

PMSTPCOL PEmails

From: Tai, Tom
Sent: Thursday, June 11, 2009 10:33 AM
To: John Price (jeprice@stpegs.com)
Cc: STPCOL
Subject: Draft RAI 2899 for Chapter 3.9.6
Attachments: RAI 2899 03.09.06-xx.doc

John,

Please review the attached RAI (03.09.06-xx) for Chapter 3.9.6. If you need a conference call to clarify the requested information, please contact me. If a conference call is not needed, please send me an email and I will continue the formal process of issuing the RAI to STPNOC.

Regards

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Request for Additional Information No. 2899 Revision 2

South Texas Project Units 3 and 4
South Texas Project Nuclear Operating Co
Docket No. 52-012 and 52-013

SRP Section: 03.09.06 - Functional Design Qualification and Inservice Testing Programs for Pumps,
Valves, and Dynamic Restraints
Application Section: 3.9.6

QUESTIONS for Component Integrity, Performance, and Testing Branch 2 (ESBWR/ABWR Projects)
(CIB2)

03.09.06-***

STP Units 3 & 4 COL FSAR Section 3.9, "Mechanical Systems and Components," incorporates by reference this section in the ABWR DCD with departures and supplemental information. ABWR DCD Tier 2, Subsection 3.9.3.2, "Pump and Valve Operability Assurance," describes operability assurance of active ASME Code Section III pumps and valves. For example, ABWR DCD Tier 2, Subsection 3.9.3.2 states that safety-related valves and pumps are qualified by testing and analysis and by satisfying the stress and deformation criteria at the critical locations within the pumps and valves. ABWR DCD Tier 2, Subsection 3.9.3.4, "Component Supports," includes provisions for design specifications applicable to snubbers. The subsections in ABWR DCD Tier 2, Section 3.9.6 include general provisions for the design and qualification of pumps and valves. For example, ABWR DCD Tier 2, Subsection 3.9.6.1, "Testing of Safety-Related Pumps," states that the COL applicant will establish design and qualification requirements and will provide acceptance criteria for these requirements. The NRC staff requests that the STP COL applicant describe the implementation of the functional design and qualification process specified in the ABWR DCD for pumps, valves, and dynamic restraints to be used at STP Units 3 & 4. As discussed in Paragraph C.III.3.9.6.1 in Regulatory Guide (RG) 1.206 for equipment that do not have their functional design and qualification process specified in the ABWR DCD, provide the following information or reference these provisions in the ABWR DCD: (1) describe the provisions in the design of safety-related pumps, valves, and piping that allow testing of pumps and valves at the maximum flow rates specified in the plant accident analyses; (2) describe the provisions in the functional design and qualification of each safety-related pump and valve that demonstrate the capacity of the pumps and valves to perform their intended functions for a full range of system differential pressures and flows, ambient temperatures, and available voltages (as applicable) from normal operating to design-basis conditions; (3) verify that the qualification program for safety-related valves includes testing and analyses that demonstrate these valves do not experience any leakage, or increase in leakage, from their loading; (4) describe the provisions in the functional design and qualification of dynamic restraints in safety-related systems and access for performing inservice testing (IST) program activities that comply with the requirements in the latest edition and addenda of the ASME OM Code incorporated by reference in 10 CFR 50.55a on the date 12 months before the date for initial fuel load; and (5) give

particular attention to flow-induced loading in functional design and qualification to incorporate degraded flow conditions such as those that might be encountered by the presence of debris, impurities, and contaminants in the fluid system (e.g., containment sump pump recirculating water with debris). As part of this information, STP is requested to discuss the incorporation of lessons learned from nuclear power plant operating experience in the functional design and qualification of plant components, such as provided in ASME Standard QME-1-2007, "Qualification of Active Mechanical Equipment Used in Nuclear Power Plants." Further, the STP COL applicant is requested to discuss the availability of design and procurement specifications for NRC on-site review to demonstrate the implementation of the ABWR functional design and qualification process for pumps, valves, and dynamic restraints to be used at STP Units 3 & 4.

