

1 **Appendix C - Onsite Emergency Plan**

2
3 **Highlighting codes –**

4
5 **Red highlight – NRC questions or things to check**

6
7 **Yellow/Magenta highlight/Lime green highlights – NRC wording or**
8 **additions that PNNL did not modify**

9
10 **Blue lettering – PNNL additions**

11 **Red lettering – PNNL changes to the original NRC wording**

12
13 **General Comment –**

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

18
19 **13.3.1C Introduction**

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

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

33 The following subsections describe the staff’s evaluation of the onsite emergency plan for Lee
34 Nuclear Station and parallels the Planning Standards and Evaluation Criteria in NUREG-
35 0654/FEMA-REP-1 issued November 1980, and the March 2002 addenda.

36

1 **13.3.1C.A Assignment of Responsibility (Organizational Control)**
2

3 **13.3.1C.A.1 Regulatory Basis:** 10 CFR 50.47, “Emergency Plans.” 10 CFR 50.47(b)(1)
4 requires that primary responsibilities for emergency response by the nuclear facility licensee
5 and by State and local organizations within the EPZs [Emergency Planning Zones] be assigned,
6 the emergency responsibilities of the various supporting organizations be specifically
7 established, and each principal response organization has sufficient staff to respond and to
8 augment its initial response on a continuous basis.

9 The NRC staff evaluated the emergency plan against NUREG-0654/FEMA-REP-1, Planning
10 Standard A, “Assignment of Responsibility (Organizational Control).” The detailed evaluation
11 criteria¹ that the staff considered in determining whether the emergency plan met the applicable
12 regulatory requirements in 10 CFR 50.47(b)(1) and Planning Standard A are taken from
13 NUREG-0654/FEMA-REP-1.

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

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

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

41 **Technical Evaluation:** The Lee Emergency Plan describes the applicant’s operational role, its
42 concept of operations, and its relationship to the total effort.
43

44 **Technical Information in the Emergency Plan: [A.1.c.]** Section II.A.1.c, “Organizational
45 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).

1 interrelationships of all organizations participating in emergency response (Figure II-1,
2 “Emergency Response Organization Interrelationships). The diagram does not show specific
3 State and local agencies. The relationships are only shown by organization and not by position
4 or title. The diagram does not make clear how organizations interact with each other. In **RAI**
5 **13.03-54(B)** the NRC staff requested the applicant provide in the diagram, the specific positions
6 or titles of the organizations that will interact during an emergency, and how the organizations
7 interact with each other.

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

15 **Technical Evaluation:** Additional information related to the specific positions or titles of the
16 emergency response organizations that will interact during an emergency was requested in RAI
17 13.03-54(B). The applicant stated this information would be provided when available. Since
18 this information needs to be included in the Emergency Plan, the NRC staff has requested that
19 this information be provided. When received, the NRC staff will review the details provided in
20 the response to RAI 13.03-54 (B) regarding the requested information. This issue will be
21 tracked as **Open Item 13.3-01**. The Lee Emergency Plan also illustrates these interrelationships
22 in a block diagram.
23

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

27 **Technical Evaluation:** A specific individual was identified by title that shall be in charge of the
28 emergency response.
29

30 **Technical Information in the Emergency Plan: [A.1.e.]** Section II.A.1.e., “24 Hour
31 Emergency Response Capability,” of the Lee Emergency Plan states that the station does have
32 24 hour emergency response capability, communications links are manned, and multiple
33 responders are trained for key emergency response positions, consistent with the training
34 requirements established in Section II.O, “Radiological Emergency Response Training,” of the
35 Lee Emergency Plan.

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

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

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

1 **Technical Evaluation:** In RAI 13.03-54(C), staff requested the applicant provided additional
2 information related in certification letters. In response the applicant stated Letters of Agreement
3 with affected organizations will be developed and submitted on a schedule that supports NRC
4 inspection activities and the full participation emergency exercise required by 10 CFR 50,
5 Appendix E, Section IV.F.2. The NRC staff has requested Letters of Agreement with affected
6 organizations be provided when available. Since the applicant is required to provide Letters of
7 Agreement in their Emergency Plan, the development and submittal of Letters of Agreement
8 with affected organizations is tracked as **Open Item 13.03-02**. The Lee Emergency Plan
9 includes written agreements referring to the concept of operations developed between Federal,
10 State, and local agencies and other support organizations having an emergency response role
11 within the EPZs. The agreements identify the emergency measures to be provided and the
12 mutually acceptable criteria for their implementation, and specify the arrangements for
13 exchange of information. These agreements which are provided in an appendix to the plan
14 contain descriptions of these matters.

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

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

27

28 **13.3.1C.A.2 Regulatory Basis:** 10 CFR 50, Appendix E. Section III., "The Final Safety
29 Analysis Report," requires that onsite emergency plans be an expression of the overall concept
30 of operation by describing the essential elements of advance planning that have been
31 considered and the provisions that have been made to cope with emergency situations. The
32 plans must also incorporate information about the emergency response roles of supporting
33 organizations and offsite agencies. The information in the onsite emergency plan shall be
34 sufficient to provide assurance of coordination among the supporting groups and with the
35 licensee.

36 **Technical Information in the Emergency Plan:** The Lee Nuclear Station FSAR Section 13.3-
37 2, "Combined License Information Item," states: "The emergency plan describes the plans for
38 coping with emergency situations, including communications interfaces and staffing of the
39 emergency operations facility." This is the extent the FSAR describes the emergency plan.
40 Section II, "Emergency Plan," Subsections A through F; of the Lee Emergency Plan contain
41 supporting information. Section 13.3, "Emergency Planning," of the FSAR (FSAR incorporates
42 the Design Control Document (DCD) by reference). Communication interfaces among the main
43 control room, the technical support center and the emergency planning centers are discussed in
44 Section 13.3.1, "Combined License Information Item." Section 13.3.1 states "COL applicants
45 referencing the AP1000 certified design will address emergency planning including post-72 hour
46 actions and its communication interface, as well as the activation of the emergency operations
47 facility." These plans are said to be consistent with current operating practice and NUREG-
48 0654/FEMA-REP-1. FSAR Section 18.8, "Human System Interface Design," provides the high

1 level requirements for the technical support center and the operational support center. FSAR
2 Section 7.5, "Safety Related Display Information," provides identification of plant variables that
3 are provided for interface to the emergency planning areas.
4

5 **Technical Evaluation:** The Lee Emergency Plan provides an expression of the overall concept
6 of operation by describing the essential elements of advance planning that have been
7 considered and the provisions that have been made to cope with emergency situations. The
8 Lee Emergency Plan also incorporates information about the emergency response roles of
9 supporting organizations and offsite agencies. The information in the onsite emergency plan is
10 sufficient to provide assurance of coordination among the supporting groups and with the
11 licensee.
12

13 **13.3.1C.A.3 Regulatory Basis:** Section IV.A.8. of Appendix E "Content of Emergency
14 Plans," to 10 CFR 50, "Emergency Planning and Preparedness for Production and Utilization
15 Facilities" requires the identification of State and local officials responsible for planning for,
16 ordering, and controlling appropriate protective actions, including evacuations when necessary.

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

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

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

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

44 Within the State of North Carolina, the Department of Environment and Natural
45 Resources (DENR), Division of Environmental Health recommends protective actions for
46 the public. The Department Of Crime Control and Public Safety (CCPS) is responsible
47 for providing PARs to the Governor, who is responsible for ordering protective actions.

1 The Director, North Carolina Division of Emergency Management (NCEM), is
2 responsible for planning, organizing, directing and supervising emergency operations
3 conducted by the State. In the event of a rapidly-developing emergency condition that
4 requires implementation of PARs before the State Emergency Operations Center can be
5 activated, the Chairman of the Board of County Commissioners may implement the
6 facility recommended PARs without prior consultation with the Department of
7 Environment and Natural Resources, Division of Environmental Health, and the
8 Governor.

9 **Technical Evaluation:** The staff finds the additional information and textual revisions provided
10 in the applicant's response to RAI 13.03-54(A) to be acceptable. **Confirmatory Action NRC**
11 **13.03-01** was created to track these revisions. The Lee Emergency Plan identifies State and/or
12 local officials responsible for planning for, ordering, and controlling appropriate protective
13 actions, including evacuations when necessary.

14

15 **13.3.1C.A.4 Conclusion for Assignment of Responsibility (Organizational Control)**

16 The NRC staff has reviewed the onsite emergency plan and the applicant's responses to RAI
17 13.03-54(A) through (C) in regards to Planning Standard A of NUREG-0654/FEMA-REP-1. The
18 NRC will determine whether this planning standard is acceptable and document its
19 determination in the Final Safety Evaluation Report (FSER), based on information the applicant
20 has provided to date, verification of Confirmatory Action Items, and the applicant's response to
21 Open Items. The staff identified the following Open Items and Confirmatory Actions as needing
22 to be resolved before concluding that the Lee Emergency Plan meets applicable requirements:

23 - The applicant stated that details regarding specific titles or positions that will interact during an
24 emergency will be provided when available. The need to identify the specific positions or titles
25 of the organizations that will interact during an emergency is tracked as **Open Item 13.03-01**.

26
27 - The applicant stated Letters of Agreement with affected organizations will be developed and
28 submitted on a schedule that supports NRC inspection activities and the full participation
29 emergency exercise required by 10 CFR 50. The development and submittal of Letters of
30 Agreement with affected organizations is tracked as **Open Item 13.03-02**.

31
32 - The applicant revised section A.1.b of the Lee Emergency Plan to identify by title, the State
33 and local officials that will be responsible for implementing offsite protective actions.

34 **Confirmatory Action NRC 13.03-01** was created to track these revisions.

35
36 Upon resolution of these items, Section a of the Lee Emergency Plan will be consistent with
37 Planning Standard A of NUREG-0654/FEMA-REP-1 and will meet the requirements of 10 CFR
38 50.47(b)(1) and applicable parts of Section III and Section IV.A.8 of Appendix E to 10 CFR Part
39 50.]

40

1 **13.3.4C.B Onsite Emergency Organization**

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

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

12 **Technical Information in the Emergency Plan: [B.1]** Section II.B, "Onsite Emergency
13 Organization," of the Lee Emergency Plan states that minimum staff required to conduct routine
14 and immediate emergency operations is maintained at the station consistent with Appendix E of
15 10 CFR 50. Staffing is described in FSAR Section 13.1, "Organizational Structure of Applicant,"
16 (reference from the DCD). Table 13.1-201, "Generic Position/Site Specific Position Cross
17 Reference," provides generic titles and functions provided. Figure II-2, "Emergency Response
18 Organization—Site Only," and Figure II-3, "Off-Site Emergency Response Organization," in the
19 Lee Emergency Plan show the high level organizations that will be located in the ERFs, but
20 there are no details of the actual functions and titles of staff that will be located in these blocks
21 on the diagrams. In **RAI 13.03-55(B)** the NRC staff requested that the applicant provide details
22 regarding staffing of the ERFs. Normal staffing is expected to fulfill corresponding roles within
23 the emergency response organization.

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

33 **Technical Evaluation:** The staff finds the applicant's response to RAI 13.03-55(B) acceptable
34 and therefore resolved. The Lee Emergency Plan specifies the onsite emergency organization
35 of plant staff personnel for all shifts and its relation to the responsibilities and duties of the
36 normal staff complement.

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

44 **Technical Evaluation:** The applicant designated an individual as emergency coordinator who
45 shall be on shift at all times, and who shall have the authority and responsibility to immediately
46 and unilaterally initiate any emergency actions, including providing protective action
47 recommendations to authorities responsible for implementing offsite emergency measures.

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

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

18 **Technical Evaluation:** In RAI 13.03-55(C), the NRC staff requested that the applicant
19 describe the reasons why or situations where a higher level of Duke Energy management might
20 take over from the Shift Manager. In response the applicant provided additional information to
21 adequately address the RAI. Since this information was not previously included in the
22 emergency plan, the NRC staff has requested that the information provided in response to RAI
23 13.03-55(C) also be included in the Lee Emergency Plan. This issue will be tracked as **Open**
24 **Item 13.03-3**. In addition, the Lee Emergency Plan identifies a line of succession for the
25 Emergency Coordinator position, and identifies the specific conditions for higher level utility
26 officials assuming this function.

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

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

40 **Technical Information in the Emergency Plan: [B.5]** Section II.B, “Onsite Emergency
41 Organization,” of the Lee Emergency Plan states that positions, title and major tasks to be
42 performed by the persons assigned to the functional areas of emergency activity at the station
43 are said to be described in EIPs. These assignments shall cover the emergency functions in
44 Table II-2, “Plant Staff Emergency Functions.” There are several positions in Table II-2 that do
45 not have sufficient detail to determine that the correct individual is assigned to the functional
46 area. There is no position identified to address the following activities: accountability,
47 decontamination and public information. The NRC staff requested this information be provided
48 in **REMOVED the reference to RAI 13.03-55(F) through (Q). These appear to be in the**

1 wrong location and should be under 13.3.1C.B.2. The reasoning behind this move –
2 these RAIs all relate to Table II-2 and staffing and are not specifically related to
3 accountability, decontamination and public information. They are NRC RAIs and NRC
4 needs to determine if this is the correct location for the responses. RAI 13.03-55(A)
5 relates specifically to accountability, decontamination and public information.] RAI 13.03-
6 55(A). Minimum on-shift staffing and goals for providing additional resources after declaration
7 of an emergency are also indicated in Table II-2.

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

16 **Technical Evaluation:** The staff finds the additional information provided in the applicant's
17 response to RAI 13.03-55(A) acceptable and therefore resolved. The Lee Emergency Plan
18 specified the positions or title and major tasks to be performed by the persons to be assigned to
19 the functional areas of emergency activity. For emergency situations, specific assignments
20 were made for all shifts and for plant staff members, both onsite and away from the site. These
21 assignments covered the emergency functions in Table B-1, "Minimum Staffing Requirements
22 for Nuclear Power Plant Emergencies." The minimum on-shift staffing levels were as indicated
23 in Table B-1. The applicant described the augmentation of on-shift capabilities within a short
24 period after declaration of an emergency. This capability was indicated in Table B-1 of the Lee
25 Emergency Plan.

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

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

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

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

4 **Technical Evaluation:** The staff finds the additional information provided in the applicant's
5 response to RAI 13.03-55(D) acceptable and therefore resolved. The Lee Emergency Plan
6 specified the corporate management, administrative, and technical support personnel who will
7 augment the plant staff, as specified in NUREG-0654/FEMA –REP-1, Table B-1, "Minimum
8 Staffing Requirements for Nuclear Power Plant Emergencies," in the following areas:

- 9 a. logistics support for emergency personnel, e.g., transportation, communications,
10 temporary quarters, food and water, sanitary facilities in the field, and special equipment
11 and supplies procurement;
- 12 b. technical support for planning and reentry/recovery operations;
- 13 c. management level interface with governmental authorities;
- 14 d. release of information to news media during an emergency (coordinated with
15 governmental authorities).
16

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

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

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

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

39 **Technical Evaluation:** The staff finds the additional information and textual revisions provided
40 in the applicant's response to RAI 13.03-55(E) to be acceptable with one exception.

41 **Confirmatory Action NRC 13.03-02** was created to track the revision to II.B.8. In RAI 13.03-
42 55(E), the NRC staff requested the applicant provide the names of the other
43 engineering/technical services support firms and other consultants and vendors, as well as the
44 supporting MOUs/MOAs. The applicant stated that additional engineering and technical
45 services support firms have not yet been identified, but details regarding arrangements and
46 supporting Letters of Agreement will be developed when available. Since guidance requires
47 these letters of agreement be submitted with the emergency plan, the NRC staff has requested

1 this information be provided. The development and submittal of Letters of Agreement with
2 additional engineering and technical services support firms is tracked as **Open Item 13.03-04**.
3 The Lee Emergency Plan specified the contractor and private organizations that may be
4 requested to provide technical assistance to, and augmentation of, the emergency organization.

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

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

14 **Technical Evaluation:** The staff finds the additional information and textual revisions provided
15 in the applicant's response to RAI 13.03-55(E) to be acceptable with one exception.

16 **Confirmatory Action NRC 13.03-02** was created to track the revision to II.B.8. In RAI 13.03-
17 55(E), the NRC staff requested the applicant provide the names of the other
18 engineering/technical services support firms and other consultants and vendors, as well as the
19 supporting MOUs/MOAs. The applicant stated that additional engineering and technical
20 services support firms have not yet been identified, but details regarding arrangements and
21 supporting Letters of Agreement will be developed when available. Since guidance requires
22 these letters of agreement be submitted with the emergency plan, the NRC staff has requested
23 this information be provided. The development and submittal of Letters of Agreement with
24 additional engineering and technical services support firms is tracked as **Open Item 13.03-04**.
25 The Lee Emergency Plan also identified the services to be provided by local agencies for
26 handling emergencies (e.g., police, ambulance, medical, hospital, and fire-fighting
27 organizations). The applicant provided for transportation and treatment of injured personnel
28 who may also be contaminated. Copies of the arrangements and agreements reached with
29 contractor, private, and local support agencies were appended to the plan. The agreements
30 delineated the authorities, responsibilities, and limits on the actions of the contractor, private
31 organization, and local services support groups.

32
33 **13.3.1C.B.2 Regulatory Basis:** 10 CFR 50, Appendix E.IV., "Content of Emergency Plans."
34 10 CFR 50, Appendix E.IV.A.1. requires that the emergency plan describe the normal plant
35 operating organization.

36 **Technical Information in the Emergency Plan:** The Lee Nuclear Station FSAR, Section 13.1,
37 "Organizational Structure of Applicant," (referenced from the DCD) describes staffing. Table
38 13.1-201, "Generic Position/Site Specific Position Cross Reference," provides generic titles and
39 functions. Section II of the Lee Emergency Plan, Table II-2, "Plant Staff Emergency Functions,"
40 provides the on-site normal plant organization by position, title or expertise as related to the
41 functional area. **MOVED FROM SECTION B.5 NRC RAIs** In **RAI 13.03-55(F) through (Q)**,
42 the staff requested additional information regarding information presented in Table II-2 as
43 summarized below:

44 In **RAI 13.03-55 (F)** the staff requested the applicant justify extending the augmentation time
45 from 60-75 minutes. In response letters dated December 17 and December 23, 2008 the
46 applicant stated that based on experience at the existing facilities, the plant staff is capable of
47 carrying out the initial emergency response activities prior to activation of the emergency

1 response facilities and that the proposed staff augmentation times of 75 minutes does not
2 adversely affect emergency response capabilities. The applicant also stated that the 75-minute
3 staffing goal is consistent with the minimum staffing requirements previously approved for the
4 emergency response facilities of Duke's Oconee, McGuire, and Catawba Nuclear Stations.

5
6 In **RAI 13.03-55 (G)** the staff requested the applicant provide additional information regarding
7 the SRO/STA combined position and specify the applicable mode ensuring that this emergency
8 response function is staffed in all operating modes. In response letters dated December 17 and
9 December 23, 2008 the applicant stated that the individual filling the combined emergency
10 response roles of the SRO/STA position is expected to delegate responsibilities as needed to
11 focus on the highest priority activities as needed to protect the public health and safety. The
12 operator training program for SROs has been modified to include the accident assessment skills
13 that a Shift Technical Advisor (STA) would possess. By virtue of training and testing all SROs in
14 the performance of SRO as well as STA duties,' a single individual can perform the dual role of
15 SRO/STA. the dual role was endorsed by the NRC in GL 86-04 and has been implemented at
16 existing-operating stations. Based on the information provided, the applicant does not believe
17 that the combination of these positions will impair the emergency response capabilities of the
18 on-shift staff.

19
20 In **RAI 13.03-55 (H)** staff requested the applicant provided additional information regarding
21 how/why the emergency response functions are filled for all operating modes. In response
22 letters dated December 17 and December 23, 2008 the applicant stated that Table II-2 indicates
23 that there are two Radiation Protection technicians on shift and that one chemistry technician
24 and a senior Radiation Protection expert will be available within 75 minutes. Note 5 of FSAR
25 Table 13.1-202 states a chemistry technician will be onsite during plant operation in all modes
26 other than cold shutdown and refueling. The applicant also stated that minimum shift crew size
27 will always be maintained in a fashion consistent with 10 CFR 50.54 and the plant Technical
28 Specifications.

29
30 In **RAI 13.03-55 (I)** the staff requested the applicant clarify why three Non-Licensed Operators
31 are not listed in Table II-2. In response letters dated December 17 and December 23, 2008 the
32 applicant stated that FSAR Table 13.1-202 and Table II-2 in the Lee Emergency Plan contain
33 the same information but are presented differently. The minimum number of non-licensed
34 operators required to support a two-unit plant both operating under emergency conditions is
35 four.

