March 22, 2000

Mr. D. N. Morey
Vice President - Farley Project
Southern Nuclear Operating
Company, Inc.
Post Office Box 1295
Birmingham, Alabama 35201-1295

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 1 AND 2, RE: COMPLETION OF LICENSING ACTION FOR GENERIC LETTER 97-01 (TAC NOS. M98564 AND M98565)

Dear Mr. Morey:

On April 1, 1997, the U.S. Nuclear Regulatory Commission issued Generic Letter (GL) 97-01, "Degradation of CRDM/CEDM Nozzle and Other Vessel Closure Head Penetrations." Your letters of April 29 and July 25, 1997, provided your 30-day and 120-day responses to GL 97-01. Your letter of January 11, 1998, responded to our request for additional information on August 27, 1998. Your responses explained your proposed program and efforts to address the potential for primary water stress corrosion cracking to occur in the control rod drive mechanism nozzles at the Farley Nuclear Plant, Units 1 and 2.

We have reviewed your responses to GL 97-01 and find them acceptable. Accordingly, we consider GL 97-01 to be closed for Farley Nuclear Plant, Units 1 and 2. The enclosure contains our assessment of your responses to the GL. Please contact me at (301) 415-1423 if you have any questions about this.

Sincerely,

/RA/

L. Mark Padovan, Project Manager, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-348 and 50-364

Enclosure: As stated

cc w/encl: See next page

March 22, 2000

Mr. D. N. Morey
Vice President - Farley Project
Southern Nuclear Operating
Company, Inc.
Post Office Box 1295
Birmingham, Alabama 35201-1295

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 1 AND 2, RE: COMPLETION OF LICENSING ACTION FOR GENERIC LETTER 97-01 (TAC NOS. M98564 AND M98565)

Dear Mr. Morey:

On April 1, 1997, the U.S. Nuclear Regulatory Commission issued Generic Letter (GL) 97-01, “Degradation of CRDM/CEDM Nozzle and Other Vessel Closure Head Penetrations.” Your letters of April 29 and July 25, 1997, provided your 30-day and 120-day responses to GL 97-01. Your letter of January 11, 1998, responded to our request for additional information on August 27, 1998. Your responses explained your proposed program and efforts to address the potential for primary water stress corrosion cracking to occur in the control rod drive mechanism nozzles at the Farley Nuclear Plant, Units 1 and 2.

We have reviewed your responses to GL 97-01 and find them acceptable. Accordingly, we consider GL 97-01 to be closed for Farley Nuclear Plant, Units 1 and 2. The enclosure contains our assessment of your responses to the GL. Please contact me at (301) 415-1423 if you have any questions about this.

Sincerely,

/RA/

L. Mark Padovan, Project Manager, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-348 and 50-364

Enclosure: As stated

cc w/encl: See next page

<u>Distribution:</u>

File Center	OGC
PUBLIC	ACRS
PD II-1 R/F	SCahill, RII

DOCUMENT NAME: G:\PDii-1\Farley\ltr98564&5.wpd

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

OFFICE	PDII-1/PM	E	PDII-1/LA		PDI-1/LPM	PDII-1/SC	
NAME	MPadovan:cn		CHawes		JHarold	REmch	
DATE	2/29/00		2/29/00		3/14/00	3/22/00	

OFFICIAL RECORD COPY

Joseph M. Farley Nuclear Plant

cc:

Mr. L. M. Stinson
General Manager -
Southern Nuclear Operating Company
Post Office Box 470
Ashford, Alabama 36312

Mr. Mark Ajluni, Licensing Manager
Southern Nuclear Operating Company
Post Office Box 1295
Birmingham, Alabama 35201-1295

Mr. M. Stanford Blanton
Balch and Bingham Law Firm
Post Office Box 306
1710 Sixth Avenue North
Birmingham, Alabama 35201

Mr. J. D. Woodard
Executive Vice President
Southern Nuclear Operating Company
Post Office Box 1295
Birmingham, Alabama 35201

State Health Officer
Alabama Department of Public Health
434 Monroe Street
Montgomery, Alabama 36130-1701

Chairman
Houston County Commission
Post Office Box 6406
Dothan, Alabama 36302

Resident Inspector
U.S. Nuclear Regulatory Commission
7388 N. State Highway 95
Columbia, Alabama 36319

Rebecca V. Badham
SAER Supervisor
Southern Nuclear Operating Company
P. O. Box 470
Ashford, Alabama 36312

NRC Assessment of Responses to GL 97-01

Farley Nuclear Plant, Units 1 and 2

On April 1, 1997, the U.S. Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 97-01, "Degradation of CRDM/CEDM Nozzle and Other Vessel Closure Head Penetrations," requesting that addressees describe their plans to inspect the vessel head penetrations (VHPs) at their pressurized water reactor (PWR) designed plants. In the discussion section of the GL, the staff indicated that it did not object to individual PWR licensees basing their inspection activities on an integrated, industry-wide inspection program.

The Westinghouse Owners Group (WOG), in coordination with the Nuclear Energy Institute (NEI) and the Babcock and Wilcox Owners Group and Combustion Engineering Owners Group, determined that it was appropriate for its members to develop a cooperative integrated inspection program in response to GL 97-01. Therefore, on July 25, 1997, the WOG submitted two Topical Reports, WCAP-14901, Revision 0, and WCAP-14902, Revision 0, on behalf of the WOG's member utilities. In these reports, the WOG described two models, the Electric Power Institute (EPRI)/Dominion Engineering CIRSE (crack initiation and growth susceptibility) Model and the Westinghouse Model, that were being used to rank the VHPs at the participating WOG plants.

