STP Nuclear Operating Company
South Texas Project Electric Generating Station PO Box 289 Wadsworth, Texas 77483

February 13, 2003
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STI: 31542537
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U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
Response to NRC Request for Additional Information
on Bulletin 2002-01,
"Reactor Pressure Vessel Head Degradation
and Reactor Coolant Pressure Boundary Integrity"

References:

1. Letter from J. J. Sheppard, STPNOC, to NRC Document Control Desk, dated April 2, 2002, Response to Bulletin 2002-01 (NOC-AE-02001290)
2. Letter from J. J. Sheppard, STPNOC, to NRC Document Control Desk, dated May 16, 2002, 60 Day Response to NRC Bulletin 2002-01 (NOC-AE-02001317)
3. Letter from Mohan C. Thadani, NRC, to William T. Cottle, STPNOC, dated November 25, 2002, Request for Additional Information Re: Bulletin 2002-01 (AE-NOC-02001000)

In accordance with 10CFR50.54(f), attached is the STP Nuclear Operating Company (STPNOC) response to the U.S. Nuclear Regulatory Commission (NRC) November 25, 2002 request for additional information (RAI) regarding Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity" (Reference 3).

STPNOC coordinated preparation of this response with the other participants in the Strategic Teaming and Resource Sharing (STARS) group.

There are no commitments in this letter.

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If you should have any questions regarding this submittal, please contact me at 361-972-7902 or Mr. Michael Lashley at 361-972-7523.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on: February 13, 2003

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Vice President,
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AWH
Attachment:
Response to NRC RAI on Bulletin 2002-01

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Response to NRC Request for Additional Information on Bulletin 2002-01

STPNOC's response to the NRC letter dated November 25, 2002 and entitled *South Texas Project, Units 1 and 2 - Request for Additional Information Re: Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation And Reactor Coolant Pressure Boundary Integrity," 60-day Response (TAC NOS. MB4580 and MB4581)* is provided below. Note that the questions from the letter are provided in bold and STPNOC's responses follow.

STPNOC fully complies with American Society of Mechanical Engineers (ASME) Section XI requirements, as provided for in 10 CFR 50.55a. It is assumed that a review of these requirements is not the subject for the Request for Additional Information (RAI) and is not included here, unless specifically noted. For example, question one inquired about "*...examination of* Alloy 600 pressure boundary material and *dissimilar metal Alloy 82/182 welds...*" (emphasis added). In this case, STP's response does not mention the ASME Section XI Code requirements of Examination Category B-F, "Pressure Retaining Dissimilar Metal Welds". On the other hand, where ASME Code-mandated examinations are deemed pertinent to the discussion of boric acid leakage identification, such as VT-2 examinations, mention is made for clarity and completeness of response.

STPNOC's responses with regard to Alloy 600 do not address steam generator tubes. The steam generators at both units have been replaced with steam generators that have Alloy 690 tubes.

1. **Provide detailed information on, and the technical basis for, the inspection techniques, scope, extent of coverage, and frequency of inspections, personnel qualifications, and degree of insulation removal for examination of Alloy 600 pressure boundary material and dissimilar metal Alloy 82/182 welds and connections in the reactor coolant pressure boundary (RCPB). Include specific discussion of inspection of locations where reactor coolant leaks have the potential to come in contact with and degrade the subject material (e.g., reactor pressure vessel (RPV) bottom head).**

Response:

Table 1 and Table 2 (attached) provide the information for Alloy 600 and Alloy 82/182 inspections, respectively. Table 3 addresses other connections to the RCPB (e.g., carbon steel).

The majority of the reactor coolant system is fabricated with corrosion-resistant stainless steel. If evidence of leakage is found, the source of the leakage is determined and evaluated for impacts on the structural integrity. Requirements for the inspection of specific components (e.g. reactor coolant pump bolts, RPV bolts, pressurizer, and steam generator) are identified in procedure 0PGP03-ZE-0033 (RCS Pressure Boundary Inspection for Boric Acid Leaks).

The inspection scope and technique are derived from the inspection practices required by the ASME Section XI code and industry practices. The reliance on visual methods is based on industry success with this technique as endorsed by the EPRI Boric Acid Corrosion Guidebook (#1000975)(section 6.4.3). The scope of inspection is directly based on the ASME Class One components, with an emphasis on those components constructed of materials that can be damaged by leakage.

