

PMComanchePeakPEm Resource

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Sent: Monday, September 14, 2009 4:47 PM
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Cc: Ward, William; ComanchePeakCOL Resource
Subject: Comanche Peak RCOL- Section 3.9.6 - RAI # 57
Attachments: RAI 2772 (RAI 57).doc

The NRC staff has identified that additional information is needed to continue its review of the combined license application. The NRC staff's request for additional information (RAI) is contained in the attachment.

The response to this RAI is due within 42 calendar days of September 14, 2009.

Note: If changes are needed to the safety analysis report, the NRC staff requests that the RAI response include the proposed wording change

thanks,

Stephen Monarque
U. S. Nuclear Regulatory Commission
NRO/DNRL/NMIP
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Hearing Identifier: ComanchePeak_COL_Public
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Request for Additional Information (RAI) No. 2772

RAI # 57

9/14/2009

Comanche Peak Units 3 and 4
Luminant Generation Company, LLC.
Docket No. 52-034 and 52-035

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 1 (AP1000/EPR Projects)
(CIB1)

03.09.06-1

Comanche Peak Units 3 and 4 FSAR Section 3.9, "Mechanical Systems and Components," incorporates by reference this section in the US-APWR design certification document (DCD) with departures and supplemental information. Describe the implementation of the functional design and qualification process specified in the US-APWR DCD for pumps, valves, and dynamic restraints to be used at Comanche Peak Units 3 and 4. As discussed in Regulatory Guide (RG) 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)," (June 2007) for equipment that do not have their functional design and qualification process specified in the US-APWR DCD, provide the following information or reference these provisions in the US-APWR 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 American Society of Mechanical Engineers (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). For example, discuss the application of ASME Standard QME-1-2007, "Qualification of Active Mechanical Equipment used in Nuclear Power Plants," for the functional design and qualification of pumps, valves, and dynamic restraints in light of its application in MHI Technical Report MUAP-08015, "US-APWR Equipment Environmental Qualification Program," which is referenced in Section 3.11, "Environmental Qualification of Mechanical and

Electrical Equipment,” in the US-APWR DCD. Further, discuss the availability of design and procurement specifications for NRC on-site review to demonstrate the implementation of the US-APWR functional design and qualification process for pumps, valves, and dynamic restraints to be used at Comanche Peak. For example, US-APWR DCD Tier 2, Subsection 3.9.3.4.2.5, “Design Specifications,” specifies that the COL Applicant is to assure snubber functionality in harsh service conditions, including snubber materials (e.g., lubricants, hydraulic fluids, and seals). Clarify the statement in Comanche Peak FSAR Subsection 3.9.3.4.2.5 of the same title (as modified in the Editorial Correction Version dated March 31, 2009) that the “design specification for snubbers installed in harsh service conditions (e.g., high humidity, temperature, radiation levels) is evaluated for the projected life of the snubber to assure that snubber functionality, including snubber materials (e.g., lubricants, hydraulic fluids, seals).”

03.09.06-2

Comanche Peak FSAR Section 3.9.6, “Functional Design, Qualification, and Inservice Testing Programs for Pumps, Valves, and Dynamic Restraints,” incorporates by reference the provisions in the US-APWR DCD in describing the operational programs for inservice testing (IST) of pumps, valves, and dynamic restraints, and motor-operated valve (MOV) testing at Comanche Peak. US-APWR combined license (COL) Information Item COL 13.4(1) listed in Comanche Peak FSAR Table 1.8-201, “Resolution of Combined License Items for Chapters 1-19,” indicates, among other actions, that the COL applicant is to “fully describe” the operational programs as defined in SECY-05-0197, “Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria,” dated October 28, 2005. Through a combination of the US-APWR DCD and Comanche Peak FSAR, fully describe the IST and MOV testing operational programs as discussed in Commission Paper SECY-05-0197. See RG 1.206 for guidance regarding the information to be provided in describing the IST programs for pumps, dynamic restraints, and various types of valves. As part of the description of the IST operational program for dynamic restraints, clarify the applicability of ASME Boiler Pressure Vessel (BPV) Code Section XI, and the ASME OM Code, discussed in US-APWR DCD Tier 2, Subsection 3.9.3.4.2.6, “Considerations for Inspection, Testing, Repair, and/or Replacement of Snubbers,” for the program for inservice examination and testing of snubbers.

03.09.06-3

Comanche Peak COL application (COLA) FSAR Section 3.9.6 modifies a statement in US-APWR DCD Tier 2, Section 3.9.6 that the COL Applicant is to administratively control the edition and addenda to be used for the IST program plan for pumps, valves, and dynamic restraints. Comanche Peak COLA FSAR Section 3.9.6 states that the edition and addenda used for the IST program for pumps, valves, and dynamic restraints is administratively controlled as part of the operational program procedures. Comanche Peak COLA FSAR Section 3.9.6 also states that the preservice test program is implemented as described in Section 13.4, "Operational Program Implementation." Comanche Peak COLA FSAR Section 3.9.6 specifies that the requirements of functional testing for pumps, valves, and dynamic restraints will be in accordance with the IST program plan outlined 12 months prior to fuel load. US-APWR DCD Tier 2, Section 3.9.6 references the ASME OM Code 1995 Edition through the 2003 Addenda for the IST program for plants referencing the US-APWR design. The NRC regulations in 10 CFR 50.55a(f)(4)(i) and (g)(4)(i) require that the IST and ISI 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 COL 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. Specify the most recent edition and addenda of the ASME OM Code incorporated by reference in 10 CFR 50.55a that will be used as the basis for the IST program description in the COL application to provide support for NRC review of the application for an operating license for Comanche Peak Units 3 and 4. In addition, 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 requests for relief from or alternatives to the OM Code, and their justification.

