



L-2013-231  
10 CFR 52.3

July 31, 2013

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. 074  
(eRAI 7103) – SRP Section 11.02 – Process and Radiological Monitoring  
Instrumentation and Sampling Systems

References:

1. NRC Letter to FPL dated June 13, 2013, Request for Additional Information Letter No. 074 Related to SRP Section: 11.05 – Process & Effluent Radiological Monitoring Instrumentation & Sampling Systems for the Turkey Point Nuclear Plant Units 6 and 7 Combined License Application
2. FPL Letter L-2013-224 dated July 24, 2013, Schedule for Response to Request for Additional Information Letter No. 074 Related to SRP Section: 11.05 – Process & Effluent Radiological Monitoring Instrumentation & Sampling Systems for the Turkey Point Nuclear Plant Units 6 and 7 Combined License Application

Florida Power & Light Company (FPL) provides, as attachment to this letter, its response to the Nuclear Regulatory Commission's (NRC) Request for Additional Information (RAI) 11.05-2 provided in Reference 1. The schedule for this response was provided in Reference 2. 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.

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

Executed on July 31, 2013.

Sincerely,

A handwritten signature in blue ink, appearing to read 'William Maher', is written over a horizontal line.

William Maher  
Senior Licensing Director – New Nuclear Projects  
WDM/RFO

Attachment: FPL Response to NRC RAI No. 11.05-2 (eRAI 7103)

cc:

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

**NRC RAI Letter No. PTN-RAI-LTR-074 Dated June 13, 2013**

**SRP Section: 11.05 – Process and Radiological Monitoring Instrumentation and Sampling Systems**

**NRC RAI Number: 11.05-2 (eRAI 7103)**

Item 1:

FPL, Turkey Point Units 6&7, FSAR Tier 2, Rev. 4, Sections 11.5.3 and 11.5.4 present supplemental information on effluent and process monitoring and sampling. Based on a review of the corresponding information presented in the AP1000 DCD Section 11.5.2 and Table 11.5-1 and parallel discussions presented Turkey Point Units 6&7, ER, Rev. 4, Section 3.6.3.2, the staff notes that the ER commits to the use of a radiation monitor installed on the common discharge line of the Turbine Building sumps. This monitor performs an automatic control function by tripping the discharge pump upon detecting elevated levels of radioactivity in the common discharge line. The descriptions also states that, if necessary, contaminated wastewater from the Turbine Building sumps will be diverted to the liquid radwaste system for processing and disposal.

The applicant is requested to introduce this information in FSAR Tier 2, Sections 11.2 and 11.5 since the radiation monitor and its operating features are not described there. The applicant should describe the design features of the Turbine Building sumps and connections to a common discharge line, provide the basis for the placement and type of radiation monitor installed on the common discharge line of the sumps, describe the associated automatic control features and alarm functions, and describe how discharges will be diverted (manual or automatic method) to the liquid radwaste processing system upon tripping an alarm set-point. In addressing associated regulatory requirements and guidance, the applicant is requested to integrate this potential radioactive discharge path in the Turkey Point Units 6&7 Offsite Dose Calculation Manual (ODCM) in demonstrating compliance with 10 CFR Part 20 liquid effluent concentration and dose limits for members of the public, 10 CFR 20.1406 in minimizing the contamination of plant facilities and the environment, Part 50, Appendix I on design objectives and ALARA provisions; and describe equipment features and operational commitments that are consistent with the guidance of NUREG-0800, SRP Sections 11.2 and 11.5, Regulatory Guides 1.206, 1.143, and 4.21, IE Bulletin 80-10, and NEI 08-08A in avoiding unmonitored and uncontrolled releases of radioactive materials in unrestricted areas.

Item 2:

FPL, Turkey Point Units 6&7, FSAR Tier 2, Rev. 4, Section 11.5.8 endorses the use of NEI ODCM Template 07-09A (Revision 0, March 2009) to meet COL Information Item 11.5-1 until a plant and site specific ODCM is prepared, before fuel load, under the requirements of a license condition described in FSAR Section 13.4, Table 13.4-201, Item 9. However, a comparison of FSAR Tier 2, Rev. 4, Section 11.5.8 and Turkey Point Units 6&7 ER, Rev. 4, Sections 3.3, 6.2.2, and 6.7.4 indicates that a simple endorsement of NEI ODCM Template 07-09A and Turkey Point Units 3&4 ODCM does

not address the unique site-specific conditions associated with deep injection well for the disposal of radioactive effluents and associated radiological environmental monitoring.

The applicant is requested to introduce this information in FSAR Tier 2, Sections 11.2 and 11.5, since it is not contained there. The applicant should identify which portions of NEI ODCM Template 07-09A will need to be modified, describe the new information addressing deep injection well, describe methods that will be used in controlling and monitoring discharges of liquid effluents via deep injection well, and describe how water samples will be collected and sampled from each dual zone monitoring well, including well development and purging, containment and processing of purged well water, and sample processing including sample collection, sample preservation, and quality control.

