444C	2026'	1410	A-18	North Electrical Penetration Room	1	Fire Barrier	Jct. Box	0 in.	N/A	N/A	Thermo-Lag not required per RFR# 16916A.	Thermo-Lag removed per RFR# 16916F. Work performed under C595114.
3JJ024	E-2R1354	2013'	1304	A-29	Area 5/ Up Ladder	3	Fire Barrier	Conduit	0 ft.	1.5 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595115.
3JJ027	E-2R1444B	2026'	1408	A-16	North of Dress Out Area	1	Fire Barrier	Conduit	0 ft.	3 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595072.
3JJ029	E-2R1444B	2026'	1408	A-16	North of Dress Out Area	3	Fire Barrier	Conduit	0 ft.	3 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595072.
3JJ031	E-2R1444B E-2R1444C	2026'	1408	A-16	North Hallway	3	Fire Barrier	Conduit	0 ft.	3 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Sample taken for NEI testing (Sample #1). Thermo-Lag removed per RFR# 16916F. Work performed under C595072.
3JJ034	E-2R1354	2013'	1304	A-29	Area 5/ Up Ladder	3	Fire Barrier	Conduit	0 ft.	1.5 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595115.
3JJ01F	E-2R1423B E-2R1423D	2026'	1406	A-16	North of Dress Out Area	3	Fire Barrier	Conduit	0 ft.	3 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595110.
3JJ052	E-2R1423D E-2R1444B	2026'	1408	A-16	North of Dress Out Area	3	Fire Barrier	Jct. Box	0 in.	N/A	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595072.
3JJ053	E-2R1444B	2026'	1408	A-16	North of Dress Out Area	1	Fire Barrier	Jct. Box	0 in.	N/A	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595072.

\* Length shown refers to how much Darnat material is installed after implementation of RFR# 16916C. Appendix R Thermo-Lag removed by documents listed in "Method of Resolution" column.