03.09.06-4

Comanche Peak COLA FSAR 3.9.6 states that the functional testing for pumps, valves, and dynamic restraints will be in accordance with the "IST program plan" outlined 12 months prior to fuel load. The NRC regulations in 10 CFR 50.55a(f)(4)(i) require 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 the regulations 12 months before the date scheduled for initial loading fuel under a combined license under Part 52, subject to the limitations and modifications listed in the regulations. The NRC regulations in 10 CFR 50.55a(g)(4)(i) provide a similar requirement applicable to dynamic restraints. Other subsections in Comanche Peak COLA FSAR Section 3.9.6 also refer to an IST program plan outlined 12 months prior to fuel load when discussing various IST activities. Clarify the Comanche Peak COLA FSAR to ensure that the IST program (as compared to a program plan) will be available to the NRC staff for review and inspection in a timely manner to allow evaluation of compliance with the NRC regulations applicable to the IST programs from pumps, valves, and dynamic restraints prior to plant operation.

03.09.06-5

Comanche Peak COLA FSAR Section 3.9.6 provides plant-specific supplemental information in addition to incorporating by reference the US-APWR DCD for the functional design, qualification, and IST programs for pumps, valves, and dynamic restraints. Confirm that the provisions in the US-APWR DCD for functional design and qualification, and IST and MOV testing operational programs, as supplemented by the information in the Comanche Peak COLA FSAR, will be applied to the specified pumps, valves, and dynamic restraints, or describe plant-specific provisions in these technical areas for the pumps, valves, and dynamic restraints.

03.09.06-6

Comanche Peak COLA FSAR Table 3.9-203, "Site-Specific Valve IST Requirements," provides information on testing of valves in addition to those identified in the US-APWR DCD. For the listed plant-specific valves, provide (1) actuator type; (2) Code Class; (3) normal, safety, and fail safe position; (4) containment isolation function; and (5) test parameters and frequency. Also, provide this information for the valves listed in US-APWR DCD Tier 2, Table 3.9-14, "Valve Inservice Test Requirements."

03.09.06-7

Footnote 6 to Comanche Peak COLA FSAR Table 3.9-203 states that exercise testing for the specified valves will be performed at cold shutdown to avoid impact on power operation. Discuss the basis for the deferral of exercise testing without a partial stroke test at a quarterly interval for the specific identified valves.

03.09.06-8

Comanche Peak COLA FSAR Subsection 3.9.6.3, "IST Program for Valves," modifies the provision in US-APWR DCD Tier 2, Section 3.9.6 that the COL Applicant is to provide any alternate method of valve position indicator operation and justification for valves in the IST program. Comanche Peak COLA FSAR Subsection 3.9.6.3 states that any alternate method for verification of valve position indicator operation, and its justification, will be described in the IST program plan outlined 12 months prior to fuel load. Confirm that any alternate method for verification of valve position indicator operation, and its justification, will be made available consistent with the implementation schedule for the IST program to provide for timely review during NRC inspection of the IST program prior to plant operation.

03.09.06-9

Comanche Peak COLA FSAR Subsection 3.9.6.3.1, "IST Program for MOVs," modifies the provision in the US-APWR DCD Tier 2, Subsection 3.9.6.3.1 that the COL Applicant is to identify MOVs that require non-intrusive diagnostic testing techniques. Comanche Peak COLA FSAR Subsection 3.9.6.3.1 states that the IST program plan will identify those MOVs that require non-intrusive testing techniques. Discuss plans for non-intrusive testing of safety-related MOVs in fully describing the MOV Testing operational program in support of the NRC review of the COL application for Comanche Peak, Units 3 and 4.

03.09.06-10

Comanche Peak COLA FSAR Section 3.9.6 does not provide supplemental information for US-APWR DCD Tier 2, Subsection 3.9.6.5, "Relief Request and Authorization to ASME OM Code," which states that Table 3.9-13, "Pump IST," and Table 3.9-14, "Valve Inservice Test Requirements," in the US-APWR DCD Tier 2 identify requests for relief from the ASME OM Code. Provide justification for requests for relief from or alternatives to the ASME OM Code edition and addenda used as the basis for the IST program description in the Comanche Peak COL application following the guidance in RG 1.206, or an application-specific approach in justifying relief or alternative requests.

03.09.06-11

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. US-APWR DCD Tier 2, Section 3.9.3, "ASME Code Class 1, 2, and 3 Components, Component Supports, and Core Support Structures," specifies provisions for evaluating the load combinations on safety-related components including fluid effects due to various system operational characteristics. US-APWR DCD Tier 2, Section 14.2, "Initial Plant Test Program," includes Subsection 14.2.12.1.51, "Steady State Vibration Monitoring of Safety Related and High Energy Piping," to demonstrate that steady state vibrations of safety-related and high-energy piping are within acceptable limits. Discuss the planned implementation of the program indicated in the US-APWR DCD to address potential adverse flow effects on safety-related components within the IST program in the reactor coolant, steam, and feedwater systems at Comanche Peak Units 3 and 4 from hydraulic loading and acoustic resonance during plant operation.

03.09.06-12

Part 10, "ITAAC and Proposed License Conditions," of the Comanche Peak, Units 3 and 4 COLA states that operational programs are identified in Comanche Peak FSAR Table 13.4-201, "Operational Programs Required by NRC Regulation and Program Implementation," and that their implementation by the milestones indicated in the table is a potential condition to the license. Part 10 of the Comanche Peak COL application does not specify a license condition for implementation of operational programs. 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. For example, 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 should 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.