FPL

L-2010-252
10 CFR 52.3

November 5, 2010

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. 008 (eRAI 5080)
Standard Review Plan Section 9.03.03 – Equipment and Floor Drainage System

References:

1. NRC Letter to FPL dated October 7, 2010, Request for Additional Information Letter No.008 Related to SRP Section 9.03.03 – Equipment and Floor Drainage System for the Turkey Point Nuclear Plant Units 6 and 7 Combined License Application

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

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 November 5, 2010

Sincerely,

William Maher
Senior Licensing Director – New Nuclear Projects

Attachment: FPL Response to NRC RAI No. 9.03.03-1 (eRAI 5080)

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

D097
NRO

NRC RAI Letter No. PTN-RAI-LTR-008

SRP Section: 09.03.03 – Equipment and Floor Drainage System

Question from Balance of Plant Branch 1 (AP1000/EPR Projects) (SBPA)

NRC RAI Number: 09.03.03-1 (eRAI 5080)

In FSAR Section 9.2.9.2.2, the applicant describes the basin transfer pumps and states:

> "Controls are provided for automatic or manual operation of the pumps based on the level of the retention basin."

In accordance with GDC 60, an applicant is required to demonstrate suitable control of the release of radioactive materials in liquid effluent.

a. Provide a discussion on whether all site-specific potentially radioactive effluents will be monitored prior to disposition.

b. Provide a description of the water level instrumentation and radiation monitoring instrumentation utilized in the wastewater retention basins or justify why this instrumentation is not necessary.

In the AP1000 DCD Section 9.2.11.2, Westinghouse states, for COL Information Item 9.2-2:

> "The Combined License applicant will address the final design and configuration of the plant waste water retention basins and associated discharge piping, including piping design pressure, basin transfer pump size, basin size, and location of the retention basins."

In FSAR Section 9.2.9.2.2, the applicant only provided the location of the retention basins. Provide additional details on the method proposed for transfer of inventory from wastewater basin to the deep injection wells or final discharge and provide a description of the associated components (i.e. transfer pumps, size of basin, basin lining, etc...) as requested in the COL information item and update the FSAR accordingly.

FPL RESPONSE:

Radiation Monitoring of Effluents

The wastewater retention basin (WWRB) for each unit (6 & 7) receives influent from the turbine building sump pumps and the associated oil separator. As discussed in DCD Subsections 9.2.9.2.1 and 11.5.2.3.3, a radiation monitor located on the common discharge piping of the turbine building sump pumps provides an alarm upon detection of radioactivity in the wastewater. The radiation monitor trips the turbine building sump pumps and initiates an alarm in the main control room if the concentration of radioactive materials exceeds a predetermined setpoint. Following an alarm, the operator can manually realign the discharge from the turbine building sump pumps to the liquid radwaste system for processing. Provisions are included for sampling the turbine building sumps.

There are several WWRB influent pathways within the scope of the certified design that discharge downstream of the turbine building sump discharge radiation monitors. These

sources of influent to the WWRB were discussed in the response to Westinghouse AP1000 RAI-SRP9.3.3-SBPA-02, and are summarized below:

1. Diesel Fuel Area Sumps

   The diesel fuel area sumps discharge to the Waste Water System (WWS) oil separator. This standard plant effluent does not interact with any potentially radioactive sources during operation, nor are there any recognized radioactive sources located in the vicinity of this portion of the WWS.

2. Service Water System (SWS) Cooling Tower Blowdown

   The SWS blowdown can be routed to the WWRB as depicted in DCD Figure 9.2.1-1. The SWS blowdown is equipped with a radiation monitor as discussed in DCD Subsections 9.2.1.5 and 11.5.2.3.1. The service water blowdown radiation monitor initiates an alarm in the main control room if the concentration of radioactive materials exceeds a predetermined setpoint. Following the alarm, the operator can manually isolate the blowdown flow. Provision is made for taking local fluid samples.

3. SWS Strainer Backwash

   The SWS strainer backwash is routed to the WWRB. The SWS radiation monitor described in DCD Subsections 9.2.1.5 and 11.5.2.3.1 will initiate an alarm in the control room if radiation is detected. Automatic strainer backwash operation should be temporarily disabled in the event of an alarm.

4. Circulating Water System (CWS) Strainer Backwash

   The CWS piping to the Turbine Building Closed Cooling Water System (TCS) is provided with a strainer to prevent fouling of the TCS heat exchangers. Backwash from this strainer is routed to the WWRB. Radiation monitoring of the CWS is not required, since all systems interfacing with CWS that have plausible potential for contamination are provided with radiation monitoring. The CWS is operated at a higher pressure than the condenser; therefore radioactive contamination from the condenser is precluded.

