PMLevyCOLPEm Resource

From: Habib, Donald
Sent: Thursday, May 26, 2016 3:49 PM
To: PMLevyCOLPEm Resource
Subject: FW: Levy FSER Editorial Comments in Multiple Chapters
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Sent: Wednesday, May 25, 2016 3:35 PM
To: Habib, Donald <Donald.Habib@nrc.gov>
Subject: [External_Sender] Levy FSER Editorial Comments in Multiple Chapters

Don

The attached file provides a number of editorial comments (e.g., spelling, double words, etc.) found in the FSER chapters, indicated by yellow highlights. These are provided for your consideration and incorporation of changes as necessary.

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maximum relative displacements between the NI and the adjacent structures, and the median relative displacements between the NI and the adjacent structures. The applicant also provided figures showing the conceptual design for the interface between the NI and the drilled shaft foundation. The staff reviewed the responses provided by the applicant and concluded that the responses are sufficient to demonstrate that the seismic separation between buildings is adequate to prevent interaction with the seismic Category I NI structures as stated in this SER Section 3.7.2.4. The staff considers RAIs 03.07.02-1, and 03.08.05-7 to be resolved pending the incorporation of changes in a future revision to the LNP COL FSAR. This is being tracked as **Confirmatory Item 3.7-3.**

Resolution of Confirmatory Item 3.7-3

Confirmatory Item 3.7-3 is an applicant commitment to update the LNP COL FSAR in various sections of Chapter 2 and Chapter 3 as discussed in the responses cited above. The staff verified the proposed changes were made to the LNP COL FSAR. As a result, Confirmatory Item 3.7-3 is now closed.

Departure

- LNP DEP 3.7-1

On August 27, 2013, LNP submitted letter number NPD-NRC-2013-037 to address the drilled shaft foundation design criteria for the Annex and Turbine Buildings. The submittal included a departure from the AP1000 DCD Tier 2 information in Sections 3.7.2.8.1 and 3.7.2.8.3, LNP DEP 3.7-1, which addresses the use of site-specific seismic hazard for the lateral design of the drilled shafts supporting the seismic Category II portions of the Annex and Turbine Buildings. In the applicant's submittal, the applicant stated that the drilled shafts supporting the portions of the buildings adjacent to the NI do not conform to any of the six soil profiles described in Subsection 3.7.1.4 of the AP1000 DCD. The applicant further stated that in the conceptual design of the drilled shafts, the vertical seismic demands are consistent with the AP1000 CSDRS which exceed the site-specific vertical seismic demands at the LNP site. However, instead of the AP1000 CSDRS, the applicant used site-specific demands (e.g., PBSRS, RG 1.60 minimum FIRS, and scaled site-specific FIRS) to compute the maximum relative horizontal displacements of the Turbine, Annex, and Radwaste Buildings drilled shaft foundations with respect to the NI. The applicant concluded that the drilled shafts are designed for the AP1000 certified design vertical seismic loads and the site-specific horizontal seismic loads to ensure that the maximum relative displacement of the foundation of these buildings and the NI remains within the DCD limit.

The staff reviewed the applicant's departure, to use site-specific horizontal seismic response spectra for the design of the drilled shafts that support the seismic Category II portions of the Annex and Turbine Buildings. The staff's review focused on the impact of the the departure as it relates to the potential seismic interaction between the NI and the adjacent structures. The staff's review found that the applicant used the site-specific horizontal seismic demands (e.g., PBSRS, RG 1.60 minimum FIRS, scaled site-specific FIRS) for the conceptual lateral design of the drilled shafts. The development and use of the site-specific horizontal demands as a representation for the seismic demands at the Levy site was reviewed and found acceptable by the staff in Sections 3.7.1 and 20.1.4.6.5 of this SER. Using the site-specific