Item 3:

FPL, Turkey Point Units 6&7, ER, Rev. 4, Section 3.3.1 and Figure 3.3-1 (sheet 1) describe how MDWASD reclaimed water will be further treated onsite by the FPL reclaimed water treatment facility prior to being pumped into the circulating water system. The treatment process is described as including trickling filters, clarifiers, deep bed filters, and equipment to handle solid wastes generated by the onsite treatment system. A review of Turkey Point Units 6&7, ER, Rev. 4, Figure 3.3-1 (sheet 1) indicates that some end products of the processing may be bypassed to the plant blowdown sump as warranted by operational conditions. Solid waste would be disposed using current operating practices, such as recycling and landfill disposal, as described in Turkey Point Units 6&7, ER, Rev. 4, Section 3.6.3.3. The staff notes that the corresponding information presented in the Turkey Point Units 6&7 ER, Rev. 4, Section 3.6.3 and FSAR, Tier 2, Section 11.5 does not acknowledge that the use of an onsite treatment for MDWASD reclaimed water might result in the re-concentration of naturally occurring radioactivity and other forms of radioactivity which should not be attributed to plant operations.

In addition, the potential presence of such radioactive materials in sludge and solids generated by the FPL reclaimed water treatment facility might pose operational and disposal challenges, given an estimated daily generation rate of over 400 tons of solids per day under normal operations (ER, Rev. 4, Section 3.6.3.3). Moreover, the bypass of liquid wastes from the onsite treatment facility to the plant blowdown sump may introduce radioactivity (if present in MDWASD reclaimed water) which would then need to be accounted for in demonstrating compliance with Part 20 and Part 50, Appendix I requirements once discharged via deep injection wells. As a result, the applicant is requested to expand its radiological monitoring program, at least initially, to routinely collect and analyze samples from reclaimed waste water obtained from the MDWASD, reclaimed waste water treated by the FPL reclaimed water treatment facility, and solid wastes and sludge generated by the FPL reclaimed water treatment facility.

The applicant is requested to expand the scope of its site waste management program to include provisions and procedures to handle, store, contain, and ship for disposal solid wastes and sludge should radioactive materials be detected with radiological characteristics not associated with the operations of Turkey Point Units 6&7. The procedure should describe steps that if radioactive materials of other origins are detected in MDWASD reclaimed water, the bypass from the onsite reclaimed water treatment system will be locked out (manually or automatically) to prevent the inadvertent introduction of radioactive materials in the plant blowdown sump. If such measures cannot be readily implemented, the applicant is requested to augment the scope of the radiological monitoring and sampling program to include waste treatment products and treated water from the onsite reclaimed water treatment facility and commit to revise the site and plant-specific ODCM accordingly.

**FPL RESPONSE:**

Item 1:

ER, Rev.4, Section 3.6.3.2 provides details concerning the turbine building floor and equipment drains which discharge into the turbine building sumps. This section in the ER also provides detail concerning a radiation monitor on the common discharge piping from the turbine building sumps as follows:

“Wastes from the turbine building floor and equipment drains (which include laboratory and sampling sink drains, oil storage room drains, the main steam isolation valve compartment, auxiliary building penetration area, and the auxiliary building HVAC room) are collected in the two turbine building sumps. Drainage from the diesel generator building sumps, the auxiliary building nonradioactive sump, and the annex building sump is also collected in the turbine building sumps. The turbine building sumps provide a temporary storage capacity and a controlled source of fluid flow to the oil separator. A radiation monitor located on the common discharge piping of the sump pumps alarms upon detection of radioactivity in the wastewater. The radiation monitor also trips the sump pumps on detection of radioactivity to isolate the contaminated wastewater. Provisions are included for sampling the sumps. If necessary, the wastewater from the turbine building sumps will be diverted to the liquid radwaste system for processing and disposal.”

The radiation monitor discussed in the above excerpt from ER Section 3.6.3.2 is the same monitor presented in Section 11.5.2.3.3 of the AP1000 DCD (i.e., the waste water discharge radiation monitor [WWS-JE-RE021]):

**“Waste Water Discharge Radiation Monitor**

The waste water discharge radiation monitor (WWS-JE-RE021) measures the concentration of radioactive materials in the discharge from the waste water system. The waste water discharge radiation monitor provides data for reports of

liquid releases of radioactive materials in accordance with Regulatory Guide 1.21.

The waste water discharge radiation monitor is an inline monitor. It stops 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 to the liquid radwaste system for processing. For process system details refer to subsection 9.2.9.”

This DCD information has been incorporated by reference in the Turkey Point Units 6 & 7 FSAR Section 11.5 as part of the NRC-certified standard plant design.

DCD Subsection 9.2.9.2, supplemented by FSAR Subsection 9.2.9.2.2, describes the oil-water separator discharge flow paths. This information is further supplemented by the new FSAR Subsection 9.2.12 Deep Injection Well System, provided in the response to RAI 11.02-6 (eRAI 6985).

