TurkeyPointRAIsPEm Resource

From: Comar, Manny
Sent: Wednesday, July 06, 2011 4:47 PM
To: TurkeyPointRAIsPEm Resource
Subject: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 029 RELATED TO SRP 09.02.01 STATION SERVICE WATER SYSTEM FOR THE TURKEY POINT PLANT UNITS 6 AND 7
Attachments: PTN-RAI-LTR-029.doc

Hearing Identifier: TurkeyPoint_COL_eRAIs
Email Number: 34

Mail Envelope Properties (377CB97DD54F0F4FAAC7E9FD88BCA6D0774B990647)

Subject: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 029 RELATED TO SRP 09.02.01 STATION SERVICE WATER SYSTEM FOR THE TURKEY POINT PLANT UNITS 6 AND 7
Sent Date: 7/6/2011 4:47:02 PM
Received Date: 7/6/2011 4:47:03 PM
From: Comar, Manny

Created By: Manny.Comar@nrc.gov

Recipients:
"TurkeyPointRAIsPEm Resource" <TurkeyPointRAIsPEm.Resource@nrc.gov>
Tracking Status: None

Post Office: HQCLSTR01.nrc.gov

Files	**Size**	**Date & Time**
MESSAGE	13	7/6/2011 4:47:03 PM
PTN-RAI-LTR-029.doc	65530	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

July 6, 2011

Mano K. Nazar
Senior Vice President and Chief Nuclear Officer
Florida Power & Light Company
Mail Stop NNP/JB
700 Universe Blvd
Juno Beach, FL 33408-0420

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 029 RELATED TO SRP SECTION 09.02.01 STATION SERVICE WATER SYSTEM FOR THE TURKEY POINT NUCLEAR PLANT UNITS 6 AND 7 COMBINED LICENSE APPLICATION

Dear Mr. Nazar:

By letter dated June 30, 2009, as supplemented by letters dated August 7, 2009, September 3, 2010 and December 21, 2010, Florida Power and Light submitted its application to the U. S. Nuclear Regulatory Commission (NRC) for a combined license (COL) for two AP1000 advanced passive pressurized water reactors pursuant to 10 CFR Part 52. The 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 you are unable to provide a response within 30 days, please state when you will be able to provide the response. In the event the response submitted is incomplete, please indicate in the response when the complete response will be provided. If changes are needed to the final safety analysis report, the staff requests that the RAI response include the proposed wording changes. Your response should also indicate whether any of the information provided is to be withheld as exempt from public disclosure pursuant to 10 CFR 2.390.

If you have any questions or comments concerning this matter, you may contact me at 301-415-3863 or manny.comar@nrc.gov.

Sincerely,

/**RA**/

Manny Comar, Lead Project Manager
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-040
52-041

Enclosure:
Request for Additional Information

CC: see next page

If you have any questions or comments concerning this matter, you may contact me at 301-415-3863 or manny.comar@nrc.gov.

Sincerely,

/**RA**/

Manny Comar, Lead Project Manager
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-040
52-041
eRAI Tracking No. 5491

Enclosure:
Request for Additional Information

Distribution:

Public	BWeisman	BHughes
RidsNroDnrlNwe1	JCruz	MComar
RidsNroLAKGoldstein	DMcGovern	TGalletta
RidsOgcMailCenter	BAnderson	RJoshi
RidsAcrsAcnwMailCenter	SGoetz	LWheeler
RidsRgn2MailCenter	JSebrosky	DHabib
AMinarik	JSegala	SLee

NRO-002

OFFICE	SBPA/BC	NWE1/PM	OGC	NWE1/L-PM
NAME	JSegala*	MComar*	PMoulding*	MComar*
DATE	2/25/11	3/29/11	4/18/11	6/16/11

*Approval captured electronically in the electronic RAI system.

OFFICIAL RECORD COPY

Request for Additional Information No. 5491

7/6/2011

Turkey Point Units 6 and 7
Florida P and L
Docket No. 52-040 and 52-041
SRP Section: 09.02.01 - Station Service Water System
Application Section: 9.2.11 - Raw Water System

QUESTIONS from Balance of Plant Branch 1 (SBPA)

09.02.01-2

In accordance with 10 CFR 50, Appendix A, GDC 2, “Design Basis for Protection Against Natural Phenomena,” GDC 4, "Environmental and Dynamic Effects Design Bases," and consistent with NRC policy considerations for passive plant designs (for example, SECY 94-084), the staff’s review considers whether raw water system (RWS) failures will either adversely affect SSCs that are safety-related or encompassed by regulatory treatment of nonsafety related systems (RTNSS), or impact the control room inhabitants.

