Appendix C - Onsite Emergency Plan

Highlighting codes –

Red highlight – NRC questions or things to check

Yellow/Magenta highlight/Lime green highlights – NRC wording or additions that PNNL did not modify

Blue lettering – PNNL additions
Red lettering – PNNL changes to the original NRC wording

General Comment –
We did not change any of the wording for the ITAACs. We left the wording for ITAACs in the conclusion and we also added the ITAAC to the appropriate technical information sections. All of the ITAAC words that were left have been highlighted in red.

13.3.1C Introduction

The NRC evaluates emergency plans for nuclear power reactors to determine whether there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. This SER Appendix provides the results of the review of the onsite emergency plan for the proposed reactors at the William States Lee III Nuclear Station, Units 1 and 2 (Lee Nuclear Station).

Part 2 of the Final Safety Analysis Report (FSAR) states in Section 13.3, "Emergency Planning," that the Lee Nuclear Station Emergency Plan (the Lee Emergency Plan) is contained in a separate document. The separate document is Part 5, "Emergency Planning," of the combined license (COL) application. Also included as part of the onsite emergency plan are ten appendices that provide additional detailed information on various aspects of the Lee Emergency Plan, and an evacuation time analysis report. In addition, the Lee Emergency Plan includes a set of inspections, tests, analyses, and acceptance criteria (ITAAC) to address those aspects of the Lee Emergency Plan that cannot be completed at the COL Application phase.

The following subsections describe the staff's evaluation of the onsite emergency plan for Lee Nuclear Station and parallels the Planning Standards and Evaluation Criteria in NUREG-0654/FEMA-REP-1 issued November 1980, and the March 2002 addenda.

13.3.1C.A Assignment of Responsibility (Organizational Control)

13.3.1C.A.1 Regulatory Basis: 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(1) requires that primary responsibilities for emergency response by the nuclear facility licensee and by State and local organizations within the EPZs [Emergency Planning Zones] be assigned, the emergency responsibilities of the various supporting organizations be specifically established, and each principal response organization has sufficient staff to respond and to augment its initial response on a continuous basis.

The staff evaluated the emergency plan against NUREG-0654/FEMA-REP-1, Planning Standard A, "Assignment of Responsibility (Organizational Control)." The detailed evaluation criteria[1] that the staff considered in determining whether the emergency plan met the applicable regulatory requirements in 10 CFR 50.47(b)(1) and Planning Standard A are taken from NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [A.1.a] Section II.A, "Assignment of Responsibility (Organizational Control)," of the Lee Emergency Plan provides a general discussion of the assignment of responsibility. Participating organizations include: Duke Energy, in South Carolina; Emergency Management Division of the Adjutant General's Office, Department of Health and Environmental Control, Division of Waste Assessment and Emergency Response, and York County and Cherokee County Government Agencies, in North Carolina; Department of Crime Control and Public Safety, Division of Emergency Management, Department of Environment and Natural Resources, Division of Environmental Health, Radiation Protection Section and Cleveland County Government Agencies, U.S. Nuclear Regulatory Commission (NRC), U.S. Department of Energy (DOE), U.S. Department of Homeland Security (DHS)/Federal Emergency Management Agency (FEMA).

Technical Evaluation: As described above, the Lee Emergency Plan, identifies the State, local, Federal and private sector organizations (including utilities), that are intended to be part of the overall response organization within the Lee EPZ.

Technical Information in the Emergency Plan: [A.1.b.] Section II.A.1.b, "Concept of Operations," of the Lee Emergency Plan defines the concept of operations for participating organizations. This section defines Duke Energy's responsibilities during an emergency condition. Duke will assess plant conditions, classify the emergency, activate the Emergency Response Organization (ERO) and Emergency Response Facilities (ERFs), support offsite assessment, make protective action recommendations, monitor control and mitigate plant conditions, communicate to offsite agencies and terminate emergency conditions. The involvement of state, county, and federal governments, as well as the participation of supporting agencies in the private sector are also covered in this section. A chart of responsibility for participating facilities and their functions can be found on Table II-1, "Responsibility for Emergency Response Functions." Figure II-1, "Emergency Response Organization Interrelationships," provides a high level overview of interrelationships between onsite and offsite organizations.

Technical Evaluation: The Lee Emergency Plan describes the applicant's operational role, its concept of operations, and its relationship to the total effort.

Technical Information in the Emergency Plan: [A.1.c.] Section II.A.1.c, "Organizational Interrelationships," of the Lee Emergency Plan contains a block diagram illustrating the

[1] The bracketed, alphanumeric designations used throughout this SER section identify the corresponding NUREG-0654/FEMA-REP-1 evaluation criteria used by the staff to determine compliance with 10 CFR 50.47(b).

interrelationships of all organizations participating in emergency response (Figure II-1, "Emergency Response Organization Interrelationships). The diagram does not show specific State and local agencies. The relationships are only shown by organization and not by position or title. The diagram does not make clear how organizations interact with each other. In **RAI 13.03-54(B)** the staff requested the applicant provide in the diagram, the specific positions or titles of the organizations that will interact during an emergency, and how the organizations interact with each other.

In response letters dated December 17 and December 23, 2008 the applicant stated that principals in charge of emergency response for State, county and local organizations that have radiological incident response responsibilities are identified in Section IV.B of the South Carolina Operational Radiological Emergency Response Plan (SCORERP) and Section IV.B of the Proposed Cherokee County and York County Emergency Operations Plans. The applicant also stated that details regarding specific titles or positions that will interact during an emergency will be provided when available.

Technical Evaluation: Additional information related to the emergency response organizations that will interact during an emergency was requested in **RAI 13.03-54(B).** The applicant stated this information would be provided when available. Because this information needs to be included in the emergency plan, the staff has requested that this information be provided. This issue will be tracked as **Open Item 13.3-01.**

Technical Information in the Emergency Plan: [A.1.d.] Section II.A.1.d, "Individual in Charge of Emergency Response," of the Lee Emergency Plan identifies the individual in charge for coordinating the emergency response as the Shift Manager.

Technical Evaluation: A specific individual was identified by title that shall be in charge of the emergency response.

Technical Information in the Emergency Plan: [A.1.e.] Section II.A.1.e., "24 Hour Emergency Response Capability," of the Lee Emergency Plan states that the station does have 24 hour emergency response capability, communications links are manned, and multiple responders are trained for key emergency response positions, consistent with the training requirements established in Section II.O, "Radiological Emergency Response Training," of the Lee Emergency Plan.

Technical Evaluation: The Lee Emergency Plan describes provisions for 24-hour per day emergency response, including 24-hour per day manning of communications links.

Technical Information in the Emergency Plan: [A.3] Copies of the certification letters established between Duke Energy and the State and local government agencies and private sector organizations that will be supporting the emergency response effort can be found in Appendix 7, "Certification Letters". The actual agreement letters have not been completed. In **RAI 13.03-54(C),** the staff requested the applicant provide additional information relating to certification letters.

In response letters dated December 17 and December 23, 2008 the applicant stated Letters of Agreement with affected organizations will be developed and submitted on a schedule that supports NRC inspection activities and the full participation emergency exercise required by 10 CFR 50, Appendix E, Section IV.F.2.

Technical Evaluation: In **RAI 13.03-54(C)**, staff requested additional information related to certification letters. In response the applicant stated Letters of Agreement with affected organizations will be developed and submitted on a schedule that supports NRC inspection

activities and the full participation emergency exercise required by 10 CFR 50, Appendix E, Section IV.F.2. Because the applicant is required to provide Letters of Agreement in their emergency plan, the staff has requested Letters of Agreement be provided when available. This issue is tracked as **Open Item 13.03-02**.

Technical Information in the Emergency Plan: [A.4] Section II.A.4, "Continuous Operations," of the Lee Nuclear Station Plan discusses Duke Energy's capability for continuous operations by training of multiple responders for key emergency response positions (Section II.O, "Radiological Emergency Response Training.") The Emergency Coordinator or Emergency Operation Facility (EOF) Director is identified as the individual from the principal organization who in charge and has the responsibility for ensuring continuity of technical, administrative, and material resources during emergency operations. Section II.B.7, "Corporate Off-Site Support for Plant Staff," states, "The EOF is capable of 24 hours/day operation for a protracted period."

Technical Evaluation: The Lee Emergency Plan describes the applicant's capability for continuous (24-hour) operations for a protracted period. The individual in the principal organization who will be responsible for assuring continuity of resources (technical, administrative, and material) is specified by title.

13.3.1C.A.2 Regulatory Basis: 10 CFR 50, Appendix E. Section III., "The Final Safety Analysis Report," requires that onsite emergency plans be an expression of the overall concept of operation by describing the essential elements of advance planning that have been considered and the provisions that have been made to cope with emergency situations. The plans must also incorporate information about the emergency response roles of supporting organizations and offsite agencies. The information in the onsite emergency plan shall be sufficient to provide assurance of coordination among the supporting groups and with the licensee.

Technical Information in the Emergency Plan: The Lee Nuclear Station FSAR Section 13.3-2, "Combined License Information Item," states: "The emergency plan describes the plans for coping with emergency situations, including communications interfaces and staffing of the emergency operations facility." This is the extent the FSAR describes the emergency plan. Section II, "Emergency Plan," Subsections A through F; of the Lee Emergency Plan contain supporting information. Section 13.3, "Emergency Planning," of the FSAR (FSAR incorporates the Design Control Document (DCD) by reference). Communication interfaces among the main control room, the technical support center and the emergency planning centers are discussed in Section 13.3.1, "Combined License Information Item." Section 13.3.1 states "COL applicants referencing the AP1000 certified design will address emergency planning including post-72 hour actions and its communication interface, as well as the activation of the emergency operations facility." These plans are said to be consistent with current operating practice and NUREG-0654/FEMA-REP-1. FSAR Section 18.8, "Human System Interface Design," provides the high level requirements for the technical support center and the operational support center. FSAR Section 7.5, "Safety Related Display Information," provides identification of plant variables that are provided for interface to the emergency planning areas.

Technical Evaluation: The Lee Emergency Plan provides an expression of the overall concept of operation by describing the essential elements of advance planning that have been considered and the provisions that have been made to cope with emergency situations. The Lee Emergency Plan also incorporates information about the emergency response roles of supporting organizations and offsite agencies. The information in the onsite emergency plan is

sufficient to provide assurance of coordination among the supporting groups and with the licensee.

13.3.1C.A.3 Regulatory Basis: Section IV.A.8. of Appendix E "Content of Emergency Plans," to 10 CFR 50, "Emergency Planning and Preparedness for Production and Utilization Facilities" requires the identification of State and local officials responsible for planning for, ordering, and controlling appropriate protective actions, including evacuations when necessary.

Technical Information in the Emergency Plan: Section II.A "Assignment of Responsibility (Organizational Control)", of the Lee Emergency Plan defines assignment of responsibility. However, the Lee Emergency Plan does not give the title of officials responsible for planning, ordering and controlling protective actions. In **RAI 13.03-54(A)** the staff requested the applicant provide, by title, the State and local officials that will be responsible for implementing offsite protective actions. Figure II-1, "Emergency Response Organization Interrelationships," shows the interrelationships of all organizations that will be participating in emergency response. Appendix 7, "Certification Letters," contains certification letter signed by the supporting agencies.

In response letters dated December 17 and December 23, 2008 the applicant provided additional information related to State and/or local officials that will be responsible for implementing offsite protective actions. The response provides a summary of the information contained in Section IV.B.1.c of the SCORERP and Sections II.B and II.D of the North Carolina Radiological Emergency Response Plan (NCRERP). The applicant has also provided proposed revisions to Section A.1.b. The following paragraph will be included under the heading, "The State of South Carolina":

> Within the State of South Carolina, the Department of Health and Environmental Control (DHEC) provides Protective Action Recommendations to the Emergency Management Division (EMD) and the Governor, who is responsible for ordering protective actions. EMD is responsible for coordinating radiological emergency planning activities and for coordinating the implementation of corrective actions ordered by the Governor. In the event of a rapidly developing emergency condition that requires implementation of PARs before the State Emergency Operations Center can be activated, the County Manager may implement the facility-recommended PARs without prior consultation with the Director of the Emergency Management Division and the Governor.

The following paragraph will be added to the second paragraph under the heading," The State of North Carolina":

> Within the State of North Carolina, the Department of Environment and Natural Resources (DENR), Division of Environmental Health recommends protective actions for the public. The Department Of Crime Control and Public Safety (CCPS) is responsible for providing PARs to the Governor, who is responsible for ordering protective actions. The Director, North Carolina Division of Emergency Management (NCEM), is responsible for planning, organizing, directing and supervising emergency operations conducted by the State. In the event of a rapidly-developing emergency condition that requires implementation of PARs before the State Emergency Operations Center can be activated, the Chairman of the Board of County Commissioners may implement the facility recommended PARs without prior consultation with the Department of Environment and Natural Resources, Division of Environmental Health, and the Governor.

Technical Evaluation: The staff finds the additional information and proposed textual revisions provided in the applicant's response to **RAI 13.03-54(A)** to be acceptable. **Confirmatory Action NRC Item 13.03-01** was created to track these proposed revisions.

13.3.1C.A.4 Conclusion for Assignment of Responsibility (Organizational Control)

The staff has reviewed the onsite emergency plan and the applicant's responses to **RAI 13.03-54(A) through (C)** in regards to Planning Standard A of NUREG-0654/FEMA-REP-1 and the requirements of 10 CFR 50.47(b)(1) and applicable parts of Section III and Section IV.A.8 of Appendix E to 10 CFR Part 50. Final determination regarding this planning standard will be based on verification of **Confirmatory Action NRC Item13.03-01**, and the applicant's response to the following Open Items:

- Additional information related to the emergency response organizations, by position or title that will interact during an emergency was requested in **RAI 13.03-54(B).** The applicant stated this information would be provided when available. This issue will be tracked as **Open Item 13.3-01.**

- In Response to **RAI 13.03-54(C)**, the applicant stated Letters of Agreement with affected organizations will be developed and submitted on a schedule that supports NRC inspection activities and the full participation emergency exercise required by 10 CFR 50. This issue will be tracked as **Open Item 13.03-02**.

13.3.4C.B Onsite Emergency Organization

13.3.1C.B.1 Regulatory Basis: 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(2); Planning Standard B requires that on-shift facility licensee responsibilities for emergency response be unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available, and the interfaces among various onsite response activities and offsite support and response activities be specified.

The staff evaluated the emergency plan against NUREG-0654/FEMA-REP-1, Planning Standard B, "Onsite Emergency Organization." Planning Standard B provides the detailed evaluation criteria that the staff considered in determining whether the emergency plan met the applicable regulatory requirements in 10 CFR 50.47(b)(2).

Technical Information in the Emergency Plan: [B.1] Section II.B, "Onsite Emergency Organization," of the Lee Emergency Plan states that minimum staff required to conduct routine and immediate emergency operations is maintained at the station consistent with Appendix E of 10 CFR 50. Staffing is described in FSAR Section 13.1, "Organizational Structure of Applicant," (reference from the DCD). Table 13.1-201, "Generic Position/Site Specific Position Cross Reference," provides generic titles and functions provided. Figure II-2, "Emergency Response Organization–Site Only," and Figure II-3, "Off-Site Emergency Response Organization," in the Lee Emergency Plan show the high level organizations that will be located in the ERFs, but there are no details of the actual functions and titles of staff that will be located in these blocks on the diagrams. In **RAI 13.03-55(B)** the staff requested that the applicant provide details regarding staffing of the ERFs. Normal staffing is expected to fulfill corresponding roles within the emergency response organization.

In response letters dated December 17 and December 23, 2008 the applicant stated staffing of Emergency Response Facilities is addressed in Implementing Procedures in place for Duke Energy's operating nuclear plants. The applicant provided Catawba Nuclear Station procedure RP/0/A/5000/022, "Technical Support Center Activation Procedure," and RP/0/A/5000/024, "OSC Activation Procedure," and corporate procedure SR/0/B/2000/003, "Activation of the Emergency Operations Facility," as attachments 1, 2, and 3 to this response. The applicant also stated that these procedures will be revised to include Lee Nuclear Station, on a schedule to support the required full-participation exercise.

Technical Evaluation: In **RAI 13.03-55(B)** the staff requested additional information related to staffing of the ERFs. In response the applicant stated this information will be addressed in implementing procedures. Because this information should be in the emergency plan, the staff requested the applicant provide a summary of this information in the Lee Emergency Plan or provide a statement to explain that this information has been placed in a procedure. A reference to the procedure by title should also be provided. This issue will be tracked as **Open Item 13.03-03.**

Technical Information in the Emergency Plan: [B.2] Section II.B, "Onsite Emergency Organization," of the Lee Emergency Plan states that the Shift Manager position is staffed at all times. In an emergency, this person will act as the Emergency Coordinator until relieved by a qualified member of management (Section II.B.3, "Emergency Coordinator Line of Succession,") or termination of the emergency. The Shift Manager is responsible for initiating required emergency response actions, including notification of affected Federal, State, and local authorities and provision of Protective Action Recommendations to off-site authorities.

Technical Evaluation: The applicant designated an individual as emergency coordinator who shall be on shift at all times, and who shall have the authority and responsibility to immediately

and unilaterally initiate any emergency actions, including providing protective action recommendations to authorities responsible for implementing offsite emergency measures.

Technical Information in the Emergency Plan: [B.3] Section II.B "Onsite Emergency Organization," of the Lee Emergency Plan identifies the Unit Supervisor on shift assumes the Emergency Coordinator position until relieved by a qualified member of management if the Operations Shift Manager is unable to fulfill the duties and responsibilities for any reason. A trained, higher level member of Duke Energy management may assume Emergency Coordinator responsibilities from the Operations Shift Manager after becoming familiar with plant and radiological conditions, status of emergency response/accident mitigation efforts, and determining that the ERFs are staffed adequately enough for them to perform the designated Emergency Coordinator functions. In **RAI 13.03-55(C)**, the staff requested that the applicant describe the reasons why or situations where a higher level of Duke Energy management might take over from the Shift Manager.

In response letters dated December 17 and December 23, 2008 the applicant provided the following examples for the reasons why or situations where a higher level of Duke Energy management might take over from the Shift Manager: the time to ensure adequate rest or to allow for them to accomplish other station management activities for which they are more familiar; the Unit Supervisor/Operations Shift Manager may be needed to discuss events that lead up to the emergency or to plan for future reentry/recovery operations.

Technical Evaluation: In **RAI 13.03-55(C),** the staff requested that the applicant describe the reasons why or situations where a higher level of Duke Energy management might take over from the Shift Manager. The staff found the response to be acceptable. However, because this information was not previously included in the emergency plan, the staff requested Section B.3 of the Lee Emergency Plan be revised to include this information. This issue will be tracked as **Open Item 13.03-4.**

Technical Information in the Emergency Plan: [B.4] Section II.B, "Onsite Emergency Organization," of the Lee Emergency Plan outlines the functional responsibilities assigned to the Emergency Coordinator. Three of the 13 responsibilities, classifying the emergency, authorizing notification to the NRC, State and local authorities, and the decision to notify and recommend protective actions to authorities responsible for offsite emergency measures, are designated as non-delegable. Emergency Operations Facility (EOF) Director is responsible for assuming these non-delegable responsibilities. The Emergency Coordinator can request assistance from any organization deemed necessary to mitigate the emergency.

Technical Evaluation: The Lee Emergency Plan establishes the functional responsibilities assigned to the Emergency Coordinator, and clearly specifies which responsibilities may not be delegated to other elements of the emergency organization. Among the responsibilities that were not delegated included the decision to notify and to recommend protective actions to authorities responsible for offsite emergency measures.

Technical Information in the Emergency Plan: [B.5] Section II.B, "Onsite Emergency Organization," of the Lee Emergency Plan states that positions, title and major tasks to be performed by the persons assigned to the functional areas of emergency activity at the station are said to be described in EPIPs. These assignments shall cover the emergency functions in Table II-2, "Plant Staff Emergency Functions." There are several positions in Table II-2 that do not have sufficient detail to determine that the correct individual is assigned to the functional area. There is no position identified to address the following activities: accountability, decontamination and public information. The staff requested this information be provided in **RAI 13.03-55(A)**. Minimum on-shift staffing and goals for providing additional resources after declaration of an emergency are also indicated in Table II-2.

In response letters dated December 17 and December 23, 2008 the applicant stated that dose assessment responsibility will reside with a senior Radiation Protection (RP) professional in the EOF. A communicator will be assigned by the Operations Shift Manager/Emergency Coordinator from the on shift staff. This position may be filled by a Control Room Operator or Non-Licensed Operator from the unaffected unit who has been trained to perform this function. "Public Information" is handled by the Emergency Operations Facility (EOF). On-site personnel accountability is the responsibility of the Security personnel on shift. Decontamination activities would be the responsibility of the RP Technicians on shift until the arrival of augmented staff.

Technical Evaluation: In **RAI 13.03-55(A)** the staff requested additional information related to staffing of accountability, decontamination and public information positions. The applicant provided this information, but because this information should be included in the Lee Emergency Plan, the staff has requested Section B.5 be revised to include this information. This issue will be tracked as **Open Item 13.03-05**.

Technical Information in the Emergency Plan: [B.6] Section II.B.6, "Interface Between Functional Area," and Figure II-1, "Emergency Response Organization Interrelationships," of the Lee Emergency Plan identifies and illustrates the interface among functional areas of the stations emergency response activity, Duke Energy's corporate support, and the affected State and local government response organizations.

Technical Evaluation: The Lee Emergency Plan specified the interfaces between and among the onsite functional areas of emergency activity, licensee headquarters support, local services support, and State and local government response organization. The interfaces were illustrated in a block diagram, and included the onsite Technical Support Center (TSC), Operational Support (assembly) Center (OSC), and applicant=s near-site Emergency Operations Facility (EOF).

Technical Information in the Emergency Plan: [B.7] Section II.B.7, "Corporate Off-Site Support for the Plant Staff," identifies that the Emergency Coordinator directs the activation and notification of the onsite and off-site ERFs during an emergency. Staffing of the Emergency Operating Facility is shown in Table II-2, "Plant Staff Emergency Functions." Figure II-3, "Off-Site Emergency Response Organization," of the Lee Emergency Plan is a diagram of the EOF organization however the specific job titles are not available to evaluate whether staffing is adequate. Additional information on staffing of the EOF is said to be described in EPIPs but not provided. In **RAI 13.03-55(D)** the staff requested the applicant provide more detail on the EOF staff. The goal for the minimum staff to be in place and operational is 75 minutes. The Corporate Communications organization is described in the Joint Information Center (JIC) Activation information Procedure.

In response letters dated December 17 and December 23, 2008 the applicant provided corporate procedure SR/O/B/2000/003, "Activation of the Emergency Operations Facility," as Attachment 3 to this response, which describes the organization of the EOF.

Technical Evaluation: In **RAI 13.03-55(D)** the staff requested the applicant provide additional information related to staffing of the EOF. The applicant stated this information will be contained in an EPIP and provided an example procedure. Because this information should be in the emergency plan, the staff has requested the applicant provide a summary of this information in the Lee Emergency Plan or provide a statement to explain that this information has been placed in a procedure. A reference to the procedure, by title, should also be provided. This issue will be tracked as **Open Item 13.03-06(D).**

Technical Information in the Emergency Plan: [B.8] Section II.B.8, "Support from Contractor and Private Organizations," of the Lee Emergency Plan identifies information on the principal organizations in the private sector that are part of the overall response organization. However, only four specific organizations identified as "principle" are listed. Generic references are made to the architect/engineering firm, reactor supplier and other consultants and vendors that could be contacted. In **RAI 13.03-55(E)**, the staff requested the applicant provide the names of the other engineering/technical services support firms and other consultants and vendors, as well as the supporting MOUs/MOAs.

In response letters dated December 17 and December 23, 2008 the applicant has revised Section II.B.8 to identify Westinghouse Electric Company by including the following paragraph:

> The principal contractor and private sector organizations that are part of the overall response organization are: Draytonville-McKown Mountain-Wilkinsville Volunteer Fire Department, Upstate Carolina Medical Center, Piedmont Medical Center (Rock Hill, SC), Westinghouse Electric Company, and designated engineering/technical services support firms.

The applicant also stated that additional engineering and technical services support firms have not yet been identified. When additional supporting organizations are identified, details regarding arrangements and supporting Letters of Agreement will be developed. Piedmont Medical Center, Upstate Carolina Medical Center and REAC/TS provide offsite medical support, but are not considered to "provide technical assistance to and augmentation of the emergency organization." Based on this information, the applicant feels that these organizations are correctly identified in Lee Emergency Plan.

Technical Evaluation: The staff finds the additional information and proposed textual revisions provided in the applicant's response to **RAI 13.03-55(E)** to be acceptable with one exception. **Confirmatory Action NRC Item 13.03-02** was created to track the proposed revision to II.B.8. In **RAI 13.03-55(E),** the staff requested the applicant provide the names of the other engineering/technical services support firms and other consultants and vendors, as well as the supporting MOUs/MOAs. The applicant stated that additional engineering and technical services support firms have not yet been identified, but details regarding arrangements and supporting Letters of Agreement will be provided when available. The staff has requested the applicant provide details regarding these arrangements when available. This issue is tracked as **Open Item 13.03-07**. The submittal of Letters of Agreement for these organizations will be tracked under **Open Item 13.03-02.**

Technical Information in the Emergency Plan: [B.9] Section II.B.9, "Local Emergency Response Support," identifies that Duke Energy has established and maintains agreements for local emergency response support services, including firefighting, rescue squad, medical and hospital services. Sections of this plan outline what the basic commitments of these local agencies are and these are echoed in the certification letters in Appendix 7, "Certification Letters." The specific organizations have not been provided in the Lee Emergency Plan and the final agreement letters are not provided. In **RAI 13.03-55(E)**, the staff requested information for these organizations.

The applicant response to **RAI 13.03-55(E)** is summarized above in section B.8.

Technical Evaluation: The staff finds the additional information and proposed textual revisions provided in the applicant's response to **RAI 13.03-55(E)** to be acceptable with one exception. **Confirmatory Action NRC Item 13.03-02** was created to track the proposed revision to II.B.8. In **RAI 13.03-55(E),** the staff requested the applicant provide the names of the other engineering/technical services support firms and other consultants and vendors, as well as the

supporting MOUs/MOAs. The applicant stated that additional engineering and technical services support firms have not yet been identified, but details regarding arrangements and supporting Letters of Agreement will be developed when available. The staff has requested this information be provided when available. This issue is tracked as **Open Item 13.03-07**. The submittal of Letters of Agreement for these organizations will be tracked under **Open Item 13.03-02.**

13.3.1C.B.2 Regulatory Basis: 10 CFR 50, Appendix E.IV., "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.A.1. requires that the emergency plan describe the normal plant operating organization.

Technical Information in the Emergency Plan: The Lee Nuclear Station FSAR, Section 13.1, "Organizational Structure of Applicant," (referenced from the DCD) describes staffing. Table 13.1-201, "Generic Position/Site Specific Position Cross Reference," provides generic titles and functions. Section II of the Lee Emergency Plan, Table II-2, "Plant Staff Emergency Functions," provides the on-site normal plant organization by position, title or expertise as related to the functional area. In **RAI 13.03-55(F) through (Q)**, the staff requested additional information regarding information presented in Table II-2 as summarized below:

In **RAI 13.03-55 (F**) the staff requested the applicant justify extending the augmentation time from 60-75 minutes. In response letters dated December 17 and December 23, 2008 the applicant stated that based on experience at the existing facilities, the plant staff is capable of carrying out the initial emergency response activities prior to activation of the emergency response facilities and that the proposed staff augmentation times of 75 minutes does not adversely affect emergency response capabilities. The applicant also stated that the 75-minute staffing goal is consistent with the minimum staffing requirements previously approved for the emergency response facilities of Duke's Oconee, McGuire, and Catawba Nuclear Stations.

In **RAI 13.03-55 (G)** the staff requested the applicant provide additional information regarding the SRO/STA combined position and specify the applicable mode ensuring that this emergency response function is staffed in all operating modes. In response letters dated December 17 and December 23, 2008 the applicant stated that the individual filling the combined emergency response roles of the SRO/STA position is expected to delegate responsibilities as needed to focus on the highest priority activities as needed to protect the public health and safety. The operator training program for SROs has been modified to include the accident assessment skills that a Shift Technical Advisor (STA) would possess. Training and testing of all SROs in the performance of SRO as well as STA duties has shown a single individual can perform the dual role of SRO/STA. This was endorsed by the NRC in GL 86-04 and has been implemented at existing-operating stations. The applicant does not believe this decision will impair the emergency response capabilities of the on-shift staff.

In **RAI 13.03-55 (H)** staff requested the applicant provided additional information regarding how/why the emergency response functions are filled for all operating modes. In response letters dated December 17 and December 23, 2008 the applicant stated that Table II-2 indicates that there are two Radiation Protection technicians on shift and that one chemistry technician and a senior Radiation Protection expert will be available within 75 minutes. Note 5 of FSAR Table 13.1-202 states a chemistry technician will be onsite during plant operation in all modes other than cold shutdown and refueling. The applicant also stated that minimum shift crew size will always be maintained in a fashion consistent with 10 CFR 50.54 and the plant Technical Specifications.

In **RAI 13.03-55 (I)** the staff requested the applicant clarify why three Non-Licensed Operators are not listed in Table II-2. In response letters dated December 17 and December 23, 2008 the applicant stated that FSAR Table 13.1-202 and Table II-2 in the Lee Emergency Plan contain the same information but are presented differently. The minimum number of non-licensed operators required to support a two-unit plant both operating under emergency conditions is four.

In **RAI 13.03-55 (J)** the staff requested the applicant provide additional information regarding the functions the remaining eight individuals at the unaffected unit will perform in the event of an emergency at the other unit. In response letters dated December 17 and December 23, 2008 the applicant stated that during an emergency, the Operations Shift Manager, one Unit Supervisor, 2 Reactor Operators, 2 Non-Licensed Operators and the Shift Technical Advisor will be available to support the emergency as shown in Table 11-2 of the Lee Emergency Plan. Additional staff may be assigned to support by the Emergency Coordinator as a communicator. One of the Reactor Operators or Non-Licensed Operators may fill this role. Remaining staff will continue to operate their unit. The applicant also stated that minimum staffing for the unaffected Unit will be consistent with Table 13.1-202 of the FSAR.

In **RAI 13.03-55 (K)** the staff requested the clarification regarding staff augmentation as discussed in footnote 3 of Table II-2. In response letters dated December 17 and December 23, 2008 the applicant stated that Footnote 3 on page II-2 of the Lee Emergency Plan reflects a common sense approach to staffing of the emergency response facilities. The applicant does not intend to staff the facilities for a condition that no longer exists and requires no follow-up action by the augmented staff. The applicant also stated that guidance provided in NEI 99-01 addresses whether or not the facility should declare an emergency for a transient event and does not preclude implementation of a common sense approach to facility staffing. As indicated in Footnote 1 on page 11-2 of the Lee Emergency Plan, the transient event would be properly classified and required notifications would be made.

In **RAI 13.03-55 (L)** the staff requested the applicant provide additional information regarding EOF, TSC and OSC activation, operation, full operation time capabilities with respect to staffing levels. In response letters dated December 17 and December 23, 2008 the applicant stated that Section II.B.5 of the Lee Emergency Plan states that the goal for activation of the full on-site emergency response organization is 75 minutes. The EOF has the same activation goal but additional time is allotted for turnover of TSC functions to the EOF.

In **RAI 13.03-55 (M)** the staff requested the applicant provide additional information regarding the specific emergency responder assignments for dose assessment on-shift, and how on-shift and augmented staff functional assignments for this activity meet or exceed NUREG-0654 augmentation guidance, as you commit on page II-12. In response letters dated December 17 and December 23, 2008 the applicant stated that offsite dose assessment is not an on-shift function according 10 CFR 50, NUREG-0654 or the Lee Emergency Plan and is performed by the dose assessors located in the EOF (offsite). Emergency classification of events, on-site protective actions, and off-site protective action recommendations by on-shift staff are based on radiological monitoring and event diagnosis.

In **RAI 13.03-55 (N)** the staff requested the applicant provide clarification regarding emergency response functions described in Table II-1 and II-2. In response letters dated December 17 and December 23, 2008 the applicant stated that the purpose of Table II-1 in the Lee Emergency Plan is to replicate the licensee responsibilities provided in Table 1 of NUREG-0696. This table is not a line-by-line cross-reference to Table 1. Inconsistencies between the tables are due to

inconsistencies in guidance documents. The applicant also stated that there are no plans to transfer functions between facilities due to escalation of the emergency class with regard to firefighting, rescue, and security functions so they are not included in Table II-1.

In **RAI 13.03-55 (O)** the staff requested the applicant provide clarification regarding how the narrative in Section B.1 applies to personnel assignments and capabilities listed in Table 11-2. In response letters dated December 17 and December 23, 2008 the applicant stated that Section II.B.1 of the Lee Emergency Plan discusses the on-shift plant staff and their responsibilities which are reflected in Table II-2. The applicant also stated that assignments are consistent with the individuals' normal duties although some individuals may have additional emergency response duties, such as fire-fighting and first aid, for which they are specifically trained.

In **RAI 13.03-55 (P)(1)** the staff requested the applicant provided clarification for how the on-shift/per unit personnel numbers would be assigned without collateral duty assignments. Specifically, the applicant was asked to include the repair and corrective action and radiation protection functions. Identify the total number of personnel that are not assigned collateral duties. In response letters dated December 17 and December 23, 2008 the applicant stated that the number of individuals who do not have collateral emergency response duties has not yet been determined and details regarding staffing of certain functions (fire-fighting and first aid) are not currently known. The applicant further stated that this information will be developed on a schedule to support execution of the emergency exercise required by 10 CFR 50, Appendix E, Section IV.F.2.

In **RAI 13.03-55 (P)(2)** the staff requested the applicant clarify how a 75 minute timeliness to fulfill the dose assessment function is in accordance with regulations and meets or exceeds NUREG-0654 guidance. In response letters dated December 17 and December 23, 2008 the applicant stated that 10 CFR 50 Appendix E, IV.B, NUREG-0654, and 10 CFR 50.47(b), do not describe a requirement for on-shift dose assessment personnel. NUREG-0654 Table B.1 describes that a dose assessment function be available within 30 minutes, however the applicant feels that the requirement can be relaxed due to (a) the enhanced safety of the AP1000 design; (b) the training of the on-shift Operations staff to provide PARs based on radiological monitoring and event diagnosis; and (c) the availability of the dose assessment function within 75 minutes with the remainder of the ERO.

In **RAI 13.03-55 (P)(3)** the staff requested the applicant clarify whether the activation time clock initiates upon declaration of the emergency classification or some other initiator. In response letters dated December 17 and December 23, 2008 the applicant stated the activation time clock initiates upon declaration of an emergency that requires activation.

In **RAI 13.03-55 (Q)** the staff requested the applicant provide additional information regarding where this capability exists and align other references in the emergency plan, in tables such as Tables II-1 and II-2. In response letters dated December 17 and December 23, 2008 the applicant stated that dose assessment functions are performed using a computer program called Raddose-V. The program can be run from the Control Room, TSC, and EOF or at other Duke facilities if necessary. Following activation of the emergency response facilities, dose assessment functions are normally completed in the EOF.

Technical Evaluation: RAIs 13.03-55 (F) through (Q) were submitted by NRC HQ and were not part of the PNNL review. PNNL did not evaluate the adequacy of the RAI responses. The Lee Emergency Plan describes the normal plant operating organization.

13.3.1C.B.3 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.A.2.a requires that the emergency plan describe the onsite emergency response organization with a detailed discussion of the authorities, responsibilities, and duties of the individual(s) who will take charge during an emergency.

Technical Information in the Emergency Plan: Section II.B, "On-Site Emergency Response Organization" of the Lee Emergency Plan discusses specific positions and responsibilities within the on-site emergency response organization. Information on staff complement can be found in FSAR Section 13.1, "Organizational Structure of Applicant," and Table 13.1-201, "Generic Position/Site Specific Position Cross Reference". The Emergency Coordinator will be in charge of the response effort. A Line of succession and general responsibilities are outlined in Section II.B.3, "Emergency Coordinator Line of Succession", and II.B.4, "Emergency Coordinator Responsibilities". Of those responsibilities listed, classifying the emergency, authorizing notification to the NRC, State and local agencies of emergency status, and recommending protective measures, cannot be delegated.

Technical Evaluation: In addition, the Lee Emergency Plan describes the onsite emergency response organization with a detailed discussion of the authorities, responsibilities, and duties of the individual(s) who will take charge during an emergency.

13.3.1C.B.4 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.A.2.b requires that the emergency plan describe the onsite emergency response organization with a detailed discussion of the plant staff emergency assignments.

Technical Information in the Emergency Plan: Section II.B, "On-Site Emergency Response Organization" of the Lee Emergency Plan states that positions, title and major tasks to be performed by the persons assigned to the functional areas of emergency activity at the station are said to be described in EPIPs. These assignments shall cover the emergency functions in Table II-2 "Plant Staff Emergency Functions." The minimum on-shift staffing and goals for providing additional resources after declaration of an emergency are also indicated in Table II-2.

Technical Evaluation: The Lee Emergency Plan describes the onsite emergency response organization with a detailed discussion of the plant staff emergency assignments.

13.3.1C.B.5 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.A.2.c requires that the emergency plan describe the onsite emergency response organization with a detailed discussion of the authorities, responsibilities, and duties on an onsite emergency coordinator who shall be in charge of the exchange of information with offsite authorities responsible for coordinating and implementing offsite emergency measures.

Technical Information in the Emergency Plan: Section II.B.4, "Emergency Coordinator Responsibilities," of the Lee Emergency Plan identifies responsibilities of the Emergency Coordinator (including those that cannot be delegated). Those responsibilities are described in Sections II.B.3, "Emergency Coordinator Line of Succession", and II.B.4, "Emergency Coordinator Responsibilities".

Technical Evaluation: Also, the Lee Emergency Plan describes the onsite emergency response organization with a detailed discussion of the authorities, responsibilities, and duties on an onsite emergency coordinator who shall be in charge of the exchange of information with offsite authorities responsible for coordinating and implementing offsite emergency measures.

13.3.1C.B.6 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.A.4 requires that the emergency plan identify, by position and function to be performed, the persons within the licensee organization who will be responsible for making offsite dose projections, and a description of how these projections will be made and the results transmitted to State and local authorities, the NRC, and other appropriate governmental entities.

Technical Information in the Emergency Plan: Section II.B, "On-Site Emergency Response Organization" of the Lee Emergency Plan, Table II-1 "Responsibility for Emergency Response Functions," identifies that the Control Room is responsible for dose assessment and projection until the EOF is activated. Dose projections are made in the control room following initial designation of emergency. Upon activation of the EOF (EOF Director), the responsibility of radiological assessment and monitoring are passed to them. The Radiological Assessment Manager is responsible for making projections on a periodic basis. The position and function to be performed is provided in Table II-2, "Plant Staff Emergency Functions." A discussion of the process can be found in Section II-B. Results of dose projections are transmitted to state and local authorities by the emergency coordinator. The communication process is outlined in Section II.E.1, "Notification of State and Local Authorities," of the Lee Emergency Plan.

Technical Evaluation: The Lee Emergency Plan identifies, by position and function to be performed, the persons within the licensee organization who will be responsible for making offsite dose projections and a description of how these projections will be made and the results transmitted to State and local authorities, the NRC, and other appropriate governmental entities.

13.3.1C.B.7 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.A.5 requires that the emergency plan identify, by position and function to be performed, other employees of the licensee with special qualifications for coping with emergency conditions that may arise. Other persons with special qualifications, such as consultants, who are not employed by the licensee and who may be called upon for assistance for emergencies shall also be identified. The special qualifications of those persons shall be described.

Technical Information in the Emergency Plan: Section II.B "On-Site Emergency Response Organization," of the Lee Emergency Plan, Table II-2, "Plant Staff Emergency Functions," outlines plant staff emergency functions. People with expertise assemble in the Technical Support Center (TSC) to assess and provided recommendations to the control room. Table II-2 states that additional staff with expertise deemed beneficial can be designated to assist by the EOF director if necessary. Contractors that may be contacted by the Emergency Coordinator if necessary are listed in Section II.B.8, "Support from Contractor and Private Organizations" of the Lee Emergency Plan.

Technical Evaluation: Also, the Lee Emergency Plan identifies, by position and function to be performed, other employees of the licensee with special qualifications for coping with emergency conditions that may arise. Other persons with special qualifications, such as consultants, who are not employees of the licensee, and who may be called upon for assistance

for emergencies were also identified. The special qualifications of those persons were described.

