Dave Morey
Vice President
Farley Project

Southern Nuclear
Operating Company, Inc.
Post Office Box 1295
Birmingham, Alabama 35201

Tel 205.992.5131

SOUTHERN COMPANY
Energy to Serve Your World℠

March 29, 2002

NEL-02-0068

Docket Nos. 50-348
50-364

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

Joseph M. Farley Nuclear Plant
15-Day Response to NRC Bulletin 2002-01
Reactor Pressure Vessel Head Degradation and
Reactor Coolant Pressure Boundary Integrity

Ladies and Gentlemen:

Pursuant to the requirements of Nuclear Regulatory Commission (NRC) Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity," dated March 18, 2002, Southern Nuclear Operating Company (SNC) hereby submits in accordance with 10 CFR 50.54(f) the enclosed information which serves as the 15-day response for Farley Nuclear Plant - Units 1 and 2, required by Bulletin Item 1. This response addresses wastage concerns associated with the reactor pressure vessel heads attributable to leakage of primary coolant.

This submittal contains NRC commitments for future inspection of the reactor pressure vessel heads and for performance of a finite element analysis of penetration nozzle interference as specified in the response to Item 1.D in the enclosure.

Mr. D. N. Morey states he is Vice President of Southern Nuclear Operating Company and is authorized to execute this oath on behalf of Southern Nuclear Operating Company, and to the best of his knowledge and belief, the facts set forth in this letter are true.

Respectfully submitted,

DN Morey

Dave Morey

Sworn to and subscribed before me this 29 *day of* March, *2002.*

Deborah B. Gurganus
Notary Public

NOTARY PUBLIC STATE OF ALABAMA AT LARGE
MY COMMISSION EXPIRES: MAR 19, 2004
BONDED THRU NOTARY PUBLIC UNDERWRITERS

My commission expires: _____

A095

DWD/sdl: Bulletin 2002-01 FNP Response.doc

Enclosure

cc: Southern Nuclear Operating Company
Mr. D. E. Grissette, Nuclear Plant General Manager - Farley

U. S. Nuclear Regulatory Commission, Washington, D. C.
Mr. F. Rinaldi, NRR Project Manager - Farley

U. S. Nuclear Regulatory Commission, Region II
Mr. L. A. Reyes, Regional Administrator
Mr. T. P. Johnson, Senior Resident Inspector - Farley

ENCLOSURE

Joseph M. Farley Nuclear Plant
15-Day Response to NRC Bulletin 2002-01
Reactor Pressure Vessel Head Degradation and
Reactor Coolant Pressure Boundary Integrity

Provided below is the Farley Nuclear Plant (FNP) 15-day response to the requested information contained in Nuclear Regulatory Commission (NRC) Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity," dated March 18, 2002, for Bulletin Item 1. The Bulletin's "Required Information" contained in Item 1 is shown in bold.

Bulletin Item 1.A

"provide the following: a summary of the reactor pressure vessel head inspection and maintenance programs that have been implemented at your plant . . ."

Response to Bulletin Item 1.A

At every refueling outage prior to cooldown (i.e., at approximately normal operating temperature and pressure) a general inspection for evidence of reactor coolant system (RCS) leakage is performed. This inspection includes examination of components external to the reflective insulation on the reactor pressure vessel (RPV) head. A more detailed inspection of the head area (but still external to the insulation) is performed after cooldown during head disassembly. Finally, a return-to-service inspection is performed at the end of the outage at approximately normal operating pressure. The startup inspection is performed in accordance with ASME Section XI requirements and specifically includes a visual examination of accessible RPV head components for any leakage or boron buildup. Any evidence of leakage is evaluated to identify and document the leakage path(s), the effects of the leakage and appropriate corrective actions.

In addition to these routine inspections, a special inspection of the RPV head was performed during the most recent refueling outage for each unit. Visual inspection of the RPV head penetrations and surrounding bare metal head surfaces was performed using remote video equipment inserted beneath the head insulation. This inspection was done in April 2001 for Unit 2 (refueling outage 2R14) and in October 2001 for Unit 1 (refueling outage 1R17). Although all nozzles were inspected, this effort did not achieve a full 100% inspection of the bare metal head surface on Unit 2, but it was sufficient to ensure that conditions did not exist which could lead to wastage similar to that experienced at Davis-Besse. A 100% bare metal inspection was achieved on Unit 1. On both units only minor deposits of boric acid residue were found, and no evidence of ongoing leakage or corrosion of external surfaces was seen. These examinations were recorded on videotape.

During operation, leakage is monitored as required by FNP Technical Specifications. Existing procedures allow for the identification of leakage at rates less than the Technical Specifications requirements. Results are evaluated, and where abnormal leakage is suspected, investigations are performed to identify potential sources.

Bulletin Item 1.B

"provide the following: an evaluation of the ability of your inspection and maintenance programs to identify degradation of the reactor pressure vessel head including, thinning, pitting, or other forms of degradation such as the degradation of the reactor pressure vessel head observed at Davis-Besse . . ."