03.09.06-***

ABWR DCD Tier 2, Section 3.9.6, "Testing of Pumps and Valves," states that inservice testing of safety-related pumps and valves will be performed in accordance with the requirements of ASME/ANSI OMa-1988 Addenda to ASME/ANSI OM-1987, Parts 1, 6, and 10. This section also states that the reason for each code defined testing exception or justification for each code exemption requested is noted in Table 3.9-8, "Inservice Testing Safety-Related Pumps and Valves," for the affected pump or valve. The NRC regulations in 10 CFR 50.55a(f)(4)(i) and (g)(4)(i) require that the inservice testing and inspection programs during the initial 120-month interval comply with the requirements in the latest edition and addenda of the Code incorporated by reference in the regulations on the date 12 months before the date scheduled for initial loading of fuel under a combined license under 10 CFR Part 52 (or the optional ASME Code cases listed in the applicable regulatory guides), subject to the limitations and modifications listed in 10 CFR 50.55a of the NRC regulations. The STP COL applicant is requested to specify the edition and addenda of the ASME OM Code that is the basis for fully describing the IST Program in support of receiving a COL for STP Units 3 & 4. The STP COL applicant is also requested to indicate those instances where the applicable OM Code will not be satisfied, and to provide justification for relief from those Code requirements. The STP COL applicant is requested to justify any "code exemption" (as indicated in the ABWR DCD) intended for STP Units 3 & 4. The STP COL applicant is requested to provide appropriate references to the OM Code edition and addenda in describing the IST and MOV Testing programs for STP Units 3 & 4 outlined in ABWR DCD Tier 2, Section 3.9.6 and Table 3.9-8. In addition, the applicant is requested to discuss the planned use of any code cases and their implementation consistent with RG 1.192, "Operation and Maintenance Code Case Acceptability, ASME OM Code," and any other alternatives to the OM Code, and their justification.

03.09.06-***

ABWR DCD Tier 2, Section 3.9.6 and its subsections refer to numerous actions by the "COL applicant" related to the design and qualification, preservice testing, and IST programs for pumps and valves. RG 1.206 provides guidance for information to fully describe the IST program for pumps, valves, and dynamic

restraints, and the motor-operated valve (MOV) Testing program. The STP COL applicant is requested to discuss its implementation of the COL applicant actions indicated in the ABWR DCD to fully describe the IST and MOV Testing operational programs in support of its request for a COL for STP Units 3 & 4. As part of fully describing these programs, the STP COL applicant is requested to specify the categorization of pumps, valves, and dynamic restraints in STP Units 3 & 4 as Tier 1, Tier 2*, or Tier 2 components, as appropriate.

03.09.06-***

ABWR DCD Tier 2, Subsection 3.9.6.1 refers to Table 3.9-8, "Inservice Testing Safety-Related Pumps and Valves," for test parameters for inservice testing of pumps with the criteria limits specified in the ASME Code. Note (b) in Table 3.9-8 lists speed, discharge pressure, inlet pressure, flow rate, peak-to-peak vibration displacement, and peak vibration velocity as pump test parameters. RG 1.206 provides guidance for a COL applicant to fully describe the IST Program for pumps. The NRC staff requests that the STP COL applicant describe (1) the methods for establishing and measuring the reference values and IST values for the pump parameters, including instrumentation range and accuracy; (2) the test plan (including test duration) for the pumps listed in Table 3.9-8 (which includes the test schedule) and whether Technical Specifications include the test schedule; and (3) the implementation program for establishing the IST Program for pumps, such as when the program will be available for NRC inspection to allow review prior to reliance on the pumps to perform their safety functions.

03.09.06-***

ABWR DCD Tier 2, Table 3.9-8 includes Note i1 for the Residual Heat Removal System fill pump, which is referred to as a summary justification for a "code exemption request" to not include flow measurement. The STP COL applicant is requested to discuss this "code exemption request" and its justification for STP Units 3 & 4. See RG 1.206 for guidance on information to support requests for relief from the ASME OM Code.

03.09.06-***

ABWR DCD Tier 2, Subsection 3.9.6.2, "Testing of Safety-Related Valves," provides separate subsections for check valves, MOVs, power-operated valves (POVs) other than MOVs, and isolation valves. The STP COL applicant is requested to describe the following as listed in Paragraph C.III.3.9.6.3, "Inservice Testing Program for Valves," for the valves in IST Program to be established for STP Units 3 & 4: (1) the type for each valve listed in Table 3.9-8 (including valve type and actuator type if applicable); (2) the IST Program (including test requirements, procedures, and acceptance criteria) for valve preservice tests, valve replacement, valve repair and maintenance, and indicate of valve position; (3) the proposed methods for measuring the reference values and IST values for POVs, including MOVs, air-operated valves, hydraulic-operated valves, and solenoid-operated valves; (4) the valve test procedures and schedules (including

justifications for cold shutdown and refueling outage test schedules) and whether this information will be included in the plant technical specifications; and (5) milestones for preparing and implementing the IST Program to allow for review and inspection of those programs in advance of relying on nuclear power plant components within the scope of those programs to perform their safety functions.