13.3.1B.B.8 Conclusion for Onsite Emergency Organization

The staff has reviewed the onsite emergency plan and the applicant's responses to **RAIs 13.03-55(A) through (Q)** in regards to Planning Standard B of NUREG-0654/FEMA-REP-1 and the requirements of 10 CFR 50.47(b)(2) and Sections IV.A.1., A.2.a., A.2.b, A.2.c., A.4. and A.5. of Appendix E to 10 CFR Part 50. RAIs 13.03-55 (F) through (Q) were submitted by NRC HQ and were not part of the PNNL review. PNNL did not evaluate the adequacy of the RAI responses. Final determination regarding this planning standard will be based on verification of **Confirmatory Action NRC Item 13.03-02**, and the applicant's response to the following Open Items:

- In **RAI 13.03-55(B)** the staff requested additional information related to staffing of the ERFs. In response the applicant stated this information will be addressed in implementing procedures. Because this information should be in the emergency plan, the staff requested the applicant provide a summary of this information in the Lee Emergency Plan or provide a statement to explain that this information has been placed in a procedure. A reference to the procedure by title should also be provided. This issue will be tracked as **Open Item 13.03-03.**

- In **RAI 13.03-55(C),** the staff requested that the applicant describe the reasons why or situations where a higher level of Duke Energy management might take over from the Shift Manager. The staff found the response to be acceptable. However, because this information was not previously included in the emergency plan, the staff requested Section B.3 of the Lee Emergency Plan be revised to include this information. This issue will be tracked as **Open Item 13.03-4.**

-In **RAI 13.03-55(A)** the staff requested additional information related to staffing of accountability, decontamination and public information positions. Because this information should be included in the Lee Emergency Plan, the staff has requested Section B.5 be revised to include this information. This issue will be tracked as **Open Item 13.03-05**.

- In **RAI 13.03-55(D)** the staff requested the applicant provide additional information related to staffing of the EOF. The applicant stated this information will be contained in an EPIP and provided an example procedure. The staff has requested the applicant provide a summary of this information in the Lee Emergency Plan or provide a statement to explain that this information has been placed in a procedure. A reference to the procedure by title should also be provided. This issue will be tracked as **Open Item 13.03-06.**

- In **RAI 13.03-55(E),** the staff requested the applicant provide the names of the other engineering/technical services support firms and other consultants and vendors, as well as the supporting MOUs/MOAs. The applicant stated that additional engineering and technical services support firms have not yet been identified, but details regarding arrangements and supporting Letters of Agreement will be provided when available. The staff has requested the applicant provide details regarding these arrangements when available. This issue is tracked as **Open Item 13.03-07**. The submittal of Letters of Agreement for these organizations will be tracked under **Open Item 13.03-02.**

13.3.1C.C Emergency Response Support and Resources

13.3.1C.C.1 Regulatory Basis: 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(3); Planning Standard C requires that arrangements for requesting assistance and effectively using resources have been made, arrangements to accommodate State and local staff at the licensee=s near-site Emergency Operations Facility (EOF) have been made, and other organizations capable of augmenting the planned response have been identified.

The staff evaluated the emergency plan against NUREG-0654/FEMA-REP-1, Planning Standard C, "Emergency Response Support and Resources". Planning Standard C provides the detailed evaluation criteria that the staff considered in determining whether the emergency plan met the applicable regulatory requirement in 10 CFR 50.47(b)(3).

Technical Information in the Emergency Plan: [C.1.a. and b.] Section II.C, "Emergency Response Support and Resources", Section II.C.1.a, "Federal Response Capability," of the Lee Emergency Plan states that the EOF Director or Radiological Assessment Manager may request the Federal Radiological Monitoring and Assessment Center (FRMAC) assistance directly or through the NRC for off-site radiological monitoring support. Section II.C.1.b, "Federal Response Capability," states that DOE Savannah River may provide radiological monitoring assistance (DOE Radiological Assistance Program). DOE Oak Ridge may provide medical support from the Radiation Emergency Assistance Center/Training Site (REAC/TS). FRMAC Advance Party could arrive at the Lee Nuclear Station within 3 to 4 hours following the order to deploy, based on driving time. NRC assistance from offices in Atlanta, GA, could arrive 7-8 hours following notification (reduced by air travel). Section II.A.b, "Concept of Operations," references the National Response Plan (NRP), rather than the National Response Framework (NRF) which has now been implemented. In **RAI 13.03-56(A) (B) and (E)** the staff requested the applicant address reference of the NRF.

With regard to **RAI 13.03-56(A)**, in response letters dated December 17 and December 23, 2008 the applicant stated the request for FRMAC assistance could originate with the NRC or with State, tribal, or local governments. Details regarding the request for federal assets are contained in the State and local emergency plans. The process is consistent with the NRF. Requests are based on site conditions and would be directed to the NRC from the EOF Director or Radiological Assessment Manager. The applicant also stated that Duke Energy currently maintains an agreement with REAC/TS for supporting services for dose assessment of whole-body exposures to ionizing radiation for all their operating nuclear power plants. This agreement will be revised to incorporate the Lee Nuclear Station prior to fuel loading.

With regard to **RAI 13.03-56(B)**, in response letters dated December 17 and December 23, 2008 the applicant stated implementation of the NRF will be addressed in Section II.A.1.b and the NRF will be provided as a reference in Section III, "References and Appendices," in a future revision of the Emergency Plan since the NRF became effective in March 2008 following the December 2007 submittal of their application. Drafts of this section were provided as attachments 1 and 2 in this response.

with regard to **RAI 13.03-56(E)**, in response letters dated December 17 and December 23, 2008 the applicant stated the Lee Emergency Plan correctly indicates that the EOF Director and Radiological Assessment Manager are responsible for requesting Federal assistance, but incorrectly states that these individuals may request FRMAC assistance directly. Consistent with the NRF, the request for FRMAC originates with the NRC or with State, tribal, or local governments. Therefore, any requests would be directed to the NRC from the EOF Director or Radiological Assessment Manager. The applicant has provided a revised draft for Section C.1.a

to this response to correct this statement. The last sentence in Section C.1.a now reads as follows: "The EOF Director or Radiological Assessment Manager may request FRMAC assistance through the NRC (Federal Coordinating Agency)."

Technical Evaluation: The staff finds the additional information and proposed textual revisions provided in the applicant's response to **RAI 13.03-56 (B)** and **(E)** to be acceptable with one exception. **Confirmatory Action NRC Items 13.03-03** and **13.03-04** were created to track these proposed revisions. In **RAI 13.03-56(A)** the staff requested the applicant address reference of the NRF. In response the applicant stated that Duke Energy maintains an agreement with REAC/TS and expects this agreement to be revised to incorporate the Lee facility prior to fuel loading. Because emergency plan needs to include Letters of Agreement, the staff has requested the revision of the agreement with REAC/TS to be provided when available. This issue will be tracked under **Open Item 13.03-02**.

Technical Information in the Emergency Plan: [C.1.c.] Section II.C.1.e, "Federal Response Capability," of the Lee Emergency Plan states that facilities and resources needed to support the Federal response through the EOF will be provided. This includes office space and telephones. Duke Energy will also provide limited office space and telephone communications facilities for the NRC personnel in the TSC.

Technical Evaluation: In addition, Section II.C.1.c, "Federal Response Capability," of the Lee Emergency Plan describes provisions for incorporating the Federal response capability into its operation plan, including specific licensee, State and local resources available to support the Federal response, e.g., air fields, command posts, telephone lines, radio frequencies and telecommunications centers.

Technical Information in the Emergency Plan: [C.2.a.] Section II.C.2, "Off-site Organization Representation in the EOF," of the Lee Emergency Plan indicates that designated work areas have been provided in the EOF for the State and county Emergency Management Liaisons and State Radiation Protection Liaisons.

Technical Evaluation: Section II.C.2.b, "Off-site Organization Representation in the EOF," of the Lee Emergency Plan states the applicant will prepare for the dispatch of a representative to principal offsite governmental emergency operations centers (EOCs).

Technical Information in the Emergency Plan: [C.3.] Section II.C.3, "Radiological Laboratories," of the Lee Emergency Plan identifies radiological laboratories in SC Departments of Health and Environmental Control, Bureau of Radiological Health, and NC Department of Environment and Natural Resources, Radiation Protection Section and the DOE Radiological Assistance Team. The Lee Emergency Plan also identifies mobile monitoring and assessment capabilities in addition to fixed facilities for gross counting and spectral analysis. There is no additional detail on the location and abilities of the fixed facilities. In **RAI 13.03-56(C)** the staff requested the applicant provide additional information summarizing where the station counting laboratory is located and when it will be used. The Lee Emergency Plan also states that other Duke Energy facilities at McGuire, Oconee, and Catawba could provide additional support within 1-4 hours. The facilities are identified but the criteria and procedure for requesting this support was not provided. In **RAI 13.03-56(C)** the staff also requested the applicant provide information related to the criterion that would be used to determine when the additional facilities would be needed and what the process for requesting additional aid would be.

In response letters dated December 17 and December 23, 2008 the applicant stated health physics facilities and their capabilities are discussed in Sections 12.5 of the DCD, Chapter 12 and Section 13.1.1.2.4 of the FSAR. The applicant also stated that the Radiological Assessment Manager working with the EOF Director determines staffing needs and is

responsible for committing resources in support efforts to deal with radiological aspects of an emergency. Radiological Assessment Manager also has the authority to seek help from other organizations within Duke Energy. Facilities within Duke Energy that may be utilized during an emergency consist of fixed radiological facilities at the Catawba, McGuire, and Oconee Nuclear Stations.

Technical Evaluation: The staff finds the additional information provided in the applicant's response to **RAI 13.03-56 (C)** acceptable and therefore resolved. Section II.C.3, "Radiological Laboratories," of the Lee Emergency Plan identifies radiological laboratories and their general capabilities and expected availability to provide radiological monitoring and analyses services which can be used in an emergency.

Technical Information in the Emergency Plan: [C.4.] Section II.C.4, "Other Supporting Organizations," of the Lee Emergency Plan identifies additional emergency response support from: INPO Fixed Nuclear Facility Voluntary Assistance Agreement signatories, and REAC/TS. Certification letters are provided in Appendix 7," Certification Letter." No letters of agreement were found for INPO or REAC/TS. In **RAI 13.03-56(D),** the staff requested the applicant provide letters of agreement or other appropriate supporting documentation related to the emergency assistance provided by INPO and REAC/TS.

In response letters dated December 17 and December 23, 2008 the applicant stated agreement letters with INPO and REAC/TS will be incorporated into Appendix 7 in a future revision to the Lee Emergency Plan once they have been reach and prior to fuel loading.

Technical Evaluation: In **RAI 13.03-56(D),** the staff requested the applicant provide letters of agreement or supporting documentation related to the emergency assistance provided by INPO and REAC/TS. The applicant stated Letters of Agreement with INPO and REAC/TS will be incorporated into Appendix 7 once they have been reach and prior to fuel loading. Because the emergency plan should include Letters of Agreement, the staff has requested the Letters Agreement with INPO and REAC/TS be provided once developed. This issue will be tracked under **Open Item 13.03-02**.

13.3.1C.C.2 Regulatory Basis: 10 CFR 50, Appendix E.IV., "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.A.6. requires a description of the local offsite services to be provided in support of the licensee=s emergency organization.

Technical Information in the Emergency Plan: Section II.C.4, "Other Supporting Organizations," of the Lee Emergency Plan identifies additional emergency response support, including local offsite services. Section II.A.1.b, "Assignment of Responsibility" (Organization Control, Concept of Operations), states that State, local and county agencies for public health and safety work through the Emergency Management Agency's EOC in the affected county. The EOF coordinates with the agencies necessary to support the emergency condition. Section II.B.9, "Local Emergency Response Support," states Duke Energy has established and maintains agreements for local emergency response support services, including fire-fighting, medical and hospital services. Appendix 7, "Certification Letters," of the Lee Emergency Plan contains certification letters for fire and medical services.

Technical Evaluation: The Lee Emergency Plan describes the local offsite services to be provided in support of the licensee's emergency organization.

13.3.1C.C.3 Regulatory Basis: 10 CFR 50, Appendix E.IV., "Content of Emergency Plans." 10 CFR 50, Appendix E, IV.A.7. requires the identification of, and assistance expected from, appropriate State, local, and Federal agencies with responsibilities for coping with emergencies.

Technical Information in the Emergency Plan: Section II.C.1, "Federal Response Capability," of the Lee Emergency Plan provides basic information related to expected support from the following Federal agencies: FRMAC, DOE Savannah River, DOE-Oak Ridge and REAC/TS and the NRC. Section II.A.1.b, "Concept of Operations," provides basic information related to expected support from the following State, local and Federal agencies: State of North Carolina, State of South Carolina, County Governments (not specifically identified), the NRC Operations Center, NRC Region II Offices, FRMAC, DOE, EPA, and DHS/FEMA. Section II.B.9, "Local Emergency Response Support," states that Duke Energy has established and maintains agreements with local emergency response support services. Sections D.3 and D.4, "State/Local Emergency Action Level Scheme and Procedures," refer to State and local plans identified in Appendix 8, "Cross-References to Regulations, Guidance, and State and Local Plans," of the Lee Emergency Plan. Section II.E.1, "Notification of State and Local Authorities," provides an overview of the notification systems for prompt notification of affected State, local and Federal authorities. Section II.H.3, "State/County Emergency Operations Centers," refers to State and local plans identified in Appendix 8, "Cross-References to Regulations, Guidance, and State and Local Plans," of the Lee Emergency Plan. Section II.I.11, "Tracking of Plume Using Federal and State Recourses," refers to State and local plans identified in Appendix 8, "Cross-References to Regulations, Guidance, and State and Local Plans," of the Lee Emergency Plan. Section II.J.9, "State and Local Government Implementation of Protective Measures," and Section II.J.11, "Protective Measures Specified by the State(s)," refers to State and local plans identified in Appendix 8, "Cross-References to Regulations, Guidance, and State and Local Plans", of the Lee Emergency Plan. Section II.K.4, "State and Local Responder Exposure Authorizations," refers to State and local plans identified in Appendix 8, "Cross-References to Regulations, Guidance, and State and Local Plans", of the Lee Emergency Plan. Section II.L, "Medical and Public Health Support," discusses local hospital and medical support, including first aid and ambulance transport, and REAC/TS responsibilities during emergencies. Section II.N.1, "Exercises," involves participation by each off-site authority having a role under the Lee Emergency Plan at least biennially.

Technical Evaluation: The Lee Emergency Plan identifies the assistance expected from appropriate State, local, and Federal agencies with responsibilities for coping with emergencies.

13.3.1C.C.4 Conclusion for Emergency Response Support and Resources

The staff has reviewed the onsite emergency plan and the applicant's responses to **RAI 13.03-56(A)** through **(E)** in regards to Planning Standard C of NUREG-0654/FEMA-REP-1and the requirements of 10 CFR 50.47(b)(3) and Sections IV.A.6 and A.7 of Appendix E to 10 CFR Part 50. Final determination regarding this planning standard will be based on verification of **Confirmatory Action NRC Item 13.03-03 and 13.03-4**, and the applicant's response to the following Open Items:

- In **RAI 13.03-56(A)** the staff requested the applicant address reference of the NRF. In response the applicant stated that Duke Energy maintains an agreement with REAC/TS and expects this agreement to be revised to incorporate the Lee facility prior to fuel loading. This issue will be tracked under **Open Item 13.03-02**.

- In **RAI 13.03-56(D),** the staff requested the applicant provide letters of agreement or supporting documentation related to the emergency assistance provided by INPO and REAC/TS. The applicant stated Letters of Agreement with INPO and REAC/TS will be incorporated into Appendix 7 once they have been reach and prior to fuel loading. This issue will be tracked under **Open Item 13.03-02**.

13.3.1C.D Emergency Classification System

13.3.1C.D.1 Regulatory Basis: 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(4) requires that a standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.

Technical Information in the Emergency Plan: Subsection D.1, "Classification System," of Section II.D, "Emergency Classification System," of the Lee Emergency Plan includes a standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters. The following emergency classes are identified: Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency. In **RAI-13.03-75,** the staff requested the applicant submit either an entire EAL scheme or a revised Section D, "Emergency Classification System to address the four critical elements of the EAL scheme. RAI Response]

The "Executive Summary" for Appendix 1, "Emergency Action Levels," of the Lee Emergency Plan states that the approved Design Certification does not include some detailed information such as setpoints and some instrument numbers which are being developed by Westinghouse. The "Executive Summary" also states that in many cases this data is necessary to determine EAL thresholds. Also, the Appendix provides placeholders for future inclusion of certain site-specific values. Since NEI 07-01, Rev. 0, "Methodology for Development of Emergency Action Levels, Advanced Passive Light Water Reactors" has not been endorsed by the NRC, the staff cannot cross-check EAL Recognition Categories (RCs) and Initiating Conditions (ICs) as referenced. In RAI 13.03-57(C), the staff asked the applicant to discuss when the content of subsection 5.3, "Site-specific Implementation," in Section 5.0, "Emergency Action Levels," of Appendix 1 to the Lee Emergency Plan will be provided.

[RAI CLOSED Placeholder. In response letters dated December 17 and December 23, 2008 the applicant stated that they have "reserved" Section 2.0 and Section 5.3 of Appendix 1 is shown as "Reserved." Section 2.0 is also "Reserved" for possible future use and to preserve formatting used in NEI 07-01. The applicant does not intend to include information in Sections 5.3 so neither an ITAAC nor a License Condition is appropriate.]

In RAI 13.03-57(A), the staff asked the applicant to remove the reference to NEI-07 from all submitted emergency planning information, or justify why it should be retained.

[RAI CLOSED Placeholder. In response letters dated December 17 and December 23, 2008 the applicant stated that NEI 07-01 was developed to satisfy the concern that NEI 99-01, Rev. 4, did not apply to advanced light water reactor designs (see Regulatory Guide 1.206). NEI 07-01 specifically applies to the Westinghouse AP1000 and GE Hitachi ESBWR designs. The applicant also stated that Subsection II.D.2 of the Lee Emergency Plan Rev. 0, acknowledges that NEI 07-01 has not yet been endorsed by the NRC and states that EALs in the Lee Emergency Plan are subject to further review and modification based on the version of NEI 07-01 that is endorsed. The applicant intends to update the emergency classification system to be consistent with the endorsed version.]

The Letters of Certification with State and local governments that are included in Appendix 7, "Certification Letters," of the Lee Emergency Plan state that the signature on the letter indicates that the parties concurred with the emergency classification system, initiating conditions, and emergency action levels for the Lee Nuclear Station. "EALs and initiating conditions, based

upon the September 2007 draft of NEI 07-01, are included in the Lee Emergency Plan as Appendix 1, "Emergency Action Levels." However, NEI 07-01, "Methodology for Development of Emergency Action Levels, Advanced Passive Light Water Reactors," Rev. 0, has not been endorsed by the NRC. In **RAI 13.03-57(B)**, the staff asked the applicant to discuss when the final version of the initial emergency action levels will be discussed with and agreed upon with state and local governmental authorities.

[RAI CLOSED Placeholder: In response letters dated December 17 and December 23, 2008 the applicant stated that certification letters indicate concurrence with emergency classification system, EALs and ICs described in the Lee Emergency Plan consistent with the requirements of Section IV.B of Appendix E to 10 CFR Part 50. The applicant also stated when NEI 07-01 is endorsed by NRC, changes to the emergency classification system, EALs and ICs will be reviewed with offsite agencies and their concurrence documented to satisfy regulatory requirements.**]**

Technical Evaluation: RAIs 13.03-56 (A) through 4(C) were submitted by NRC HQ and were not part of the PNNL review. PNNL did not evaluate the adequacy of the RAI response."**]** Section D, "Emergency Classification System," of the Lee Emergency Plan describes a standard emergency classification and action level scheme, including the bases which include facility system and effluent parameters.

The staffs primary focus was its evaluation of the emergency plan against NUREG-0654/FEMA-REP-1, Planning Standard D, "Emergency Classification System." Planning Standard D provides the detailed evaluation criteria that the staff should consider in determining whether the emergency plan meets the applicable regulatory requirement in 10 CFR 50.47(b)(4).

Technical Information in the Emergency Plan - [D.1 and D.2] Section D, "Emergency Classification System," states that for Lee Emergency Plan, the initiating conditions (ICs) include the conditions provided in NEI 07-01, "Methodology for Development of Emergency Action Levels, Advanced Passive Light Water Reactors," Rev. 0 (NEI 07-01) as it applies to AP1000 facilities and postulated accidents identified in the Final Safety Analysis Report (FSAR). Appendix 1, "Emergency Action Levels," of the Lee Emergency Plan provides the parameter values and equipment status that are indicative of each emergency class. **ITAAC 1.1.1** states that a report exists that confirms the specific parameters identified in the Appendix 1 have been retrieved and displayed in the control room, technical support center (TSC), and Emergency Operations Facility (EOF). **[RAI 13.03-74(C)** "...a report exists" issue...**]** **ITAAC 1.1.2** states that a report exists that confirms the ranges available in the control room, TSC, and EOF encompassed the values for the specific parameters identified in Appendix 1. **[RAI 13.03-74(C)** "...a report exists" issue...**]** The "Executive Summary" of Appendix 1, "Emergency Action Levels," states that the set of Emergency Action Levels (EALs) and Initiating Conditions (ICs) are based on the industry guidance provided in NEI 07-01 Rev. 0 draft dated September 2007. **RAI 13.03-57(A)** - Since NEI 07-01 has not been endorsed by the NRC, a review of the EALs and ICs would not be appropriate. Provide one of the following: 1) the EALs with ICs in the Lee Emergency Plan, 2) a reference to the document that contains the EALs with ICs, or 3) an explanation as to why the EALs and ICs in Appendix 1 should be reviewed at this time. **[RAI CLOSED Placeholder:** RAI Response**]**

Technical Evaluation: [Adequacy of RAI Response] **[D.1]** An emergency classification and emergency action level scheme has been established by the applicant. The specific instruments, parameters or equipment status are shown for establishing each emergency class in the in-plant emergency procedures. The plan identifies the parameter values and equipment status for each emergency class. Additional technical interface information is located at SRP Section 2.3.3, "Onsite Meteorological Measurements Programs."

[D.2.1] The initiating conditions included the example conditions found in Appendix 1, "Emergency Action Level Guidelines for Nuclear Power Plants," to NUREG-0654/FEMA-REP-1 and all postulated accidents in the Final Safety Analysis Report (FSAR) for the nuclear facility.

The staff did not review Appendix 1, "Emergency Action Levels," of the Lee Emergency Plan since it references the NEI 07-01, "Methodology for Development of Emergency Action Levels, Advanced Passive Light Water Reactors," Rev. 0, which is a draft document and has not been endorsed by the NRC. **[RAI 13.03-57(A) NRC-endorsed document needed.]** The draft version of NEI 07 also does not contain AP1000 design-specific Initiating Conditions. **[RAI 13.03-57(A) The applicant needs to provide the AP1000 design-specific initiating conditions (ICs), which are subject to NRC approval, to conform with 10 CFR 50.47(b)(4), specifically by meeting Evaluation Criterion D.2 of NUREG-0654/FEMA-REP-1, Rev. 1.] [RAI CLOSED Placeholder: RAI Response]**

The information provided in Section D of the Lee Emergency Plan did not capture the Licensee Actions specified in the Emergency Classification Level scheme in Appendix 1, "Emergency Action Level Guidelines for Nuclear Power Plants," to NUREG-0654/FEMA-REP-1, Rev.1. **[RAI 13.03-57(A) *The applicant also needs to submit the Licensee Actions that are consistent with* those provided in the ECL scheme in Appendix 1 to NUREG-0654/FEMA-REP-1, Rev.] [RAI CLOSED Placeholder: RAI Response]**

Consequently, the staff finds that the Lee Emergency Plan has only partially met the regulatory requirements of 10 CFR 50.47(b)(4).

13.3.1.C.D.2 Regulatory Basis. 10 CFR 50, Appendix E, IV, "Content of Emergency Plans," 10 CFR 50, Appendix E, IV.B, requires that the means to be used for determining the magnitude of and for continually assessing the impact of the release of radioactive materials shall be described, including emergency action levels that are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within and outside the site boundary to protect health and safety. The emergency action levels shall be based on in-plant conditions and instrumentation in addition to onsite and offsite monitoring. These initial emergency action levels shall be discussed and agreed on by the applicant or licensee and state and local governmental authorities, and approved by the NRC.

Technical Information in the Emergency Plan. Subsection 1.3, "Determination of Source Term and Radiological Conditions," of the Lee Emergency Plan states that Appendix 2, "Radiological Assessment and Monitoring," of the Lee Emergency Plan describes the means for determining the source term available for release and the magnitude of release. Subsection D.2, "Emergency Action Levels," of Section D, "Emergency Classification System," of the Lee Emergency Plan incorporates by reference NEI 07-01, "Methodology for Development of Emergency Action Levels, Advanced Passive Light Water Reactors," Rev. 0 (NEI 07-01) that is intended to provide the parameter values and equipment status that are indicative of each emergency class. The emergency action levels are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within and outside the site boundary to protect health and safety. The emergency action levels are based on in-plant conditions and instrumentation in addition to onsite and offsite monitoring. However, NEI 07-01 has not been approved by the NRC.

Technical Evaluation: The means to be used for determining the magnitude of and for continually assessing the impact of the release of radioactive materials, including emergency action levels that are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies are described. In addition, the emergency action levels that are to be used for determining when and what type of protective measures should be considered within and outside the site boundary to protect health and safety are also described. The emergency action levels are based on in-plant conditions and instrumentation in addition to onsite and offsite monitoring. These initial emergency action levels were discussed and agreed on by the applicant and State and local governmental authorities, and approved by the NRC.

13.3.1C.D.3 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans," 10 CFR 50, Appendix E.IV.C, requires that the entire spectrum of emergency conditions that involve the alerting or activating of progressively larger segments of the total emergency organization be described. In addition, emergency action levels (based not only on onsite and offsite radiation monitoring information but also on readings from a number of sensors that indicate a potential emergency, such as the pressure in containment and the response of the Emergency Core Cooling System) for notification of offsite agencies shall be described. Also, the emergency classes defined shall include: (1) notification of unusual events, (2) alert, (3) site area emergency, and (4) general emergency.

Technical Information in the Emergency Plan: Appendix 1, "Emergency Action Levels," of the Lee Emergency Plan describes the entire spectrum of emergency action levels and initiating conditions that involve the alerting or activating of progressively larger segments of the total emergency organization. Emergency action levels (based not only on onsite and offsite radiation monitoring information but also on readings from a number of sensors that indicate a potential emergency, such as the pressure in containment and the response of the Emergency Core Cooling System) for notification of offsite agencies.

Technical Evaluation: The Lee Emergency Plan describes the entire spectrum of emergency conditions that involve the alerting or activating of progressively larger segments of the total emergency organization. Emergency action levels (based not only on onsite and offsite radiation monitoring information but also on readings from a number of sensors that indicate a potential emergency, such as the pressure in containment and the response of the Emergency Core Cooling System) for notification of offsite agencies were described. The emergency classes were defined as: (1) notification of unusual events, (2) alert, (3) site area emergency, and (4) general emergency.

13.3.1C.D.4 Conclusion for Emergency Classification System

On the basis of its review of the Lee Emergency Plan as described above for the emergency classification system, the staff concludes that the information provided is consistent with Planning Standard D of NUREG-0654/FEMA-REP1. Therefore the information is acceptable and meets the requirements of 10 CFR 50.47(b)(4) and Sections IV.B and C of Appendix E to 10 CFR Part 50.

OR

The staff has reviewed the onsite emergency plan and the applicant's responses to **RAI 13.03-XX(Y) through (YY)** in regards to Planning Standard D of NUREG-0654/FEMA-REP-1 and requirements of 10 CFR 50.47(b)(4) and Sections IV.B and C of Appendix E to 10 CFR Part 50.

Final determination regarding this planning standard will be based on verification of **Confirmatory Action NRC Item 13.03-XX**, and the applicant's response to the following Open Items:

- ADD ANY OPEN ITEMS

The applicant has committed to meet the following license conditions and ITAAC, with the associated dates, for the emergency preparedness program:

ITAAC 1.1.1 states that a report exists that confirms the specific parameters identified in the Appendix 1 have been retrieved and displayed in the control room, technical support center (TSC), and Emergency Operations Facility (EOF).

ITAAC 1.1.2 states that a report exists that confirms the ranges available in the control room, TSC, and EOF encompassed the values for the specific parameters identified in Appendix 1.

13.3.1C.E Notification Methods and Procedures

13.3.1C.E.1 Regulatory Basis: 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(5) requires that procedures are established for notification by the licensee of State and local response organizations, and for notification of emergency personnel by all response organizations. In addition, the content of initial and follow-up messages to response organizations and the public was established. Also, the means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone was established.

The staff evaluated the emergency plan against NUREG-0654/FEMA-REP-1, Planning Standard E, ANotification Methods and Procedures.@ Planning Standard E provides the detailed evaluation criteria that the staff considered in determining whether the emergency plan met the applicable regulatory requirements in 10 CFR 50.47(b)(5).

Technical Information in the Emergency Plan: [E.1] Section E, "Notification Methods and Procedures," of the Lee Emergency Plan states that on-site emergencies are immediately reported to the Shift Manager on duty. Offsite response is the responsibility of local government officials in accordance with the State plans. Procedures for notification of State and local response organizations and licensee emergency responders reference the pre-planned messages in the State plans. Notification is initiated by the Emergency Coordinator within 15 minutes of emergency declaration based on EALs in Appendix 1, "Emergency Action Levels," in the Lee Emergency Plan. All affected organizations (warning points) are listed. NRC is notified following notification of State and local authorities and within one hour of declaration of emergency. The notification system consists of a primary and a back-up system maintained through the use of commercial telephones (Section II-F-1, "Description of Communications Links").

Unit 1 and 2 ITAAC 2.1 has been proposed to test the capability to notify responsible State and local organizations within 15 minutes after the licensee declares an emergency (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

Technical Evaluation: The Lee Emergency Plan refers to procedures which describe mutually agreeable bases for notification of response organizations, consistent with the emergency classification and action level scheme set forth in Appendix 1, "Emergency Action Level Guidelines for Nuclear Power Plants," to NUREG-0654/FEMA-REP-1. These procedures include the means for verification of messages. The specific details of verification were ***not*** included in the plan. [Note: *messages are in the North Carolina and South Carolina State Plans* ITAAC 17.0, "Implementing Procedures."]

Technical Information in the Emergency Plan: [E.2.] Section II.E.2, "Notification and Mobilization of Licensee Response Organizations," is directed by the Emergency Coordinator. The plant has an evacuation alarm and a Telephone/Page System. There is redundant notification through the paging system and an automated telephone system. A siren tone generator and public address system speakers can be activated from the control room in case of emergency (DCD 9.5.2.2, "Communications Systems-System Design"). ERO personnel are notified by alpha-numeric pagers following procedures in the EPIPs.

Unit 1 and 2 ITAAC 2.2 has been proposed to test the capability to notify emergency response personnel (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL.

Technical Evaluation: The Lee Emergency Plan also refers to procedures for alerting, notifying, and mobilizing emergency response personnel. [Note: Identify procedures by name and number or refer to ITAAC 17.0; "Implementing Procedures."]

Technical Information in the Emergency Plan: [E.3] Section II.E.3, "Message Content," of the Lee Emergency Plan states that "The content of the messages has been established in conjunction with the State and local governments and include the class of emergency, whether a release is in progress, and any recommended protective measures." The Lee Emergency Plan does not include potentially affected areas and populations as listed in the Guidance in NUREG-0654, FEMA-REP-1, Evaluation Criterion E.3. There is no mention of a notification form and the description of the message content lacks detail. In **RAI 13.03-58(C),** the staff requested the applicant provide detailed information related to the content of the messages/notification.

In response letters dated December 17 and December 23, 2008 the applicant stated that the content of emergency notification messages has been established in conjunction with State and local governments and the forms are included in the State emergency plans. Sections II.E.3 and II.E.4 of the Lee Emergency Plan discuss the content of initial and follow-up messages to State and local authorities.

Technical Evaluation: The staff finds the clarification provided in the applicant's response to **RAI 13.03-58 (C)** acceptable and therefore resolved. The Lee Emergency Plan, in conjunction with State and local organizations, establishes the contents of the initial emergency messages to be sent from the plant. These messages contain information about the class of emergency, whether a release is taking place, potentially affected population and areas, and whether protective measures may be necessary.

Technical Information in the Emergency Plan: [E.4.] Section II.E.4, "Follow-up Messages to Off-site Authorities," of the Lee Emergency Plan states that there are dedicated communications for continuous communication allowing regular updates. However, the Lee Emergency Plan does not provide any detail on where the communication system is located or who provides the communication. In **RAI 13.03-58(D),** the staff requested the applicant provide information identifying the communicators, where they will be located during an emergency and how they will obtain the necessary information for the follow-up messages. Communication with designated authorities is to be continuous with updates approximately every 60 minutes. Follow-up messages shall include all information listed in the FEMA-0654 E.4.a-n (as appropriate).

In response letters dated December 17 and December 23, 2008 the applicant stated that Section II.F.1.b of the Lee Emergency Plan describes follow-up communications with State and local authorities via the Selective Signaling Telephone System as discussed in response to **RAI 13.03-58(A).** Communications are provided by communicators in the TSC or EOF. Follow-up communications during a Notification of Unusual Event are provided by the Control Room.

Technical Evaluation: The staff finds the clarification provided in the applicant's response to **RAI 13.03-58 (D)** acceptable and therefore resolved. The Lee Emergency Plan makes provisions for follow-up messages from the facility to offsite authorities, which contain the following information:

a. location of incident and name and telephone number (or communications channel identification) of caller;
b. date and time of incident;
c. class of emergency;

d. type of actual or projected release (airborne, waterborne, surface spill), and estimated duration/impact times;
e. estimate of quantity of radioactive material release or being released, and the points and height of releases;
f. chemical and physical form of released material, including estimates of the relative quantities and concentration of noble gases, iodines, and particulates;
g. meteorological conditions at appropriate levels (wind speed, direction (to and from), indicator of stability, precipitation, if any);
h. actual or projected dose rates at site boundary; projected integrated dose at site boundary;
i. projected dose rate and integrated dose at the projected peak and at 2, 5 and 10 miles, including sector(s) affected;
j. estimate of any surface radioactive contamination in-plant, onsite, or offsite;
k. licensee emergency response actions underway;
l. recommended emergency actions, including protective measures;
m. request for any needed onsite support by offsite organizations; and
n. prognosis for worsening or termination of event, based on plant information.

Technical Information in the Emergency Plan: [E.6] Section II.E.6, "Instructions to the Public in the Plume Exposure EPZ," of the Lee Emergency Plan states that the Alert and Notification System is used that includes an outdoor warning system designed to meet the acceptance criteria of Section B, "Criteria for Acceptance" of Appendix 3, "Means for Providing Prompt Alerting and Notification of Response Organizations and the Population," of NUREG-0654, FEMA-REP-1, Rev. 1. As a back-up, State and Local plans maintain the alert mechanism via systems such as emergency vehicles, automated dialing systems, and PA Systems to also alert the public to monitor commercial broadcasts for emergency information. Each county controls the activation of the sirens within its boundaries. Person listed by title that will initiate alarm is not mentioned in Lee Emergency Plan but is listed in the referenced state plans.

Unit 1 and 2 ITAAC 2.3 was proposed to test the capability to notify and provide instructions to the populace within the plume exposure EPZ (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL.

Technical Evaluation: The Lee Emergency Plan establishes administrative and physical means, and the time required for notifying and providing prompt instructions to the public within the plume exposure pathway Emergency Planning Zone.

Technical Information in the Emergency Plan: [E.7] Section II.E.7, "Written Messages to the Public," of the Lee Emergency Plan states that written pre-planned messages are released to the local media by the State Director of Emergency Management or Local Director of Emergency Management. The messages give instruction to specific actions to be taken, the nature of the emergency and recommended protective actions, including sheltering, evacuation, and the use of potassium iodide, as appropriate. The Lee Emergency Plan also states that Duke Energy will assist with the development of the messages, but the Lee Emergency Plan does not identify who will assist and in what EPIP the procedure for providing assistance will be located. In **RAI 13.03-58(E)** the staff requested the applicant provide details on how they will be supporting information for written messages to the public.

In response letters dated December 17 and December 23, 2008 the applicant stated that the EOF News Manager manages the communication organization which is responsible for coordinating plant status updates to state and local authorities and the media. The emergency response organization works with state and local authorities to prepare emergency messages

for the public by providing detailed information regarding Protective Action Recommendations (PARs). The applicant also provided corporate procedure SR/0/B/2000/001, "Standard Procedure for Corporate Communications Response to the Emergency Operations Facility", as attachment 1 to this response. The applicant has committed to revise this procedure to include the Lee Facility on a schedule that supports NRC inspection activities and execution of the emergency exercise required by Section IV.F.2 of 10 CFR 50, Appendix E.

Technical Evaluation: In **RAI 13.03-58(E)** the staff requested additional information related to written messages to the public. In response the applicant provided corporate procedure SR/0/B/2000/001, "Standard Procedure for Corporate Communications Response to the Emergency Operations Facility," and committed to revise this procedure to include the Lee Facility. Since the emergency plan should describe the process for disseminating information to the public, the staff has requested that a summary of this information be included in the Lee Emergency Plan or a statement be provided that specifies this information has been moved into a procedure. A reference to this procedure, by title should also be provided. This issue will be tracked as **Open Item 13.03-08**.

13.3.1C.E.2 Regulatory Basis: 10 CFR 50, Appendix E.IV., "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.C. requires that the entire spectrum of emergency conditions that involve the alerting or activating of progressively larger segments of the total emergency organization be described. The communication steps to be taken to alert or activate emergency personnel under each class of emergency shall also be described. Emergency action levels (based not only on onsite and offsite radiation monitoring information but also on readings from a number of sensors that indicate a potential emergency, such as the pressure in containment and the response of the Emergency Core Cooling System) for notification of offsite agencies shall be described. The existence, but not the details, of a message authentication scheme shall be noted for such agencies. The emergency classes defined shall include: (1) notification of unusual events, (2) alert, (3) site area emergency, and (4) general emergency. These classes are further discussed in NUREG-0654/FEMA-REP- 1.

Technical Information in the Emergency Plan: Section II.A, "Assignment of Responsibility (Organization Control)" of the Lee Emergency Plan outlines the responsibility of participating organizations. Section II.D, "Emergency Classification System," and Appendix 1, "Emergency Action Levels," cover emergency response classification, action levels and initiating criteria for the four specified emergency classes. Section II.E, "Notification Methods and Procedures," outlines communication procedures, mobilization, message content and verification of notification is discussed in State plans, and follow-up messages. The actual steps to make the notification are not provided in the Lee Emergency Plan. In **RAI 13.03-58(A)**, the staff requested the applicant provides documentation detailing the notification process. Section II.F contains a brief description of emergency communication systems.

In response letters dated December 17 and December 23, 2008 the applicant stated the Emergency Coordinator provides emergency notification directly to the State and county governments through the Selective Signaling Telephone system discussed in Section II.F. Emergency notification forms are transmitted to the 24-hour warning points in NC and SC as soon as there are online and hourly updates are provided throughout the emergency. Warning points implement their respective emergency plans and notify the appropriate State or local officials specified in their plans once notified. Commercial and satellite phones can be used as backup.

Technical Evaluation: The staff finds the clarification provided in the applicant's response to **RAI 13.03-58 (A)** acceptable and therefore resolved. The Lee Emergency Plan describes the

entire spectrum of emergency conditions that involve the alerting or activating of progressively larger segments of the total emergency organization. The Lee Emergency Plan also describes the communication steps to be taken to alert or activate emergency personnel under each class of emergency. Emergency action levels (based not only on onsite and offsite radiation monitoring information but also on readings from a number of sensors that indicate a potential emergency, such as the pressure in containment and the response of the Emergency Core Cooling System) for notification of offsite agencies were described. The existence, but not the details, of a message authentication scheme were noted. The emergency classes were defined as: (1) notification of unusual events, (2) alert, (3) site area emergency, and (4) general emergency.

13.3.1C.E.3 Regulatory Basis: 10 CFR 50, Appendix E.IV., "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.D.1. requires that administrative and physical means for notifying local, State, and Federal officials and agencies and agreements reached with these officials and agencies for the prompt notification of the public and for public evacuation or other protective measures, should they become necessary, shall be described. This description shall include identification of the appropriate officials, by title and agency, of the State and local government agencies within the EPZs.

Technical Information in the Emergency Plan: Section II.E, "Notification Methods and Procedures," of the Lee Emergency Plan outlines communication procedures, mobilization, message content (see State plans for content), and follow-up messages, however, it does not address the administrative or physical means for notifying local, State and Federal officials and agencies. The Lee Emergency Plan only provides a list of warning points notified but does not indentify the officials by title and agency located in the EPZs that will be notified in an emergency. In **RAI 13.03-58(B)** the staff requested the applicant provide the details described in 10 CFR 50, Appendix E.IV.D.1.

