



L-2012-219
10 CFR 52.3

May 14, 2012

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555-0001

Re: Florida Power & Light Company
Proposed Turkey Point Units 6 and 7
Docket Nos. 52-040 and 52-041
Response to NRC Request for Additional Information Letter No. 053 (eRAI 6346) -
Standard Review Plan Section 09.02.01 - Station Service Water System

References:

1. NRC Letter to FPL dated July 6, 2011, 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
2. FPL Letter to NRC dated August 3, 2011, Schedule for Response to NRC Request for Additional Information Letter No. 029 (eRAI 5491) - Standard Review Plan Section 09.02.01 Station Service Water System
3. FPL Letter to NRC dated August 17, 2011, Response to NRC Request for Additional Information Letter No. 029 (eRAI 5491) Standard Review Plan Section 09.02.01 - Station Service Water System
4. NRC Letter to FPL dated March 29, 2012, Request for Additional Information Letter No. 053 Related to SRP Section 09.02.01 - Station Service Water System for the Turkey Point Nuclear Plant Units 6 and 7 Combined License Application
5. FPL Letter to NRC dated April 30, 2012, Schedule for Response to NRC Request for Additional Information Letter No. 053 (eRAI 6346) - Standard Review Plan Section 09.02.01 - Station Service Water System

Florida Power & Light Company (FPL) provides, as attachments to this letter, its responses to the Nuclear Regulatory Commission's (NRC) request for additional information (RAI) 09.02.01-6 and 09.02.01-7 provided in the referenced letter (Reference 4). The attachments identify changes that will be made in a future revision of the Turkey Point Units 6 and 7 Combined License Application (if applicable).

Proposed Turkey Point Units 6 and 7
Docket Nos. 52-040 and 52-041
L-2012-219 Page 2

If you have any questions, or need additional information, please contact me at 561-691-7490.

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

Executed on May 14, 2012.

Sincerely,



William Maher
Senior Licensing Director – New Nuclear Projects

WDM/ETC

Attachment 1: FPL Response to NRC RAI No. 09.02.01-6 (RAI 6346)
Attachment 2: FPL Response to NRC RAI No. 09.02.01-7 (RAI 6346)

cc:

PTN 6 & 7 Project Manager, AP1000 Projects Branch 1, USNRC DNRL/NRO
Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant 3 & 4

Proposed Turkey Point Units 6 and 7
Docket Nos. 52-040 and 52-041
FPL Response to NRC RAI No. 09.02.01-6 (RAI 6346)
L-2012-219 Attachment 1 Page 1 of 4

NRC RAI Letter No. PTN-RAI-LTR-053 Dated March 29, 2012

SRP Section: 09.02.01 – Station Service Water System

Question from Balance of Plant and Technical Specifications Branch

NRC RAI Number: 09.02.01-6 (eRAI 6346)

Based on the applicant's response to Letter 29, RAI 5491, Question 09.02.01-3, the staff had follow-up questions related to the raw water system (RWS).

The referenced RAI response stated:

It is unlikely that a failure of raw water system (RWS) to provide adequate makeup flow to the SWS cooling tower basins would occur during the short time period in which the service water system (SWS) is performing a regulatory treatment of nonsafety-related system (RTNSS) function, as described above. However, if a failure were to occur, the remaining available inventory in the service water cooling tower basins and the stored water, which is available in the additional excess volume of the secondary fire water tank, would provide ample time (more than 24 hours) to restore the RWS makeup flow or take the procedural actions necessary to exit the conditions for RTNSS applicability. Therefore, the RWS is not required to be a RTNSS system or subject to investment protection short-term availability controls. The RWS is designed to be a highly reliable and robust system capable of operating during a loss of normal alternating current (ac) power to provide makeup flow to the SWS under normal and abnormal conditions. Procedural controls, which provide for continued operation of the RWS or re-establishment of operations under off normal conditions, will be described in the operating procedures, where appropriate.

An ample inventory of raw water is available to provide makeup to the SWS cooling tower basins. As noted in Turkey Point Nuclear (PTN) COL FSAR Section 9.2.11.2.2.3, a raw water storage tank serving both PTN Units 6 and 7 (Note: GDC 5, "Sharing of Structures, Systems, and Components," does not apply since the RWS is not an important to safety system as discussed previously) receives potable water supplied from the Miami-Dade Water and Sewer Department (MDWASD). The potable water supply piping enters the PTN Units 6 and 7 plant area from the north and is routed to the raw water storage tank located to the east of PTN Units 6 and 7 (FSAR Figure 1.1-201). The raw water ancillary pumps are located at grade elevation in close proximity to the above ground raw water storage tank, which continually receives makeup from the potable water supply. Should the potable water supply to the raw water storage tank be interrupted, the volume of water in the tank would provide sufficient time to temporarily supply water from another onsite water source, such as reclaimed water from the makeup water reservoir (MWR). The MWR has a capacity well in excess of that needed to support cooldown to cold shutdown conditions and maintain the station in Mode 5 for greater than 7 days.