03.09.06-***

Note (e) in ABWR DCD Tier 2, Table 3.9-8 lists the valve test parameters of the ANSI/ASME OM Standard Part 10. The NRC regulations in 10 CFR 50.55a require that that the MOV stroke time testing provisions in the ASME OM Code be supplemented by periodic testing to demonstrate design-basis capability. The STP COL applicant is requested to update the reference to the applicable ASME OM Code to be used in fully describing the IST Program for STP Units 3 & 4. The STP COL applicant is also requested to discuss the “stroke exercise” test parameter and whether its inclusion of stroke time testing and, as applicable, MOV periodic design-basis capability testing.

03.09.06-***

Note (f) in ABWR DCD Tier 2, Table 3.9-8 lists pump or valve test exclusions, alternatives and frequency per the ASME Code or Appendix I. The STP COL applicant is requested to specify the applicable OM Code sections for the components and their associated exclusions, alternatives, and frequencies covered in Note (f). The STP COL applicant is requested to provide appropriate justification for any relief or alternatives to the applicable ASME OM Code sections. The STP COL applicant is also requested to indicate the justification for cold shutdown and refueling outage test intervals if not indicated in Table 3.9-8 for each applicable valve. The STP COL applicant is requested to discuss its implementation of item E3, which is said to be an operability test every 6 months. The STP COL applicant is also requested to discuss its implementation of item E11, which refers to the absence of required fluid inventory with a test once every 2 years.

03.09.06-***

Note (h) in ABWR DCD Tier 2, Table 3.9-8 lists reasons for code defined testing exceptions per the ANSI/ASME OM Standard Part 10. The NRC staff requests that the STP COL applicant justify the basis for deferring inservice testing for valves that rely on reasons h2 (avoids valve damage and impacts on power operations) and h3 (avoids impacts on power operations). The STP COL applicant is also requested to justify the basis for the use of reason h9 (test connection size is insufficient for full flow test during operation) in deferring testing. The NRC staff notes that the temporary loss of system redundancy during an inservice test is covered by the Limiting Conditions for Operations in plant Technical Specifications and, therefore, the loss of system redundancy is not acceptable as a basis for deferral of inservice testing to a refueling outage or cold shutdown interval.

03.09.06-***

ABWR DCD Tier 2, Subsection 3.9.6.2.1, "Check Valves," includes (1) Design and Qualification, and (2) Pre Operational Testing, which specify parameters and acceptance criteria to be established by the COL applicant for demonstrating that functional performance requirements have been met. The STP COL applicant is requested to discuss its implementation of those actions for STP Units 3 & 4.

03.09.06-***

The last paragraph of ABWR DCD Tier 2, Subsection 3.9.6.2.1 provides general information on inservice testing of check valves, including referencing ANSI/ASME OM Standard Part 10. The NRC staff requests that the STP COL applicant fully describe the program for inservice testing of check valves, including OM Code provisions for bi-directional testing for active and passive check valves. As indicated in Paragraph C.III.3.9.6.3.3, "Inservice Testing Program for Check Valves," of RG 1.206, the STP COL applicant is requested to (1) describe the preservice and IST for each check valve (including diagnostic equipment or nonintrusive techniques, testing performed under temperature and flow conditions, how test results identify flow required to open the check valve, and how testing includes effects of rapid pump starts and stops and other reverse flow conditions; (2) describe diagnostic techniques to periodically assess degradation and performance characteristics; (3) describe how successful completion of pre-service and IST is assessed (including demonstrating that the disk fully opens or closes, determining disk positions without disassembly, verifying free disk movement, and demonstrating disk is stable in open position); (4) confirm piping design features accommodate check valve testing requirements; and (5) show how the IST program meets guidelines of Appendix II to ASME OM Code. The STP COL applicant is also requested to discuss parameter and acceptance criteria for inservice testing as included for pre-operational testing in the ABWR DCD.