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NOTE: Sort by barrier ID

## Thermolag 330-1 Resolution (Appendix R Barriers)

Attachment 1

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Barrier ID	Drawing	Floor Elev.	Room	Fire Area	Location Description	Orig Fire Rate	Intended Purpose	Type	Length*	Width/ Diameter	Depth	Notes	Method of Resolution
4J1013	E-2R1343C E-2R1911	2000'	1323	A-24	North Piping Penetration Room	3	Fire Barrier	Conduit	0.5 ft.	0.75 in.	N/A		3-hr Thermo-Lag replaced with 3-hr Darnat per RFR# 16916C. Work performed under A586388A & C586388.
4J1014	E-2R1343C E-2R1911	2000'	1323	A-24	North Piping Penetration Room	3	Fire Barrier	Conduit	0.5 ft.	3 in.	N/A		3-hr Thermo-Lag replaced with 3-hr Darnat per RFR# 16916C. Work performed under A586388A & C586388.
4J1038	E-2R1343C E-2R1911	2000'	1323	A-24	North Piping Penetration Room	3	Fire Barrier	Conduit	0.5 ft.	1.5 in.	N/A		3-hr Thermo-Lag replaced with 3-hr Darnat per RFR# 16916C. Work performed under A586388A & C586388.
4J1064	E-2R1353B	2000'	1331	A-15	Area 5/ Turbine Driven Aux. Feed Pump Room	3	Fire Barrier	Conduit	0 ft.	2 in.	N/A	Thermo-Lag not required per RFR# 16916A.	Thermo-Lag removed per RFR# 16916F. Work performed under C595113.
4J3C1C	E-2R1343C E-2R1911	2000'	1323	A-24	North Piping Penetration Room	3	Fire Barrier	Conduit	1 ft.	3 in.	N/A		3-hr Thermo-Lag replaced with 3-hr Darnat per RFR# 16916C. Work performed under A586388A & C586388.
4JJ046	E-2R1343C E-2R1911	2000'	1323	A-24	North Piping Penetration Room	3	Fire Barrier	Jct. Box	6 in.	6 in.	24 in.		3-hr Thermo-Lag replaced with 3-hr Darnat per RFR# 16916C. Work performed under A586388A & C586388.
4U1132	E-2R1233	1988'	1203	A-1	By Containment Spray and RHR Iso. Valves	1	Fire Barrier	Conduit	0 ft.	3 in.	N/A	Thermo-Lag not required per RFR# 16916A.	Thermo-Lag removed per RFR# 16916F. Work performed under C595111.
4U1132	E-2R1333B E-2R1313D	2000'	1314	A-8	By Containment Spray and RHR Iso. Valves	1	Fire Barrier	Conduit	0 ft.	3 in.	N/A	Thermo-Lag not required per RFR# 16916A.	Thermo-Lag removed per RFR# 16916F. Work performed under C595116.
4U3003	E-2R3112	1974'	3101	C-1	ESW Penetration Room	1	Fire Barrier	Conduit	0 ft.	2 in.	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1009 implemented. Sample taken for NEI testing (Sample #2)	CMP 96-1009 modifies conduit routing thereby eliminating need for Thermo-Lag. Thermo-Lag removed per RFR# 16916F. Work performed under C595117.
4U386D	E-2R1313D	2000'	1314	A-8	By Containment Spray and RHR Iso. Valves	1	Fire Barrier	Conduit	0 ft.	3 in.	N/A	Thermo-Lag not required per RFR# 16916A.	Thermo-Lag removed per RFR# 16916F. Work performed under C595116.
4U386F	E-2R1313B	2000'	1301	A-8	West Hallway	1	Fire Barrier	Conduit	0 ft.	4 in.	N/A	Thermo-Lag not required per RFR# 16916A.	Thermo-Lag removed per RFR# 16916F. Work performed under C595116.
6J5P30	E-2R1411 E-2R8900-65	2026'	1408	A-16	Dress Out Area	3	Fire Barrier	Tray Fire Stop	0 ft.	N/A	N/A		Thermo-Lag removed iaw RFR# 15713A. Work performed under W166434.
6J5D30	E-2R1411 E-2R8900-65	2026'	1408	A-16	Dress Out Area	3	Fire Barrier	Tray Fire Stop	0 ft.	N/A	N/A		Thermo-Lag removed iaw RFR# 15713A. Work performed under W166446 & W149789.
6J5E30	E-2R1411 E-2R8900-65	2026'	1408	A-16	Dress Out Area	3	Fire Barrier	Tray Fire Stop	0 ft.	N/A	N/A		Thermo-Lag removed iaw RFR# 15713A. Work performed under W166446.
AI HV 32	E-2R1153	1989'	1207	A-1	Area 5	3	Fire Barrier	Valv. Encl.	0 ft.	N/A	N/A		Thermo-Lag removed: CMP# 89-1047 removed valve enclosure

\* Length shown refers to how much Darnat material is installed after implementation of RFR# 16916C. Appendix R Thermo-Lag removed by documents listed in "Method of Resolution" column.