Follow-up questions that should be addressed in the COL FSAR or RAI response.

1. Provide the volume of the RWS storage tank. A bounding volume of the RWS storage tank could be provided to support 'sufficient time to restore the potable water supply' for various flow requirements; such as, power operations, support for shutdown conditions and SWS RTNSS conditions.

Proposed Turkey Point Units 6 and 7
Docket Nos. 52-040 and 52-041
FPL Response to NRC RAI No. 09.02.01-6 (RAI 6346)
L-2012-219 Attachment 1 Page 2 of 4

2. The flow rate of the RWS pumps was not provided and reviewed to the AP1000 required flow rate (to support RWS being adequately designed). Established AP1000 raw water makeup flow requirements can be found in ML090760819 (publicly available).
3. The reclaimed water connections and system line-up from the MWR to support the SWS is not clearly defined in the FSAR (drawings or text does not show interconnections). If temporary equipment is needed for this water makeup source, provide statement that supports 'sufficient time to restore the potable water supply'.
4. Flow rate of the reclaimed makeup water pumps to support SWS makeup is not defined.
5. Since the MWR is a backup water source for the ESWS cooling tower, describe any negative SWS system performance issues with the cleanliness of the MWR water. Describe if the SWS cooling tower efficiency is affected by the change in water supply.

FPL RESPONSE:

1. The raw water storage tank minimum capacity is two million gallons. The installed available supply of makeup water to the Service Water System (SWS) cooling tower basins would be 2,000,000 gallons (raw water storage tank minimum), plus 380,000 gallons (Units 6 & 7 secondary fire water tanks nominal volume not reserved for fire protection), plus 460,000 gallons (Units 6 & 7 minimum usable SWS cooling tower basin inventory). This represents a combined capacity of 2,840,000 gallons. Twenty-four (24) hours from the loss of the potable water supply to the raw water storage tank should be sufficient time to either restore the supply or assess the situation and provide another source (such as the makeup water reservoir) of makeup water to the SWS cooling tower basins.

At the normal makeup combined flow rate of approximately 370 gpm to both units' SWS cooling tower basins with blowdowns secured, greater than 72 hours of makeup flow would be available from the raw water storage tank alone.

For the case of shutdown of both units, the maximum makeup demand occurs at the beginning of cooldown, 4 hours after reactor shutdown. The maximum combined makeup requirement for simultaneous cooldown of both units, with blowdowns secured, is approximately 1,250 gpm. Conservatively assuming this flow rate, a raw water storage tank minimum capacity of two million gallons can provide makeup to the SWS cooling tower basins for greater than 24 hours. In reality, the required makeup flow rate drops off significantly during the initial cooldown period and the required makeup flow rate during cooldown (96 hours) is estimated by Westinghouse to be approximately 444 gpm (combined average for both units with blowdowns secured). Based on this information, there is sufficient water in the raw water storage tank alone to provide makeup for at least 2 – 3 days to support simultaneous shutdown of both units while the potable water supply is restored to the raw water storage tank or makeup water is provided from another source.

During Modes 5 and 6 (the modes when SWS RTNSS requirements could apply) the required makeup to the SWS cooling tower basins is much lower than during normal operation or cooldown during plant shutdown. Therefore, additional time would be available to restore the potable water supply to the raw water storage tank or provide SWS cooling tower basins makeup from another source.

Proposed Turkey Point Units 6 and 7
Docket Nos. 52-040 and 52-041
FPL Response to NRC RAI No. 09.02.01-6 (RAI 6346)
L-2012-219 Attachment 1 Page 3 of 4

2. Both Unit 6 and Unit 7 RWS have two (2) redundant ancillary pumps. Each of the four (4) pumps has a minimum capacity to provide 100 percent of the design maximum makeup requirement for the SWS of approximately 832 gpm which includes approximately 207 gpm for the SWS blowdown.
3. FSAR Subsection 9.2.11.2.2.3 mentions the MWR as a potential temporary source of SWS makeup water in the event that the potable water supply to the raw water storage tank is interrupted. The FSAR section specifically identifies the MWR as a potential temporary source of SWS makeup to convey that a sufficient volume of water would be available on-site should it be needed. Mention of the MWR does not preclude the use of water from other sources that may be determined to be suitable and available. The drawings and text do not show interconnections because the MWR is only identified as a potential temporary water source. Assuming water would be supplied from the MWR, determination of what interconnections, if any, would be used to transfer water from the MWR to the SWS cooling tower basins will be made during the detailed design. The method of water transfer currently envisioned is the use of temporary pumps and hoses without the need for permanent connections/interconnections. This method would be procedurally controlled to ensure water would only be introduced into the SWS under controlled conditions to address a temporary need and that temporary equipment as necessary would be available for deployment and use.