When the Boric Acid program was initiated as a response to Generic Letter 88-05, no specific technical basis for the scope, frequency or inspection technique was generated. The success in finding small leaks and in evaluating the leakage location and potential damage path have shown those engineering judgements to be sound if the activities are performed with high standards similar to the ASME code requirements.

2. **Provide the technical basis for determining whether or not insulation is removed to examine all locations where conditions exist that could cause high concentrations of boric acid on pressure boundary surfaces or locations that are susceptible to primary water stress corrosion cracking (Alloy 600 base metal and dissimilar metal Alloy 82/182 welds). Identify the type of insulation for each component examined, as well as any limitations to removal of insulation. Also include in your response actions involving removal of insulation required by your procedures to identify the source of leakage when relevant conditions (e.g., rust stains, boric acid stains, or boric acid deposits) are found.**

Response:

When the Boric Acid program was initiated, it was thought that locations where high concentrations of boric acid could occur were limited to the vicinity of bolted joints in the reactor coolant pressure boundary. These locations and the adjacent areas where residue could impact carbon steel were specifically evaluated and incorporated into the inspection scope. In all cases, these locations were accessible or could be made sufficiently accessible by the displacement of existing insulation. Based on this understanding, no further evaluation of insulation removal has been conducted.

Other than the reactor head, all locations susceptible to primary water stress corrosion cracking are welds. These locations were covered already by the Inservice Inspection program scope. Their evaluation from the exterior was performed as allowed by Section XI inspection requirements. Since these criteria for both types of leakage inspection were found to be effective by the industry as shown by leak detection both at South Texas Project and at other sites, no further technical evaluation of the need for insulation removal was performed.

No specific procedural steps for leak characterization or investigation have been specified at the station. Proper application of the STP Corrective Action Program would drive the need for insulation removal to accurately determine the source of the leakage in order to properly characterize the operational impact.

Boric acid leakage can travel down sloped pipes or through insulation. When there is doubt as to a leak's origin, the evidence (i.e., accumulation of boric acid crystals) must be preserved until an evaluation has been performed to determine the source, pathway, amount, whether any low alloy/carbon steel components may be affected, and suitability of the component for continued service. This requirement is procedurally provided in 0PGP03-ZE-0033 (RCS Pressure Boundary Inspection for Boric Acid Leaks). This requirement does not preclude the immediate installation of drip bags, diverting curbs, or splash pans to mitigate the leak's impact on the surrounding environment. Prompt use of these measures is necessary to maintain plant cleanliness, personnel safety, and equipment reliability.

When leakage indications are found, then the impact of that leakage must be evaluated per the program. To evaluate the impact the source and leakage path must be identified, which generally requires the removal of insulation.

The leakage is documented in a Corrective Action Program Condition Report. Each Condition Report receives a supervisory review and appropriate consideration for operability.

The types of insulation are described in Tables 1, 2, and 3.

The primary considerations with regard to insulation removal are contamination control and radiation exposure. A secondary limitation is access. Much of the insulation would require scaffold construction to support full removal.

3. **Describe the technical basis for the extent and frequency of walkdowns and the method for evaluating the potential for leakage in inaccessible areas. In addition, describe the degree of inaccessibility, and identify any leakage detection systems that are being used to detect potential leakage from components in inaccessible areas.**

Response:

The program involves looking for boric acid leakage indications in areas that are reasonably accessible or in areas surrounding components where boric acid and residue could collect. Because of the high radiation levels, inside the secondary shield wall is considered inaccessible while the reactor is critical and no RCS piping, with the exception of the pressurizer and the connections to it, can be inspected. In the event that leakage is postulated due to other indications (as listed below), a remote visual inspection (robotic) may be performed to evaluate the extent and attempt to determine the source. STPNOC experience has shown that the limitations of the robot and the large number of structural steel members and reactor containment building components inside the bioshield do not allow for an effective remote inspection while at power. Leakage in areas not directly accessible when the reactor is shutdown will be evident from boric acid accumulation at insulation seams and piping penetrations.

The frequency of walkdowns is a balance between the need for thorough inspections and the inaccessibility of all areas inside the secondary shield wall while operating at significant power levels. For shutdown conditions, boric acid walkdowns are required to be performed if the duration of the outage is expected to be 12 hours or more and there has been at least 90 days at operating pressure and temperature since the last inspection. If the shutdown is expected to last at least 72 hours, then the areas below the mirror insulation at the reactor closure studs and the bottom of the reactor vessel are also inspected. The inspection may also be performed more frequently (when the plant is shutdown) based on management directive. There is no documented basis for the 90-day criterion.