Although FSAR Section 9.2.11.1.1, “Safety Design Basis,” states that failures of the RWS will not affect the ability of safety-related systems to perform their intended functions, more detailed information is needed to adequately describe the consequences of RWS failures and to explain why safety-related system, structures, and components (SSCs) are not affected. Likewise, additional information is needed in the FSAR to explain why a failure of the RWS (including the RWS storage tank) will not adversely affect RTNSS systems and components or impact the control room, or result in an unacceptable release of radioactive material to the environment.

Accordingly, revise FSAR Section 9.2.11 to address the impact of RWS failures. Include, as appropriate, development of plant-specific inspections, tests, analyses, and acceptance criteria; test program provisions; Technical Specifications; and availability controls.

09.02.01-3

The RWS is relied upon for achieving and maintaining cold shutdown conditions, which is necessary for satisfying Technical Specification requirements. In accordance with NRC policy considerations for passive plant designs, non-safety related active systems that are relied upon for achieving and maintaining cold shutdown conditions (i.e., transitioning from Mode 4 to Mode 5) should be highly reliable and able to accommodate single active failures without a loss of the cooldown capability that is needed. In Section 9.2.11 of the FSAR, provide a clearly defined design basis with respect to the RWS cooldown function. Describe the reliability and capability of the RWS to perform the cooldown function for the most limiting situations. For example, describe the minimum RWS flow rate, water inventory, temperature limitations, and corresponding bases for providing SWS makeup for PTN units 6 and 7. Also, address the suitability of RWS

materials for the plant-specific application and measures being implemented to resolve vulnerabilities and degradation mechanisms to assure RWS functionality over time. In sum, revise Section 9.2.11 of the FSAR to fully describe and address the RWS design bases in this regard and to include design specifications that are necessary to ensure the reliability and capability of the RWS to perform its cooldown function. The following guidance should be considered when revising the FSAR in response to this question:
a. The design bases should specifically recognize and describe cold shutdown functions that are credited, and applicable design considerations that pertain to these functions should be specified, such as reliability, redundancy, backup power, etc. Provide a complete description of the relevant design bases in FSAR Section 9.2.11, rather than simply referring to other portions of the DCD.

b. The system description should explain how the applicable design-bases considerations referred to in (a) are satisfied. For example:
• the minimum required system functional capability and the bases for this determination should be described (note that a minimum of seven days worth of on-site water inventory should be available for reactor decay heat removal and spent fuel cooling);
• the description should explain how design-bases considerations are satisfied;
• the guidance in SRP Sections 9.2.1 and 9.2.5 that are relevant for ensuring the capability and reliability of the RWS to perform its design-bases functions should be considered and addressed as appropriate (materials considerations, net positive suction head, water hammer, etc.);
• operating experience considerations that pertain to the capability and reliability of the system to perform its design-bases functions should be addressed (note that the relevance of operating experience is independent of safety classification considerations);
• in order to demonstrate adequate reliability, the system design should include (among other things) the capability of all necessary components (pumps, valves, strainers, instrumentation and controls, etc.) to function during a loss of off-site power and redundancy for single active failure vulnerabilities;
• dual-unit considerations need to be addressed.

c. Major components and features that are important to ensure the capability and reliability of the system to perform its cooldown function should be described. Applicable industry codes and quality group designations that are commensurate with plant-specific RWS reliability considerations should be specified and reflected in Chapter 3, “Design of Structures, Components, Equipment, and Systems.” Note that this may be different from what is specified for the standard plant design since the analysis for the standard design was based solely on regulatory treatment of non-safety systems considerations and did not include consideration of the cooldown function.

d. System design parameters that are important for performing the cold shutdown function should be specified, such as water inventory (RWS storage tank size/volume), flow rate, nominal pipe sizes, limiting flow velocities, and design temperatures and pressures.