horizontal demands, the applicant computed a maximum relative displacement in Table 3.7-206 between the NI and the adjacent structures of 0.77 inches. This relative displacement is less than the minimum 2-inch gap at and below grade, and the 4-inch gap above grade as specified in the AP1000 DCD between the NI and the adjacent structures. The design method for the drilled shafts was reviewed and found acceptable in SER Section 3.8.5. Based on the adequacy of the site-specific seismic hazard development, the limited relative displacement as compared to the available gap between the NI and the adjacent structures under those seismic demands, and the adequate design method for the drilled shafts, the staff finds that there is reasonable assurance that the drilled shaft design under the horizontal site-specific seismic demands will be adequate to support the adjacent structures to the NI so as to preclude seismic interaction under the LNP site-specific seismic demands. Accordingly, proposed departure LNP DEP 3.7-1 is acceptable. The staff concludes that the relevant information presented by the applicant is acceptable and satisfies the guidance in Section 3.7.2 of NUREG-0800 and the requriements in 10 CFR Part 50, Appendix A, GDC 2; 10 CFR Part 50, Appendix S; and 10 CFR 100.23. The staff verified that the applicant has appropriately updated Sections 3.7.2.8.1 and 3.7.2.8.3 in Revision 7 of the LNP COL FSAR.

AP1000 COL Information Item

- LNP COL 3.7-1

The NRC staff reviewed the resolution to the COL information item related to the evaluation of existing and new dams included under Section 3.7.2.12 of the LNP COL FSAR. LNP COL 3.7-1 addresses the evaluation of existing and new dams whose failure could affect the site interface flood level specified in AP1000 DCD Section 2.4.1.2. The applicant references LNP COL FSAR Section 2.4.4 for the details of the evaluation. The applicant states that the LNP site is not subject to flooding from dam failures. The staff's review of LNP COL FSAR Section 2.4.4 is in Section 2.4.4 of this SER, which found the information included therein to be acceptable. Therefore, the NRC staff finds the information added to the LNP COL FSAR by LNP COL 3.7-1 to be acceptable.

The following portion of this technical evaluation section is reproduced from Section 3.7.2.4 of the VEGP SER:

> *License Conditions*
>
> - *Part 10, License Condition 2, Item 3.7-3*
>
> *The applicant has proposed a license condition requiring a seismic interaction review by the licensee for as-built information. This review is performed in parallel with the seismic margin evaluation. The review is based on as-procured data, as well as the as-constructed condition. The as-built seismic interaction review is to be completed prior to fuel load. The Staff has reviewed and approved this review methodology in Section 3.7.5.3 of the AP1000 DCD. Therefore, the staff finds the proposed License Condition 2 acceptable.*

9.2.8.2 *Summary of Application*

Section 9.2 of the LNP COL FSAR, Revision 9, incorporates by reference Section 9.2 of the AP1000 DCD, Revision 19. Section 9.2 of the DCD includes Section 9.2.8.

In addition, in LNP COL FSAR Section 9.2.8, the applicant provided the following:

Site-Specific Information Replacing Conceptual Design Information

- LNP CDI

The applicant provided additional information to replace conceptual design information (CDI) in the AP1000 DCD with information indentifying the source of cooling water for the LNP TCS heat exchangers.

9.2.8.3 *Regulatory Basis*

The regulatory basis of the information incorporated by reference is addressed in NUREG-1793 and its supplements.

In addition, the acceptance criteria associated with the relevant requirements of the Commission regulations for the TCS are given in Section 9.2.2 of NUREG-0800.

9.2.8.4 *Technical Evaluation*

The NRC staff reviewed Section 9.2.8 of the LNP COL FSAR and checked the referenced DCD to ensure that the combination of the DCD and the COL application represents the complete scope of information relating to this review topic.[1] The NRC staff's review confirmed that the information in the application and incorporated by reference addresses the required information relating to the TCS. The results of the NRC staff's evaluation of the information incorporated by reference in the LNP COL application are documented in NUREG-1793 and its supplements.

The staff reviewed the information in the LNP COL FSAR:

Site-Specific Information Replacing Conceptual Design Information

- LNP CDI

The AP1000 standard plant allows the use of either circulating water or raw water for removing heat from the TCS heat exchangers. The AP1000 DCD leaves it up to the COL applicant to specify a specific source of cooling water for plant-specific applications. The LNP design specifies the use of only the circulating water for this purpose and raw water is not utilized for the TCS. This arrangement was reviewed and approved by the NRC during its evaluation of the AP1000 DCD. Consequently, the LNP design is consistent with the AP1000 licensing basis as approved by the staff, which includes conformance with NUREG-0800 Section 9.2.2 (as applicable). Therefore, the supplementary design information that was provided for the LNP TCS is acceptable.

