10 CFR 50.54(f)
NRCB 2003-02

Progress Energy

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U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23

SUMMARY OF REACTOR PRESSURE VESSEL LOWER HEAD INSPECTION IN ACCORDANCE WITH NRC BULLETIN 2003-02, "LEAKAGE FROM REACTOR PRESSURE VESSEL LOWER HEAD PENETRATIONS AND REACTOR COOLANT PRESSURE BOUNDARY INTEGRITY"

Ladies and Gentlemen:

On August 21, 2003, the NRC issued Bulletin 2003-02, "Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity." The required 90-day response to that bulletin was provided for H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2, by letter dated November 13, 2003. In that response, it was stated that inspection of the reactor pressure vessel (RPV) lower head would be conducted during the next refueling outage.

Inspection of the HBRSEP, Unit No. 2, RPV lower head was satisfactorily completed during Refueling Outage 22 (RO-22). The results of that inspection are provided in Attachment II to this letter. In accordance with NRC Bulletin 2003-02, the inspection results are being provided within 60 days of the completion of RO-22, which ended on May 28, 2004.

An Affirmation in accordance with 10 CFR 50.54(f) is provided in Attachment I to this letter.

If you have any questions concerning this matter, please contact Mr. C. T. Baucom at (843) 857-1253.

Sincerely,

J. F. Lucas
Manager – Support Services – Nuclear

CAC/cac

Progress Energy Carolinas, Inc.
Robinson Nuclear Plant
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A109

Attachments:

I. Affirmation
II. Summary of Reactor Pressure Vessel Lower Head Inspection

c: Dr. W. D. Travers, NRC, Region II
Mr. C. P. Patel, NRC
NRC Resident Inspector

AFFIRMATION

The information contained in letter RNP-RA/04-0089 is true and correct to the best of my information, knowledge, and belief; and the sources of my information are officers, employees, contractors, and agents of Progress Energy Carolinas, Inc., also known as Carolina Power and Light Company. I declare under penalty of perjury that the foregoing is true and correct.

Executed On: 22 July 2004

J. W. Moyer
Vice President, HBRSEP, Unit No. 2

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

SUMMARY OF REACTOR PRESSURE VESSEL LOWER HEAD INSPECTION

NRC REQUESTED INFORMATION:

NRC Bulletin 2003-02, Requested Information – Item (2):

(2) Within 60 days of plant restart following the next inspection of the [reactor pressure vessel] RPV lower head penetrations, the subject PWR addressees should submit to the NRC a summary of the inspections performed, the extent of the inspections, the methods used, a description of the as-found condition of the lower head, any findings of relevant indications of through-wall leakage, and a summary of the disposition of any findings of boric acid deposits and any corrective actions taken as a result of indications found.

RESPONSE:

The H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2, 90-day response to NRC Bulletin 2003-02, Item (1), was provided by letter dated November 13, 2003. That response stated the following:

Description of Planned RPV Lower Head Penetration Inspections

A bare-metal visual (BMV) examination of the RPV lower head penetrations is planned for the next refueling outage, which is scheduled to occur during April 2004. The examination will require removal of portions of the RPV bottom insulation as necessary to allow visual examination of the RPV bottom penetrations. If unforeseen circumstances prevent completion of the bare-metal visual exam, appropriate changes will be implemented, as necessary based on the lessons learned during this inspection, to facilitate a complete visual examination during the next scheduled refueling outage.

The examination procedure to be used for the BMV examination of the RPV lower head penetrations will be developed based on guidance contained in Electric Power Research Institute (EPRI) Report 1007842, "Visual Examination for Leakage of PWR Reactor Head Penetrations: Revision 2 of 1006296, Includes 2002 Inspection Results and MRP Inspection Guidance," and any additional relevant guidance that becomes available prior to the examination, as deemed appropriate. It is expected that documentation of the inspection will be collected and maintained consistent with ASME Code, Section XI, requirements. Inspection findings will be resolved consistent with the requirements of ASME Code, Section XI, and the HBRSEP, Unit No. 2, Boric Acid Corrosion Control Program and Technical Specifications.

The periodicity and scope of future inspections will be based on the results of this inspection and relevant regulatory and industry guidance.

Summary of the Inspections Performed, Extent of Inspections, and Methods Used

In accordance with the HBRSEP, Unit No. 2, 90-day response to NRC Bulletin 2003-02, a BMV inspection of the RPV lower head was completed during Refueling Outage 22 (RO-22) using Special Procedure (SP) - 1500, "Visual Examination of RPV Head and Vessel Bottom Penetration Nozzles," Revision 1. The inspection procedure was developed based on guidance contained in EPRI Report 1007842, "Visual Examination for Leakage of PWR Reactor Head Penetrations: Revision 2 of 1006296, Includes 2002 Inspection Results and MRP Inspection Guidance," and other relevant guidance.

The insulation on the RPV lower head was removed and remote visual inspection imaging equipment (a rover-based, remote-controlled camera) was used to inspect each of the fifty (50) lower head penetrations. The "as-found" inspection was conducted after insulation removal, but prior to cleaning the RPV lower head. A visual inspection of each penetration was performed and the results were summarized in the completed inspection procedure, SP-1500. An "as-left" inspection was also performed and documented in procedure SP-1500 to confirm the condition of the RPV lower head following cleaning.

Personnel performing the inspection were VT-2 qualified Level II and Level III visual examiners. The optical systems demonstrated a resolution of 0.105 inch (2.667 mm) lower-case character height under conditions similar to those for the actual inspection. The resolution requirements were qualified by demonstration, and the Authorized Nuclear Inservice Inspector (ANII) concurred with the demonstration. A Level III visual examiner certified the results of the examination.

Description of the As-Found Condition, Findings of Relevant Indications of Through-Wall Leakage, Disposition of Any Findings of Boric Acid Deposits, and Corrective Actions Taken as a Result of Indications Found

The RPV lower head inspection determined that the penetrations are acceptable in accordance with the acceptance criterion that no active leakage was present. Some rust and evidence of boric acid residue was noted. This residue was attributed to refueling cavity leakage that had occurred during previous refueling outages. The amount of rust was not considered abnormal based on the length of time in-service for the RPV and the known previous occurrences of refueling cavity leakage. No significant wastage of the RPV lower head was identified. Based on the results of the inspection, no specific corrective actions applicable to through-wall leakage were required. The RPV lower head was cleaned after the "as-found" inspection was completed, and an "as-left" inspection was conducted. Additionally, repairs to refueling cavity components were completed during RO-22 that have significantly reduced the refueling cavity leakage.