In response letters dated December 17 and December 23, 2008 the applicant stated that Section II.E of NUREG-0654/FEMA-REP-1 does not suggest that the licensee specify the "officials" to be notified, but indicates that the licensee should specify "response organizations."

Technical Evaluation: In **RAI 13.03-58 (B)** the staff requested the applicant provide the details described in 10 CFR 50, Appendix E.IV.D.1. In response the applicant stated that Section II.E of NUREG-0654/FEMA-REP-1 does not suggest that the licensee specify the "officials" to be notified, but indicates that the licensee should specify "response organizations." While the staff does agree that NUREG-0654/FEMA-REP-1 does not suggest that the licensees specify the "officials" to be notified, 10 CFR 50, Appendix E.IV.D does state that "...This description shall include identification of the appropriate officials, by title and agency, of the State and local government agencies within the EPZs." Therefore the staff has requested that information required 10 CFR 50, Appendix E.IV.D be provided. This issue is tracked as **Open Item 13.03-09**.

13.3.1C.E.4 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.D.3 requires that a licensee shall have the capability to notify responsible State and local governmental agencies within 15 minutes after declaring an emergency. The licensee shall demonstrate that the State/local officials have the capability to make a public notification decision promptly on being informed by the licensee of an emergency condition. The design objective of the prompt public notification system shall be to have the capability to essentially complete the initial notification of the public within the plume exposure pathway EPZ within about 15 minutes. The use of this notification capability will range from immediate notification of the public (within 15 minutes of the time that State and local officials

are notified that a situation exists requiring urgent action) to the more likely events where there is substantial time available for the State and local governmental officials to make a judgment whether or not to activate the public notification system. Where there is a decision to activate the notification system, the State and local officials will determine whether to activate the entire notification system simultaneously or in a graduated or staged manner. The responsibility for activating such a public notification system shall remain with the appropriate governmental authorities.

Technical Information in the Emergency Plan: Section II.A, "Assignment of Responsibility (Organizational Control)," of the Lee Emergency Plan outlines the responsibility of participating organizations. Section II.E, "Notification Methods and Procedures," outlines communication procedures, mobilization, message content (see state plans), and follow-up messages and states this can be done within 15 minutes of an emergency being declared. The system has the capability to notify the public within the EPZ. The responsibility for off-site response resides with local government officials. Section II.F, "Emergency Communications," contains a description of emergency communication systems. Section II.G, "Public Education and Information," describes the public notification program which includes distribution of information and coordination with media. A description of the public alert and notification system can be found in Appendix 3, "Public Alert and Notification System Description."

Technical Evaluation: The Lee Emergency Plan describes the capability to notify responsible State and local governmental agencies within 15 minutes after declaring an emergency. The design objective of the prompt public notification system shall be to have the capability to essentially complete the initial notification of the public within the plume exposure pathway EPZ within about 15 minutes. The responsibility for activating such a public notification system is described.

13.3.1B.E.5 Conclusion for Notification Methods and Procedures

NOTE – Should this be here? As discussed above, the applicant needs to provide the bases for why ITAACs in Table 3.8-1 Inspection, Tests, Analyses, And Acceptance Criteria 2.1, 2.2, and 2.3 will demonstrate the sufficiency for Planning Standards E.1, E.2, and E.6. The NRC will determine whether this planning standard is acceptable and document its determination in the Final Safety Evaluation Report (FSER), based on information the applicant has provided to date and its response to Open Item ------

The staff has reviewed the onsite emergency plan and the applicant's responses to **RAIs 13.03-58(A) through (E)** in regards to Planning Standard E of NUREG-0654/FEMA-REP-1 and the requirements of 10 CFR 50.47(b)(3) and Sections IV.A.6 and A.7 of Appendix E to 10 CFR Part 50. Final determination regarding this planning standard will be based on the applicant's response to the following Open Items:

- In **RAI 13.03-58(E)** the staff requested additional information related to written messages to the public. In response the applicant provided corporate procedure SR/0/B/2000/001, "Standard Procedure for Corporate Communications Response to the Emergency Operations Facility," and committed to revise this procedure to include the Lee Facility. The staff has requested that a summary of this information be included in the Lee Emergency Plan or a statement be provided that specifies this information has been moved into a procedure. A reference to this procedure, by title should also be provided. This issue will be tracked as **Open Item 13.03-08**.

- In response to **RAI 13.03-58 (B)** The applicant described the physical means for notifying local, State, and Federal officials and agencies and agreements reached with these officials and

agencies for the prompt notification of the public and for public evacuation or other protective measures, but did not identify the appropriate officials, by title and agency, of the State and local government agencies within the EPZs that will provide support consistent with the requirements of 10 CFR 50, Appendix E.IV.D. The need to identify the appropriate government officials is tracked as **Open-item 13.03-09**.

The applicant has committed to meet the following license conditions and ITAAC, with the associated dates, for the emergency preparedness program:

[E.1., ITAAC 2.1] An ITAAC has been proposed to test the capability to notify responsible State and local organizations within 15 minutes after the licensee declares an emergency (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

[E.2., ITAAC 2.2] An ITAAC has been proposed to the capability to notify emergency response personnel (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL.

[E.6., ITAAC 2.3] An ITAAC has been proposed to test the capability to notify and provide instructions to the populace within the plume exposure EPZ (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL.

13.3.1C.F Emergency Communications

13.3.1C.F.1 Regulatory Basis: 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(6) requires that provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.

The staff evaluated the emergency plan against NUREG-0654/FEMA-REP-1, Planning Standard F, "Emergency Communications." Planning Standard F provides the detailed evaluation criteria that the staff considered in determining whether the emergency plan met the applicable regulatory requirements in 10 CFR 50.47(b)(6).

The communication plans for emergencies included organizational titles and alternates for both ends of the communication links. The applicant described reliable primary and backup means of communication for the response organization. The applicant and the respective State and local communication systems are compatible with one another. Additional technical interface information is located at SRP Section 9.5.2, "Intra-plant and Plant-to-Offsite Communications." The Lee Emergency Plan includes the following:

Technical Information in the Emergency Plan: [F.1.a] Section II.F, "Emergency Communications," of the Lee Emergency Plan, states that responsibilities of designated personnel for the communication systems can be found in State and local plans and in the EPIPS. However, without a summary of these responsibilities in the Lee Emergency Plan it is not possible to assess whether the responsibilities are adequate to meet the intent of the criterion. In **RAI 13.03-59(D),** the staff requested the applicant provide additional information on who is designated to use communication systems and what responsibilities they have for using those communication systems. The station maintains capabilities for 24 hours per day emergency notification to the State and county emergency response network. All State/county Warning Points are staffed 24 hours per day.

In response letters dated December 17 and December 23, 2008 the applicant stated that a communicator will be assigned by the Operations Shift Manager/Emergency Coordinator from the on shift staff. The position will generally be filled by a Control Room Operator or Non-Licensed Operator from the unaffected unit that has been trained to perform this function. Full-time communications positions in the emergency response organization include the TSC Off-Site Agency Communicator, the EOF Off-Site Agency Communicator, and the NRC Communicator.

Technical Evaluation: The staff finds the additional information provided in the applicant's response to **RAI 13.03-59(D)** acceptable and therefore resolved. Provisions for 24-hour per day notification to and activation of the State/local emergency response network; and at a minimum, a telephone link and alternate, including 24-hour per day manning of communications links that initiate emergency response actions.

Technical Information in the Emergency Plan: [F.1.b] Section II.F.1.a, "Description of Communication Links," of the Lee Emergency Plan states that Duke Energy maintains capabilities for 24 hour per day emergency notification to the State and county emergency response network. Section II.F.1.b, "Description of Communication Links," states that communication links exist between EOF and State and County warning points.

Technical Evaluation: Provisions are established for communicating with contiguous State/local governments within the Emergency Planning Zones.

Technical Information in the Emergency Plan: [F.1.c] Section II.F "Emergency Communications," of the Lee Emergency Plan provides communication system descriptions.

Section II.N.2.a, "Communications Drills," states that communications testing with Federal emergency response organizations is performed quarterly.

Technical Evaluation: Provisions for communications, as needed, are established with Federal emergency response organizations.

Technical Information in the Emergency Plan: [F.1.d] Section II.F.1.d "Description of Emergency Communications Links," of the Lee Emergency Plan states that Duke Energy provides capability for communications between Control Room or TSC and the EOF, county and State EOCs. Section II.F.1.f, "Description of Communications Links," states that communications between the TSC/EOF and off-site monitoring teams is via radio. This appears to be inconsistent with the terminology (off-site monitoring teams) listed in Section II.F.1.f and the term "radiological monitoring teams" used in NUREG-0654/FEMA-REP-1; Evaluation Criterion F.1. This information was requested in **RAI 13.03-59(B).** Section II.F.1.b, "Description of Communications Links," identifies communication links (EOF to State and county warning points).

Unit 1 and 2 ITAAC 3.1 has been proposed to test that the means exist for communication among the control room, TSC, EOF, principal State and local emergency operations centers and radiological field assessment teams (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL.)

In response letters dated December 17 and December 23, 2008 the applicant stated that the Radiological Assessment Manager may contact DOE-Savannah River and/or REAC/TS for radiological monitoring assistance as discussed in Section II.C.1.b of the Lee Emergency Plan. The NRC is the primary interface for communications with other Federal agencies.

Technical Evaluation: The staff finds the additional information provided in the applicant's response to **RAI 13.03-59(B)** acceptable and therefore resolved. Provisions are established for communications between the nuclear facility and the licensee=s near-site Emergency Operations Facility, State and local emergency operations centers, and radiological monitoring teams.

Technical Information in the Emergency Plan: [F.1.e] Section II.F.1.e "Description of Communications Links," of the Lee Emergency Plan refers back to Section II.E.2, "Notification and Mobilization of Licensee Response Organizations," for notification, alerting and activation of emergency response personnel in the TSC, OSC and EOF.

Technical Evaluation: Provisions are provided for alerting or activating emergency personnel in each response organization.

Technical Information in the Emergency Plan: [F.1.f] Section II.F.1.c, "Description of Communications Links," of the Lee Emergency Plan identifies dedicated communications with the NRC through ENS, HPN, RSCL, PMCL, ERDS, MCL, and LAN systems. Section F.1.f identifies communications between Control Room/TSC/EOF to the NRC Operations Center is via the ETS or private telephone and to the regional office via the normal private capability. Communication between the TSC/EOF and off-site monitoring teams is by radio.

Unit 1 and 2 ITAAC 3.2 has been proposed to test that the means exists for communication from the control room, TSC, and EOF to NRC headquarters and regional office EOCs including the establishment of ERDS between onsite computer systems and the NRC (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL).

Technical Evaluation: Provisions are established for communication by the licensee with NRC headquarters and NRC Regional Office Emergency Operations Centers and the licensee=s Corporate Emergency Operations Facility and radiological monitoring team assembly area.

Technical Information in the Emergency Plan: [F.2] Section II.F.2, "Communication with Fixed and Mobile Medical Support Facilities," states Duke Energy maintains communications systems that allow for communications between Lee Nuclear Station and fixed and mobile medical support facilities. A communication system exists between the station and fixed and medical support facilities that include commercial telephones radio through the supporting dispatching center.

Technical Evaluation: The Lee Emergency Plan ensures that a coordinated communication link exists for fixed medical support facilities and ambulance service(s).

Technical Information in the Emergency Plan: [F.3] Section II.F.3, "Communication System Reliability," of the Lee Emergency Plan states that on-site communication systems are periodically tested and that dedicated telephone lines are checked according to specified schedules. Section II.H.10, "Emergency Equipment and Supplies," states that emergency equipment is inspected and inventoried once each calendar quarter and after each use. The requirements for performing the inventories and inspection are provided in the EPIPs.

Technical Evaluation: *The Lee Emergency Plan describes the conduct of periodic testing of* the entire emergency communications system.

13.3.1C.F.2 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR 50, *Appendix E. IV.E.9 requires at least one onsite and one offsite communications* system; each system having a backup power source.

Technical Information in the Emergency Plan: Section II.F.3, "Communication System Reliability," of the Lee Emergency Plan states that the onsite communication systems have diverse power supplies. There is also a statement that failure of normal power supplies does not impact offsite communications because, in most cases, backup power is provided. In **RAI 13.03-59(A)**, the staff requested the applicant provide clarification of this statement. Additional information of communication system and backup power can be found in DCD Section 9.5.2, "Communications Systems."

In response letters dated December 17 and December 23, 2008 the applicant stated that systems are maintained to communicate within the station and offsite as discussed in section 9.5.2.2.3.2.2 of the FSAR. The selective signaling system is used as the primary means of communication between the station and offsite agencies. The system has sufficient backup power sources with automatic transfer capability to maintain communication if power is lost. Commercial telephone company lines and the Duke radio Network can be used as secondary means of communication.

Technical Evaluation: The staff finds the additional information provided in the applicant's response to **RAI 13.03-59(A)** acceptable and therefore resolved. The Lee Emergency Plan states that at least one onsite and one offsite communications system, each system having a backup power source, is provided. In addition, the applicant's communication plans have arrangements for emergencies, including titles and alternates for those in charge at both ends of the communication links and the primary and backup means of communication.

13.3.1C.F.3 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR 50, Appendix E. IV.E.9 also requires that all communication plans shall have arrangements for emergencies, including titles and alternates for those in charge at both ends of the communication links and the primary and backup means of communication. Where consistent with the function of the governmental agency, these arrangements shall include:

a. Provision for communications with contiguous State/local governments within the plume exposure pathway EPZ. Such communications shall be tested monthly.
b. Provision for communications with Federal emergency response organizations. Such communications systems shall be tested annually.
c. Provision for communications among the nuclear power reactor control room, the onsite technical support center, and the near-site emergency operations facility; and among the nuclear facility, the principal State and local emergency operations centers, and the field assessment teams. Such communications systems shall be tested annually.
d. Provisions for communications by the licensee with NRC Headquarters and the appropriate NRC Regional Office Operations Center from the nuclear power reactor control room, the onsite technical support center, and the near-site emergency operations facility. Such communications shall be tested monthly.

Technical Information in the Emergency Plan: [E.9.a] Section II.F, "Emergency Communications" of the Lee Emergency Plan and Section 9.5.2, "Communication System Reliability," of the DCD provide communication system descriptions. Section II.N.2.a, "Communications Drills," and states that communication testing with State and local governments within the EPZ for this system is performed monthly. Appendix 8, "Cross-References to Regulations, Guidance, and State and Local Plans," provides a cross-reference between the Lee Emergency Plan and the state and local plans.

[E.9.b] Section II.F, "Emergency Communications" of the Lee Emergency Plan provides communication system descriptions but does not identify communication between the licensee and Federal emergency response organizations other than NRC. In **RAI 13.03-59(B),** the staff requested the applicant provide information regarding communications between the licensee and Federal emergency response organizations (other than NRC). Section II.N.2.a, "Communications Drills," states that communications testing with Federal emergency response organizations is performed quarterly.

In response letters dated December 17 and December 23, 2008 the applicant stated that the Radiological Assessment Manager may contact DOE-Savannah River and/or REAC/TS for radiological monitoring assistance as discussed in Section II.C.1.b of the Lee Emergency Plan. The NRC is the primary interface for communications with other Federal agencies.

[E.9.c] Section II.F.1.d, "Description of Communications Links," of the Lee Emergency Plan states that Duke Energy provides capability for communications between Control Room or TSC and the EOF, county and State EOCs. Section II.F.1.b identifies communication links (EOF to State and county warning points).

[E.9.d] Section II. F.1.f "Description of Communications Links," of the Lee Emergency Plan states that "Communications between Control Room/TSC/EOF to the NRC Operations Center is via the ETS or private telephone...and to the regional office via the normal private capability." Section II.N.2.a, "Communications Drills," states that "Duke Energy tests communications with Federal emergency response organizations and States within the EPZ...quarterly." This does not meet the monthly requirement. In **RAI 13.03-59(C),** the staff requested the applicant

provide clarification regarding the testing frequency from the licensee to the NRC Headquarters and appropriate NRC Regional Office Operations Center.

In response letters dated December 17 and December 23, 2008 the applicant has revised Section N.2.a by adding the following statement: "Duke Energy tests communications between the facility and NRC Headquarters and the NRC Regional Operations Center monthly."

Technical Evaluation: The staff finds the additional information and proposed textual revisions provided in the applicant's response to **RAI 13.03-59(C)** acceptable. **Confirmatory Action NRC 13.03-05** was created to track this proposed revision. The Lee Emergency Plan states that at least one onsite and one offsite communications system, each system having a backup power source, is provided. In addition, the applicant's communication plans have arrangements for emergencies, including titles and alternates for those in charge at both ends of the communication links and the primary and backup means of communication. Where consistent with the function of the governmental agency, these arrangements included:

a. Provisions for communications with contiguous State/local governments within the plume exposure pathway EPZ. Such communications shall be tested monthly.
b. Provisions for communications with Federal emergency response organizations. Such communications systems shall be tested annually.
c. Provisions for communications among the nuclear power reactor control room, the onsite technical support center, and the near-site emergency operations facility; and among the nuclear facility, the principal State and local emergency operations centers, and the field assessment teams. Such communications systems shall be tested annually.
d. Provisions for communications by the licensee with NRC Headquarters and the appropriate NRC Regional Office Operations Center from the nuclear power reactor control room, the onsite technical support center, and the near-site emergency operations facility. Such communications shall be tested monthly.

13.3.1C.F.4 Regulatory Basis: Generic Letter 91-14, "Emergency Communications," requires that the following communications paths be provided: Emergency Notification System (ENS), Health Physics Network (HPN), Reactor Safety Counterpart Link (RSCL), Protective measures Counterpart Link (PMCL), Emergency Response Data System (ERDS), Management Counterpart Link (MCL), and Local Area Network (LAN). Provide guaranteed power to the emergency communications equipment per NRC Bulletin 80-15, "Possible Loss of Emergency Notification System (ENS) with Loss of Offsite Power."

Technical Information in the Emergency Plan: Section II.F.1.c, "Description of Communications Links," of the Lee Emergency Plan discusses each of the listed communications paths (ENS, HPN, RSCL, PMCL, ERDS, MCL, and LAN). Section II.F.3, "Communication System Reliability" discusses system reliability. Section 9.5.2.2.3.1.1, "NRC Offsite Interfaces," of the FSAR states the design addresses the recommendations of IE Bulletin BL-80-15. Section F, "Emergency Communications," states "The communications systems include those systems described in Subsection 9.5.2 of the AP1000 DCD".

Technical Evaluation: The Lee Emergency Plan states that the following communications paths are or will be provided (see ITAACs above): Emergency Notification System (ENS), Health Physics Network (HPN), Reactor Safety Counterpart Link (RSCL), Protective measures Counterpart Link (PMCL), Emergency Response Data System (ERDS), management Counterpart Link (MCL), and Local Area Network (LAN)). The Lee Emergency Plan also states

that guaranteed power to the emergency communications equipment per NRC Bulletin 80-15, "Possible Loss of Emergency Notification System (ENS) with Loss of Offsite Power," *is* ***[or will be (potential ITAAC)]*** provided.

13.3.1C.F.5 Conclusion for Emergency Communications

As discussed above, the applicant needs to provide the bases (for why ITAAC Table 3.8-1 Inspection, Tests, Analyses, And Acceptance Criteria,3.1 and 3.2 will demonstrate the sufficiency testing communications under Planning Standard F.1.d and F.1.f. The NRC will determine whether this planning standard is acceptable and document its determination in the Final Safety Evaluation Report (FSER), based on information the applicant has provided to date and its response to Open Item ----- 1 – SAME QUESTION AS ABOVE

The staff has reviewed the onsite emergency plan and the applicant's responses to **RAIs 13.03-59(A) through (D)** with regards to Planning Standard F of NUREG-0654/FEMA-REP-1 and the requirements of 10 CFR 50.47(b)(6) and Section IV.E.9 of Appendix E to 10 CFR Part 50. Final determination regarding this planning standard will be based on verification of **Confirmatory Action NRC Item 13.03-05.**

The applicant has committed to meet the following license conditions and ITAAC, with the associated dates, for the emergency preparedness program:

ITAAC:

[F.1.d., ITAAC 3.1.] An ITAAC has been proposed to test that the means exist for communication among the control room, TSC, EOF, principal State and local emergency operations centers and radiological field assessment teams (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL.)

[F.1.f., ITAAC 3.2] An ITAAC has been proposed to test that the means exists for communication from the control room, TSC, and EOF to NRC headquarters and regional office EOCs including the establishment of ERDS between onsite computer systems and the NRC (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL).

13.3.1C.G Public Education and Information

13.3.1C.G.1 Regulatory Basis: 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(7); Planning Standard G requires that information be made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) be established in advance, and procedures for coordinated dissemination of information to the public be established.

The staff evaluated the emergency plan against NUREG-0654/FEMA-REP-1, Planning Standard G, "Public Education and Information." Planning Standard G provides the detailed evaluation criteria that the staff considered in determining whether the emergency plan met the applicable regulatory requirements in 10 CFR 50.47(b)(7).

Technical Information in the Emergency Plan: [G.1] Section II.G.2, "Distribution and Maintenance of Public Information," of the Lee Emergency Plan, lists how written information may be provided to permanent residences and transient populations. Section II.G.1, "Public Information Program," states that information provided to the public includes educational information on radiation, point of contact for additional information, protective measures (evacuation routes, relocation centers, sheltering, respiratory protection, etc.,) and information addressing special needs of the handicapped A general statement is made in Section II.G.2, that information for transient populations may be provided by postings, publications provided to hotels, motels and campground or information published in telephone directories.

Technical Evaluation: The Lee Emergency Plan provides for a coordinated periodic (at least annually) dissemination of information to the public regarding how they will be notified and what their actions should be in an emergency. This information includes:

a. educational information on radiation
b. contact for additional information
c. protective measures, e.g., evacuation routes and relocation centers, sheltering, respiratory protection, radioprotective drugs
d. special needs of the handicapped

Means for accomplishing this dissemination may include, but are not necessarily limited to: information in the telephone book; periodic information in utility bills; posting in public areas; and publications distributed on an annual basis.

Technical Information in the Emergency Plan: [G.2] Section II.G, "Public Education and Information," provides a general discussion of the public information and education program. Duke Energy commits to coordinating with the State and local authorities to disseminate information to the public on responding to a radiological emergency at the Lee Nuclear Station site. The Lee Emergency Plan does not state who is responsible for the actions that Duke Energy will take or what they will actually do to coordinate and assist the State and locals. The staff requested this information be provided in **RAI 13.03-60(A).** Section II.G.2 "Distribution and Maintenance of Public Information," lists how written information may be provided to permanent residences and transient populations, but it does not provide sufficient detail to determine if the dissemination of material is sufficient to meet the regulations and guidance. Additionally, the Lee Emergency Plan does not address who will be responsible for creating the material and having the material disseminated. The staff also requested this information be provided in **RAI 13.03-60(A).**

In response letters dated December 17 and December 23, 2008 the applicant stated that educational material is distributed to commercial and residential addresses within the plume exposure pathway EPZ annually. The applicant provided an example of public information used at the Catawba site. Public education material for Duke's operating nuclear plants is also available on the Internet via the Duke Energy Nuclear Emergency Preparedness Website at http://www.dukeenergy.com/safety/nuclear-emeraency-preparedness.asp. The applicant also stated that the Emergency Communications Manager is responsible for operation and maintenance of the Joint Information Center (JIC), and coordinating the creation and distribution of public informational materials in cooperation with State and local authorities for the Lee site. The applicant further stated that details regarding the creation and distribution of public information materials will be developed on a schedule that supports NRC inspection activities and execution of the emergency exercise required by 10 CFR 50, Appendix E, Section IV.F.2.

Technical Evaluation: In response to **RAI 13.03-60(A)** the applicant stated details regarding the creation and distribution of public information materials will be developed on a schedule that supports NRC inspection activities and execution of the emergency exercise required by 10 CFR 50, Appendix E, Section IV.F.2. Because the emergency plan should describe this process, the staff has requested the applicant provide this information when available. This issue will be tracked as **Open Item 13.03-10**.

Technical Information in the Emergency Plan: [G.3.a] Section II.G.3, "News Media Coordination," states that the Joint Information Center (JIC) is located in the Energy Center located in Charlotte, N.C. The section also indicates that the News Manager and Public Spokesperson are the primary contacts for the news media.

Technical Evaluation: The Lee Emergency Plan designates the points of contact and physical locations for use by news media during an emergency.

Technical Information in the Emergency Plan: [G.3.b] Section B of the Lee Emergency Plan, Figure II-3, "Off-Site Emergency Response Organization," shows the JIC reporting to the EOF Director. The Joint Information Center (JIC) is defined as "A center established near the affected site to assist the news media in providing press coverage during an emergency." Section II.G.3.b "News Media Coordination," states that an on-site media center can be promptly established and provide space for a limited number of media.

Unit 1 and 2 ITAAC 4.1 has been proposed to test that the licensee has provided space which may be used for a limited number of news media (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

Technical Evaluation: In addition, the Lee Emergency Plan also describes space which may be used for a limited number of the news media at the Emergency Operations Facility.

Technical Information in the Emergency Plan: [G.4.a] Section II.G.4.a, "Information Exchange," of the Lee Emergency Plan indicates that the public spokesperson has access to all the required information related to the emergency and provides plant status information during news conferences and briefings. The Chief Nuclear Officer and his direct reports are the designated public spokespeople.

Technical Evaluation: The Lee Emergency plan identifies a spokesperson that should have access to all necessary information.

Technical Information in the Emergency Plan: [G.4.b] Section II.G.4.b "Information Exchange," of the Lee Emergency Plan states that liaisons coordinate with licensee and

designated members of the State and local emergency response organizations on a periodic basis. Appendix 9, "Justification for Common EOF," states "State and utility staff at the JIC are responsible for providing timely and accurate information concerning an emergency to the media." However, there is no explanation of how timely and accurate information is provided to the media. In **RAI 13.03-60(B),** the staff requested the applicant provide details on how timely and accurate information is provided to the media during an emergency.

In response letters dated December 17 and December 23, 2008 the applicant stated that the procedure for verifying availability and readiness of Radiation Protection (RP) emergency response equipment will be similar to that in use at other Duke Facilities. The applicant provided Catawba Nuclear Station's Procedure HP/0/B/1000/006, "Emergency Equipment Functional Check and Inventory," which provides the process to verify availability and readiness of RP emergency response equipment. The applicant also provided Duke Corporate procedure SR/0/B/4600/086, "Standard Procedure for Periodic Verification of EOF Communication Equipment Operation and Equipment/Supply Inventory," which ensures that equipment is operational and sufficient supplies are available to effectively manage an emergency situation in the EOF. These procedures are provided as attachments 1 and 2 respectively to this response. A license condition has been proposed in Part 10 of the COL application addressing the submittal schedule for operational programs, including emergency planning implementing procedures, which is consistent with 10 CFR Part 50, Appendix E, Section V and the allowances provided in SECY-05-0197.

Technical Evaluation: In **RAI 13.03-60(B)**, the staff requested the applicant provide details on how timely and accurate information is provided to the media during an emergency. In response the applicant provided Catawba Nuclear Station's Procedure HP/0/B/1000/006, "Emergency Equipment Functional Check and Inventory," and Duke Corporate procedure SR/0/B/4600/086, "Standard Procedure for Periodic Verification of EOF Communication Equipment Operation and Equipment/Supply Inventory," as examples of the process. Since the emergency plan should contain a description of the process for interacting with the media, the staff has requested the applicant provide a summary of this information in the Lee Emergency Plan or provide a statement that specifies this information will be provided in a procedure. A reference to these procedures, by title, should also be provided. This issue is tracked as **Open Item 13.03-11**.

Technical Information in the Emergency Plan: [G.4.c] Section II.G.4.c, "Information Exchange," of the Lee Emergency Plan states that contact between the designated spokespersons and by the activities of a licensee liaison in the JIC serves to control rumors. Customer inquiries are handled by Customer Contact Centers. Employees are updated through company intranet/portal. Elected officials and regulatory agencies are updated through the Corporate Communications and Governmental Affairs departments. Industry groups assist in disseminating information to other industry groups.

Technical Evaluation: The Lee Emergency Plan also describes coordinated arrangements for dealing with rumors.

Technical Information in the Emergency Plan: [G.5] Section II.G.5, "News Media Training," of the Lee Emergency Plan states that Information regarding emergency plans and radiation hazards, and points of contact for release of public information is provided annually to media organizations.

Technical Evaluation: The Lee Emergency Plan describes coordinated programs that will be conducted at least annually to acquaint news media with the emergency plans, information concerning radiation, and points of contact for release of public information in an emergency.

13.3.1C.G.2 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.D.2 requires that provisions be described for yearly dissemination to the public within the plume exposure pathway EPZ of basic emergency planning information, such as the methods and times required for public notification and the protective actions planned if an accident occurs, general information as to the nature and effects of radiation, and a listing of local broadcast stations that will be used for dissemination of information during an emergency be developed. In addition, signs or other measures shall also be used to disseminate to any transient population within the plume exposure pathway EPZ appropriate information that would be helpful if an accident occurs.

Technical Information in the Emergency Plan: Section II.G.2, "Distribution and Maintenance of Public Information," of the Lee Emergency Plan, lists how written information may be provided to permanent residences and transient populations, but it does not provide sufficient detail to determine method and times necessary for public notification. Section II.G.1, "Public Information Program," states that information provided to the public includes educational information on radiation, point of contact for additional information, protective measures (evacuation routes, relocation centers, sheltering, respiratory protection, etc.,) and information addressing special needs of the handicapped. A general statement is made in Section II.G.2, that information for transient populations may be provided by postings, publications provided to hotels, motels and campground or information published in telephone directories.

Technical Evaluation: The Lee Emergency Plan describes provisions for yearly dissemination to the public within the plume exposure pathway EPZ of basic emergency planning information, including the methods and times required for public notification and the protective actions planned if an accident occurs, general information as to the nature and effects of radiation, and provides a listing of local broadcast stations that will be used for dissemination of information during an emergency be developed. In addition, signs or other measures will be used to disseminate to any transient population within the plume exposure pathway EPZ appropriate information that would be helpful if an accident occurs.

13.3.1C.G.3 Conclusion for Public Education and Information

The staff has reviewed the onsite emergency plan and the applicant's responses to **RAIs 13.03-60(A) and (B)** with regards to Planning Standard G of NUREG-0654/FEMA-REP-1 and the requirements of 10 CFR 50.47(b)(7) and Section IV.D.2. of Appendix E to 10 CFR Part 50. Final determination regarding this planning standard will be based on the applicant's response to the following Open Items:

- In response to **RAI 13.03-60(A)** the applicant stated details regarding the creation and distribution of public information materials will be developed on a schedule that supports NRC inspection activities and execution of the emergency exercise required by 10 CFR 50, Appendix E, Section IV.F.2. Because the emergency plan should describe this process, the staff has requested the applicant provide this information when available. This issue will be tracked as **Open Item 13.03-10**.

- In **RAI 13.03-60(B)**, the staff requested the applicant provide details on how timely and accurate information is provided to the media during an emergency. In response the applicant provided Catawba Nuclear Station's Procedure HP/0/B/1000/006, "Emergency Equipment Functional Check and Inventory," and Duke Corporate procedure SR/0/B/4600/086, "Standard Procedure for Periodic Verification of EOF Communication Equipment Operation and Equipment/Supply Inventory," as examples of the process. Since the emergency plan should

contain a description of the process for interacting with the media, the staff has requested the applicant provide a summary of this information in the Lee Emergency Plan or provide a statement that specifies this information will be provided in a procedure. A reference to these procedures, by title, should also be provided. This issue is tracked as **Open Item 13.03-11**.

As discussed above, the applicant needs to provide the bases for why ITAAC from Table 3.8-1 "Inspections, Tests, Analyses and Acceptance Criteria," planning Standard G.3.b Public Education and Information demonstrate the sufficiency of the HIC to verify that space is provided for a limited number of the news media. The NRC will determine whether its planning standard is acceptable and document its determination in the Final Safety Evaluation Report (FSER), based on information the applicant has provided to date and its response to Open Item [redacted]

The applicant has committed to meet the following license conditions and ITAAC, with the associated dates, for the emergency preparedness program:

ITAAC:

[G.3.b, ITAAC 4.1] An ITAAC has been proposed to test that the licensee has provided space which may be used for a limited number of news media (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

13.3.1C.H Emergency Facilities and Equipment

13.3.1C.H.1 Regulatory Basis: 10 CFR 50.47, "Emergency plans."10 CFR 50.47(b)(8); Planning Standard H, requires that adequate emergency facilities and equipment to support the emergency response be provided and maintained.

In determining whether the proposed emergency plan met the applicable regulatory requirements in 10 CFR 50.47(b)(8), the staff evaluated it against the detailed evaluation criteria [2] in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [H.1.] Section II.H.1, "On-site Emergency Response Facilities," provides a short discussion on the Technical Support Center (TSC), and the Operations Support Centers (OSC). Section II.H.1 states "These facilities were designed to meet the intent of the guidance in NUREG-0696" and the clarification in NUREG-0737, Supplement 1". In **RAI 13.03-61 (I)** staff requested additional information regarding how the facilities meet intent of the guidance in NUREG-0696" and the clarification in NUREG-0737, Supplement 1".

With regard to **RAI 13.03-61 (I)**, in response letters dated December 17 and December 23, 2008 the applicant stated that a design description addressing the criteria provided in Sections 2.1 through 2.10 of NUREG-0696 is included as Appendix 10 of the COL application Emergency Plan. The applicant also stated that the design satisfies the criteria established in the AP1000 DCD with the exception of being within a 2-minute walk of the Control Room.

In **RAI 13.03-61 (I)(a)**, staff requested the applicant address training of TSC staff to follow procedures. In response letters dated December 17 and December 23, 2008 the applicant stated that the TSC is staffed with technical, engineering, and senior plant management consistent with the guidance offered in NUREG-0696, Section 2.3. The applicant added their emergency response training program will be addressed in plant procedures and is discussed in Section II.O.2 and II.O.4.of the Lee Emergency Plan. A schedule for implementation is provided in Table 13.4-201, "Operational Programs Required by NRC Regulations," included in Part 2 of the COL application,

In RAI **13.03-61 (I)(b)**, the staff requested the applicant address management plans, facility staffing and task assignments of TSC personnel. In response letters dated December 17 and December 23, 2008 the applicant stated that management, staffing, and assignments of TSC personnel are addressed in Emergency Plan Implementing Procedures. These procedures will be similar to Catawba Nuclear Station Procedure RP/0/A/5000/020, "Technical Support Center Activation Procedure." This procedure was included as Attachment 1 to the response to RAI 13.03-55.

In RAI **13.03-61 (I)(c)**, the staff requested the applicant provide a detail staffing plan for the TSC to address the overall management of licensee resources and the continuous evaluation and coordination of licensee activities during and after an accident. In response letters dated December 17 and December 23, 2008 the applicant stated that Section II.A.4 of the Lee Emergency Plan outlines the capability for continuous operations through training of multiple responders for key emergency response positions allowing for multiple shifts for extended response operations. Additional information on staffing of the TSC is provided in response to RAI 13.03-55.

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[2] The bracketed, alphanumeric designations used throughout this SER section identify the corresponding NUREG-0654/FEMA-REP-1 evaluation criteria used by the staff to determine compliance with 10 CFR 50.47(b).

In **RAI 13.03-61 (I)(d)**, the staff requested the applicant provide the TSC staff assignments to address that TSC management of licensee onsite and offsite radiological monitoring, to perform radiological evaluations, and to interface with offsite officials. The staff also requested the applicant address whether the personnel assigned to the TSC varies according to the emergency class. In response letters dated December 17 and December 23, 2008 the applicant stated that TSC staff assignments will be similar to that in use at other Duke Energy nuclear stations. In accordance with procedures, RP personnel are responsible for activating and dispatching field monitoring teams. TSC offsite agency communicators ensure that communicators in the EOF are aware of information affecting offsite agencies. Staffing levels are not varied based on the emergency classification. The applicant further stated that procedures will contain provisions for emergency response managers to request additional support from other organizations to assess and mitigate the emergency condition. Catawba Nuclear Station Implementing Procedure, RP/0/A/5000/020, "Technical Support Center (TSC) Activation Procedure," was provided for informational purposes as attachment 1 in response to RAI 13.3-055.

In **RAI 13.03-61 (I)(e)**, the staff requested the applicant address procedures for and training of personnel to use the data systems and instrumentation and include limitations of instrumentation. In response letters dated December 17 and December 23, 2008 the applicant stated that information regarding the Emergency Response Training program is discussed in response to RAI 13.03-61 (A). The training program requires TSC staff to receive an overview of the site Emergency Plan and training on facility operations, technical assessment function, and task-specifics consistent with assigned duties. This task-specific training includes, for example, use of data systems and instrumentation, including the limitation of instrumentation for assigned personnel. The applicant expects to use a similar approach at the Lee Nuclear Station.

In **RAI Site-8(I)(f)**, the staff requested the applicant address how TSC staff maintain proficiency (participation in drills). In response letters dated December 17 and December 23, 2008 the applicant stated that the exercise and drill program is discussed in Sections II.N.1.a, II.N.1.b, and II.N.2 of the Lee Emergency Plan. The applicant also provided additional information related to the goals and primary objectives of drills and exercises. The applicant further stated that TSC staffs participate in these exercises and drills to maintain their proficiency.

In **RAI 13.03-61 (I)(g)**, the staff requested the applicant Address whether there are means for facsimile transmission capability between the EOF, TSC and NRC Operations Center. In response letters dated December 17 and December 23, 2008 the applicant stated that facsimile transmission between the EOF, TSC, and NRC Operations Center will be supported at the TSC. The applicant also stated that new advancements in technology will be considered before incorporating transmissions system into the facilities due to the amount of time prior to operation. An ITAAC regarding this capability was submitted in Tier 1, Table 3.1-1, Part 10, and Table 3.8.1 of the COL application.

Duke filed for a departure from the DCD (WLS DEP 18.8-1) as listed in Part 7 of the application, to move the TSC from the control support area (CSA) as identified in DCD. The TSC was moved to a central location to serve Units 1 and 2 as identified in the Emergency Plan. The Lee Emergency Plan states that the TSC contains resources to support the emergency response effort including communication between emergency response facilities, Duke Energy Management and the NRC. This includes displaying parameters that are required of a Safety Parameter Display System (SPDS). The TSC also provides radiological protection similar to the CR. Section II-H.1, contains the statement: "in the event that all off-site AC power is unavailable, the TSC could be evacuated and function transferred to a location unaffected..." A description of the procedure and locations to be considered is not provided. Information related

to this procedure was requested in **RAI 13.03-61(A)**. Appendix 10, "Technical Support Center Description" provides additional information on the TSC.

In Appendix 10 (Emergency Plan) "Technical Support Center Description", the applicant states that the ventilation system includes high efficiency particulate air (HEPA) filters and charcoal filters and the ventilation system is designed to maintain exposures at or below 0.05 Sv (5 rem) total effective dose equivalent (TEDE) as defined in 10 CFR 50.2 for the duration of an accident. In addition, the TSC structure, shielding, and ventilation system are designed to protect the TSC personnel from radiological hazards. Furthermore, Appendix 10 states the TSC ventilation system is manually controlled from the TSC. Also, portable radiation monitors are available to personnel in the TSC. Additional information regarding TSC habitability was requested in RAI 13.03-61(J).

In response to a request for additional information, RAI 13.03-61(J), the applicant provided additional information about TSC habitability. The staff asked for details pertaining to ventilation design such as air inlet flow rates, recirculation flow rates, unfiltered air inleakage, and other factors necessary to complete a radiological assessment. The applicant provided a Technical Support Center Design Description Document (RAI attachment 13.03-25A) and a detailed radiological assessment. The TSC Design Description Document states that the Technical Support Center (TSC) heating, ventilation, and air-conditioning (HVAC) system functions to provide normal environmental control for personnel and equipment operational requirements, and provides environmental control for habitability through filtration of potentially radioactive particulates and adsorption of iodine during emergency conditions. The applicant also states, the TSC is designed to comparable levels of habitability, such as humidity and temperature, as described in the DCD, as well as the same radiological habitability as the control room, under accident conditions. The actual radiological consequences for the postulated accident fall within GDC 19 exposure acceptance criteria (5 rem Total Effective Dose Equivalent) with sufficient margin (factor of three) [Assumes RSAC concurs with inputs (x/Q and others) and reasonableness of output].