For Units 6 & 7, there are no additional site specific influent streams to the WWRBs outside of those associated with the certified design described above. All WWRB influent streams with a potential to become radioactively contaminated are monitored as discussed above, therefore no additional radiation monitoring is provided.

Effluent from each WWRB is discharged to the common site-specific WWS blowdown sump via each basin's transfer pumps and associated piping. WWRB water level is monitored by a level control instrumentation system.

At the blowdown sump, located downstream of the WWRBs, the wastewater stream mixes with the high volume CWS blowdown stream. As discussed in the Westinghouse response to AP1000 RAI-SRP9.3.3-SBPA-02, all systems interfacing with the CWS that have plausible potential for radioactive contamination are provided with radiation monitoring. Additionally, as described in FSAR Subsection 10.4.5.2.3, since the circulating water system operates at a greater pressure than the condenser, passage of condensate from the main condenser into the circulating water system through a condenser tube leak is not possible during power generation operation.

There is also a site-specific local chemical addition package used to inject chemicals from local tanks into the CWS cooling tower basin, however this chemical addition feed does not interact with any potentially radioactive areas or sources. Therefore, no additional radiation monitoring is provided.

The blowdown sump discharges to the deep injection wells using an injection pumping station designed to accommodate the highest anticipated blowdown sump influent flow rate. A branch line from each unit's liquid radwaste system (WLS) connects to the pumping station discharge piping at a location that provides suitable dilution flow prior to discharge to the deep injection wells. The pumping station and associated discharge piping is designed to ensure that there is no potential for contamination of the blowdown sump via the WLS piping and therefore, no additional radiation monitoring of the discharge stream to the deep injection wells is provided.

As discussed in DCD Subsection 11.5.2.3.3, the WLS discharge radiation monitor measures the concentration of radioactive materials in liquids released to the environment. The liquid releases are prepared in batches that are mixed thoroughly and sampled. The samples are analyzed onsite before discharge to determine that the discharge is within allowable concentration limits and within allowable totals. As discussed in DCD Subsection 11.2.1.2.4, the discharge line contains a radiation monitor with diverse methods of stopping the discharge. The first method closes an isolation valve in the discharge line, which prevents any further discharge from the liquid radwaste system. The valve automatically closes and an alarm is actuated if the activity in the discharge stream reaches the monitor setpoint. The second method stops the monitor tank pumps. No additional radiation monitoring of this discharge stream is provided.

As identified in FSAR Subsection 9.2.11.1.2, the raw water system (RWS) could provide water (from reclaimed water or saltwater sources) for dilution of liquid radwaste. This would occur when CWS blowdown is not sufficient or available for that purpose. As discussed in FSAR Subsection 9.2.11.4, the RWS has no interconnection with any system that contains radioactive fluid. Therefore, the RWS does not have the potential to be a flow path for radioactive fluids and no radiation monitoring for RWS is provided.

As described in FSAR Subsection 9.2.6.2.1, the blowdown sump also receives sanitary waste effluent from the sanitary drainage system (SDS). As stated in DCD Subsection 9.2.6.3, there are no interconnections between this system and systems having the potential for containing radioactive material. Therefore, no radiation monitoring for the SDS effluent stream is provided.

Therefore, no additional monitoring of the influent streams to the WWRB, the blowdown sump and the outfall piping is provided.

Transfer of Inventory from WWRB to Final Discharge

(includes discussion of components and water level instrumentation)

Each WWRB described above is a lined basin constructed such that its contents (dissolved or suspended), do not penetrate the liner and leach into the ground. The WWRB is designed to allow entrained solids to settle and allow for chemical treatment to effluent concentrations required for release prior to discharge to the blowdown sump.

The configuration and sizing of the WWRB is to allow settling of solids larger than 10 microns that may be suspended in the wastewater stream. Wastewater can be sampled prior to discharge from the WWRB.

Each WWRB is divided into two separate compartments, which allows one compartment to be out of service while the other compartment is available. Each compartment discharges to a pump sump. A level transmitter located in each WWRB pump sump provides an alarm signal in the Main Control Room when the sump level(s) reach predetermined setpoints. The WWRBs for each unit are located in the yard area outside of each unit's Turbine Building.