NOTE: Sort by barrier ID

## Thermolag 330-1 Resolution (Appendix R Barriers)

Attachment 1  
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Barrier ID	Drawing	Floor Elev.	Room	Fire Area	Location Description	Orig Fire Rate	Intended Purpose	Type	Length*	Width/ Diameter	Depth	Notes	Method of Resolution
Buttress Hatch Cover 2026 El. - North	C-2C1441	2026'	1408	A-16	Next to Chmt Bldg Tendons on Pedestal, East of Dress Out Area	3	Fire Barrier	B. Hatch Cover	0 ft.	N/A	N/A		Thermo-Lag removed iaw RFR# 15713A. Work performed under W166444.
Buttress Hatch Cover 2026 El. - South	C-2C1441	2026'	1408	A-16	Next to Chmt Bldg Tendons on Pedestal, East of Dress Out Area	3	Fire Barrier	B. Hatch Cover	0 ft.	N/A	N/A		Thermo-Lag removed iaw RFR# 15713A. Work performed under W166443. Sample taken for NEL testing (Sample #3)
Buttress Hatch Cover 2047 El. - North	C-2C1541	2047'	1504	A-19	Next to Chmt Bldg Tendons on Pedestal	3	Fire Barrier	B. Hatch Cover	0 ft.	N/A	N/A		Thermo-Lag removed iaw RFR# 15713A. Work performed under W166445.
Buttress Hatch Cover 2047 El. - South	C-2C1541	2047'	1504	A-19	Next to Chmt Bldg Tendons on Floor	3	Fire Barrier	B. Hatch Cover	0 ft.	N/A	N/A		Thermo-Lag removed iaw RFR# 15713A. Work performed under W166447 & W166434.
Circle J of Conduits 1U1037 & 1U1038	E-2R1153	1989'	1207	A-1	Area 5/ Basement	3	Fire Barrier	Jct. Box	0 ft.	N/A	N/A	Thermo-Lag not required per RFR# 16916A.	Thermo-Lag removed iaw RFR# 16916C. Work performed under AS86109A.
Circle J of Conduits 1U1E2A & 1U3C1A	E-2R1917 E-2R14448	2026'	1408	A-16	North of Dress Out Area	3	Fire Barrier	Jct. Box	0 in.	N/A	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595072.
Circle J of Conduits 3U1024 & 3U1034	E-2R1354	2013'	1304	A-29	Area 3/ Up Ladder	3	Fire Barrier	Jct. Box	0 in.	N/A	N/A	Thermo-Lag not required per RFR# 16916A. Hourly fire watch can be terminated after CMP# 96-1008 implemented.	CMP 96-1008 adds local manual control stations for S/G B&C PORV's. Thermo-Lag removed per RFR# 16916F. Work performed under C595115.
Circle J of Conduits 4U1132 & 4U3B6D	E-2R1313D	2000'	1314	A-8	By Containment Spray and RHR Iso Valves	1	Fire Barrier	Jct. Box	0 in.	N/A	N/A	Thermo-Lag not required per RFR# 16916A.	Thermo-Lag removed per RFR# 16916F. Work performed under C595116.
Pull box to conduit 1U1118	E-2R1353B	2000'	1331	A-15	Area 5/ T/D Aux Feed Pump Room	3	Fire Barrier	Jct. Box	0 in.	N/A	N/A	Thermo-Lag not required per RFR# 16916A.	Thermo-Lag removed per RFR# 16916F. Work performed under C595113.
RHR & Cont. Spray Hatch Cover - North	A-2302 C-2S1333	2000'	1314	A-8	N/A	3	Fire Barrier	RHR Valve Enc.	0 ft.	N/A	N/A		CMP# 93-1010 removed Thermo-Lag and installed 1/4" steel plates. RFR# 15713A evaluated suitability of plates for hazard present & found acceptable.
RHR & Cont. Spray Hatch Cover - South	A-2302 C-2S1333	2000'	1315	A-8	N/A	3	Fire Barrier	RHR Valve Enc.	0 ft.	N/A	N/A		CMP# 93-1010 removed Thermo-Lag and installed 1/4" steel plates. RFR# 15713A evaluated suitability of plates for hazard present & found acceptable.

\* Length shown refers to how much Darmaat material is installed after implementation of RFR# 16916C. Appendix R Thermo-Lag removed by documents listed in "Method of Resolution" column.