In addition, the acceptance criteria associated with the relevant requirements of the Commission regulations for LNP COL 13.1-1, LNP COL 9.5-1, LNP COL 18.6-1, and LNP COL 18.10-1 are given in Sections 13.1.1, "Management and Technical Support Organization," and 13.1.2-13.1.3, "Operating Organization," of NUREG-0800, "Standard Review Plan [SRP] for the Review of Safety Analysis Reports for Nuclear Power Plants."

The applicable regulatory guidance for the organizational structure of the applicant is as follows:

- American National Standards Institute/American Nuclear Society (ANSI/ANS) -3.1-1993, as endorsed and amended by Regulatory Guide (RG) 1.8, Revision 3, "Qualification and Training of Personnel for Nuclear Power Plants."

The applicable regulations and regulatory guidance for the management, technical support, and operating organizations of the applicant are as follows:

- Title 10 of the *Code of Federal Regulations* (10 CFR) 50.34, "Contents of applications; technical information"
- 10 CFR 50.40, "Common standards"
- 10 CFR 50.48, "Fire Protection"
- 10 CFR 50.71, "Maintenance of records, making of reports"
- 10 CFR 50.50 Appendix B, "Quality Assurance Criteria for Nuclrar Power Plants and Fuel Reprocessing Plants"
- 10 CFR 52.47, "Contents of applications; technical information"
- 10 CFR 50.54, "Condiitons of licenses"
- 10 CFR 52.79, "Contents of applications; technical information in final safety analysis report"
- RG 1.33, Revision 2, "Quality Assurance Program Requirements (Operation)"
- 10 CFR 55, "Operator's Licenses."
- Regulatory Guide 1.8, "Qualification and Training of Personnel for Nuclear Power Plants."
- Regulatory Guide 1.28, "Quality Assurance Program Criteria (Design and Construction)."
- Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)."
- Regulatory Guide 1.68, "Initial Test Programs for Water-cooled Nuclear Power Plants."
- Regulatory Guide 1.114, AGuidance to Operators at the Controls and to Senior Operators in the Control Room of a Nuclear Power Unit."
- Regulatory Guide 1.160, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants."
- Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis."
- Regulatory Guide 1.175, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Inservice Testing."
- Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications."
- Regulatory Guide 1.178, "An Approach for Plant-Specific Risk-Informed Decisionmaking for Inservice Inspection of Piping."
- Regulatory Guide 1.182, "Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants."

The applicable regulations and regulatory guidance documents for STD COL 13.2-1 are as follows:

- 10 CFR 50.54(m)
- 10 CFR Part 55, "Operators' licenses"
- RG 1.8
- RG 1.149, "Nuclear Power Plant Simulation Facilities for Use in Operator Training and License Examinations"
- NUREG-1021, "Operator Licensing Examination Standards for Power Reactors"

The applicable regulations for the Non-Licensed Plant Staff Training Program are as follows:

- 10 CFR 50.120, "Training and qualification of nuclear power plant personnel"
- 10 CFR 52.79(a)(33), "Contents of applications; technical information"

The applicable regulations for the licensed operators training program are as follows:

- 10 CFR 55.13, "General exemptions"
- 10 CFR 55.31, "How to apply"
- 10 CFR 55.41, "Written examinations: Operators"
- 10 CFR 55.43, "Written examinations: Senior operators"
- 10 CFR 55.45, "Operating tests"

The applicable regulations for the licensed operator's requalification program are found in:

- 10 CFR 50.34(b), "Final safety analysis report"
- 10 CFR 50.54(i)
- 10 CFR 55.59, "Requalificaton"

The applicable regulatory guidance for STD COL 18.10-1 is as follows:

- NUREG-0711, "Human Factors Engineering Program Review Model"

13.2.4 Technical Evaluation

The NRC staff reviewed Section 13.2 of the LNP COL FSAR and checked the referenced DCD to ensure that the combination of the DCD and the COL application represents the complete scope of information relating to this review topic. The NRC staff's review confirmed that the information in the application and incorporated by reference addresses the required information relating to the description and schedule of the training programs for nuclear plant personnel. The results of the NRC staff's evaluation of the information incorporated by reference in the LNP COL application are documented in NUREG-1793 and its supplements.