Furthermore, the applicant states in Technical Support Center Design Description Document (RAI attachment 13.03-25A) that radiation monitoring systems are available to personnel in the TSC. These monitoring systems may be composed of installed monitors or portable monitoring equipment. These systems continuously indicate radiation dose rates and airborne radioactivity concentrations inside the TSC while it is in use during an emergency. These monitoring systems include local alarms with trip levels set to provide early warning to TSC personnel of adverse conditions that may affect the habitability of the TSC. These detectors are able to distinguish the presence or absence of radioiodines at concentrations as low as 10-7 microcuries/cc.

The TSC is common for Lee Unit 1 and 2 and is not located in the nuclear island Control Support Area (CSA), but is located in the maintenance support building to provide centralized response management oversight for the site. This is a departure from the DCD Tier 2, Section 18.8.3.5, "Technical Support Center Mission and Major Tasks." SER Appendix A, "COL Information Items, Supplemental Information Items and Departures," discusses the departure in greater detail.

Section II.H.1 states the OSC is provides resources for communication with the CR and TSC. Its primary function is to dispatch assessment, corrective action, and rescue personnel to plant locations. As part of the aforementioned departure from the DCD (WLS DEP 18.8-1) listed in Part 7 of the application, the OSC is being moved to the CSA initially for the TSC. Section II-H.1 contains the statement: "Implementing procedures make provisions for the relocation of the OSC as needed..." The information supporting this statement is not provided. This information

was requested in **RAI 13.03-61(A).** Additional information on the operation of the OSC and TSC can be found in DCD Section 18.8.3.5, "Technical Support Center Mission and Major Tasks." Tier 1 Section 3.1, "Emergency Response Facilities," contains a description of the facility and its ITAACable criteria. In **RAI 13.03-61 (H)** the staff requested additional information related to design of the OSC.

With regard to **RAI 13.03-61 (A)**, in response letters dated December 17 and December 23, 2008 the applicant stated that procedures for relocating the Lee TSC and OSC will be similar to those currently in use at other Duke Energy nuclear plants. If AC power is unavailable or the facilities become uninhabitable, the TSC and/or OSC are relocated to its alternate location. Alternate locations for the TSC and OSC have not been determined but they have been addressed in an ITAAC in Table 3.8-1, "Proposed Licensed Conditions (including ITAAC)" of Part 10 of the application. The applicant also provided Catawba Nuclear Station Procedures RP/0/A/5000/024, "OSC Activation Procedure," and RP/O/A/5000/020, "Technical Support Center (TSC) Activation Procedure," as Attachments 1 and 2 to the response to RAI 13.3-055.

With regard to **RAI 13.03-61 (H)**, in response letters dated December 17 and December 23, 2008 the applicant stated that site layout drawings are not included in emergency plans or implementing procedures. This information will be included in training and orientation of OSC personnel. The applicant also stated DCD Figures 1.2-17 through 1.2-20 figures are designated as Security-Related Information and properly withheld from public disclosure pursuant to NRC regulation and guidance. Figure 1.2-201 in the Lee application (which replaces DCD Figure 1.2-18) is similarly withheld and included in Part 9 of the application. The applicant also stated that this information is available for review through processes and procedures established by the NRC for such material.

Unit 1 and 2 ITAAC 5.1 has been proposed to test that the licensee has established a TSC and OSC (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

Technical Evaluation: Based on the discussion and review completed above, the staff finds the additional information provided in response to RAIs 13.03-61 (H), (I)(a, c, e, f, g) and (J) to be acceptable and therefore resolved. On the basis of the review, as described above, the staff concludes that the information provided in the Lee COL [FSAR Section XX.X???] related to TSC habitability is consistent with the guidelines in Regulatory Guide 1.101, Section 13.3 of the SRP NUREG 0696, and other applicable guidance associated with TSC habitability. Therefore the staff concludes that the information meets the relevant requirements of 10 CFR 50.47(b)(8) and (b)(11), and Subsections III and IV.E.8 to Appendix E to 10 CFR part 50.

With regard to **RAI 13.03-61 (I)(b),** the staff requested the applicant address management plans, facility staffing and task assignments of TSC personnel. In response the applicant stated that management, staffing, and assignments of TSC personnel are addressed in procedures. Catawba Nuclear Station Procedure RP/0/A/5000/020, "Technical Support Center Activation Procedure," was provided as an example. Because the emergency plan should contain this information, the staff has requested the applicant provide a summary of this information or a statement that specifies it has been moved into a procedure in the Lee Emergency Plan. A reference to the procedure, by title, should also be provided This issue will be tracked as **Open Item 13.03-11.**

With regard to **RAI 13.03-61 (I)(d),** the staff requested the applicant provide additional information related to TSC staff assignments. The applicant stated this information will be discussed in procedures. Procedure, RP/0/A/5000/020, "Technical Support Center (TSC)

Activation Procedure," was provided as an example. Because the emergency plan should contain this information, the staff has requested the applicant provide a summary of this information or a statement that specifies it has been moved into a procedure in the Lee Emergency Plan. A reference to the procedure, by title, should also be provided This issue will be tracked as **Open Item 13.03-12.**

With regard to RAI 13.03-61 (A), in response the applicant provided Catawba Nuclear Station Procedures RP/0/A/5000/024, "OSC Activation Procedure," and RP/O/A/5000/020, "Technical Support Center (TSC) Activation Procedure." Because the emergency plan should contain this information, the staff has requested the applicant provide a summary of this information or a statement that specifies it has been moved into a procedure in the Lee Emergency Plan. A reference to the procedure, by title, should also be provided. This issue will be tracked as **Open Item 13.03-13.**

Technical Information in the Emergency Plan: [H.2.] Section II.H.2, "Off-site Emergency Response Facilities," provides information on the Emergency Operations Facility (EOF). The EOF provides direction and coordination of all emergency response activities. Discussion on the available communication links in the EOF can be found in Section II.F.1, "Description of Communications Links," of the Lee Emergency Plan. Duke has filed for an exception to have the EOF located in the Charlotte General Office in the Energy Center at 526 South Church Street, Charlotte, N.C. Justification of this exception can be found in Appendix 9, "Justification for Common EOF".

Unit 1 and 2 ITAAC 5.2 has been proposed to test that the licensee has established an EOF (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

Technical Evaluation: The Lee Emergency Plan describes an EOF from which evaluation and coordination of all licensee activities related to an emergency is to be carried out. In addition, the EOF provides information to Federal, State and local authorities responding to radiological emergencies in accordance with NUREG-0696, "Functional Criteria for Emergency Response Facilities."

Technical Information in the Emergency Plan: [H.4.] Function and location of the EOF is discussed in Section II.H.2., "Off-site Emergency Response Facilities." Communication capabilities are explained in Section II.F.1, "Description of Communication Links." The ERFs are staffed and activated in accordance with Emergency Plan Implementing Procedures (EPIPs). Table 13.4-201, "Operational Programs Required by NRC Regulations," of the FSAR states: "the applicant's detailed implementing procedures for its emergency plan is to be submitted at least 180 days prior to scheduled date for initial loading of fuel. Staffing of the EOF is described in Section II.E.2, "Notification and Mobilization of Licensee Response Organizations." The ERF is declared activated following an assessment of staffing levels, habitability, operability of installed systems, sufficiency of supplies and equipment, and communications interfaces. Alternate plans can be initiated in a time of adverse conditions.

Technical Evaluation: The Lee Emergency Plan provides for timely activation and staffing of the facilities and centers described in the plan.

Technical Information in the Emergency Plan: [H.5.] Section II.H.5, "On-Site Monitoring Systems," contains a description of the various monitoring systems necessary for initiating emergency measures and performing accident assessment. Information on personnel monitoring equipment discussed in this section reference the AP1000 DCD, Revision 16 and the FSAR. Geophysical phenomena are described in Section 3.7.4, "Supporting Media for Seismic Category I Structures," of the AP1000 DCD, Revision 16, and the corresponding section of FSAR. Radiological monitoring systems can be found in Sections 11.5, "Radiation Monitoring," and 12.3, "Radiation Protection Design Features," of the AP1000 DCD, Revision 16, and the corresponding sections of the FSAR. A supply of portable radiation monitoring and sampling equipment and emergency response equipment (Section II.H, "Emergency Facilities and Equipment," and Appendix 6, "Emergency Equipment and Supplies") are available. Plant process monitoring systems are described in Section 11.5 of AP1000 DCD, Revision 16, and the corresponding section of the FSAR. Plant fire monitoring systems are described Section 9.5.1, "Fire Protection Systems," of the AP1000 DCD, Revision 16, and the corresponding section of the FSAR. Appendix 1, "Emergency Action Levels," describes the bases for the selection of the designated instruments as indicators of emergency conditions.

Technical Evaluation: The Lee Emergency Plan describes an onsite monitoring systems that is used to initiate emergency measures, as well as those to be used for conducting assessment. The equipment includes:

a. geophysical phenomena monitors (e.g., meteorological, hydrologic, seismic); [**Potential interfaces:** SRP Sections 2.3.3 and 7.5 (meteorological instrumentation)]
b. radiological monitors (e.g., process, area, emergency, effluent, wound and portable monitors and sampling equipment);
c. process monitors (e.g., reactor coolant system pressure and temperature, liquid levels, flow rates, status or lineup of equipment components); and
d. fire and combustion products detectors.

Technical Information in the Emergency Plan: [H.6.] The on-site meteorological data collection system is discussed in Section II.H.8, "Meteorological Instrumentation and Procedures." Back-up seismic data is available from USGS. Flooding data is available from NOAA's Hydro-Meteorological Reports. Data are shared with local, State, and Federal organizations (Section II.F, "Emergency Communications"). The station has an Off-site Dose Calculation Manual (ODCM) that describes the monitoring systems. The plant also has equipment and radiological laboratory facilities available on site. Environmental monitoring equipment includes multiple radioiodine and particulate monitors and TLDs (other dose integrating devices). The dosimeters are posted and collected in accordance with Table 1 of Revision 1 of the Branch Technical Position included with Generic Letter 79-65, "Environmental Monitoring for Direct Radiation". Locations of dosimeter and air sampler postings are in the ODCM. In **RAI 13.03-61 (E)** staff requested that the applicant provide additional information on monitoring systems and the locations of dosimeters and air samplers that is available in the ODCM. Arrangements for backup support and analysis are described in Section II.A, "Assignment of Responsibility (Organizational Control)," and arrangements with other organizations documented with certification letters in Appendix 7, "Certification Letters.". Descriptions of laboratory facilities both fixed and mobile are in Section II.C.3, "Radiological Laboratories."

In response letters dated December 17 and December 23, 2008 the applicant stated that the ODCM is discussed in Section 6.2 of the Environmental Report (ER). Section 11.5.7 of the Final

Safety Analysis Report (FSAR), states that a description of the ODCM program will be finalized prior to fuel load. Milestones for implementation of the ODCM program are provided in Table 13.4-201 of the FSAR. The applicant also states that the radiological environmental monitoring program is discussed in Section 6.2 of the ER. Station monitoring and sampling locations are identified in Table 6.2-2 and Figures 6.2-1 and 6.2-2. The program is based on guidance in Revision 1 of the Branch Technical Position included with Generic Letter 79-65, "Radiological Environmental Monitoring Program Requirements." The applicant identified a license condition for implementing ODCM and Radiological Environmental Monitoring Program, which is addressed in Part 10, "Proposed Licensed Conditions (including ITAAC)" of the application. This is consistent with 10 CFR Part 50, Appendix E, Section V and the allowances provided in SECY-05-0197.

Technical Evaluation: The staff finds the additional information provided in the applicant's response to **RAI 13.03-61 (E)** acceptable and therefore resolved. The Lee Emergency Plan describes provisions to acquire data from or for emergency access to offsite monitoring and analysis equipment including:

a. geophysical phenomena monitors (e.g., meteorological, hydrologic, seismic);
b. radiological monitors including rate meters and sampling devices. Dosimetry meets, as a minimum, the NRC Radiological Assessment Branch Technical Position for the Environmental Radiological Monitoring Program; and,
c. laboratory facilities, fixed or mobile.

Technical Information in the Emergency Plan: [H.7.] Section II.H.7, "Off-site Radiological Monitoring Equipment," of the Lee Emergency Plan states that Duke Energy provides off-site radiological monitoring equipment suitable for assessment of off-site radiological consequences of facility incidents. Appendix 6, "Emergency Equipment and Supplies," lists the general types of equipment that would be available for off-site measurements. This equipment includes: radiation survey instruments, surface contamination control and survey supplies, air sampling equipment and media, and scalers or other appropriate radio-analytical counting instruments. Further, Section II.I.9, "Measuring Radioiodine Concentrations," states that the field equipment is capable of detecting radioiodine concentrations of 10^{-7} microcuries per milliliter under field conditions.

Technical Evaluation: The Lee Emergency Plan describes offsite radiological monitoring equipment in the vicinity of the nuclear facility.

Technical Information in the Emergency Plan: [H.8.] Section II.H.8, "Meteorological Instrumentation and Procedures," states that meteorological data is acquired from an on-site meteorological tower. The tower measures wind speeds, ambient temperatures, atmospheric stability, dew point, and precipitation. The meteorological monitoring program and climatology are described in FSAR 2.3, "Meteorology." All measured data from on-site meteorological tower is available to the plant and ERF display systems. Meteorological data can also be obtained from the Catawba Nuclear Station and the National Weather Service in Greer, SC. In **RAI 13.03-61(E)(1),** the staff requested Duke Energy provide additional information regarding their procedures related to meteorological data.

In response letters dated December 17 and December 23, 2008 the applicant stated that alternate meteorological data sources are located within 50 miles of the Lee facility site and have been found to be representative of the Lee facility location. A Duke meteorologist is responsible for interpreting data received and for determining representativeness of the data

when onsite meteorological systems cannot be used. The applicant also provided Duke Energy's corporate procedure SH/O/B/2005/001, "Emergency Response Offsite Dose Projections," which describes the procedure for obtaining data from an alternate source. The procedure was included as attachment 1 to their response to RAI 13.03-62.

Technical Evaluation: In **RAI 13.03-61(E)(1)**, the staff requested Duke Energy provide additional information regarding their procedures related to meteorological data. In response the applicant provided Duke Energy's corporate procedure SH/O/B/2005/001, "Emergency Response Offsite Dose Projections," which describes the procedure for obtaining data from an alternate source. Because the emergency plan should contain this information, the staff has requested the applicant provide a summary of this information or a statement that specifies it has been moved into a procedure in the Lee Emergency Plan. A reference to the procedure, by title, should also be provided. This issue will be tracked as **Open Item 13.03-14.**

Technical Information in the Emergency Plan: [H.9] Section II.H.1, "On-site Emergency Response Facilities," states the OSC provides resources for communication with the CR and TSC. Its primary function is to dispatch assessment, corrective action, and rescue personnel to plant locations. As part of the aforementioned departure from the DCD (WLS DEP 18.8-1) listed in Part 7 of the application, the OSC is being moved to the CSA initially for the TSC. Section II-H.1 contains the statement: Implementing procedures make provisions for the relocation of the OSC as needed..." The information supporting this statement is not provided. This information was requested in **RAIs 13.03-61(A) and (I).** Additional information on the operation of the OSC and TSC can be found in DCD Section 18.8.3.5, "Technical Support Center Mission and Major Tasks." Tier 1 Section 3.1, "Emergency Response Facilities," contains a description of the facility and its ITAACable criteria. Protective clothing and respirators are discussed in Section II.J.6, "Protective Measures," however, the detail in the section is not sufficient to determine that the protective equipment is adequate. Communication is covered in Sections II.E, "Notification Methods and Procedures," and II.F, "Emergency Communications," however the detail is not sufficient to determine that adequate communications are available in the OSC. In **RAI 13.03-61(F)** the staff requested the applicant provide additional information regarding communication system available in the OSC.

In response letters dated December 17 and December 23, 2008 the applicant stated that Section II.H.1 of the Lee Emergency Plan describes functionality and habitability of the ERFs in compliance with NUREG-0696 criteria 3.1 and 3.2. Section II.F discusses the use of wireless telephone system for communication between the facilities. The telephone-page and PABX telephone communication systems serve as backups to this system. A design description for the alternative location of the TSC is provided in Appendix 10 of the application which addresses criteria in Section 8.2.1 of Supplement 1 to NUREG-0737. The applicant also stated that design criteria are met with the exception of being within a 2-minute walk of the Control Room. Emergency Plan Section II.H.1 describes the location function and communications of the OSC satisfying Supplement 1 to NUREG 0737 criterion 8.3.1.a, 8.3.1.b, and 8.3.1.c. The applicant added that the OSCs are not designed to remain habitable under all emergency conditions and relocation under these conditions is addressed in Section II.H.1 also. An ITAAC has been proposed to test the adequacy of ERFs communications in Tier 1, Table 3.1-1 and Part 10, Table 3.8.1.

Technical Evaluation: The responses to **RAI 13.03-61 (A) and (I)** are summarized in Section H.1. Refer to this section for the staffs evaluation of these RAI responses. The staff also finds the additional information provided in the applicant's response to **RAI 13.03-61 (F)** acceptable and therefore resolved. The Lee Emergency Plan also describes the capacity, and supplies,

including: respiratory protection, protective clothing, portable lighting, portable radiation monitoring equipment, cameras and communications equipment for personnel present in the OSC.

Technical Information in the Emergency Plan: [H.10] Section II.H.10, "Emergency Equipment and Supplies," states that Duke Energy performs inspections and operational test of emergency equipment once each calendar quarter. Reserves are maintained to replace instruments removed for calibration or repair. The scope and responsibilities for performing these tests are provided in administrative procedures. A description of the equipment is in Appendix 6, "Emergency Equipment and Supplies." In **RAI 13.03-61(B)** the staff requested additional information on the procedures to inspect and test dedicated emergency equipment.

In response letters dated December 17 and December 23, 2008 the applicant stated that the procedure for verifying availability and readiness emergency response equipment will be similar to that in use at other Duke Energy nuclear plants. The applicant provided Catawba Nuclear Station's Procedure HP/0/B/1000/006, "Emergency Equipment Functional Check and Inventory," which provides the process to verify availability and readiness of RP emergency response equipment. The applicant also provided Duke Energy corporate procedure SR/0/B/4600/086, "Standard Procedure for Periodic Verification of EOF Communication Equipment Operation and Equipment/Supply Inventory," which ensures that equipment is operational and sufficient supplies are available. These procedures are provided as attachments 1 and 2 respectively to this response. A license condition has been proposed in Part 10 of the COL application addressing the submittal schedule for operational programs, including emergency planning implementing procedures, which is consistent with 10 CFR Part 50, Appendix E, Section V and the allowances provided in SECY-05-0197.

Technical Evaluation: In **RAI 13.03-61(B)** the staff requested additional information on the procedures to inspect and test dedicated emergency equipment. In response the applicant provided Catawba Nuclear Station's Procedure HP/0/B/1000/006, "Emergency Equipment Functional Check and Inventory," and Duke Energy corporate procedure SR/0/B/4600/086, "Standard Procedure for Periodic Verification of EOF Communication Equipment Operation and Equipment/Supply Inventory," as examples of the process. Because the emergency plan should contain this information, the staff has requested the applicant provide a summary of this information or a statement that specifies it has been moved into a procedure in the Lee Emergency Plan. A reference to the procedure, by title, should also be provided. This issue will be tracked as **Open Item 13.03-15.**

Technical Information in the Emergency Plan: [H.11.] Appendix 6, "Emergency Equipment and Supplies," states that there will be emergency equipment. Minimal detail regarding contents of emergency kits was provided but general categories were not. In **RAI 13.03-61(G)** the staff requested additional information on the contents of the emergency kits.

In response letters dated December 17 and December 23, 2008 the applicant stated that information regarding emergency kits will be similar to that in use at other Duke Energy nuclear stations. The applicant provided Catawba Nuclear Station's Procedure HP/0/B/1000/006, "Emergency Equipment Functional Check and Inventory," which provides the process to verify availability and readiness of emergency response equipment. The applicant also provided Duke Energy corporate procedure SR/O/B/4600/086, "Standard Procedure for Periodic Verification of EOF Communication Equipment Operation and Equipment/Supply Inventory," which provides a

quarterly inventory and verification of EOF equipment operation. These procedures were submitted as attachments 1 and 2 to this response. A license condition addressing the submittal schedule for implementation of emergency planning implementing procedures, is addressed in Part 10, "Proposed Licensed Conditions (including ITAAC)" of the application which is consistent with 10 CFR Part 50, Appendix E, Section V and the allowances provided in SECY-05-0197.]

Technical Evaluation: In **RAI 13.03-61(G)** the staff requested additional information on the contents of the emergency kits. In response the applicant provided Catawba Nuclear Station's Procedure HP/0/B/1000/006, "Emergency Equipment Functional Check and Inventory," and Duke Energy corporate procedure SR/O/B/4600/086, "Standard Procedure for Periodic Verification of EOF Communication Equipment Operation and Equipment/Supply Inventory," as examples for the Lee facility. Because the emergency plan should contain this information, the staff has requested the applicant provide a summary of this information or a statement that specifies it has been moved into a procedure in the Lee Emergency Plan. A reference to the procedure, by title, should also be provided. This issue will be tracked as **Open Item 13.03-16**.

Technical Information in the Emergency Plan: [H.12.] Section II.H.12, "Receipt of Field Monitoring Data," of the Lee Emergency Plan states that Radiological Assessment personnel in the EOF are the central point for the receipt of off-site monitoring data results and sample media analysis. The Radiological Assessment personnel will evaluate the information and make recommendations.

Technical Evaluation: The Lee Emergency Plan establishes that Radiological Assessment personnel in the EOF are the central point for the receipt of off-site monitoring data results and sample media analysis for the receipt and analysis of all field monitoring data and coordination of sample media.

In determining whether the proposed emergency plan met the applicable regulatory requirements related to the area of "Emergency Facilities and Equipment," the staff also evaluated it against the following requirements in Appendix E to 10 CFR Part 50, 10 CFR 52.79(a), 10 CFR 50.34(f) and 10 CFR 52.73.

13.3.1C.H.2 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.E.1 requires that there be equipment at the site for personnel monitoring.

Technical Information in the Emergency Plan: Section II.H.5, "On-Site Monitoring Systems," states that an adequate supply of portable radiation monitoring equipment is maintained at the site including dedication emergency response equipment. A very generic description of this equipment is provided in Appendix 6, "Emergency Equipment and Supplies."

Technical Evaluation: The Lee Emergency Plan states that there is equipment at the site for personnel monitoring.

13.3.1C.H.3 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.E.2 requires equipment for determining the magnitude of and for continuously assessing the impact of the release of radioactive materials to the environment.

Technical Information in the Emergency Plan: Section II.H.5, "On-Site Monitoring Systems," contains a description of the various monitoring systems necessary for initiating emergency measures and performing accident assessment. Information on personnel monitoring equipment discussed in this section reference the DCD and the FSAR. Geophysical phenomena are described in Section 3.7.4, "Seismic Instrumentation," of the DCD and the

corresponding section of FSAR. Radiological monitoring systems can be found in Sections 11.5, "Radiation Monitoring," 12.3, "Radiation Protection Design Features," of the DCD and the corresponding sections of the FSAR. A supply of portable radiation monitoring and sampling equipment and emergency response equipment (Section II.H, "Emergency Facilities and Equipment," and Appendix 6, "Emergency Equipment and Supplies") are available. Plant process monitoring systems are described in Section 11.5 of DCD and the corresponding section of the FSAR. Plant fire monitoring systems are described Section 9.5.1, "Fire Protection Systems," of the DCD and the corresponding section of the FSAR. Appendix 1, "Emergency Action Levels" describes the bases for the selection of the designated instruments as indicators of emergency conditions.

Technical Evaluation: The Lee Emergency Plan describes equipment for determining the magnitude of and for continuously assessing the impact of the release of radioactive materials to the environment.

13.3.1C.H.4 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.E.3 requires facilities and supplies at the site for decontamination of onsite individuals.

Technical Information in the Emergency Plan: Section II.J.3, "Personnel Monitoring and Decontamination" (page II-44) mentions the establishment of relocation sites for monitoring of contamination and decontamination. Section II.k.7, "Decontamination of Relocated Lee Nuclear Station Personnel" (page II-54), briefly discusses the ability to decontaminate relocated station personnel. Appendix 6 mentions that emergency kits contain decontamination supplies but specific equipment is not identified. In response to an RAI for Chapter 13 of the FSER the applicant stated, "the hot machine shop (Room 40358) will include ..... a permanent diked decontamination basin with a grating support floor, connected to the radioactive waste drain system for cleaning contaminated components. The hot machine shop will also contain a "portable decontamination system," which the COL holder will purchase according to specifications of its choosing. Personnel decontamination will be performed in a separate decontamination room (Room 40355), which will include two personnel showers and two sinks connected to the radioactive liquid waste system. The staff reviewing this portion found the applicant's design meets the applicable requirements of 10 CFR 50.34(f) (2) (xxv), 10 CFR 50.47(b) (8), 10 CFR 50.47(b) (11), and Subsections IV.E.3 and IV.E.8 to 10 CFR Part 50, Appendix E.

The below text was sent by NRC but appears to be in the wrong section. This paragraph also appears in the technical evaluation section under 13.3.1C.H.9. The above text replaces it in this section. Section 18.8.2 "Safety Parameter Display System (SPDS)," of the DCD states the Safety Parameter Display System (SPDS) is designed following the human system interface design implementation plan described in subsection 18.8.1, "Implementation Plan for the Human System Interface Design." The SPDS is integrated into the design of the AP1000 human system interface resources. Section 18.8.2.1, "General Safety Parameter Display System Requirements," states, "The AP1000 human system interface data display (alarms and visual display unit displays) is organized around the SPDS requirement of plant process functions." The display of system parameters is discussed in Section 18.2.2.2 "Organizational Placement and Authority." In Section 1.9 of the DCD sub section (2), (iv), "Safety Parameter Display System," states the purpose of the plant safety parameter display console (SPDS) is to display important plant variables in the main control room in order to assist in rapidly and reliably determining the safety status of the plant." The requirements for the safety parameter display system are specified during the main control room design process, and are met by the main control room design, specifically as part of the alarms, displays, and controls. The requirements for a SPDS are met by grouping the alarms by plant process or purpose, as

[redacted] directly related to the critical safety functions. The process data presented on the graphic displays is similarly grouped, facilitating an easy transition for the operators. The SPDS requirement for presentation of plant data in an analog fashion prior to reactor trip is met by the design of the graphic CRT displays. Displays are available at the operator workstations, the remote shutdown workstation, and at the TSC.

Technical Evaluation: The Lee Emergency Plan identifies facilities and supplies at the site for decontamination of onsite individuals.

13.3.1C.H.5 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.E.4 requires facilities and medical supplies at the site for appropriate emergency first aid treatment.

Technical Information in the Emergency Plan: Section II.H.10, "Emergency Equipment and Supplies," states that Duke Energy performs inspections and operational test of emergency equipment once each calendar quarter. Onsite first aid capability is discussed in Section II.L.2, "On-Site First Aid Capability," and a generic list of supplies can be found in Appendix 6, "Emergency Equipment and Supplies."

Technical Evaluation: The Lee Emergency Plan identifies facilities and medical supplies at the site for appropriate emergency first aid treatment.

13.3.1C.H.6 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.E.8 requires an onsite technical support center and an emergency operations facility from which effective direction can be given and effective control can be exercised during an emergency.

Technical Information in the Emergency Plan: Section II.H.1, "On-site Emergency Response Facilities," provides a short discussion on the Technical Support Center (TSC). Section II.H. states "These facilities were designed to meet the intent of the guidance in NUREG-0696" and the clarification in NUREG-0737, Supplement 1". Duke filed for a departure from the DCD (WLS DEP 18.8-1) as listed in Part 7 of the application, to move the TSC from the control support area (CSA) as identified in DCD. The TSC was moved to a central location to serve Units 1 and 2 as identified in the Emergency Plan. The Lee Emergency Plan states that the TSC contains resources to support the emergency response effort including communication between emergency response facilities, Duke Energy Management and the NRC. This includes displaying parameters that are required of a Safety Parameter Display System (SPDS). The TSC also provides Radiological protection similar to the CR. Section II-H.1, "On-Site Emergency Response Facilities," contains the statement: "in the event that all off-site AC power is unavailable, the TSC could be evacuated and ...function transferred to a location unaffected..." A description of the procedure and locations to be considered is not provided. Additional information on the TSC was requested in **RAI 13.03-61(A)**. Appendix 10, "Technical Support Center Description" provides additional information on the TSC. In **RAI 13.03-61(I)** the staff requested additional information on compliance with the intent of NUREG-0696, "Functional Criteria for Emergency Response Facilities."

Responses provided by the applicant with regards to **RAIs 13.03-61 (A) and (I)** are summarized in Section H.1

Technical Evaluation: The responses to **RAI 13.03-61 (A) and (I)** are summarized in Section H.1. Refer to this section for the staffs evaluation of these RAI responses.

13.3.1C.H.7 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.G requires a description of the provisions to be employed to ensure that the emergency plan, and its implementing procedures, and emergency equipment and supplies are maintained up-to-date.

Technical Information in the Emergency Plan: Procedures to review audit and update the emergency plan are covered in Section II.P.4, "Plan Reviews and Updates". The emergency plan is to be reviewed and updated on an annual basis. Implementing procedures are discussed in Section II.P.7, "Implementing procedures," and Appendix 5, "Implementing Procedures". Section II.H.10, "Emergency Equipment and Supplies," states that Duke Energy performs inspections and operational test of emergency equipment once each calendar quarter.

Technical Evaluation: The Lee Emergency Plan describes the provisions to be employed to ensure that the emergency plan, and its implementing procedures, and emergency equipment and supplies are maintained up-to-date.

13.3.1C.H.8 Regulatory Basis: 10 CFR 50, Appendix E.VI., "Emergency Response Data System," requires Emergency Response Data System (ERDS), which is a direct near real-time electronic data link between the licensee's onsite computer system and the NRC Operations Center that provides for the automated transmission of a limited data set of selected parameters. The ERDS supplements the existing voice transmission over the Emergency Notification System (ENS) by providing the NRC Operations Center with timely and accurate updates of a limited set of parameters from the licensee's installed onsite computer system in the event of an emergency. The licensee shall test the ERDS periodically to verify system availability and operability. The frequency of ERDS testing will be quarterly unless otherwise set by NRC based on demonstrated system performance.

10 CFR 50, Appendix E.VI., "Emergency Response Data System," also requires onsite hardware at each unit by the licensee to interface with the NRC receiving system. Software, which will be made available by the NRC, will assemble the data to be transmitted and transmit data from each unit via an output port on the appropriate data system. The hardware and software must have the following characteristics:

a. Data points, if resident in the in-plant computer systems, must be transmitted for four selected types of plant conditions: Reactor core and coolant system conditions; reactor containment conditions; radioactivity release rates; and plant meteorological tower data. A separate data feed is required for each reactor unit. While it is recognized that ERDS is not a safety system, it is conceivable that a licensee's ERDS interface could communicate with a safety system. In this case, appropriate isolation devices would be required at these interfaces. The data points, identified in the following parameters will be transmitted:

(i) [**As appropriate**] For pressurized water reactors (PWRs), the selected plant parameters are: (1) Primary coolant system: pressure, temperatures (hot leg, cold leg, and core exit thermocouples), subcooling margin, pressurizer level, reactor coolant charging/makeup flow, reactor vessel level, reactor coolant flow, and reactor power; (2) Secondary coolant system: Steam generator levels and pressures, main feedwater flows, and auxiliary and emergency feedwater flows; (3) Safety injection: High- and low-pressure safety injection flows, safety injection flows (Westinghouse), and borated water storage tank level; (4) Containment: pressure, temperatures, hydrogen concentration, and sump levels; (5) Radiation monitoring system: Reactor coolant radioactivity, containment radiation level, condenser air removal radiation level, effluent radiation monitors, and process radiation monitor levels; and (6) Meteorological data: wind speed, wind direction, and atmospheric stability.

(ii) [**As appropriate**] For boiling water reactors (BWRs), the selected parameters are: (1) Reactor coolant system: Reactor pressure, reactor vessel level, feedwater flow, and reactor power; (2) Safety injection: Reactor core isolation cooling flow, high-pressure coolant injection/high-pressure core spray flow, core spray flow, low-pressure coolant injection flow, and condensate storage tank level; (3) Containment: drywell pressure, drywell temperatures, drywell sump levels, hydrogen and oxygen concentrations, suppression pool temperature, and suppression pool level; (4) Radiation monitoring system: Reactor coolant radioactivity level, primary containment radiation level, condenser off-gas radiation level, effluent radiation monitor, and process radiation levels; and (5) Meteorological data: Wind speed, wind direction, and atmospheric stability.

b. The system must be capable of transmitting all available ERDS parameters at time intervals of not less than 15 seconds or more than 60 seconds. Exceptions to this requirement will be considered on a case by case basis.

c. All link control and data transmission must be established in a format compatible with the NRC receiving system as configured at the time of licensee implementation.

Technical Information in the Emergency Plan: Section II.F.1.c (page II-30) states that a separate telephone line is dedicated to the operation of the ERDS system. The ERDS system is activated within one hour following declaration of alert of higher emergency class. Section II.H.10 (page II-39) states that testing of the communication systems will be performed quarterly and after each use. Additional information is provided in FSAR section 9.5.2.2.3.2.1 NRC Communication Interfaces. Lee Nuclear Station DCD Tier 2, Chapter 7, "Instrumentation and Controls", Section 7.7, "Control and Instrumentation Systems (pages 7.7-1/25), discusses most of the systems parameters. Meteorological data parameters transmitted are discussed in Chapter 2, "Site Characteristics", Section,2.3.3, "Onsite Meteorological Measurement Programs" (pages 23-26/32), of the FSAR and II.H.8, "Meteorological Instrumentation and Procedures" (page II-36), of the Lee Emergency Plan. Radiation Monitoring is discussed in the Lee Nuclear Station DCD, Tier 2, Chapter 11, "Radioactive Waste Management", Section 11.5, "Radiation Monitoring" (pages 11.5-1/29) and Section 11.1.2, "Plant Monitoring Systems" (page 11-40) of the Lee Emergency Plan. Containment parameter monitoring is discussed in Section 7, of the DCD. Description of area radiation monitors and there locations can be found in Lee DCD Tier 1, Chapter 3, "Non-System Based Design Descriptions and ITAAC", Section 3.5, "Radiation Monitoring" (page 3.5-1/8). **In RAI 13.03-61 (C)** the staff requested the applicant provide the following information regarding the data points transmitted for selected plant conditions: Verify that data points can be transmitted for reactor core and coolant system conditions; reactor containment conditions; radioactivity release rates; and plant meteorological tower data. Verify that a separate data feed will be provided for each reactor unit. If the Emergency Response Data System (ERDS) is to communicate with a safety system, verify that appropriate isolation devices will exist at these interfaces. Additional information regarding the ERDS was also requested in **RAIs 13.03-61 (D)(1-4)**.

In response letters dated December 17 and December 23, 2008 the applicant stated that data points for reactor and core coolant system conditions; reactor containment conditions; radioactivity release rates; and plant meteorological tower data will be available for transmittal, and a separate data feed for each reactor unit is to be provided. Data transmission design will include isolation devices as part of the Cyber Security Program being developed. The process and hardware used to transmit data has not been identified but will be specific to AP1000 design features and based on regulatory guidance. The applicant also stated that the ERDS for

Lee Nuclear Station will be developed on a schedule in compliance with the milestones provided in COL application, Part 10.

In **RAI 13.03-61 (D)(1)**, the staff requested the applicant verify that the system is capable of transmitting ERDS parameters in not more than 60 seconds or no less than 15 seconds. In response letters dated December 17 and December 23, 2008 the applicant stated that ERDS parameters can be transmitted in no more than 60 seconds or no less than 15 seconds.

In **RAI 13.03-61 (D)(2)**, the staff requested the applicant verify that the link control and data transmission is established in a compatible format with NRC receiving equipment. In response letters dated December 17 and December 23, 2008 the applicant stated that link control and data transmission is in a compatible format with Nuclear Regulatory Commission (NRC) receiving equipment.

In **RAI 13.03-61 (D)(3)**, the staff requested the applicant verify that any hardware or software changes that affect the transmitted data points identified in the ERDS Data Point Library will be submitted to the NRC within 30 days after the changes are completed. The staff also requested that the applicant verify that Hardware and software changes that could affect the transmission format and computer communication protocol to the ERDS will be provided to the NRC at least 30 days prior to the modification.. In response letters dated December 17 and December 23, 2008 the applicant stated that hardware or software changes that affect the transmitted data points identified in the ERDS Data Point Library will be submitted to the NRC within 30 days after the changes are completed. The applicant also stated that hardware and software changes that could affect the transmission format and computer communication protocol to the ERDS will be provided to the NRC at least 30 days prior to the modification.

In **RAI 13.03-61 (D)(4)**, the staff requested the applicant verify that an ERDS implementation program plan has or will be submitted to the NRC. In response letters dated December 17 and December 23, 2008 the applicant stated that an ERDS implementation program plan will be submitted to the NRC. The applicant also stated that some of the details regarding this information are specific to the design features of the AP 1000 and will be based on applicable regulatory guidance. Other details are applicable to the emergency planning program implementation. The ERDS and implementation procedures for the Lee Nuclear Station will be developed on a schedule in compliance with the milestones provided in COL application, Part 10, and Tier 1 ITAAC.

Technical Evaluation: [If applicable: The staff finds the additional information provided in the applicant's response to **RAI 13.03-61 (C) and (D)(1-4)** acceptable and therefore resolved. The Lee Emergency Plan describes the Emergency Response Data System (ERDS), as a direct near real-time electronic data link between the licensee's onsite computer system and the NRC Operations Center that provides for the automated transmission of a limited data set of selected parameters. The ERDS supplements the existing voice transmission over the Emergency Notification System (ENS) by providing the NRC Operations Center with timely and accurate updates of a limited set of parameters from the licensee's installed onsite computer system in the event of an emergency. The Lee Emergency Plan states that the licensee will test the ERDS periodically to verify system availability and operability. The frequency of ERDS testing will be quarterly unless otherwise set by NRC based on demonstrated system performance.

Also, the Lee Emergency Plan states that onsite hardware will be provided at each unit by the licensee to interface with the NRC receiving system. Software, which will be made available by the NRC, will assemble the data to be transmitted and transmit data from each unit via an output port on the appropriate data system. The hardware and software has the following characteristics:

a. Data points will be transmitted for four selected types of plant conditions: Reactor core and coolant system conditions; reactor containment conditions; radioactivity release rates; and plant meteorological tower data. A separate data feed is provided for each reactor unit. [**If applicable**] The Lee Emergency Plan states that appropriate isolation devices are provided at interfaces with safety systems. In addition, the Lee Emergency Plan states that the data points, identified in the following parameters will be transmitted:

(i) [**As appropriate**] (For pressurized water reactors (PWRs)) Selected plant parameters are: (1) Primary coolant system: pressure, temperatures (hot leg, cold leg, and core exit thermocouples), subcooling margin, pressurizer level, reactor coolant charging/makeup flow, reactor vessel level, reactor coolant flow, and reactor power; (2) Secondary coolant system: Steam generator levels and pressures, main feedwater flows, and auxiliary and emergency feedwater flows; (3) Safety injection: High- and low-pressure safety injection flows, safety injection flows (Westinghouse), and borated water storage tank level; (4) Containment: pressure, temperatures, hydrogen concentration, and sump levels; (5) Radiation monitoring system: Reactor coolant radioactivity, containment radiation level, condenser air removal radiation level, effluent radiation monitors, and process radiation monitor levels; and (6) Meteorological data: wind speed, wind direction, and atmospheric stability.

(ii) [**As appropriate**] (For boiling water reactors (BWRs)) Selected parameters are: (1) Reactor coolant system: Reactor pressure, reactor vessel level, feedwater flow, and reactor power; (2) Safety injection: Reactor core isolation cooling flow, high-pressure coolant injection/high-pressure core spray flow, core spray flow, low-pressure coolant injection flow, and condensate storage tank level; (3) Containment: drywell pressure, drywell temperatures, drywell sump levels, hydrogen and oxygen concentrations, suppression pool temperature, and suppression pool level; (4) Radiation monitoring system: Reactor coolant radioactivity level, primary containment radiation level, condenser off-gas radiation level, effluent radiation monitor, and process radiation levels; and (5) Meteorological data: Wind speed, wind direction, and atmospheric stability.

b. The system is capable of transmitting all available ERDS parameters at time intervals of not less than 15 seconds or more than 60 seconds.

c. All link control and data transmission are established in a format compatible with the NRC receiving system as configured at the time of licensee implementation.