Containment leak detection systems are in place to monitor unidentified RCS leakage at levels of 1 gpm or greater. These systems include:

- Containment radiation monitors
- Containment sump monitors
- Containment Particulate, Iodine, and Gas monitors

Leakage is evaluated as described above, and corrective actions are performed within established site programs and procedures based on the severity of the conditions identified. Visual identification of conditions is the basis for the current program.

RCS inventory balance is normally performed every day by Operations to document any unidentified leakage and is required by Technical Specifications to be performed every 72 hours. This inventory balance provides values for both identified and unidentified leakage. Changes in either of these leak rates are evaluated via a condition report if an adverse trend is identified.

4. **Describe the evaluations that would be conducted upon discovery of leakage from mechanical joints (e.g., bolted connections) to demonstrate that continued operation with the observed leakage is acceptable. Also describe the acceptance criteria that were established to make such a determination. Provide the technical basis used to establish the acceptance criteria.**

<u>Response:</u>

If the leakage could not be stopped and operation were to continue, the area would be cleaned to remove as much of the boric acid as possible. An appropriate engineering evaluation that includes the effects over the allowed time frame would be required consistent with GL 91-18 guidance for operable but degraded conditions.

The station has not established any specific leak rate acceptance criteria. Each case is evaluated based on the potential for adversely affecting nearby components. The evaluation considers the size of the leak, potential for continued degradation, and impact on adjacent components. Appropriate action would be taken to protect the adjacent equipment to minimize the consequences of the leakage. The condition would be monitored as described below.

In addition,

a. **if observed leakage is determined to be acceptable for continued operation, describe what inspection/monitoring actions are taken to trend/evaluate changes in leakage, or**

Response:

Evidence of leakage through mechanical connections may be managed. Use of existing leakage monitoring methods would be continued. These include sump monitoring (level and rate of pumpdown), radiation monitoring (particulate and noble gas) and direct visual or camera observation of the leakage location.

b. **if observed leakage is not determined to be acceptable, describe what corrective actions are taken to address the leakage.**

Response:

STPNOC would perform a risk assessment to determine if the leak could be safely repaired with the unit on-line. If the leak cannot be safely repaired on-line, the plant would proceed with an orderly shutdown to a configuration where the leak could be repaired.

Corrective action is performed per plant procedures. For components governed by ASME Code, the requirements of ASME Section XI are followed as part of plant procedures, unless relief to implement another alternative is approved by the NRC. Options include repair, replacement, and/or modification of the leaking component. For components not governed by ASME Code, a similar process (except for the need for an NRC-approved relief request) would be followed using plant procedures and the applicable standards.

5. **Explain the capabilities of your program to detect the low levels of reactor coolant pressure boundary leakage that may result from through-wall cracking in the bottom reactor pressure vessel head incore instrumentation nozzles. Low levels of leakage may call into question reliance on visual detection techniques or installed leakage detection instrumentation, but has the potential for causing boric acid corrosion. The NRC has had a concern with the bottom reactor pressure vessel head incore instrumentation nozzles because of the high consequences associated with loss of integrity of the bottom head nozzles. Describe how your program would evaluate evidence of possible leakage in this instance. In addition, explain how your program addresses leakage that may impact components that are in the leak path.**

Response:

The visual inspection performed each refueling outage has been demonstrated to detect 10^{-6} gpm leakage if the bare head is viewed (Ref. MRP-75). It is extrapolated that the same leakage rate would also be detectable on the bottom of the reactor vessel since the technique is the same and the viewing conditions are better than the head configuration. In addition, 10^{-3} gpm leakage will produce 500 cu. in. of boric acid over a cycle (Ref. MRP-75). This amount of boric acid is well above (by a factor of 100) the amount of boric acid consistently detected by visual inspection. The insulation on the RPV bottom head was designed to allow relatively easy access to view the bottom-mounted instrumentation penetrations and any evidence of leakage would be readily detected. Given the detectability, any deposits are investigated and evaluated. This evaluation includes structural integrity due to wastage. Based on the above capability, leakage would be detected long before there would be significant effects on the vessel bottom. In addition, for this location, the boric acid would be directed away from the carbon steel by the arrangement of the vessel and associated BMI tubing.