The NRC staff's evaluation related to STD COL 13.3-1 and 13.3-2 is addressed in Attachment 13.3A of this SER.

Supplemental Information

- STD SUP 13.3-1

The NRC staff's review of STD SUP 13.3-1 is addressed in Attachment 13.3A of this SER.

The NRC staff's review of the information provided in the application that is not part of the LNP Emergency Plan is addressed in Attachment 13.3B, "Additional Required Emergency Planning Information," of this SER. The NRC staff's review of the LNP Emergency Plan is addressed in Attachment 13.3C, "Onsite Emergency Plan," of this SER.

The NRC staff reviewed the application against the generic EP ITAAC provided in Table 14.3.10-1, "Emergency Planning Generic Inspections, Tests, Analyses, & Acceptance Criteria (EP ITAAC)," pursuant to Section 14.3.10 of NUREG-0800.

By letter dated September 26, 2013, from DEF to NRC, DEF requested exemptions for Crystal River 3 (CR3) from specific EP standards of 10 CFR 50.47 and specific requirements of Appendix E to 10 CFR Part 50. The staff evaluated the requested exemption in "Safety Evaluation by the Office of Nuclear Reactor Regulation Related to Request for Exemptions from Portions of 10 CFR 50.47 and 10 CFR Part 50, Appendix E, Duke Energy Florida, Inc. et al., Crystal River Unit 3 Nuclear Generating Plant, Docket No. 50-302," and by letter dated March 30, 2015, from NRC to DEF, the NRC approved the exemption. The NRC staff reviewed the LNP Emergency Plan with respect to these exemptions which relate to the use of shared facilities (e.g., the Emergency Operations Facility (EOF)), the conduct of exercises, communications capabilities between the LNP and Crystal River Technicl Support Centers (TSCs), and the distribution of public information.

FEMA has reviewed the emergency plans for the State of Florida and the local government plans for Levy, Citrus, and Marion counties pursuant to 44 CFR 350, and provided its Interim Findings Report (IFR) for Reasonable Assurance, dated December 17, 2009, to the NRC in a letter dated February 17, 2010. FEMA has concluded that based on its review of the currently available offsite plans and procedures for the 10-mile plume exposure pathway emergency planning zone (EPZ), as well as the 50-mile ingestion exposure pathway EPZ, the offsite plans are adequate and there is reasonable assurance that the plans can be implemented with no corrections needed. In a letter dated August 20, 2012, NRC provided FEMA with an updated State of Florida Radiological Emergency Preparedness Plan (REPP) revised November 2011. By letter dated October 18, 2012, FEMA provided its response to NRC stating that FEMA has reviewed the updated State of Florida REPP and the February 17, 2010, reasonable assurance finding for off-site emergency planning is still valid. FEMA again re-evaluated the IFR after the NRC granted exemptions to DEF for the CR3 site. By letter dated September 28, 2015, FEMA determined there is no need to revise the findings of the December 17, 2009, IFR for LNP. Specifically, the IFR determined that the offsite plans are adequate and there is reasonable assurance that the plans can be implemented with no corrections needed. The NRC staff has reviewed the FEMA report and based its overall reasonable assurance finding on the FEMA findings and determinations regarding offsite EP.