13.3.1C.H.9 Regulatory Basis: 10 CFR 52.79(a)(17) and 10 CFR 50.34(f)(2)(iv) require that the application contain information with respect to compliance with the technically relevant positions of the Three Mile Island requirements in 10 CFR 50.34(f). 10 CFR 50.34(f)(2)(iv) specifically requires a plant safety parameter display console that will display to operators a minimum set of parameters defining the safety status of the plant. The console must be capable of displaying a full range of important plant parameters [list them if provided] and data trends on demand and capable of indicating when process limits are being approached or exceeded. 10 CFR 50.34(f)(2)(viii) requires that the application describe the capability to promptly obtain and analyze from the reactor coolant system and containment that may contain accident source term radioactive materials without radiation exposures to the individual exceeding 5 rems to the whole body or 50 rems to the extremities. Materials to be analyzed and quantified include certain radionuclides that are indicators of the degree of core damage (e.g., noble gases, radioiodines, and cesiums, and nonvolatile isotopes), hydrogen in containment atmosphere, dissolved gases, chloride, and boron concentrations. 10 CFR

50.34(f)(2)(xvii) requires that the application describe instruments to measure, record and readout in the control room for: (1) containment pressure, (2) containment water level, (3) containment hydrogen concentration, (4) containment radiation intensity (high level), and (5) noble gas effluents at all potential, accident release points. In addition, the application must describe a continuous sampling capability for radioactive iodines and particulates in gaseous effluents from all potential accidents release points, and for onsite capability to analyze and measure these samples. 10 CFR 50.34(f)(2(xxv) requires a description of the onsite Technical Support Center (TSC) and the onsite Operational Support Center (OSC).

Technical Information in the Emergency Plan: Section --- of the --- Plan. What does here?

Technical Evaluation: [If applicable: address the adequacy of RAI response.] Section 18.8.2, "Safety Parameter Display System (SPDS)," of the Tier 2 Material in AP1000 DCD, Revision 16, states the SPDS is designed following the human system interface design implementation plan described in subsection 18.8.1, "Implementation Plan for the Human System Interface Design". The SPDS is integrated into the design of the AP1000 human system interface resources. Section 18.8.2.1 states, "The AP1000 human system interface data display (alarms and visual display unit displays) is organized around the SPDS requirement of plant process functions." The display of system parameters is discussed in section 18.2.2.2. In Section 1.9 of the DCD sub-section (2) (iv) Safety Parameter Display System, states the purpose of the plant safety parameter display console (SPDS) is to display important plant variables in the main control room in order to assist in rapidly and reliably determining the safety status of the plant. The requirements for the safety parameter display system are specified during the main control room design process, and are met by the main control room design, specifically as part of the alarms, displays, and controls. The requirements for a SPDS are met by grouping the alarms by plant process or purpose, as directly related to the critical safety functions. The process data presented on the graphic displays is similarly grouped, facilitating an easy transition for the operators. The SPDS requirement for presentation of plant data in an analog fashion prior to reactor trip is met by the design of the graphic CRT displays. Displays are available at the operator workstations, the remote shutdown workstation, and at the TSC. [**Potential interface**: SRP Section 7.5 (SPDS)]

13.3.1C.H.10 Regulatory Basis: Supplement 1 to NUREG-0737, "Clarification of TMI Action Plan Requirements," issued January 1983, provides guidance emergency response facilities in section 8, "Emergency Response Facilities."

[**Note**: SPDS is reviewed in SRP Section 7.5 and 18.2. It may be easier to refer to those sections of the SRP.] The application contained information with respect to compliance with the technically relevant positions of the Three Mile Island requirements in 10 CFR 50.34(f). The ---- Plan addressed the plant safety parameter display console that will display to operators a minimum set of parameters defining the safety status of the plant. The console is capable of displaying a full range of important plant parameters **[list them if provided]** and data trends **[list them if provided]** on demand and capable of indicating when process limits are being approached or exceeded.

[**Note**: Post-accident sampling is also reviewed in SRP Section 9.3.2. NUREG-1793 only approved radiation exposure controls during sampling. The capabilities of the PASS system are contained in DCD Tier 2 sections 9.3.3 and 12.4.1.8. and possibly the Emergency plan.] The application describes the capability to promptly obtain and analyze from the reactor coolant system and containment that may contain accident source term radioactive materials without

radiation exposures to the individual exceeding 5 rems to the whole body or 50 rems to the extremities. Materials to be analyzed and quantified include certain radionuclides that are indicators of the degree of core damage (e.g., noble gases, radioiodines, and cesiums, and nonvolatile isotopes), hydrogen in containment atmosphere, dissolved gases, chloride, and boron concentrations.

[**Note**: This area is also addressed in SRP Sections 7 and 18. References to these Sections may be appropriate.] The application [**Plan**] describes instruments to measure, record and readout in the control room for: (1) containment pressure, (2) containment water level, (3) containment hydrogen concentration, (4) containment radiation intensity (high level), and (5) noble gas effluents at all potential, accident release points. The ---- Plan also describes a continuous sampling capability for radioactive iodines and particulates in gaseous effluents from all potential accidents release points [**Option**: **insert list**], and for onsite capability to analyze and measure these samples.

Technical Information in the Emergency Plan: Section --- of the --- Plan. What goes here?

Technical Evaluation: [If applicable: address the adequacy of RAI response.] The --- Plan

13.3.1C.H.11 Regulatory Basis: Section H, "Emergency Facilities and Equipment," of the Lee Emergency Plan states that the Control Rooms, OSCs and TSC were designed to meet the intent of the guidance in NUREG-0737, Supplement 1. However, the details in the plan are not descriptive enough to determine that the guidance in NUREG-0737, Supplement 1 has been implemented. The staff requested in **RAI 13.03-61(E)**, a summary of the information in the emergency plan to describe how the plan meets the intent of the guidance in Supplement 1 to NUREG-0737. RAI Response**]**

Technical Information in the Emergency Plan: Section H of the Lee Emergency Plan states that the Control Rooms, OSCs and TSC were designed to meet the intent of the guidance in NUREG-0737, however the details in the plan are not descriptive enough to determine that the guidance in NUREG-0737 has been implemented. [**If applicable**: standard design approval, or manufacturing license]. [Additional details needed.]

Technical Evaluation: [If applicable: Adequacy of RAI Response] The applicant referenced a standard design certification,

13.3.1C.H.12 Regulatory Basis: NUREG-0696, "Functional Criteria for Emergency Response Facilities" provides guidance related to the control room, technical support center (TSC), emergency operations facility (EOF), and the safety parameter display system (SPDS).

Technical Information in the Emergency Plan: Section H, "Emergency Facilities and Equipment," of the Lee Emergency Plan states that the Control Rooms and OSCs were designed to meet the intent of the guidance in NUREG-0696. However the details in the plan are not descriptive enough to determine that the guidance in NUREG-0696 has been implemented. The staff requested in **RAI 13.03-61(H)**, a summary of the information in the emergency plan to describe how the plan meets the intent of the guidance in NUREG-0696 for the Control Rooms and OSCs. RAI Response**]**

Technical Evaluation: Adequacy of RAI Response**]** The applicant referenced a standard design certification.

13.3.1C.H.13 Regulatory Basis: 10 CFR 52.73, "Relationship to other Subparts," states that an applicant for a combined license may reference a standard design certification, standard design approval, or manufacturing license.

Technical Information in the Emergency Plan: The applicant referenced a standard design certification as being AP1000, Revision 16.

Technical Evaluation: The applicant referenced a standard design certification.

13.3.1C.H.14 Conclusion for Emergency Facilities and Equipment

If applicable, As discussed above, the applicant needs to provide the bases for why ITAAC [redacted] will demonstrate the sufficiency [redacted]. The NRC will determine whether this planning standard is acceptable and document its determination in the Final Safety Evaluation Report (FSER), based on information the applicant has provided to date and its response to Open Item [redacted].

The staff has reviewed the onsite emergency plan and the applicant's responses to **RAI 13.03-61(A) through (I)** in regards to Planning Standard H of NUREG-0654/FEMA-REP-1 and the requirements of 10 CFR 50.47(b)(8) and Section IV.E.1., E.2., E.3, E.4., E.8., G., and VI. of Appendix E to 10 CFR Part 50. Final determination regarding this planning standard will be based on the applicant's response to the following Open Items:

- In **RAI 13.03-61 (I)(b),** the staff requested the applicant address management plans, facility staffing and task assignments of TSC personnel. In response the applicant stated that management, staffing, and assignments of TSC personnel are addressed in procedures. Catawba Nuclear Station Procedure RP/0/A/5000/020, "Technical Support Center Activation Procedure," was provided as an example. Because the emergency plan should contain this information, the staff has requested the applicant provide a summary of this information or a statement that specifies it has been moved into a procedure in the Lee Emergency Plan. A reference to the procedure, by title, should also be provided. This issue will be tracked as **Open Item 13.03-11.**

- In **RAI 13.03-61 (I)(d),** the staff requested the applicant provide additional information related to TSC staff assignments. The applicant stated this information will be discussed in procedures. Procedure, RP/0/A/5000/020, "Technical Support Center (TSC) Activation Procedure," was provided as an example. Because the emergency plan should contain this information, the staff has requested the applicant provide a summary of this information or a statement that specifies it has been moved into a procedure in the Lee Emergency Plan. A reference to the procedure, by title, should also be provided This issue will be tracked as **Open Item 13.03-12.**

In **RAI 13.03-61 (A)**, in response the applicant provided Catawba Nuclear Station Procedures RP/0/A/5000/024, "OSC Activation Procedure," and RP/O/A/5000/020, "Technical Support Center (TSC) Activation Procedure." Because the emergency plan should contain this information, the staff has requested the applicant provide a summary of this information or a statement that specifies it has been moved into a procedure in the Lee Emergency Plan. A reference to the procedure, by title, should also be provided. This issue will be tracked as **Open Item 13.03-13.**

- In **RAI 13.03-61(E)(1)**, the staff requested Duke Energy provide additional information regarding their procedures related to meteorological data. In response the applicant provided Duke Energy's corporate procedure SH/O/B/2005/001, "Emergency Response Offsite Dose

Projections," which describes the procedure for obtaining data from an alternate source. Because the emergency plan should contain this information, the staff has requested the applicant provide a summary of this information or a statement that specifies it has been moved into a procedure in the Lee Emergency Plan. A reference to the procedure, by title, should also be provided. This issue will be tracked as **Open Item 13.03-14.**

- In **RAI 13.03-61(B)** the staff requested additional information on the procedures to inspect and test dedicated emergency equipment. In response the applicant provided Catawba Nuclear Station's Procedure HP/0/B/1000/006, "Emergency Equipment Functional Check and Inventory," and Duke Energy corporate procedure SR/0/B/4600/086, "Standard Procedure for Periodic Verification of EOF Communication Equipment Operation and Equipment/Supply Inventory," as examples of the process. Because the emergency plan should contain this information, the staff has requested the applicant provide a summary of this information or a statement that specifies it has been moved into a procedure in the Lee Emergency Plan. A reference to the procedure, by title, should also be provided. This issue will be tracked as **Open Item 13.03-15.**

- In **RAI 13.03-61(G)** the staff requested additional information on the contents of the emergency kits. In response the applicant provided Catawba Nuclear Station's Procedure HP/0/B/1000/006, "Emergency Equipment Functional Check and Inventory," and Duke Energy corporate procedure SR/O/B/4600/086, "Standard Procedure for Periodic Verification of EOF Communication Equipment Operation and Equipment/Supply Inventory," as examples for the Lee facility. Because the emergency plan should contain this information, the staff has requested the applicant provide a summary of this information or a statement that specifies it has been moved into a procedure in the Lee Emergency Plan. A reference to the procedure, by title, should also be provided. This issue will be tracked as **Open Item 13.03-16**.

The applicant has committed to meet the following license conditions and ITAAC, with the associated dates, for the emergency preparedness program:

ITAAC:

[H.1., ITAAC 5.1] An ITAAC has been proposed to test that the licensee has established a TSC and OSC (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

[H.2., ITAAC 5.2] An ITAAC has been proposed to test that the licensee has established an EOF (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

13.3.1C.I Accident Assessment

13.3.1C.I.1 Regulatory Basis: 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(9); Planning Standard I requires that adequate methods, systems and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition be in use.

The staff evaluated the emergency plan against NUREG-0654/FEMA-REP-1, Planning Standard I, "Accident Assessment." Planning Standard I provides the detailed evaluation criteria that the staff considered in determining whether the emergency plan met the applicable regulatory requirements in 10 CFR 50.47(b)(9).

Technical Information in the Emergency Plan: [I.1.] Section II-I.1, "Parameters Indicative of Emergency Conditions," of the Lee Emergency Plan directs readers to EP Appendix 1, "Emergency Actions Levels," for the information related to identification of off-normal conditions and accidents. Appendix 1, based on NEI 07-01, Rev. 0, lists off-normal and accident conditions and plant instrumentation used to determine emergency initiating conditions.

Technical Evaluation: The Lee Emergency Plan identifies plant system and effluent parameter values characteristic of a spectrum of off-normal conditions and accidents, and identifies the plant parameter values or other information which correspond to the initiating conditions. Such parameter values and the corresponding emergency class are included in the appropriate facility emergency procedures. Facility emergency procedures specify the kinds of instruments being used and their capabilities.

Technical Information in the Emergency Plan: [I.2.] Section II.1.2, "Plant Monitoring Systems," of the Lee Emergency Plan addresses methods of making initial and continuing assessments of plant conditions through the course of an accident. This section incorporates Subsection 9.3.3, "Primary Sampling System," of the AP1000 DCD dealing with the primary sampling system by reference. The primary sampling system includes a post-accident sampling capability, but it does not include a PASS specifically. The reference to the Lee Nuclear Station FSAR in this section is unnecessary because it only refers to the DCD. The section also incorporates DCD Tier 2, Section 11.5, "Radiation Monitoring," dealing with radiation monitoring systems by reference. Lee Nuclear Station FSAR Section 11.5, "Radiation Monitoring," provides supplementary information and lists departures from the DCD.

Unit 1 and 2 ITAAC 6.1 has been proposed to test that the means exists to provide initial and continuing radiological assessment throughout the course of an accident (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

Technical Evaluation: The Lee Emergency Plan describes the onsite capability and resources to provide initial values and continuing assessment throughout the course of an accident. The capabilities include post-accident sampling capability, radiation and effluent monitors, in-plant iodine instrumentation, and containment radiation monitoring. Additional technical interface information is located at SRP Section 9.3.2 "Post-accident Sampling System."

Technical Information in the Emergency Plan: [I.3.] Section II.I.3, "Determination of Source Term and Radiological Conditions," of the Lee Emergency Plan refers to Appendix 2, "Radiological Assessment and Monitoring," for descriptions of the means for relating various measured parameters, including containment radiation monitor reading, to the source term available for release within plant systems and effluent monitor readings to the magnitude of the release of radioactive materials. Appendix 2, describes the method of estimating source terms in very general terms using a combination of user input and monitoring data and the Raddose-V

computer code. In **RAI 13.03-62(D)** the staff requested additional information on the process used to estimate accident source terms.

Unit 1 and 2 ITAAC 6.2 has proposed to test that the means exists to determine the source term of releases of radioactive material within plant systems, and the magnitude of the release of radioactive materials based on plant system parameters and effluent monitors. (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

With regard to **RAI 13.03-62 (D)**, in response letters dated December 17 and December 23, 2008 the applicant stated that Appendix 2, "Radiological Assessment and Monitoring" of the Lee Emergency Plan provides a description of the Raddose-V dose assessment model which is used to analyze offsite does at Duke Facilities. This model provides results that are compatible and consistent with NRC dose assessment models evaluated during successful emergency plan exercises. The code is maintained current with respect to the facility's physical and operational characteristics and the assumptions and criteria used in the dose consequence analysis performed as part of the regulatory required accident analyses described in Chapter 15 of the FSAR. The applicant further stated that Raddose-V does not currently include modeling for the Lee facility but they anticipate modifying the code to include data for the Lee facility or using more advanced assessment capabilities that may be available.

In **RAI 13.03-62 (D)(1)**, the staff requested the applicant provide a list of procedures that cover the estimation of accident source terms (radionuclides and activities) and describe the contents of each procedure. In response letters dated December 17 and December 23, 2008 the applicant stated that instruction to dose assessors for determining source term and calculating the projected offsite dose to the public using Raddose-V and guidance for completion of Emergency Notification Forms is provided in Duke Corporate Procedure SH/0/B/2005/001, "Emergency Response Offsite Dose Projections."

In **RAI 13.03-62 (D)(2)**, the staff requested the applicant identify who is responsible for making source term estimates at various stages of the event. In response letters dated December 17 and December 23, 2008 the applicant stated that Dose Assessors in the EOF, under the direction of the Radiological Assessment Manager, are responsible for evaluating source terms until the event is terminated. Additional information is provided in response to RAI 13.03-62 (D)(3).

In **RAI 13.03-62 (D)(3)**, the staff requested the applicant clarify assumptions related to the pathway from the reactor to the environment. In response letters dated December 17 and December 23, 2008 the applicant stated that Section 15.6 of the DCD identifies the following pathways to the environment: 1) A steam generator tube rupture where the pathways may involve the Unit Vent and Main Steam Isolation Valves; 2) A loss of coolant accident inside containment where the pathway involves a loss of containment or design basis leakage with significant increase in reactor coolant activity (Unit Vent); 3) A loss of coolant accident outside of containment (Unit Vent); 4) A fuel handling accident (Unit Vent).

In **RAI 13.03-62 (D)(4)**, the staff requested the applicant discuss whether or not the assumptions include reduction of the source term to account for filters, sprays, or other safety. In response letters dated December 17 and December 23, 2008 the applicant stated that the code used in Raddose-V includes provisions for features that provide for source term reduction specific to the as-built plant. The applicant further stated that features of the Lee Facility have not yet been added to the code as specified in response to RAI Site-9(D).

In **RAI 13.03-62 (D)(5)**, the staff requested the applicant clarify whether the source term estimates will be modified during the course of the event to account for changes in the release pathway. In response letters dated December 17 and December 23, 2008 the applicant stated that the source term available for release is modified within the Raddose-V program to account for processes that reduce or increase the release based on the pathway(s) or release rates. The applicant further stated that features of the Lee Facility have not yet been added to the code as specified in response to RAI 13.03-62 (D).

In **RAI 13.03-62 (D)(6)**, the staff requested the applicant clarify how long it takes to obtain source term estimates. In response letters dated December 17 and December 23, 2008 the applicant stated that 15 minute averages of effluent and/or accident monitors may be needed to obtain source term estimates for the model currently used for other operating facilities

In **RAI 13.03-62 (D)(7)**, the staff requested the applicant explain how source term estimates are obtained in the event that the computer-based methods are not available . In response letters dated December 17 and December 23, 2008 the applicant stated that laptop computers are available for on-site evaluations if the primary computers are not functional. The applicant further stated that the program can also be run at other Duke facilities if necessary. Source term estimates can be obtained by inserting data provided by the affected site or using default values contained within the program code for the facility.

Technical Evaluation: The staff finds the clarifications and additional information provided in the applicant's response to **RAI 13.03-62 (D)(3-7)** acceptable and therefore resolved. In **RAI 13.03-62(D)** the staff requested additional information on the process used to estimate accident source terms. In response the applicant stated that Raddose-V does not currently include modeling for the Lee facility but they anticipate modifying the code to include data for the Lee facility or using more advanced assessment capabilities that may be available. Because the emergency plan is dependent on site specific analysis for offsite dose, the NRC has requested that this information be provided. The inclusion of site specific data in the Lee emergency Plan is tracked as **Open Item 13.03-17**.

In **RAI 13.03-62 (D)(1)**, the staff requested the applicant provide a list of procedures that cover the estimation of accident source terms (radionuclides and activities) and describe the contents of each procedure. In response the applicant stated that instruction to dose assessors for determining source term and calculating the projected offsite dose to the public using Raddose-V and guidance for completion of Emergency Notification Forms is provided in Duke Corporate Procedure SH/0/B/2005/001, "Emergency Response Offsite Dose Projections." since this information was not included in the emergency plan, the staff has requested a summary of this information or a statement specifying it has been moved into a procedure be provided in the Lee Emergency Plan. A reference to the procedures by title should also be provided. This issue is tracked as **Open Item 13.03-18**

Technical Information in the Emergency Plan: [I.4.] Section II.I.4, "Relationship Between Effluent Monitor Reading and Exposure and Contamination Levels," of the Lee Emergency Plan, introduces the dose assessment capability. Appendix 2, Section 3.0, "Conceptual Design Description: Atmospheric Transport and Diffusion Assessment," describe the dose assessment programs. Sections 3.3, "Data Acquisition," 3.4, "Modeling," and 3.5, "Data Output," of Appendix 2, "Radiological Assessment and Monitoring," to the Lee Emergency Plan describe the method of estimating offsite exposures and contamination from monitoring readings and

meteorological data using the Raddose-V computer code. In **RAI 13.03-62(E)**, the staff requested additional information regarding the dose assessment program.

Unit 1 and 2 ITAAC 6.3 has been proposed to test that the means exists to continuously assess the impact of the release of radioactive materials to the environment, accounting for the relationship between effluent monitor readings, and onsite and offsite exposures and contamination for various meteorological conditions. (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria." in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

With regard to **RAI 13.03-62 (E)(1)**, in response letters dated December 17 and December 23, 2008 the applicant stated that the Lee Nuclear Station site-specific procedures have not yet been developed but they will be similar to those in use at Catawba Nuclear Facility. Dispatch of on-site survey teams is discussed in Enclosure 5.1, of procedure HP/0/B/1009/009, "Guidelines for Accident and Emergency Response." The dispatched of teams to monitor the particulate and iodine levels present during an emergency is discussed in procedure HP/0/B/1009/007, "In-Plant Particulate and Iodine Monitoring Under Accident Conditions." These procedures are provided as attachments 2 and 3 to this response.

In **RAI 13.03-62 (E)(2)**, the staff requested the applicant identify who is responsible for making estimates of onsite exposures and contamination. In response letters dated December 17 and December 23, 2008 the applicant stated that the Lee Nuclear Station site-specific procedures have not yet been developed but they will be similar to those in use at Catawba Nuclear Facility. On-shift staff is responsible for initial emergency response actions as discussed in section 4.1 of HP/0/B/1 009/009, "Guidelines for Accident and Emergency Response," This procedure is provided as attachment 2 to this response.

In **RAI 13.03-62 (E)(3)**, the staff requested the applicant provide a List of procedures that cover the estimation [of] offsite exposures and contamination and summarize the contents of each procedure. In response letters dated December 17 and December 23, 2008 the applicant stated that the Lee Nuclear Station site-specific procedures have not yet been developed but they will be similar to those in use at other Duke Facilities. The procedure contains guidance for utilizing the automatic mode for data input which uses a number of defaults to speed the initial dose assessment process. Dose assessment is performed by the ERO dose assessors in the EOF. The applicant also stated that Raddose-V will be updated with actual plant data to improve the dose estimates. The applicant anticipates that the Duke corporate procedure, SH/0/B/2005/001, "Emergency Response Offsite Dose Projections," will be modified to incorporate the Lee site. This procedure is provided as attachment 1 to this response.

In **RAI 13.03-62 (E)(4)**, the staff requested the applicant identify who is responsible for making estimates of offsite exposures and contamination. In response letters dated December 17 and December 23, 2008 the applicant stated that dose assessment will be provided by EOF Dose Assessment personnel reporting to the EOF Director.

In **RAI 13.03-62 (E)(5)**, the staff requested the applicant identify how exposure and contamination estimates would be made in the event that the computer method is unavailable. In response letters dated December 17 and December 23, 2008 the applicant refers to information provided in response to RAI 13.03-62 (D)(7).

In **RAI 13.03-62 (E)(6)**, the staff requested the applicant describe how exposure and contamination estimated would be adjusted in the event that onsite meteorological data are not

available. In response letters dated December 17 and December 23, 2008 the applicant refers to information provided in response to RAI 13.03-62 (C) regarding meteorological data.]

Technical Evaluation: The staff finds the additional information provided in the applicant's response to **RAIs 13.03-62 (E)(4-6)** to be acceptable and therefore resolved. In **RAI 13.03-62(E)(1-3)**, the staff requested additional information regarding the dose assessment program. With regard to **RAI 13.03-62 (E)(1),** in response the applicant site specific procedures have not been developed for the Lee facility so Catawba procedure HP/0/B/1009/009, "Guidelines for Accident and Emergency Response," and procedure HP/0/B/1009/007, "In-Plant Particulate and Iodine Monitoring Under Accident Conditions," which describes dispatch of survey teams and monitoring of particulates and iodine levels respectively, were provided as examples. Because this information is not discussed in the emergency plan, the staff has requested that a summary of this information or a statement specifying it has been moved into a procedure be included in the Lee emergency Plan. A reference to these procedures by title should also be included. This issue is tracked as **Open Item 13.03-19**.

In **RAI 13.03-62 (E)(2)**, the staff requested the applicant identify who is responsible for making estimates of onsite exposures and contamination. In response the applicant stated that the Lee Nuclear Station site-specific procedures have not yet been developed but they will be similar to those in use at Catawba Nuclear Facility. Catawba procedure HP/0/B/1 009/009, "Guidelines for Accident and Emergency Response," was provided as an example to be used a t the Lee facility. Because this information is not discussed in the emergency plan, the staff has requested that a summary of this information or a statement specifying it has been moved into a procedure be included in the Lee emergency Plan. A reference to these procedures by title should also be included. This issue is tracked as **Open Item 13.03-20**.

In **RAI 13.03-62 (E)(3)**, the staff requested the applicant provide a list of procedures that cover the estimation [of] offsite exposures and contamination and summarize the contents of each procedure. In response the applicant stated that the Lee Nuclear Station site-specific procedures have not yet been developed but they will be similar to those in use at other Duke Facilities. The applicant provided Duke corporate procedure, SH/0/B/2005/001, "Emergency Response Offsite Dose Projections," as an example of guidance for utilizing the automatic mode for data input which uses a number of defaults to speed the initial dose assessment process. Because this information is not discussed in the emergency plan, the staff has requested that a summary of this information or a statement specifying it has been moved into a procedure be included in the Lee emergency Plan. A reference to these procedures by title should also be included. This issue is tracked as **Open Item 13.03-21**.

Technical Information in the Emergency Plan: [I.5.] Section II.H.6.a, "Access to Data from Monitoring Systems," Section II.H.8, "Meteorological Instrumentation and Procedures," and Appendix 2, "Radiological Assessment and Monitoring," of the Lee Emergency Plan briefly discuss meteorological data acquisition and evaluation. There is a more detailed discussion in Lee Nuclear Station FSAR Section 2.3.3, "Onsite Meteorological Measurement Programs." An ITAAC has been submitted to verify the capability to perform an inspection of the MCR, TSC, and EOF to verify the availability of the meteorological data is available. In **RAI 13.03-62(F),** the staff requested additional information on the acquisition and distribution of the representative meteorological information.

Unit 1 and 2 ITAAC 6.4 has been proposed to test that the means exists to acquire and evaluate meteorological information. (see Table 3.8-1, "Inspections, Tests, Analyses, and

Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

In response letters dated December 17 and December 23, 2008 the applicant refers to information provided in response to **RAI 13.03-62 (B) and (C)** regarding distribution of meteorological information to the Control Room, TSC, and EOF and processes used in the event the primary meteorological data system is unavailable.

Technical Evaluation: The staff finds the additional information provided in the applicant's response to **RAI 13.03-62 (F)** acceptable and therefore resolved. The Lee Emergency Plan describes the capability of acquiring and evaluating meteorological information. There are provisions for access to meteorological information by Emergency Operations Facility, the Technical Support Center, the Control Room and [an offsite NRC Center]. The applicant made available to the [insert State name(s)] suitable meteorological data processing interconnections which will permit independent analysis by the State(s), of facility generated data. Additional technical interface information is located at SRP Section 2.3.3, "Onsite Meteorological Measurements Programs."

Technical Information in the Emergency Plan: [I.6.] Section II.I.6, "Determination of Release Rates and Projected Doses When Installed Instruments are Inoperable or Off-Scale," of the Lee Emergency Plan states that plant implementing procedures establish processes for estimating release rates and doses when instrumentation used for assessments is not available. It mentions two considerations, field monitoring data and surrogate instrumentation and methods for estimating fuel damage. In **RAI 13.03-62(G)**, the staff requested additional information on surrogate monitoring and estimating fuel damage.

In **RAI 13.03-62 (G)(1)**, the staff requested the applicant describe methods for determining release rates and doses when instrumentation used for assessments in inoperable or readings are off scale, and summarize the contents of each procedure. In response letters dated December 17 and December 23, 2008 the applicant stated that release rates can be estimated by using default source term inventories or back calculations from field data both provided in the Raddose-V model. These site specific procedures have not yet been developed for the Lee Facility.

In **RAI 13.03-62 (G)(2)**, the staff requested the applicant identify who makes the decision to use alternative methods for estimating release rates and doses. In response letters dated December 17 and December 23, 2008 the applicant stated that the Radiation Protection Manager in the TSC or the Radiological Assessment Manager in the EOF would make the decision to use alternative methods for estimating release rates and doses.

In **RAI 13.03-62 (G)(3)**, the staff requested the applicant identify who estimates release rates in these cases. In response letters dated December 17 and December 23, 2008 the applicant stated that the ERO Dose Assessors under guidance of the Radiological Assessment Manager will estimate the release rates, in all cases.

In **RAI 13.03-62 (G)(4)**, the staff requested the applicant explain what compensatory measures are taken in the assessment. In response letters dated December 17 and December 23, 2008 the applicant stated, "Any necessary or appropriate compensatory measures not already considered in the existing dose assessment procedures and Raddose-V code that are specific to Lee facility operation will be addressed in the procedures implemented for or to include the Lee facility when developed."

In **RAI 13.03-62 (G)(5)**, the staff requested the applicant describe how are release rates estimated from field monitoring data. In response letters dated December 17 and December 23, 2008 the applicant stated that the Raddose-V code uses field data, meteorology, and accident assumptions to back-calculate source term required to result in measured field dose. That source term could then be used to generate a complete dose projection.

In **RAI 13.03-62 (G)(6)**, the staff requested the applicant explain what assumptions are made in the process. In response letters dated December 17 and December 23, 2008 the applicant stated that any assumptions beyond those provided in FSAR Chapter 15 that are specific to the Lee facility will be determined during the modifications made to Raddose-V or within the development of alternative software.

In **RAI 13.03-62 (G)(7)**, the staff requested the applicant explain what is the sensitivity of the release rate estimates to the assumptions. In response letters dated December 17 and December 23, 2008 the applicant stated that sensitivities of the release rates will be determined and evaluated based on the site specific modification to the software determined for the Lee Facility.

Technical Evaluation: RAIs 13.03-62 (G)(1-7) were submitted by NRC headquarters and were not evaluated by PNNL staff. The Lee Emergency Plan establishes the methodology for determining the release rate/projected doses if the instrumentation used for assessment are off-scale or inoperable.

Technical Information in the Emergency Plan: [I.7] Section II.I.7, "Field Monitoring Capability," of the Lee Emergency Plan briefly describes the field monitoring capability. Implementing procedures provide guidance for field monitoring teams' performance of monitoring activities. Instrumentation typically available for field deployment is listed in Appendix 6, "Emergency Equipment and Supplies," and Section II.B, "On-Site Emergency Organization", Table II-2, "Plant Staff Emergency Functions," of the Lee Emergency Plan indicates that 4 individuals (two teams consisting of a driver and a tech.) should be available for off-site field monitoring within 75 minutes. Field monitoring teams are directed by Radiation Protection personnel in the TSC.

Technical Evaluation: The Lee Emergency Plan describes the capability and resources for field monitoring within the plume exposure Emergency Planning Zone which are an intrinsic part of the concept of operations for the facility.

Technical Information in the Emergency Plan: [I.8] Section II.I.8, "Assessing Hazards Through Liquid or Gaseous Release Pathways," of the Lee Emergency Plan states that actual or potential magnitude and locations of radiological hazards are assessed by field teams consistent with the procedures of Section II.I.7, "Field Monitoring Capability." Implementing procedures provide guidance for field monitoring teams' performance of monitoring activities. Notification and activation of field team personnel is covered in Section II.E, "Notification Methods and Procedures." Mobilization times are covered in Section II.B, "Onsite Emergency Organization." Typical equipment available for these assessments is listed in Appendix 6, "Emergency Equipment and Supplies," of the plan.

Unit 1 and 2 ITAAC 6.5 has been proposed to test that the means exist to make rapid assessments of actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways, including activation, notification means, field team composition, transportation, communication, monitoring equipment, and estimated deployment

times. (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria." in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

Technical Evaluation: The Lee Emergency Plan describes methods, equipment and expertise to make rapid assessments of the actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways. The methods include activation, notification means, field team composition, transportation, communication, monitoring equipment and estimated deployment times.

Technical Information in the Emergency Plan: [I.9.] Section II.I.9, "Measuring Radioiodine Concentrations," of the Lee Emergency Plan states that equipment typically available to field teams is listed in Appendix 6, "Emergency Equipment and Supplies," of the Lee Emergency Plan. It includes air samplers, appropriate sample media, and analysis equipment, stated to be capable of detecting radioiodine concentrations at or below 10^{-7} microcuries/mm under field conditions.

Unit 1 and 2 ITAAC 6.6 has been proposed to test that the capability exists to detect and measure radioiodine concentrations in air in the plume exposure EPZ, as low as 10-7 µCi/cc (microcuries per cubic centimeter) under field conditions. (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria" in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

Technical Evaluation: The Lee Emergency Plan describes a capability to detect and measure radioiodine concentrations in air in the plume exposure EPZ as low as 10-7 uCi/cc (microcuries per cubic centimeter) under field conditions. Interference from the presence of noble gas and background radiation does not decrease the stated minimum detectable activity.

Technical Information in the Emergency Plan: [I.10.] Section II.I.10, "Relating Measured Parameters to Dose Rates," of the Lee Emergency Plan states that details of the capability are set forth in Appendix 2, "Radiological Assessment and Monitoring," and involve use of the dose assessment models and procedures generally described in that appendix. However, no specific procedures are listed or described. In **RAI 13.03-62(H),** the staff requested the applicant provide additional information on relating measured parameter to dose rates. Radiation Protection personnel are responsible for directing implementation of these procedures under emergency conditions.

Unit 1 and 2 ITAAC 6.7 has been proposed to test that the means exist to estimate integrated dose from the projected and actual dose rates, and for comparing these estimates with the EPA protective action guides (PAGs). (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

In response letters dated December 17 and December 23, 2008 the applicant provided Duke's corporate procedure SR/0/B/2000/003, "Activation of the Emergency Operations Facility", which provides instructions for preparing Protective Action Recommendations to appropriate State authorities. The procedure includes Offsite Protective Action Flowcharts used by Duke at its operating nuclear plants. The flowcharts include radiological dose considerations. The applicant stated that the dose assessment procedures used for the Lee site will be similar to those in use at other Duke Energy nuclear plants. The procedure is included as attachment 1 to the response to **RAI 13.03-55**. The applicant also stated that Implementing procedures and programs will be modified to include the Lee Nuclear Station on a schedule that supports NRC inspection activities and execution of the emergency exercise required by Section IV.F.2 of 10 CFR 50, Appendix E.

Technical Evaluation: In **RAI 13.03-62(H),** the staff requested the applicant provide additional information on relating measured parameter to dose rates. In response the applicant provided Duke's corporate procedure SR/0/B/2000/003, "Activation of the Emergency Operations Facility." The applicant states that procedures used at the Lee facility would be similar. Because the3 emergency plan should contain this information, the staff has requested a summary of this information or a statement that specifies the information has been moved into a procedure, be included in the Lee Emergency Plan. A reference to the specific procedure by title should also be included. This issue will be tracked as **Open Item 13.03-22.**

13.3.1C.I.2 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.B requires that the means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials be described. The description must include emergency action levels that are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within and outside the site boundary to protect health and safety. The emergency action levels are to be based on in-plant conditions and instrumentation in addition to onsite and offsite monitoring. These initial emergency action levels are to be discussed and agreed on by the applicant or licensee and state and local governmental authorities, and approved by the NRC.

Technical Information in the Emergency Plan: Section II.D, "Emergency Classification System," and Appendix 1, "Emergency Action Levels," discusses the Lee Nuclear Station standard emergency classification scheme, based on system and effluent parameters, on which affected State and local response organizations may rely for determining initial off-site response measures. Section II.H, "Emergency Facilities and Equipment," describes the Lee Nuclear Station capability to assess the magnitude and consequences of releases.

Technical Evaluation: The Lee Emergency Plan describes the means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials be described. The description includes emergency action levels that are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within and outside the site boundary to protect health and safety. The emergency action levels are based on in-plant conditions and instrumentation in addition to onsite and offsite monitoring. These initial emergency action levels are discussed and agreed on by the applicant or licensee and state and local governmental authorities, and approved by the NRC.

13.3.1C.I.3 Regulatory Basis: Supplement 1 to NUREG-0737, Section 6.1.b., "Control Room," provides guidance related to control room instrumentation to assess plant and environs conditions during and following an accident, including the reliable indication of the meteorological variables (wind direction, wind speed, and atmospheric stability) for site meteorology. Further information is found at Regulatory Guide 1.97 (Rev. 3), "Instrumentation for Light-Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions during And Following an Accident."

Technical Information in the Emergency Plan: Meteorological monitoring is addressed in Section II.H.8, "Meteorological Instrumentation and Procedures," of the Lee Emergency Plan and Lee Nuclear Station FSAR Section 2.3.3, "Onsite Meteorological Measurement Programs,"

and provides information on meteorological monitoring. The Lee Emergency Plan does not describe the operational distribution of meteorological data from the onsite data collection system. In **RAI 13.03-62(B),** the staff requested the applicant provide a summary of the meteorological data available in the Control Room. DCD Tier 2, Section 7.5, "Safety-Related Display Information," lists meteorological data as E2 variable in the RG 1.97 classification scheme for safety-related display information. As such, it would be available in the Control Room.

In response letters dated December 17 and December 23, 2008 the applicant stated that information necessary for protective action decision making and dose assessment is available in ERFs where it is required. The applicant further stated that Section II.H.8 of the Lee Emergency Plan states wind speed, wind direction, ambient air temperature, Dewpoint, and precipitation data is available in the Control Rooms, TSC, and EOF.

Section II.H.8, "Meteorological Instrumentation and Procedures," of the Lee Emergency Plan states that meteorological data are also available from Catawba Nuclear Station and the National Weather Service in Greer, SC. In **RAI 13.03-62(C)** the staff requested further information on information gathered from the Catawba nuclear Station and the National Weather Service.

In response letters dated December 17 and December 23, 2008 the applicant stated that Section II.H.8 of the Lee Emergency Plan states backup meteorological data can be obtained from the Catawba Nuclear Station and the National Weather Service (NWS). The NWS is contacted by commercial telephone and an EOF meteorologist is responsible for interpreting data. The applicant also provided Duke Corporate procedure SH/O/B/2005/001,"Emergency Response Offsite Dose Projections," which used at other Duke sites for obtaining and using data from the national weather service. The procedure is included as attachment 1 to this response.

Technical Evaluation: The staff finds the clarification and additional information provided in the applicant's response to **RAIs 13.03-62 (B)** to be acceptable and therefore resolved. In **RAI 13.03-62(C)** the staff requested further information on information gathered from the Catawba nuclear Station and the National Weather Service. In response provided Duke Corporate procedure SH/O/B/2005/001,"Emergency Response Offsite Dose Projections," which used at other Duke sites for obtaining and using data from the national weather service. Because the emergency plan does not contain this information, the staff has requested a summary of the information or a statement specifying the information has been moved into a procedure be provided in the Lee Emergency Plan. A reference to the procedure, by title, should also be included. This issue is tracked as **Open Item 13.03-23**.

13.3.1C.I.4 Regulatory Basis: 10 CFR 52.79(a)(17) and 10 CFR 50.34(f)(2)(viii) require that the applicant provide a capability to promptly obtain and analyze samples from the reactor coolant system and containment that may contain accident source term radioactive materials without radiation exposures to the individual exceeding 5 rems to the whole body or 50 rems to the extremities.

Technical Information in the Emergency Plan: AP1000 FSER Section 13.3.3.4.2, "Radiation Exposure", DCD Tier 2, Section 9.3.3, "Primary Sampling System," states that the primary sampling system includes equipment to collect representative samples of the various process fluids, including reactor coolant system and containment air, in a manner that adheres to as low

as is reasonably achievable (ALARA) principles during normal and post-accident conditions. DCD Tier 2, Section 12.4.1.8, "Post-Accident Actions," states that requirements of 10 CFR 52.79(b) relative to plant area access and post accident sampling (10 CFR 50.34(f)(2)(viii)) are included in DCD Tier 2, Section 1.9.3, "Three Mile Island Issues." If procedures are followed, the design prevents radiation exposures to any individual from exceeding 5 rem [0.05 Sv] to the whole body or 50 rem [0.5 Sv] to the extremities.

