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July 24, 2008

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

Gentlemen:

In the Matter of	)	Docket No. 50-391
Tennessee Valley Authority	)	

WATTS BAR NUCLEAR PLANT (WBN) - UNIT 2 – RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING BULLETIN NO. 2003-02 (TAC NO. MD6713)

References:
1. NRC letter dated June 10, 2008, "Watts Bar Nuclear Plant – Unit 2 – Request for Additional Information Regarding Bulletin No. 2003-03 (TAC No. MD6713)"
2. TVA letter dated September 7, 2007, "Watts Bar Nuclear Plant, Unit 2 – Initial Responses to Bulletins and Generic Letters"

The purpose of this letter is to respond to the NRC request for additional information (RAI) provided in NRC letter dated June 10, 2008 (Reference 1) regarding Bulletin 2003-02. TVA's original response to the Bulletin was submitted September 7, 2007 (Reference 2). The enclosure provides the TVA response. There are no new regulatory commitments made in this letter.

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NRR

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 24th day of July, 2008.

If you have any questions, please contact me at (423) 365-2351.

Sincerely,

M. Bajestani

Masoud Bajestani
Watts Bar Unit 2 Vice President

Enclosure
cc (Enclosure)

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ENCLOSURE
TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT (WBN) – UNIT 2
RESPONSE TO REQUEST FOR
ADDITIONAL INFORMATION DATED JUNE 10, 2008

As stated in TVA's letter dated September 7, 2007 (Reference 2), to meet the requirements of Bulletin 2003-02, WBN Unit 2 will perform a VT-2 examination of the reactor pressure vessel (RPV) lower head penetrations during the first refueling outage. At initial startup, WBN Unit 2 will conform to the Corrosion Control Program. Unit 2 will perform a bare metal visual examination of the 58 RPV lower head penetrations using the same process as WBN Unit 1 each refueling outage until a change to the ASME Code or a regulatory action justifies a change in frequency. TVA will perform a baseline inspection prior to fuel load. This approach is reflected throughout the responses to the questions below:

1. **Provide the qualification requirements for the inspectors who will perform the VT-2 visual examinations.**

TVA RESPONSE:

TVA's field inspections are defined by procedure N-VT-17, "Visual Examination for Leakage of PWR Reactor Head Penetrations," which requires that examiners be certified VT-2 with experience in leak detection. This procedure also requires that personnel performing this examination be knowledgeable of the design of the equipment, proficient in operating the equipment, knowledgeable and aware of industry findings, and qualified in accordance with the requirements of TVA's program. Certification of examiners is controlled by TVA Inspection Services Organization IEP-200 procedure, titled "Qualification and Certification Requirements for TVA Nuclear Power Group Nondestructive Examination Personnel," which is based on American Society for Nondestructive Testing (ASNT) CP-189, "ASNT Standard for Qualification and Certification of Nondestructive Testing Personnel."

2. **State whether bare metal visual (BMV) examinations will be conducted on the circumference of all of the 58 RPV lower head penetrations during the first refueling outage at WBN-2.**

TVA RESPONSE:

TVA will perform BMV examinations of the 58 RPV lower head penetrations for each refueling outage at WBN Unit 2 until a change to the ASME Code or a regulatory action justifies a change in frequency. TVA's current inspection procedure, N-VT-17, "Visual Examination for Leakage of PWR Reactor Head Penetrations," requires that the extent of exam for a BMV include 100 percent of the RPV bare head surface and 360 degrees around each of the RPV closure and lower head penetrations. However, this procedure has an allowance that if 100 percent of the bare head surface is not accessible for examination, the inaccessible areas shall be documented including the degree and cause of the inaccessibility.

3. **Provide information addressing the type of the corrective action that will be taken if any evidence of general corrosion of the RPV lower head or any discoloration of the alloy 600 penetrations is identified during the BMV examinations.**

TVA RESPONSE:

TVA programs to address general corrosion and alloy 600 issues are defined by procedures Business Practice (BP) 257, "Integrated Material Issues Management Plan," and Standard Programs and Processes (SPP) 9.7, "Corrosion Control Program." Field inspections for these issues are dictated by Procedures N-VT-17, "Visual Examination for Leakage of PWR Reactor Head Penetrations," and N-VT-19, "Visual Inspection of Alloy 600/82/182 - Pressure Boundary Components." N-VT-17 is based on EPRI Report No. 1006296, "Visual Examination for Leakage of PWR Reactor Head Penetrations on Top of RPV Head," and NRC Bulletin 2003-02, "Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Boundary Integrity." N-VT-19 is based on Material Reliability Program 2003-039, "Recommendation for Inspection of Alloy 600/82/182 Pressure Boundary Components," and NRC Bulletin 2004-01, "Inspection of Alloy 82/182/600 Materials Used in the Fabrication of Pressurizer Penetrations and Steam Space Piping Connections at Pressurized-water Reactors."