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
9.0 Protective Response			
10 CFR 50.47(b)(10) – A range of protective actions has been developed for the plume exposure EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure EPZ appropriate to the locale have been developed.	9.1 The means exist to warn and advise onsite individuals of an emergency, including those in areas controlled by the operator, including:[J.1.1] 1. employees not having emergency assignments; 2. visitors; 3. contractor and construction personnel; and 4. Other other persons who may be in the public access areas, on or passing through the site, or within the owner controlled area.	9.1 A test will be performed of the capabilities.	9.1 The following objectives to warn and advise onsite individuals using the plant public address system are successfully satisfied during a drill or exercise: A. Demonstrate the ability to perform assembly and accountability for all onsite individuals, including those identified below, within 30 minutes of an emergency requiring protected area evacuation and accountability: 1. non-essential employees; 2. visitors; 3. contractor and construction personnel. B. Demonstrate the ability to warn and advise other personnel within the owner controlled area in a timely manner (about 15 minutes). C. Demonstrate the ability to perform site dismissal.

to handle simultaneous activation for a simulated emergency condition. Integrated communication, data capability, and functionality will include the LNP and Crystal River TSC, NRC, and other Federal, State, and local coordination centers.

Technical Evaluation: [H.2] {Appendix E, Section IV.E.8} (8.4.1.a)
The applicant proposed the use of a shared EOF between LNP Units 1 and 2, and CR3, which is owned and operated by Progress Energy. The EOF is an existing facility approved for use by the NRC for CR3. The staff's evaluation of the existing EOF as a shared facility, included the consideration of past implementation practices for shared facilities pertaining to operating reactors and the associated Commissions requirements for operation. In addition, the staff's evaluation focused on the potential impact to the functionality and capability of the existing facility with the addition of the two new units.

PEF has committed in a license condition to demonstrate its integrated capability of the EOF to handle the simultaneous activation of the LNP and CR3 EROs for a simulated emergency condition. Integrated communication, data capability, and functionality will include the LNP and Crystal River TSC, NRC (site teams and incident response centers), and other Federal, State, and local coordination centers, as appropriate.

The staff finds the additional information and proposed textual revisions to the emergency plan and Part 10 of the COL application provided in response to RAIs 13.3-21(A), 13.3-31, and 13.3-39 to be acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1 and Supplement 1 to NUREG-0737 and meets the applicable requirements of Appendix E to 10 CFR Part 50. The staff confirmed that the additional information and proposed textual revisions provided in response to these RAIs have been incorporated into Revisions 1 and 2 of the LNP Emergency Plan and Part 10 of the COL application.

By letter dated November 8, 2012, from PEF to the NRC, the applicant provided its response to address the Final Rule on Enhancements to Emergency Preparedness Regulation effective November 23, 2011. In regard to implementation of the EP rule pertaining to the distance and performance based criteria of the EOF, there were no changes warranted for the LNP Emergency Plan.

By letter dated April 18, 2013, from PEF to NRC regarding impacts from retirement of the CR3 nuclear plant, the applicant renamed the EOF to remove any reference to the Crystal River Training Center. The EOF is now referred to in the LNP Emergency Plan as the LNP EOF. In addition, the applicant added a conditional statement to address when the EOF is required for use by CR3 in the LNP Emergency Plan.

As discussed in Section 13.3.4, CR3 was granted exemptions from specific EP standards including the requirement to have an EOF.

In consideration for the applicant's response to address the new EP rule, and deletion of the reference to theCrystal River Training Center with additional conditional language, the staff finds the LNP Emergency Plan adequately describes the EOF functions. This is acceptable because

EOF staff and representatives of Federal, State, county, and industry emergency response agencies.

Technical Evaluation: (8.4.1.c)
The staff finds the LNP Emergency Plan adequately describes the EOF size requirements. This is acceptable because it conforms to the guidance in Supplement 1 to NUREG-0737.

13.3C.8.22 *EOF Structural Capabilities*

Technical Information in the Emergency Plan: (8.4.1.d)
Section H.2.1.a of the LNP Emergency Plan states, in part, that CR3 will share the existing EOF with LNP.

Technical Evaluation: (8.4.1.d)
Initially, the applicant proposed to use the existing CR3 EOF for support of emergency planning for LNP Units 1 and 2. The staff's review of the EOF focused on the extension of the existing facility as it applies to the proposed reactor units at the LNP site. Currently, the EOF is an existing NRC approved facility for CR3 that meets the requirements of 10 CFR 50.47 and Appendix E to Part 50, and conforms to the guidance in NUREG-0696 and NUREG-0737, Supplement No. 1. The staff determined the EOF was acceptable for use at LNP Units 1 and 2 because: 1) the NRC performs oversight of emergency preparedness, including the EOF, by monitoring performance indicators; 2) the EOF is inspected periodically during routine inspections, drills and exercises; and 3) any changes to the EOF are reviewed in accordance with the established inspection program and requirements for operating reactors.