AP1000 DCD Tier 2, Section 1.9.5.2.9, "Post-Accident Sampling System," states that the PASS is a subsystem of the primary sampling system and that the primary sampling system is designed to conform to the guidelines of the model safety evaluation report on eliminating PASS requirements from technical specifications for operating plants. DCD Tier 2, Section 1.9.3, "Three Mile Island Issues"-(2)(viii), Post-Accident Sampling (NUREG-0737 Item II.B.3), states that the AP1000 sampling design is consistent with the approach in the model safety evaluation report and not the guidance outlined in NUREG-0737 and RG 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident" (Revision 3, May 1983). The primary sampling system design is consistent with contingency plans to obtain and analyze highly radioactive post accident samples from the reactor coolant system, the containment sump, and the containment atmosphere.

AP1000 DCD Tier 2, Section 9.3.3.1.2.2, "Post-Accident Sampling," states that the primary sampling system does not include specific post accident sampling capability. However, there are contingency plans for obtaining and analyzing highly radioactive samples of reactor coolant, containment sump, and containment atmosphere. These plans include the procedures to analyze, during the later stages of accident response, reactor coolant for boron, containment atmosphere for hydrogen and fission products, and containment sump water for pH. The primary means of containment atmosphere hydrogen analysis is the hydrogen analyzer, which is not part of the post accident sampling capabilities.

Technical Evaluation: The Lee Emergency Plan describes the capability to promptly obtain and analyze the reactor coolant system and containment that may contain accident source term radioactive materials without radiation exposures to the individual exceeding 5 rems to the whole body or 50 rems to the extremities. Materials to be analyzed and quantified include certain radionuclides that are indicators of the degree of core damage (e.g., noble gases, radioiodines, cesiums, and nonvolatile isotopes), hydrogen in containment atmosphere, dissolved gases, chloride, and boron concentrations.

13.3.1C.I.5 Regulatory Basis: 10 CFR 50.34(f)(2)(xvii) requires that the applicant provide instruments to measure, record and readout in the control room: (A) containment pressure, (B) containment water level, (C) containment hydrogen concentration, (D) containment radiation intensity (high level), and (E) noble gas effluents at all potential, accident release points. The applicant will also provide for continuous sampling of radioactive iodines and particulates in gaseous effluents from all potential accidents release points, and for onsite capability to analyze and measure these samples.

Technical Information in the Emergency Plan Section II.I, "Accident Assessment," of the Lee Emergency Plan briefly describes measuring, monitoring, readout and continuous sampling systems. FSAR Chapter 7, 7.5, "Safety-Related Display Information," states this section of the referenced DCD is incorporated by reference with no departures or supplements. In RAI 13.03-62(A) the staff requested the applicant provide additional information regarding the Emergency

Preparedness (EP)-related instrumentation found in the Control Room that is available for use in emergency classification and dose assessment.

In response letters dated December 17 and December 23, 2008 the applicant stated that the selection of monitored variables, based on guidance provided in Regulatory Guide 1.97, is discussed in Section 7.5 of Tier 2 of the AP1000 DCD and incorporated by reference in the Lee FSAR. Instrument design criteria are described in subsections 7.5.2 and 7.5.3 of the DCD. Subsection 7.5.4 discusses the equipment that processes the safety-related display information and makes it available to the operator. Emergency preparedness-related instrumentation is discussed in Appendix 1 of the Emergency Plan provides details related to Control Room instrumentation used for emergency classification. A summary of the instrumentation was provided. The applicant also stated Appendix 2 of the Lee Emergency Plan provides information regarding atmospheric transport and diffusion assessment. Plant Vent and Turbine Island Vent effluent monitors are discussed in Section 11.5.3 of the DCD Revision 16.

Technical Evaluation: The staff finds the clarification and additional information provided in the applicant's response to RAI 13.03-62 (A) acceptable and therefore resolved. The Lee Emergency Plan describes instruments to measure, record and readout in the control room for: (1) concentration, (2) containment water levels, (3) containment hydrogen, and (5) noble gas effluents at all potential, accident release points. Also, Section II.I, "Accident Assessment," of the Lee Emergency Plan describes a continuous sampling capability for radioactive iodines and particulates in gaseous effluents from all potential accident release points, and for onsite capability to analyze and measure these samples.

13.3.1C.I.6Regulatory Basis: 10 CFR 50.34 (f)(2)(viii) states the applicant will provide a capability to promptly obtain and analyze samples from the reactor coolant system and containment that may contain accident source term[3] radioactive materials without radiation exposures to the individual exceeding 5 rems to the whole body or 50 rems to the extremities. Materials to be analyzed and quantified include certain radionuclides that are indicators of the degree of core damage (e.g., noble gases, radioiodines, and cesiums, and nonvolatile isotopes), hydrogen in containment atmosphere, dissolved gases, chloride, and boron concentrations.

Technical Information in the Emergency Plan: Section 13.3.3.4.2 "Radiation Exposure", of the Tier 2 material in the AP1000 DCD, Section 9.3.3, "Primary Sampling System", states that the primary sampling system includes equipment to collect representative samples of the various process fluids, including reactor coolant system and containment air, in a manner that adheres to as low as is reasonably achievable (ALARA) principles during normal and post-accident conditions. DCD Tier 2, Section 12.4.1.8, "Post-Accident Actions", states that requirements of 10 CFR 52.79(b) relative to plant area access and post accident sampling (10 CFR 50.34(f)(2)(viii) are included in Section 1.9.3, "Three Mile Island Issues," of the Tier 2 material in the AP1000 DCD. If procedures are followed, the design prevents radiation exposures to any individual from exceeding 5 rem [0.05 Sv] to the whole body or 50 rem [0.5 Sv] to the extremities.

[3] The fission product release assumed for these calculations should be based upon a major accident, hypothesized for purposes of site analysis or postulated from considerations of possible accidental events, that would result in potential hazards not exceeded by those from any accident considered credible. Such accidents have generally been assumed to result in substantial meltdown of the core with subsequent release of appreciable quantities of fission products.

Section 1.9.5.2.9, "Post-Accident Sampling System," of the Tier 2 material in the AP1000 DCD states that the PASS is a subsystem of the primary sampling system and that the primary sampling system is designed to conform to the guidelines of the model safety evaluation report on eliminating PASS requirements from technical specifications for operating plants. Subsection (2)(viii), "Post-Accident Sampling System," (NUREG-0737 Item II.B.3)," of the Tier 2 material in Revision 16 of the AP1000 DCD states that the AP1000 sampling design is consistent with the approach in the model safety evaluation report and not the guidance outlined in NUREG-0737 and RG 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident" (Revision 3, May 1983). The primary sampling system design is consistent with contingency plans to obtain and analyze highly radioactive post accident samples from the reactor coolant system, the containment sump, and the containment atmosphere.

Section 9.3.3.1.2.2, "Post-Accident Sampling," of the Tier 2 material in the AP1000 DCD states that the primary sampling system does not include specific post accident sampling capability. However, there are contingency plans for obtaining and analyzing highly radioactive samples of reactor coolant, containment sump, and containment atmosphere. These plans include the procedures to analyze, during the later stages of accident response, reactor coolant for boron, containment atmosphere for hydrogen and fission products, and containment sump water for pH. The primary means of containment atmosphere hydrogen analysis is the hydrogen analyzer, which is not part of the post accident sampling capabilities. Further references are located at Subsection H.7 of this SER Section 13.3.1C.H.1, "Emergency Facilities and Equipment."

Technical Evaluation: The Lee Emergency Plan describes the capability to promptly obtain and analyze the reactor coolant system and containment that may contain accident source term radioactive materials without radiation exposures to the individual exceeding 5 rems to the whole body or 50 rems to the extremities. Materials to be analyzed and quantified include certain radionuclides that are indicators of the degree of core damage (e.g., noble gases, radioiodines, cesiums, and nonvolatile isotopes), hydrogen in containment atmosphere, dissolved gases, chloride, and boron concentrations.

13.3.1C.I.7 Conclusion for Accident Assessment

As discussed above, the applicant needs to provide the bases for why ITAAC 6.1 through ITAAC 6.6 will demonstrate the sufficiency related to accident assessment. The NRC will determine whether this planning standard is acceptable and document its determination in the Final Safety Evaluation Report (FSER), based on information the applicant has provided to date and its response to Open Item [redacted].

The staff has reviewed the onsite emergency plan and the applicant's responses to RAI 13.03-62(A) through (H) in regards to Planning Standard I of NUREG-0654/FEMA-REP-1 and the requirements of 10 CFR 50.47(b)(9) and Section IV.B. of Appendix E to 10 CFR Part 50. Final determination regarding this planning standard will be based on the applicant's response to the following Open Items:

- In **RAI 13.03-62(D)** the staff requested additional information on the process used to estimate accident source terms. In response the applicant stated that Raddose-V does not currently include modeling for the Lee facility but they anticipate modifying the code to include data for the Lee facility or using more advanced assessment capabilities that may be available. Because

the emergency plan is dependent on site specific analysis for offsite dose, the staff has requested that this information be provided. This issue is tracked as **Open Item 13.03-17**.

- In **RAI 13.03-62 (D)(1)**, the staff requested the applicant provide a list of procedures that cover the estimation of accident source terms (radionuclides and activities) and describe the contents of each procedure. In response the applicant stated that instruction to dose assessors for determining source term and calculating the projected offsite dose to the public using Raddose-V and guidance for completion of Emergency Notification Forms is provided in Duke Corporate Procedure SH/0/B/2005/001, "Emergency Response Offsite Dose Projections." since this information was not included in the emergency plan, the staff has requested a summary of this information or a statement specifying it has been moved into a procedure be provided in the Lee Emergency Plan. A reference to the procedures by title should also be provided. This issue is tracked as **Open Item 13.03-18**.

- The staff requested additional information regarding the dose assessment program in **RAI 13.03-62 (E)(1).** In response the applicant site specific procedures have not been developed for the Lee facility so Catawba procedure HP/0/B/1009/009, "Guidelines for Accident and Emergency Response," and procedure HP/0/B/1009/007, "In-Plant Particulate and Iodine Monitoring Under Accident Conditions," as examples for procedures that will be used at the Lee facility. Because this information is not discussed in the emergency plan, the staff has requested that a summary of this information or a statement specifying it has been moved into a procedure be included in the Lee emergency Plan. A reference to these procedures by title should also be included. This issue is tracked as **Open Item 13.03-19**.

- In **RAI 13.03-62 (E)(2)**, the staff requested the applicant identify who is responsible for making estimates of onsite exposures and contamination. In response the applicant stated that the Lee Nuclear Station site-specific procedures have not yet been developed but they will be similar to those in use at Catawba Nuclear Facility. Catawba procedure HP/0/B/1 009/009, "Guidelines for Accident and Emergency Response," was provided as an example to be used a t the Lee facility. Because this information is not discussed in the emergency plan, the staff has requested that a summary of this information or a statement specifying it has been moved into a procedure be included in the Lee emergency Plan. A reference to these procedures by title should also be included. This issue is tracked as **Open Item 13.03-20**.

- In **RAI 13.03-62 (E)(3)**, the staff requested the applicant provide a list of procedures that cover the estimation [of] offsite exposures and contamination and summarize the contents of each procedure. In response the applicant stated that the Lee Nuclear Station site-specific procedures have not yet been developed but they will be similar to those in use at other Duke Facilities. The applicant provided Duke corporate procedure, SH/0/B/2005/001, "Emergency Response Offsite Dose Projections," as an example of guidance for utilizing the automatic mode for data input which uses a number of defaults to speed the initial dose assessment process. Because this information is not discussed in the emergency plan, the staff has requested that a summary of this information or a statement specifying it has been moved into a procedure be included in the Lee emergency Plan. A reference to these procedures by title should also be included. This issue is tracked as **Open Item 13.03-21**.

- In **RAI 13.03-62(H),** the staff requested the applicant provide additional information on relating measured parameter to dose rates. In response the applicant provided Duke's corporate procedure SR/0/B/2000/003, "Activation of the Emergency Operations Facility." The applicant states that procedures used at the Lee facility would be similar. Because the3 emergency plan

should contain this information, the staff has requested a summary of this information or a statement that specifies the information has been moved into a procedure, be included in the Lee Emergency Plan. A reference to the specific procedure by title should also be included. This issue will be tracked as **Open Item 13.03-22.**

- In **RAI 13.03-62(C)** the staff requested further information on information gathered from the Catawba nuclear Station and the National Weather Service. In response provided Duke Corporate procedure SH/O/B/2005/001,"Emergency Response Offsite Dose Projections," which used at other Duke sites for obtaining and using data from the national weather service. Because the emergency plan does not contain this information, the staff has requested a summary of the information or a statement specifying the information has been moved into a procedure be provided in the Lee Emergency Plan. A reference to the procedure, by title, should also be included. This issue is tracked as **Open Item 13.03-23**.

The applicant has committed to meet the following license conditions and ITAAC, with the associated dates, for the emergency preparedness program:

ITAAC:

[I.2., ITAAC 6.1] An ITAAC has been proposed to test that the means exists to provide initial and continuing radiological assessment throughout the course of an accident (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

[I.3., ITAAC 6.2] An ITAAC has been proposed to test that the means exists to determine the source term of releases of radioactive material within plant systems, and the magnitude of the release of radioactive materials based on plant system parameters and effluent monitors. (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

[I.4., ITAAC 6.3] An ITAAC has been proposed to test that the means exists to The means exist to continuously assess the impact of the release of radioactive materials to the environment, accounting for the relationship between effluent monitor readings, and onsite and offsite exposures and contamination for various meteorological conditions. (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria." in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

[I.5., ITAAC 6.4] An ITAAC has been proposed to test that the means exists to acquire and evaluate meteorological information. (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

[I.8., ITAAC 6.5] An ITAAC has been proposed to test that the means exist to make rapid assessments of actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways, including activation, notification means, field team composition, transportation, communication, monitoring equipment, and estimated deployment times. (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria." in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

[I.9., ITAAC 6.6] An ITAAC has been proposed to test that the capability exists to detect and measure radioiodine concentrations in air in the plume exposure EPZ, as low as 10-7 µCi/cc (microcuries per cubic centimeter) under field conditions. (see Table 3.8-1, "Inspections, Tests,

Analyses, and Acceptable Criteria" in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

[I.10., ITAAC 6.7] An ITAAC has been proposed to test that the means exist to estimate integrated dose from the projected and actual dose rates, and for comparing these estimates with the EPA protective action guides (PAGs). (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

13.3.1C.J Protective Response

13.3.1C.J.1 Regulatory Basis: 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(10); Planning Standard J requires that a range of protective actions be developed for the plume exposure pathway 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 to be developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale must be developed.

The staff evaluated the emergency plan against NUREG-0654/FEMA-REP-1, Planning Standard J, AProtective Response.@ Planning Standard J provides the detailed evaluation criteria that the staff considered in determining whether the emergency plan met the applicable regulatory requirement in 10 CFR 50.47(b)(10).

Technical Information in the Emergency Plan: [J.1.] Section J.1, "On-Site Notification," of the Lee Emergency Plan indicates that individuals within the protected area are notified by the plant public address system and audible warning systems. In high noise areas, other measures may be used. However these measures are not described. In **RAI 13.03-63(A)**, the staff requested the applicant provide clarification of this statement. Individuals located outside of the Protected Area are notified by audible warnings, activities of the Security, and, if needed, local law enforcement personnel. Information on the warning systems, and response actions, are provided through plant training programs, visitor orientation, escort instructions, posted instructions, or within the audible messages. Individuals within the Protected Area are notified within 15 minutes of the declaration an emergency. The plan does not address the time necessary to warn people outside the Protected Area, therefore, in **RAI 13.03-63(A),** the staff also requested the applicant provide information on timing to notify the people outside the Protected Area.

Unit 1 and 2 ITAAC 7.1 has been proposed to test that the means exist to warn and advise onsite individuals of an emergency, including those in areas controlled by the operator, including: a. employees not having emergency assignments; b. visitors; c. contractor and construction personnel; and d. other persons who may be in the public access areas, on or passing through the site, or within the owner controlled area. (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

In response letters dated December 17 and December 23, 2008 the applicant stated that audibility problems encountered on evacuation of personnel from high-noise areas for its fleet units were addressed in previous responses to IE Bulletin No. 79-18. The plant alarm system will use the telephone page system amplifiers and speakers that will be assessed in as-built plant to determine is additional measures of equipment is necessary. The applicant added accountability process has been proven at other Duke operating stations. Catawba Nuclear Station procedure RP/O/A/5000/010, "Conducting a Site Assembly or Preparing the Site for an Evacuation," was provided as Attachment 1 to this response. The applicant believes that the site alarm system along with security sweeps of the owner controlled area will be adequate to assemble and evacuate and nonessential personnel.]

Technical Evaluation: In **RAI 13.03-63(A),** the staff requested the applicant provide additional information related to evacuation of onsite individuals. In response the applicant provided Catawba procedure RP/O/A/5000/010, "Conducting a Site Assembly or Preparing the Site for an Evacuation," as an example of procedures that will be used. Since this information is not

included in the emergency plan, the staff has requested the applicant provided a summary of the information or a statement specifying that the information has been moved into a procedure. A reference to the procedure, by title, should also be included. This issue will be tracked as **Open Item 13.03-24**

Technical Information in the Emergency Plan: [J.2] Section J.2, "Evacuation Routes and Transportation," of the Lee Emergency Plan states that evacuation routes are determined by Shift Manager/Emergency Coordinator, using available information on conditions. Provisions for evacuation of on-site individuals include evacuation by private automobile (15-30min. high traffic density not expected). Because preplanned routes are not identified (considering contingencies based on plant and radiological conditions), in **RAI 13.03-63(B),** the staff requested the applicant explain why prearranged routes, coordinated with the State and local governments were not arranged. This section also states that Security forces will arrange transportation for those without cars. In **RAI 13.03-63(B),** the staff also requested Duke Energy provide information on what type of transportation the Security Force will have available to transport people without cars. The designated relocation site will have decontamination and contamination control capability and equipment. Because the relocation centers are not identified in the Lee Emergency Plan, **RAI 13.03-63(B)** requested information to identify where the relocation center will be established. Additionally, if the relocation center is not within the control of Duke Energy, when will the letters of agreement be available? In adverse conditions affected individuals will be directed to a safe on-site area (as determined by the Emergency/Coordinator).

In response letters dated December 17 and December 23, 2008 the applicant provided additional information regarding the role of the Security Force in site evacuation. The applicant also stated that specific locations for the relocation center have not been determined but they will be adequate to accommodate activities and located in a manner that reduces the exposure of evacuating individuals to radiological hazards. Consideration will also be given to prevailing traffic patterns and the effect of the plant evacuation on public evacuation activities. The applicant further stated that a Letter of Agreement will be provided if the selected area is not under their control and the letter will be incorporated into the Lee Emergency Plan prior to initial fuel load.

Technical Evaluation: The staff finds the additional information provided in the applicant's response to **RAI 13.03-63 (B)** acceptable with one exception. **In RAI 13.03-63(B)**, the staff requested the applicant identify locations for relocation centers and provided any applicable Letter of Agreement. In response the applicant stated areas for relocation centers have not yet been identified but that a Letter of Agreement will be provided if the selected area is not under their control. The letter will be incorporated into the Lee Emergency Plan prior to initial fuel load. Because the information needs to be in the emergency plan, the staff has requested the specific locations of decontamination facilities and offsite relocation centers be identified and any applicable Letters of Agreement be provided. The identification of relocation centers will be tracked as **Open Item 13.3-25.** The submittal of Letters of Agreement will be tracked under **Open Item 13.03-02.**

Technical Information in the Emergency Plan: [J.3] Section J.3, "Personnel Monitoring and Decontamination," of the Lee Emergency Plan states addresses decontamination and contamination control capability and equipment that are available, but the details to determine the adequacy of the capability and equipment are not provided. Appendix 6, "Emergency Equipment and Supplies," is a general list of the types of equipment available, but there are no details on what type of equipment is actually available, where it is stored, how often it tested and inventoried. In **RAI 13.03-63(C),** the staff requested the applicant provide a summary of the

decontamination capabilities and equipment sufficient to assess adequacy. Relocation sites will provide a location for personnel monitoring. According to Section J.2, "Evacuation Routes and Transportation," the Emergency Coordinator directs contamination monitoring of personnel, vehicles, and personal property arriving at the relocation site. The procedures and criteria for monitoring are not addressed in the plan. In **RAI 13.03-63(C),** the staff also requested the applicant provide information to identify the criteria for monitoring.

In response letters dated December 17 and December 23, 2008 the applicant stated that the procedure for personnel and vehicle monitoring at relocation sites will be consistent with that in use at other Duke Energy nuclear plants. The applicant also provided Catawba Nuclear Station Procedure HP/0/B/1009/005, "Personnel/Vehicle Monitoring for Emergency Conditions," which provides guidance for personnel and vehicle monitoring during a site evacuation, as attachment 2 to this response. The applicant also provided Catawba Nuclear Station's Procedure HP/0/B/1000/006, "Emergency Equipment Functional Check and Inventory," which provides the process to verify availability and readiness of RP emergency response equipment, for informational purposes as an attachment to RAI response 13.03-61.

Technical Evaluation: In **RAI 13.03-63(C)**, the staff requested the applicant provide a summary of the decontamination capabilities and equipment and criteria for monitoring. In response the applicant provided Catawba Nuclear Station Procedure HP/0/B/1009/005, "Personnel/Vehicle Monitoring for Emergency Conditions," and Catawba Procedure HP/0/B/1000/006, "Emergency Equipment Functional Check and Inventory," as examples of procedures that will be used at the Lee facility. Because this information is not included in the emergency plan, the staff has requested the applicant provide a summary of this information or a statement specifying that it has been moved into a procedure be included in the Lee Emergency Plan. A reference to the procedure, by title, should also be included. This issue is tracked as **Open Item 13.03-26.**

Technical Information in the Emergency Plan: [J.4] Section II.J.4, "Non-Essential Personnel Evacuation and Decontamination," states that non-essential personnel will be evacuated and decontaminated in accordance with Section II.J.2, ""Evacuation Routes and Transportation."

Technical Evaluation: The Lee Emergency Plan provides for the evacuation of onsite non-essential personnel in the event of a Site or General Emergency and provides a decontamination capability.

Technical Information in the Emergency Plan: [J.5.] Section J.5, "Personnel Accountability," of the Lee Emergency Plan states that all individuals within the Protected Area will be accounted for and missing individuals identified within 30 minutes following initiation of accountability measures (consistent with the requirements Security Plan.

Technical Evaluation: The Lee Emergency Plan provides for a capability to account for all individual onsite at the time of the emergency and ascertain the names of missing individuals within 30 minutes of the start of an emergency and account for all onsite individuals continuously thereafter.

Technical Information in the Emergency Plan: [J.6.] Section J.6, "Protective Measures," of the Lee Emergency Plan covers provisions for Respiratory Protection and Engineering Controls, Use of Protective Clothing, and Individual Thyroid Protection. The plan states that measures are taken to minimize ingestion and or inhalation of radionuclides to minimize exposure below limits. However, the measures used are not identified. In **RAI 13.03-63(D),** the staff requested the applicant provide a summary of the measures to be used so an assessment of the adequacy of the measure can be made. Section J.6 addresses that self contained breathing

apparatus (SCBAs) are used in locations where there is low oxygen or fires. Other respiratory protection is available and issued by Radiation Protection or Safety and Health. The plan does not address training for use of SCBAs or other respiratory protection equipment. In addition, this section does not address the number of respirators available or the maintenance of the equipment. In **RAI 13.03-63(D),** the staff requested the applicant provide additional information on training in the use of respiratory equipment as well as the inventory and maintenance of the respiratory equipment. The criteria for use of protective clothing (PCs) are given, however, the location of the equipment and inventory is not addressed to ensure that the PCs are available when needed. In **RAI 13.03-63(D),** the staff requested the applicant provide additional information on storage and inventory of the PCs. The use of radioprotective drugs (potassium iodide [KI]) is mentioned in the Lee Emergency Plan, but there are no criteria for issuance, how and where it is stored and inventoried, and who makes the decision on issuance. In **RAI 13.03-63(D),** the staff also requested details on these issues.

In response letters dated December 17 and December 23, 2008 the applicant stated that Radiation Protection (RP) personnel will be responsible for monitoring the safety of personnel during a Site Assembly or Site evacuation, which includes contamination monitoring at site exits, and monitoring of work locations for personnel remaining on site. A description their monitoring process was provided. The applicant also stated that respiratory protection will be prescribed for workers that are trained, qualified, and fit tested in accordance with the respiratory protection program discussed in Chapter 12 of the FSAR. The applicant further stated that details regarding these procedures and quantity or locations of respiratory equipment are not available. The applicant expects procedures will be similar to those in use at the Catawba Nuclear Station. Catawba Nuclear Station's Procedure HP/0/B/1000/006, "Emergency Equipment Functional Check and Inventory," was provided as attachment 1 to RAI response 13.3-061.

With regard to protective clothing, the applicant stated that inventories are maintained in the Change Rooms inside the Radiation Control Area and inventories are conducted each quarter. A discussion on the issuance of this clothing was also included. Additional information was provided in response to **RAI 13.03-61**.

With regard to the distribution of potassium iodide, the applicant stated Duke Energy corporate procedure SH/0/B/2005/003, "Distribution of Potassium Iodide Tablets in the Event of a Radioiodine Release," provides information necessary to distribute Active Potassium Iodide (KI) tablets to Emergency Response Organization (ERO) personnel in the event of a release of radioiodine and outlines storage and supply information. The Station Radiation Protection Manager shall evaluate the distribution of KI. The KI is distributed only to prevent a significant uptake" defined as that amount taken into the body that would result in a Committed Dose Equivalent (CDE) of 5 rem or more to the thyroid.

Technical Evaluation: In **RAI 13.03-63(D)**, the staff requested the applicant provide additional information on storage and inventory of the PCs and criteria for issuance, use, and storage of potassium iodide. In response the applicant provided Catawba Nuclear Station's Procedure HP/0/B/1000/006, "Emergency Equipment Functional Check and Inventory," and Duke Energy corporate procedure SH/0/B/2005/003, "Distribution of Potassium Iodide Tablets in the Event of a Radioiodine Release," as examples. Because this information is not included in the emergency plan, the staff has requested the applicant provide a summary of this information or a statement specifying that it has been moved into a procedure be included in the Lee Emergency Plan. A reference to the procedure, by title, should also be included. This issue is tracked as **Open Item 13.03-27.**

Technical Information in the Emergency Plan: [J.7.] Section J.7, "Protective Action Recommendations and Bases," of the Lee Emergency Plan states that the Emergency Coordinator or EOF Director is responsible for recommending off-site protective actions to the affected States and counties. The State and local governments are responsible for notification of the public and implementation of protective measures. Protective Action Recommendations (PARs) are required to be made within 15 minutes of notification of an emergency. Guidance is based on Supplement 3, "Criteria for Protective Action Recommendations for Severe Accidents," to NUREG-0654. Public PARs are based on plant conditions, estimated off-site doses, or some combination of both. The Emergency Action Levels are determined using the methodology discussed in NEI 07-01. PARs based on off-site dose projections are also provided. The Radiological Assessment Manager is responsible for making dose projections. When radiation levels in the containment atmosphere are significant, a scoping analysis is performed to determine what recommendations would be made if containment integrity were lost. A TEDE and CDE thyroid are calculated at various distances from the plant (site boundary, 2, 5, 10 miles and beyond) are compared to Protective Action Guides shown in Table II-3, "Protective Action Guides," (derived from EPA 400-R-92-001). Based on these comparisons, PARs are developed by the Radiological Assessment Manager. If these recommendations involve sheltering or evacuation of the public around the plant, the EOF Director is informed.

Technical Evaluation: The Lee Emergency Plan establishes a mechanism for recommending protective actions to the appropriate State and local authorities. The mechanism includes Emergency Action Levels corresponding to projected dose to the population-at-risk and with the recommendations set forth in the "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," (EPA-520/1-75-001). Prompt notification is made directly to the offsite authorities responsible for implementing protective measures within the plume exposure pathway Emergency Planning Zone.

Technical Information in the Emergency Plan: [J.8.] Section II.J.8, "Evacuation Time Estimates," of the Lee Emergency Plan states that a summary of the ETE is included in Appendix 4, "Evacuation Time Estimates," with maps of evacuation routes and population information. No significant impediments to the development of emergency plans were identified.

Technical Evaluation: The Lee Emergency Plan contains time estimates for evacuation within the plume exposure EPZ.

Technical Information in the Emergency Plan: [J.10.a.] Section II.J.10.a, "Protective Measure Implementation," of the Lee Emergency Plan states that maps of evacuation routes, evacuation areas, and general locations of shelter areas and relocation sites are provided in Appendix 4, "Evacuation Time Estimate". Pre-selected radiological sampling and monitoring point locations are not identified. In **RAI 13.03-63(E),** the staff requested the applicant provide the specific location of the shelter areas and relocation sites and the pre-identified monitoring locations or provide and ITAAC for when those locations would be identified.

In response letters dated December 17 and December 23, 2008 the applicant stated that the specific locations of the shelter areas or reception centers for the have not been determined, only general areas where these facilities may be located. The applicant expects that the facilities will be adequate to accommodate expected activities and located in a manner that reduces the exposure to radiological hazards. Consideration will also be given traffic patterns and the effect of evacuation on public access to the facilities. The applicant has committed to provide a Letter of Agreement if the area is not under their control and incorporate the letter into the emergency plan prior to fuel loading. An implementation schedule for these Programs is

provided in Table 13.4-201, "Operational Programs Required by NRC Regulations," included in Part 2 of the COL application. The applicant also provided a map of preliminary, pre-identified radiological sampling and monitoring locations attachment 3 to this response.

Technical Evaluation: In **RAI 13.03-63(E)**, the staff requested the applicant provide the specific location of the shelter areas, relocation sites, and pre-identified monitoring sites. In response the applicant stated that the specific locations of the shelter areas or reception centers for the have not been determined, only general areas where these facilities may be located. The applicant has committed to provide a Letter of Agreement if the area is not under their control and incorporate the letter into the emergency plan prior to fuel loading. Because this information is not included in the emergency plan, the staff has requested the applicant provide the location of shelter areas and relocation sites when available. The identification of shelter areas and relocation sites is tracked as **Open Item 13.03-28.** The submittal of any applicable Letters of Agreement will be tracked under **Open Item 13.03-02**.

Technical Information in the Emergency Plan: [J.10.b] Section II.J.10.b, "Protective Measures Implementation," of the Lee Emergency Plan states that maps of the EPZ population distribution around the facility by evacuation area and in a sector format can be found in Appendix 4.

Technical Evaluation: The Lee Emergency Plan describes plans to implement protective measures for the plume exposure pathway which include maps showing population distribution around the nuclear facility by evacuation areas.

Technical Information in the Emergency Plan: [J.10.c.] Section II.J.10.c. "Protective Measures Implementation," of the Lee Emergency Plan states that: Alert and Notification System will be used to warn the public within the 10-mile EPZ (responsibility of State and local officials).

Technical Evaluation: The Lee Emergency Plan describes plans to implement protective measures for the plume exposure pathway which include means for notifying all segments of the transient and resident population.

Technical Information in the Emergency Plan: [J.10.m.] Section II.J.10.c. "Protective Measures Implementation," of the Lee Emergency Plan states that: recommended protective actions are based on the guidance provided in Supplement 3 to NUREG-0654/FEMA-REP-1 "Criteria for Protective Action Recommendations for Severe Accidents", Section II.J.8, "Evacuation Time Estimates," and Appendix 4, "Evacuation Time Estimates."

Technical Evaluation: The Lee Emergency Plan includes the choice of recommended protective actions for the plume exposure pathway during emergency conditions. The choices include expected local protection afforded in residential units or other shelter for direct and inhalation exposure, as well as evacuation time estimates.

13.3.1C.J.2 Regulatory Basis: 10 CFR 50, Appendix E.IV., "Content of Emergency Plans," requires that the nuclear power reactor operating license applicant provide an analysis of the time required to evacuate and for taking other protective actions for various sectors and distances within the plume exposure pathway EPZ for transient and permanent populations.

Technical Information in the Emergency Plan: Evacuation time estimates were performed for the plume exposure pathway for transient and permanent resident populations. These estimates are evaluated separately from the Emergency Plan.

Technical Evaluation: The Lee Emergency Plan includes an analysis of the time required to evacuate and for taking other protective actions for various sectors and distances within the plume exposure pathway EPZ for transient and permanent populations.

13.3.1C.J.3 Conclusion for Protective Response

[As discussed above, the applicant needs to provide the bases for why ITAAC 7.1 Protective Response will demonstrate the means to warn and advise onsite individuals of an emergency, including employees not having emergency assignments, visitors, contractors and construction personnel, other persons that may be in the public access areas. The NRC will determine whether this planning standard is acceptable and document its determination in the Final Safety Evaluation Report (FSER), based on information the applicant has provided to date and its response to Open Item ------.]

The staff has reviewed the onsite emergency plan and the applicant's responses to **RAI 13.03-63(A) through (E)** with regard to Planning Standard J of NUREG-0654/FEMA-REP-1 and the requirements of 10 CFR 50.47(b)(10) and Section IV. of Appendix E to 10 CFR Part 50. Final determination regarding this planning standard will be based on the applicant's response to the following Open Items:

- In **RAI 13.03-63(A),** the staff requested the applicant provide additional information related to evacuation of onsite individuals. In response the applicant provided Catawba procedure RP/O/A/5000/010, "Conducting a Site Assembly or Preparing the Site for an Evacuation," as an example of procedures that will be used. Since this information is not included in the emergency plan, the staff has requested the applicant provided a summary of the information or a statement specifying that the information has been moved into a procedure. A reference to the procedure, by title, should also be included. This issue will be tracked as **Open Item 13.03-24**.

- **In RAI 13.03-63(B)**, the staff requested the applicant identify locations for relocation centers and provided any applicable Letter of Agreement. In response the applicant stated areas for relocation centers have not yet been identified but that a Letter of Agreement will be provided if the selected area is not under their control. The letter will be incorporated into the Lee Emergency Plan prior to initial fuel load. Because the information needs to be in the emergency plan, the staff has requested the specific locations of decontamination facilities and offsite relocation centers be identified and any applicable Letters of Agreement be provided. The identification of relocation centers will be tracked as **Open Item 13.3-25.** The submittal of Letters of Agreement will be tracked under **Open Item 13.03-02.**

- In **RAI 13.03-63(C)**, the staff requested the applicant provide a summary of the decontamination capabilities and equipment and criteria for monitoring. In response the applicant provided Catawba Nuclear Station Procedure HP/0/B/1009/005, "Personnel/Vehicle Monitoring for Emergency Conditions," and Catawba Procedure HP/0/B/1000/006, "Emergency Equipment Functional Check and Inventory," as examples of procedures that will be used at the Lee facility. Because this information is not included in the emergency plan, the staff has requested the applicant provide a summary of this information or a statement specifying that it has been moved into a procedure be included in the Lee Emergency Plan. A reference to the procedure, by title, should also be included. This issue is tracked as **Open Item 13.03-26.**

- In **RAI 13.03-63(D)**, the staff requested the applicant provide additional information on storage and inventory of the PCs and criteria for issuance, use, and storage of potassium iodide. In response the applicant provided Catawba Nuclear Station's Procedure HP/0/B/1000/006,

"Emergency Equipment Functional Check and Inventory," and Duke Energy corporate procedure SH/0/B/2005/003, "Distribution of Potassium Iodide Tablets in the Event of a Radioiodine Release," as examples. Because this information is not included in the emergency plan, the staff has requested the applicant provide a summary of this information or a statement specifying that it has been moved into a procedure be included in the Lee Emergency Plan. A reference to the procedure, by title, should also be included. This issue is tracked as **Open Item 13.03-27.**

- In **RAI 13.03-63(E)**, the staff requested the applicant provide the specific location of the shelter areas, relocation sites, and pre-identified monitoring sites. In response the applicant stated that the specific locations of the shelter areas or reception centers for the have not been determined, only general areas where these facilities may be located. The applicant has committed to provide a Letter of Agreement if the area is not under their control and incorporate the letter into the emergency plan prior to fuel loading. Because this information is not included in the emergency plan, the staff has requested the applicant provide the location of shelter areas and relocation sites when available. The identification of shelter areas and relocation sites is tracked as **Open Item 13.03-28.** The submittal of any applicable Letters of Agreement will be tracked under **Open Item 13.03-02**.

The applicant has committed to meet the following license conditions and ITAAC, with the associated dates, for the emergency preparedness program:

ITAAC:

[J.1., ITAAC 7.1] An ITAAC has been proposed to test that The means exist to warn and advise onsite individuals of an emergency, including those in areas controlled by the operator, including: a. employees not having emergency assignments; b. visitors; c. contractor and construction personnel; and d. other persons who may be in the public access areas, on or passing through the site, or within the owner controlled area. (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

13.3.1C.K Radiological Exposure Control

13.3.1C.K.1 Regulatory Basis: 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(11) requires that means for controlling radiological exposures, in an emergency, be established for emergency workers. The means for controlling radiological exposures must include exposure guidelines consistent with EPA "Emergency Worker and Lifesaving Activity Protective Action Guides."

The staff evaluated the emergency plan against NUREG-0654/FEMA-REP-1, Planning Standard K, ARadiological Exposure Control.@ Planning Standard K provides the detailed evaluation criteria that the staff considered in determining whether the emergency plan met the applicable regulatory requirement in 10 CFR 50.47(b)(11).

Technical Information in the Emergency Plan: [K.1.a-g] Section II.K.1, "On-site Exposure Guidelines and Authorizations," of the Lee Emergency Plan discusses implementation of guidelines from EPA-400-R-92-001, Table 2.2 "Guidance on Dose Limits for Workers Performing Emergency Services," in the Lee Emergency Plan, Table II-4, "Emergency Worker Exposure Guidelines." The Emergency Coordinator, in consultation with senior Radiological Protection personnel, is responsible for authorizing on-site emergency exposures that would result in doses in excess of occupational dose limits in 10 CFR 20. Exposures in excess of 10 CFR 20 limits are limited to individuals who are properly trained and knowledgeable of the tasks to be performed and the risks associated with the exposures. Selection criteria for volunteer emergency workers are outlined. In the absence of extenuating circumstances listed in Table II-4, routine dose limits are applied to activities including those listed above.

Technical Evaluation: The Lee Emergency Plan establishes onsite exposure guidelines consistent with EPA's "Emergency Worker and Lifesaving Activity Protective Actions Guides," (EPA 520/1-75/001), for:

a. removal of injured persons
b. undertaking corrective actions
c. performing assessment actions
d. providing first aid
e. performing personnel decontamination
f. providing ambulance service
g. providing medical treatment services

Technical Information in the Emergency Plan: [K.2.] Section II.K.2, "Radiation Protection Program," of the Lee Emergency Plan refers to Chapter 12 of the Lee Nuclear Station FSAR for a description of the Lee Nuclear Station Radiation Protection Program (RPP), which is claimed to be consistent 10 CFR 20. Section II.K.1 of the Lee Emergency Plan describes the provisions made for implementation of emergency exposure guidelines. No details of the Radiation Protection Program (RPP) are provided in this section. In **RAI 13.03-64(A) and (B),** the staff requested the applicant provide a summary of the occupational radiation protection programs outlined in the FSAR, the AP1000 DCD, NEI 07-08, "Guidance for Ensuring That Occupational Radiation Exposures Are As Low As Is Reasonably Achievable (ALARA)," Revision 0 and NEI 07-03, "Guidance for Radiation Protection Program Description."

With regard to **RAI 13.03-64 (A)**, in response letters dated December 17 and December 23, 2008 the applicant provided a description of their procedure for requesting exposures in excess of occupational dose limits. The applicant also provided Catawba Nuclear Station procedure, RP/0/A/5000/018, "Emergency Worker Dose Extension," as information in Attachment 1 to this response. The applicant expects that a similar process will be established for the Lee Facility via

implementing procedures that are to be developed on a schedule that supports NRC inspection activities and execution of the emergency exercise required by Section IV.F.2 of 10 CFR 50, Appendix E.

With regards to **RAI 13.03-64 (B)**, in response letters dated December 17 and December 23, 2008 the applicant stated that a summary of the Lee Radiation Protection Program (RPP) is provided in FSAR Appendix 12AA. Milestones for the development of the RPP are provided in Table 13.4-201. Procedures are discussed in FSAR Section 13.5.2.2.1. The processes for authorizing and implementing emergency dose constraints consistent with EPA guidance are discussed in Section II.K of the Lee Emergency Plan. The applicant also stated that compliance with the RPP is maintained under emergency conditions. Procedures are discussed in more detail in response to RAI Site-11(A). The applicant further stated that variations from routine Radiation Protection practices may be implemented on a case-by-case basis, consistent with ERO management direction and the provisions of 10 CFR 20.1001(b).

