



L-2011-295  
10 CFR 52.3

August 4, 2011

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. 027 (eRAI 5655)  
Standard Review Plan Section 02.02.03 – Evaluation of Potential Accidents

Reference:

1. NRC Letter to FPL dated July 5, 2011, Request for Additional Information Letter No.027 Related to SRP Section 02.02.03 – Evaluation of Potential Accidents for the Turkey Point Nuclear Plant Units 6 and 7 Combined License Application

Florida Power & Light Company (FPL) provides, as attachments to this letter, its responses to the Nuclear Regulatory Commission's (NRC) Requests for Additional Information (RAI) 02.02.03-2 and 02.02.03-3 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 August 4, 2011

Sincerely,

William Maher  
Senior Licensing Director – New Nuclear Projects

WDM/RFB

Attachment 1: FPL Response to NRC RAI No. 02.02.03-2 (eRAI 5655)  
Attachment 2: FPL Response to NRC RAI No. 02.02.03-3 (eRAI 5655)

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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

**NRC RAI Letter No. PTN-RAI-LTR-027**

**SRP Section: 02.02.03 -Evaluation of Potential Accidents**

Question from Question from Siting and Accident Conseq Branch (RSAC)

**NRC RAI Number: 02.02.03-2 (eRAI 5655)**

Pursuant to 10 CFR sections 52.79(a)(1)(iv) and 52.79(a)(1)(vi), a COL application must contain a final safety analysis report (FSAR) that shall include, among other things, the location and description of any nearby industrial, military, or transportation facilities and routes, and a description and safety assessment of the site on which the facility is to be located, including site characteristics that comply with site criteria in 10 CFR 100. With respect to onsite or offsite storage of hazardous chemicals, guidance on these regulations is provided in RG 1.206, Section C.I.2.2.3, "Evaluation of Potential Accidents," which states that applicants should determine, on the basis of information provided in FSAR Sections 2.2.1 and 2.2.2, the potential accidents to be considered as design basis accidents and identify the potential effects of those accidents on the nuclear plant in terms of design parameters or physical phenomena. For COL applicants referencing the AP1000 DCD, COL information item 2.2-1 states, among other things, that COL applicants referencing the AP1000 certified design will provide site-specific information related to the identification of potential hazards within the site vicinity. PTN COL 6 & 7 FSAR Section 2.2.3.1.3 addresses toxic and asphyxiant chemicals. For the chemicals stored onsite at Units 1-5, the applicant reported in Table 2.2.-215 that the calculated distance to reach IDLH (Immediate Danger to Life and Health) concentration exceeded the distance to the nearest control room air intake, implying that the concentration of ammonium hydroxide and chlorine exceeded the IDLH concentration at the air intake to the control room. Please provide the concentration of all chemicals at the control room air intake along with the concentration in the control room for comparison.

**FPL RESPONSE:**

As requested, for toxic and asphyxiant chemicals stored on-site at Turkey Point Units 1 through 5, Table 1 provides ground-level concentrations at the control room (CR) air intake in addition to concentrations inside the CR. It is important to note that the ground-level concentrations are derived based on a straight line distance from the postulated spill location to the CR air intake location at ground-level (this represents the centerline concentration of the formed vapor cloud). Therefore, the CR air intake height was not credited in this analysis and the reported concentrations are conservative. In each case the concentration inside the CR is less than the Immediate Danger to Life and Health (IDLH) limit.

**Table 1**  
**IDLH and Chemical Concentration at CR Air Intake/CR**  
**(Chemicals Stored at Turkey Point Units 1 through 5)**

Chemical	IDLH (ppm)	Distance to Nearest CR (feet)	Distance to IDLH (feet)	Concentration at CR Intake (ppm) <sup>1</sup>	Concentration in CR (ppm)/(Oxygen Concentration) <sup>3</sup>
Acetylene	SA <sup>2</sup>	4,331	N/A	1,040	157 / (20.997%)
Ammonium Hydroxide (30% by weight)	300	5,110	10,560	1,170	253
Argon	SA <sup>2</sup>	4,001	N/A	230	29.9/ (21%)
Carbon Dioxide	40,000	4,001	963	2,220	321
Chlorine	10	2,994	3,474	13.5	1.68
Hydrazine	50	2,758	2,178	33.4	14.1
Hydrogen	SA <sup>2</sup>	4,001	N/A	1,280	185
Muriatic Acid (42% by weight)	50	4,429	1,983	10.6	2.13
Nitrogen Gas	SA <sup>2</sup>	3,596	N/A	3,650	500/ (20.989%)
Nitrogen Liquid	SA <sup>2</sup>	3,596	N/A	3,970	340/ (20.993%)
Oxygen	May displace air and cause an oxygen enriched environment	4,329	N/A	275	34.8
Propane	2,100	4,198	1,878	223	26.2
Sodium Hypochlorite (10.8% by weight)	10 (as chlorine)	5,232	1,752	1.22	0.327

<sup>1</sup> The concentrations reported are at ground-level at a distance from the postulated spill location to the CR air intake location at ground-level. Therefore, dispersion from the ground-level to the air intake height is not accounted for in the analysis.