With respect to the RPV bottom head, leakage paths and leakage effects are specifically required to be evaluated. The Condition reporting process will ensure that work is performed if needed and evaluations will be retained. Work orders are screened by an Senior Reactor Operator to ensure evaluations are completed at the earliest opportunity. The CR is also reviewed by a supervisor who evaluates the same potential impact.

STP has had several experiences where leakage at approximately .05 gpm has been noted by radiation monitors. Significant investigation was required to pinpoint the location in each instance.

6. **Explain the capabilities of your program to detect the low levels of reactor coolant pressure boundary leakage that may result from through-wall cracking in certain components and configurations for other small diameter nozzles. Low levels of leakage may call into question reliance on visual detection techniques or installed leakage detection instrumentation, but has the potential for causing boric acid corrosion. Describe how your program would evaluate evidence of possible leakage in this instance. In addition, explain how your program addresses leakage that may impact components that are in the leak path.**

Response:

Borated water systems readily leave evidence of leakage for even very small leak rates. Because of the high pressure of the RCS when at power, very small leaks tend to find a release path around the insulation. The boric acid crystals are then identified during subsequent examinations or by station personnel as a part of normal walkdowns, containment entry inspections, etc. Visual examination techniques have proven effective in detecting boric acid leakage.

Given the limited number of ASME Class 1 carbon steel components installed at STP, STPNOC believes that the scope and frequency of visual inspections will adequately detect low levels of leakage before significant wastage is able to occur.

In addition to visual examinations during walkdowns, refueling outages and shutdowns, the detection methods described in the response to Question 3 complement the Boric Acid Corrosion Prevention program during operating cycles to aid in the identification of potential small primary leaks.

If any one or more of the detection methods were to identify an abnormal condition potentially indicating a primary coolant leak, Systems Engineering, as well as Plant Management, would be notified of the results. An initial assessment would be performed by Engineering utilizing data trends and comparisons to qualify the potential significance of the result. A Condition Report would be initiated. An at-power containment walkdown can be performed if this assessment determines that it is warranted.

When found, evidence is thoroughly evaluated. Leakage is tracked to its source and any components that may be impacted by that leakage are inspected and evaluated as necessary. The run-off path and surrounding area are examined. The procedure requires a careful cleaning of any affected component and an evaluation of the extent the component has been affected. Insulation is removed if necessary to perform this evaluation. The procedure identifies that measurements of wall thickness, diameter, localized corrosion depths, etc. related to the affected area may be required to determine the extent of the degradation and its potential impact on component operability and structural integrity.

7. **Explain how any aspects of your program (e.g., insulation removal, inaccessible areas, low levels of leakage, evaluation of relevant conditions) make use of susceptibility models or consequence models.**

Response:

None of the aspects of the STPNOC Boric Acid Corrosion Control program make use of formal susceptibility or consequence models.

8. **Provide a summary of recommendations made by your reactor vendor on visual inspections of nozzles with Alloy 600/82/182 material, actions you have taken or plan to take regarding vendor recommendations, and the basis for any recommendations that are not followed.**

Response:

Westinghouse has made no recommendations on visual inspections of nozzles with Alloy 600/82/182 material.

9. Provide the basis for concluding that the inspections and evaluations described in your responses to the above questions comply with your plant Technical Specifications and Title 10 of the Code of Federal Regulations (10 CFR), Section 50.55(a), which incorporates Section XI of the American Society of Mechanical Engineers (ASME) Code by reference. Specifically, address how your boric acid corrosion control program complies with ASME Section XI, paragraph IWA-5250 (b) on corrective actions. Include a description of the procedures used to implement the corrective actions.

Response:

STPNOC concluded that STP Units 1 and 2 are in compliance with all regulatory requirements in its initial response to Bulletin 2002-01 (NOC-AE-02001290, dated April 2, 2002). STPNOC still concludes that both units have complied with the Technical Specifications and 10CFR50.55a, as described below.