NOTE: Sort by barrier ID

## Thermolag 330-1 (IEEE 384-74 Barriers)

Attachment 2  
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Barrier I.D.	Drawing	Floor Elev.	Room	Fire Area	Location Description	Orig Fire Rate	Intended Purpose	Type	Length*	Width/ Diameter	Depth	Notes	Method of Resolution
1J1019	E-2R1443A E-2R1443C	2026'	1410	A-18	North Elect Pen Room (on floor)	1	Barrier for Physical Independence	Conduit	31 ft.	4 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
1J1020	E-2R1443A E-2R1443C	2026'	1410	A-18	North Elect Pen Room (on floor)	1	Barrier for Physical Independence	Conduit	8 ft.	4 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
1J1021	E-2R1443C	2026'	1410	A-18	North Elect Pen Room (on floor)	1	Barrier for Physical Independence	Conduit	3 ft.	4 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
1J1022	E-2R1443C	2026'	1410	A-18	North Elect Pen Room (on floor)	1	Barrier for Physical Independence	Conduit	3 ft.	4 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
1J1062	E-2R1443A	2026'	1410	A-18	North Elect Pen Room (on floor)	1	Barrier for Physical Independence	Conduit	8 ft.	4 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
1J1063	E-2R1443A	2026'	1410	A-18	North Elect Pen Room (on floor)	1	Barrier for Physical Independence	Conduit	15 ft.	4 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
1J1130	E-2R1443C	2026'	1410	A-18	North Elect Pen Room (on floor)	1	Barrier for Physical Independence	Conduit	3 ft.	4 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
1J1132	E-2R1443A E-2R1443C	2026'	1410	A-18	North Elect Pen Room (on floor)	1	Barrier for Physical Independence	Conduit	23 ft.	4 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
1J1A2A	E-2R3212	1984'	3222	C-05	HP Office	1	Barrier for Physical Independence	Conduit	16 ft.	1.5 in.	N/A	TL added per CMP# 86-0048	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
1J3A1B	E-2R1523D	2047'	1512	A-22	Control Room A/C Unit Train A Room	1	Barrier for Physical Independence	Conduit	10 ft.	2 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
1J6004	E-2R6411	2065'	6301	F-1	Roof of Emergency Exhaust Filter Room A	1	Barrier for Physical Independence	Conduit	7 ft.	2 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.

\* Unless noted otherwise, length shown refers to how much Thermo-Lag material is installed.

NOTE: Sort by barrier ID

## Thermolag 330-1 (IEEE 384-74 Barriers)

Attachment 2  
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Barrier I.D.	Drawing	Floor Elev.	Room	Fire Area	Location Description	Orig Fire Rate	Intended Purpose	Type	Length*	Width/ Diameter	Depth	Notes	Method of Resolution
1J6008	E-2R6411	2065	6301	F-1	Roof of Emergency Exhaust Filter Room A	1	Barrier for Physical Independence	Conduit	1 ft.	1.5 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
1J6009	E-2R6411	2065	6301	F-1	Roof of Emergency Exhaust Filter Room A	1	Barrier for Physical Independence	Conduit	1 ft.	1.5 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
1J6010	E-2R6411	2065	6301	F-1	Roof of Emergency Exhaust Filter Room A	1	Barrier for Physical Independence	Conduit	1 ft.	1.5 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
1JJ037	E-2R1443A	2026	1410	A-18	North Elect Pen Room (on floor)	1	Barrier for Physical Independence	Jct. Box	0 in.	N/A	N/A	T-L not required per RFR# 16740A.	Wrap removed under WR# C595621
1JJ038	E-2R1443C	2026	1410	A-18	North Elect Pen Room (on floor)	1	Barrier for Physical Independence	Jct. Box	6 in.	6 in.	30 in.	Wrapped with 1JJ039	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
1JJ039	E-2R1443C	2026	1410	A-18	North Elect Pen Room (on floor)	1	Barrier for Physical Independence	Jct. Box	6 in.	6 in.	30 in.	Wrapped with 1JJ038	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
1JJ043	E-2R1443A	2026	1410	A-18	North Elect Pen Room (on column)	1	Barrier for Physical Independence	Jct. Box	36 in.	12 in.	24 in.	None	1-hr T-L replaced with 1-hr Darnat per RFR# 16916C. Work performed under A586413A & C586413.
1JJ044	E-2R1443A	2026	1410	A-18	North Elect Pen Room (on floor)	1	Barrier for Physical Independence	Jct. Box	30 in.	8 in.	15 in.	Sample taken for NEI testing (Sample #4)	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
1JJ075	E-2R1443C	2026	1410	A-18	North Elect Pen Room (on floor)	1	Barrier for Physical Independence	Jct. Box	30 in.	8 in.	8 in.	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
1U1119	E-2R1523D	2047	1512	A-22	Control Room A/C Unit Train A Room	1	Barrier for Physical Independence	Conduit	10 ft.	2 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
1U1H1A	E-2R3212	1984	3222	C-05	HP Office	1	Barrier for Physical Independence	Conduit	16 ft.	4 in.	N/A	TL added per CMP# 86-0048	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
1U4004	E-2R4422	2033	4401	T-2	West Side of General Floor Area (In Ceiling Area)	1	Barrier for Physical Independence	Conduit	20 ft.	2 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.