Southern Nuclear Operating Company's (SNC's) letters of April 29, and July 25, 1997, provided SNC's 30-day and 120-day responses to GL 97-01. SNC's letter on January 11, 1998, responded to the NRC's request for additional information (RAI) of August 27, 1998. SNC's responses provided their proposed program and efforts to address the potential for primary water stress corrosion cracking (PWSCC) to occur in the control rod drive mechanism (CRDM) nozzles at the Farley Nuclear Plant, Units 1 and 2. In their 30-day and 120-day responses to GL 97-01, SNC indicated that they were participating in the WOG's integrated program for evaluating the potential for PWSCC to occur in the VHPs of Westinghouse-designed PWRs. SNC also indicated that they were endorsing the probabilistic susceptibility model in Westinghouse Electric Company's Topical Report WCAP-14901, Revision O, "Background and Methodology for Evaluation of Reactor Vessel Closure Head Penetration Integrity for the Westinghouse Owners Group," as being applicable to the assessment of VHPs at the Farley Plant.

The staff performed a review of SNC's responses of April 29 and July 25, 1997, and WCAP-14901, Revision O for Farley and determined that the staff needed additional information to complete the review. Therefore, on August 27, 1998, the staff issued an RAI requesting the following:

(1) A description of the probabilistic susceptibility ranking for a plant's VHPs to undergo PWSCC relative to the rankings for the rest of the industry.
(2) A description of how the respective susceptibility models were benchmarked.

Enclosure

(3) A description of how the variability in the product forms, material specifications, and heat treatments used to fabricate a plant's VHPs were addressed in the susceptibility models.
(4) A description of how the models would be refined in the future to include plant-specific inspection results.

As was the case for the earlier responses to the GL, the staff encouraged a coordinated, generic response to the requests in the RAI.

On December 11, 1998, NEI submitted a generic, integrated response to the RAIs on GL 97-01 on behalf of the PWR industry and the utility members in the owners groups. In the generic submittal, NEI informed the staff that it normalized the susceptibility rankings for the industry. The generic response to the RAIs also provided sufficient information to answer the staff's RAIs, and emphasized that the integrated program is an ongoing program that will be implemented in conjunction with EPRI, the PWR Owners Groups, the participating utilities, and the Material Reliability Projects' Subcommittee on Alloy 600. The staff's letter of March 21, 1999, informed NEI that the integrated program was an acceptable approach for addressing the potential for PWSCC to occur in the VHPs of PWR-designed nuclear plants, and that licensees responding to the GL could refer to the integrated program as a basis for assessing the postulated occurrence of PWSCC in PWR-design VHPs.

To date, all utilities have implemented VT-2 type visual examinations of their VHPs in compliance with the ASME requirements specified in Table IWB-2500 for Category B-P components. Most utilities, if not all, have also performed visual examinations as part of plant-specific boric acid wastage surveillance programs. In addition, the following plants have completed voluntary, comprehensive augmented eddy current or ultrasonic examinations of their CRDM nozzles:

- 1994 - Point Beach Unit 1 (Westinghouse design)
- 1994 - Oconee Unit 2 (B&W design)
- 1994 - D.C. Cook Unit 2 (Westinghouse design)
- 1996 - North Anna Unit 1 (Westinghouse design)
- 1998 - Millstone Unit 2 (a CE design)
- 1999 - Ginna (a Westinghouse design)

In addition, the following plants have completed voluntary, limited augmented volumetric inspections of their VHPs as well:

- 1995 - Palisades - eight instrument nozzles (CE design)
- 1996 - Oconee Unit 2 - reinspection of two CRDM nozzles (B&W design)
- 1997 - Calvert Cliffs Unit 2 - vessel head vent pipe (CE design)

The majority of these plants have been ranked as having the more susceptible VHPs in the industry. Of these inspections, only the inspections at D.C. Cook Unit 2 have identified any domestic PWSCC type flaw indications. The current program included additional commitments to perform further volumetric inspections of the CRDM nozzles at Oconee Unit 2 (a reinspection of 2-12 nozzles in 1999), Crystal River 3 (in 2001, a B&W design), Diablo Canyon Unit 2 (in 1999, a Westinghouse design), Farley Unit 2 (in 2001, a Westinghouse design), and San

Onofre Unit 3 (in 2002-2008, a CE design). These plants are currently ranked in either the high or moderate susceptibility categories.

In SNC's RAI response of January 11, 1998, SNC endorsed NEI's submittal of December 11, 1998, and indicated that SNC was a participant in the NEI/WOG integrated program. Since the additional voluntary volumetric inspections performed to date have confirmed that PWSCC is not an immediate safety concern with respect to the structural integrity of VHPs in domestic PWRs, and since we have approved the integrated program for implementation, the staff concludes that the integrated program provides an acceptable basis for evaluating SNC's VHPs. SNC may refer to the integrated program when submitting related VHP-related licensing action submittals for the remainder of the current 40-year licensing period. However, if SNC considers applying for license renewal of their facilities, SNC's application will need to address the following items:

(1) Assess the susceptibility of SNC's VHPs to develop PWSCC during the extended license terms for the facilities.
(2) Confirmation that the VHPs at SNC's facilities are included under the scope of your boric acid corrosion inspection program.
(3) Summarize the results of any inspections that have been completed on SNC's VHPs prior to the license renewal application, as appropriate.

This completes the staff's efforts relative to GL 97-01 for the Farley Nuclear Plant, Units 1 and 2.