e. The RWS operating modes for performing its cold shutdown function should be described, such as interlocks, protective features, and automatic actuation.
f. Limitations on the capability of the RWS to perform its cold shutdown function should be described, such as minimum required water inventory and temperature restrictions that apply.

g. Instrumentation (e.g., indication, controls, interlocks and alarms) that is relied upon by plant operators in the main control room and at the remote shutdown panels for performing cooldown functions should be described.

h. System diagrams should show division designations, flow paths, major components and features, nominal pipe sizes, and instrumentation that is relied upon to ensure proper operation of the system by operators in the main control room and at the remote shutdown panels.

i. The more important periodic inspections that will be completed and specified frequencies for ensuring the capability and reliability of the system should be described. For example, design provisions and actions that will be implemented to periodically assess the condition of buried or otherwise inaccessible piping and components should be described. Specify if non-metallic piping materials such as high density plastic (HDPE) are to be used in the RWS and should be included and described in the FSAR. Include in the FSAR the applicable construction codes for this material.

j. The more important periodic tests that will be completed and specified frequencies for ensuring the capability and reliability of the system should be described. For example, periodic testing of pumps, valves, self-cleaning strainers, and vacuum breakers should be described.

k. Based on the FSAR description, plant-specific ITAAC should be established that are appropriate and sufficient for verifying that the RWS is constructed as designed.

l. The initial test program should test all modes of RWS operation that are credited for its cooldown function and confirm acceptable performance for the most limiting assumptions. For example, confirmation that net positive suction head requirements are satisfied for minimum pump suction head and maximum water temperature conditions with all pumps running at full flow, and that water hammer will not occur during situations when voiding is most likely to occur, should be specified. It should be clear from the information provided in Section 9.2.11 what constitutes acceptable performance.

m. Clarify the specific location of the potable water supply, RWS storage tanks, and raw water ancillary pumps, as they are not described in the FSAR or shown on Figure 1.1-201, “Unit 6 & 7 Layout”.

n. Clarify why the RWS is not described in Section 3.2 as a reference (to FSAR 9.2.11.2.1).

o. Identify piping connections for the strainer backwater and media filter backwash from the potable water; they could not be located on Figure 9.2-201 (FSAR 9.2.11.1.2.).

p. Clarify in the FSAR the approximate water volume of the raw water storage tank or explain how many hours are available to supply water to the SWS cooling tower basin if the potable water supply is unavailable due to component or electrical failures.

q. Clarifiy in the FSAR the RWS pump controls or interlocks with the raw water storage tanks relate to pump trips or pump automatic starts, for example pump trips on low water

level. Provide a discussion on net positive suction head requirements relevant to pump performance and tank level.

r. Explain how GDC 5 is met, given that the RWS storage tank supplies both units 6 & 7.

09.02.01-4

While the service water system (SWS) is designated for RTNSS during reduced reactor inventory conditions, it does not appear that the RWS is needed to support the SWS cooling function during this condition because RWS is not designated for RTNSS. Explain in Section 9.2.11 why this is the case. Also, because the SWS cooling tower basins are very limited in their capacity, explain why RWS makeup would not be required for this situation. In summary, revise Section 9.2.11 to explain why RWS makeup is not needed during reduced reactor inventory conditions and in particular, describe controls that will be implemented to ensure that SWS makeup assumptions are valid for this situation.

09.02.01-5

As specified by 10 CFR 20.1406, COL applicants are required to describe how facility design and procedures for operation will minimize the generation of radioactive waste and contamination of the facility and environment, and facilitate eventual plant decommissioning. Although the RWS has no interconnections with any systems that contain radioactive fluids, industry experience has shown that this alone may not be sufficient to prevent the RWS from becoming contaminated. For example, unplanned leaks or release of contaminated fluids as a result of component failures or transport, drainage problems in contaminated areas, and the migration of contamination through soils and other porous barriers over time have caused systems and areas of the plant that are not directly connected with contaminated systems to become contaminated. The staff requests that the applicant describe any applicable design provisions and other measures that will be implemented to satisfy 10 CFR 20.1406 with respect to the RWS, including measures that will be implemented to monitor the RWS for contamination and corrective actions that will be taken to eliminate any radioactive contamination that is identified. RG 4.21, “Minimization of Contamination and Radioactive Waste Generation: Life-Cycle Planning,” provides guidance that may be used for addressing the requirements specified by 10 CFR 20.1406.