However, by letter dated April 18, 2013, from PEF to NRC, the applicant proposed a revision to the LNP Emergency Plan to address the future state of CR3 as it relates to decommissioning activities and the anticipated relaxation of offsite EP responsibilities for CR3. In consideration of these circumstances, the applicant anticipates the EOF will no longer be required for response to an emergency event at CR3. In LNP Emergency Plan, the EOF has been renamed the LNP EOF and is expected to support the future needs of LNP only. The staff anticipates a lapse in time for which the readiness capabilities of the EOF will no longer be required. By letter dated January 10, 2014, from DEF to the NRC, the applicant proposed EP ITAAC 7.2.3 through 7.2.5 to address regulatory guidance criteria in NUREG-0696 and Supplement 1 to NUREG-0737 that are not addressed in the LNP Emergency Plan. Prior to fuel load, these EP ITAAC will provide staff assuranceconfirm that the EOF continues to comply with the uniform building code; the EOF is environmentally controlled to provide room air temperature, humidity, and cleanliness appropriate for personnel and equipment; and the EOF is provided with industrial security when it is activated to exclude unauthorized personnel and when it is idle to maintain its readiness. Given that the EOF may not be required to maintain its functionality for some time prior to LNP operations, the staff found these ITAAC necessary to ensure that the EOF is constructed as designed, as required by 10 CFR 52.80. Therefore, the staff finds the applicant's proposed EP ITAAC 7.2.3 through 7.2.5 acceptable since they conform to the guidance in NUREG-0696 and Supplement 1 to NUREG-0737 and meet the requirements in 10 CFR 52.80. The staff subsequently finds the LNP EOF acceptable.

and Supplement 1 to NUREG-0737 that are not addressed in the LNP Emergency Plan. Prior to fuel load, these EP ITAAC will provide staff assuranceconfirm that the EOF continues to comply with the uniform building code; the EOF is environmentally controlled to provide room air temperature, humidity, and cleanliness appropriate for personnel and equipment; and the EOF is provided with industrial security when it is activated to exclude unauthorized personnel and when it is idle, to maintain its readiness. Given that the EOF may not be required to maintain its functionality for some time prior to LNP operations, the staff found these ITAAC necessary to ensure that the EOF is constructed as designed, as required by 10 CFR 52.80. Therefore, the staff finds the applicant's proposed EP ITAAC 7.2.3 through 7.2.5 acceptable since they conform to the guidance in NUREG-0696 and Supplement 1 to NUREG-0737 and meet the requirements in 10 CFR 52.80. The staff subsequently finds the LNP EOF acceptable.

The applicant is proposing to use the EOF formerly used for CR3 for LNP Units 1 and 2. The staff's review focused on the extension of the existing facility as it applies to the proposed reactor units at the LNP site. The EOF is an existing NRC approved facility for CR3 that conforms to the guidance in NUREG-0737 as it pertains to industrial security. Therefore, the staff finds the EOF acceptable for use at LNP Units 1 and 2 because: 1) the NRC has been performing oversight of emergency preparedness, including the EOF, by monitoring performance indicators; 2) the EOF has been inspected periodically during routine inspections and drills and exercises; and 3) any changes to the EOF were reviewed in accordance with the established inspection program and requirements for operating reactors.

13.3C.8.27 *EOF Human Factors*

Technical Information in the Emergency Plan: (8.4.1.k)
By letter dated December 21, 2010, the applicant proposed to revise the LNP Emergency Plan to include a statement that the EOF has been established consistent with NUREG-0696 guidelines. In RAI 13.3-49(4)(b), the staff requested that the applicant describe the capability of the TSC and EOF equipment and data displays to clearly identify and reflect the affected unit during a declared emergency, or propose an EP ITAAC to demonstrate this capability. In response, in part, the applicant proposed additional EP ITAAC acceptance criteria (12.1.1.D.2.d) that states the applicant will demonstrate the capability of the EOF equipment and data displays to clearly reflect the affected unit. Additional information regarding human factors engineering (HFE) for the EOF can be found in Chapter 18, "Human Factors Engineering," of the AP1000 DCD and its supplements, and Section 18.2 of this SER.