\* Unless noted otherwise, length shown refers to how much Thermo-Lag material is installed.

NOTE: Sort by Barrier ID

**Thermolag 330-1**  
(IEEE 384-74 Barriers)

**Attachment 2**  
Page 3 of 8

Barrier I.D.	Drawing	Floor Elev.	Room	Fire Area	Location Description	Orig Fire Rate	Intended Purpose	Type	Length*	Width/ Diameter	Depth	Notes	Method of Resolution
1U6C36	E-2R6411	2065'	6301	F-1	Roof of Emergency Exhaust Filter Room A	1	Barrier for Physical Independence	Conduit	9 ft.	1.5 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
2J1035	E-2R1444C	2026'	1408	A-16	North Electrical Penetration Room	3	Barrier for Physical Independence	Conduit	5 ft.	3 in.	N/A	T-L material originally installed to meet Appendix R requirements.	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
2J1B1R	E-2R3614	2047'	3605	C-27	Back of Control Room (In Ceiling Area)	1	Barrier for Physical Independence	Conduit	6 ft.	3 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
2J1B1S	E-2R3614	2047'	3605	C-27	Back of Control Room (In Ceiling Area)	1	Barrier for Physical Independence	Conduit	4 ft.	1.5 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
2U1034	E-2R3312	2000'	3301	C-09	NB01 Room	1	Barrier for Physical Independence	Conduit	4.5 ft.	0.75 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
2U1B1E	E-2R3312	2000'	3302	C-10	NB02 Room	1	Barrier for Physical Independence	Conduit	35 ft.	1.5 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
2U1B1J	E-2R3911	2000'	3302	C-10	NB02 Room	1	Barrier for Physical Independence	Conduit	27 ft.	3 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
2U1B1K	E-2R3614	2047'	3605	C-27	Back of Control Room	1	Barrier for Physical Independence	Conduit	9 ft.	3 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
2U1B1L	E-2R3911	2000'	3302	C-10	NB02 Room	1	Barrier for Physical Independence	Conduit	27 ft.	3 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
2U3004	E-2R3312	2000'	3302	C-10	NB02 Room	1	Barrier for Physical Independence	Conduit	16 ft.	1 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
2U3014	E-2R3911	2000'	3302	C-10	NB02 Room	1	Barrier for Physical Independence	Conduit	14 ft.	3 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.

\* Unless noted otherwise, length shown refers to how much Thermo-Lag material is installed.