The RPP in the FSAR incorporates by reference material from the AP1000 DCD and NEI 07-08, to support ALARA principles for exposure criteria, and NEI 07-03 Generic FSAR Template, Appendix 12AA, to develop RPP.

Technical Evaluation: The staff finds the additional information provided in the applicant's response to **RAI 13.03-64 (B)** to be acceptable and therefore resolved. In **RAI 13.03-64(A)** the staff requested the applicant provide a summary of the occupational radiation protection programs. In response the applicant provided a description of their procedure for requesting exposures in excess of occupational dose limits. The applicant also provided Catawba Nuclear Station procedure, RP/0/A/5000/018, "Emergency Worker Dose Extension," as an example of procedures to be used at the Lee facility. Because this information is not included in the emergency plan, the staff has requested the applicant provide a summary of this information or a statement specifying that it has been moved into a procedure be included in the Lee Emergency Plan. A reference to the procedure, by title, should also be included. This issue is tracked as **Open Item 13.03-29.**

Technical Information in the Emergency Plan: [K.3.a.] Section II.K.3, "Dosimetry and Dose Assessment," of the Lee Emergency Plan states that self-reading and cumulative type dosimeters are provided to all personnel involved in emergency on-site response. Dose records are maintained and checked throughout the emergency. A personnel radiation dosimetry program with capability to determine both external and internal doses consistent 10 CFR 20 is maintained. The external dosimetry program includes provisions and requirements for use of both permanent record and self-reading dosimeters. Implementing procedures associated with the Lee Emergency Plan establish requirements for distributing dosimeters to emergency responders, including individuals from off-site locations. Internal doses are estimated with whole body counting and/or in-vitro sampling and analysis routines. Dose assessment capabilities are available on a 24-hour per day basis. Procedures related to external and internal dosimetry are mentioned.

Technical Evaluation: The Lee Emergency Plan describes provisions for 24-hour-per-day capability to determine the doses received by emergency personnel involved in any nuclear accident, including volunteers. Provisions are also described for the distribution of dosimeters, both self-reading and permanent record devices.

Technical Information in the Emergency Plan: [K.3.b.] Section II.K.3, "Dosimetry and Dose Assessment," of the Lee Emergency Plan states that "Station procedures establish guidance for wearers to periodically read their self-reading dosimeters...," and "Duke Energy maintains

individual dose records in accordance with the requirements of 10 CFR 20 and the radiation protection program and its supporting procedures". Cursory review of Chapter 12 of the FSAR (the RPP) fails to disclose any significant discussion of maintenance of dose records or supporting procedures in this area. In **RAI 13.03-64(C),** the staff requested the applicant provide a list and summary of applicable implementing procedures. The Lee Emergency Plan does not discuss contingency plans for accessing dose records should normal access be precluded by post-accident conditions. In **RAI 13.03-63(D),** the staff requested the applicant provide a description or summary of contingency plans for dosimetry services (including recordkeeping), loss of power, instrument failure, inadvertent contamination, etc.

With regards to **RAI 13.03-64 (C)**, in response letters dated December 17 and December 23, 2008 the applicant stated that Lee Nuclear Station provides and distributes self-reading and cumulative type dosimeters to personnel involved in emergency on-site response regardless of their affiliation. Dosimetry is available at the single point access in the operating facilities. Distribution of dosimetry to TSC and OSC personnel is discussed in facility activation procedures. Dosimetry is also available for NRC personnel if needed. Radiation Protection personnel are assigned to locations to assist and support this effort. Requirements for determining internal and external doses are established by the Radiation Protection Program. When instrument failure or an inadvertent contamination event occurs that requires dose analysis, support can be provided by unaffected Duke Facilities. The applicant anticipates Duke Procedure SH/0/B/2001/001, "Internal Dose Assessment" which determines "dose received from internal exposures to radioactive material received while working at a Duke Energy facility" will be modified to include the Lee facility.

With regards to **RAI 13.03-64 (D)**, in response letters dated December 17 and December 23, 2008 the applicant stated that the Dose Records Coordinator (DRC) Supervisor in the OSC responsible for maintaining the emergency dose records in accordance with the OSC Activation Procedure. The applicant included applicable portions of the Catawba procedure as attachment 2 to this response. The applicant anticipates that a similar procedure will be developed for the Lee facility. The applicant further stated that immediate approximations of external dose may be derived from self-indicating dosimeters during an emergency. Records of dosimeter readings may be maintained on log sheets or other record form. Individual dose records are maintained on plant computer systems. If they are not available during an emergency the OSC activation procedures requires that copies of the Daily Dose Report be gathered for the TSC and OSC upon activation. The FSAR addresses Radiation Protection procedures as discussed in the response to RAI Site-11(B).

Technical Evaluation: In **RAI 13.03-64(C)**, the staff requested the applicant provide a list and summary of applicable implementing procedures for determining dose and maintenance of dose records. In response the applicant provided Duke Procedure SH/0/B/2001/001, "Internal Dose Assessment" which determines "dose received from internal exposures to radioactive material received while working at a Duke Energy facility." Because this information is not included in the emergency plan, the staff has requested the applicant provide a summary of this information or a statement specifying that it has been moved into a procedure be included in the Lee Emergency Plan. A reference to the procedure, by title, should also be included. This issue is tracked as **Open Item 13.03-30.**

In **RAI 13.03-63(D)**, the staff requested the applicant provide a description or summary of contingency plans for dosimetry services (including recordkeeping), loss of power, instrument failure, inadvertent contamination, etc. In response the applicant provided applicable portions of the Catawba procedure as an example. Because this information is not included in the emergency plan, the staff has requested the applicant provide a summary of this information or a statement specifying that it has been moved into a procedure be included in the Lee

Emergency Plan. A reference to the procedure, by title, should also be included. This issue is tracked as **Open Item 13.03-31.**

Technical Information in the Emergency Plan: [K.5.a.] Section II.K.5.a, "Decontamination Action Levels," of the Lee Emergency Plan states that Duke Energy implements procedures and has supplies. It does not state what the decontamination levels are, who decides how and when to decontaminate, etc. In **RAI 13.03-64(C),** the staff requested the applicant provide a list and summary of applicable implementing procedures. The Lee Emergency Plan does not reference the RPP in this area or describe any procedures related to decontamination. In **RAI 13.03-64(A),** the staff requested the applicant provide a summary of the occupational radiation protection programs outlined in the FSAR, the AP1000 DCD, NEI 07-08, "Guidance for Ensuring That Occupational Radiation Exposures Are As Low As Is Reasonably Achievable (ALARA)," Revision 0 and NEI 07-03, "Guidance for Radiation Protection Program Description." Additional information received in response to **RAIs 13.03-64 (A) and (C)** are summarized in Section K.2 and Section K.3.b above.

Technical Evaluation: The staff found the additional information provided in the applicant's response to **RAIs 13.03-64 (A) and (C)** to be acceptable and therefore resolved. The Lee Emergency Plan specifies action levels for determining the need for decontamination.

Technical Information in the Emergency Plan: [K.5.b.] Section II.K.5, "Decontamination Action Levels," of the Lee Emergency Plan states that Duke Energy implements procedures for decontamination of on-site emergency personnel wounds, etc., and refers to the general list of decontamination supplies found in Appendix 6 of the Lee Emergency Plan. It does not state what procedures are appropriate, who is responsible for decontamination, where the decontamination supplies are kept, who is responsible for maintaining decontamination supply inventories, etc. The plan is also silent on waste disposal other than including it in a list of items to be covered by implementing procedures. In **RAI 13.03-64(E),** the staff requested the applicant provide a list and summary of applicable implementing procedures. The Lee Emergency Plan does not reference the RPP in this area or describe any procedures related to decontamination of wounds, etc. In **RAI 13.03-64(F),** the staff requested the applicant provide a summary of the occupational radiation protection programs outlined in the FSAR, the AP1000 DCD, NEI 07-08, and NEI 07-03.

With regards to **RAI 13.03-64 (E)**, in response letters dated December 17 and December 23, 2008 the applicant stated that procedures define contaminated areas as areas accessible to individuals where removable surface contamination is greater than or equal to 1000 disintegrations per minute (dpm)/100 square cm (beta, gamma), but less than 50,000 dpm/100 square cm or greater than or equal to 20 dpm/100 square cm (alpha), but less than 2000 dpm/100 square cm. The response also discusses procedures for surveying equipment/items and personnel, decontamination of equipment and the return of equipment to normal use. Equipment/items removed from radiologically controlled areas are surveyed with automated equipment or portable instrumentation. The applicant also stated that Duke Energy follows EPRI Guidelines for Industry Response to Personnel Contaminants. Personnel are considered to be contaminated if the instrumentation detects approximately 400 dpm or higher. Levels used at the Lee Nuclear Station will be consistent with those used at other Duke nuclear stations. Decontamination methods are established in Radiation Protection procedures and are implemented under the direction of trained Radiation Protection personnel. The FSAR addresses the Radiation Protection program and Procedures with respect to decontamination as discussed in the response to **RAI 13.03-64 (B).**

With regards to **RAI 13.03-64 (F)**, in response letters dated December 17 and December 23, 2008 the applicant stated that the FSAR addresses the Radiation Protection program as discussed in the response to **RAI 13.03-64 (B)**. A description of personnel and equipment decontamination facilities and the means for handling radioactive waste is provided in AP 1000 DCD Section 1.2. The NRC determined that "information provided in the AP1000 DCD pertaining to the TSC, OSC, and decontamination room is consistent with the guidance identified in RG 1.101 in Section 13.3.3.1 of NUREG-1793. Thus, the staff finds that the applicant's design meets the applicable requirements of 10 CFR 50.34(f)(2)(xxv), 10 CFR 50.47(b)(8), 10 CFR 50.47(b)(l 1), and Subsections IV.E.3 and IV.E.8 to 10 CFR Part 50, Appendix E." The applicant expects that the bulk of the emergency equipment and supplies will be stored in the established emergency response facilities. Additional supplies may be stored at locations convenient for use by emergency response personnel, such as within or adjacent to RCA access and egress areas and decontamination areas. The applicant will determine initial storage locations based on an assessment of plant layout and their experience operating nuclear power plants. Locations may be changed based on assessments of plant emergency operations, drills, and exercises.

Technical Evaluation: The staff finds the additional information provided in the applicant's response to **RAI 13.03-64 (E) and (F)** acceptable and therefore resolved. The Lee Emergency Plan establishes the means for radiological decontamination of emergency personnel wounds, supplies, instruments and equipment, and for waste disposal.

Technical Information in the Emergency Plan: [K.6.] Section K.6.a, "Contamination Control Measures," of the Lee Emergency Plan discusses access control in the event of an emergency by stating that requirement for site access control is established in the FSAR and Security Plan. State and local agencies will control access to the owner controlled area consistent with State and local plans. The Lee Emergency Plan does state that the Station Security Force will control entry to the protected area in the event of an emergency, but no implementing procedures are included. In **RAI 13.03-64(G),** the staff requested the applicant provide a list and summary of applicable implementing procedures.

In response letters dated December 17 and December 23, 2008 the applicant stated that access to the protected area is maintained by the Security force. The security plans and associated procedures are discussed in Part 8 of the COL application. Milestones associated with the implementation of the Security program are presented in FSAR Table 13.4-201. Chapter 12 of the Lee Nuclear Station FSAR describes the radiation protection program, applicable to contamination control measures, consistent with the requirements of 10 CFR Part 20. FSAR Appendix 12AA provides a summary of the Lee Radiation Protection Program; FSAR Table 13.4-201 addresses milestones associated with the development of the Radiation Protection Program; and FSAR Section 13.5.2.2.1 provides a discussion of Radiation Protection procedures.

Technical Evaluation: The staff finds the additional information provided in the applicant's response to **RAI 13.03-64 (G)** acceptable and therefore resolved. The Lee Emergency Plan provides onsite contamination control measures including:

a. area access control;
b. drinking water and food supplies;
c. criteria for permitting return of areas and items to normal use

Technical Information in the Emergency Plan: [K.6.a] Section K.6.a, "Contamination Control Measures," of the Lee Emergency Plan discusses access control in the event of an emergency

by stating that requirement for site access control is established in the FSAR and Security Plan. State and local agencies will control access to the owner controlled area consistent with State and local plans.

Technical Evaluation: The Lee Emergency plan provides onsite contamination control measures including area access control.

Technical Information in the Emergency Plan: [K.6.b] Section K.6.b, "Contamination Control Measures," of the Lee Emergency Plan states that Nuclear Supply Chain Personnel will make arrangements for transport of non-contaminated off-site supplies in event of contamination. However, no implementing procedures are included. In **RAI 13.03-64(H),** the staff requested the applicant provide a list and summary of applicable implementing procedures.

In response letters dated December 17 and December 23, 2008 the applicant stated that procurement support located in the EOF is responsible for ensuring adequate supplies of food and water are available to the ERO. Food and water would be made available on-site through acquisition of supplies under Duke commercial arrangements and subsequent transportation of supplies to the site, using either vendor or Duke-supplied transport. The applicant expects that distribution of food and water under emergency conditions would be made on an ad-hoc basis. The applicant also stated that procedures are likely to be limited to the existing Duke corporate procedure, assigning responsibility to the procurement support assigned to the EOF. The applicant expects procedure SR/0/B/2000/002 will be modified to incorporate the Lee Nuclear Station on a schedule that supports execution of the emergency exercise required by 10 CFR 50, Appendix E, Section IV.F.2.

Technical Evaluation: In **RAI 13.03-64(H),** the staff requested the applicant provide a list and summary of applicable implementing procedures related to transport of non-contaminated off-site supplies. In response the applicant provided Duke corporate procedure SR/0/B/2000/002 which discusses the assignment of responsibility of procurement support to the EOF. Because this information is not included in the emergency plan, the staff has requested the applicant provide a summary of this information or a statement specifying that it has been moved into a procedure be included in the Lee Emergency Plan. A reference to the procedure, by title, should also be included. This issue is tracked as **Open Item 13.03-32.**

Technical Information in the Emergency Plan: [K.6.c] Section K.6.c, "Contamination Control Measures," of the Lee Emergency Plan states that areas and items are permitted to return to normal use following conduct of appropriate surveys and verification that the contamination levels meet criteria specified in the RPP or its supporting procedures. In **RAI 13.03-64(I),** the staff requested additional information on radiological surveys and to summarize Radiation Protection Program criteria for decontamination.

In response letters dated December 17 and December 23, 2008 the applicant stated that contamination levels and decontamination are discussed in response to RAI 13.03-64 (E). The applicant also stated that the Lee Facility will use the same radiological guidance followed at all existing Duke nuclear stations. The applicant provided the following list of procedures that address decontamination and the release of previously contaminated areas and items to normal use at Duke's existing nuclear stations: RA/0/1 100/002, "Tool, Equipment and Area Decontamination" – Catawba; SH/O/B/2001/003, "Investigation of Skin and Clothing Contaminations"; HP/0/B/1005/005, "Personnel/Vehicle Monitoring for Emergency Conditions"; SH/O/B/2000/006, "Control of Radioactive Material and Use of Radioactive Material Tags"; SH/O/B/2000/013, "Removal of Items from RCA/RCZs"; SH/O/B/2000/004, "Taking, Counting and Recording Surveys" The applicant expects that similar procedures will be developed or corporate procedures expanded to account for the Lee Nuclear Station.

Technical Evaluation: The staff finds the additional information provided in the applicant's response to **RAI 13.03-64 (I)** acceptable and therefore resolved. The Lee Emergency Plan provides onsite contamination control measures including criteria for permitting return of areas and items to normal use.

Technical Information in the Emergency Plan: [K.7.] Section II.K.7, "Decontamination of Relocated Lee Nuclear Station Personnel," of the Lee Emergency Plan states that Lee Nuclear Station makes provisions for protective clothing, contamination monitoring, at the designated relocation site. A general description of the equipment and supplies that are typically available is included in Appendix 6. In **RAI 13.03-63(J),** the staff requested additional information on equipment, supplies and facilities.

In response letters dated December 17 and December 23, 2008 the applicant stated that the Lee Facility would use decontamination procedures similar to those in use at other Duke Facilities. Personnel and vehicle monitoring during a site evacuation will be conducted in accordance with Catawba Procedure HP/0/B/1009/005, "Personnel/Vehicle Monitoring for Emergency Conditions" which includes provisions for dressing contaminated individuals in protective clothing. The applicant expects that a procedure similar to Catawba Nuclear Station's Procedure HP/0/B/1000/006, "Emergency Equipment Functional Check and Inventory," which provides the process to verify availability and readiness of RP emergency response equipment will also be implemented for the Lee Facility. The applicant also stated that the location of relocation facilities has not been determined nor has the facility design been finalized. The applicant has committed that these details will be established on a schedule that supports execution of the emergency exercise required by 10 CFR 50, Appendix E, Section IV.F.2. **Open Items** were written to track the identification of relocation centers and the submittal of any applicable Letters of Agreement. Emergency plan implementing procedures will be developed on a schedule that supports NRC inspection activities and execution of the emergency exercise required by Section IV.F.2 of 10 CFR 50, Appendix E.

Technical Evaluation: The staff finds the additional information provided in the applicant's response to **RAI 13.03-64 (J)** acceptable and therefore resolved. The Lee Emergency Plan describes the capability for decontaminating relocated onsite personnel, including provisions for extra clothing and decontaminants suitable for the type of contamination expected, with particular attention given to radioiodine contamination of the skin.

13.3.1C.K.2 Conclusion for Radiological Exposure Control

On the basis of its review of the onsite emergency plan as described above for radiological exposure control, the staff concludes that the information provided in the Lee Emergency Plan is consistent with Planning Standard K of NUREG-0654/FEMA-REP-1. Therefore, the information is acceptable and meets the requirements of 10 CFR 50.47(b)(11).

The staff has reviewed the onsite emergency plan and the applicant's responses to **RAI 13.03-64(A) through (J)** with regards to Planning Standard K of NUREG-0654/FEMA-REP-1 and the requirements of 10 CFR 50.47(b)(11). Final determination regarding this planning standard will be based on the applicant's response to the following Open Items:

- In **RAI 13.03-64(A)** the staff requested the applicant provide a summary of the occupational radiation protection programs. In response the applicant provided a description of their procedure for requesting exposures in excess of occupational dose limits. The applicant also provided Catawba Nuclear Station procedure, RP/0/A/5000/018, "Emergency Worker Dose Extension," as an example of procedures to be used at the Lee facility. Because this information is not included in the emergency plan, the staff has requested the applicant provide

a summary of this information or a statement specifying that it has been moved into a procedure be included in the Lee Emergency Plan. A reference to the procedure, by title, should also be included. This issue is tracked as **Open Item 13.03-29.**

- In **RAI 13.03-64(C)**, the staff requested the applicant provide a list and summary of applicable implementing procedures for determining dose and maintenance of dose records. In response the applicant provided Duke Procedure SH/0/B/2001/001, "Internal Dose Assessment" which determines "dose received from internal exposures to radioactive material received while working at a Duke Energy facility." Because this information is not included in the emergency plan, the staff has requested the applicant provide a summary of this information or a statement specifying that it has been moved into a procedure be included in the Lee Emergency Plan. A reference to the procedure, by title, should also be included. This issue is tracked as **Open Item 13.03-30.**

- In **RAI 13.03-63(D)**, the staff requested the applicant provide a description or summary of contingency plans for dosimetry services (including recordkeeping), loss of power, instrument failure, inadvertent contamination, etc. In response the applicant provided applicable portions of the Catawba procedure as an example. Because this information is not included in the emergency plan, the staff has requested the applicant provide a summary of this information or a statement specifying that it has been moved into a procedure be included in the Lee Emergency Plan. A reference to the procedure, by title, should also be included. This issue is tracked as **Open Item 13.03-31.**

- In **RAI 13.03-64(H),** the staff requested the applicant provide a list and summary of applicable implementing procedures related to transport of non-contaminated off-site supplies. In response the applicant provided Duke corporate procedure SR/0/B/2000/002 which discusses the assignment of responsibility of procurement support to the EOF. Because this information is not included in the emergency plan, the staff has requested the applicant provide a summary of this information or a statement specifying that it has been moved into a procedure be included in the Lee Emergency Plan. A reference to the procedure, by title, should also be included. This issue is tracked as **Open Item 13.03-32.**

13.3.1C.L Medical and Public Health Support

13.3.1C.L.1 Regulatory Basis: 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(12); Planning Standard L requires that arrangements be made for medical services for contaminated injured individuals.

The staff evaluated the emergency plan against NUREG-0654/FEMA-REP-1, Planning Standard L, AMedical and Public Health Support.@ Planning Standard L provides the detailed evaluation criteria that the staff considered in determining whether the emergency plan met the applicable regulatory requirement in 10 CFR 50.47(b)(12).

Technical Information in the Emergency Plan: [L.1.] Section II.L.1, Hospital and Medical Support of the Lee Emergency Plan states that an agreement has been established with Piedmont Medical Center (PMC) to provide medical services for injured personnel. Radiation monitoring equipment, dosimeters, and protective clothing are available at PMC. PMC has the capability to evaluate the radiation exposure and/or uptake of accident victims and to handle contaminated victims due to training courses supported by Duke Energy, Section II.O, "Radiological Emergency Response Training," of the Lee Emergency Plan. Periodic drills, exercises, and materiel support are provided consistent with agreements developed with medical support providers addressed in Section II.N, "Exercise and Drills," of the Lee Emergency Plan. Radiation Protection personnel may accompany the victim to support the radiological aspects of the medical treatment and post-treatment efforts. Certification letters are in Appendix 7, "Certification Letters." **RAI 13.03-65** was submitted requesting information on when the agreements will be finalized between Duke Energy and the medical support providers.

In response letters dated December 17 and December 23, 2008 the applicant stated Letters of Agreement will be established and incorporated into the Lee Emergency Plan prior to receipt of nuclear fuel at the site.

Technical Evaluation: **RAI 13.03-65** was submitted requesting information on when the agreements will be finalized between Duke Energy and the medical support providers. In response the applicant stated Letters of Agreement will be established and incorporated into the Lee Emergency Plan prior to receipt of nuclear fuel at the site. Because Letters of Agreement are required to be included in the emergency plan, the staff has requested Letters of Agreement be provided when available. This issue is tracked under **Open Item 13.03-02**.

Technical Information in the Emergency Plan: [L.2.] Section II.L.2, "On-Site First Aid Capability," of the Lee Emergency Plan states that a trained Medical Emergency Response Team (MERT) is maintained at the site to provide 24 hours first aid support. As a minimum, the MERT personnel are DOT first responder trained. Medical services are also available from two other sources discussed in the plan. MERT training is consistent with Section II.O, "Radiological Emergency Response Training," and drills and exercises consistent with Section II.N, "Exercise and Drills," of the Lee Emergency Plan. Appendix 6, "Emergency Equipment and Supplies," of the Lee Emergency Plan provides a brief description of first aid supplies/equipment.

Technical Evaluation: The Lee Emergency Plan provides for onsite first aid capability.

Technical Information in the Emergency Plan: [L.4.] Section II.L.4, "Medical Emergency Transportation," of the Lee Emergency Plan identifies the Drayton-McKown Mountain-Wilkinsville Volunteer Fire Department and Upstate Carolina Center Emergency Medical Services providing transport of contaminated injured personnel. Contaminated injured personnel are suitably clothed or prepared to prevent the spread of contamination in the

transporting vehicle. Communication can be maintained from the station to the site ambulance or to the ambulance through the dispatching station. Response team members have received training concerning transportation of contaminated injured individuals. The approximate time to transport a patient to Piedmont Medical Center is 60 minutes. The estimated time for local rescue squads to arrive at the station is 30 minutes. Appendix 7, "Certification Letters", contains signed certification letters between Piedmont Medical Center and Upstate Carolina Medical Center.

Technical Evaluation: In addition, the Lee Emergency Plan describes the arrangements made for transportation of contaminated injured individuals from the site to specifically identified treatment facilities outside the site boundary.

13.3.1C.L.2 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.E.5 requires that arrangements be made for the services of physicians and other medical personnel qualified to handle radiation emergencies on-site.

Technical Information in the Emergency Plan: Section II.L.2, "On-Site First Aid Capability," of the Lee Emergency Plan states that a trained Medical Emergency Response Team (MERT) is maintained at the site to provide 24 hours first aid support. As a minimum, the MERT personnel are DOT first responder trained. Medical services are also available from Upstate Carolina Medical Center (ambulance) and Drayton-McKown Mountain-Wilkinsville Volunteer Fire Department. Duke Energy provides for First Aid Team readiness through training consistent with Section II.O "Radiological Emergency Response Training," and drills and exercises consistent with Section II.N, "Exercise and Drills," of the Lee Emergency Plan. Appendix 6, Emergency Equipment and Supplies," of the Lee Emergency Plan provides a brief description of first aid supplies/equipment.

Technical Evaluation: The Lee Emergency Plan describes arrangements made for the services of physicians and other medical personnel qualified to handle radiation emergencies on-site.

13.3.1C.L.3 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.E.6 requires that arrangements be made for transportation of contaminated injured individuals from the site to specifically identified treatment facilities outside the site boundary.

Technical Information in the Emergency Plan: Section II.L.4, "Medical Emergency Transportation," of the Lee Emergency Plan identifies the Drayton-McKown Mountain-Wilkinsville Volunteer Fire Department and Upstate Carolina Center Emergency Medical Services providing transport of contaminated injured personnel. Contaminated injured personnel are suitably clothed or prepared to prevent the spread of contamination in the transporting vehicle. Communication can be maintained from the station to the site ambulance or to the ambulance through the dispatching station. Response team members have received training concerning transportation of contaminated injured individuals. The approximate time to transport a patient to Piedmont Medical Center is 60 minutes. The estimated time for local rescue squads to arrive at the station is 30 minutes. Appendix 7, "Certification Letters", contain signed certification letters between Piedmont Medical Center and Upstate Carolina Medical Center.

Technical Evaluation: The Lee Emergency Plan describes arrangements made for the services of physicians and other medical personnel qualified to handle radiation emergencies on-site.

13.3.1C.L.4 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.E.7 requires that arrangements be made for treatment of individuals injured in support of licensed activities on the site at treatment facilities outside the site boundary.

Technical Information in the Emergency Plan: Section II.L.1, "Hospital and Medical Support," of the Lee Emergency Plan states that Duke Energy has established an agreement with Piedmont Medical Center in Rock Hill, SC, to provide medical services for injured personnel. Section II.L.4, "Medical Emergency Transportation," states that initial off-site support for a medical emergency is provided by the Draytonville-McKown Mountain-Wilkinsville Volunteer Fire Department. Upstate Carolina Medical Center provides an ambulance to transport non-contaminated injured personnel.

Technical Evaluation: The Lee Emergency Plan describes arrangements made for treatment of individuals injured in support of licensed activities on the site at treatment facilities outside the site boundary.

13.3.1C.L.5 Conclusion for Medical and Public Health Support

The staff has reviewed the onsite emergency plan and the applicant's responses to **RAI 13.03-65** in regards to Planning Standard L of NUREG-0654/FEMA-REP-1 and the requirements of 10 CFR 50.47(b)(12) and Section IV.E.5., E.6., and E.7 of Appendix E to 10 CFR Part 50. Final determination regarding this planning standard will be based on verification of the applicant's response to the following Open Item:

- **RAI 13.03-65** was submitted requesting information on when the agreements will be finalized between Duke Energy and the medical support providers. In response the applicant stated Letters of Agreement will be established and incorporated into the Lee Emergency Plan prior to receipt of nuclear fuel at the site. Because Letters of Agreement are required to be included in the emergency plan, the staff has requested applicant provide Letters of Agreement when available. This issue is tracked under **Open Item 13.03-02**

13.3.1C.M Recovery and Reentry Planning and Post-accident Operations

13.3.1C.M.1 Regulatory Basis: 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(13); Planning Standard M requires that general plans for recovery and reentry be developed.

The staff evaluated the emergency plan against NUREG-0654/FEMA-REP-1, Planning Standard M, "Recovery and Reentry Planning and Post-Accident Operations." Planning Standard M provides the detailed evaluation criteria that the staff considered in determining whether the emergency plan meets the applicable regulatory requirement in 10 CFR 50.47(b)(13).

Technical Information in the Emergency Plan: [M.1] Section II.M, "Recovery and Re-Entry," of the Lee Emergency Plan addresses that plans for recovery and re-entry will be developed. The section states that the following are addressed in the plans and procedures: guidance for a range of recovery and re-entry activities, including; responsibilities for recovery/re-entry decision-making, including decisions for relaxing protective measures based on existing and potential hazardous conditions; means for informing members of the emergency response organization that recovery operations are to be initiated and related changes in the organizational structure; and methods for periodically updating estimates of total population exposure". The people responsible for different activities within the recovery organization are mentioned by title in Section II.M.2., "Recovery Organization." Criteria used to determine when reentry is permissible or operation can resume are passed on station parameters no longer indicate a potential or actual emergency exists, the release of radioactivity is controllable, does not exceeds permissible levels, and does not present a credible danger to the public, the station is capable of sustaining itself in a long term shutdown condition. Section II.M.3, "Changes in Organizational Structure," states the recovery process is implemented when the emergency response organization managers and State and Federal agencies determine the station is stable. Planning effort related to recovery plans and procedures prior to an emergency.

Technical Evaluation: The Lee Emergency Plan describes general plans and procedures for reentry and recovery and describes the means by which decisions to relax protective measures (e.g., allow reentry into an evacuated area) are reached. This process considers both existing and potential conditions.

Technical Information in the Emergency Plan: [M.2] Section II.M.2, "Recovery Organization," of the Lee Emergency Plan discusses the basis and procedure for the development of a recovery organization. The primary positions in the Recovery Organization are described. The Emergency Coordinator acts as site liaison with the Recovery Organization. The organization may be modified to address the given situation. The EOF Director assumes control and direction of the recovery operation with the authority and responsibilities set forth in the EPIPs. The organization will develop plans and procedures designed to address immediate and long term actions. The Recovery Organization will recommend relaxation of the protective measures if appropriate under the conditions listed. The recovery organization may perform its activities from one or more designated ERFs or from other locations as specified by the responsible recovery organization managers. In **RAI 13.03-66(A),** the staff requested additional information on the position and responsibilities for the facility recovery organization.

In response letters dated December 17 and December 23, 2008 the applicant stated that Subsection II.M.2 of the Emergency Plan describes key positions in the recovery organization. The EOF Director assumes overall management of recovery activities and coordination with federal, state, and local governments. Structure of the recovery organization structure at the Lee site will be modeled after Catawba, Maguire, and Oconee. Duke Energy's Corporate

Procedure RP/0/B/5000/025, "Recovery and Reentry Procedure," was included as Attachment 1 to this response as an example of this structure.

Technical Evaluation: In **RAI 13.03-66(A),** the staff requested additional information on the position and responsibilities for the facility recovery organization. In response the applicant stated that Structure of the recovery organization structure at the Lee site will be modeled after Catawba, Maguire, and Oconee. Duke Energy's Corporate Procedure RP/0/B/5000/025, "Recovery and Reentry Procedure," was included as Attachment 1 to this response as an example of this structure. Because this information is not included in the emergency plan, the staff has requested the applicant provide a summary of this information or a statement specifying that it has been moved into a procedure be included in the Lee Emergency Plan. A reference to the procedure, by title, should also be included. This issue is tracked as **Open Item 13.03-33.**

Technical Information in the Emergency Plan: [M.3] Section II.M.3, "Changes in Organizational Structure," of the Lee Emergency Plan does not address the means for informing members of the onsite response organizations that a recovery operation has been initiated. The plan does state that the EOF Director will notify the NRC Operations Center and the State and local EOC. The means for this notification was not addressed. **RAI 13.03-66(B)** has been submitted requesting information on notification of emergency response personnel that the emergency has been terminated and that a recovery organization has been implemented.

In response letters dated December 17 and December 23, 2008 the applicant stated that Section E. I (Page 11-25) and Section F. I of the Lee Emergency Plan describe the notification of emergency response personnel onsite and emergency response organizations offsite. The EOF Director is responsible for developing a message that details the date and time recovery operations are initiated as well as any organizational realignment. This message is distributed to EOF Managers, News Manager, Emergency Coordinator, State and Local Officials, the NRC and any other representatives identified by the EOF Director. Duke Energy's Corporate Procedure RP/0/B/5000/025, "Recovery and Reentry Procedure," was included as Attachment 1 to this response as an example of this structure. The applicant expects to use similar procedures at the Lee Facility.

Technical Evaluation: In **RAI 13.03-66(B)** the staff requested additional information related to the recovery organization. In response the applicant provided Duke Energy's Corporate Procedure RP/0/B/5000/025, "Recovery and Reentry Procedure," as man example recover/reentry procedures that will be used at the Lee facility. Because this information is not included in the emergency plan, the staff has requested the applicant provide a summary of this information or a statement specifying that it has been moved into a procedure be included in the Lee Emergency Plan. A reference to the procedure, by title, should also be included. This issue is tracked as **Open Item 13.03-34.**

Technical Information in the Emergency Plan: [M.4] Section II.M.4, "Updating Total Population Exposure During Recovery Operations," of the Lee Emergency states that the Radiological Assessment Manager will work with SC and NC officials to periodically update estimates of total population exposure using population distribution data. The information on who they will be communicating with is not provided. In **RAI 13.03-66(C),** the staff requested the applicant provide information on who the Radiological Assessment Manager will be communicating with at the state level.

In response letters dated December 17 and December 23, 2008 the applicant stated that the Radiological Assessment Manager will communicate with South Carolina Department of Health and Environmental Control and the North Carolina Department of Environment and Natural

Resources/Radiation Protection Section via liaison personnel that are assigned within the EOF to periodically update estimates of total population exposure using population distribution data.

Technical Evaluation: The staff finds the additional information provided in the applicant's response to **RAI Site-13.03-66 (C)** acceptable and therefore resolved. The Lee Emergency Plan establishes a method for periodically estimating total population exposure.

13.3.1C.M.2 Regulatory Basis: 10 CFR 50, Appendix E.IV., "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.H. requires that the criteria to be used to determine when, following an accident, reentry of the facility would be appropriate or when operation could be resumed be described.

Technical Information in the Emergency Plan: Section II:M.2, "Recovery Organization," criteria used to determine when reentry is permissible or operation can resume are passed on station parameters no longer indicate a potential or actual emergency exists, the release of radioactivity is controllable, does not exceeds permissible levels, and does not present a credible danger to the public, the station is capable of sustaining itself in a long term shutdown condition. The recovery process is implemented when the Lee Nuclear Station Response Organization Managers and State and Federal agencies determine the station is stable.

Technical Evaluation: The Lee Emergency Plan describes the criteria to be used to determine when, following an accident, reentry of the facility would be appropriate or when operation could be resumed.

13.3.1C.M.3 Conclusion for Recovery and Reentry Planning and Post-accident Operations

The staff has reviewed the onsite emergency plan and the applicant's responses to RAI **13.03-66(A) through (C)** in regards to Planning Standard M of NUREG-0654/FEMA-REP-1and the requirements of 10 CFR 50.47(b)(13) and Section IV.H. of Appendix E to 10 CFR Part 50. Final determination regarding this planning standard will be based on the applicant's response to the following Open Items:

- In **RAI 13.03-66(A),** the staff requested additional information on the position and responsibilities for the facility recovery organization. In response the applicant stated that Structure of the recovery organization structure at the Lee site will be modeled after Catawba, Maguire, and Oconee. Duke Energy's Corporate Procedure RP/0/B/5000/025, "Recovery and Reentry Procedure," was included as Attachment 1 to this response as an example of this structure. Because this information is not included in the emergency plan, the staff has requested the applicant provide a summary of this information or a statement specifying that it has been moved into a procedure be included in the Lee Emergency Plan. A reference to the procedure, by title, should also be included. This issue is tracked as **Open Item 13.03-33.**

- In **RAI 13.03-66(B)** the staff requested additional information related to the recovery organization. In response the applicant provided Duke Energy's Corporate Procedure RP/0/B/5000/025, "Recovery and Reentry Procedure," as man example recover/reentry procedures that will be used at the Lee facility. Because this information is not included in the emergency plan, the staff has requested the applicant provide a summary of this information or a statement specifying that it has been moved into a procedure be included in the Lee Emergency Plan. A reference to the procedure, by title, should also be included. This issue is tracked as **Open Item 13.03-34.**

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13.3.1C.N Exercises and Drills

13.3.1C.N.1 Regulatory Basis: 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(14); Planning Standard N requires that periodic exercises be conducted to evaluate major portions of emergency response capabilities, periodic drills be conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills be corrected.

The staff evaluated of the emergency plan against NUREG-0654/FEMA-REP-1, Planning Standard N, AExercises and Drills.@ Planning Standard N provides the detailed evaluation criteria that the staff considered in determining whether the emergency plan met the applicable regulatory requirement in 10 CFR 50.47(b)(14).

Technical Information in the Emergency Plan: **[N.1.a.]** Section II.N.1, "Exercises," of the Lee Emergency Plan states that exercises are conducted on a biennial basis in a manner that tests the major portion of emergency response capabilities. Exercises test adequacy of timing and content of implementing procedures; test emergency equipment and communications networks, public notification system; evaluate emergency organization personnel's familiarity with their duties; and disclose deficiencies. Section N.1.a, "Exercise Scope and Frequency" states that Duke Energy conducts emergency exercises in accordance with the NRC and FEMA requirements (10 CFR 50.47(b)(14) and 44 CFR 350.9).

Technical Evaluation: The Lee Emergency Plan states that exercises will test the integrated capability and a major portion of the basic elements existing within emergency preparedness plans and organizations. In addition, the emergency preparedness exercise will simulate an emergency that results in offsite radiological releases which would require response by offsite authorities. The Lee Emergency Plan also states that exercises will be conducted as set forth in the NRC and FEMA rules.

Technical Information in the Emergency Plan: [N.1.b] Section II.N.1.b, "Exercise Scenarios and Participation," of the Lee Emergency Plan states that exercise scenarios are varied in a manner that tests the major elements of the plans and preparedness organizations within a six year period (NOTE: this meets FEMA guidance). Exercises test, adequacy of timing and content of implementing procedures; test emergency equipment and communications networks, public notification system; evaluate ERO personnel response; and disclose deficiencies. Section II.N.5, "Drill and Exercise Critique," the Lee Emergency Plan state that Duke Energy conducts a critique as soon as practicable following each exercise. Section II.N.5, also states an action plan is developed to address substantive issue.

Unit 1 and 2 ITAAC 8.1 has been proposed to test that the licensee conducts a full participation exercise to evaluate major portions of emergency response capabilities, which includes participation by each State and local agency within the plume exposure EPZ, and each State within the ingestion control EPZ. (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

Technical Evaluation: The Lee Emergency Plan states that exercises will include mobilization of State and local personnel and resources adequate to verify the capability to respond to an accident scenario requiring response. In addition, the Lee Emergency Plan describes provisions for a critique of the annual exercise by Federal and State observers/evaluators. The Lee Emergency Plan states that the scenario will be varied from year to year such that all major elements of the plans and preparedness organizations are tested within a five-year period. The Lee Emergency Plan describes provisions to start an exercise between 6:00 p.m. and midnight, and another between midnight and 6:00 a.m. once every six years. The Lee Emergency Plan

also states that exercises will be conducted under various weather conditions and that some exercises will be unannounced.

Technical Information in the Emergency Plan: [N.2.] Section II.N.2, "Drills," of the Lee Emergency Plan states that drills shall be controlled and observed by individuals qualified to conduct and evaluate the drill. Drills are used to consider accident management strategies, provide supervised instruction, allow the operating staff to resolve problems and focus on internal training objectives. One or more drills may be included as portions of an exercise. Communications drills are conducted quarterly with federal organizations and annually with state and local emergency operations centers (EOCs) and field assessment teams. Section II.A.1, "Emergency Organization," of the Lee Emergency Plan indentifies participating organizations. Communications drills evaluate the operability of the communications system(s) and the ability to understand message content.

Technical Evaluation: The Lee Emergency Plan states that a drill is a supervised instruction period aimed at testing, developing and maintaining skills in a particular operation, and that a drill is often a component of an exercise. In addition, the Lee Emergency Plan states that a drill will be supervised and evaluated by a qualified drill instructor.

Technical Information in the Emergency Plan: [N.2.a.] Section II.N.2, "Drills," of the Lee Emergency Plan states drills shall be controlled and observed by individuals qualified to conduct and evaluate the drill. Drills are used to consider accident management strategies, provide supervised instruction, allow the operating staff to resolve problems and focus on internal training objectives. One or more drills may be included as portions of an exercise. Communications Drills are, quarterly with federal organizations, and annually with EOCs and field assessment teams addressed in Section II.A, "Assignment of Responsibility (Organizational Control." Communications drills evaluate the operability of the communications system(s) and the ability to understand message content.