Technical Evaluation: (8.4.1.k)
The staff created Confirmatory Item 13.3-2 in Section 13.3C.8.9 of this SER to track the applicant's inclusion of its reference to NUREG-0696 in a future revision to the LNP Emergency Plan. The staff's evaluation of the EOF HFE pursuant to Supplement 1 to NUREG-0737 is addressed in Section 18.2 of this SER. The staff's evaluation of EP ITAAC is provided in Section 13.3C.19 of this SER.

13.3C.9.11 *Capability to Measure Radioiodine Concentrations in Air*

Technical Information in the Emergency Plan: [I.9]
Section I.9, "Measuring Radioiodine Concentrations," of the LNP Emergency Plan states that field teams are equipped with the capability to detect and measure radioiodine concentrations as low as 1×10-7 μCi/cm^3 (microcuries per cubic centimeter) in the vicinity of the site. Interference from background radiation and noble gas is minimized by moving to a low-background position before analyzing a sample cartridge. The collected air sample is measured by hand-held survey meter as an initial check of the projection derived from the plant data to determine if significant quantities of elemental iodine have actually been released. The applicant proposed EP ITAAC 8.8 to ensure a test will be performed of the capabilities to detect and measure radioiodine concentrations in air in the plume exposure EPZ, as low as 10^{-7} μCi/cc under field conditions.

Technical Evaluation: [I.9]
The staff finds that the LNP Emergency Plan adequately describes a capability to detect and measure radioiodine concentrations in air in the plume exposure EPZ as low as 10^{-7} uCi/cc under field conditions. This is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1. The staff's evaluation of EP ITAAC is provided in Section 13.3C.19 of this SER.

13.3C.9.12 *Means to Relate Various Parameters to Dose Rates*

Technical Information in the Emergency Plan: [I.10]
Section I.10, "Relating Measured Parameters to Dose Rates," of the LNP Emergency Plan states that implementing procedures establish the means for relating measured parameters to dose rates for key radioisotopes. These procedures also set the methods for determining projected dose based on projected and actual dose rates. The applicant proposed EP ITAAC 8.9 to ensure a test will be performed of the capabilities to estimate integrated dose from the projected and actual dose rates, and for comparing these estimates with the Environmental Protection Agency Protection Action Guidelines. Appendix 5 provides reference to an EPIP for making dose assessments.

Technical Evaluation: [I.10]
The staff finds that the LNP Emergency Plan adequately establishes means for relating the various measured parameters (e.g., contamination levels, water and air activity levels) to dose rates for key isotopes and gross radioactivity measurements. The LNP Emergency Plan also adequately describes provisions for estimating integrated dose from the projected and actual dose rates, and for comparing these estimates with the protective action guides. The detailed provisions are described in separate procedures. This is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1. The staff's evaluation of EP ITAAC is provided in Section 13.3C.19 of this SER.

53(1)(b) and 13.3-64 to track the applicant's proposed revisions to the emergency plan consistent with this RAI response.

Resolution of Confirmatory Item 13.3-53(1)(b) and 13.3-64

Confirmatory Items 13.3-53(1)(b) and 13.3-64 are the applicant's commitment to update the LNP Emergency Plan. The staff verified that the LNP Emergency Plan was appropriately updated (or revised). As a result, Confirmatory Item 13.3-53(1)(b) and 13.3-64 are now closed.

Therefore, the staff finds that the LNP Emergency Plan adequately describes provisions for the conduct of emergency preparedness exercises and specifies that exercises test the adequacy of timing and content of implementing procedures and methods, test emergency equipment and communications networks, test the public notification system, and ensure that emergency organization personnel are familiar with their duties. This is acceptable because it meets the requirements in Appendix E to 10 CFR Part 50.