03.09.06-***

ABWR DCD Tier 2, Subsection 3.9.6.2.2, "Motor-Operated Valves," provides general information on MOV inservice testing, but does not fully describe the IST or MOV Testing operational programs. For example, the introduction of ABWR DCD Tier 2, Section 3.9.6 references Generic Letter 89-10, but does not address MOV lessons learned since issuance of that generic letter. Further, the ABWR DCD does not discuss the regulatory requirement in 10 CFR 50.55a to supplement the MOV stroke-time testing provision in the ASME OM Code with periodic testing to verify the design-basis capability of safety-related MOVs. The ABWR DCD also does not discuss the Joint Owners Group Program on MOV Periodic Verification, the performance of static or dynamic MOV periodic testing, or the periodic verification of MOV output capability. As indicated in Paragraph C.III.3.9.6.3.1, "Inservice Testing Program for Motor-Operated Valves," of RG 1.206, the STP COL applicant is requested to describe the IST Program that periodically verify the design-basis capability of safety-related MOVs, including (1) showing how periodic testing (or analysis combined with test results where testing is not conducted at design-basis conditions) objectively demonstrates continued MOV capability to open and/or close under design-basis conditions; and (2) justifying any IST intervals that exceed either 5 years or three refueling outages, whichever

interval is longer. Also as indicated in Paragraph C.III.3.9.6.3.1 of RG 1.206, the STP COL applicant is requested to show how successful completion of the preservice and IST of MOVs demonstrates that the following criteria are met: (1) valve fully opens and/or closes as required by its safety function; (2) adequate margin exists and includes consideration of diagnostic equipment inaccuracies, degraded voltage, control switch repeatability, load-sensitive MOV behavior, and margin for degradation; and (3) maximum torque and/or thrust (as applicable) achieved by the MOV (allowing sufficient margin for diagnostic equipment inaccuracies and control switch repeatability) does not exceed the allowable structural and undervoltage motor capability limits for the individual parts of the MOV.

03.09.06-***

ABWR DCD Tier 2, Subsection 3.9.6.2.3 states the IST program for POVs will incorporate the use of advance non-intrusive techniques to periodically assess degradation and performance characteristics of the POVs, and refers to ANSI/ASME OM Standard Part 10. The ABWR DCD does not fully describe the IST program for POVs. For example, the subsection does not discuss the MOV lessons learned applicable to other POVs in Regulatory Issue Summary (RIS) 2000-03, "Resolution of Generic Safety Issue 158: Performance of Safety-Related Power-Operated Valves Under Design Basis Conditions." As indicated in Paragraph C.III.3.9.6.3.2, "Inservice Testing Program for Power-Operated Valves Other Than Motor-Operated Valves," the STP COL applicant is requested to (1) describe how the POVs are qualified to perform their design-basis functions either before installation or as part of preoperational testing; (2) describe the POV IST program and show how the program incorporates the lessons learned from MOV analysis and tests performed in response to GL 89-10; and (3) explain how solenoid-operated valves are verified to meet their Class 1E electrical requirements by performing their safety functions for the appropriate electrical power supply amperage and voltage.

03.09.06-***

ABWR DCD Tier 2, Subsection 3.9.6.2.4, "Isolation Valve Leak Tests," refers to pressure isolation valves, temperature isolation valves, and containment isolation valves. The STP COL applicant is requested to indicate the classification, allowable leak rate, and test interval for pressure isolation valves to be included at STP Units 3 & 4.

03.09.06-***

ABWR DCD Tier 2, Section 3.9.3.4, "Component Supports," includes provisions to be addressed in design specifications for snubbers, but does not describe the inservice examination and testing program. The STP COL applicant needs to fully describe the IST program for dynamic restraints to support the COL application for STP Units 3 & 4. The NRC staff requests that the STP COL applicant provide the information on its IST program for dynamic restraints as indicated in Paragraph C.III.3.9.6.4 of RG 1.206. This

information should (1) include a table listing the safety-related components that use snubbers in their support systems with (a) the systems and components that use snubbers; (b) number of snubbers used in each system and on components in that system; (c) types of snubbers (hydraulic or mechanical and corresponding supplier; (d) whether the snubber was constructed to industry codes; (e) whether snubber is used as a shock, vibration, or dual-purpose snubber; and (f) indication of whether dual-purpose or vibration arrester snubbers were evaluated for fatigue strength; (2) describe the IST program (including test frequency and duration and examination methods) related to visual inspections and functional testing of dynamic restraints and basis for testing; (3) describe the steps to be taken to assure snubbers are properly installed prior to preoperational piping and startup tests; (4) confirm accessibility provisions for maintenance, IST and testing, and repair and replacement of snubbers; and (5) describe implementation program to allow for NRC inspection to review the snubber program prior to reliance on dynamic restraints to perform their safety function. As part of this information, the STP COL applicant is requested to specify the ASME OM Code, Section ISTD, edition and addenda to be applied for the IST program for dynamic restraints.