Both BP-257 and SPP-9.7 require nonconforming findings to be placed into TVA's Corrective Action Program (CAP) to evaluate the leakage findings on a case-by-case basis. Under the CAP, the identified findings are evaluated as to cause or source of the leakage (utilizing industry guidance and/or previously identified industry resolutions to hardware conditions) which will result in corrective actions tailored to address the specific hardware issue. In addition, the CAP findings are periodically reviewed to identify potential trends that may be indicative of broader program issues.

TVA expects to find no adverse conditions from the baseline inspection prior to fuel load since the reactor coolant system has not been in operation resulting in no boron being present.

4. **Provide information regarding the type of cleaning that may be required to remove any corrosion products on the RPV lower head or on the alloy 600 penetrations.**

TVA RESPONSE:

As discussed in the response to Question 3 above, each condition identified during inspection will be evaluated on a case-by-case basis under TVA's CAP. Based on this approach, until a specific condition is identified it is difficult to provide specific information regarding cleaning and corrosion product removal techniques. Instead, it may be beneficial to discuss the resolution of a previous condition found during a Unit 1 inspection and submitted as part of the inspection results provided in Enclosure 3 of TVA's December 10, 2003 letter. In that letter the following was provided:

Corrective Action Program - Problem Evaluation Report (PER) 03-016599-000

Inspection of Surface Rust on the Unit 1 Reactor Vessel Lower Head

The subject PER documents the presence of rust on the surface of the reactor vessel lower head. This rust was photographed during the remote inspection that was performed on the bottom mounted penetrations. This rust was believed to be tightly adhering, light surface rust based on the photos and video taken during the inspection. A subsequent inspection was performed on October 12, 2003, by Modifications and Design Engineering personnel to determine the extent of the rust on the surface of the lower head.

Two areas, approximately 6 inches by 6 inches, were selected for cleaning and review. One of the two areas selected contained rust colorations consistent with the majority of the lower head, while the other area was selected because the rust colorations looked heavier in that location. The inspection involved wiping the surface with a damp cloth, removing the substance with a lightly wetted pad of Scotchbrite, and wiping the area a final time with a damp cloth. The two areas cleaned up with minimal effort and were wiped down to expose the surface of the head. The surface of the lower head was observed to be smooth after cleaning the two areas. The substance was mostly removed during the initial wipedown with the damp cloth. The substance on the lower head is believed to be a combination of light rust and what remains of an initial protective coating. Based upon the ease of removal of the substance, it is determined that there is very little rust on the vessel lower head itself. The substance left a brownish-black, thick residue on the cloth after wiping, which led to the conclusion that there was some of the initial protective coating present. Both areas contained only light rust, and these areas are considered to be representative of the condition on the lower head. This observation is consistent with the determination made during the inspection at the start of the outage. Therefore, no further corrective action will be required.

As can be seen from the above example, the corrective action for the Unit 1 identified condition was fairly simple to identify and implement. Similar corrective actions could be applied for Unit 2, if required. However, other conditions may be identified which may warrant more extensive corrective actions as required by engineering evaluation for each specific condition.

5. Provide information regarding the type of examination (i.e., direct or remote visual method using remotely controlled equipment) that will be used to perform the BMV examinations of each RPV lower head penetration.

TVA RESPONSE:

As is the case for Unit 1, TVA's BMV examination of the lower head bottom mounting instruments will be performed either directly or with remote equipment. The visual examination process will utilize enhanced methodology. The direct inspection method used by TVA has VT-3 resolution capabilities, and the conditions identified during the examination will be documented in a written report supplemented with photographic images. TVA's remote inspections consist of outfitting remote equipment with high

resolution color cameras to examine the RPV lower head penetrations. Camera resolution will be established for VT-3 sensitivity.

The remote examinations will be video recorded for archival and offline review. The penetration annulus area and the head surface in the area of the penetrations will be examined and digitally recorded.

TVA's examination scan plan ensures examinations are performed in a logical sequence, while minimizing radiation exposure (after operation) and validating positional accuracy. During the examination of the 58 lower head penetrations, the head area adjacent to each penetration will also be visually examined for boron deposits in future inspections.

Any areas deemed suspect during the initial remote VT examination of the penetrations will be further examined by gaining access and performing a direct visual examination. In these cases, an evaluation will be performed to determine the physical appearance and origin of the suspect area.

6. Provide the type of documentation (e.g., written report, video record, photographs) that will be generated to record the BMV examinations of the RPV lower head penetrations.

TVA RESPONSE:

The examinations will be documented in a detailed report and will include the results of each penetration examined including any inaccessible areas and the degree and cause of the inaccessibility.

Video and/or photographic images to support the examination findings will supplement the report. TVA stores documentation (i.e., detailed reports, video, and/or photographic images, etc.) of the results of these examinations to ensure that the results are retrievable to facilitate reviews during future examinations.

7. Describe any design or maintenance improvements that TVA has evaluated to improve the performance of future inspections after operation?

TVA RESPONSE:

On Unit 1 to date, 100 percent BMV examinations of the RPV lower head penetrations have been successfully completed. Although TVA is always searching for technique improvements, particularly where radiological dose can be lowered, there have been no design or maintenance improvements identified as of yet for this activity. Any future lessons learned will benefit both units.