Plant Technical Specifications:

The limits for STP reactor coolant pressure boundary leakage are provided in Technical Specification 3.4.6.2, and are stated in terms of the amount of leakage, i.e., no pressure boundary leakage, 1 gallon per minute for unidentified leakage, and 10 gpm for identified leakage from the reactor coolant system. Industry experience indicates that most leaks from reactor coolant system Alloy 600 penetrations have been well below the sensitivity of on-line leakage detection systems. STP has evaluated this condition and has determined that STP's inspection and maintenance processes are adequate, as described earlier in this response. If leakage or unacceptable indications are found, the defects are repaired before startup. If measurable leakage is detected by the on-line leak detection systems, the leak is evaluated per the Technical Specifications, and the plant will be shut down if required. Upon detection and identification of a leak, corrective actions are taken to restore reactor coolant pressure boundary integrity. STP continues to meet the requirements of this Technical Specification.

Inspection Requirements (10 CFR 50.55a and ASME Section XI):

The Bulletin describes the requirements for inspection in accordance with the ASME Code, detection of leakage from insulated components, and the acceptance standards if through-wall leakage is detected. STP has complied with the inspection requirements for insulated components as part of the STP ISI program.

Because the boric acid corrosion program procedure does not supply specifics of leak evaluation and determination of acceptability of any conditions that are found, the limitations of IWA 5250(b) are not covered. However, the associated condition reporting program (0PGP03ZX0002) and the station's work control (0PGP03ZA0090) and Section XI repair and replacement program (0PGP03ZE0027) ensure that the corrosion limits contained in that section are taken into account in the dispostion for the associated components.

Table 1: Alloy 600

Component	Inspection Techniques	Personnel Qualifications	Extent of Coverage	Frequency	Degree of Insulation Removal/Insulation Type	Corrective Action
BMI tubes	Visual	All inspectors are selected and evaluated by the NSSS section supervisor. A period of "internship" is used to ensure understanding of the areas and techniques for proper coverage. Although it is not a programmatic requirement, the inspectors are also VT-2 qualified.	A local visual check of the exterior of the tubing is performed. A sufficient portion of each tube is viewed to ensure that any leakage is detected. In addition, an observation of the area (including the insulation below) is made for signs of leakage or boric acid residue. Finally, a check is made for potential impact on adjoining carbon steel components or supports.	Each boric acid walkdown	Insulation at the BMI tubes is designed for visual access and at least two panels are removed for each inspection. The insulation is composed of reflective (mirror) blocks that loosely conform to the lower vessel shape.	A condition report is generated. Since boric acid residue may not pinpoint the source of the leak, further investigation is performed. Corrective action to either plug or replace the tubing would restore the pressure boundary.
	ASME Section XI Inservice Pressure test	Personnel are certified in accordance with Section XI IWA 2300 and Code Case N546	This tubing is included in the ASME Class One components that are inspected per pressure test procedure 0PSP15-RC-0001.	At the end of each refueling outage	Same as above	Same as above

Table 2: Alloy 82/182

Component	Inspection Techniques	Personnel Qualifications	Extent of Coverage	Frequency	Degree of Insulation Removal/Insulation Type	Corrective Action
RCS loop piping to RPV	visual inspection	All visual inspectors are selected and evaluated by the NSSS section supervisor. A period of "internship" is used to ensure understanding of the areas and techniques for proper coverage. Although it is not a programmatic requirement, the inspectors are also VT-2 qualified.	The visual inspection is performed outside of the mirror insulation around the circumference of all eight pipes from the primary shield wall interior to the enclosure around the vessel.	Refuel	Loop-to-vessel insulation is not removed except as required to support the ISI UT. Evidence of boric acid is expected to manifest outside the pad and flashing insulation over time. The insulation is composed of Nukon blankets inside of either a stainless steel jacket or a stainless steel mesh.	Any signs of boric acid residue would be investigated by initially removing sufficient insulation for a bare pipe inspection. If required, further examinations would be conducted. Repair or replacement of the leak location would be performed prior to power operation.
	UT of selected welds in accordance with the Risk-informed ISI Program.	The ultrasonic inspectors performing the exterior volumetric inspections are qualified in accordance with Sec. XI IWA-2300	Selected welds are examined in accordance with the Risk-Informed ISI Program In the event that expansion in scope is required, the additional welds are inspected in the same manner.	Per ISI Program	No insulation removal is required since the inspection is performed from the interior surface.	Any relevant condition is documented and evaluated in accordance with station procedures and ASME code requirements.
	ASME Section XI Inservice Pressure test	Personnel are certified in accordance with Section XI IWA 2300 and Code Case N546	This piping is included in the ASME Class One components that are inspected per pressure test procedure 0PSP15-RC-0001	At the end of each refueling outage	Loop-to-pressurizer insulation is not removed. Evidence of boric acid is expected to manifest outside the pad and flashing insulation over time.	Same as above