Item 2:

FPL agrees that the NEI ODCM template was not developed to specifically accommodate radioactive effluent discharges to the subsurface environment. The principal limitations of the template in this regard are Regulatory Guides 1.109 (in its adoption of RG 1.113) and 4.2 that presume discharge to surface water bodies and receptor exposure thereto. The template does however provide effluent controls (e.g., release permits, radiation monitor surveillance) that can be adopted directly in the Units 6 & 7 ODCM. The Units 6 & 7 ODCM to be developed and made available for NRC inspection prior to fuel load will reflect the DIS operations fate-transport-dosimetry model for normal operations and anticipated operational occurrences. This model is under development and will be described in the response to eRAI 6985 along with the associated COLA revisions. The information requested to be added to FSAR Sections 11.2 and 11.5 has been added to the new FSAR Subsection 9.2.12 (provided in the response to eRAI 6985) and Subsection 11.5.8.

Item 3:

FPL recognizes the reclaimed water to be supplied to the RWTF by MDWASD may contain measurable quantities of unregulated radioactive material, both naturally-occurring and man-made (principally perishable medical isotopes from nuclear reactors and cyclotrons and possibly industrial tritium from landfill leachate). If present, a fraction of this radioactive material will be adsorbed in RWTF treatment sludge and another fraction will remain in the treated RWTF effluent provided as a circulating water supply to Units 6 & 7. The RWTF effluent fraction is ultimately comingled with the Units 6 & 7 blowdown effluent and disposed during DIS operations.

The RWTF sludge fraction will be characterized as required to demonstrate compliance with the waste acceptance criteria established by the commercial sludge disposal facility, as well as applicable transportation regulations. The RWTF effluent fraction, including some end products of processing which may be bypassed to the plant blowdown sump (as warranted by operational conditions), will be characterized to enable its differentiation from radioactive material attributed to Units 6 & 7 operations (to ensure the reporting of DIS discharge quantities and dose solely reflects Units 6 & 7 radioactive material).

The Units 6 & 7 ODCM to be developed and made available for NRC inspection prior to fuel load will describe the sampling, monitoring, analysis, and assessment of the RWTF effluent as it relates to reporting DIS discharge quantities and dose. Additionally, the Units 6 & 7 ODCM and other programs will be informed by relevant reclaimed water use operational experience (e.g., Palo Verde Nuclear Generating Station).

This response is PLANT SPECIFIC.

**References:**

None

**ASSOCIATED COLA REVISIONS:**

Item 1:

No COLA changes.

Item 2:

A sentence will be added after the first paragraph of FSAR Subsection 11.5.8 in a future COLA revision as follows:

An Offsite Dose Calculation Manual (ODCM) is developed and implemented in accordance with the recommendations and guidance of NEI 07-09A (Reference 202). The ODCM contains the methodology and parameters used for calculating doses resulting from liquid and gaseous effluents. The ODCM addresses operational setpoints, including planned discharge rates, for radiation monitors and monitoring programs (process and effluent monitoring and environmental monitoring) for the control and assessment of the release of radioactive material to the environment. The ODCM provides the limitations on operation of the radwaste systems, including functional capability of monitoring instruments, concentrations of effluents, sampling, analysis, 10 CFR Part 50, Appendix I dose and dose commitments, and reporting. The ODCM will be finalized prior to fuel load with site-specific information.

**The site specific conditions addressed in the ODCM includes information addressing the deep injection wells, describes methods that are used in controlling and monitoring discharges of liquid effluents via deep injection well, and describes how water samples are collected and sampled from each dual zone monitoring well. Also addressed are well development and purging, containment and processing of purged well water, and sample processing including sample collection, sample preservation, and quality control.**

Item 3:

A paragraph will be added after the second paragraph of FSAR Subsection 11.5.3 in a future COLA revision as follows:

Units 6 & 7 use the existing fleet program for quality assurance of radiological effluent and environmental monitoring that is based on RG 4.15, Revision 2.

**The effluent from the RWTF facility is monitored for measurable quantities of unregulated radioactive material. If present, a fraction of this radioactive material would be adsorbed in RWTF treatment sludge and another fraction would remain in the treated RWTF effluent as circulating water supply. The RWTF sludge fraction is characterized as required to demonstrate compliance with the waste acceptance criteria established by the commercial sludge disposal facility, as well as applicable transportation regulations. The RWTF effluent fraction, including some end products of processing which may be bypassed to the plant blowdown sump (as warranted by operational conditions), is characterized to enable its differentiation from radioactive material attributed to Units 6 & 7 operations (to ensure the reporting of DIS discharge quantities and dose solely reflects Units 6 & 7 radioactive material).**

**The Units 6 & 7 ODCM developed and made available for NRC inspection prior to fuel load describes the sampling, monitoring, analysis, and assessment of the RWTF effluent as it relates to reporting DIS discharge quantities and dose.**

**ASSOCIATED ENCLOSURES:**

None