The Lee Emergency Plan states that a drill is a supervised instruction period aimed at testing, developing and maintaining skills in a particular operation, and that a drill is often a component of an exercise. In addition, the Lee Emergency Plan states that a drill will be supervised and evaluated by a qualified drill instructor. The Lee Emergency Plan also states that in addition to the biennial exercise, drills will be conducted, at the frequencies indicated below:

a. Communication drills - Communications with State and local governments within the plume exposure pathway Emergency Planning Zone will be tested monthly. Communications with Federal emergency response organizations and States within the ingestion pathway will be tested quarterly. Communications between the nuclear facility, State and local emergency operations centers, and field assessment teams will be tested annually. In addition, the Lee Emergency Plan states that communication drills will also include the aspect of understanding the content of messages.
b. Fire drills - Fire drills will be conducted in accordance with the plant technical specifications.
c. Medical Emergency drills - A medical emergency drill involving a simulated contaminated individual which contains provisions for participation by the local support services agencies (i.e., ambulance and offsite medical treatment facility) will be conducted annually. Lee Emergency Plan also states that the offsite portions of the medical drill may be performed as part of the required biennial exercise.
d. Radiological monitoring drills - Plant environs and radiological monitoring drills (onsite and offsite) will be conducted annually. These drills will include collection and analysis of all

sample media (e.g., water, vegetation, soil and air), and provisions for communications and record keeping. The Lee Emergency Plan also describes provisions for including State and local response organizations in radiological monitoring drills.

e. Health physics drills - Health physics drills will be conducted semi-annually and will involve response to, and analysis of, simulated elevated airborne and liquid samples and direct radiation measurements in the environment. The Lee Emergency Plan also describes provisions for including State response organizations in these drills. On an annual basis, an analysis of in-plant liquid samples with actual elevated radiation levels including use of the post-accident sampling system will be included in health physics drills.

Technical Evaluation: The Lee Emergency Plan also states that in addition to the biennial exercise, drills will be conducted, at the frequencies indicated below: (a) Communication drills - Communications with State and local governments within the plume exposure pathway Emergency Planning Zone will be tested monthly. Communications with Federal emergency response organizations and States within the ingestion pathway will be tested quarterly. Communications between the nuclear facility, State and local emergency operations centers, and field assessment teams will be tested annually. In addition, the Lee Emergency Plan states that communication drills will also include the aspect of understanding the content of messages.

Technical Information in the Emergency Plan: [N.2.b.] Section II.N.2.b, "Fire Drills," of the Lee Emergency Plan states that fire drills are conducted as required by Subsection 9.5.1, "Other Auxiliary Systems," of the FSAR. FSAR Section 9.5.1.8.2.2, "Fire Brigade Training," states that training is conducted by qualified individuals and consists of classroom instruction supplemented will periodic classroom retraining, practice in fire fighting, and fire drills. FSAR, Table 13.4-201 (Sheet 2 of 7), "Operational Programs Required by NRC Regulations," identifies the Fire Protection Program implementation milestones to be prior to receipt of fuel onsite and prior to initial fuel load.

Technical Evaluation: Fire drills will be conducted in accordance with the plant technical specifications.

Technical Information in the Emergency Plan: [N.2.c.] Section II.N.2.c, "Medical Emergency Drills," of the Lee Emergency Plan states that medical emergency drills that include a simulated contaminated injured individual, transportation to off-site facilities, and participation by the local medical support agencies are performed annually.

Technical Evaluation: A medical emergency drill involving a simulated contaminated individual that contains provisions for participation by the local support services agencies (i.e., ambulance and offsite medical treatment facility) will be conducted annually. Lee Emergency Plan also states that the offsite portions of the medical drill may be performed as part of the required biennial exercise.

Technical Information in the Emergency Plan: [N.2.d.] Section II.N.2.d, "Radiological Monitoring Drills," of the Lee Emergency Plan states that radiological monitoring drills, involving both on-site and off-site radiological monitoring activities are conducted at least once each calendar year. Radiological monitoring drills include the use of appropriate procedures for collecting and analyzing samples and recording results; collection and analysis of the sample media for which the facility is response; communications with monitoring teams and recordkeeping activities. Drills may be coordinated with state and local organizations or conducted separately.

Technical Evaluation: Plant environs and radiological monitoring drills (onsite and offsite) will be conducted annually. These drills will include collection and analysis of all sample media (e.g., water, vegetation, soil and air), and provisions for communications and record keeping. The Lee Emergency Plan also describes provisions for including State and local response organizations in radiological monitoring drills.]

Technical Information in the Emergency Plan: [N.2.e.] Section II.N.2.e, "Radiation Protection Drills," of the Lee Emergency Plan states that on-site radiation protection drills that include response to and analysis of simulated elevated airborne and liquid activity levels and elevated area radiation levels in the environment are conducted at least semi-annually.

Section II.N.2.e, "Radiological Control Drills," of the Lee Emergency Plan states that drills involving in-plant liquid samples with actual or simulated elevated radiation levels are conducted at least annually.

Technical Evaluation: Health physics drills will be conducted semi-annually and will involve response to, and analysis of, simulated elevated airborne and liquid samples and direct radiation measurements in the environment. The Lee Emergency Plan also describes provisions for including State response organizations in these drills. On an annual basis, an analysis of in-plant liquid samples with actual elevated radiation levels including use of the post-accident sampling system will be included in health physics drills.

Technical Information in the Emergency Plan: [N.3.a.] Section II.N.3.a, "Conduct of Drills and Exercises," of the Lee Emergency Plan states that basic performance objectives and evaluation criteria are included in scenario materials.

Technical Evaluation: The Lee Emergency Plan describes how exercises and drills will be carried out to allow free play for decision-making and to meet the following objectives. The Lee Emergency Plan states that the scenarios for use in exercises and drills will include, but are not limited to, the following:

a. The basic objective(s) of each drill and exercise and appropriate evaluation criteria
b. The date(s), time period, place(s) and participating organizations
c. The simulated events
d. A time schedule of real and simulated initiating events
e. A narrative summary describing the conduct of the exercises or drills to include such things as simulated casualties, offsite fire department assistance, rescue of personnel, use of protective clothing, deployment of radiological monitoring teams, and public information activities
f. A description of the arrangements for and advance materials to be provided to official observers

Technical Information in the Emergency Plan: [N.3.b] Section II.N.3.b, "Conduct of Drills and Exercises," of the Lee Emergency Plan states that date, initiation time, affected locations, exercise duration and participating organizations are included in scenario materials.

Technical Evaluation: Section II.N.3.b, "Conduct of Drills and Exercises," of the Lee Emergency Plan states that date, initiation time, affected locations, exercise duration and participating organizations are included in scenario materials.

Technical Information in the Emergency Plan: [N.3.c.] Section II.N.3.c, "Conduct of Drills and Exercises," of the Lee Emergency Plan states that simulated events are included in scenario materials.

Technical Evaluation: Section II.N.3.c, "Conduct of Drills and Exercises," of the Lee Emergency Plan states that simulated events are included in scenario materials.

Technical Information in the Emergency Plan: [N.3.d.] Section II.N.3.d, "Conduct of Drills and Exercises," of the Lee Emergency Plan states that a time schedule of real and simulated events is included in scenario materials.

Technical Evaluation: Section II.N.3.d, "Conduct of Drills and Exercises," of the Lee Emergency Plan states that a time schedule of real and simulated events is included in scenario materials.

Technical Information in the Emergency Plan: [N.3.e.] Section II.N.3.e, "Conduct of Drills and Exercises," of the Lee Emergency Plan states that a narrative summary describing the overall integration of scenario events such as simulated causalities, off-site assistance, rescue of personnel, use of protective equipment, simulated activity and radiation levels and deployment of monitoring teams is included in scenario materials.

Technical Evaluation: Section II.N.3.e, "Conduct of Drills and Exercises," of the Lee Emergency Plan states that a narrative summary describing the overall integration of scenario events such as simulated causalities, off-site assistance, rescue of personnel, use of protective equipment, simulated activity and radiation levels and deployment of monitoring teams is included in scenario materials.

Technical Information in the Emergency Plan: [N.3.f.] Section II.N.3.f, "Conduct of Drills and Exercises," of the Lee Emergency Plan states that a description of the arrangements made for an official observer be provided.

Technical Evaluation: Section II.N.3.f, "Conduct of Drills and Exercises," of the Lee Emergency Plan states that a description of the arrangement made for, and advance materials to be provided to, the facilitators is included in scenario materials.

Technical Information in the Emergency Plan: [N.4.] Section II.N.4, "Exercise and Drill Evaluation," of the Lee Emergency Plan states that one or more qualified instructors or evaluators supervises and evaluates drills and exercises. A qualified individual must have been evaluated by an Emergency Planning Manager. Areas to be observed by the evaluators are defined in a critique sheet. Section II.N.5, "Drill and Exercise Critiques," states that Duke Energy records input from the critique participants, evaluates the need for changes to the plan, procedures, equipment, facilities, and other components of the program and develops an action plan to address the identified substantive issues. Identified corrective actions are tracked to completion following the corrective action program.

Technical Evaluation: The Lee Emergency Plan describes provisions for official observers from Federal, State or local governments to observe, evaluate, and critique the required exercises. A critique will be scheduled at the conclusion of the exercise to evaluate the ability to respond as described in the Lee Emergency Plan. The critique will be conducted as soon as practicable after the exercise, and a formal evaluation will result from the critique.

Technical Information in the Emergency Plan: [N.5.] Section II.N.4, "Exercise and Drill Evaluation," of the Lee Emergency Plan states that qualified instructors/evaluators supervise and evaluate drills and exercises. The second paragraph states that "...areas to be evaluated by the facilitators are defined in critique sheets."

Technical Evaluation: The Lee Emergency Plan establishes means for evaluating observer and participant comments on areas needing improvement, including emergency plan procedural

changes, and for assigning responsibility for implementing corrective actions. The Lee Emergency Plan also establishes management control used to ensure that corrective actions are implemented. Additional technical interface information can be located in SRP Section 17.5 "Corrective Action Program."

13.3.1C.N.2 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.F.2 requires that the emergency plan describe provisions for the conduct of emergency preparedness exercises and 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. [**If applicable:** Use of a site-specific simulator is used for some exercises.]

Technical Information in the Emergency Plan: Section II.N.1, "Exercises and Drills," of the Lee Emergency Plan states that exercises are conducted on a biennial basis in a manner that tests the major elements of the plans and emergency response capabilities. Exercises test adequacy of timing and content of implementing procedures; test emergency equipment and communications networks, public notification system; evaluate emergency organization personnel's familiarity with their duties; and disclose deficiencies. Section N.1.a, "Exercise Scope and Frequency," states that Duke Energy conducts emergency exercises in accordance with NRC and FEMA requirements (10 CFR 50.47(b)(14) and 44 CFR 350.9).

Technical Evaluation: The Lee Emergency Plan 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. [**If applicable:** The Lee Emergency Plan also describes the use of a site-specific simulator use for some exercises.]

13.3.1C.N.3 Regulatory Basis: 10 CFR 50, Appendix E.IV., "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.F.2.b. requires that each licensee at each site conduct an exercise of its onsite emergency plan every 2 years. The exercise may be included in the full participation biennial exercise. In addition, the licensee shall take actions necessary to ensure that adequate emergency response capabilities are maintained during the interval between biennial exercises by conducting drills, including at least one drill involving a combination of some of the principal functional areas of the licensee's onsite emergency response capabilities. The principal functional areas of emergency response include activities such as management and coordination of emergency response, accident assessment, protective action decision-making, and plant system repair and corrective actions. During these drills, activation of all of the licensee's emergency response facilities (Technical Support Center (TSC), Operations Support Center (OSC), and the Emergency Operations Facility (EOF)) would not be necessary, licensees would have the opportunity to consider accident management strategies, supervised instruction would be permitted, operating staff would have the opportunity to resolve problems (success paths) rather than have controllers intervene, and the drills could focus on onsite training objectives.

Technical Information in the Emergency Plan: Section II.N.2.b, "Fire Drills," of the Lee Emergency Plan states that fire drills are conducted as required by subsection 9.5.1, "Other Auxiliary Systems," of the FSAR. FSAR Section 9.5.1.8.2.2, "Fire Brigade Training," states that training is conducted by qualified individuals and consists of classroom instruction

supplemented will periodic classroom retraining, practice in fire fighting, and fire drills. FSAR, Table 13.4-201, "Operational Programs Required by NRC Regulations," identifies the Fire Protection Program implementation milestones to be prior to receipt of fuel onsite and prior to initial fuel load.

Technical Evaluation: The Lee Emergency Plan states that an exercise of its onsite emergency plan will be conducted every 2 years. In addition, the Lee Emergency Plan describes actions that will be taken to ensure that adequate emergency response capabilities are maintained during the interval between biennial exercises by conducting drills, including at least one drill involving a combination of some of the principal functional areas of the licensee's onsite emergency response capabilities. The principal functional areas of emergency response include activities such as management and coordination of emergency response, accident assessment, protective action decision-making, and plant system repair and corrective actions. During these drills, the Lee Emergency Plan states that activation of all of the licensee's emergency response facilities (TSC, OSC, and EOF) would not be necessary. However, emergency response personnel would have the opportunity to consider accident management strategies, supervised instruction would be permitted, operating staff would have the opportunity to resolve problems (success paths), and the drills will focus on onsite training objectives.

13.3.1C.N.4 Regulatory Basis: 10 CFR 50, Appendix E.IV., "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.F.2.c. requires that offsite plans for each site shall be exercised biennially with full participation by each offsite authority having a role under the plan. Where the offsite authority has a role under a radiological response plan for more than one site, it shall fully participate in one exercise every 2 years and shall, at least, partially participate in other offsite plan exercises in this period. If two different licensees whose licensed facilities are located either on the same site or on adjacent, contiguous sites, and that share most of the elements defining co-located licensees, each licensee shall:

a. Conduct an exercise biennially of its onsite emergency plan

b. Participate quadrennially in an offsite biennial full or partial participation exercise

c. Conduct emergency preparedness activities and interactions in the years between its participation in the offsite full or partial participation exercise with offsite authorities, to test and maintain interface among the affected state and local authorities and the licensee. Co-located licensees shall also participate in emergency preparedness activities and interaction with offsite authorities for the period between exercises.

Technical Information in the Emergency Plan: Section II.N.1, "Exercises," of the Lee Emergency Plan discusses participation frequencies and participant involvement. These exercises are to be conducted in accordance with NRC and FEMA requirements. Section II.N.2, "Drills," of the Lee Emergency Plan states that Duke Energy, upon request, allows affected State and local governments located within the plume EPZ to participate in drills. Drills are conducted between biennial exercises to maintain adequate emergency response capabilities.

Technical Evaluation: The Lee Emergency Plan states that offsite plans for each site will be exercised biennially with full participation by each offsite authority having a role under the Plan.

13.3.1C.N.5 Regulatory Basis: 10 CFR 50, Appendix E.IV., "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.F.2.e. requires that licensees enable any State or local Government

located within the plume exposure pathway EPZ to participate in the licensee's drills when requested by such State or local Government.

Technical Information in the Emergency Plan: Section II.N.2, "Drills," of the Lee Emergency Plan states that Duke Energy, upon request, allows affected State and local governments located within the plume EPZ to participate in drills

Technical Evaluation: The Lee Emergency Plan states that the licensee will enable any State or local Government located within the plume exposure pathway EPZ to participate in the licensee's drills when requested by such State or local Government.

13.3.1C.N.6 Regulatory Basis: 10 CFR 50, Appendix E.IV., "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.F.2.f. states that remedial exercises will be required if the emergency plan is not satisfactorily tested during the biennial exercise, such that NRC, in consultation with FEMA, cannot find reasonable assurance that adequate protective measures can be taken in the event of a radiological emergency. The extent of State and local participation in remedial exercises must be sufficient to show that appropriate corrective measures have been taken regarding the elements of the plan not properly tested in the previous exercises.

Technical Information in the Emergency Plan: Section II.N, "Exercises and Drills," of the Lee Emergency Plan does not contain a statement about remedial exercises being performed if the emergency plan is not satisfactorily tested during the biennial exercise, such that NRC, in consultation with FEMA, cannot find reasonable assurance that adequate protective measures can be taken in the event of a radiological emergency. In **RAI 13.03-67,** the staff requested the applicant provide additional information on remedial exercises.

In response letters dated December 17 and December 23, 2008 the applicant has revised Section II.N.c, "Remedial Exercises," to include a discussion on remedial exercises to read as follows: "A remedial exercise is required, if it is determined that the emergency plan was not satisfactorily tested during the biennial exercise such that the NRC cannot find reasonable assurance that adequate protective measures can be taken in the event of a radiological emergency."

Technical Evaluation: The staff finds the clarification provided in the applicant's response to **RAI 13.03-67** acceptable. **Confirmatory Action NRC Item 13.03-06** was created to track this revision. The Lee Emergency Plan states that remedial exercises will be conducted if the emergency plan is not satisfactorily tested during the biennial exercise, such that NRC, in consultation with FEMA, cannot find reasonable assurance that adequate protective measures can be taken in the event of a radiological emergency. The extent of State and local participation in remedial exercises will be sufficient to show that appropriate corrective measures have been taken regarding the elements of the plan not properly tested in the previous exercises. Additional technical interface information can be located in SRP Section 17.5, "Corrective Action Program."

13.3.1C.N.7 Regulatory Basis: 10 CFR 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.F.2.g requires that all training, including exercises, provide for formal critiques in order to identify weak or deficient areas that need correction. Any weaknesses or deficiencies must be identified and corrected.

Technical Information in the Emergency Plan: Section II.N.5, "Drill and Exercise Critiques," of the Lee Emergency Plan states that critiques are conducted as soon as practicable following each exercise and include selected Duke Energy, NRC, State, local and other participants and observers/evaluators. Section II.N.5 of the Lee Emergency Plan also states that Duke Energy records input from the critique participants, evaluates the need for changes to the plan, procedures, equipment, facilities, and other components of the program and develops an action plan to address the identified substantive issues. Duke Energy tracks corrective action to completion using their corrective action program.

Technical Evaluation: The Lee Emergency Plan states that exercises have provisions for formal critiques in order to identify weak or deficient areas that need correction. Any weaknesses or deficiencies will be identified and corrected.

13.3.1C.N.8 Conclusion for Exercises and Drills

[redacted]

The staff has reviewed the onsite emergency plan and the applicant's responses to **RAI 13.03-67** in regards to Planning Standard N of NUREG-0654/FEMA-REP-1and the requirements of 10 CFR 50.47(b)(14) and Sections IV.F.2., F.2.b, F.2.c., F.2.e., F.2.g. with respect to exercise and drill training of Appendix E to 10 CFR Part 50. Final determination regarding this planning standard will be based on verification of **Confirmatory Action NRC Item 13.03-06**.

The applicant has committed to meet the following license conditions and ITAAC, with the associated dates, for the emergency preparedness program:

ITAAC:

[N.1., ITAAC 8.1] An ITAAC has been proposed to test that the licensee conducts a full participation exercise to evaluate major portions of emergency response capabilities, which includes participation by each State and local agency within the plume exposure EPZ, and each State within the ingestion control EPZ. (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

13.3.1C.O Radiological Emergency Training

13.3.1C.O.1 Regulatory Basis: 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(15); Planning Standard O requires that radiological emergency response training be provided to those who may be called on to assist in an emergency.

The staff evaluated the emergency plan against NUREG-0654/FEMA-REP-1, Planning Standard O, ARadiological Emergency Response Training.@ Planning Standard O provides the detailed evaluation criteria that the staff considered in determining whether the emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(15).

Technical Information in the Emergency Plan: [O.1.a.] Section II.O.1, "Radiological Emergency Response Training, General," of the Lee Emergency Plan states that the Lee Nuclear Station training program provides for initial training and retraining for individuals who have been assigned emergency response duties. Section II.O.1.a, "Off-site Emergency Response Training," of the Lee Emergency Plan describes training of off-site personnel likely to provide assistance at during an emergency. Training addresses: scope of the Lee Emergency Plan; emergency classification; notification methods; basic radiation protection; individuals in response organizations who direct on-site activities; definition of support roles; and, station access procedures. In **RAI 13.03-68**, the staff requested additional information on training of media representatives. Section O.1.2, "On-site Emergency Response Training," of the Lee Emergency Plan states that the training program includes those individuals that may be called upon to respond to an emergency. Training is performed prior to assignment to a position which includes practical drills consistent with Section II.N, "Exercises and Drills," of the Lee Emergency Plan. Section II.O.4.a, "Emergency Response Training and Qualification," of the Lee Emergency Plan states that Duke Energy implements a program to provide position-specific training for positions covered in Section II.O.4.a through II.O.4.j, including of-site local support personnel. Content of the training program is appropriate for the duties and responsibilities of the assigned position.

In response letters dated December 17 and December 23, 2008 the applicant stated this information is provided in Section G.5, page II-33 of the Lee Emergency Plan which states: "Annually, Duke Energy provides to affected media organizations information regarding the emergency plans, information regarding radiation hazards, and points of contact for release of public information during an emergency."

Technical Evaluation: The staff finds the clarification provided in the applicant's response to **RAI 13.03-68** acceptable and therefore resolved. The Lee Emergency Plan describes the site-specific emergency response training to be provided for the following offsite emergency organizations who may be called upon to provide assistance in the event of an emergency. Additional technical interface information is located at SRP Section 13.2.2, "Training Program."

Technical Information in the Emergency Plan: [O.2.] Section II.O.2, "On-site Emergency Response Training," of the Lee Emergency Plan states that the emergency response training program includes Duke Energy personnel who may be called upon to respond to an emergency. Training is complete prior to assignment to a position in the emergency response organization. The training program includes practical drills addressed in Section II.N, "Exercises and Drills," during which each individual demonstrate the ability to discharge the assigned emergency response function. Any erroneous performance is immediately noted during these practical drills and, proper performance demonstrated consistent with procedures and standards.

Technical Evaluation: Section II.O.2 of the Lee Emergency Plan refers to the training program for members of the onsite emergency organization. The training program includes classroom training and practical drills in which each individual demonstrates ability to perform his/her

assigned emergency function. During the practical drills, on-the-spot correction of erroneous performance will be made and a demonstration of the proper performance offered by the instructor. Additional technical interface information is located at SRP Section 13.2.2, "Training Program."

Technical Information in the Emergency Plan: **[O.3]** Section II.L.2, "On-Site First Aid Capability," of the Lee Nuclear Station Emergency Plan states that Lee Nuclear Station maintains a Medical Emergency Response Team (MERT) that is at a minimum Department of Transportation, First Responder trained. Section II.O.3, "First Aid Team Training," of the Lee Emergency Plan states that MERT members receive training in accordance with procedures.

Technical Evaluation: The Lee Emergency Plan describes training for individuals assigned to first aid teams that includes courses equivalent to Red Cross Multi-Media.

Technical Information in the Emergency Plan: [O.4] Section II.O.1, "Radiological Emergency Response Training, General," of the Lee Emergency Plan states that the training program provides for initial training and retraining for individuals assigned emergency response duties. Section II.O.1.a, "Off-site Emergency Response Training," of the Lee Emergency Plan describes training of off-site personnel likely to provide assistance at the Lee Nuclear Station site during an emergency. The program establishes the scope, nature, and frequency of the required training and qualification measures. Section O.1.2, "On-site Emergency Response Training, of the Lee Emergency Plan states that plant training requirements for Duke Energy personnel who may be called upon to respond to an emergency are established by procedure. Section II.O.4, "Emergency Response Training and Qualification," of the Lee Emergency Plan states plant training procedures establish the scope, nature, and frequency of the required training and qualification measures and may include practical drills consistent with Section II.N.

[O.4.b.] Section II.O.4.a, "Emergency Response Training and Qualification," of the Lee Emergency Plan states that Duke Energy implements a program to provide position-specific training for Personnel responsible for accident assessment. Content of the training program is appropriate for the duties and responsibilities of the assigned position.

[O.4.c.] Training Section II.O.4.a, "Emergency Response Training and Qualification," of the Lee Emergency Plan states that Duke Energy implements a program to provide position-specific training for radiological monitoring and analysis personnel. Content of the training program is appropriate for the duties and responsibilities of the assigned position.

[O.4.d.] Training Section II.O.4.a, "Emergency Response Training and Qualification," of the Lee Emergency Plan states that Duke Energy implements a program to provide position-specific training for police, security and firefighting personnel. Content of the training program is appropriate for the duties and responsibilities of the assigned position. Off-site police and firefighting personnel receive training consistent with Section II.O.1.a "Off-site Emergency Response Training," of the Lee Emergency Plan.

[O.4.e.] Training Section II.O.4.a, "Emergency Response Training and Qualification," of the Lee Emergency Plan states that Duke Energy implements a program to provide position-specific training for damage control, repair, and corrective action teams. Content of the training program is appropriate for the duties and responsibilities of the assigned position.

[O.4.f.] Training Section II.O.4.a, "Emergency Response Training and Qualification," of the Lee Emergency Plan states that Duke Energy implements a program to provide position-specific training for first aid and rescue teams. Content of the training program is appropriate for the duties and responsibilities of the assigned position.

[O.4.g.] Section II.O.4.a, "Emergency Response Training and Qualification," of the Lee Emergency Plan states that Duke Energy provides position-specific training for local support services/emergency service personnel. Content of the training program is appropriate for the duties and responsibilities of the assigned position. Section II.O.1.a, "Off-site Emergency Response Training," of the Lee Emergency Plan describes off-site emergency response personnel training.

[O.4.h.] Training Section II.O.4.a, "Emergency Response Training and Qualification," of the Lee Emergency Plan states that Duke Energy implements a program to provide position-specific training for medical support personnel. Content of the training program is appropriate for the duties and responsibilities of the assigned position.

[O.4.i.] Training Section II.O.4.a, "Emergency Response Training and Qualification," of the Lee Emergency Plan states that Duke Energy implements a program to provide position-specific training for cooperate office support personnel. Content of the training program is appropriate for the duties and responsibilities of the assigned position.

[O.4.j.] Training Section II.O.4.a, "Emergency Response Training and Qualification," of the Lee Emergency Plan states that Duke Energy implements a program to provide position-specific training for emergency communicators. Content of the training program is appropriate for the duties and responsibilities of the assigned position.

Technical Evaluation: The Lee Emergency Plan establishes a training program for instructing and qualifying personnel who will implement radiological emergency response plans. Specialized initial training and periodic retraining programs (including the scope, nature and frequency) were described for the following categories:

a. Directors and/or coordinators of the plant emergency organization
b. Personnel responsible for accident assessment, including control room shift personnel
c. Radiological monitoring teams
d. Fire control teams (fire brigades)
e. Repair and damage control teams
f. First aid and rescue teams
g. Medical support personnel
h. Licensee's headquarters support personnel
i. Security personnel

Additional technical interface information is located at SRP Section 13.2.2, "Training Program."

Technical Information in the Emergency Plan: [O.5.] Section II.O.5 "Retraining," of the Lee Emergency Plan states that annual retraining for those categories of emergency response personnel listed in Section II.O, "Radiological Emergency Response Training," is provided. Failure to successfully complete this training in a timely manner as specified in plant training program requirements results in the individual's removal from the ERO pending completion of the required training.

Technical Evaluation: The Lee Emergency Plan describes provisions for the initial and annual retraining of personnel with emergency response responsibilities. Additional technical interface information is located at SRP Section 13.2.2, "Training Program."

13.3.1C.O.2 Regulatory Basis: 10 CFR 50, Appendix E.IV., "Content of Emergency Plans." 10 CFR 50, Appendix E.IV. F.1-F.9. requires that the emergency plan describe a program to provide for: (a) The training of employees and exercising, by periodic drills, of radiation emergency plans to ensure that employees of the licensee are familiar with their specific emergency response duties, and (b) The participation in the training and drills by other persons whose assistance may be needed in the event of a radiation emergency. The description is to include specialized initial training and periodic retraining programs that is to be provided to each of the following categories of emergency personnel:

a. Directors and/or coordinators of the plant emergency organization
b. Personnel responsible for accident assessment, including control room shift personnel
c. Radiological monitoring teams
d. Fire control teams (fire brigades)
e. Repair and damage control teams
f. First aid and rescue teams
g. Medical support personnel
h. Licensee's headquarters support personnel
i. Security personnel

In addition, a radiological orientation training program is to be made available to local services personnel; e.g., local emergency services/Civil Defense, local law enforcement personnel, local news media persons.

Technical Information in the Emergency Plan: Section II.O.1, "Radiological Emergency Response Training, General," of the Lee Emergency Plan states that the training program provides for initial training and retraining for individuals assigned emergency response duties. Section II.O.1.a, "Off-site Emergency Response Training," of the Lee Emergency Plan describes training of off-site personnel likely to provide assistance at Lee Nuclear Station during an emergency. Training addresses: scope of the Lee Emergency Plan; emergency classification; notification methods; basic radiation protection; individuals in response organizations who direct on-site activities; definition of support roles; and, station access procedures. Section O.1.2, "On-site Emergency Response Training," of the Lee Emergency Plan states that the training program includes those individuals that may be called upon to respond to an emergency. Training is performed prior to assignment to a position which includes practical drills consistent with Section II.N, "Exercise and Drills," of the Lee Emergency Plan. Section II.O.4.a, "Emergency Response Training and Qualification," of the Lee Emergency Plan states that Duke Energy implements a program to provide position-specific training for emergency response directors and coordinators. Content of the training program is appropriate for the duties and responsibilities of the assigned position.

Technical Evaluation: The Lee Emergency Plan describes a program to provide for: (a) The training of employees and exercising, by periodic drills, of radiation emergency plans to ensure that employees of the licensee are familiar with their specific emergency response duties, and (b) The participation in the training and drills by other persons whose assistance may be needed in the event of a radiation emergency. The description includes specialized initial training and periodic retraining programs that will be provided to each of the following categories of emergency personnel:

a. Directors and/or coordinators of the plant emergency organization
b. Personnel responsible for accident assessment, including control room shift personnel

c. Radiological monitoring teams
d. Fire control teams (fire brigades)
e. Repair and damage control teams
f. First aid and rescue teams
g. Medical support personnel
h. Licensee's headquarters support personnel
i. Security personnel

In addition, a radiological orientation training program is to be made available to local services personnel; e.g., local emergency services/Civil Defense, local law enforcement personnel, local news media persons. Additional technical interface information is located at SRP Section 13.2.2, "Training Program."

13.3.1C.O.3 Regulatory Basis: 10 CFR 50, Appendix E.IV., "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.F.2.g. requires that all training, including exercises, provide for formal critiques in order to identify weak or deficient areas that need correction. Any weaknesses or deficiencies that are identified are to be corrected.

Technical Information in the Emergency Plan: Section II.O.4, "Emergency Response Training and Qualification" of the Lee Emergency Plan states that training programs may include practical drills consistent with Section II.N, "Exercises and Drills," of the Lee Emergency Plan. Instructors or evaluator immediately correct any erroneous action. If appropriate, performance consistent with procedure will be demonstrated.

Technical Evaluation: The Lee Emergency Plan provides for formal critiques of exercises in order to identify weak or deficient areas that need correction. Any weaknesses or deficiencies that are identified will be corrected. Additional technical interface information is located at SRP Section 13.2.2, "Training Program."

13.3.1C.O.4 Conclusion for Radiological Emergency Training

On the basis of its review of the onsite emergency plan and the response to **RAI 13.03-68** as described above for radiological emergency response training, the staff concludes that the information provided in the Lee Emergency Plan is consistent with Planning Standard O of NUREG-0654/FEMA-REP-1. Therefore, the information is acceptable and meets the requirements of 10 CFR 50.47(b)(15) and Sections IV.F.1 and applicable portions of F.2.g. of Appendix E to 10 CFR Part 50.

13.3.1C.P Responsibility for the Planning Effort: Development, Periodic Review and Distribution of Emergency Plans

13.3.1C.P.1 Regulatory Basis: 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(16); Planning Standard P requires that the emergency plan describe the responsibilities for emergency plan development and review and for distribution of the emergency plans. In addition, planners must be properly trained.

The staff evaluated the emergency plan compared to NUREG-0654/FEMA-REP-1, Planning Standard P, "Responsibility for the Planning Effort: Development, Periodic Review and Distribution of Emergency Plans." Planning Standard P provides the detailed evaluation criteria that the staff should consider in determining whether the emergency plan met the applicable regulatory requirements in 10 CFR 50.47(b)(16).

Technical Information in the Emergency Plan: [P.1.] Section II.P.1, "Training", of the Lee Emergency Plan describes the process used to provide training for the Emergency Preparedness Manager and support staff to facilitate effective implementation of the emergency planning effort, consistent with applicable regulatory requirements and guidance, license conditions, other commitments, and accepted good practices. Training may include formal education, professional seminars, plant-specific training, industry meetings, and other activities and forums that provide for an exchange of pertinent information.

Technical Evaluation: The Lee Emergency Plan describes the training that will be provided for individuals responsible for the planning effort.

Technical Information in the Emergency Plan: [P.2.] Section II.P.2, "Responsibility for Radiological Emergency Response Planning," of the Lee Emergency Plan, discussed the responsibility of plan development. The Lee Emergency Plan states that the Site Vice President is the overall authority for ensuing that there is an appropriate level of emergency preparedness at the site. The responsibility for the actual planning effort is delegated to the Emergency Preparedness Planning Manager.

Technical Evaluation: The Lee Emergency Plan identifies the individual by title with the overall authority and responsibility for radiological emergency response planning.

Technical Information in the Emergency Plan: [P.3.] Section II.P.3, "Emergency Planning Manager," of the Lee Emergency Plan, describes the Emergency Planning Manager position. The incumbent is responsible for developing and updating the Emergency Plan and coordinating with other response organizations.

Technical Evaluation: The Lee Emergency Plan designates an Emergency Planning Coordinator with responsibility for the development and updating of emergency plans and coordination of these plans with other response organizations.

Technical Information in the Emergency Plan: [P.4.] Section II.P.4, "Plan Reviews and Updates," of the Lee Emergency Plan states that the Lee Emergency Plan is updated as needed and certified to be current on an annual basis. The main resource to identifying the need to change the plan is through drills and exercises.

Technical Evaluation: The Lee Emergency Plan describes provisions for updating the emergency plan and agreements as needed, and reviewing and certifying it to be current on an annual basis. In addition, the updating provisions described take into account changes identified by drills and exercises.

Technical Information in the Emergency Plan: [P.5.] Section II.P.5, "Distribution of Revised Plans," of the Lee Emergency Plan, covers the distribution of the revised plans. The

Emergency Planning Manager or designee makes needed changes to the Lee Emergency Plan. The pages that are changed are marked and dated to indicate the change. The Lee Nuclear Station Site Vice President reviews and approves the changes. Changes to the Lee Emergency Plan are submitted to NRC for approval in accordance with the requirements in 10 CFR 50.54(q). The approved revised plans are distributed through the Lee Nuclear Station document control organization.

Technical Evaluation: The Lee Emergency Plan states that the emergency response plans and approved changes to the plan will be forwarded to all organizations and appropriate individuals with responsibility for implementation of the plan. The Lee Emergency Plan also states that revised pages will be dated and marked to show where changes have been made.

Technical Information in the Emergency Plan: [P.6.] Section II.P.6, "Supporting Plans," of the Lee Nuclear Station Emergency, provides a list of the State and county plans.

Technical Evaluation: The Lee Emergency Plan contains a detailed listing of supporting plans and their source.

Technical Information in the Emergency Plan: [P.7.] Appendix 5, "Implementing Procedures" of the Lee Emergency Plan provides topical listing of EPIPs that support the plan, however, the Lee Emergency Plan calls out procedures that do not appear to be listed in the topical list. In **RAI 13.03-69(A),** the staff requested the applicant provide information about procedures that are discussed in the plan, but listed in Appendix 5.

In response letters dated December 17 and December 23, 2008 the applicant stated that Emergency plan implementing procedures (EPIPs) are addressed in FSAR Table 13.4-201 and in Licensing Condition #6, Operational Programs, Part 10, of the COL Application. Detailed EPIPs will be submitted at least 180 days prior to initial fuel loading. These EPIPs will address: source term determination, assessment of radioactive release to the environment, assessment of actual and potential radiological hazards through liquid or gaseous releases, and comparison of projected and actual dose rates to protective action guidelines. The applicant also stated that the list of topic areas in Appendix 5 is not to be viewed as a list of procedures. Each topic area may include multiple procedures. The applicant provided a list of applicable procedures covered under topic areas presented in Appendix 5.

Technical Evaluation: The staff finds the additional information provided in the applicant's response to **RAI 13.03-69 (A)** acceptable and therefore resolved. The Lee Emergency Plan contains as an appendix, a listing of the procedures by title that are required to implement the plan. The listing includes the section(s) of the plan to be implemented by each procedure.

Technical Information in the Emergency Plan: [P.8.] The format for this Emergency Plan directly follows the format of NUREG-0654, Rev. 1. Appendix 8, "Cross-References to Regulations, Guidance, and State and Local Plans," provides a cross reference for regulatory requirements (includes Appendix E) and NUREG-0654.

Technical Evaluation: The Lee Emergency Plan contains a table of contents. In addition, the Lee Emergency Plan contains a cross-reference listing to the Evaluation Criteria in NUREG-0654/ FEMA-REP-1.

Technical Information in the Emergency Plan: [P.9.] Section II.P.9, "Emergency Plan Audits," describes Duke Energy's Nuclear Performance Assessment organizations independent audit of the Lee Nuclear Station emergency preparedness program. The organization oversees

the performance of, periodic independent audits of the emergency preparedness program consistent of 10 CFR 50.54(t). Frequency of the periodic audits is based on an assessment of performance, but all elements of the EP program must be reviewed at least once every 24 months. Section II.P.9 states the independent audit must be conducted at least every 12 months. In **RAI 13.03-69(B),** the staff requested the applicant provide an explanation for the audits being conducted not less than once every 24 months. An audit is performed after a change occurs in personnel, procedures, equipment, or facilities that potentially could adversely affect EP, but no longer than twelve months after the change. Audit results are documented and improvement recommendations sent to Lee Nuclear Station facility and Duke Energy management. Duke Energy's Records Management shall file and maintain records of this for five years.

In response letters dated December 17 and December 23, 2008 the applicant stated Periodic audits will be conducted at 12 month intervals in accordance with 10 CFR 50.54(t)(1)(i) as stated but the interval may be extended to 24 months, as provided in 10 CFR 50.54(t)(1)(ii), based upon an assessment of Licensee performance indicators. First tier indicators from NEI 99-02 and Second Tier indicators developed by Duke, were provided with the response.

Technical Evaluation: The staff finds the additional information provided in the applicant's response to **RAI 13.03-69 (B)** acceptable and therefore resolved. The Lee Emergency Plan describes arrangements for and conducts of independent reviews of the emergency preparedness program at least every 12 months. The review will include the emergency plan, its implementing procedures and practices, training, readiness testing, equipment, and interfaces with State and local governments. Management controls are described for evaluation and correction of review findings. The result of the review, along with recommendations for improvements, will be documented, reported to appropriate licensee corporate and plant management, and involved Federal, State and local organizations, and retained for a period of five years.

Technical Information in the Emergency Plan: [P.10.] Section II.P.10, "Emergency Telephone Numbers," of the Lee Emergency Plan, states that the Emergency Planning Manager (or designee) is responsible for performing a quarterly review of the telephone numbers in emergency response procedures and for ensuring required revisions is completed.

Technical Evaluation: Section II.P.10, "Emergency Telephone Numbers," of the Lee Emergency Plan, states that the Emergency Planning Manager (or designee) is responsible for performing a quarterly review of the telephone numbers in emergency response procedures and for ensuring required revisions is completed.

13.3.1C.P.2 Regulatory Basis: 10 CFR 50, Appendix E.IV., "Content of Emergency Plans." 10 CFR 50, Appendix E.IV.G. requires the description of provisions to be employed to ensure that the emergency plan, its implementing procedures, and emergency equipment and supplies are maintained up-to-date.

Technical Information in the Emergency Plan: Emergency plans are updated as needed on an annual basis. Equipment, discussed in Appendix 6, "Emergency Equipment and Supplies," is inventoried based on implementing procedures.

Technical Evaluation: The Lee Emergency Plan describes provisions to be employed to ensure that the emergency plan, its implementing procedures, and emergency equipment and supplies are maintained up-to-date.

13.3.1C.P.3 Conclusion for Responsibility for the Planning Effort: Development, Periodic Review and Distribution of Emergency Plans

On the basis of its review of the onsite emergency plan and responses to **RAI 13.03-69(A)** and **(B)** as described above for responsibility for the planning effort, the staff concludes that the information provided in the Lee Emergency Plan is consistent with Planning Standard P of NUREG-0654/FEMA-REP-1. Therefore, the information is acceptable and meets the requirements of 10 CFR 50.47(b)(16) and Section IV.G. of Appendix E to 10 CFR Part 50.