Component	Inspection Techniques	Personnel Qualifications	Extent of Coverage	Frequency	Degree of Insulation Removal/Insulation Type	Corrective Action
Surge line nozzle, spray line nozzle, and safety and relief valve nozzle piping to pressurizer	Verify the absence of wetted lagging or boric acid residue during any accessible walkdown.	All visual inspectors are selected and evaluated by the NSSS section supervisor. A period of "internship" is used to ensure understanding of the areas and techniques for proper coverage. Although it is not a programmatic requirement, the inspectors are also VT-2 qualified.	The visual inspection is performed outside of the mirror insulation around the entire circumference and length of the pressurizer.	During any accessible walkdown.	Loop-to-pressurizer insulation is not removed except as required to support the ISI UT. Evidence of boric acid is expected to manifest outside the pad and flashing insulation over time. The insulation is composed of Nukon blankets inside of either a stainless steel jacket or a stainless steel mesh.	Any signs of boric acid residue are investigated by initially removing sufficient insulation for a bare pipe inspection. If required, further examinations are conducted. Repair or replacement of the leak location is performed prior to power operation.
	A representative sample of these locations are UT inspected in accordance with Risk-Informed ISI Program.	The ultrasonic inspectors performing the exterior volumetric inspections are qualified in accordance with Sec. XI, IWA-2300	In accordance with the Risk-Informed ISI Program. As above, the scope is expanded as necessary based on the inspection results.	Per ISI Program	Insulation is removed as necessary to conduct this type of inspection.	Same as above
	ASME Section XI Inservice Pressure test	Personnel are certified in accordance with Section XI IWA 2300 and Code Case N546	This piping is included in the ASME Class One components that are inspected per pressure test procedure 0PSP15-RC-0001	At the end of each refueling outage	No insulation is removed.	Same as above

Table 3: Other RCPB Connections

Component	Inspection Techniques	Personnel Qualifications	Extent of Coverage	Frequency	Degree of Insulation Removal/Insulation Type	Corrective Action
All carbon steel components at possible leakage locations and all carbon steel sub-components on valves that are part of RCPB The valves are specified by valve number but the major components are listed in a broad description of the areas to be covered.	Visual	All inspectors are selected and evaluated by the NSSS section supervisor. A period of "internship" is used to ensure understanding of the areas and techniques for proper coverage. Although it is not a programmatic requirement, the inspectors are also VT-2 qualified.	All joints adjacent to RCPB carbon steel are inspected or the surrounding insulation is checked for signs of wetting. Inspectors also check for indications of leakage from packing and gland leakoff as well as flow orifice and other bolted connection points since boric acid on any carbon steel component could lead to significant damage. The carbon steel supports for the RCPB components are also checked such as the pressurizer skirt, and the pressurizer and steam generator manways, the RCP upper head and seal package bolting.	Every Boric Acid walkdown	No insulation is removed. Boric acid residue has been found to show up quickly whenever leakage is present. The insulation is composed of Nukon blankets inside of either a stainless steel jacket or a stainless steel mesh.	Where leakage is found a written report or reference to previous reports is required. In the event that repair is not performed, it is confirmed that no RCPB integrity issues exist, and that no significant damage will occur prior to the leak being repaired

Component	Inspection Techniques	Personnel Qualifications	Extent of Coverage	Frequency	Degree of Insulation Removal/Insulation Type	Corrective Action
Reactor vessel sides and bottom surfaces	Visual	Same as above.	The bottom of the reactor vessel carbon steel surface is visible through inspection openings in the insulation. The sides of the reactor vessel are not visible for most of their length and coverage consists of a check for any residue that is visible along the bottom of the vessel, on the tubing or on the insulation below. In contrast to other designs, the STP cavity floor is directly connected to the vessel flange such that no gap provides a potential leakage path during refueling operations.			
	ASME Section XI Inservice Pressure test	Personnel are certified in accordance with Section XI IWA 2300 and Code Case N546	This piping is included in the ASME Class One components that are inspected per pressure test procedure 0PSP15-RC-0001	At the end of each refueling outage	Same as above	Same as above