NOTE: Sort by barrier ID

### Thermolag 330-1 (IEEE 384-74 Barriers)

Attachment 2  
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Barrier ID	Drawing	Floor Elev	Room	Fire Area	Location Description	Orig Fire Rate	Intended Purpose	Type	Length*	Width/ Diameter	Depth	Notes	Method of Resolution
2U3015	E-2R3911	2000'	3302	C-10	NB02 Room	1	Barrier for Physical Independence	Conduit	14 ft.	3 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
2U3016	E-2R3911	2000'	3302	C-10	NB02 Room	1	Barrier for Physical Independence	Conduit	54 ft.	2 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
2U3019	E-2R3312	2000'	3301	C-09	NB01 Room	1	Barrier for Physical Independence	Conduit	19 ft.	0.75 in.	N/A	Two separate sections of Conduit Wrapped. Continued in NB02 Room.	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
2U3019	E-2R3312 E-2R3911	2000'	3302	C-10	NB02 Room	1	Barrier for Physical Independence	Conduit	13 ft.	0.75 in.	N/A	Continuation from NB01 Room	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
2U3021	E-2R3911	2000'	3302	C-10	NB02 Room	1	Barrier for Physical Independence	Conduit	14 ft.	0.75 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
2UJ025	E-2R3911	2000'	3302	C-10	NB02 Room	1	Barrier for Physical Independence	Jct. Box	6 in.	6 in.	30 in.	Wrapped with 2UJ026 & 2UJ030	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
2UJ026	E-2R3911	2000'	3302	C-10	NB02 Room	1	Barrier for Physical Independence	Jct. Box	6 in.	6 in.	30 in.	Wrapped with 2UJ025 & 2UJ030	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
2UJ030	E-2R3911	2000'	3302	C-10	NB02 Room	1	Barrier for Physical Independence	Jct. Box	6 in.	6 in.	30 in.	Wrapped with 2UJ025 & 2UJ026	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
3J1033	E-2R1444A, 44B, & 44C	2026'	1410	A-18	North Elect Pen Room (Runs vert & along ceiling)	1	Barrier for Physical Independence	Conduit	40 ft.	1.5 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
3J1049	E-2R1444C	2026'	1410	A-18	North Elect Pen Room (Runs vertical)	1	Barrier for Physical Independence	Conduit	3 ft.	0.75 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
3J1050	E-2R1914	2047'	1513	A-19	North of Control Room A/C Unit Train A Room (Runs vertical)	1	Barrier for Physical Independence	Conduit	7 ft.	0.75 in.	N/A	Wrapped to meet separation reqmts from exposed cables in GKPT05 (See E-2R1914)	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.

\* Unless noted otherwise, length shown refers to how much Thermo-Lag material is installed.

NOTE: Sort by barrier ID

## Thermolag 330-1 (IEEE 384-74 Barriers)

Attachment 2  
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Barrier ID	Drawing	Floor Elev.	Room	Fire Area	Location Description	Orig Fire Rate	Intended Purpose	Type	Length*	Width/Diameter	Depth	Notes	Method of Resolution
2J1051	E-2R1444C	2026	1410	A-18	North Elect Pen Room (Runs vertical)	1	Barrier for Physical Independence	Conduit	3 ft.	0.75 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
3U1010	E-2R1914	2047	1513	A-19	North of Control Room A/C Unit Train A Room (Runs vertical)	1	Barrier for Physical Independence	Conduit	7 ft.	1.5 in.	N/A	Wrapped to meet separation reqmts from exposed cables in GKRT05 (See E-2R1914)	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
3U183A	E-2R3312	2000	3301	C-09	NB01 Room	1	Barrier for Physical Independence	Conduit	5.5 ft.	1.5 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
4G2A1A	E-2R2414 E-2R2512B	2047	Rx	RB-10	South Penetration Area	1	Barrier for Physical Independence	Conduit	15.5 ft.	2 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
4G2A1B	E-2R2414 E-2R2512B	2047	Rx	RB-10	South Penetration Area	1	Barrier for Physical Independence	Conduit	16.5 ft.	4 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
4G2A1C	E-2R2414 E-2R2512B	2047	Rx	RB-10	South Penetration Area	1	Barrier for Physical Independence	Conduit	16.5 ft.	4 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
4G2A1F	E-2R2414 E-2R2512B	2047	Rx	RB-10	South Penetration Area	1	Barrier for Physical Independence	Conduit	14.5 ft.	1 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
4J1099	E-2R1433B	2026	1409	A-17	South Elect Pen Room (Runs along ceiling)	1	Barrier for Physical Independence	Conduit	19 ft.	1.5 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
4J1101	E-2R1433B	2026	1409	A-17	South Elect Pen Room (Runs along floor)	1	Barrier for Physical Independence	Conduit	18 ft.	0.75 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
4J1103	E-2R1433B	2026	1409	A-17	South Elect Pen Room (Runs along floor)	1	Barrier for Physical Independence	Conduit	18 ft.	0.75 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
4J1115	E-2R1433A E-2R1433B	2026	1409	A-17	South Elect Pen Room (Runs along ceiling)	1	Barrier for Physical Independence	Conduit	32 ft.	1 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.