Response to Bulletin Item 1.B

The inspection programs described in the response to Item 1.A would be effective at identifying any leakage from above the RPV head that could lead to degradation of the low alloy steel RPV head. If abnormal leakage is found, the FNP programs require that an evaluation be performed to identify and document the leakage path(s), the effects of the leakage, and any corrective actions. With regard to leakage from the penetration nozzle / RPV head interface, the special remote video inspections of the bare RPV head metal that were performed in 2001 showed no evidence of leakage. Videotapes from these inspections have been re-reviewed in light of the Davis-Besse experience. The FNP inspection program provides assurance that no external thinning, pitting, or other degradation of the RPV head such as was observed at Davis-Besse has occurred at either FNP unit.

Plans for future FNP inspections with the ability to identify RPV head degradation are discussed in the response to Item 1.D.

Bulletin Item 1.C

"provide the following: a description of any conditions identified (chemical deposits, head degradation) through the inspection and maintenance programs described in 1.A that could have led to degradation and the corrective actions taken to address such conditions . . ."

Response to Bulletin Item 1.C

The special inspections described in Item 1.A found that both the Unit 1 and Unit 2 RPV heads exhibited small amounts of dry crystalline boric acid residue consistent with previous, no longer active leaks from the conoseal joints above the head. However, nothing was found on the RPV head of either unit indicative of any leakage from the penetration nozzle / RPV head interface, nor did inspection of the bare metal surface of either head disclose any wastage or corrosion beyond minor surface staining. It was determined that these stains and small amounts of dry crystalline boric acid residue, which were left as found, did not obscure visual confirmation of the head metal condition and will not lead to future degradation of the head metal.

Bulletin Item 1.D

"provide the following: your schedule, plans, and basis for future inspections of the reactor pressure vessel head and penetration nozzles. This should include the inspection method(s), scope, frequency, qualification requirements, and acceptance criteria . . ."

Response to Bulletin Item 1.D

FNP will continue to perform routine inspections of the accessible areas of the reactor vessel head as described in response to Item 1.A at each refueling outage.

In addition, inspection of the Unit 2 RPV head and nozzles is planned for the next refueling outage in September 2002 (2R15). As described in our response to Bulletin 2001-01, FNP plans to perform this inspection on Unit 2 as part of the industry program in response to Generic Letter 97-01. The current plans are to perform volumetric inspections of all the penetration nozzles using ultrasonic testing (UT) methods and to perform a 100% bare metal visual inspection of the upper surface of the RPV head. The UT exams utilize techniques that cover the entire thickness of the penetration nozzles for detection of pressurized water stress corrosion cracking (PWSCC). The bare metal visual inspection of the RPV head will identify any thinning, pitting, or other degradation such as occurred at Davis-Besse. A finite element analysis of the interference fit between the RPV head and penetration nozzles is being performed to determine whether the interference fit would allow the passage of coolant if a through-wall defect exists. If the results of this analysis confirm that the interference fit allows coolant to pass through the annulus, then the bare metal visual inspection of the head will meet the requirements of a "qualified" inspection. These inspections (and appropriate corrective actions, if needed) will assure that there is no leakage through the penetration nozzles and no detrimental boron accumulation on the RPV head.

The scope and frequency of future bare metal visual or volumetric inspections will be determined based on the results of the upcoming Unit 2 inspection and on additional industry experience.

Bulletin Item 1.E

"provide the following: your conclusion regarding whether there is reasonable assurance that regulatory requirements are currently being met (see the Applicable Regulatory Requirements, above). This discussion should also explain your basis for concluding that the inspections discussed in response to Item 1.D will provide reasonable assurance that these regulatory requirements will continue to be met. Include the following specific information in this discussion:

(1) If your evaluation does not support the conclusion that there is reasonable assurance that regulatory requirements are being met, discuss your plans for plant shutdown and inspection.

(2) If your evaluation supports the conclusion that there is reasonable assurance that regulatory requirements are being met, provide your basis for concluding that all regulatory requirements discussed in the Applicable Regulatory Requirements section will continue to be met until the inspections are performed."

Response to Bulletin Item 1.E

SNC believes there is reasonable assurance that regulatory requirements are being met at FNP. As described in our response to Item 1.A, reactor vessel head inspections have been conducted at FNP during the most recent refueling outage for each unit.

RPV head pressure boundary leakage will be detected by the proposed inspection plan and appropriate corrective action will be implemented. FNP Technical Specifications require periodic monitoring of RCS leakage. RCS leakage detection systems, which are required by plant Technical Specifications, afford the ability to detect low levels of RCS leakage through a variety of independent means.

FNP has programs and procedures in place to facilitate boric acid corrosion control. Included are programs for ASME Section XI leakage and ASME Section XI bolted connections. The programs and procedures developed for FNP are intended to satisfy the requirements that are identified in the Applicable Regulatory Requirements section of this Bulletin. These programs provide reasonable assurance that the regulatory requirements are currently being met.

Future inspections at FNP Units 1 and 2 will continue to be performed in accordance with existing FNP programs and procedures. The need for additional visual or volumetric inspections will be based on the results of our upcoming Unit 2 exams as well as additional industry experience. Therefore, there is reasonable assurance that the regulatory requirements discussed in the Applicable Regulatory Requirements section of this Bulletin will continue to be met.