The WWRB transfer pumps, discussed in FSAR Subsection 9.2.9.2.2, are located in pump sumps adjacent to each compartment. There are two 100% capacity transfer pumps (one per sump) for each WWRB. Controls are provided for automatic or manual operation of the pumps based on the level of the retention basin. The transfer pumps are sized to meet the maximum expected influent flow. The normal pump discharge flowpath is to the blowdown sump. In the event of oily waste leakage into the WWRB, a recirculation line is provided to recycle the oil/water waste from the basin to the oil separator. In the event of radioactive contamination, this same line can be used to send the contents of the basin to the WLS.

The blowdown sump mentioned above accepts wastewater from the Unit 6 & 7 WWRBs, CWS cooling tower blowdown from both units, and sanitary waste effluent. As previously stated, in the absence of CWS cooling tower blowdown, RWS supplies an alternate source of dilution water. The pumping station and associated piping, through which the blowdown sump contents discharge to the deep injection wells, is sized to handle the highest expected influent flow rate. The blowdown sump is sized and equipped with controls and instrumentation as necessary to manage the blowdown sump level without overflowing. An alarm is provided in the Main Control Room to alert operators when the water level reaches a predetermined setpoint.

The locations of the WWRBs, blowdown sump, and deep injection wells are shown on FSAR Figure 1.1-201. The locations of the WWRBs and the blowdown sump along with site grading ensure there will be no adverse impact on safety-related or RTNSS structures, systems or components in the event of an overflow.

In a future revision to the COLA, FSAR Subsection 9.2.9.2.2 will be revised to provide additional detail to more fully address COL Information Item 9.2-2.

This response is PLANT SPECIFIC.

References:

None

ASSOCIATED COLA REVISIONS:

1) Revise FSAR Table 1.8-202 as follows to add reference to FSAR Section 9.2.9.5 to the entry for COL Item 9.2-2:

COL Item	Subject	DCD Subsection	FSAR Section(s)	COL Applicant (A), Holder (H), Or Both (B)
9.2-2	Wastewater Retention Basins	9.2.11.2	9.2.9.2.2 **9.2.9.5** 9.2.12.2	A

2) Revise FSAR Subsection 9.2.9.2.2 beginning with the first paragraph under the heading Basin Transfer Pumps and add FSAR Subsection 9.2.9.5 as follows:

Basin Transfer Pumps

Two **100% capacity** submersible type pumps, one per basin compartment, send the wastewater from the retention basin to the blowdown sump~~, where it combines with the cooling tower blowdown and is discharged to the deep injection wells~~. **Each pump is sized to meet the maximum expected influent flow to prevent overflow of the basin.** In the event of oily waste leakage into the retention basin, a recirculation line is provided to recycle the oil/water waste from the basin to the oil separator in the turbine building. **In the event of radioactive contamination, this same line can be used to send the contents of the basin to the liquid radwaste system (WLS).** Controls are provided for automatic or manual operation of the pumps based on the level of the retention basin.

Add the following text at the end of DCD Subsection 9.2.9.2.2.

Blowdown Sump/Deep Injection Wells

The blowdown sump is a lined concrete structure common to Units 6 & 7 that receives wastewater from the wastewater retention basins of both units, circulating water system (CWS) blowdown from both units, and effluent from the sanitary treatment facility. The blowdown sump is located southeast of the units near the makeup water reservoir. In the absence of CWS blowdown, dilution flow can be supplied to the blowdown sump from the raw water system (reclaimed water or saltwater sources). The waste stream from the blowdown sump is pumped to the deep injection wells for disposal in accordance with the requirements of underground injection control permits. The blowdown sump, injection pumping station and associated piping to the injection wells is sized with adequate capacity to accommodate the highest expected influent flow rate to the blowdown sump without overflowing of the sump.

A branch line from each unit's liquid radwaste system (WLS) connects to the pumping station discharge piping at a location that provides suitable dilution flow prior to discharge to the deep injection wells. The pumping station and associated discharge piping is designed to ensure that there is no potential for contamination of the blowdown sump due to radioactive waste discharges.

9.2.9.5 Instrumentation Applications

Add the following after the first paragraph of DCD Subsection 9.2.9.5.

Level instrumentation is provided at the wastewater retention basin and is used to control operation of the basin transfer pumps. High-level alarms indicate the basin level where operator action is required.

Level instrumentation is provided at the blowdown sump and is used to control operation of the pumps discharging to the deep injection wells. A high level alarm indicates the sump level where operator action is required.

3) Revise FSAR Subsection 9.2.12.2 as follows:

This COL item is addressed in Subsections 9.2.9.2.2 **and 9.2.9.5**.

ASSOCIATED ENCLOSURES:

None