36
37 In **RAI 13.03-55 (J)** the staff requested the applicant provide additional information regarding
38 the functions the remaining eight individuals at the unaffected unit will perform in the event of an
39 emergency at the other unit. In response letters dated December 17 and December 23, 2008
40 the applicant stated that during an emergency, the Operations Shift Manager, one Unit
41 Supervisor, 2 Reactor Operators, 2 Non-Licensed Operators and the Shift Technical Advisor will
42 be available to support the emergency as shown in Table 11-2 of the Lee Emergency Plan.
43 Additional staff may be assigned to support by the Emergency Coordinator as a communicator.
44 One of the Reactor Operators or Non-Licensed Operators may fill this role. Remaining staff will
45 continue to operate their unit. The applicant also stated that minimum staffing for the unaffected
46 Unit will be consistent with Table 13.1-202 of the FSAR.

47
48 In **RAI 13.03-55 (K)** the staff requested the clarification regarding staff augmentation as
49 discussed in footnote 3 of Table II-2. In response letters dated December 17 and December 23,
50 2008 the applicant stated that Footnote 3 on page II-2 of the Lee Emergency Plan reflects a
51 common sense approach to staffing of the emergency response facilities. The applicant does

1 not intend to staff the facilities for a condition that no longer exists and requires no follow-up
2 action by the augmented staff. The applicant also stated that guidance provided in NEI 99-01
3 addresses whether or not the facility should declare an emergency for a transient event and
4 does not preclude implementation of a common sense approach to facility staffing. As indicated
5 in Footnote 1 on page 11-2 of the Lee Emergency Plan, the transient event would be properly
6 classified and required notifications would be made.
7

8 In **RAI 13.03-55 (L)** the staff requested the applicant provide additional information regarding
9 EOF, TSC and OSC activation, operation, full operation time capabilities with respect to staffing
10 levels. In response letters dated December 17 and December 23, 2008 the applicant stated
11 that Section II.B.5 of the Lee Emergency Plan states that the goal for activation of the full on-site
12 emergency response organization is 75 minutes. The EOF has the same activation goal but
13 additional time is allotted for turnover of TSC functions to the EOF.
14

15 In **RAI 13.03-55 (M)** the staff requested the applicant provide additional information regarding
16 the specific emergency responder assignments for dose assessment on-shift, and how on-shift
17 and augmented staff functional assignments for this activity meet or exceed NUREG-0654
18 augmentation guidance, as you commit on page II-12. In response letters dated December 17
19 and December 23, 2008 the applicant stated that offsite dose assessment is not an on-shift
20 function according 10 CFR 50, NUREG-0654 or the Lee Emergency Plan and is performed by
21 the dose assessors located in the EOF (offsite). Emergency classification of events, on-site
22 protective actions, and off-site protective action recommendations by on-shift staff are based on
23 radiological monitoring and event diagnosis.
24

25 In **RAI 13.03-55 (N)** the staff requested the applicant provide clarification regarding emergency
26 response functions described in Table II-1 and II-2. In response letters dated December 17 and
27 December 23, 2008 the applicant stated that the purpose of Table II-1 in the Lee Emergency
28 Plan is to replicate the licensee responsibilities provided in Table 1 of NUREG-0696. This table
29 is not a line-by-line cross-reference to Table 1. Inconsistencies between the tables are due to
30 inconsistencies in guidance documents. The applicant also stated that there are no plans to
31 transfer functions between facilities due to escalation of the emergency class with regard to
32 firefighting, rescue, and security functions so they are not included in Table II-1.
33

34 In **RAI 13.03-55 (O)** the staff requested the applicant provide clarification regarding how the
35 narrative in Section B.1 applies to personnel assignments and capabilities listed in Table 11-2.
36 In response letters dated December 17 and December 23, 2008 the applicant stated that
37 Section II.B.1 of the Lee Emergency Plan discusses the on-shift plant staff and their
38 responsibilities which are reflected in Table II-2. The applicant also stated that assignments are
39 consistent with the individuals' normal duties although some individuals may have additional
40 emergency response duties, such as fire-fighting and first aid, for which they are specifically
41 trained.
42

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

1 schedule to support execution of the emergency exercise required by 10 CFR 50, Appendix E,
2 Section IV.F.2.
3

4 In **RAI 13.03-55 (P)(2)** the staff requested the applicant clarify how a 75 minute timeliness to
5 fulfill the dose assessment function is in accordance with regulations and meets or exceeds
6 NUREG-0654 guidance. In response letters dated December 17 and December 23, 2008 the
7 applicant stated that 10 CFR 50 Appendix E, IV.B, NUREG-0654, and 10 CFR 50.47(b), do not
8 describe a requirement for on-shift dose assessment personnel. NUREG-0654 Table B.1
9 describes that a dose assessment function be available within 30 minutes, however the
10 applicant feels that the requirement can be relaxed due to (a) the enhanced safety of the
11 AP1000 design; (b) the training of the on-shift Operations staff to provide PARs based on
12 radiological monitoring and event diagnosis; and (c) the availability of the dose assessment
13 function within 75 minutes with the remainder of the ERO.
14

15 In **RAI 13.03-55 (P)(3)** the staff requested the applicant clarify whether the activation time clock
16 initiates upon declaration of the emergency classification or some other initiator. In response
17 letters dated December 17 and December 23, 2008 the applicant stated the activation time
18 clock initiates upon declaration of an emergency that requires activation.
19

20 In **RAI 13.03-55 (Q)** the staff requested the applicant provide additional information regarding
21 where this capability exists and align other references in the emergency plan, in tables such as
22 Tables II-1 and II-2. In response letters dated December 17 and December 23, 2008 the
23 applicant stated that dose assessment functions are performed using a computer program
24 called Raddose-V. The program can be run from the Control Room, TSC, and EOF or at other
25 Duke facilities if necessary. Following activation of the emergency response facilities, dose
26 assessment functions are normally completed in the EOF.
27

28 **Technical Evaluation:** RAIs 13.03-55 (F) through (Q) were submitted by NRC HQ and were
29 not part of the PNNL review. PNNL did not evaluate the adequacy of the RAI responses.] The
30 Lee Emergency Plan describes the normal plant operating organization.
31

32 **13.3.1C.B.3 Regulatory Basis:** 10 CFR 50, Appendix E.IV., "Content of Emergency Plans."
33 10 CFR 50, Appendix E.IV.A.2.a requires that the emergency plan describe the onsite
34 emergency response organization with a detailed discussion of the authorities, responsibilities,
35 and duties of the individual(s) who will take charge during an emergency.

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

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

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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 EIPs. 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, 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

1 local authorities by the emergency coordinator. The communication process is outlined in
2 Section II.E.1, "Notification of State and Local Authorities," of the Lee Emergency Plan.

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

7
8 **13.3.1C.B.7 Regulatory Basis:** 10 CFR 50, Appendix E.IV., "Content of Emergency Plans."
9 10 CFR 50, Appendix E.IV.A.5. requires that the emergency plan identify, by position and
10 function to be performed, other employees of the licensee with special qualifications for coping
11 with emergency conditions that may arise. Other persons with special qualifications, such as
12 consultants, who are not employees of the licensee, and who may be called upon for assistance
13 for emergencies shall also be identified. The special qualifications of those persons shall be
14 described.

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

23 **Technical Evaluation:** Also, the Lee Emergency Plan identifies, by position and function to be
24 performed, other employees of the licensee with special qualifications for coping with
25 emergency conditions that may arise. Other persons with special qualifications, such as
26 consultants, who are not employees of the licensee, and who may be called upon for assistance
27 for emergencies were also identified. The special qualifications of those persons were
28 described.

29 30 **13.3.1B.B.8 Conclusion for Onsite Emergency Organization**

31 The NRC staff has reviewed the onsite emergency plan and the applicant's responses to **RAIs**
32 **13.03-55(A) through (Q) in regards to Planning Standard B of NUREG-0654/FEMA-REP-1**
33 **[RAIs 13.03-55 (F) through (Q) were submitted by NRC HQ and were not part of the PNNL**
34 **review. PNNL did not evaluate the adequacy of the RAI responses.]** The NRC will determine
35 whether this planning standard is acceptable and document its determination in the Final Safety
36 Evaluation Report (FSER), based on information the applicant has provided to date, verification
37 of Confirmatory Action Items, and the applicant's response to Open Items. The staff identified
38 the following Open Items and Confirmatory Actions as needing to be resolved before concluding
39 that the Lee Emergency Plan meets applicable requirements:

40 - In response letters dated December 17 and December 23, 2008 the applicant has revised
41 Section II.B.8 to identify Westinghouse Electric Company. **Confirmatory Action NRC 13.03-02**
42 **was created to track the revision to II.B.8.**

43 - In RAI 13.03-55(C), the NRC staff requested that the applicant describe the reasons why or
44 situations where a higher level of Duke Energy management might take over from the Shift
45 Manager. In response the applicant provided additional information to adequately address the
46 RAI. Since this information was not previously included in the emergency plan, the NRC staff

1 has requested that the information provided in response to RAI 13.03-55(C) also be included in
2 the Lee Emergency Plan. This issue will be tracked as **Open Item 13.03-3**.

3 - The applicant stated that additional engineering and technical services support firms have not
4 yet been identified, but details regarding arrangements and supporting Letters of Agreement will
5 be developed when available. Since guidance requires these letters of agreement be submitted
6 with the emergency plan, the NRC staff has requested this information be provided. The
7 development and submittal of Letters of Agreement with additional engineering and technical
8 services support firms is tracked as **Open Item 13.03-04**.

9 Upon resolution of these items, Section B of the Lee Emergency Plan will be consistent with
10 Planning Standard B of NUREG-0654/FEMA-REP-1 and will meet the requirements of 10 CFR
11 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
12 Part 50.]

13

1 **13.3.1C.C Emergency Response Support and Resources**
2

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

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

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

26 With regard to **RAI 13.03-56(A)**, in response letters dated December 17 and December 23,
27 2008 the applicant stated the request for FRMAC assistance could originate with the NRC or
28 with State, tribal, or local governments. Details regarding the request for federal assets are
29 contained in the State and local emergency plans. The processes for requesting federal
30 assistance is consistent with the NRF. Request for Federal assistance is based on site
31 conditions and would be directed to the NRC from the EOF Director or Radiological Assessment
32 Manager. The applicant also stated that Duke Energy currently maintains an agreement with
33 REAC/TS for supporting services for dose assessment of whole-body exposures to ionizing
34 radiation for all their operating nuclear power plants. The applicant expects this agreement to be
35 revised to incorporate the Lee Nuclear Station prior to fuel loading.

36 With regard to **RAI 13.03-56(B)**, in response letters dated December 17 and December 23,
37 2008 the applicant stated implementation of the NRF will be addressed in Section II.A.1.b and
38 the NRF will be provided as a reference in Section III, "References and Appendices," in a future
39 revision of the Emergency Plan since the NRF became effective in March 2008 following the
40 December 2007 submittal of their application. Drafts of this section were provided as
41 attachments 1 and 2 in this response.

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

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

4 **Technical Evaluation:** The staff finds the additional information provided in the applicant's
5 response to RAI 13.03-56 (B) and (E) to be acceptable with one exception. **Confirmatory**
6 **Action NRC 13.03-03** and **13.03-04** were created to track these revisions. In RAI 13.03-56(A)
7 the NRC staff requested the applicant address reference of the NRF. In response the applicant
8 stated that Duke Energy maintains an agreement with REAC/TS and expects this agreement to
9 be revised to incorporate the Lee facility prior to fuel loading. Since the Emergency Plan needs
10 to include this information, The NRC staff has requested the revision of the agreement with
11 REAC/TS to be provided when available. This issue is tracked as **Open Item 13.03-05**.
12 Sections II.C.a and II.C.b "Federal Response Capability," of the Lee Emergency Plan describes
13 provisions for incorporating the Federal response capability into its operation plan including
14 specific persons by title authorized to request Federal assistance, and specific Federal
15 resources expected, including expected times of arrival at specific nuclear facility sites.

16
17 **Technical Information in the Emergency Plan: [C.1.c.]** Section II.C.1.e, "Federal Response
18 Capability," of the Lee Emergency Plan states that facilities and resources needed to support
19 the Federal response through the EOF will be provided. This includes office space and
20 telephones. Duke Energy will also provide limited office space and telephone communications
21 facilities for NRC personnel in the TSC.

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

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

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

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

1 additional facilities would be needed and what the process for requesting additional aid would
2 be.

3 In response letters dated December 17 and December 23, 2008 the applicant stated health
4 physics facilities and their capabilities are discussed in Sections 12.5 of the DCD, Chapter 12
5 and Section 13.1.1.2.4 of the FSAR. The applicant also stated that the Radiological
6 Assessment Manager working with the EOF Director determines staffing needs and is
7 responsible for committing resources in support efforts to deal with radiological aspects of an
8 emergency. Radiological Assessment Manager also has the authority to seek help from other
9 organizations within Duke Energy. Facilities within Duke Energy that may be utilized during an
10 emergency consist of fixed radiological facilities at the Catawba, McGuire, and Oconee Nuclear
11 Stations.

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

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

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

27 **Technical Evaluation:** In RAI 13.03-56(D), the NRC staff requested the applicant provide
28 letters of agreement or supporting documentation related to the emergency assistance provided
29 by INPO and REAC/TS. The applicant stated Letters of Agreement with INPO and REAC/TS
30 will be incorporated into Appendix 7 once they have been reach and prior to fuel loading. Since
31 guidance states the emergency plan should include Letters of Agreement, the NRC staff has
32 requested the Letters Agreement with INPO and REAC/TS be provided once developed. This
33 issue is tracked as **Open Item 13.03-06.**] Section II.C.4, "Other Supporting Organizations," of
34 the Lee Emergency Plan also identifies nuclear and other facilities, organization or individual
35 what can be relied upon in an emergency to provide assistance. The described assistance is
36 supported by appropriate letters of agreement in Appendix 7, "Certification Letters" of the Lee
37 Emergency Plan.

38
39 **13.3.1C.C.2 Regulatory Basis:** 10 CFR 50, Appendix E.IV., "Content of Emergency Plans."
40 10 CFR 50, Appendix E.IV.A.6. requires a description of the local offsite services to be provided
41 in support of the licensee's emergency organization.

42 **Technical Information in the Emergency Plan:** Section II.C.4, "Other Supporting
43 Organizations," of the Lee Emergency Plan identifies additional emergency response support,
44 including local offsite services. Section II.A.1.b, "Assignment of Responsibility" (Organization
45 Control, Concept of Operations), states that State, local and county agencies for public health
46 and safety work through the Emergency Management Agency's EOC in the affected county.
47 The EOF coordinates with the agencies necessary to support the emergency condition. Section

1 II.B.9, "Local Emergency Response Support," states Duke Energy has established and
2 maintains agreements for local emergency response support services, including fire-fighting,
3 medical and hospital services. Appendix 7, "Certification Letters," of the Lee Emergency Plan
4 contains certification letters for fire and medical services.

5
6 **Technical Evaluation:** The Lee Emergency Plan describes the local offsite services to be
7 provided in support of the licensee's emergency organization.
8

9 **13.3.1C.C.3 Regulatory Basis:** 10 CFR 50, Appendix E.IV., "Content of Emergency Plans."
10 10 CFR 50, Appendix E, IV.A.7. requires the identification of, and assistance expected from,
11 appropriate State, local, and Federal agencies with responsibilities for coping with emergencies.

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

40 **Technical Evaluation:** The Lee Emergency Plan identifies the assistance expected from
41 appropriate State, local, and Federal agencies with responsibilities for coping with emergencies.
42

43 **13.3.1C.C.4 Conclusion for Emergency Response Support and Resources**

44 The NRC staff has reviewed the onsite emergency plan and the applicant's responses to RAI
45 13.03-56(A) through (E) in regards to Planning Standard C of NUREG-0654/FEMA-REP-1. The
46 NRC will determine whether this planning standard is acceptable and document its
47 determination in the Final Safety Evaluation Report (FSER), based on information the applicant
48 has provided to date, verification of Confirmatory Action Items, and the applicant's response to

1 Open Items. The staff identified the following Open Items and Confirmatory Actions as needing
2 to be resolved before concluding that the Lee Emergency Plan meets applicable requirements:

3 - The applicant stated that Duke Energy currently maintains an agreement with REAC/TS for
4 supporting services for dose assessment of whole-body exposures to ionizing radiation for all
5 their operating nuclear power plants. The applicant expects this agreement to be revised to
6 incorporate the Lee Nuclear Station prior to fuel loading. The revision of the agreement with
7 REAC/TS to incorporate the Lee Nuclear Station is tracked as **Open Item 13.03-05**.

8
9 - The applicant stated Letters of Agreement letters with INPO and REAC/TS will be incorporated
10 into Appendix 7 in a future revision to the Lee Emergency Plan once they have been reach and
11 prior to fuel loading. The development and submittal of Letters of Agreement with affected
12 organizations is tracked as **Open Item 13.03-06**.

13
14 - The applicant revised section A.1.b and C.1.b of the Lee Emergency Plan to address
15 implementation of the NRF. **Confirmatory Action NRC 13.03-03** was created to track this
16 revision.

17
18 - The applicant revised section C.1.b of the Lee Emergency Plan to correct a statement
19 regarding the request of FRMAC assistance. **Confirmatory Action NRC 13.03-04** was created
20 to track this revision.

21
22 Upon resolution of these items, Section F of the Lee Emergency Plan will be consistent with
23 Planning Standard F of NUREG-0654/FEMA-REP-1 and will meet the requirements of 10 CFR
24 50.47(b)(3) and Sections IV.A.6 and A.7 of Appendix E to 10 CFR Part 50.

25

1 **13.3.1C.D Emergency Classification System**

2 **13.3.1C.D.1 Regulatory Basis:** 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(4)
3 requires that a standard emergency classification and action level scheme, the bases of which
4 include facility system and effluent parameters, is in use by the nuclear facility licensee, and
5 State and local response plans call for reliance on information provided by facility licensees for
6 determinations of minimum initial offsite response measures.

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

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

26
27 **[RAI CLOSED Placeholder:** In response letters dated December 17 and December 23, 2008
28 the applicant stated that they have "reserved" Section 2.0 and Section 5.3 of Appendix 1 is
29 shown as "Reserved." Section 2.0 is also "Reserved" for possible future use and to preserve
30 formatting used in NEI 07-01. The applicant does not intend to include information in Sections
31 5.3 so neither an ITAAC nor a License Condition is appropriate.]

32
33 In **RAI 13.03-57(A)**, the NRC staff asked the applicant to remove the reference to NEI-07 from
34 all submitted emergency planning information, or justify why it should be retained.

35
36 **[RAI CLOSED Placeholder:** In response letters dated December 17 and December 23, 2008
37 the applicant stated that NEI 07-01 was developed to satisfy the concern that NEI 99-01, Rev. 4,
38 did not apply to advanced light water reactor designs (see Regulatory Guide 1.206). NEI 07-01
39 specifically applies to the Westinghouse AP1000 and GE Hitachi ESBWR designs. The
40 applicant also stated that Subsection II.D.2 of the Lee Emergency Plan Rev. 0, acknowledges
41 that NEI 07-01 has not yet been endorsed by the NRC and states that EALs in the Lee
42 Emergency Plan are subject to further review and modification based on the version of NEI 07-
43 01 that is endorsed. The applicant intends to update the emergency classification system to be
44 consistent with the endorsed version.]

45
46 The Letters of Certification with State and local governments that are included in Appendix 7,
47 "Certification Letters," of the Lee Emergency Plan state that the signature on the letter indicates
48 that the parties concurred with the emergency classification system, initiating conditions, and
49 emergency action levels for the Lee Nuclear Station. EALs and initiating conditions, based

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

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

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

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

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

44 **Technical Evaluation:** Adequacy of RAI Response] **[D.1]** An emergency classification and
45 emergency action level scheme has been established by the applicant. The specific
46 instruments, parameters or equipment status are shown for establishing each emergency class,
47 in the in-plant emergency procedures. The plan identifies the parameter values and equipment

1 status for each emergency class. Additional technical interface information is located at SRP
2 Section 2.3.3, "Onsite Meteorological Measurements Programs."

3 **[D.2.]** The initiating conditions included the example conditions found in Appendix 1,
4 "Emergency Action Level Guidelines for Nuclear Power Plants," to NUREG-0654/FEMA-REP-1
5 and all postulated accidents in the Final Safety Analysis Report (FSAR) for the nuclear facility.