03.09.06-***

STP FSAR Subsection 3.9.7.3, "Pump and Valve Testing Program," states that the plant specific environmental parameters for the equipment qualification program will be available for NRC review as part of the ITAAC for basis configuration of systems, as provided in the reference ABWR DCD Tier 1 Section 1.2. The STP COL applicant needs to demonstrate its implementation of the design provisions specified for pumps, valves, and dynamic restraints in the ABWR DCD in support of the STP COL application. The NRC staff requests that the STP COL applicant discuss the availability of design and procurement specifications for pumps, valves, and dynamic restraints for NRC review.

03.09.06-***

STP FSAR Subsection 3.9.7.3 states that the pump and valve IST and inspection program will be provided to the NRC as specified in FSAR Section 13.4S, "Operational Program Implementation." FSAR Section 13.4S states that descriptions of operational programs, consistent with the definition of "fully described" in Staff Requirements Memorandum for SECY-05-0197, are provided in the FSAR sections noted in Table 13.4S-1, "Operational Programs Required by NRC Regulation and Program Implementation." However, the IST program for pumps, valves, and dynamic restraints, and the MOV Testing program are not fully described in the sections referenced in Table 13.4S-1. As discussed in other RAIs, the STP COL applicant is requested to supplement the FSAR referenced sections with the information requested in RG 1.206 for these operational programs. STP FSAR Table 13.4S-1 specifies that the IST Program will be implemented after generator on line on nuclear heat. No implementation milestone is specified for the MOV Testing Program. The NRC staff requests that the STP COL applicant describe its milestones for preparing and implementing the IST and MOV Testing Programs to allow for review and inspection of those programs in advance of relying on pumps, valves, and

dynamic restraints within the scope of those programs to perform their safety functions.

03.09.06-***

STP FSAR Subsection 3.9.7.3 states that the design qualification test, inspection and analysis criteria in Subsections 3.9.6.1, 3.9.6.2.1, 3.9.6.2.2, and 3.9.6.2.3 of ABWR DCD Tier 2 will be included in the respective safety-related pump and valve design specifications prior to fuel load as Commitment 3.9-3. STP FSAR Subsection 3.9.7.3 also states that the design, qualification, and preoperational testing for MOVs will conform to the provisions in ABWR DCD Tier 2, Subsection 3.9.6.2.2 as Commitment 3.9-4. The NRC staff requests that the STP COL applicant discuss its compliance with the COL applicant actions specified in those subsections of the ABWR DCD as part of its COL application for STP Units 3 & 4.

03.09.06-***

STP FSAR Subsection 3.9.7.3 states that the safety-relief valve (SRV) IST requirements are included in Table 3.9-8, and additional SRV testing including technical specification testing is described in Section 5.2.2.10. The NRC staff requests that the STP COL applicant fully describe the IST program for SRVs consistent with RG 1.206 and Commission paper SECY-05-0197. For example, Paragraph C.III.3.9.6.3.6 in RG 1.206 requests that COL applicants provide a list of SRVs including type, valve identification number, code class, test parameters, and test frequency. The STP COL applicant is requested to confirm that this information is provided as part of the COL application for STP Units 3 & 4.

03.09.06-***

STP FSAR Subsection 3.9.7.3 states that inservice tests to verify operational readiness of pumps and valves, whose function is required for safety, conducted during the initial 120-month interval must comply with the requirements in the latest edition and addenda of the Code incorporated by reference in 10 CFR 50.55a(b) of this section on the date 12 months before the date of issuance of the operating license (or the optional ASME Code cases listed in RG 1.192 that is incorporated by reference in 10 CFR 50.55a(b) of this section), subject to the limitations and modifications listed in 10 CFR 50.55a(b) of this section. STP FSAR Subsection 3.9.7.3 also states that inservice tests to verify operational readiness of pumps and valves, whose function is required for safety, conducted during successive 120-month intervals must comply with the requirements of the latest edition and addenda of the Code incorporated by reference in 10 CFR 50.55a(b) of this section 12 months before the start of the 120-month interval (or the optional ASME Code cases listed in RG 1.147, through Revision 14, or RG 1.192 that are incorporated by reference in 10 CFR 50.55a(b) of this section), subject to the limitations and modifications listed in 10 CFR 50.55a(b) of this section. RG 1.206, Section C.IV.4.3 states that the COL will contain a license condition that requires the licensee to submit to the NRC a schedule, 12 months after issuance of the COL that supports planning for and conduct of NRC inspections of

operational programs. The schedule will be updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until either the operational programs in FSAR Table 13.4-201 have been fully implemented or the plant has been placed in commercial service, whichever comes first. The NRC staff requests that the STP COL applicant discuss the plans to develop license conditions for operational program implementation consistent with the guidance in RG 1.206 and Commission paper SECY-05-0197. The STP COL applicant is also requested to discuss updating the reference to Revision 14 to RG 1.147 to be consistent with the NRC regulations at the time of development of the IST program for STP Units 3 & 4.