As discussed in Item 1 of this RAI response, SWS makeup from another source of water, such as water from the MWR, would not be necessary for a number of days after the potable water supply to the raw water storage tank was interrupted. Therefore, there is ample time to restore the potable water supply or take steps to provide a temporary source of SWS makeup.

4. The maximum SWS makeup requirement is less than 1700 gpm (for two units), which is relatively small compared to the capacity of the reclaimed makeup water pumps (greater than 10,000 gpm anticipated). Therefore, use of the reclaimed makeup water pumps would not likely be considered to support SWS makeup because of the provisions in the permanent piping system that might be needed to accommodate the low flow condition. Procedurally controlled temporary pumps will be available (in appropriate quantity and capacity) to support SWS makeup requirements.
5. Please note that the nomenclature ESWs does not apply to the AP1000 and therefore is not recognized in this response.

FSAR Subsection 9.2.11.2.2.3 mentions the MWR as a potential temporary source of SWS makeup water in the event that the water supply to the raw water storage tank is interrupted. The FSAR section specifically identifies the MWR as a potential temporary source of SWS makeup to convey that a sufficient volume of water would be available on-site should it be needed. Mention of the MWR does not preclude the use of water from other sources that may be determined to be suitable and available.

Proposed Turkey Point Units 6 and 7
Docket Nos. 52-040 and 52-041
FPL Response to NRC RAI No. 09.02.01-6 (RAI 6346)
L-2012-219 Attachment 1 Page 4 of 4

However, in the event a temporary source of SWS makeup water is needed and the MWR is used as the source, any negative impact to the SWS cooling tower performance would not be significant during the short term use.

While the potable water supplied to the raw water storage tank is of higher quality than the water stored in the MWR, water from the MWR should be of sufficient quality for short term use in the SWS cooling towers. Finalization of the design will provide for additional treatment of the MWR water and/or another source that can supply sufficient water with acceptable chemistry, as necessary. The SWS includes permanent strainers and chemical injection to assist in controlling water quality. Additionally, during temporary operation with water from the MWR or another source, the SWS cooling towers would be subjected to heat loads lower than design capacity.

Plant procedures will control restoration of the normal potable water supply, including SWS cleanup, to ensure appropriate levels of chemical treatment and blowdown of the system.

This response is PLANT SPECIFIC.

References:

None

ASSOCIATED COLA REVISIONS:

COLA Part 2, Chapter 9, Subsection 9.2.11.2.2.3 will be updated in a future COLA revision as shown below:

Raw Water Storage Tank

A raw water storage tank is provided for Units 6 & 7. This tank receives water from the MDWASD potable water supply. The tank includes features to prevent contamination of the potable water supply by the tank contents. Should the potable water supply to the storage tank be interrupted, the volume of water in the tank (**a minimum of two million gallons**) provides sufficient time to facilitate a temporary supply of water to the service water cooling tower basins from another on-site water source, such as reclaimed water from the makeup water reservoir (MWR). The MWR has a capacity well in excess of that needed to support cooldown to cold shutdown conditions and maintain the station in Mode 5 for greater than 7 days.

ASSOCIATED ENCLOSURES:

None

Proposed Turkey Point Units 6 and 7
Docket Nos. 52-040 and 52-041
FPL Response to NRC RAI No. 09.02.01-7 (RAI 6346)
L-2012-219 Attachment 2 Page 1 of 1

NRC RAI Letter No. RAI-LTR-053 Dated March 29, 2012

SRP Section: 09.02.01 – Station Service Water System

Question from Balance of Plant and Technical Specifications Branch

NRC RAI Number: 09.02.01-7 (eRAI 6346)

COL FSAR Table 1.8-203, Plant Interface Item 9.5, Requirements for location and arrangement of raw and sanitary water systems.

- Section is missing 9.2.6.

FPL RESPONSE:

Section 9.2.6 will be included in COLA FSAR Table 1.8-203 for Plant Interface Item 9.5 in a future COLA revision.

This response is PLANT SPECIFIC.

References:

None

ASSOCIATED COLA REVISIONS:

COLA Part 2, Chapter 1, Table 1.8-203 will be updated in a future COLA revision as shown below:

**Table 1.8-203 (Sheet 5 of 6)
Summary of FSAR Discussions of AP1000 Plant Interfaces**

Item No.	Interface	Interface Type	Matching Interface Item	Section ^(a) or Subsection
9.5	Requirements for location and arrangement of raw and sanitary water systems	NNS	Site Implementation	9.2.5, 9.2.6, 9.2.11

ASSOCIATED ENCLOSURES:

None