6 The NRC staff did not review Appendix 1, "Emergency Action Levels," of the Lee Emergency
7 Plan, since it references the NEI 07-01, Methodology for Development of Emergency Action
8 Levels, Advanced Passive Light Water Reactors," Rev. 0, which is a draft document and has not
9 been endorsed by the NRC. **[RAI 13.03-57(A)** NRC-endorsed document needed] The draft
10 version of NEI-07 also does not contain AP1000 design-specific Initiating Conditions. **[RAI**
11 **13.03-57(A)** The applicant needs to provide the AP1000 design-specific initiating conditions
12 (ICs), which are subject to NRC approval, to conform with 10 CFR 50.47(b)(4), specifically by
13 meeting Evaluation Criterion D.2 of NUREG-0654/FEMA-REP-1, Rev. 1.] **[RAI CLOSED**
14 **Placeholder: RAI Response]**

15 The information provided in Section D of the Lee Emergency Plan did not capture the Licensee
16 Actions specified in the Emergency Classification Level scheme in Appendix 1, "Emergency
17 Action Level Guidelines for Nuclear Power Plants," to NUREG-0654/FEMA-REP-1, Rev.1. **[RAI**
18 **13.03-57(A)** The applicant also needs to submit the Licensee Actions that are consistent with
19 those provided in the ECL scheme in Appendix 1 to NUREG-0654/FEMA-REP-1, Rev.] **[RAI**
20 **CLOSED Placeholder: RAI Response]**

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

23
24 **13.3.1C.D.2 Regulatory Basis:** 10 CFR 50, Appendix E.IV., "Content of Emergency Plans."
25 10 CFR 50, Appendix E, IV.B. requires that the means to be used for determining the magnitude
26 of and for continually assessing the impact of the release of radioactive materials shall be
27 described, including emergency action levels that are to be used as criteria for determining the
28 need for notification and participation of local and State agencies, the Commission, and other
29 Federal agencies, and the emergency action levels that are to be used for determining when
30 and what type of protective measures should be considered within and outside the site
31 boundary to protect health and safety. The emergency action levels shall be based on in-plant
32 conditions and instrumentation in addition to onsite and offsite monitoring. These initial
33 emergency action levels shall be discussed and agreed on by the applicant or licensee and
34 state and local governmental authorities, and approved by the NRC.

35 **Technical Information in the Emergency Plan:** Subsection I.3, "Determination of Source
36 Term and Radiological Conditions," of the Lee Emergency Plan states that Appendix 2,
37 "Radiological Assessment and Monitoring," of the Lee Emergency Plan describes the means for
38 determining the source term available for release and the magnitude of release. Subsection
39 D.2, "Emergency Action Levels," of Section D, "Emergency Classification System," of the Lee
40 Emergency Plan incorporates by reference NEI 07-01, "Methodology for Development of
41 Emergency Action Levels, Advanced Passive Light Water Reactors," Rev. 0, (NEI 07-01) that is
42 intended to provide the parameter values and equipment status that are indicative of each
43 emergency class. The emergency action levels are to be used as criteria for determining the
44 need for notification and participation of local and State agencies, the Commission, and other
45 Federal agencies, and the emergency action levels that are to be used for determining when
46 and what type of protective measures should be considered within and outside the site
47 boundary to protect health and safety. The emergency action levels are based on in-plant

1 conditions and instrumentation in addition to onsite and offsite monitoring. However, NEI 07-01
2 has not been approved by the NRC.

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

13
14 **13.3.1C.D.3 Regulatory Basis:** 10 CFR 50, Appendix E.IV., "Content of Emergency Plans."
15 10 CFR 50, Appendix E.IV.C. requires that the entire spectrum of emergency conditions that
16 involve the alerting or activating of progressively larger segments of the total emergency
17 organization be described. In addition, emergency action levels (based not only on onsite and
18 offsite radiation monitoring information but also on readings from a number of sensors that
19 indicate a potential emergency, such as the pressure in containment and the response of the
20 Emergency Core Cooling System) for notification of offsite agencies shall be described. Also,
21 the emergency classes defined shall include: (1) notification of unusual events, (2) alert, (3) site
22 area emergency, and (4) general emergency.

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

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

38 39 **13.3.1C.D.4 Conclusion for Emergency Classification System**

40 On the basis of its review of the Lee Emergency Plan as described above for the emergency
41 classification system, the NRC Staff concludes that the information provided is consistent with
42 Planning Standard D of NUREG-0654/FEMA-REP1. Therefore the information is acceptable
43 and meets the requirements of 10 CFR 50.47(b)(4) and Sections IV.B and C of Appendix E to
44 10 CFR Part 50.

45 OR

1 The NRC staff has reviewed the onsite emergency plan and the applicant's responses to RAI
2 13.03-XX(Y) through (YY) in regards to Planning Standard D of NUREG-0654/FEMA-REP-1.
3 The NRC will determine whether this planning standard is acceptable and document its
4 determination in the Final Safety Evaluation Report (FSER), based on information the applicant
5 has provided to date, verification of Confirmatory Action Items, and the applicant's response to
6 Open Items. The staff identified the following Open Items and Confirmatory Actions as needing
7 to be resolved before concluding that the Lee Emergency Plan meets applicable requirements:

8 - ADD ANY OPEN ITEMS OR CONFIRMATORY ACTIONS
9

10 Upon resolution of these items, Section D of the Lee Emergency Plan will be consistent with
11 Planning Standard D of NUREG-0654/FEMA-REP-1 and will meet the requirements of 10 CFR
12 50.47(b)(4) and Sections IV.B and C of Appendix E to 10 CFR Part 50.]
13

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

16 **ITAAC: What do we do with this?**

17
18 **ITAAC 1.1.1** states that a report exists that confirms the specific parameters identified in the
19 Appendix 1 have been retrieved and displayed in the control room, technical support center
20 (TSC), and Emergency Operations Facility (EOF).
21

22 **ITAAC 1.1.2** states that a report exists that confirms the ranges available in the control room,
23 TSC, and EOF encompassed the values for the specific parameters identified in Appendix 1.
24
25

1 **13.3.1C.E Notification Methods and Procedures**

2 **13.3.1C.E.1 Regulatory Basis:** 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(5)
3 requires that procedures are established for notification by the licensee of State and local
4 response organizations, and for notification of emergency personnel by all response
5 organizations. In addition, the content of initial and follow-up messages to response
6 organizations and the public was established. Also, the means to provide early notification and
7 clear instruction to the populace within the plume exposure pathway Emergency Planning Zone
8 was established.

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

13 **Technical Information in the Emergency Plan: [E.1]** Section E, "Notification Methods and
14 Procedures," of the Lee Emergency Plan states that on-site emergencies are immediately
15 reported to the Shift Manager on duty. Offsite response is the responsibility of local government
16 officials in accordance with the State plans. Procedures for notification of State and local
17 response organizations and licensee emergency responders reference the pre-planned
18 messages in the State plans. Notification is initiated by the Emergency Coordinator within 15
19 minutes of emergency declaration based on EALs in Appendix 1, "Emergency Action Levels," in
20 the Lee Emergency Plan. All affected organizations (warning points) are listed. NRC is notified
21 following notification of State and local authorities and within one hour of declaration of
22 emergency. The notification system consists of a primary and a back-up system maintained
23 through the use of commercial telephones (Section II-F-1, "Description of Communications
24 Links"). An ITAAC has been written to test the capabilities (see Table 3.8-1, Inspections, Tests,
25 Analyses, and Acceptable Criteria in Part 10 of the William S. Lee Nuclear Station, Units 1 and
26 2 COL Application).

27 **Unit 1 and 2 ITAAC 2.1** has been submitted to test the capability to notify responsible State and
28 local organizations within 15 minutes after the licensee declares an emergency (see Table 3.8-
29 1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee
30 Nuclear Station, Units 1 and 2 COL Application).

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

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

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

1

2 **Technical Evaluation:** The Lee Emergency Plan also refers to procedures for alerting,
3 notifying, and mobilizing emergency response personnel. [Note: Identify procedures by name
4 and number or refer to ITAAC 17.0, "Implementing Procedures."]
5

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

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

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

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

36 In response letters dated December 17 and December 23, 2008 the applicant stated that
37 Section II.F.1.b of the Lee Emergency Plan describes follow-up communications with State and
38 local authorities via the Selective Signaling Telephone System as discussed in response to RAI
39 13.03-58(A). Communications are provided by communicators in the TSC or EOF. Follow-up
40 communications during a Notification of Unusual Event are provided by the Control Room.

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

- 45 a. location of incident and name and telephone number (or communications channel
46 identification) of caller;
47 b. date and time of incident;

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

19
20 **Technical Information in the Emergency Plan: [E.6]** Section II.E.6, “Instructions to the
21 Public in the Plume Exposure EPZ,” of the Lee Emergency Plan states that the Alert and
22 Notification System is used that includes an outdoor warning system designed to meet the
23 acceptance criteria of Section B, “Criteria for Acceptance” of Appendix 3, “Means for Providing
24 Prompt Alerting and Notification of Response Organizations and the Population,” of NUREG-
25 0654, FEMA-REP-1, Rev. 1. As a back-up, State and Local plans maintain the alert mechanism
26 via systems such as emergency vehicles, automated dialing systems, and PA Systems to also
27 alert the public to monitor commercial broadcasts for emergency information. Each county
28 controls the activation of the sirens within its boundaries. Person listed by title that will initiate
29 alarm is not mentioned in Lee Emergency Plan but is listed in the referenced state plans.

30 [Unit 1 and 2 ITAAC 2.3](#) was submitted to test the capability to notify and provide instructions to
31 the populace within the plume exposure EPZ (see Table 3.8-1, “Inspections, Tests, Analyses,
32 and Acceptable Criteria,” in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL.
33

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

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

47 [In response letters dated December 17 and December 23, 2008](#) the applicant stated that the
48 [EOF News Manager](#) manages the communication organization which is responsible for
49 [coordinating plant status updates to state and local authorities and the media.](#) The emergency

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

8 **Technical Evaluation:** In RAI 13.03-58(E) the NRC staff requested the applicant provide
9 details on how they will be supporting information for written messages to the public. In
10 response the applicant provided corporate procedure SR/0/B/2000/001, "Standard Procedure
11 for Corporate Communications Response to the Emergency Operations Facility", and
12 committed to revise this procedure to include the Lee Facility. Since the emergency plan should
13 describe the process for disseminating information to the public, the NRC staff has requested
14 that a summary of this information or a reference to this procedure, once revised, be include in
15 the Lee Emergency Plan. This issue is tracked as **Open Item 13.03-07**. The Lee Emergency
16 Plan provides written messages intended for the public, consistent with the licensee's
17 classification scheme. In particular, draft messages to the public giving instructions with regard
18 to specific protective actions to be taken by occupants of affected areas, were prepared. The
19 messages included the appropriate aspects of sheltering, ad hoc respiratory protection, e.g.,
20 handkerchief over mouth, thyroid blocking or evacuation.

21
22 **13.3.1C.E.2 Regulatory Basis:** 10 CFR 50, Appendix E.IV., "Content of Emergency Plans."
23 10 CFR 50, Appendix E.IV.C. requires that the entire spectrum of emergency conditions that
24 involve the alerting or activating of progressively larger segments of the total emergency
25 organization be described. The communication steps to be taken to alert or activate emergency
26 personnel under each class of emergency shall also be described. Emergency action levels
27 (based not only on onsite and offsite radiation monitoring information but also on readings from
28 a number of sensors that indicate a potential emergency, such as the pressure in containment
29 and the response of the Emergency Core Cooling System) for notification of offsite agencies
30 shall be described. The existence, but not the details, of a message authentication scheme
31 shall be noted for such agencies. The emergency classes defined shall include: (1) notification
32 of unusual events, (2) alert, (3) site area emergency, and (4) general emergency. These classes
33 are further discussed in NUREG-0654/FEMA-REP- 1.

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

44
45 In response letters dated December 17 and December 23, 2008 the applicant stated the
46 Emergency Coordinator provides emergency notification directly to the State and county
47 governments through the Selective Signaling Telephone system discussed in Section II.F.
48 Emergency notification forms are transmitted to the 24-hour warning points in NC and SC as
49 soon as there are online and hourly updates are provided throughout the emergency. Warning

1 points implement their respective emergency plans and notify the appropriate State or local
2 officials specified in their plans once notified. Commercial and satellite phones can be used as
3 backup.
4

5 **Technical Evaluation:** The staff finds the clarification provided in the applicant's response to
6 RAI 13.03-58 (A) acceptable and therefore resolved. The Lee Emergency Plan describes the
7 entire spectrum of emergency conditions that involve the alerting or activating of progressively
8 larger segments of the total emergency organization. The Lee Emergency Plan also describes
9 the communication steps to be taken to alert or activate emergency personnel under each class
10 of emergency. Emergency action levels (based not only on onsite and offsite radiation
11 monitoring information but also on readings from a number of sensors that indicate a potential
12 emergency, such as the pressure in containment and the response of the Emergency Core
13 Cooling System) for notification of offsite agencies were described. The existence, but not the
14 details, of a message authentication scheme were noted. The emergency classes were defined
15 as: (1) notification of unusual events, (2) alert, (3) site area emergency, and (4) general
16 emergency.
17

18 **13.3.1C.E.3 Regulatory Basis:** 10 CFR 50, Appendix E.IV., "Content of Emergency Plans."
19 10 CFR 50, Appendix E.IV.D.1. requires that administrative and physical means for notifying
20 local, State, and Federal officials and agencies and agreements reached with these officials and
21 agencies for the prompt notification of the public and for public evacuation or other protective
22 measures, should they become necessary, shall be described. This description shall include
23 identification of the appropriate officials, by title and agency, of the State and local government
24 agencies within the EPZs.

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

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

36 **Technical Evaluation:** In RAI 13.03-58(B) the NRC staff requested the applicant provide the
37 details described in 10 CFR 50, Appendix E.IV.D.1. In response the applicant stated that
38 Section II.E of NUREG-0654/FEMA-REP-1 does not suggest that the licensee specify the
39 "officials" to be notified, but indicates that the licensee should specify "response organizations."
40 While the staff does agree that NUREG-0654/FEMA-REP-1 does not suggest that the licensees
41 specify the "officials" to be notified, 10 CFR 50, Appendix E.IV.D does state that "...This
42 description shall include identification of the appropriate officials, by title and agency, of the
43 State and local government agencies within the EPZs." Therefore the NRC staff has requested
44 that information required 10 CFR 50, Appendix E.IV.D be provided. This issue is tracked as
45 **Open Item 13.03-08.** The Lee Emergency Plan describes the administrative and physical
46 means for notifying local, State, and Federal officials and agencies. In addition, the Lee
47 Emergency Plan describes the agreements reached with these officials and agencies for the
48 prompt notification of the public and for public evacuation or other protective measures, should

1 they become necessary. This description included identification of the appropriate officials, by
2 title and agency, of the State and local government agencies within the EPZs.

3
4 **13.3.1C.E.4 Regulatory Basis:** 10 CFR 50, Appendix E.IV., “Content of Emergency Plans.”
5 10 CFR 50, Appendix E.IV.D.3. requires that a licensee shall have the capability to notify
6 responsible State and local governmental agencies within 15 minutes after declaring an
7 emergency. The licensee shall demonstrate that the State/local officials have the capability to
8 make a public notification decision promptly on being informed by the licensee of an emergency
9 condition. The design objective of the prompt public notification system shall be to have the
10 capability to essentially complete the initial notification of the public within the plume exposure
11 pathway EPZ within about 15 minutes. The use of this notification capability will range from
12 immediate notification of the public (within 15 minutes of the time that State and local officials
13 are notified that a situation exists requiring urgent action) to the more likely events where there
14 is substantial time available for the State and local governmental officials to make a judgment
15 whether or not to activate the public notification system. Where there is a decision to activate
16 the notification system, the State and local officials will determine whether to activate the entire
17 notification system simultaneously or in a graduated or staged manner. The responsibility for
18 activating such a public notification system shall remain with the appropriate governmental
19 authorities.

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

31
32 **Technical Evaluation:** The Lee Emergency Plan describes the capability to notify responsible
33 State and local governmental agencies within 15 minutes after declaring an emergency. The
34 design objective of the prompt public notification system shall be to have the capability to
35 essentially complete the initial notification of the public within the plume exposure pathway EPZ
36 within about 15 minutes. The responsibility for activating such a public notification system is
37 described.
38

39 **13.3.1B.E.5 Conclusion for Notification Methods and Procedures**

40 **NOTE – we added the ITAACS to the specific technical information sections. Is that**
41 **appropriate? SHOULD THEY BE HERE as well? Where should they be discussed? As**
42 **discussed above, the applicant needs to provide the bases for why ITAACs in Table 3.8-1**
43 **Inspection, Tests, Analyses, And Acceptance Criteria, 2.1, 2.2, and 2.3 will demonstrate the**
44 **sufficiency for Planning Standards E.1, E.2, and E.6. The NRC will determine whether this**
45 **planning standard is acceptable and document its determination in the Final Safety Evaluation**
46 **Report (FSER), based on information the applicant has provided to date and its response to**
47 **Open Item -----.]**

1 The NRC staff has reviewed the onsite emergency plan and the applicant's responses to RAIs
2 13.03-58(A) through (E) in regards to Planning Standard E of NUREG-0654/FEMA-REP-1. The
3 NRC will determine whether this planning standard is acceptable and document its
4 determination in the Final Safety Evaluation Report (FSER), based on information the applicant
5 has provided to date, verification of Confirmatory Action Items, and the applicant's response to
6 Open Items. The staff identified the following Open Items and Confirmatory Actions as needing
7 to be resolved before concluding that the Lee Emergency Plan meets applicable requirements:

8 - In response to RAI 13.03-58(E) the applicant provided corporate procedure SR/0/B/2000/001,
9 "Standard Procedure for Corporate Communications Response to the Emergency Operations
10 Facility," and committed to revise this procedure to include the Lee Facility. Since the
11 emergency plan should describe the process for disseminating information to the public, the
12 NRC staff has requested that a summary of this information or a reference to this procedure,
13 once revised, be include in the Lee Emergency Plan. This issue is tracked as **Open Item**
14 **13.03-07**.

15
16 - The applicant described the physical means for notifying local, State, and Federal officials and
17 agencies and agreements reached with these officials and agencies for the prompt notification
18 of the public and for public evacuation or other protective measures, but did not identify the
19 appropriate officials, by title and agency, of the State and local government agencies within the
20 EPZs that will provide support consistent with the requirements of 10 CFR 50, Appendix E.IV.D.
21 The need to identify the appropriate government officials is tracked as **Open-item 13.03-08**.

22
23 Upon resolution of these items, Section E of the Lee Emergency Plan will be consistent with
24 Planning Standard E of NUREG-0654/FEMA-REP-1 and will meet the requirements of 10 CFR
25 50.47(b)(3) and Sections IV.A.6 and A.7 of Appendix E to 10 CFR Part 50.

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

28 **[SHOULD THESE BE HERE? – ITAAC]:**

29
30 **[E.1., ITAAC 2.1]** An ITAAC has been written to test the capability to notify responsible State
31 and local organizations within 15 minutes after the licensee declares an emergency (see Table
32 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee
33 Nuclear Station, Units 1 and 2 COL Application).

34
35 **[E.2., ITAAC 2.2]** An ITAAC has been written to the capability to notify emergency response
36 personnel (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10
37 of the William S. Lee Nuclear Station, Units 1 and 2 COL).

38
39 **[E.6., ITAAC 2.3]** An ITAAC has been written to test the capability to notify and provide
40 instructions to the populace within the plume exposure EPZ (see Table 3.8-1, "Inspections,
41 Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station,
42 Units 1 and 2 COL).

43
44
45
46

1 **13.3.1C.F Emergency Communications**

2

3 **13.3.1C.F.1 Regulatory Basis:** 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(6)
4 requires that provisions exist for prompt communications among principal response
5 organizations to emergency personnel and to the public.

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

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

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

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

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

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

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

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

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

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

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

15 **Unit 1 and 2 ITAAC 3.1** has been submitted to test that the means exist for communication
16 among the control room, TSC, EOF, principal State and local emergency operations centers
17 and radiological field assessment teams (see Table 3.8-1, "Inspections, Tests, Analyses, and
18 Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL.)
19

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

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

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

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

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

40 [Unit 1 and 2 ITAAC 3.2](#) has been submitted to test that the means exists for communication
41 [from the control room, TSC, and EOF to NRC headquarters and regional office EOCs including](#)
42 [the establishment of ERDS between onsite computer systems and the NRC \(see Table 3.8-1,](#)
43 ["Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear](#)
44 [Station, Units 1 and 2 COL\).](#)
45

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

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

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

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

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

20

21 **13.3.1C.F.2 Regulatory Basis:** 10 CFR 50, Appendix E.IV, "Content of Emergency Plans."
22 10 CFR 50, Appendix E. IV.E.9 requires at least one onsite and one offsite communications
23 system; each system having a backup power source.

24 **Technical Information in the Emergency Plan:** Section II.F.3, "Communication System
25 Reliability," of the Lee Emergency Plan states that the onsite communication systems have
26 diverse power supplies. There is also a statement that failure of normal power supplies does
27 not impact offsite communications because, in most cases, backup power is provided. In **RAI**
28 **13.03-59(A)**, the NRC staff requested the applicant provide clarification of this statement.
29 Additional information of communication system and backup power can be found in DCD
30 Section 9.5.2, "Communications Systems."

31 [In response letters dated December 17 and December 23, 2008 the applicant stated that](#)
32 [systems are maintained to communicate within the station and offsite as discussed in section](#)
33 [9.5.2.2.3.2.2 of the FSAR. The selective signaling system is used as the primary means of](#)
34 [communication between the station and offsite agencies. The system has sufficient backup](#)
35 [power sources with automatic transfer capability to maintain communication if power is lost.](#)
36 [Commercial telephone company lines and the Duke radio Network can be used as secondary](#)
37 [means of communication.\]](#)

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

44

1 **13.3.1C.F.3 Regulatory Basis:** 10 CFR 50, Appendix E.IV, "Content of Emergency Plans."
2 10 CFR 50, Appendix E. IV.E.9 also requires that all communication plans shall have
3 arrangements for emergencies, including titles and alternates for those in charge at both ends of
4 the communication links and the primary and backup means of communication. Where
5 consistent with the function of the governmental agency, these arrangements shall include:

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

18
19 **Technical Information in the Emergency Plan:** [E.9.a] Section II.F, "Emergency
20 Communications" of the Lee Emergency Plan and Section 9.5.2, "Communication System
21 Reliability," of the DCD provide communication system descriptions. Section II.N.2.a,
22 "Communications Drills," and states that communication testing with State and local
23 governments within the EPZ for this system is performed monthly. Appendix 8, "Cross-
24 References to Regulations, Guidance, and State and Local Plans," provides a cross-reference
25 between the Lee Emergency Plan and the state and local plans.

