

October 9, 1996

Distribution w/encls:

Docket File	LTran
PUBLIC	EAdensam
PD3-3 Reading	ACRS
JRoe	OGC
JCaldwell, RIII	GMarcus
APal	RJenkins
PGill	JCalvo

Mr. John K. Wood
Vice President - Nuclear, Davis-Besse
Centerior Service Company
c/o Toledo Edison Company
Davis-Besse Nuclear Power Station
5501 North State Route 2
Oak Harbor, OH 43449-9760

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION ON CABLE AMPACITY -
DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1 (TAC NO. M85542)

Dear Mr. Wood:

By letter dated June 26, 1996, Davis-Besse Nuclear Power Station (DBNPS) submitted a response to the NRC staff's Request for Additional Information (RAI) dated October 11, 1995, related to Generic Letter (GL) 92-08, "Thermo-Lag 330-1 Fire Barriers." You stated that you intend to remove all existing Thermo-Lag and replace it with an alternate material. Your June 26, 1996, submittal addressed the adequacy of margin to accommodate the ampacity derating resulting from the application of Thermo-Lag from the time it was installed until the time it is removed, such that the insulation properties of the protected cables are not adversely impacted. The NRC staff completed the preliminary review of your original analytical approach as documented in the June 26, 1996, submittal and has identified specific questions that require further clarification and discussion. Enclosed is the staff's request for additional information.

In your letter of June 26, 1996, you requested completion of the review of ampacity issues by December 30, 1996. Please respond to the enclosed request for additional information on ampacity derating factor determinations for DBNPS within 30 days. Should you have any questions or require additional information or an extension of the schedule, please contact Allen G. Hansen, at (301) 415-1390.

Sincerely,
Original signed by:
Linda L. Gundrum, Project Manager
Project Directorate III-3
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket No. 50-346

Enclosure: Request for Additional
Information

cc w/encl: See next page

NRC FILE CENTER COPY

DOCUMENT NAME: G:\DAVISBES\DB85542A.RAI

To receive a copy of this document, indicate in the box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

OFFICE	PDIII-3:LA	E	PDIII-3:PM	E					
NAME	DFoster-Curse		LGundrum						
DATE	10/9/96		10/9/96						

9610160337 961009
PDR ADOCK 05000346
F PDR

OFFICIAL RECORD COPY



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20565-0001

October 9, 1996

Mr. John K. Wood
Vice President - Nuclear, Davis-Besse
Centerior Service Company
c/o Toledo Edison Company
Davis-Besse Nuclear Power Station
5501 North State Route 2
Oak Harbor, OH 43449-9760

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION ON CABLE AMPACITY -
DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1 (TAC NO. M85542)

Dear Mr. Wood:

By letter dated June 26, 1996, Davis-Besse Nuclear Power Station (DBNPS) submitted a response to the NRC staff's Request for Additional Information (RAI) dated October 11, 1995, related to Generic Letter (GL) 92-08, "Thermo-Lag 330-1 Fire Barriers." You stated that you intend to remove all existing Thermo-Lag and replace it with an alternate material. Your June 26, 1996, submittal addressed the adequacy of margin to accommodate the ampacity derating resulting from the application of Thermo-Lag from the time it was installed until the time it is removed, such that the insulation properties of the protected cables are not adversely impacted. The NRC staff completed the preliminary review of your original analytical approach as documented in the June 26, 1996, submittal and has identified specific questions that require further clarification and discussion. Enclosed is the staff's request for additional information.

In your letter of June 26, 1996, you requested completion of the review of ampacity issues by December 30, 1996. Please respond to the enclosed request for additional information on ampacity derating factor determinations for DBNPS within 30 days. Should you have any questions or require additional information or an extension of the schedule, please contact Allen G. Hansen, at (301) 415-1390.