13.3C.14.4 *Full Participation Exercise Prior to Fuel Load*

Technical Information in the Emergency Plan: {Appendix E, Section IV.F.2.a}
Section 13.3A.3 of this SER provides discussion and evaluation on EP implementation milestones to include a full participation exercise prior to fuel load. In addition, the applicant proposed EP ITAAC 12.0 to ensure the conductof a full participation exercise that tests major portions of emergency response capabilities, and includes participation by each State and local agency within the plume exposure pathway EPZ, and each State within the ingestion control EPZ. The exercise will be conducted within the specified time periods of 10 CFR Part 50, Appendix E.

Technical Evaluation: {Appendix E, Section IV.F.2.a}
The staff finds that the LNP Emergency Plan adequately describes provisions for the conduct of a full participation exercise at least one year before fuel load. This is acceptable because it meets the applicable requirements in Appendix E to 10 CFR Part 50. The staff's evaluation of EP ITAAC is provided in Section 13.3C.19 of this SER.

13.3C.14.5 *Onsite Biennial Exercise*

Technical Information in the Emergency Plan: {Appendix E, Section IV.F.2.b}
Section N.1.a of the LNP Emergency Plan states that an emergency response exercise will be conducted every 2 years. Section N.1 states, in part, that at least one drill involving principal areas of onsite emergency response capabilities will be conducted during the interval between the biennial exercise. Drills will include management and coordination of emergency response, accident assessment, protective action decision-making, plant system repair, and corrective actions, which would assure that emergency organization personnel are familiar with their duties. State and local agencies will be invited to participate in off-year drills.

adaptors that will be readily available in the event of a fire. The staff requested that the applicant revise Section 14.2.9.4.26 to address this issue. In addition, with respect to BLN COL FSAR Section 14.2.9.4.26(c), the staff requested that the applicant specifically identify any portable "communication equipment" that is credited for fire brigade use. In a letter dated June 30, 2008, the applicant proposed to add the requirement to verify fire equipment hose thread compatibility in Section 14.2 in a future revision of the BLN COL FSAR. The staff confirmed that the applicant addressed the relevant information in Revision 1 of the BLN COL FSAR, and there is no outstanding information expected to be addressed related to this section. This resolves RAI 14.2-9.

In RAI 12.3-12.4-5, the staff requested that the applicant provide additional information related to the portable personnel monitors and radiation survey instruments test abstract contained in Section 14.2.9.4.27 of the BLN COL FSAR. Specifically, the staff requested the applicant to provide information regarding the accuracy and overall performance of portable survey instruments addressed in standard ANSI N42.17A-1989, and information related to the calibration and maintenance of portable radiation survey instruments addressed in ANSI N323A-1997. The staff also requested that the applicant revise Section 14.2 of the BLN COL FSAR to address this issue. In a letter dated September 22, 2008, the applicant proposed to revise Section 14.2.9.4.27 by providing additional text to the general method and acceptance criteria. Specifically, the applicant proposed that the portable monitors and instrument test shall include provisions for verifying proper functioning of monitors and instruments to respond to radiation as required and proper operatability [sic] of instrumentation controls, battery, and alarms as applicable. Further, the applicant proposed to revise Appendix 1AA to Chapter 1, to include the updated version of ANSI N323A cited in the exception to Regulatory Guide 8.6. The staff reviewed the applicant's response and found the proposed changes acceptable. Further, the staff confirmed that the applicant addressed the relevant information in Revision 1 of the BLN COL FSAR, and there is no outstanding information expected to be addressed related to this section. This resolves RAI 12.3-12.4-5.

Resolution of Standard Content Confirmatory Item 14.2-11

The staff verified that the VEGP applicant has incorporated into its FSAR the proposed administrative controls identified as Confirmatory Item 14.2-11 in the staff's SER for the BLN COL. On this basis, Confirmatory Item 14.2-11 [sic] [is] resolved.

- *STD COL 3.9-5*

In a letter dated July 2, 2010 and supplemented by letter dated August 6, 2010, the VEGP applicant identified changes to be made to VEGP COL FSAR Section 14.2.9 involving the initial testing of the pressurizer surge line piping. This COL item is primarily addressed in Section 3.9.3 of the VEGP COL FSAR and that portion is reviewed by the NRC staff in Section 3.12 of this SER. The