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

33
34 In response letters dated December 17 and December 23, 2008 the applicant stated that the
35 Radiological Assessment Manager may contact DOE-Savannah River and/or REAC/TS for
36 radiological monitoring assistance as discussed in Section II.C.1.b of the Lee Emergency Plan.
37 The NRC is the primary interface for communications with other Federal agencies.

38
39 [E.9.c] Section II.F.1.d, "Description of Communications Links," of the Lee Emergency Plan
40 states that Duke Energy provides capability for communications between Control Room or TSC
41 and the EOF, county and State EOCs. Section II.F.1.f, "Description of Communications Links,"
42 states that communications between the TSC/EOF and off-site monitoring teams is via radio.
43 This appears to be inconsistent with the terminology (off-site monitoring teams) listed in Section
44 II.F.1.f and the term "radiological monitoring teams" used in NUREG-0654/FEMA-REP-1;
45 Evaluation Criterion F.1. In **RAI 13.03-59(B)**, the NRC staff requested Duke Energy provide
46 clarification of the Terminology. Section II.F.1.b identifies communication links (EOF to State
47 and county warning points). **This RAI was not sent to Duke. PNNL submitted it as part of
48 the original RAIs that went to NRC, but NRC removed the RAI prior to submittal to Duke. I**

1 **would suggest removing reference to the RAI and just leaving the first and last sentence,**
2 **RAI Response**

3
4 **[E.9.d]** Section II. F.1.f “Description of Communications Links,” of the Lee Emergency Plan
5 states that “Communications between Control Room/TSC/EOF to the NRC Operations Center is
6 via the ETS or private telephone...and to the regional office via the normal private capability.”
7 Section II.N.2.a, “Communications Drills,” states that “Duke Energy tests communications with
8 Federal emergency response organizations and States within the EPZ...quarterly.” This does
9 not meet the monthly requirement. In **RAI 13.03-59(C)**, the NRC staff requested the applicant
10 provide clarification regarding the testing frequency from the licensee to the NRC Headquarters
11 and appropriate NRC Regional Office Operations Center.

12
13 In response letters dated December 17 and December 23, 2008 the applicant has revised
14 Section N.2.a by adding the following statement: "Duke Energy tests communications between
15 the facility and NRC Headquarters and the NRC Regional Operations Center monthly."
16

17 **Technical Evaluation:** The staff finds the additional information and textual revisions provided
18 in the applicant’s response to RAI 13.03-59(C) acceptable. **Confirmatory Action NRC 13.03-**
19 **05 was created to track this revision.** The Lee Emergency Plan states that at least one onsite
20 and one offsite communications system, each system having a backup power source, is
21 provided. In addition, the applicant’s communication plans have arrangements for emergencies,
22 including titles and alternates for those in charge at both ends of the communication links and
23 the primary and backup means of communication. Where consistent with the function of the
24 governmental agency, these arrangements included:

- 25 a. Provisions for communications with contiguous State/local governments within the plume
26 exposure pathway EPZ. Such communications shall be tested monthly.
27 b. Provisions for communications with Federal emergency response organizations. Such
28 communications systems shall be tested annually.
29 c. Provisions for communications among the nuclear power reactor control room, the onsite
30 technical support center, and the near-site emergency operations facility; and among the
31 nuclear facility, the principal State and local emergency operations centers, and the field
32 assessment teams. Such communications systems shall be tested annually.
33 d. Provisions for communications by the licensee with NRC Headquarters and the
34 appropriate NRC Regional Office Operations Center from the nuclear power reactor
35 control room, the onsite technical support center, and the near-site emergency
36 operations facility. Such communications shall be tested monthly.
37
38

39 **13.3.1C.F.4 Regulatory Basis:** Generic Letter 91-14, “Emergency Communications,”
40 requires that the following communications paths be provided: Emergency Notification System
41 (ENS), Health Physics Network (HPN), Reactor Safety Counterpart Link (RSCL), Protective
42 measures Counterpart Link (PMCL), Emergency Response Data System (ERDS), Management
43 Counterpart Link (MCL), and Local Area Network (LAN). Provide guaranteed power to the
44 emergency communications equipment per NRC Bulletin 80-15, “Possible Loss of Emergency
45 Notification System (ENS) with Loss of Offsite Power.”

46 **Technical Information in the Emergency Plan:** Section II.F.1.c, “Description of
47 Communications Links,” of the Lee Emergency Plan discusses each of the listed
48 communications paths (ENS, HPN, RSCL, PMCL, ERDS, MCL, and LAN). Section II.F.3,
49 “Communication System Reliability” discusses system reliability. Section 9.5.2.2.3.1.1, “NRC

1 Offsite Interfaces,” of the FSAR states the design addresses the recommendations of IE Bulletin
2 BL-80-15. Section F, “Emergency Communications,” states “The communications systems
3 include those systems described in Subsection 9.5.2 of the AP1000 DCD”.
4

5 **Technical Evaluation:** The Lee Emergency Plan states that the following communications
6 paths are or will be provided (see ITAACs above): Emergency Notification System (ENS),
7 Health Physics Network (HPN), Reactor Safety Counterpart Link (RSCL), Protective measures
8 Counterpart Link (PMCL), Emergency Response Data System (ERDS), management
9 Counterpart Link (MCL), and Local Area Network (LAN)). The Lee Emergency Plan also states
10 that guaranteed power to the emergency communications equipment per NRC Bulletin 80-15,
11 “Possible Loss of Emergency Notification System (ENS) with Loss of Offsite Power,” is **[or will**
12 **be (potential ITAAC)]** provided.

13 14 **13.3.1C.F.5 Conclusion for Emergency Communications**

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

22 The NRC staff has reviewed the onsite emergency plan and the applicant's responses to RAIs
23 13.03-59(A) through (D) in regards to Planning Standard F of NUREG-0654/FEMA-REP-1. The
24 NRC will determine whether this planning standard is acceptable and document its
25 determination in the Final Safety Evaluation Report (FSER), based on information the applicant
26 has provided to date, verification of Confirmatory Action Items, and the applicant's response to
27 Open Items. The staff identified the following Open Items and Confirmatory Actions as needing
28 to be resolved before concluding that the Lee Emergency Plan meets applicable requirements:

29 - The applicant has revised Section N.2.a to clarify the frequency of testing of communications
30 systems between the facility and NRC Headquarters and the NRC Regional Operations Center.
31 This revision is being tracked as **NRC Confirmatory Action 13.03-5**.
32

33 Upon resolution of these items, Section F of the Lee Emergency Plan will be consistent with
34 Planning Standard F of NUREG-0654/FEMA-REP-1 and will meet the requirements of 10 CFR
35 50.47(b)(6) and Section IV.E.9. of Appendix E to 10 CFR Part 50.

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

38 **ITAAC:**

39 **[F.1.d., ITAAC 3.1.]** An ITAAC has been written to test that the means exist for communication
40 among the control room, TSC, EOF, principal State and local emergency operations centers
41 and radiological field assessment teams (see Table 3.8-1, “Inspections, Tests, Analyses, and
42 Acceptable Criteria,” in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL.)
43

44 **[F.1.f., ITAAC 3.2]** An ITAAC has been written to test that the means exists for communication
45 from the control room, TSC, and EOF to NRC headquarters and regional office EOCs including
46 the establishment of ERDS between onsite computer systems and the NRC (see Table 3.8-1.

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

3

4

1 **13.3.1C.G Public Education and Information**

2 **13.3.1C.G.1 Regulatory Basis:** 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(7);
3 Planning Standard G requires that information be made available to the public on a periodic
4 basis on how they will be notified and what their initial actions should be in an emergency (e.g.,
5 listening to a local broadcast station and remaining indoors), the principal points of contact with
6 the news media for dissemination of information during an emergency (including the physical
7 location or locations) be established in advance, and procedures for coordinated dissemination
8 of information to the public be established.

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

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

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

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

30
31 Means for accomplishing this dissemination may include, but are not necessarily limited to:
32 information in the telephone book; periodic information in utility bills; posting in public areas; and
33 publications distributed on an annual basis.

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

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

13 **Technical Evaluation:** The staff finds the additional information provided in the applicant's
14 response to RAI 13.03-60(A) acceptable and therefore resolved.] The Lee Emergency Plan
15 describes a public information program that provides the permanent and transient adult
16 population within the plume exposure EPZ an adequate opportunity to become aware of the
17 information annually. The program includes provision for written material that is likely to be
18 available in a residence during an emergency. The Lee Emergency Plan describes the
19 updating of disseminated information at least annually. Signs or other measures (e.g., decals,
20 posted notices or other means, placed in hotels, motels, gasoline stations and phone booths)
21 are [or will be (with ITAAC)] used to disseminate to any transient population within the plume
22 exposure pathway EPZ appropriate information that would be helpful if an emergency or
23 accident occurs. Such notices refer [or will refer (with ITAAC)] the transient to the telephone
24 directory or other source of local emergency information and guide the visitor to appropriate
25 radio and television frequencies. [Added from Bellefonte Technical Information for Section for
26 G.2 because the wrong information was previously in this section.]

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

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

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

39 **Unit 1 and 2 ITAAC 4.1** has been submitted to test that the licensee has provided space which
40 may be used for a limited number of news media (see Table 3.8-1, "Inspections, Tests,
41 Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and
42 2 COL Application).
43

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

46 **Technical Information in the Emergency Plan: [G.4.a]** Section II.G.4.a, "Information
47 Exchange," of the Lee Emergency Plan indicates that the public spokesperson has access to all

1 the required information related to the emergency and provides plant status information during
2 news conferences and briefings. The Chief Nuclear Officer and his direct reports are the
3 designated public spokespeople.

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

6 **Technical Information in the Emergency Plan: [G.4.b]** Section II.G.4.b “Information
7 Exchange,” of the Lee Emergency Plan states that liaisons coordinate with licensee and
8 designated members of the State and local emergency response organizations on a periodic
9 basis. Appendix 9, “Justification for Common EOF,” states “State and utility staff at the JIC are
10 responsible for providing timely and accurate information concerning an emergency to the
11 media.” However, there is no explanation of how timely and accurate information is provided to
12 the media. In **RAI 13.03-60(B)**, the NRC staff requested the applicant provide details on how
13 timely and accurate information is provided to the media during an emergency.

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

28 **Technical Evaluation:** In RAI 13.03-60(B), the NRC staff requested the applicant provide
29 details on how timely and accurate information is provided to the media during an emergency.
30 In response the applicant provided Catawba Nuclear Station's Procedure HP/0/B/1000/006,
31 "Emergency Equipment Functional Check and Inventory," which provides the process to verify
32 availability and readiness of RP emergency response equipment and Duke Corporate
33 procedure SR/0/B/4600/086, "Standard Procedure for Periodic Verification of EOF
34 Communication Equipment Operation and Equipment/Supply Inventory," which ensures that
35 equipment is operational and sufficient supplies are available to effectively manage an
36 emergency situation in the EOF. Since the emergency plan should contain a description of the
37 process for interacting with the media, the NRC staff has requested the applicant provide a
38 summary of this information or a reference to these procedures in the Lee Emergency Plan.
39 This issue is tracked as **Open Item 13.03-9**. In addition, the Lee Emergency Plan describes
40 established arrangements for timely exchange of information among designated
41 spokespersons.

42
43 **Technical Information in the Emergency Plan: [G.4.c]** Section II.G.4.c, “Information
44 Exchange,” of the Lee Emergency Plan states that contact between the designated
45 spokespersons and by the activities of a licensee liaison in the JIC serves to control rumors.
46 Customer inquiries are handled by Customer Contact Centers. Employees are updated through
47 company intranet/portal. Elected officials and regulatory agencies are updated through the
48 Corporate Communications and Governmental Affairs departments. Industry groups assist in
49 disseminating information to other industry groups.

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

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

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

10

11 **13.3.1C.G.2 Regulatory Basis:** 10 CFR 50, Appendix E.IV, “Content of Emergency Plans.”
12 10 CFR 50, Appendix E.IV.D.2 requires that provisions be described for yearly dissemination to
13 the public within the plume exposure pathway EPZ of basic emergency planning information,
14 such as the methods and times required for public notification and the protective actions
15 planned if an accident occurs, general information as to the nature and effects of radiation, and
16 a listing of local broadcast stations that will be used for dissemination of information during an
17 emergency be developed. In addition, signs or other measures shall also be used to
18 disseminate to any transient population within the plume exposure pathway EPZ appropriate
19 information that would be helpful if an accident occurs.

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

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

38

39 **13.3.1C.G.3 Conclusion for Public Education and Information**

40 [The NRC staff has reviewed the onsite emergency plan and the applicant's responses to RAIs](#)
41 [13.03-60\(A\) and \(B\) in regards to Planning Standard G of NUREG-0654/FEMA-REP-1. The](#)
42 [NRC will determine whether this planning standard is acceptable and document its](#)
43 [determination in the Final Safety Evaluation Report \(FSER\), based on information the applicant](#)
44 [has provided to date, verification of Confirmatory Action Items, and the applicant's response to](#)
45 [Open Items. The staff identified the following Open Item as needing to be resolved before](#)
46 [concluding that the Lee Emergency Plan meets applicable requirements:](#)

1 - The applicant provided Catawba Nuclear Station's Procedure HP/0/B/1000/006, "Emergency
2 Equipment Functional Check and Inventory," and Duke Corporate procedure SR/0/B/4600/086,
3 "Standard Procedure for Periodic Verification of EOF Communication Equipment Operation and
4 Equipment/Supply Inventory," as example for procedures that will be used at the Lee facility for
5 interactions with the media. Since the emergency plan should contain a description of the
6 process for interacting with the media, the NRC staff has requested the applicant provide a
7 reference to these procedures or summarize information they will contain related to media
8 interaction in the Lee Emergency Plan. This issue is tracked as **Open Item 13.03-9**.

9 Upon resolution of these items, Section G of the Lee Emergency Plan will be consistent with
10 Planning Standard G of NUREG-0654/FEMA-REP-1 and will meet the requirements of 10 CFR
11 50.47(b)(7) and Section IV.D.2. of Appendix E to 10 CFR Part 50.

12
13 **NOTE – we added the ITAACS to the specific technical information sections. Is that**
14 **appropriate?**

15 *As discussed above, the applicant needs to provide the bases for why ITAAC from Table 3.8-1,*
16 *"Inspections, Tests, Analyses and Acceptance Criteria," planning Standard 4.0 Public Education*
17 *and Information demonstrate the sufficiency of the HIC to verify that space is provided for a*
18 *limited number of the news media. The NRC will determine whether this planning standard is*
19 *acceptable and document its determination in the Final Safety Evaluation Report (FSER), based*
20 *on information the applicant has provided to date and its response to Open Item -----.*

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

23 **ITAAC:**

24 **[G.3.b, ITAAC 4.1]** An ITAAC has been written to test that the licensee has provided space
25 which may be used for a limited number of news media (see Table 3.8-1, "Inspections, Tests,
26 Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and
27 2 COL Application).
28
29

1 **13.3.1C.H Emergency Facilities and Equipment**

2 **13.3.1C.H.1 Regulatory Basis:** 10 CFR 50.47, “Emergency plans.” 10 CFR 50.47(b)(8);
3 Planning Standard H, requires that adequate emergency facilities and equipment to support the
4 emergency response be provided and maintained.

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

8 **Technical Information in the Emergency Plan: [H.1.]** Section II.H.1, “On-site Emergency
9 Response Facilities,” provides a short discussion on the Technical Support Center (TSC), and
10 the Operations Support Centers (OSC). Section II.H.1 states “These facilities were designed to
11 meet the intent of the guidance in NUREG-0696” and the clarification in NUREG-0737,
12 Supplement 1”. In **RAI 13.03-61 (I)** staff requested additional information regarding how the
13 facilities meet intent of the guidance in NUREG-0696” and the clarification in NUREG-0737,
14 Supplement 1”. Duke filed for a departure from the DCD (WLS DEP 18.8-1) as listed in Part 7
15 of the application, to move the TSC from the control support area (CSA) as identified in DCD.
16 The TSC was moved to a central location to serve Units 1 and 2 as identified in the Emergency
17 Plan. The Lee Emergency Plan states that the TSC contains resources to support the
18 emergency response effort including communication between emergency response facilities,
19 Duke Energy Management and the NRC. This includes displaying parameters that are required
20 of a Safety Parameter Display System (SPDS). The TSC also provides radiological protection
21 similar to the CR. Section II-H.1, contains the statement: “in the event that all off-site AC power
22 is unavailable, the TSC could be evacuated and function transferred to a location unaffected...”
23 A description of the procedure and locations to be considered is not provided. Information
24 related to this procedure was requested in **RAI 13.03-61(A)**. Appendix 10, “Technical Support
25 Center Description” provides additional information on the TSC.

26 In Appendix 10 (Emergency Plan) “Technical Support Center Description”, the applicant states
27 that the ventilation system includes high efficiency particulate air (HEPA) filters and charcoal
28 filters and the ventilation system is designed to maintain exposures at or below 0.05 Sv (5 rem)
29 total effective dose equivalent (TEDE) as defined in 10 CFR 50.2 for the duration of an accident.
30 In addition, the TSC structure, shielding, and ventilation system are designed to protect the TSC
31 personnel from radiological hazards. Furthermore, Appendix 10 states the TSC ventilation
32 system is manually controlled from the TSC. Also, portable radiation monitors are available to
33 personnel in the TSC. **Additional information regarding TSC habitability was requested in RAI**
34 **13.03-61(J)**

35 Section II.H.1 states the OSC is provides resources for communication with the CR and TSC.
36 Its primary function is to dispatch assessment, corrective action, and rescue personnel to plant
37 locations. As part of the aforementioned departure from the DCD (WLS DEP 18.8-1) listed in
38 Part 7 of the application, the OSC is being moved to the CSA initially for the TSC. Section II-
39 H.1 contains the statement: “Implementing procedures make provisions for the relocation of the
40 OSC as needed...” The information supporting this statement is not provided. This information
41 was requested in **RAI 13.03-61(A)**. Additional information on the operation of the OSC and
42 TSC can be found in DCD Section 18.8.3.5, “Technical Support Center Mission and Major
43 Tasks.” Tier 1 Section 3.1, “Emergency Response Facilities,” contains a description of the

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).

1 facility and its ITAACable criteria. In **RAI 13.03-61 (H)** the staff requested additional information
2 related to design of the OSC.

3 **Unit 1 and 2 ITAAC 5.1** has been submitted to test that the licensee has established a TSC and
4 OSC (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the
5 William S. Lee Nuclear Station, Units 1 and 2 COL Application).
6

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

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

20 In **RAI 13.03-61 (I)(b)**, the staff requested the applicant address management plans, facility
21 staffing and task assignments of TSC personnel. In response letters dated December 17 and
22 December 23, 2008 the applicant stated that management, staffing, and assignments of TSC
23 personnel are addressed in Emergency Plan Implementing Procedures. These procedures will
24 be similar to Catawba Nuclear Station Procedure RP/0/A/5000/020, "Technical Support Center
25 Activation Procedure." This procedure was included as Attachment 1 to the response to RAI
26 13.03-55.

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

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

1 Activation Procedure," was provided for informational purposes as attachment 1 in response to
2 RAI 13.3-055.

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

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

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

26 With regard to **RAI 13.03-61 (A)**, in response letters dated December 17 and December 23,
27 2008 the applicant stated that procedures for relocating the Lee TSC and OSC will be similar to
28 those currently in use at other Duke Energy nuclear plants. If AC power is unavailable or the
29 facilities become uninhabitable, the TSC and/or OSC are relocated to its alternate location.
30 Alternate locations for the TSC and OSC have not been determined but they have been
31 addressed in an ITAAC in Table 3.8-1, "Proposed Licensed Conditions (including ITAAC)" of
32 Part 10 of the application. The applicant also provided Catawba Nuclear Station Procedures
33 RP/O/A/5000/024, "OSC Activation Procedure," and RP/O/A/5000/020, "Technical Support
34 Center (TSC) Activation Procedure," as Attachments 1 and 2 to the response to RAI 13.3-055.

