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SUBJECT: Provides response to RAI re GL 97-01, "Degradation of CRDM/
CEDM Nozzles & Other Vessel Closure Head Penetrations." Ltr
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Reference 1: Letter from David J. Modeen, Nuclear Energy Institute (NEI), to Mr. Gus C. Lainas, NRC, "Responses to NRC Requests for Additional Information on Generic Letter 97-01", dated December 11, 1998.

Dear Sirs:

**Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2, and 3
Docket Nos. STN 50-528/529/530
Response to Request for Additional Information Regarding Generic
Letter 97-01, "Degradation of CRDM/CEDM Nozzles and Other Vessel
Closure Head Penetrations".**

The Enclosure to this letter provides the additional information regarding Generic Letter 97-01, "Degradation of CRDM/CEDM Nozzles and Other Vessel Closure Head Penetrations", for the Palo Verde Nuclear Generating Station that was requested in your letter to Arizona Public Service Company (APS) dated September 4, 1998. This letter and the associated enclosure do not make any commitments to the NRC.

Please contact Mr. Scott Bauer at (602) 393-5978 if you have any questions or would like additional information regarding this matter.

Sincerely,

Enclosure
JML/SAB/RMW/rh

cc: E. W. Merschoff
M. B. Fields
J. H. Moorman

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THE UNIVERSITY OF CHICAGO
CHICAGO, ILLINOIS
JANUARY 1964

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JANUARY 1964

ENCLOSURE

**Response to Request for Additional Information
Regarding Generic Letter 97-01, "Degradation of
CRDM/CEDM Nozzle and Other Vessel Closure Head
Penetrations".**



NRC Request

Designate which crack susceptibility model is being endorsed for the assessment of CEDM penetration nozzles at the Palo Verde Nuclear Generating Station Unit Nos. 1, 2, and 3 (PVNGS). Indicate how the susceptibility model being endorsed relates to the CEOG's integrated program for assessing the CEDM penetration nozzles at ABB-CE designed plants, and whether or not the design of the susceptibility model is consistent with the contents of Topical Report CE NPSD-1085. If the ABB-CE's PITM model is being endorsed for the assessment of CEDM penetration nozzles at PVNGS, address items a. through e. that follow. If the Dominion Engineering susceptibility model is being endorsed for the assessment of CEDM penetration nozzles at PVNGS, address the items f. through i. that follow.

If the PITM models are being endorsed for the assessment of your CEDM penetration nozzles:

- a. Provide an expanded discussion and additional details describing how the time-to-failure model in the PITM relates to the PITM's time-to-initiation model. In particular, include an expanded discussion of how the PITM model relates growth of postulated flaws to the time-to-initiation model, and how the two aspects relate to each other and to the probability of failure methodology.
- b. Provide the latest PITM susceptibility ranking of CEDM penetration nozzles, and if applicable of the vessel head instrumentation nozzles at PVNGS relative to the rankings of those at the other CEOG member plants.
- c. Provide a description of how the PITM model for assessing postulated flaws in vessel head penetration nozzles was bench-marked, and list and discuss the standards the models were bench-marked against.
- d. Provide any additional information regarding how the model will be refined to allow the input of plant-specific inspection data into the model's analysis methodology.
- e. Describe how the variability in the product forms, material specifications, and heat treatments used to fabricate each CEDM penetration nozzle at the CEOG member utilities are addressed in the PITM model.

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If the susceptibility model developed by Dominion Engineering is being endorsed for the assessment of your CEDM penetration nozzles:

- f. Provide a description of how the various product forms, material specifications, and heat treatments used to fabricate each CEDM penetration nozzle at the CEOG member utilities are handled in the Dominion Engineering susceptibility model.
- g. Provide any additional information, if available, regarding how the model will be refined to allow the input of plant-specific inspection data into the model's analysis methodology.
- h. Describe how the Dominion Engineering crack initiation and crack growth models for assessing postulated flaws in vessel head penetration nozzles were bench-marked, and a listing and discussion of the standards the models were bench-marked against.
- i. Provide the latest model susceptibility rankings of CEDM penetration nozzles in CEOG member plants based on the results of the Dominion Engineering susceptibility model analyses of these CEDM and ICI nozzles.

APS Response

APS participated in an industry effort that was coordinated by NEI to develop a generic response to the NRC's requests for additional information regarding Generic Letter 97-01. The generic responses that were developed through this effort were provided to the NRC in Reference 1. Therefore, the APS response to the above requested information will refer to the appropriate enclosures of Reference 1.

The first paragraph of the requested information requires certain information regarding the crack susceptibility model that is being endorsed for the assessment of CEDM penetration nozzles at PVNGS. This information is provided in Enclosure 4 of Reference 1. Since the endorsed model is the EPRI model, which was developed from the Dominion Engineering model, items a. through e. of the requested information are not applicable. The responses to items f. through i. are as follows:

- Item f: Refer to Enclosure 2, Question 1, Response 1.a, of Reference 1.
- Item g: Refer to Enclosure 2, Question 3, Response 3.a, of Reference 1.
- Item h: Refer to Enclosure 2, Question 2, Response 2.a, of Reference 1.
- Item i: Refer to Enclosure 2, Question 4, Response 4, of Reference 1.

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