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NOTE: Sort by barrier ID

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Barrier I.D.	Drawing	Floor Elev.	Room	Fire Area	Location Description	Orig Fire Rate	Intended Purpose	Type	Length*	Width/ Diameter	Depth	Notes	Method of Resolution
4J1J19	E-2R3613	2047'	3605	C-27	Control Room Equipment Cabinet Area	1	Barrier for Physical Independence	Conduit	2 ft.	5 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
4J3B1J	E-2R1413B	2026'	1402	A-16	Hallway to MG Set Room (Runs vertical)	1	Barrier for Physical Independence	Conduit	2 ft.	1.5 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
4J3C9V	E-2R1443B	2026'	1408	A-16	North of Dress out Area (Runs vertical)	1	Barrier for Physical Independence	Conduit	11 ft.	1 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
4J5A1A	E-2R1233	1988'	1203	A-01	South Electrical Chase	1	Barrier for Physical Independence	Conduit	3.5 ft.	1.5 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
4J5B2D	E-2R1233	1988'	1203	A-01	South Electrical Chase	1	Barrier for Physical Independence	Conduit	8 ft.	0.75 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
4J6008	E-2R6411	2065'	6301	F-1	Roof of Emergency Exhaust Filter Room A	1	Barrier for Physical Independence	Conduit	11 ft.	1.5 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
4U1245	E-2R1323A E-2R1323D	2000'	1301	A-08	West Hall (Runs in overhead)	1	Barrier for Physical Independence	Conduit	5 ft.	1 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
4U1260	E-2R1433A	2026'	1409	A-17	South Elect Pen Room (Runs along ceiling)	1	Barrier for Physical Independence	Conduit	12.5 ft.	1.5 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
4U3B2U	E-2R1323A E-2R1323D	2000'	1301	A-08	West Hall (Runs in overhead)	1	Barrier for Physical Independence	Conduit	5 ft.	1 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
4U3B6F	E-2R1313B	2000'	1301	A-8	West Hallway	1	Barrier for Physical Independence	Conduit	35 ft.	4 in.	N/A	T-L material originally installed to meet Appendix R requirements.	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
4U3C4G	E-2R1433A	2026'	1409	A-17	South Elect Pen Room (Runs along ceiling)	1	Barrier for Physical Independence	Conduit	4.5 ft.	1.5 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.

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Barrier I.D.	Drawing	Floor Elev.	Room	Fire Area	Location Description	Orig Fire Rate	Intended Purpose	Type	Length*	Width/ Diameter	Depth	Notes	Method of Resolution
4U3D5R	E-2R1443B	2026	1408	A-16	North of Dress out Area (Runs vertical)	1	Barrier for Physical Independence	Conduit	13 ft.	4 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
4U3E7J	E-2R1443B	2026	1408	A-16	North of Dress out Area (Runs vertical)	1	Barrier for Physical Independence	Conduit	11 ft.	2 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
4U4004	E-2R4412 E-2R4422	2033	4401	T-2	West Side of General Floor Area (In Ceiling Area)	1	Barrier for Physical Independence	Conduit	124 ft.	2 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
4U6054	E-2R6411	2065	6301	F-1	Roof of Emergency Exhaust Filter Room A	1	Barrier for Physical Independence	Conduit	13 ft.	1.5 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
5J1040	E-2R1143A	1974	1122	A-01	Northeast General Floor Area (To Rad Monitor)	1	Barrier for Physical Independence	Conduit	1.25 ft.	1.5 in.	N/A	Radiation Monitor SDRE0013 Cable Wrap	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
5J1W1F	E-2R1333A	2000	1314	A-08	Outside South Pipe Pen Rm (To Rad Monitor)	1	Barrier for Physical Independence	Conduit	1.6 ft.	1.5 in.	N/A	Radiation Monitor SDRE0018 Cable Wrap	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
5J1W1L	E-2R1323A	2000	1301	A-08	West Corridor (To Rad Monitor)	1	Barrier for Physical Independence	Conduit	1.1 ft.	1.5 in.	N/A	Radiation Monitor SDRE0023 Cable Wrap	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
5J2A1R	E-2R2512A	2047	Rx	RB-10	Outside South Wall Pressurizer Area (To Rad Monitor)	1	Barrier for Physical Independence	Conduit	2.1 ft.	1.5 in.	N/A	Radiation Monitor S RE0040 Cable Wrap	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
5J6A2D	E-2R6311	2047	6301	F-1	West of Pool (To Rad Monitor)	1	Barrier for Physical Independence	Conduit	2.7 ft.	1.5 in.	N/A	Radiation Monitor SDRE0038 Cable Wrap	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
6C8N13	E-2R3613	2047	3605	C-27	Control Room Equipment Cabinet Area	1	Barrier for Physical Independence	Conduit	1 ft.	3 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
6J1045	E-2R1533A	2047	1507	A-20	Outside Containment Entry Hatch (To Rad Monitor)	1	Barrier for Physical Independence	Conduit	1.7 ft.	1.5 in.	N/A	Radiation Monitor SDRE0028 Cable Wrap	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.