Sincerely,

Linda L. Gundrum

Linda L. Gundrum, Project Manager
Project Directorate III-3
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket No. 50-346

Enclosure: Request for Additional
Information

cc w/encl: See next page

REQUEST FOR ADDITIONAL INFORMATION

AMPACITY DERATING ISSUES

1. You properly identified an additional derating factor to account for multiple conductors within the raceway, if applicable, utilizing the appropriate factor provided in the industry standard. However, this derating factor is not applied in actual calculation. If a conduit has three 1/C #2/0 cable with one #4 ground, the total number of conductors in the conduit is four. According to National Electric Code (NEC) or Insulated Cable Engineers Association (ICEA) Standards, a derating factor of 0.8 shall be used in the ampacity determination. This is not the case as shown in Table 1, "Ampacity Derating due to Thermo-Lag," of the subject calculation. The licensee needs to include total number of conductors in each conduit and appropriate derating factors in its calculations. The staff believes that the ampacity of cable will be impacted by the number of conductors inside a conduit. Provide justification for this deviation or provide a revised calculation.
2. For cables installed in exposed or enclosed groups of conduits in air, the grouping factors given in Table IX of ICEA Standard P-46-426, "Power Cable Ampacities, Volume 1, Copper Conductors," shall be used when the spacing between conduit surfaces is not greater than the conduit diameter or less than 1/4 of the conduit diameter. The calculation did not use conduit grouping factor. Provide a discussion about the use of the conduit grouping factor for applicable DBNPS installations.
3. Conduit fills in percent should be included in the subject calculation. Justification of cable ampacity needs to be provided if the conduit fill exceeds the value given in NEC tables.
4. It appears that the licensee used the name plate ampere rating as the load current. The nameplate ampere is at rated voltage and rated load. This is acceptable provided the loads are not operating at an overload condition or at a service factor and the rated voltage are maintained at the load terminals. Provide a discussion about the impact of overload conditions or the service factor of the load and voltage availability at the load terminals on the ampacity derating margins.
5. Explain the technical basis for the margins added as described in Section III.C of this calculation. It should be noted that similar ampacity derating tests for a single enclosure containing multiple conduits were submitted by Tennessee Valley Authority for staff review of Watts Bar fire barriers.

ENCLOSURE

Mr. John K. Wood
Toledo Edison Company

cc:

Mary E. O'Reilly
Centerior Energy Corporation
300 Madison Avenue
Toledo, Ohio 43652

Mr. James L. Freels
Manager - Regulatory Affairs
Toledo Edison Company
Davis-Besse Nuclear Power Station
5501 North State - Route 2
Oak Harbor, Ohio 43449-9760

Gerald Charnoff, Esq.
Shaw, Pittman, Potts
and Trowbridge
2300 N Street, N.W.
Washington, D.C. 20037

Regional Administrator
U.S. NRC, Region III
801 Warrenville Road
Lisle, Illinois 60523-4351

Mr. Robert B. Borsum
Babcock & Wilcox
Nuclear Power Generation Division
1700 Rockville Pike, Suite 525
Rockville, Maryland 20852

Resident Inspector
U. S. Nuclear Regulatory Commission
5503 N. State Route 2
Oak Harbor, Ohio 43449

Mr. James H. Lash, Plant Manager
Toledo Edison Company
Davis-Besse Nuclear Power Station
5501 North State Route 2
Oak Harbor, Ohio 43449-9760

Davis-Besse Nuclear Power Station
Unit No. 1

Robert E. Owen, Chief
Bureau of Radiological Health
Service
Ohio Department of Health
P. O. Box 118
Columbus, Ohio 43266-0118

Attorney General
Department of Attorney
30 East Broad Street
Columbus, Ohio 43216

Mr. James W. Harris, Director
Division of Power Generation
Ohio Department of Industrial
Regulations
P. O. Box 825
Columbus, Ohio 43216

Ohio Environmental Protection Agency
DERR--Compliance Unit
ATTN: Zack A. Clayton
P. O. Box 1049
Columbus, Ohio 43266-0149

State of Ohio
Public Utilities Commission
180 East Broad Street
Columbus, Ohio 43266-0573

Mr. James R. Williams
Chief of Staff
Ohio Emergency Management Agency
2855 West Dublin Granville Road
Columbus, Ohio 43235-2206

President, Board of County
Commissioner of Ottawa County
Port Clinton, Ohio 43452