35 In response to a request for additional information, **RAI 13.03-61(J)**, the applicant provided
36 additional information about TSC habitability. The staff asked for details pertaining to ventilation
37 design such as air inlet flow rates, recirculation flow rates, unfiltered air inleakage, and other
38 factors necessary to complete a radiological assessment. The applicant provided a Technical
39 Support Center Design Description Document (**RAI attachment 13.03-25A**) and a detailed
40 radiological assessment. The TSC Design Description Document states that the Technical
41 Support Center (TSC) heating, ventilation, and air-conditioning (HVAC) system functions to
42 provide normal environmental control for personnel and equipment operational requirements;
43 and provides environmental control for habitability through filtration of potentially radioactive
44 particulates and adsorption of iodine during emergency conditions. The applicant also states,
45 the TSC is designed to comparable levels of habitability, such as humidity and temperature, as
46 described in the DCD, as well as the same radiological habitability as the control room, under
47 accident conditions. The actual radiological consequences for the postulated accident fall within
48 GDC 19 exposure acceptance criteria (5 rem Total Effective Dose Equivalent) with sufficient

1 margin (factor of three) [Assumes RSAC concurs with inputs (x/Q and others) and
2 reasonableness of output].
3

4 Furthermore, the applicant states in Technical Support Center Design Description Document
5 (RAI attachment 13.03-25A) that radiation monitoring systems are available to personnel in the
6 TSC. These monitoring systems may be composed of installed monitors or portable monitoring
7 equipment. These systems continuously indicate radiation dose rates and airborne radioactivity
8 concentrations inside the TSC while it is in use during an emergency. These monitoring systems
9 include local alarms with trip levels set to provide early warning to TSC personnel of adverse
10 conditions that may affect the habitability of the TSC. These detectors are able to distinguish the
11 presence or absence of radioiodines at concentrations as low as 10⁻⁷ microcuries/cc.
12

13 The TSC is common for Lee Unit 1 and 2 and is not located in the nuclear island Control
14 Support Area (CSA), but is located in the maintenance support building to provide centralized
15 response management oversight for the site. This is a departure from the DCD, Tier 2, Section
16 18.8.3.5, "Technical Support Center Mission and Major Tasks." SER Appendix A, "COL
17 Information Items, Supplemental Information Items and Departures," discusses the departure in
18 greater detail.

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

28 **Technical Evaluation:** Based on the discussion and review completed above, the staff finds
29 the additional information provided in response to RAIs 13.03-61, (H), (I)(a, c, e, f, g), and (J) to
30 be acceptable and therefore resolved. On the basis of the review, as described above, the NRC
31 staff concludes that the information provided in the Lee COL [FSAR Section XX.X???) related to
32 TSC habitability is consistent with the guidelines in Regulatory Guide 1.101, Section 13.3 of the
33 SRP, NUREG 0696, and other applicable guidance associated with TSC habitability. Therefore
34 the staff concludes that the information meets the relevant requirements of 10 CFR 50.47(b)(8)
35 and (b)(11), and Subsections III and IV.E.8 to Appendix E to 10 CFR part 50]
36

37 With regard to RAI 13.03-61 (I)(b), the staff requested the applicant address management
38 plans, facility staffing and task assignments of TSC personnel. In response the applicant stated
39 that management, staffing, and assignments of TSC personnel are addressed in procedures.
40 Catawba Nuclear Station Procedure RP/0/A/5000/020, "Technical Support Center Activation
41 Procedure," was provided as an example. Since the emergency plan should contain this
42 information, the NRC staff has requested the applicant provide a summary of this information or
43 a reference to the procedure, when developed, in the Lee Emergency Plan. This issue will be
44 tracked as **Open Item 13.03-10.**
45

46 With regard to RAI 13.03-61 (I)(d), the staff requested the applicant provide additional
47 information related to TSC staff assignments. The applicant stated this information will be
48 discussed in procedures. Procedure, RP/0/A/5000/020, "Technical Support Center (TSC)
49 Activation Procedure," was provided as an example. Since the emergency plan should contain

1 a description of TSC staffing, the NRC staff has requested the applicant provide a summary of
2 this information or a reference to the procedure, when developed, in the Lee emergency Plan.
3 This issue will be tracked as **Open Item 13.03-11**.

4
5 With regard to RAI 13.03-61 (A), in response the applicant provided Catawba Nuclear Station
6 Procedures RP/O/A/5000/024, "OSC Activation Procedure," and RP/O/A/5000/020, "Technical
7 Support Center (TSC) Activation Procedure." Since the emergency should include a description
8 of the process used to relocate these facilities, the NRC staff has requested the applicant
9 provide a summary of this information or a reference to the procedure, when developed, in the
10 Lee Emergency Plan. This issue will be tracked as **Open Item 13.03-12**. The Lee Emergency
11 Plan describes a TSC and an OSC in accordance with NUREG-0696, "Functional Criteria for
12 Emergency Response Facilities."

13
14 **Technical Information in the Emergency Plan: [H.2.]** Section II.H.2, "Off-site Emergency
15 Response Facilities," provides information on the Emergency Operations Facility (EOF). The
16 EOF provides direction and coordination of all emergency response activities. Discussion on
17 the available communication links in the EOF can be found in Section II.F.1, "Description of
18 Communications Links," of the Lee Emergency Plan. Duke has filed for an exception to have
19 the EOF located in the Charlotte General Office in the Energy Center at 526 South Church
20 Street, Charlotte, N.C. Justification of this exception can be found in Appendix 9, "Justification
21 for Common EOF".

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

25
26 **Technical Evaluation:** The Lee Emergency Plan describes an EOF from which evaluation and
27 coordination of all licensee activities related to an emergency is to be carried out. In addition,
28 the EOF provides information to Federal, State and local authorities responding to radiological
29 emergencies in accordance with NUREG-0696, "Functional Criteria for Emergency Response
30 Facilities."

31
32 **Technical Information in the Emergency Plan: [H.4.]** Function and location of the EOF is
33 discussed in Section II.H.2., "Off-site Emergency Response Facilities." Communication
34 capabilities are explained in Section II.F.1, "Description of Communication Links." The ERFs
35 are staffed and activated in accordance with Emergency Plan Implementing Procedures
36 (EPIPs). Table 13.4-201, "Operational Programs Required by NRC Regulations," of the FSAR
37 states: "the applicant's detailed implementing procedures for its emergency plan is to be
38 submitted at least 180 days prior to scheduled date for initial loading of fuel. Staffing of the EOF
39 is described in Section II.E.2, "Notification and Mobilization of Licensee Response
40 Organizations." The ERF is declared activated following an assessment of staffing levels,
41 habitability, operability of installed systems, sufficiency of supplies and equipment, and
42 communications interfaces. Alternate plans can be initiated in a time of adverse conditions.

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

45

1 **Technical Information in the Emergency Plan: [H.5.]** Section II.H.5, “On-Site Monitoring
2 Systems,” contains a description of the various monitoring systems necessary for initiating
3 emergency measures and performing accident assessment. Information on personnel
4 monitoring equipment discussed in this section reference the AP1000 DCD, Revision 16 and the
5 FSAR. Geophysical phenomena are described in Section 3.7.4, “Supporting Media for Seismic
6 Category I Structures,” of the AP1000 DCD, Revision 16, and the corresponding section of
7 FSAR. Radiological monitoring systems can be found in Sections 11.5, “Radiation Monitoring,”
8 and 12.3, “Radiation Protection Design Features,” of the AP1000 DCD, Revision 16, and the
9 corresponding sections of the FSAR. A supply of portable radiation monitoring and sampling
10 equipment and emergency response equipment (Section II.H, “Emergency Facilities and
11 Equipment,” and Appendix 6, “Emergency Equipment and Supplies”) are available. Plant
12 process monitoring systems are described in Section 11.5 of AP1000 DCD, Revision 16, and
13 the corresponding section of the FSAR. Plant fire monitoring systems are described Section
14 9.5.1, “Fire Protection Systems,” of the AP1000 DCD, Revision 16, and the corresponding
15 section of the FSAR. Appendix 1, “Emergency Action Levels,” describes the bases for the
16 selection of the designated instruments as indicators of emergency conditions.

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

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

27
28
29 **Technical Information in the Emergency Plan: [H.6.]** The on-site meteorological data
30 collection system is discussed in Section II.H.8, “Meteorological Instrumentation and
31 Procedures.” Back-up seismic data is available from USGS. Flooding data is available from
32 NOAA’s Hydro-Meteorological Reports. Data are shared with local, State, and Federal
33 organizations (Section II.F, “Emergency Communications”). The station has an Off-site Dose
34 Calculation Manual (ODCM) that describes the monitoring systems. The plant also has
35 equipment and radiological laboratory facilities available on site. Environmental monitoring
36 equipment includes multiple radioiodine and particulate monitors and TLDs (other dose
37 integrating devices). The dosimeters are posted and collected in accordance with Table 1 of
38 Revision 1 of the Branch Technical Position included with Generic Letter 79-65, “Environmental
39 Monitoring for Direct Radiation”. Locations of dosimeter and air sampler postings are in the
40 ODCM. In **RAI 13.03-61 (E)** staff requested that the applicant provide additional information on
41 monitoring systems and the locations of dosimeters and air samplers that is available in the
42 ODCM. Arrangements for backup support and analysis are described in Section II.A,
43 “Assignment of Responsibility (Organizational Control),” and arrangements with other
44 organizations documented with certification letters in Appendix 7, “Certification Letters.”
45 Descriptions of laboratory facilities both fixed and mobile are in Section II.C.3, “Radiological
46 Laboratories.”
47

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

1 Safety Analysis Report (FSAR), states that a description of the ODCM program will be finalized
2 prior to fuel load. Milestones for implementation of the ODCM program are provided in Table
3 13.4-201 of the FSAR. The applicant also states that the radiological environmental monitoring
4 program is discussed in Section 6.2 of the ER. Station monitoring and sampling locations are
5 identified in Table 6.2-2 and Figures 6.2-1 and 6.2-2. The program is based on guidance in
6 Revision 1 of the Branch Technical Position included with Generic Letter 79-65, "Radiological
7 Environmental Monitoring Program Requirements." The applicant identified a license condition
8 for implementing ODCM and Radiological Environmental Monitoring Program, which is
9 addressed in Part 10, "Proposed Licensed Conditions (including ITAAC)" of the application.
10 This is consistent with 10 CFR Part 50, Appendix E, Section V and the allowances provided in
11 SECY-05-0197.]

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

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

21
22
23 **Technical Information in the Emergency Plan: [H.7.]** Section II.H.7, "Off-site Radiological
24 Monitoring Equipment," of the Lee Emergency Plan states that Duke Energy provides off-site
25 radiological monitoring equipment suitable for assessment of off-site radiological consequences
26 of facility incidents. Appendix 6, "Emergency Equipment and Supplies," lists the general types
27 of equipment that would be available for off-site measurements. This equipment includes:
28 radiation survey instruments, surface contamination control and survey supplies, air sampling
29 equipment and media, and scalers or other appropriate radio-analytical counting instruments.
30 Further, Section II.I.9, "Measuring Radioiodine Concentrations," states that the field equipment
31 is capable of detecting radioiodine concentrations of 10^{-7} microcuries per milliliter under field
32 conditions.

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

35
36 **Technical Information in the Emergency Plan: [H.8.]** Section II.H.8, "Meteorological
37 Instrumentation and Procedures," states that meteorological data is acquired from an on-site
38 meteorological tower. The tower measures wind speeds, ambient temperatures, atmospheric
39 stability, dew point, and precipitation. The meteorological monitoring program and climatology
40 are described in FSAR 2.3, "Meteorology." All measured data from on-site meteorological tower
41 is available to the plant and ERF display systems. Meteorological data can also be obtained
42 from the Catawba Nuclear Station and the National Weather Service in Greer, SC. In **RAI**
43 **13.03-61(E)(1)**, the NRC staff requested Duke Energy provide additional information regarding
44 their procedures related to meteorological data.

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

1 when onsite meteorological systems cannot be used. The applicant also provided Duke
2 Energy's corporate procedure SH/O/B/2005/001, "Emergency Response Offsite Dose
3 Projections," which describes the procedure for obtaining data from an alternate source. The
4 procedure was included as attachment 1 to their response to RAI 13.03-62.]
5

6 **Technical Evaluation:** In RAI 13.03-61(E)(1), the NRC staff requested Duke Energy provide
7 additional information regarding their procedures related to meteorological data. In response the
8 applicant provided Duke Energy's corporate procedure SH/O/B/2005/001, "Emergency
9 Response Offsite Dose Projections," which describes the procedure for obtaining data from an
10 alternate source. Since the emergency plan should contain a discussion of procedures used to
11 obtain meteorological data, the NRC staff has requested that a reference to this procedure or
12 summary of information it contains related to obtaining meteorological data be provide in the
13 Lee Emergency Plan. This issue will be tracked as **Open Item 13.03-13**. The Lee Emergency
14 Plan describes meteorological instrumentation and procedures and provisions to obtain
15 representative current meteorological information from other sources. [**Potential interface:** SRP
16 Section 2.3.3 (meteorological instrumentation)]
17

18 **Technical Information in the Emergency Plan:** [H.9] Section II.H.1, "On-site Emergency
19 Response Facilities," states the OSC provides resources for communication with the CR and
20 TSC. Its primary function is to dispatch assessment, corrective action, and rescue personnel to
21 plant locations. As part of the aforementioned departure from the DCD (WLS DEP 18.8-1) listed
22 in Part 7 of the application, the OSC is being moved to the CSA initially for the TSC. Section II-
23 H.1 contains the statement: Implementing procedures make provisions for the relocation of the
24 OSC as needed..." The information supporting this statement is not provided. This information
25 was requested in **RAIs 13.03-61(A) and (I)**. Additional information on the operation of the OSC
26 and TSC can be found in DCD Section 18.8.3.5, "Technical Support Center Mission and Major
27 Tasks." Tier 1 Section 3.1, "Emergency Response Facilities," contains a description of the
28 facility and its ITAACable criteria. Protective clothing and respirators are discussed in Section
29 II.J.6, "Protective Measures," however, the detail in the section is not sufficient to determine that
30 the protective equipment is adequate. Communication is covered in Sections II.E, "Notification
31 Methods and Procedures," and II.F, "Emergency Communications," however the detail is not
32 sufficient to determine that adequate communications are available in the OSC. In **RAI 13.03-**
33 **61(F)** the NRC staff requested the applicant provide additional information regarding
34 communication system available in the OSC.

35 In response letters dated December 17 and December 23, 2008 the applicant stated that
36 Section II.H.1 of the Lee Emergency Plan describes functionality and habitability of the ERFs in
37 compliance with NUREG-0696 criteria 3.1 and 3.2. Section II.F discusses the use of wireless
38 telephone system for communication between the facilities. The telephone-page and PABX
39 telephone communication systems serve as backups to this system. A design description for the
40 alternative location of the TSC is provided in Appendix 10 of the application which addresses
41 criteria in Section 8.2.1 of Supplement 1 to NUREG-0737. The applicant also stated that design
42 criteria are met with the exception of being within a 2-minute walk of the Control Room.
43 Emergency Plan Section II.H.1 describes the location function and communications of the OSC
44 satisfying Supplement 1 to NUREG 0737 criterion 8.3.1.a, 8.3.1.b, and 8.3.1.c. The applicant
45 added that the OSCs are not designed to remain habitable under all emergency conditions and
46 relocation under these conditions is addressed in Section II.H.1 also. The applicant provided
47 additional information in the response to RAI 13.03-61 (A). An ITAAC has been submitted to
48 test the adequacy of ERFs communications in Tier 1, Table 3.1-1 and Part 10, Table 3.8.1.

1 **Technical Evaluation:** The responses to RAI 13.03-61 (A) and (I) are summarized in Section
2 H.1. The staff found these responses acceptable and therefore resolved. The staff also finds
3 the additional information provided in the applicant's response to RAI 13.03-61 (F) acceptable
4 and therefore resolved.] The Lee Emergency Plan also describes the capacity, and supplies,
5 including: respiratory protection, protective clothing, portable lighting, portable radiation
6 monitoring equipment, cameras and communications equipment for personnel present in the
7 OSC.

8
9 **Technical Information in the Emergency Plan: [H.10]** Section II.H.10, "Emergency
10 Equipment and Supplies," states that Duke Energy performs inspections and operational test of
11 emergency equipment once each calendar quarter. Reserves are maintained to replace
12 instruments removed for calibration or repair. The scope and responsibilities for performing
13 these tests are provided in administrative procedures. A description of the equipment is in
14 Appendix 6, "Emergency Equipment and Supplies." In **RAI 13.03-61(B)** the NRC staff
15 requested additional information on the procedures to inspect and test dedicated emergency
16 equipment.

17 In response letters dated December 17 and December 23, 2008 the applicant stated that the
18 procedure for verifying availability and readiness emergency response equipment will be similar
19 to that in use at other Duke Energy nuclear plants. The applicant provided Catawba Nuclear
20 Station's Procedure HP/O/B/1000/006, "Emergency Equipment Functional Check and
21 Inventory," which provides the process to verify availability and readiness of RP emergency
22 response equipment. The applicant also provided Duke Energy corporate procedure
23 SR/O/B/4600/086, "Standard Procedure for Periodic Verification of EOF Communication
24 Equipment Operation and Equipment/Supply Inventory," which ensures that equipment is
25 operational and sufficient supplies are available. These procedures are provided as attachments
26 1 and 2 respectively to this response. A license condition has been proposed in Part 10 of the
27 COL application addressing the submittal schedule for operational programs, including
28 emergency planning implementing procedures, which is consistent with 10 CFR Part 50,
29 Appendix E, Section V and the allowances provided in SECY-05-0197.

30
31 **Technical Evaluation:** The staff finds the additional information provided in the applicant's
32 response to RAI 13.03-61 (B) acceptable and therefore resolved. The Lee Emergency Plan
33 describes provisions to inspect, inventory and operationally check emergency
34 equipment/instruments at least once each calendar quarter and after each use. Sufficient
35 reserves of instruments/equipment to replace those which are removed from emergency kits for
36 calibration or repair are provided. Calibration of equipment is described to be at intervals
37 recommended by the supplier of the equipment.

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

42
43 In response letters dated December 17 and December 23, 2008 the applicant stated that
44 information regarding emergency kits will be similar to that in use at other Duke Energy nuclear
45 stations. The applicant provided Catawba Nuclear Station's Procedure HP/O/B/1000/006,
46 "Emergency Equipment Functional Check and Inventory," which provides the process to verify
47 availability and readiness of emergency response equipment. The applicant also provided Duke
48 Energy corporate procedure SR/O/B/4600/086, "Standard Procedure for Periodic Verification of

1 EOF Communication Equipment Operation and Equipment/Supply Inventory," which provides a
2 quarterly inventory and verification of EOF equipment operation. These procedures were
3 submitted as attachments 1 and 2 to this response. A license condition addressing the submittal
4 schedule for implementation of emergency planning implementing procedures, is addressed in
5 Part 10, "Proposed Licensed Conditions (including ITAAC)" of the application which is
6 consistent with 10 CFR Part 50, Appendix E, Section V and the allowances provided in SECY-
7 05-0197.]
8

9 **Technical Evaluation:** In RAI 13.03-61(G) the NRC staff requested additional information on
10 the contents of the emergency kits. In response the applicant provided Catawba Nuclear
11 Station's Procedure HP/O/B/1000/006, "Emergency Equipment Functional Check and
12 Inventory," which provides the process to verify availability and readiness of emergency
13 response equipment and Duke Energy corporate procedure SR/O/B/4600/086, "Standard
14 Procedure for Periodic Verification of EOF Communication Equipment Operation and
15 Equipment/Supply Inventory," which provides a quarterly inventory and verification of EOF
16 equipment operation. Since the emergency plan requires a discussion of readiness of
17 emergency response equipment, NRC staff has requested the applicant provide a summary of
18 this information or a reference to these procedures in the Lee Emergency Plan. This issue will
19 be tracked as **Open Item 13.03-14**. The Lee Emergency Plan states that emergency kits are
20 identified by general category: protective equipment, communications equipment, radiological
21 monitoring equipment and emergency supplies.

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

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

31 In determining whether the proposed emergency plan met the applicable regulatory
32 requirements related to the area of "Emergency Facilities and Equipment," the NRC staff also
33 evaluated it against the following requirements in Appendix E to 10 CFR Part 50, 10 CFR
34 52.79(a), 10 CFR 50.34(f) and 10 CFR 52.73.

35 **13.3.1C.H.2 Regulatory Basis:** 10 CFR 50, Appendix E.IV, "Content of Emergency Plans."
36 10 CFR 50, Appendix E.IV.E.1 requires that there be equipment at the site for personnel
37 monitoring.

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

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

44 **13.3.1C.H.3 Regulatory Basis:** 10 CFR 50, Appendix E.IV, "Content of Emergency Plans."
45 10 CFR 50, Appendix E.IV.E.2 requires equipment for determining the magnitude of and for
46 continuously assessing the impact of the release of radioactive materials to the environment.