03.09.06-***

In Attachment 3 to its COL application dated September 20, 2007, STP states the milestone for Commitment 3.9-3 (COL Item 3.29), summarized as the Pump and Valve IST Program, will be completed and available for review prior to fuel load. The STP milestone does not provide sufficient information on the IST program to allow the NRC staff to reach a safety finding in support of the STP COL application. The STP milestone is also not sufficient for the NRC staff to perform inspections in a timely manner to verify the successful development and implementation of the IST Program prior to relying on pumps and valves to perform their safety functions. The NRC staff requests that STP provide a schedule that allows for NRC inspections of the IST Program during its development and implementation prior to relying on pumps and valves to perform their safety functions. STP is also requested to discuss the basis for its use of "commitments" in the IST program as part of its COL application.

03.09.06-***

In Attachment 3 to its COL application dated September 20, 2007, STP states the milestone for Commitment 3.9-4 (COL Item 3.29), summarized as design, qualification, and preoperational testing of Motor-Operated Valves, to be prior to fuel load. The STP milestone does not provide sufficient information regarding MOV design and qualification to allow the NRC staff to reach a safety finding on the capability of MOVs to perform their safety functions in support of the STP COL application. The STP milestone is also not sufficient for the NRC staff to perform inspections in a timely manner to verify the successful development, implementation, and completion of the MOV Program prior to relying on MOVs to perform their safety functions. The NRC staff requests that STP provide a schedule that allows for NRC inspections of the MOV Program for its development, during implementation, and following completion prior to relying on MOVs to perform their safety functions. STP is also requested to discuss the basis for its use of "commitments" in the MOV Testing program as part of its COL application.

03.09.06-***

RG 1.206, Paragraph C.III.3.9.6.1, "Functional Design and Qualification of Pumps, Valves, and Dynamic Restraints," requests that the COL applicant provide information related to equipment not included in the referenced certified design. The STP COL applicant is requested to confirm that STP Units 3 & 4 will not include equipment beyond that specified in the ABWR certified design, or to provide the information on such equipment as indicated in RG 1.206.

03.09.06-***

ABWR DCD Tier 2, Subsection 3.9.7.4, "Audit of Design Specification and Design Reports," states that COL applicants will make the design specification and design reports available for NRC staff audit. STP FSAR Subsection 3.9.7.4 of the same title states that design specification and design reports required by ASME Code for vessels, pumps, valves and piping systems for the purpose of audit will be made available for NRC review. The STP COL applicant is requested to specify the availability of design specification and design reports related to pumps, valves, and dynamic restraints for NRC review.

03.09.06-***

STP FSAR Table 3.9-8 modifies this table provided in the ABWR DCD. The modifications include addition or removal of specific components, and changes to the Code category, valve function, test parameters, and test frequency. The NRC staff requests that the STP COL applicant describe the modifications to Table 3.9-8 and the basis for the changes.

03.09.06-***

Nuclear power plant operating experience has revealed the potential for adverse flow effects from vibration caused by hydrodynamic loads and acoustic resonance on reactor coolant, steam, and feedwater systems. ABWR DCD Tier 2, Subsection 3.9.2.1.1, "Vibration and Dynamic Effects Testing," describes tests to confirm that piping, components, restraints, and supports have been design to withstand the dynamic effects of steady-state flow-induced vibration (FIV) and anticipated operational transient conditions. ABWR DCD Tier 2, Subsection 14.2.12.1.51, "Expansion, Vibration and Dynamic Effects Preoperational Test," and Subsection 14.2.12.2.11, "System Vibration," discuss the verification during plant startup tests that vibration of critical system components and piping is within acceptable limits during normal steady-state power operation and during expected operational transients. The NRC staff requests that the STP COL applicant discuss the implementation of this program to identify potential adverse flow effects on pumps, valves, and dynamic restraints from hydraulic loading and acoustic resonance during plant operation.