<sup>2</sup> There are no specific exposure limits for this chemical, a simple asphyxiant (SA). Concentrations in the control room were calculated to determine if their release resulted in a displacement of a significant fraction of control room air to cause an oxygen-deficient atmosphere (an atmosphere with less than 19.5% Oxygen as defined by the Occupational Safety and Health Administration).

<sup>3</sup> The calculated oxygen concentrations in the CR are listed for simple asphyxiants.

This response is PLANT SPECIFIC.

#### References:

None

#### ASSOCIATED COLA REVISIONS:

No COLA changes have been identified as a result of this response.

#### ASSOCIATED ENCLOSURES:

None

Proposed Turkey Point Units 6 and 7  
Docket Nos. 52-040 and 52-041  
FPL Response to NRC RAI No. 02.02.03-3 (eRAI 5655)  
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**NRC RAI Letter No. PTN-RAI-LTR-027**

**SRP Section: 02.02.03 -Evaluation of Potential Accidents**

Question from Question from Siting and Accident Conseq Branch (RSAC)

**NRC RAI Number: 02.02.03-3 (eRAI 5655)**

Pursuant to 10 CFR sections 52.79(a)(1)(iv) and 52.79(a)(1)(vi), a COL application must contain a final safety analysis report (FSAR) that shall include, among other things, the location and description of any nearby industrial, military, or transportation facilities and routes, and a description and safety assessment of the site on which the facility is to be located, including site characteristics that comply with site criteria in 10 CFR 100. With respect to onsite or offsite storage of hazardous chemicals, guidance on these regulations is provided in RG 1.206, Section C.I.2.2.3, "Evaluation of Potential Accidents," which states that applicants should determine, on the basis of information provided in FSAR Sections 2.2.1 and 2.2.2, the potential accidents to be considered as design basis accidents and identify the potential effects of those accidents on the nuclear plant in terms of design parameters or physical phenomena. For COL applicants referencing the AP1000 DCD, COL information item 2.2-1 states, among other things, that COL applicants referencing the AP1000 certified design will provide site-specific information related to the identification of potential hazards within the site vicinity. PTN COL 6 & 7 FSAR Section 2.2.3.1.3 addresses toxic and asphyxiant chemicals. For the chemicals stored onsite at Units 6 & 7, the applicant reported in Table 2.2.-215 that the distance to reach IDLH (Immediate Danger to Life and Health) concentration exceeded the distance to the control room air intake, implying that the concentration of carbon dioxide (gas & liquid), hydrazine, and sodium hypochlorite exceeded the IDLH concentration at the air intake to the control room. Please provide the concentration of all chemicals at the control room air intake along with the concentration in the control room for comparison

**FPL RESPONSE:**

As requested, for toxic and asphyxiant chemicals stored on-site at Turkey Point Units 6 & 7, Table 1 provides ground-level concentrations at the control room (CR) air intake in addition to concentrations inside the CR. It is important to note that the ground-level concentrations are derived based on a straight line distance from the postulated spill location to the CR air intake location at ground-level (this represents the centerline concentration of the formed vapor cloud). Therefore, the CR air intake height was not credited in this analysis and the reported concentrations are conservative. In each case the concentration inside the CR is less than the Immediate Danger to Life and Health (IDLH) limit

**Table 1**  
**IDLH and Chemical Concentration at CR Air Intake/CR**  
**(Chemicals Stored at Turkey Point Units 6 & 7)**

Chemical	IDLH (ppm)	Distance to Nearest CR (feet)	Distance to IDLH (feet)	Concentration at CR Intake (ppm) <sup>1</sup>	Concentration in CR (ppm)/(Oxygen Concentration) <sup>3</sup>
Carbon Dioxide	40,000	561	591	43,900	4,980
Carbon Dioxide – Liquid	40,000	561	969	174,000	5,130
Hydrazine (35% solution)	50	253	336	79.9	40.7
Hydrogen Tube Bank	SA <sup>2</sup>	561	N/A	16,600	1,890/ (20.96%)
Methanol	6,000	5,660	1,131	390	128
Morpholine	1,400	253	39	19.8	9.96
Nitrogen	SA <sup>2</sup>	561	N/A	11,500	1,310/ (20.97%)
Nitrogen-Liquid	SA <sup>2</sup>	561	N/A	78,900	2,160/ (20.95%)
Sodium Hypochlorite (10.8% by weight) (Reclaimed Water Treatment Facility)	10 (as chlorine)	5,660	6,864	9.02	2.68
Sodium Hypochlorite (10.8% by weight) (Cooling Tower)	10 (as chlorine)	807	2,622	12.7	5.59
Sodium Hypochlorite (10.8% by weight) (Turbine Building)	10 (as chlorine)	253	120	2.28	1.15

<sup>1</sup> The concentrations reported are at ground-level at a distance from the postulated spill location to the CR air intake location at ground-level. Therefore, dispersion from the ground-level to the air intake height is not accounted for in the analysis.

<sup>2</sup> There are no specific exposure limits for this chemical, a simple asphyxiant (SA). Concentrations in the control room were calculated to determine if their release resulted in a displacement of a significant fraction of control room air to cause an oxygen-deficient atmosphere (an atmosphere with less than 19.5% Oxygen as defined by the Occupational Safety and Health Administration).

<sup>3</sup> The calculated oxygen concentrations in the CR are listed for simple asphyxiants.

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#### References:

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