1 **Technical Information in the Emergency Plan:** Section II.H.5, "On-Site Monitoring Systems,"
2 contains a description of the various monitoring systems necessary for initiating emergency
3 measures and performing accident assessment. Information on personnel monitoring
4 equipment discussed in this section reference the DCD and the FSAR. Geophysical
5 phenomena are described in Section 3.7.4, "Seismic Instrumentation," of the DCD and the
6 corresponding section of FSAR. Radiological monitoring systems can be found in Sections
7 11.5, "Radiation Monitoring," 12.3, "Radiation Protection Design Features," of the DCD and the
8 corresponding sections of the FSAR. A supply of portable radiation monitoring and sampling
9 equipment and emergency response equipment (Section II.H, "Emergency Facilities and
10 Equipment," and Appendix 6, "Emergency Equipment and Supplies") are available. Plant
11 process monitoring systems are described in Section 11.5 of DCD and the corresponding
12 section of the FSAR. Plant fire monitoring systems are described Section 9.5.1, "Fire Protection
13 Systems," of the DCD and the corresponding section of the FSAR. Appendix 1, "Emergency
14 Action Levels" describes the bases for the selection of the designated instruments as indicators
15 of emergency conditions.

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

19 **13.3.1C.H.4 Regulatory Basis:** 10 CFR 50, Appendix E.IV, "Content of Emergency Plans."
20 10 CFR 50, Appendix E.IV.E.3 requires facilities and supplies at the site for decontamination of
21 onsite individuals.

22 **Technical Information in the Emergency Plan:** Section II.J.3, "Personnel Monitoring and
23 Decontamination" (page II-44) mentions the establishment of relocation sites for monitoring of
24 contamination and decontamination. Section II.k.7, "Decontamination of Relocated Lee Nuclear
25 Station Personnel" (page II-54), briefly discusses the ability to decontaminate relocated station
26 personnel. Appendix 6 mentions that emergency kits contain decontamination supplies but
27 specific equipment is not identified. In response to an RAI for Chapter 13 of the FSER the
28 applicant stated, "the hot machine shop (Room 40358) will include a permanent diked
29 decontamination basin with a grating support floor, connected to the radioactive waste drain
30 system for cleaning contaminated components. The hot machine shop will also contain a
31 "portable decontamination system," which the COL holder will purchase according to
32 specifications of its choosing. Personnel decontamination will be performed in a separate
33 decontamination room (Room 40355), which will include two personnel showers and two sinks
34 connected to the radioactive liquid waste system. The staff reviewing this portion found the
35 applicant's design meets the applicable requirements of 10 CFR 50.34(f) (2) (xxv), 10 CFR
36 50.47(b) (8), 10 CFR 50.47(b) (11), and Subsections IV.E.3 and IV.E.8 to 10 CFR Part 50,
37 Appendix E.

38 **The below text was sent by NRC but appears to be in the wrong section. This paragraph**
39 **also appears in the technical evaluation section under 13.3.1C.H.9. The above text**
40 **replaces it in this section.** Section 18.8.2, "Safety Parameter Display System (SPDS)," of the
41 DCD states the Safety Parameter Display System (SPDS) is designed following the human
42 system interface design implementation plan described in subsection 18.8.1, "Implementation
43 Plan for the Human System Interface Design." The SPDS is integrated into the design of the
44 AP1000 human system interface resources. Section 18.8.2.1, "General Safety Parameter
45 Display System Requirements," states, "The AP1000 human system interface data display
46 (alarms and visual display unit displays) is organized around the SPDS requirement of plant
47 process functions." The display of system parameters is discussed in Section 18.2.2.2,
48 "Organizational Placement and Authority." In Section 1.9 of the DCD sub-section (2) (iv) "Safety
49 Parameter Display System", states the purpose of the plant safety parameter display console

1 (SPDS) is to display important plant variables in the main control room in order to assist in
2 rapidly and reliably determining the safety status of the plant. The requirements for the safety
3 parameter display system are specified during the main control room design process, and are
4 met by the main control room design, specifically as part of the alarms, displays, and controls.
5 The requirements for a SPDS are met by grouping the alarms by plant process or purpose, as
6 directly related to the critical safety functions. The process data presented on the graphic
7 displays is similarly grouped, facilitating an easy transition for the operators. The SPDS
8 requirement for presentation of plant data in an analog fashion prior to reactor trip is met by the
9 design of the graphic CRT displays. Displays are available at the operator workstations, the
10 remote shutdown workstation, and at the TSC.
11

12 **Technical Evaluation:** The Lee Emergency Plan identifies facilities and supplies at the site for
13 decontamination of onsite individuals.
14

15 **13.3.1C.H.5 Regulatory Basis:** 10 CFR 50, Appendix E.IV, "Content of Emergency Plans."
16 10 CFR 50, Appendix E.IV.E.4 requires facilities and medical supplies at the site for appropriate
17 emergency first aid treatment.

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

23 **Technical Evaluation:** The Lee Emergency Plan identifies facilities and medical supplies at
24 the site for appropriate emergency first aid treatment.
25

26 **13.3.1C.H.6 Regulatory Basis:** 10 CFR 50, Appendix E.IV, "Content of Emergency Plans."
27 10 CFR 50, Appendix E.IV.E.8 requires an onsite technical support center and an emergency
28 operations facility from which effective direction can be given and effective control can be
29 exercised during an emergency.

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

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

3 **Technical Evaluation:** [If applicable: In Technical Evaluation Section H.1, the staff found the
4 additional information provided in response to RAIs 13.03-61 (A) and (I) to be acceptable and
5 therefore resolved. The Lee Emergency Plan adequately describes an onsite technical support
6 center and an emergency operations facility from which effective direction can be given and
7 effective control can be exercised during an emergency.

8
9 **13.3.1C.H.7 Regulatory Basis:** 10 CFR 50, Appendix E.IV, “Content of Emergency Plans.”
10 10 CFR 50, Appendix E.IV.G requires a description of the provisions to be employed to ensure
11 that the emergency plan, and its implementing procedures, and emergency equipment and
12 supplies are maintained up-to-date.

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

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

22
23 **13.3.1C.H.8 Regulatory Basis:** 10 CFR 50, Appendix E.VI., “Emergency Response Data
24 System,” requires Emergency Response Data System (ERDS), which is a direct near real-time
25 electronic data link between the licensee’s onsite computer system and the NRC Operations
26 Center that provides for the automated transmission of a limited data set of selected
27 parameters. The ERDS supplements the existing voice transmission over the Emergency
28 Notification System (ENS) by providing the NRC Operations Center with timely and accurate
29 updates of a limited set of parameters from the licensee’s installed onsite computer system in
30 the event of an emergency. The licensee shall test the ERDS periodically to verify system
31 availability and operability. The frequency of ERDS testing will be quarterly unless otherwise set
32 by NRC based on demonstrated system performance.

33 10 CFR 50, Appendix E.VI., “Emergency Response Data System,” also requires onsite
34 hardware at each unit by the licensee to interface with the NRC receiving system. Software,
35 which will be made available by the NRC, will assemble the data to be transmitted and transmit
36 data from each unit via an output port on the appropriate data system. The hardware and
37 software must have the following characteristics:

- 38 a. Data points, if resident in the in-plant computer systems, must be transmitted for four
39 selected types of plant conditions: Reactor core and coolant system conditions; reactor
40 containment conditions; radioactivity release rates; and plant meteorological tower data. A
41 separate data feed is required for each reactor unit. While it is recognized that ERDS is not
42 a safety system, it is conceivable that a licensee’s ERDS interface could communicate with
43 a safety system. In this case, appropriate isolation devices would be required at these
44 interfaces. The data points, identified in the following parameters will be transmitted:
45

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

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

- 24
- 25 b. The system must be capable of transmitting all available ERDS parameters at time
26 intervals of not less than 15 seconds or more than 60 seconds. Exceptions to this
27 requirement will be considered on a case by case basis.
 - 28 c. All link control and data transmission must be established in a format compatible with the
29 NRC receiving system as configured at the time of licensee implementation.
- 30

31 **Technical Information in the Emergency Plan:** Section II.F.1.c (page II-30) states that a
32 separate telephone line is dedicated to the operation of the ERDS system. The ERDS system
33 is activated within one hour following declaration of alert of higher emergency class. Section
34 II.H.10 (page II-39) states that testing of the communication systems will be performed quarterly
35 and after each use. Additional information is provided in FSAR section 9.5.2.2.3.2.1 NRC
36 Communication Interfaces. Lee Nuclear Station DCD Tier 2, Chapter 7, "Instrumentation and
37 Controls", Section 7.7, "Control and Instrumentation Systems (pages 7.7-1/25), discusses most
38 of the systems parameters. Meteorological data parameters transmitted are discussed in
39 Chapter 2, "Site Characteristics", Section,2.3.3, "Onsite Meteorological Measurement
40 Programs" (pages 23-26/32), of the FSAR and II.H.8, "Meteorological Instrumentation and
41 Procedures" (page II-36), of the Lee Emergency Plan. Radiation Monitoring is discussed in the
42 Lee Nuclear Station DCD, Tier 2, Chapter 11, "Radioactive Waste Management", Section 11.5,
43 "Radiation Monitoring" (pages 11.5-1/29) and Section 11.1.2, "Plant Monitoring Systems" (page
44 11-40) of the Lee Emergency Plan. Containment parameter monitoring is discussed in Section 7,
45 of the DCD. Description of area radiation monitors and their locations can be found in Lee DCD
46 Tier 1, Chapter 3, "Non-System Based Design Descriptions and ITAAC", Section 3.5, "Radiation
47 Monitoring" (page 3.5-1/8). In RAI 13.03-61 (C) the staff requested the applicant provide the
48 following information regarding the data points transmitted for selected plant conditions: Verify
49 that data points can be transmitted for reactor core and coolant system conditions; reactor
50 containment conditions; radioactivity release rates; and plant meteorological tower data. Verify

1 that a separate data feed will be provided for each reactor unit. If the Emergency Response
2 Data System (ERDS) is to communicate with a safety system, verify that appropriate isolation
3 devices will exist at these interfaces. Additional information regarding the ERDS was also
4 requested in **RAIs 13.03-61 (D)(1-4)**.

5 In response letters dated December 17 and December 23, 2008 the applicant stated that data
6 points for reactor and core coolant system conditions; reactor containment conditions;
7 radioactivity release rates; and plant meteorological tower data will be available for transmittal,
8 and a separate data feed for each reactor unit is to be provided. Data transmission design will
9 include isolation devices as part of the Cyber Security Program being developed. The process
10 and hardware used to transmit data has not been identified but will be specific to AP1000
11 design features and based on regulatory guidance. The applicant also stated that the ERDS for
12 Lee Nuclear Station will be developed on a schedule in compliance with the milestones provided
13 in COL application, Part 10.

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

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

23 In **RAI 13.03-61 (D)(3)**, the staff requested the applicant verify that any hardware or software
24 changes that affect the transmitted data points identified in the ERDS Data Point Library will be
25 submitted to the NRC within 30 days after the changes are completed. The staff also requested
26 that the applicant verify that Hardware and software changes that could affect the transmission
27 format and computer communication protocol to the ERDS will be provided to the NRC at least
28 30 days prior to the modification.. In response letters dated December 17 and December 23,
29 2008 the applicant stated that hardware or software changes that affect the transmitted data
30 points identified in the ERDS Data Point Library will be submitted to the NRC within 30 days
31 after the changes are completed. The applicant also stated that hardware and software changes
32 that could affect the transmission format and computer communication protocol to the ERDS will
33 be provided to the NRC at least 30 days prior to the modification.

34 In **RAI 13.03-61 (D)(4)**, the staff requested the applicant verify that an ERDS implementation
35 program plan has or will be submitted to the NRC. In response letters dated December 17 and
36 December 23, 2008 the applicant stated that an ERDS implementation program plan will be
37 submitted to the NRC. The applicant also stated that some of the details regarding this
38 information are specific to the design features of the AP 1000 and will be based on applicable
39 regulatory guidance. Other details are applicable to the emergency planning program
40 implementation. The ERDS and implementation procedures for the Lee Nuclear Station will be
41 developed on a schedule in compliance with the milestones provided in COL application, Part
42 10, and Tier 1 ITAAC.]

43 **Technical Evaluation: [If applicable:** The staff finds the additional information provided in the
44 applicant's response to RAI 13.03-61 (C) and (D)(1-4) acceptable and therefore resolved. The
45 Lee Emergency Plan describes the Emergency Response Data System (ERDS), as a direct
46 near real-time electronic data link between the licensee's onsite computer system and the NRC
47 Operations Center that provides for the automated transmission of a limited data set of selected
48 parameters. The ERDS supplements the existing voice transmission over the Emergency

1 Notification System (ENS) by providing the NRC Operations Center with timely and accurate
2 updates of a limited set of parameters from the licensee's installed onsite computer system in
3 the event of an emergency. The Lee Emergency Plan states that the licensee will test the
4 ERDS periodically to verify system availability and operability. The frequency of ERDS testing
5 will be quarterly unless otherwise set by NRC based on demonstrated system performance.

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

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

17
18 (i) **[As appropriate]** (For pressurized water reactors (PWRs)) Selected plant
19 parameters are: (1) Primary coolant system: pressure, temperatures (hot leg, cold leg,
20 and core exit thermocouples), subcooling margin, pressurizer level, reactor coolant
21 charging/makeup flow, reactor vessel level, reactor coolant flow, and reactor power; (2)
22 Secondary coolant system: Steam generator levels and pressures, main feedwater
23 flows, and auxiliary and emergency feedwater flows; (3) Safety injection: High- and low-
24 pressure safety injection flows, safety injection flows (Westinghouse), and borated water
25 storage tank level; (4) Containment: pressure, temperatures, hydrogen concentration,
26 and sump levels; (5) Radiation monitoring system: Reactor coolant radioactivity,
27 containment radiation level, condenser air removal radiation level, effluent radiation
28 monitors, and process radiation monitor levels; and (6) Meteorological data: wind speed,
29 wind direction, and atmospheric stability.

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

40
41 b. The system is capable of transmitting all available ERDS parameters at time intervals of
42 not less than 15 seconds or more than 60 seconds.

43 c. All link control and data transmission are established in a format compatible with the
44 NRC receiving system as configured at the time of licensee implementation.
45

46 **13.3.1C.H.9 Regulatory Basis:** 10 CFR 52.79(a)(17) and 10 CFR 50.34(f)(2)(iv) require that
47 the application contain information with respect to compliance with the technically relevant
48 positions of the Three Mile Island requirements in 10 CFR 50.34(f). 10 CFR 50.34(f)(2)(iv)

1 specifically requires a plant safety parameter display console that will display to operators a
2 minimum set of parameters defining the safety status of the plant. The console must be
3 capable of displaying a full range of important plant parameters [list them if provided] and data
4 trends on demand and capable of indicating when process limits are being approached or
5 exceeded. 10 CFR 50.34(f)(2)(viii) requires that the application describe the capability to
6 promptly obtain and analyze from the reactor coolant system and containment that may contain
7 accident source term radioactive materials without radiation exposures to the individual
8 exceeding 5 rems to the whole body or 50 rems to the extremities. Materials to be analyzed
9 and quantified include certain radionuclides that are indicators of the degree of core damage
10 (e.g., noble gases, radioiodines, and cesiums, and nonvolatile isotopes), hydrogen in
11 containment atmosphere, dissolved gases, chloride, and boron concentrations. 10 CFR
12 50.34(f)(2)(xvii) requires that the application describe instruments to measure, record and
13 readout in the control room for: (1) containment pressure, (2) containment water level, (3)
14 containment hydrogen concentration, (4) containment radiation intensity (high level), and (5)
15 noble gas effluents at all potential, accident release points. In addition, the application must
16 describe a continuous sampling capability for radioactive iodines and particulates in gaseous
17 effluents from all potential accidents release points, and for onsite capability to analyze and
18 measure these samples. 10 CFR 50.34(f)(2)(xxv) requires a description of the onsite Technical
19 Support Center (TSC) and the onsite Operational Support Center (OSC).

20 **Technical Information in the Emergency Plan:** Section ---- of the ---- Plan ... what goes
21 here?
22

23 **Technical Evaluation: [If applicable: address the adequacy of RAI response.]** Section
24 18.8.2, "Safety Parameter Display System (SPDS)," of the Tier 2 Material in AP1000 DCD,
25 Revision 16, states the SPDS is designed following the human system interface design
26 implementation plan described in subsection 18.8.1, "Implementation Plan for the Human
27 System Interface Design". The SPDS is integrated into the design of the AP1000 human
28 system interface resources. Section 18.8.2.1 states, "The AP1000 human system interface data
29 display (alarms and visual display unit displays) is organized around the SPDS requirement of
30 plant process functions." The display of system parameters is discussed in section 18.2.2.2. In
31 Section 1.9 of the DCD sub-section (2) (iv) Safety Parameter Display System, states the
32 purpose of the plant safety parameter display console (SPDS) is to display important plant
33 variables in the main control room in order to assist in rapidly and reliably determining the safety
34 status of the plant. The requirements for the safety parameter display system are specified
35 during the main control room design process, and are met by the main control room design,
36 specifically as part of the alarms, displays, and controls. The requirements for a SPDS are met
37 by grouping the alarms by plant process or purpose, as directly related to the critical safety
38 functions. The process data presented on the graphic displays is similarly grouped, facilitating
39 an easy transition for the operators. The SPDS requirement for presentation of plant data in an
40 analog fashion prior to reactor trip is met by the design of the graphic CRT displays. Displays
41 are available at the operator workstations, the remote shutdown workstation, and at the TSC.
42 **[Potential interface: SRP Section 7.5 (SPDS)]**
43

44 **13.3.1C.H.10 Regulatory Basis:** Supplement 1 to NUREG-0737, "Clarification of TMI Action
45 Plan Requirements," issued January 1983, provides guidance emergency response facilities in
46 section 8, "Emergency Response Facilities."

47 **[Note:** SPDS is reviewed in SRP Section 7.5 and 18.2. It may be easier to refer to those
48 sections of the SRP.] The application contained information with respect to compliance with the
49 technically relevant positions of the Three Mile Island requirements in 10 CFR 50.34(f). The ----

1 Plan addressed the plant safety parameter display console that will display to operators a
2 minimum set of parameters defining the safety status of the plant. The console is capable of
3 displaying a full range of important plant parameters **[list them if provided]** and data trends
4 **[list them if provided]** on demand and capable of indicating when process limits are being
5 approached or exceeded.

6 **[Note:** Post-accident sampling is also reviewed in SRP Section 9.3.2. NUREG-1793 only
7 approved radiation exposure controls during sampling. The capabilities of the PASS system are
8 contained in DCD Tier 2 sections 9.3.3 and 12.4.1.8. and possibly the Emergency plan.] The
9 application describes the capability to promptly obtain and analyze from the reactor coolant
10 system and containment that may contain accident source term radioactive materials without
11 radiation exposures to the individual exceeding 5 rems to the whole body or 50 rems to the
12 extremities. Materials to be analyzed and quantified include certain radionuclides that are
13 indicators of the degree of core damage (e.g., noble gases, radioiodines, and cesiums, and
14 nonvolatile isotopes), hydrogen in containment atmosphere, dissolved gases, chloride, and
15 boron concentrations.

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

24 **Technical Information in the Emergency Plan:** Section ---- of the ---- Plan ... **What goes**
25 **here?**
26

27 **Technical Evaluation:** **[If applicable: address the adequacy of RAI response.]** The ---- Plan
28 ...

29 **13.3.1C.H.11 Regulatory Basis:** Section H, "Emergency Facilities and Equipment," of the Lee
30 Emergency Plan states that the Control Rooms, OSCs and TSC were designed to meet the
31 intent of the guidance in NUREG-0737, Supplement 1. However, the details in the plan are not
32 descriptive enough to determine that the guidance in NUREG-0737, Supplement 1 has been
33 implemented. The NRC staff requested in **RAI 13.03-61(E)**, a summary of the information in the
34 emergency plan to describe how the plan meets the intent of the guidance in Supplement 1 to
35 NUREG-0737. RAI Response]

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

41 **Technical Evaluation:** **[If applicable: Adequacy of RAI Response]** The applicant referenced
42 a standard design certification,
43

44 **13.3.1C.H.12 Regulatory Basis:** NUREG-0696, "Functional Criteria for Emergency Response
45 Facilities" provides guidance related to the control room, technical support center (TSC),
46 emergency operations facility (EOF), and the safety parameter display system (SPDS).

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

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

10
11 **13.3.1C.H.13 Regulatory Basis:** 10 CFR 52.73, "Relationship to other Subparts," states that
12 an applicant for a combined license may reference a standard design certification, standard
13 design approval, or manufacturing license.

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

16 **Technical Evaluation:** The applicant referenced a standard design certification.

17 18 **13.3.1C.H.14 Conclusion for Emergency Facilities and Equipment**

19 **If applicable:** As discussed above, the applicant needs to provide the bases for why ITAAC ----
20 - will demonstrate the sufficiency ----- . The NRC will determine whether this planning
21 standard is acceptable and document its determination in the Final Safety Evaluation Report
22 (FSER), based on information the applicant has provided to date and its response to Open Item
23 ----.]

