

January 14, 2010

Mr. Scott Head, Manager
Regulatory Affairs
STP Nuclear Operating Company
P. O. Box 289
Wadsworth, TX 77483

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 009 RELATED TO
SRP SECTION 09.02.04 FOR THE ABWR DESIGN CERTIFICATION RULE
AMENDMENT APPLICATION

Dear Mr. Head

By letter dated June 20, 2009, STP Nuclear Operating Company (STPNOC) submitted for approval an application to amend the ABWR design certification rule (DCR) pursuant to 10 CFR Part 52. The U. S. Nuclear Regulatory Commission (NRC) staff is performing a detailed review of this application to enable the staff to reach a conclusion on the safety of the proposed application.

The NRC staff has identified that additional information is needed to continue portions of the review. The staff's request for additional information (RAI) is contained in the enclosure to this letter.

To support the review schedule, you are requested to respond within **30** days of the date of this letter. If changes are needed to the safety analysis report, the staff requests that the RAI response include the proposed wording changes.

S. Head

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If you have any questions or comments concerning this matter, I can be reached at 301-415-8484 or by e-mail at Tom.Tai@nrc.gov.

Sincerely,

/RA/

Tom M. Tai, Senior Project Manager
ABWR Projects Branch
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-001

eRAI Tracking No. 4257

Enclosures:
Request for Additional Information

cc: William Mookhoek
Coley Chappell
Fred Puleo

S. Head

-2-

If you have any questions or comments concerning this matter, I can be reached at 301-415-8484 or by e-mail at Tom.Tai@nrc.gov.

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***Approval captured electronically in the electronic RAI system.**

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Request for Additional Information No. 4257 Revision 5

ABWR Design Certification Amendment Project

South Texas Project Nuclear Operating Co

Docket No. 52-001

SRP Section: 09.02.04 - Potable and Sanitary Water Systems

Application Section: 9.5.14.1 - Alternate Feedwater Injection (AFI) System

QUESTIONS for Balance of Plant Branch 1 (AP1000/EPR Projects) (SBPA)

09.02.04-1

RAI Question 16325 (9.5.14-SPBA-1)

In section 9.5.14.1 of the application to amend the design certification rule for the US ABWR (U7-C-STP-NRC-0900070) dated June 30, 2009, it is stated that the Alternate Feedwater Injection (AFI) system piping is routed underground or otherwise protected from physical impact. It also states that injection is provided through the non-safety-related portion of the CUW tie-in lines to the feedwater system, which are in the R/B portion of the Steam Tunnel. The tie-in provides an interface between the non radioactive AFI system with the CUW system which contains radioactive fluids, reverse flow and leakage thru the check valves could result in the fluid in the injection piping becoming contaminated.

General Design Criteria (GDC) 60 "Control of releases of radioactive materials to the environment" requires that a means be provided to control the release of radioactive materials in liquid effluents. Means must also be provided for monitoring effluent discharge paths and plant environs for radioactivity that may be released in accordance with GDC 64 "Monitoring radioactivity releases" requirements. Also 10CFR52.47(a)(6) and 10CFR20.1406 requires applicants for standard plant design certifications to describe how facilities design and procedures for operation will minimize contamination of the facility and environment.

Provide a discussion that describes how the AFI system complies with GDC 60, GDC 64, and 10CFR20.1406. Include discussion on relevant design features, operation and maintenance, monitoring of the AFI systems for radiation, and detection of leaks from the AFI system to the environment.

09.02.04-2

RAI Question 16326 (9.5.14-SPBA-2)

In section 9.5.14.1 of the application to amend the design certification rule for the US ABWR (U7-C-STP-NRC-0900070) dated June 30, 2009, it is stated that there is a minimum of 300,000 gallons of usable water at the AFI pump suction line while the AFI is in standby. The application indicates there will be an existing source near the AFI pump house. Figure 9.5-6 provides a schematic of the AFI system. In order to inject water into the RPV the AFI is required to operate at a high pressure. The proposed AFI system is non-seismic and non-tornado protected.

GDC 2 requires in part that "structures, systems, and components important to safety shall be designed to withstand the effects of natural phenomena such as ... floods ... without loss of capability to perform their safety functions." Meeting the requirements of GDC 2 includes evaluating the effects of flooding from full circumferential failures of non-seismic, moderate-energy piping.

Enclosure

Provide a discussion on provisions for terminating flow following a AFI line break, and discuss how the AFI line break is addressed in the appropriate flood analysis for the affected areas. Also discuss the impact that a failure of the 300,000 gallon water source would have on safety-related equipment. Provide a summary of the results and describe the impact on risk assessment for internal flooding.

09.02.04-3

RAI Question 16327 (9.5.14-SPBA-3)

The flow of the AFI is through the AFI system piping and components, through check valves to the CUW tie in and then to the main feedwater lines. When the system is operated, the potential for water hammer may exist due to pump starts and stops, control or isolation valve operation, check valve closure, etc. The occurrence of water hammer can result in damage to the feedwater system. 10 CFR 50, Appendix A, GDC-4, "Environmental and Dynamic Effects Design Bases," requires safety-related portions of the condensate and feedwater systems to be protected against hydraulic instabilities such as water-hammer events. Provide a discussion of specific design features and system operation consideration used to minimize or preclude water hammer events due to operation of the AFI system.

09.02.04-4

RAI Question 16328 (9.5.14-SPBA-4)

The flow of the AFI is through the AFI system piping and components, through check valves to the CUW tie in and then to the main feedwater lines. In order to inject water into the RPV the AFI is required to operate at a high pressure. The proposed AFI system is non-seismic and non-tornado protected. GDC-4, "Environmental and Dynamic Effects Design Bases," requires that safe-related systems and equipment be capable of withstanding the effects of external and internally generated missiles, pipe whip and jet impingement forces associated with pipe breaks.

Provide a discussion on what effect that failure of the non-safety related AFI line will have on safe-related equipment in the RB and MST. Include the impact that the failure of the line will have taking into consideration dynamic effects such as pipe whip, jet impingement, the generation of missiles as a result of system failure. Where applicable, discuss protective measure used to protect against AFI line breaks from affecting other systems.