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Barrier I.D.	Drawing	Floor Elev.	Room	Fire Area	Location Description	Orig Fire Rate	Intended Purpose	Type	Length*	Width/ Diameter	Depth	Notes	Method of Resolution
6J4A1L	E-2R1133	1974'	1120	A-01	Southeast General Floor Area (To Rad Monitor)	1	Barrier for Physical Independence	Conduit	1.25 ft.	1.5 in.	N/A	Radiation Monitor SDRE0012 Cable Wrap	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
6J5B4B	E-2R1543B	2047'	1506	A-19	North General Floor Area (To Rad Monitor)	1	Barrier for Physical Independence	Conduit	1.75 ft.	1.5 in.	N/A	Radiation Monitor SDRE0025 Cable Wrap	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
6J8C61	E-2R3613	2047'	3605	C-27	Control Room Equipment Cabinet Area	1	Barrier for Physical Independence	Conduit	2 ft.	5 in.	N/A	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
Field Junction Box to Conduits 2U1034 & 2U3019	E-2R3312	2000'	3301	C-09	NB01 Room	1	Barrier for Physical Independence	Jct. Box	12 in.	12 in.	8 in.	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
Field Junction Box to Conduits 3J1033, 3J1051, & 3J1049	E-2R1444C	2026'	1410	A-18	North Elect Pen Room (on column)	1	Barrier for Physical Independence	Jct. Box	14 in.	14 in.	8 in.	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
Field Junction Box to Conduits 4J1101, 4J1103, & 4J1099	E-2R1433B	2026'	1409	A-17	South Electrical Penetration Room	1	Barrier for Physical Independence	Jct. Box	12 in.	12 in.	8 in.	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
Field Junction Box to Conduits 4U1245 & 4U382U	E-2R1323A E-2R1323D	2000'	1301	A-08	West Hallway (On vertical run)	1	Barrier for Physical Independence	Jct. Box	12 in.	12 in.	8 in.	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
Pull Box to Conduit 1J3A1B	E-2R1523D	2047'	1512	A-22	Control Room A/C Unit Train A Room	1	Barrier for Physical Independence	Jct. Box	12 in.	10 in.	8 in.	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
Pull Box to Conduit 1J6004	E-2R6411	2065'	6301	F-1	Roof of Emergency Exhaust Filter Room A	1	Barrier for Physical Independence	Jct. Box	8 in.	6 in.	6 in.	None	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
Pull Box to Conduit 2U1B1J	E-2R3911	2000'	3302	C-10	NB02 Room	1	Barrier for Physical Independence	Jct. Box	6 in.	6 in.	30 in.	Wrapped with Pull Box to Conduit 2U1B1L	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.
Pull Box to Conduit 2U1B1L	E-2R3911	2000'	3302	C-10	NB02 Room	1	Barrier for Physical Independence	Jct. Box	6 in.	6 in.	30 in.	Wrapped with Pull Box to Conduit 2U1B1J	RFR# 16916C evaluated T-L to assure that material is acceptable for IEEE-384 requirements.

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