24 *The NRC staff has reviewed the onsite emergency plan and the applicant's responses to RAI*
25 *13.03-61(A) through (I) in regards to Planning Standard D of NUREG-0654/FEMA-REP-1. The*
26 *NRC will determine whether this planning standard is acceptable and document its*
27 *determination in the Final Safety Evaluation Report (FSER), based on information the applicant*
28 *has provided to date, verification of Confirmatory Action Items, and the applicant's response to*
29 *Open Items. The staff identified the following Open Items and Confirmatory Actions as needing*
30 *to be resolved before concluding that the Lee Emergency Plan meets applicable requirements:*

31 - the applicant stated that management, staffing, and assignments of TSC personnel are
32 addressed in procedures. Catawba Nuclear Station Procedure RP/0/A/5000/020, "Technical
33 Support Center Activation Procedure," was provided as an example. Since the emergency plan
34 should contain this information, the NRC staff has requested the applicant provide a reference
35 to the procedure when developed or a summary of information that will be provided in the
36 procedure in the Lee Emergency Plan. This issue will be tracked as **Open Item 13.03-10**.

37
38 -With regard to RAI 13.03-61 (I)(d), the staff requested the applicant provide additional
39 information related to TSC staff assignments. The applicant stated this information will be
40 discussed in procedures. Procedure, RP/0/A/5000/020, "Technical Support Center (TSC)
41 Activation Procedure," was provided as an example. Since the emergency plan should contain
42 a description of TSC staffing, the NRC staff has requested the applicant provide a reference to
43 the procedure when developed or a summary of information that will be contained in the
44 procedure related to TSC staffing in the Lee emergency Plan. This issue will be tracked as
45 **Open Item 13.03-11**.

46

1 -With regard to RAI 13.03-61 (A), in response the applicant provided Catawba Nuclear Station
2 Procedures RP/O/A/5000/024, "OSC Activation Procedure," and RP/O/A/5000/020, "Technical
3 Support Center (TSC) Activation Procedure." Since the emergency should include a description
4 of the process used to relocate these facilities, the NRC staff has requested the applicant
5 provide a reference to the procedure when developed or a summary of information that will be
6 contained in the procedure related to relocation of ERFs in the Lee Emergency Plan. This
7 issue will be tracked as Open Item 13.03-12.

8 - The applicant provided Duke Energy's corporate procedure SH/O/B/2005/001, "Emergency
9 Response Offsite Dose Projections," which describes the procedure for obtaining data from an
10 alternate source. Since the emergency plan should contain a discussion of procedures used to
11 obtain meteorological data, the NRC staff has requested that a reference to this procedure or
12 summary of information it contains related to obtaining meteorological data be provide in the
13 Lee Emergency Plan. This issue will be tracked as Open Item 13.03-13.

14 - In RAI 13.03-61(G) the NRC staff requested additional information on the contents of the
15 emergency kits. In response the applicant provided Catawba Nuclear Station's Procedure
16 HP/O/B/1000/006, "Emergency Equipment Functional Check and Inventory," which provides the
17 process to verify availability and readiness of emergency response equipment and Duke Energy
18 corporate procedure SR/O/B/4600/086, "Standard Procedure for Periodic Verification of EOF
19 Communication Equipment Operation and Equipment/Supply Inventory," which provides a
20 quarterly inventory and verification of EOF equipment operation. Since the emergency plan
21 requires a discussion of readiness of emergency response equipment, NRC staff has requested
22 the applicant provide a reference to these procedures or a summary of information they contain
23 related to instrument readiness in the Lee Emergency Plan. This issue will be tracked as **Open**
24 **Item 13.03-15.**

25
26 Upon resolution of these items, Section H of the Lee Emergency Plan will be consistent with
27 Planning Standard H of NUREG-0654/FEMA-REP-1 and will meet the requirements of 10 CFR
28 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
29 50.

30
31 The applicant has committed to meet the following license conditions and ITAAC, with the
32 associated dates, for the emergency preparedness program:

33 **ITAAC:**

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

37
38 **[H.2., ITAAC 5.2]** An ITAAC has been written to test that the licensee has established an EOF
39 (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the
40 William S. Lee Nuclear Station, Units 1 and 2 COL Application).

41
42
43
44

1 **13.3.1C.I Accident Assessment**
2

3 **13.3.1C.I.1 Regulatory Basis:** 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(9);
4 Planning Standard I requires that adequate methods, systems and equipment for assessing and
5 monitoring actual or potential offsite consequences of a radiological emergency condition be in
6 use.

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

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

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

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

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

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

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

1 computer code. An ITAAC has been submitted to perform an analysis of emergency plan
2 implementing procedures. In **RAI 13.03-62(D)** the NRC staff requested additional information
3 on the process used to estimate accident source terms.

4 **Unit 1 and 2 ITAAC 6.2** has submitted to test that the means exists to determine the source
5 term of releases of radioactive material within plant systems, and the magnitude of the release
6 of radioactive materials based on plant system parameters and effluent monitors. (see Table
7 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee
8 Nuclear Station, Units 1 and 2 COL Application).
9

10 With regard to **RAI 13.03-62 (D)**, in response letters dated December 17 and December 23,
11 2008 the applicant stated that Appendix 2, "Radiological Assessment and Monitoring" of the Lee
12 Emergency Plan provides a description of the Raddose-V dose assessment model which is
13 used to analyze offsite does at Duke Facilities. This model provides results that are compatible
14 and consistent with NRC dose assessment models evaluated during successful emergency plan
15 exercises. The code is maintained current with respect to the facility's physical and operational
16 characteristics and the assumptions and criteria used in the dose consequence analysis
17 performed as part of the regulatory required accident analyses described in Chapter 15 of the
18 FSAR. The applicant further stated that Raddose-V does not currently include modeling for the
19 Lee facility but they anticipate modifying the code to include data for the Lee facility or using
20 more advanced assessment capabilities that may be available.

21
22 In **RAI 13.03-62 (D)(1)**, the staff requested the applicant provide a list of procedures that cover
23 the estimation of accident source terms (radionuclides and activities) and describe the contents
24 of each procedure. In response letters dated December 17 and December 23, 2008 the
25 applicant stated that instruction to dose assessors for determining source term and calculating
26 the projected offsite dose to the public using Raddose-V and guidance for completion of
27 Emergency Notification Forms is provided in Duke Corporate Procedure SH/0/B/2005/001,
28 "Emergency Response Offsite Dose Projections."
29

30 In **RAI 13.03-62 (D)(2)**, the staff requested the applicant identify who is responsible for making
31 source term estimates at various stages of the event. In response letters dated December 17
32 and December 23, 2008 the applicant stated that Dose Assessors in the EOF, under the
33 direction of the Radiological Assessment Manager, are responsible for evaluating source terms
34 until the event is terminated. Additional information is provided in response to RAI 13.03-62
35 (D)(3).
36

37 In **RAI 13.03-62 (D)(3)**, the staff requested the applicant clarify assumptions related to the
38 pathway from the reactor to the environment. In response letters dated December 17 and
39 December 23, 2008 the applicant stated that Section 15.6 of the DCD identifies the following
40 pathways to the environment: 1) A steam generator tube rupture where the pathways may
41 involve the Unit Vent and Main Steam Isolation Valves; 2) A loss of coolant accident inside
42 containment where the pathway involves a loss of containment or design basis leakage with
43 significant increase in reactor coolant activity (Unit Vent); 3) A loss of coolant accident outside of
44 containment (Unit Vent); 4) A fuel handling accident (Unit Vent).
45

46 In **RAI 13.03-62 (D)(4)**, the staff requested the applicant discuss whether or not the
47 assumptions include reduction of the source term to account for filters, sprays, or other safety.
48 In response letters dated December 17 and December 23, 2008 the applicant stated that the
49 code used in Raddose-V includes provisions for features that provide for source term reduction

1 specific to the as-built plant. The applicant further stated that features of the Lee Facility have
2 not yet been added to the code as specified in response to RAI Site-9(D).
3

4 In **RAI 13.03-62 (D)(5)**, the staff requested the applicant clarify whether the source term
5 estimates will be modified during the course of the event to account for changes in the release
6 pathway. In response letters dated December 17 and December 23, 2008 the applicant stated
7 that the source term available for release is modified within the Raddose-V program to account
8 for processes that reduce or increase the release based on the pathway(s) or release rates. The
9 applicant further stated that features of the Lee Facility have not yet been added to the code as
10 specified in response to RAI 13.03-62 (D).
11

12 In **RAI 13.03-62 (D)(6)**, the staff requested the applicant clarify how long it takes to obtain
13 source term estimates. In response letters dated December 17 and December 23, 2008 the
14 applicant stated that 15 minute averages of effluent and/or accident monitors may be needed to
15 obtain source term estimates for the model currently used for other operating facilities
16

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

24 **Technical Evaluation:** The staff finds the clarifications and additional information provided in
25 the applicant's response to RAI 13.03-62 (D)(3-7) acceptable and therefore resolved. In RAI
26 13.03-62(D) the NRC staff requested additional information on the process used to estimate
27 accident source terms. In response the applicant stated that Raddose-V does not currently
28 include modeling for the Lee facility but they anticipate modifying the code to include data for
29 the Lee facility or using more advanced assessment capabilities that may be available. Since
30 the emergency plan is dependent on site specific analysis for offsite dose, the NRC has
31 requested that this information be provided. The inclusion of site specific data in the Lee
32 emergency Plan is tracked as **Open Item 13.03-16**.
33

34 In **RAI 13.03-62 (D)(1)**, the staff requested the applicant provide a list of procedures that cover
35 the estimation of accident source terms (radionuclides and activities) and describe the contents
36 of each procedure. In response the applicant stated that instruction to dose assessors for
37 determining source term and calculating the projected offsite dose to the public using Raddose-
38 V and guidance for completion of Emergency Notification Forms is provided in Duke Corporate
39 Procedure SH/0/B/2005/001, "Emergency Response Offsite Dose Projections." since this
40 information was not included in the emergency plan, the NRC staff has requested a summary of
41 this information or a reference to the procedures be provided in the Lee Emergency Plan. This
42 issue is tracked as **Open Item 13.03-17**. The Lee Emergency Plan establishes methods and
43 techniques to be used for determining:

- 44 a. the source term of releases of radioactive material within plant systems
- 45 b. the magnitude of the release of radioactive materials based on plant system parameters
46 and effluent monitors
47

48 **Technical Information in the Emergency Plan: [I.4.]** Section II.I.4, "Relationship Between
49 Effluent Monitor Reading and Exposure and Contamination Levels," of the Lee Emergency Plan,

1 introduces the dose assessment capability. Appendix 2, Section 3.0, "Conceptual Design
2 Description: Atmospheric Transport and Diffusion Assessment," describe the dose assessment
3 programs. Sections 3.3, "Data Acquisition," 3.4, "Modeling," and 3.5, "Data Output," of
4 Appendix 2, "Radiological Assessment and Monitoring," to the Lee Emergency Plan describe
5 the method of estimating offsite exposures and contamination from monitoring readings and
6 meteorological data using the Raddose-V computer code. In **RAI 13.03-62(E)**, the NRC staff
7 requested additional information regarding the dose assessment program.

8
9 **Unit 1 and 2 ITAAC 6.3** has been submitted to test that the means exists to continuously
10 assess the impact of the release of radioactive materials to the environment, accounting for the
11 relationship between effluent monitor readings, and onsite and offsite exposures and
12 contamination for various meteorological conditions. (see Table 3.8-1, "Inspections, Tests,
13 Analyses, and Acceptable Criteria." in Part 10 of the William S. Lee Nuclear Station, Units 1 and
14 2 COL Application).

15
16 With regard to **RAI 13.03-62 (E)(1)**, in response letters dated December 17 and December 23,
17 2008 the applicant stated that the Lee Nuclear Station site-specific procedures have not yet
18 been developed but they will be similar to those in use at Catawba Nuclear Facility. Dispatch of
19 on-site survey teams is discussed in Enclosure 5.1, of procedure HP/0/B/1009/009, "Guidelines
20 for Accident and Emergency Response." The dispatched of teams to monitor the particulate
21 and iodine levels present during an emergency is discussed in procedure HP/0/B/1009/007, "In-
22 Plant Particulate and Iodine Monitoring Under Accident Conditions." These procedures are
23 provided as attachments 2 and 3 to this response.

24
25 In **RAI 13.03-62 (E)(2)**, the staff requested the applicant identify who is responsible for making
26 estimates of onsite exposures and contamination. In response letters dated December 17 and
27 December 23, 2008 the applicant stated that the Lee Nuclear Station site-specific procedures
28 have not yet been developed but they will be similar to those in use at Catawba Nuclear Facility.
29 On-shift staff is responsible for initial emergency response actions as discussed in section 4.1 of
30 HP/0/B/1 009/009, "Guidelines for Accident and Emergency Response," This procedure is
31 provided as attachment 2 to this response.

32
33 In **RAI 13.03-62 (E)(3)**, the staff requested the applicant provide a List of procedures that cover
34 the estimation [of] offsite exposures and contamination and summarize the contents of each
35 procedure. In response letters dated December 17 and December 23, 2008 the applicant stated
36 that the Lee Nuclear Station site-specific procedures have not yet been developed but they will
37 be similar to those in use at other Duke Facilities. The procedure contains guidance for utilizing
38 the automatic mode for data input which uses a number of defaults to speed the initial dose
39 assessment process. Dose assessment is performed by the ERO dose assessors in the EOF.
40 The applicant also stated that Raddose-V will be updated with actual plant data to improve the
41 dose estimates. The applicant anticipates that the Duke corporate procedure, SH/0/B/2005/001,
42 "Emergency Response Offsite Dose Projections," will be modified to incorporate the Lee site.
43 This procedure is provided as attachment 1 to this response.

44
45 In **RAI 13.03-62 (E)(4)**, the staff requested the applicant identify who is responsible for making
46 estimates of offsite exposures and contamination. In response letters dated December 17 and
47 December 23, 2008 the applicant stated that dose assessment will be provided by EOF Dose
48 Assessment personnel reporting to the EOF Director.

49
50 In **RAI 13.03-62 (E)(5)**, the staff requested the applicant identify how exposure and
51 contamination estimates would be made in the event that the computer method is unavailable.

1 In response letters dated December 17 and December 23, 2008 the applicant refers to
2 information provided in response to RAI 13.03-62 (D)(7).
3

4 In **RAI 13.03-62 (E)(6)**, the staff requested the applicant describe how exposure and
5 contamination estimated would be adjusted in the event that onsite meteorological data are not
6 available. In response letters dated December 17 and December 23, 2008 the applicant refers
7 to information provided in response to RAI 13.03-62 (C) regarding meteorological data.]
8

9 **Technical Evaluation:** The staff finds the additional information provided in the applicant's
10 response to RAIs 13.03-62 (E)(4-6) to be acceptable and therefore resolved. In RAI 13.03-
11 62(E)(1-3), the NRC staff requested additional information regarding the dose assessment
12 program. With regard to RAI 13.03-62 (E)(1), in response the applicant site specific procedures
13 have not been developed for the Lee facility so Catawba procedure HP/0/B/1009/009,
14 "Guidelines for Accident and Emergency Response," and procedure HP/0/B/1009/007, "In-Plant
15 Particulate and Iodine Monitoring Under Accident Conditions," which describes dispatch of
16 survey teams and monitoring of particulates and iodine levels respectively, were provided as
17 examples. Since this information is not discussed in the emergency plan, the NRC staff has
18 requested that a summary of this information or a reference to these procedures be included in
19 the Lee Emergency Plan. This issue is tracked as **Open Item 13.03-18**.
20

21 In **RAI 13.03-62 (E)(2)**, the staff requested the applicant identify who is responsible for making
22 estimates of onsite exposures and contamination. In response the applicant stated that the Lee
23 Nuclear Station site-specific procedures have not yet been developed but they will be similar to
24 those in use at Catawba Nuclear Facility. Catawba procedure HP/0/B/1 009/009, "Guidelines
25 for Accident and Emergency Response," discusses responsibility for initial emergency response
26 by on-shift staff. Since the emergency plan does not contain this information, the NRC staff has
27 requested that a reference to the procedure or a summary of information it contain as it relates
28 to estimates of onsite exposure and contamination provided in the Lee Emergency Plan. This
29 issue will be tracked as **Open Item 13.03-19**.
30

31 In **RAI 13.03-62 (E)(3)**, the staff requested the applicant provide a list of procedures that cover
32 the estimation [of] offsite exposures and contamination and summarize the contents of each
33 procedure. In response the applicant stated that the Lee Nuclear Station site-specific
34 procedures have not yet been developed but they will be similar to those in use at other Duke
35 Facilities. The applicant provided Duke corporate procedure, SH/0/B/2005/001, "Emergency
36 Response Offsite Dose Projections," as an example of guidance for utilizing the automatic mode
37 for data input which uses a number of defaults to speed the initial dose assessment process.
38 Since the emergency plan does not contain this information, NRC staff has requested the
39 applicant provide a reference to this procedure, when developed, or a summary of information it
40 will contain in the Lee Emergency Plan. This issue will be tracked as **Open Item 13.03-20**.
41 The Lee Emergency Plan establishes the relationship between effluent monitor readings and
42 onsite and offsite exposures and contamination for various meteorological conditions.
43

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

1 NRC staff requested additional information on the acquisition and distribution of the
2 representative meteorological information.

3 **Unit 1 and 2 ITAAC 6.4** has been submitted to test that the means exists to acquire and
4 evaluate meteorological information. (see Table 3.8-1, "Inspections, Tests, Analyses, and
5 Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL
6 Application).
7

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

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

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

28 In **RAI 13.03-62 (G)(1)**, the staff requested the applicant describe methods for determining
29 release rates and doses when instrumentation used for assessments in inoperable or readings
30 are off scale, and summarize the contents of each procedure. In response letters dated
31 December 17 and December 23, 2008 the applicant stated that release rates can be estimated
32 by using default source term inventories or back calculations from field data both provided in the
33 Raddose-V model. These site specific procedures have not yet been developed for the Lee
34 Facility.
35

36 In **RAI 13.03-62 (G)(2)**, the staff requested the applicant identify who makes the decision to use
37 alternative methods for estimating release rates and doses. In response letters dated
38 December 17 and December 23, 2008 the applicant stated that the Radiation Protection
39 Manager in the TSC or the Radiological Assessment Manager in the EOF would make the
40 decision to use alternative methods for estimating release rates and doses.
41

42 In **RAI 13.03-62 (G)(3)**, the staff requested the applicant identify who estimates release rates in
43 these cases. In response letters dated December 17 and December 23, 2008 the applicant
44 stated that the ERO Dose Assessors under guidance of the Radiological Assessment Manager
45 will estimate the release rates, in all cases.
46

47 In **RAI 13.03-62 (G)(4)**, the staff requested the applicant explain what compensatory measures
48 are taken in the assessment. In response letters dated December 17 and December 23, 2008

1 the applicant stated, "Any necessary or appropriate compensatory measures not already
2 considered in the existing dose assessment procedures and Raddose-V code that are specific
3 to Lee facility operation will be addressed in the procedures implemented for or to include the
4 Lee facility when developed."

5
6 In **RAI 13.03-62 (G)(5)**, the staff requested the applicant describe how are release rates
7 estimated from field monitoring data. In response letters dated December 17 and December 23,
8 2008 the applicant stated that the Raddose-V code uses field data, meteorology, and accident
9 assumptions to back-calculate source term required to result in measured field dose. That
10 source term could then be used to generate a complete dose projection.

11
12 In **RAI 13.03-62 (G)(6)**, the staff requested the applicant explain what assumptions are made in
13 the process. In response letters dated December 17 and December 23, 2008 the applicant
14 stated that any assumptions beyond those provided in FSAR Chapter 15 that are specific to the
15 Lee facility will be determined during the modifications made to Raddose-V or within the
16 development of alternative software.

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

23
24 **Technical Evaluation:** The staff finds the additional information provided in the applicant's
25 response to RAI 13.03-62 (G)(1-7) acceptable and therefore resolved. The Lee Emergency Plan
26 establishes the methodology for determining the release rate/projected doses if the
27 instrumentation used for assessment are off-scale or inoperable.

28
29 **Technical Information in the Emergency Plan: [I.7]** Section II.I.7, "Field Monitoring
30 Capability," of the Lee Emergency Plan briefly describes the field monitoring capability.
31 Implementing procedures provide guidance for field monitoring teams' performance of
32 monitoring activities. Instrumentation typically available for field deployment is listed in
33 Appendix 6, "Emergency Equipment and Supplies," and Section II.B, "On-Site Emergency
34 Organization", Table II-2, "Plant Staff Emergency Functions," of the Lee Emergency Plan
35 indicates that 4 individuals (two teams consisting of a driver and a tech.) should be available for
36 off-site field monitoring within 75 minutes. Field monitoring teams are directed by Radiation
37 Protection personnel in the TSC.

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

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

1 **Unit 1 and 2 ITAAC 6.5** has been submitted to test that the means exist to make rapid
2 assessments of actual or potential magnitude and locations of any radiological hazards through
3 liquid or gaseous release pathways, including activation, notification means, field team
4 composition, transportation, communication, monitoring equipment, and estimated deployment
5 times. (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria." in Part 10 of
6 the William S. Lee Nuclear Station, Units 1 and 2 COL Application).
7

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

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

19 **Unit 1 and 2 ITAAC 6.6** has been submitted to test that the capability exists to detect and
20 measure radioiodine concentrations in air in the plume exposure EPZ, as low as 10^{-7} $\mu\text{Ci/cc}$
21 (microcuries per cubic centimeter) under field conditions. (see Table 3.8-1, "Inspections, Tests,
22 Analyses, and Acceptable Criteria" in Part 10 of the William S. Lee Nuclear Station, Units 1 and
23 2 COL Application).
24

25 **Technical Evaluation:** The Lee Emergency Plan describes a capability to detect and measure
26 radioiodine concentrations in air in the plume exposure EPZ as low as 10^{-7} $\mu\text{Ci/cc}$ (microcuries
27 per cubic centimeter) under field conditions. Interference from the presence of noble gas and
28 background radiation does not decrease the stated minimum detectable activity.

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

37 **Unit 1 and 2 ITAAC 6.7** has been submitted to test that the means exist to estimate integrated
38 dose from the projected and actual dose rates, and for comparing these estimates with the EPA
39 protective action guides (PAGs). (see Table 3.8-1, "Inspections, Tests, Analyses, and
40 Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL
41 Application).
42

43 In response letters dated December 17 and December 23, 2008 the applicant provided Duke's
44 corporate procedure SR/0/B/2000/003, "Activation of the Emergency Operations Facility", which
45 provides instructions for preparing Protective Action Recommendations to appropriate State
46 authorities. The procedure includes Offsite Protective Action Flowcharts used by Duke at its
47 operating nuclear plants. The flowcharts include radiological dose considerations. The applicant
48 stated that the dose assessment procedures used for the Lee site will be similar to those in use
49 at other Duke Energy nuclear plants. The procedure is included as attachment 1 to the

1 response to RAI 13.03-55. The applicant also stated that Implementing procedures and
2 programs will be modified to include the Lee Nuclear Station on a schedule that supports NRC
3 inspection activities and execution of the emergency exercise required by Section IV.F.2 of 10
4 CFR 50, Appendix E.

5 **Technical Evaluation:** The staff finds the additional information provided in the applicant's
6 response to RAI 13.03-62 (H) acceptable and therefore resolved. The Lee Emergency Plan
7 establishes means for relating the various measured parameters (e.g., contamination levels,
8 water and air activity levels) to dose rates for key isotopes and gross radioactivity
9 measurements. The Lee Emergency Plan describes provisions for estimating integrated dose
10 from the projected and actual dose rates and for comparing these estimates with the protective
11 action guides. The detailed provisions are described in separate procedures.

12
13 **13.3.1C.I.2 Regulatory Basis:** 10 CFR 50, Appendix E.IV, "Content of Emergency Plans."
14 10 CFR 50, Appendix E.IV.B requires that the means to be used for determining the magnitude
15 of, and for continually assessing the impact of, the release of radioactive materials be
16 described. The description must include emergency action levels that are to be used as criteria
17 for determining the need for notification and participation of local and State agencies, the
18 Commission, and other Federal agencies, and the emergency action levels that are to be used
19 for determining when and what type of protective measures should be considered within and
20 outside the site boundary to protect health and safety. The emergency action levels are to be
21 based on in-plant conditions and instrumentation in addition to onsite and offsite monitoring.
22 These initial emergency action levels are to be discussed and agreed on by the applicant or
23 licensee and state and local governmental authorities, and approved by the NRC.

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

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

40
41 **13.3.1C.I.3 Regulatory Basis: Supplement 1 to NUREG-0737,** Section 6.1.b., "Control
42 Room," provides guidance related to control room instrumentation to assess plant and environs
43 conditions during and following an accident, including the reliable indication of the
44 meteorological variables (wind direction, wind speed, and atmospheric stability) for site
45 meteorology. Further information is found at Regulatory Guide 1.97 (Rev. 3), "Instrumentation
46 for Light-Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions during
47 And Following an Accident."

1 **Technical Information in the Emergency Plan:** Meteorological monitoring is addressed in
2 Section II.H.8, "Meteorological Instrumentation and Procedures," of the Lee Emergency Plan
3 and Lee Nuclear Station FSAR Section 2.3.3, "Onsite Meteorological Measurement Programs,"
4 and provides information on meteorological monitoring. The Lee Emergency Plan does not
5 describe the operational distribution of meteorological data from the onsite data collection
6 system. In **RAI 13.03-62(B)**, the NRC staff requested the applicant provide a summary of the
7 meteorological data available in the Control Room. DCD Tier 2, Section 7.5, "Safety-Related
8 Display Information," lists meteorological data as E2 variable in the RG 1.97 classification
9 scheme for safety-related display information. As such, it would be available in the Control
10 Room.

11
12 In response letters dated December 17 and December 23, 2008 the applicant stated that
13 information necessary for protective action decision making and dose assessment is available in
14 ERFs where it is required. The applicant further stated that Section II.H.8 of the Lee Emergency
15 Plan states wind speed, wind direction, ambient air temperature, Dewpoint, and precipitation
16 data is available in the Control Rooms, TSC, and EOF.]

17
18 Section II.H.8, "Meteorological Instrumentation and Procedures," of the Lee Emergency Plan
19 states that meteorological data are also available from Catawba Nuclear Station and the
20 National Weather Service in Greer, SC. In **RAI 13.03-62(C)** the NRC staff requested further
21 information on information gathered from the Catawba nuclear Station and the National Weather
22 Service.

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

32
33 **Technical Evaluation:** The staff finds the clarification and additional information provided in
34 the applicant's response to RAIs 13.03-62 (B) to be acceptable and therefore resolved. In RAI
35 13.03-62(C) the NRC staff requested further information on information gathered from the
36 Catawba nuclear Station and the National Weather Service. In response provided Duke
37 Corporate procedure SH/O/B/2005/001, "Emergency Response Offsite Dose Projections," which
38 used at other Duke sites for obtaining and using data from the national weather service. Since
39 the emergency plan does not contain this information, the NRC staff has requested the
40 applicant provide a summary of the information or a reference to the procedure, when revised,
41 in the Lee emergency Plan. This issue is tracked as **Open Item 13.03-21**. The Lee Emergency
42 Plan describes measurements and indication of Type A, B, C, D, E variables listed in Regulatory
43 Guide 1.97 (Rev. 3), "Instrumentation for Light-Water Cooled Nuclear Power Plants to Assess
44 Plant and Environs Conditions During And Following an Accident." The Lee Emergency Plan
45 describes reliable indication of the meteorological variables (wind direction, wind speed, and
46 atmospheric stability) specified in Regulatory Guide 1.97 (Rev. 3) for site meteorology.
47 Information on meteorological conditions for the region in which the site is located is available
48 via communication with the National Weather Service.

1 **13.3.1C.I.4 Regulatory Basis:** 10 CFR 52.79(a)(17) and 10 CFR 50.34(f)(2)(viii) require
2 that the applicant provide a capability to promptly obtain and analyze samples from the reactor
3 coolant system and containment that may contain accident source term radioactive materials
4 without radiation exposures to the individual exceeding 5 rems to the whole body or 50 rems to
5 the extremities.
6

7 **Technical Information in the Emergency Plan:** AP1000 FSER Section 13.3.3.4.2, "Radiation
8 Exposure", DCD Tier 2, Section 9.3.3, "Primary Sampling System," states that the primary
9 sampling system includes equipment to collect representative samples of the various process
10 fluids, including reactor coolant system and containment air, in a manner that adheres to as low
11 as is reasonably achievable (ALARA) principles during normal and post-accident conditions.
12 DCD Tier 2, Section 12.4.1.8, "Post-Accident Actions," states that requirements of 10 CFR
13 52.79(b) relative to plant area access and post accident sampling (10 CFR 50.34(f)(2)(viii)) are
14 included in DCD Tier 2, Section 1.9.3, "Three Mile Island Issues." If procedures are followed,
15 the design prevents radiation exposures to any individual from exceeding 5 rem [0.05 Sv] to the
16 whole body or 50 rem [0.5 Sv] to the extremities.

17 AP1000 DCD Tier 2, Section 1.9.5.2.9, "Post-Accident Sampling System," states that the PASS
18 is a subsystem of the primary sampling system and that the primary sampling system is
19 designed to conform to the guidelines of the model safety evaluation report on eliminating PASS
20 requirements from technical specifications for operating plants. DCD Tier 2, Section 1.9.3,
21 "Three Mile Island Issues"-(2)(viii), Post-Accident Sampling (NUREG-0737 Item II.B.3), states
22 that the AP1000 sampling design is consistent with the approach in the model safety evaluation
23 report and not the guidance outlined in NUREG-0737 and RG 1.97, "Instrumentation for Light-
24 Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and
25 Following an Accident" (Revision 3, May 1983). The primary sampling system design is
26 consistent with contingency plans to obtain and analyze highly radioactive post accident
27 samples from the reactor coolant system, the containment sump, and the containment
28 atmosphere.
29

30 AP1000 DCD Tier 2, Section 9.3.3.1.2.2, "Post-Accident Sampling," states that the primary
31 sampling system does not include specific post accident sampling capability. However, there
32 are contingency plans for obtaining and analyzing highly radioactive samples of reactor coolant,
33 containment sump, and containment atmosphere. These plans include the procedures to
34 analyze, during the later stages of accident response, reactor coolant for boron, containment
35 atmosphere for hydrogen and fission products, and containment sump water for pH. The
36 primary means of containment atmosphere hydrogen analysis is the hydrogen analyzer, which
37 is not part of the post accident sampling capabilities.
38

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

46
47 **13.3.1C.I.5 Regulatory Basis:** 10 CFR 50.34(f)(2)(xvii) requires that the applicant provide
48 instruments to measure, record and readout in the control room: (A) containment pressure, (B)
49 containment water level, (C) containment hydrogen concentration, (D) containment radiation
50 intensity (high level), and (E) noble gas effluents at all potential, accident release points. The

1 applicant will also provide for continuous sampling of radioactive iodines and particulates in
2 gaseous effluents from all potential accidents release points, and for onsite capability to analyze
3 and measure these samples.
4

5 **Technical Information in the Emergency Plan** Section II.I, “Accident Assessment,” of the Lee
6 Emergency Plan briefly describes measuring, monitoring, readout and continuous sampling
7 systems. FSAR Chapter 7, 7.5, “Safety-Related Display Information,” states this section of the
8 referenced DCD is incorporated by reference with no departures or supplements. In **RAI 13.03-**
9 **62(A)** the NRC staff requested the applicant provide additional information regarding the
10 Emergency Preparedness (EP)-related instrumentation found in the Control Room that is
11 available for use in emergency classification and dose assessment.
12

13 In response letters dated December 17 and December 23, 2008 the applicant stated that the
14 selection of monitored variables, based on guidance provided in Regulatory Guide 1.97, is
15 discussed in Section 7.5 of Tier 2 of the AP1000 DCD and incorporated by reference in the Lee
16 FSAR. Instrument design criteria are described in subsections 7.5.2 and 7.5.3 of the DCD.
17 Subsection 7.5.4 discusses the equipment that processes the safety-related display information
18 and makes it available to the operator. Emergency preparedness-related instrumentation is
19 discussed in Appendix 1 of the Emergency Plan provides details related to Control Room
20 instrumentation used for emergency classification. A summary of the instrumentation was
21 provided. The applicant also stated Appendix 2 of the Lee Emergency Plan provides
22 information regarding atmospheric transport and diffusion assessment. Plant Vent and Turbine
23 Island Vent effluent monitors are discussed in Section 11.5.3 of the DCD Revision 16.
24

25 **Technical Evaluation:** The staff finds the clarification and additional information provided in
26 the applicant’s response to RAI 13.03-62 (A) acceptable and therefore resolved. The Lee
27 Emergency Plan describes instruments to measure, record and readout in the control room for:
28 (1) concentration, (2) containment water levels, (3) containment hydrogen, and (5) noble gas
29 effluents at all potential, accident release points. Also, Section II.I, “Accident Assessment,” of
30 the Lee Emergency Plan describes a continuous sampling capability for radioactive iodines and
31 particulates in gaseous effluents from all potential accident release points, and for onsite
32 capability to analyze and measure these samples.
33

34 **13.3.1C.I.6Regulatory Basis:** 10 CFR 50.34 (f)(2)(viii) states the applicant will provide a
35 capability to promptly obtain and analyze samples from the reactor coolant system and
36 containment that may contain accident source term³ radioactive materials without radiation
37 exposures to the individual exceeding 5 rems to the whole body or 50 rems to the extremities.
38 Materials to be analyzed and quantified include certain radionuclides that are indicators of the
39 degree of core damage (e.g., noble gases, radioiodines, and cesiums, and nonvolatile
40 isotopes), hydrogen in containment atmosphere, dissolved gases, chloride, and boron
41 concentrations.
42

43 **Technical Information in the Emergency Plan:** Section 13.3.3.4.2 “Radiation Exposure”, of
44 the Tier 2 material in the AP1000 DCD, Section 9.3.3, “Primary Sampling System”, states that

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.

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

10
11 Section 1.9.5.2.9, "Post-Accident Sampling System," of the Tier 2 material in the AP1000 DCD
12 states that the PASS is a subsystem of the primary sampling system and that the primary
13 sampling system is designed to conform to the guidelines of the model safety evaluation report
14 on eliminating PASS requirements from technical specifications for operating plants.
15 Subsection (2)(viii), "Post-Accident Sampling System," (NUREG-0737 Item II.B.3)," of the Tier 2
16 material in Revision 16 of the AP1000 DCD states that the AP1000 sampling design is
17 consistent with the approach in the model safety evaluation report and not the guidance outlined
18 in NUREG-0737 and RG 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to
19 Assess Plant and Environs Conditions During and Following an Accident" (Revision 3, May
20 1983). The primary sampling system design is consistent with contingency plans to obtain and
21 analyze highly radioactive post accident samples from the reactor coolant system, the
22 containment sump, and the containment atmosphere.

23
24 Section 9.3.3.1.2.2, "Post-Accident Sampling," of the Tier 2 material in the AP1000 DCD states
25 that the primary sampling system does not include specific post accident sampling capability.
26 However, there are contingency plans for obtaining and analyzing highly radioactive samples of
27 reactor coolant, containment sump, and containment atmosphere. These plans include the
28 procedures to analyze, during the later stages of accident response, reactor coolant for boron,
29 containment atmosphere for hydrogen and fission products, and containment sump water for
30 pH. The primary means of containment atmosphere hydrogen analysis is the hydrogen
31 analyzer, which is not part of the post accident sampling capabilities. Further references are
32 located at Subsection H.7 of this SER Section 13.3.1C.H.1, "Emergency Facilities and
33 Equipment."

34
35 **Technical Evaluation:** The Lee Emergency Plan describes the capability to promptly obtain
36 and analyze the reactor coolant system and containment that may contain accident source term
37 radioactive materials without radiation exposures to the individual exceeding 5 rems to the
38 whole body or 50 rems to the extremities. Materials to be analyzed and quantified include
39 certain radionuclides that are indicators of the degree of core damage (e.g., noble gases,
40 radioiodines, cesiums, and nonvolatile isotopes), hydrogen in containment atmosphere,
41 dissolved gases, chloride, and boron concentrations.

42 43 **13.3.1C.I.7 Conclusion for Accident Assessment**

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

1 The NRC staff has reviewed the onsite emergency plan and the applicant's responses to RAI
2 13.03-62(A) through (H) in regards to Planning Standard I of NUREG-0654/FEMA-REP-1. The
3 NRC will determine whether this planning standard is acceptable and document its
4 determination in the Final Safety Evaluation Report (FSER), based on information the applicant
5 has provided to date, verification of Confirmatory Action Items, and the applicant's response to
6 Open Items. The staff identified the following Open Item as needing to be resolved before
7 concluding that the Lee Emergency Plan meets applicable requirements:

8 In RAI 13.03-62(E)(1-3), the NRC staff requested additional information regarding the dose
9 assessment program. With regard to RAI 13.03-62 (E)(1), in response the applicant stated site
10 specific procedures have not been developed for the Lee facility so Catawba procedure
11 HP/0/B/1009/009, "Guidelines for Accident and Emergency Response," and procedure
12 HP/0/B/1009/007, "In-Plant Particulate and Iodine Monitoring Under Accident Conditions,"
13 which describes dispatch of survey teams and monitoring of particulates and iodine levels
14 respectively, were provided as examples. Since this information is not discussed in the
15 emergency plan, NRC staff has requested that a summary of this information or a reference to
16 these procedures, once developed, be included in the Lee Emergency Plan. This issue is
17 tracked as **Open Item 13.03-18**.

18
19 In **RAI 13.03-62 (E)(2)**, the staff requested the applicant identify who is responsible for making
20 estimates of onsite exposures and contamination. In response the applicant stated that the Lee
21 Nuclear Station site-specific procedures have not yet been developed but they will be similar to
22 those in use at Catawba Nuclear Facility. Catawba procedure HP/0/B/1 009/009, "Guidelines
23 for Accident and Emergency Response," discusses responsibility for initial emergency response
24 by on-shift staff. Since the emergency plan does not contain this information, the NRC staff has
25 requested that a summary of this information or a reference to the procedure, once developed,
26 be included in the Lee Emergency Plan. This issue will be tracked as **Open Item 13.03-19**.

27
28 In **RAI 13.03-62 (E)(3)**, the staff requested the applicant provide a list of procedures that cover
29 the estimation [of] offsite exposures and contamination and summarize the contents of each
30 procedure. In response the applicant stated that the Lee Nuclear Station site-specific
31 procedures have not yet been developed but they will be similar to those in use at other Duke
32 Facilities. The applicant provided Duke corporate procedure, SH/0/B/2005/001, "Emergency
33 Response Offsite Dose Projections," as an example of guidance for utilizing the automatic mode
34 for data input which uses a number of defaults to speed the initial dose assessment process.
35 Since the emergency plan does not contain this information, NRC staff has requested the
36 applicant provide a reference to this procedure, when developed, or a summary of information it
37 will contain in the Lee Emergency Plan. This issue will be tracked as **Open Item 13.03-20**.

38
39 In RAI 13.03-62(C) the NRC staff requested further information on information gathered from
40 the Catawba nuclear Station and the National Weather Service. In response provided Duke
41 Corporate procedure SH/O/B/2005/001, "Emergency Response Offsite Dose Projections," which
42 used at other Duke sites for obtaining and using data from the national weather service. Since
43 the emergency plan does not contain this information, the NRC staff has requested the
44 applicant provide a reference to the procedure, when revised, or a summary of the information
45 is contain relating to obtaining data from outside sources in the Lee emergency Plan. This issue
46 is tracked as **Open Item 13.03-21**.

47 Upon resolution of this Open Items, Section I of the Lee Emergency Plan will be consistent with
48 Planning Standard I of NUREG-0654/FEMA-REP-1 and will meet the requirements of 10 CFR
49 50.47(b)(9) and Section IV.B. of Appendix E to 10 CFR Part 50.

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

3 **ITAAC:**

4 **[1.2., ITAAC 6.1]** An ITAAC has been written to test that the means exists to provide initial and
5 continuing radiological assessment throughout the course of an accident (see Table 3.8-1,
6 "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S. Lee Nuclear
7 Station, Units 1 and 2 COL Application).

8
9 **[1.3., ITAAC 6.2]** An ITAAC has been written to test that the means exists to determine the
10 source term of releases of radioactive material within plant systems, and the magnitude of the
11 release of radioactive materials based on plant system parameters and effluent monitors. (see
12 Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria," in Part 10 of the William S.
13 Lee Nuclear Station, Units 1 and 2 COL Application).

14
15 **[1.4., ITAAC 6.3]** An ITAAC has been written to test that the means exists to The means exist to
16 continuously assess the impact of the release of radioactive materials to the environment,
17 accounting for the relationship between effluent monitor readings, and onsite and offsite
18 exposures and contamination for various meteorological conditions. (see Table 3.8-1,
19 "Inspections, Tests, Analyses, and Acceptable Criteria." in Part 10 of the William S. Lee Nuclear
20 Station, Units 1 and 2 COL Application).

21
22 **[1.5., ITAAC 6.4]** An ITAAC has been written to test that the means exists to acquire and
23 evaluate meteorological information. (see Table 3.8-1, "Inspections, Tests, Analyses, and
24 Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL
25 Application).

26
27 **[1.8., ITAAC 6.5]** An ITAAC has been written to test that the means exist to make rapid
28 assessments of actual or potential magnitude and locations of any radiological hazards through
29 liquid or gaseous release pathways, including activation, notification means, field team
30 composition, transportation, communication, monitoring equipment, and estimated deployment
31 times. (see Table 3.8-1, "Inspections, Tests, Analyses, and Acceptable Criteria." in Part 10 of
32 the William S. Lee Nuclear Station, Units 1 and 2 COL Application).

33
34 **[1.9., ITAAC 6.6]** An ITAAC has been written to test that the capability exists to detect and
35 measure radioiodine concentrations in air in the plume exposure EPZ, as low as 10^{-7} $\mu\text{Ci/cc}$
36 (microcuries per cubic centimeter) under field conditions. (see Table 3.8-1, "Inspections, Tests,
37 Analyses, and Acceptable Criteria" in Part 10 of the William S. Lee Nuclear Station, Units 1 and
38 2 COL Application).

39
40 **[1.10., ITAAC 6.7]** An ITAAC has been written to test that the means exist to estimate integrated
41 dose from the projected and actual dose rates, and for comparing these estimates with the EPA
42 protective action guides (PAGs). (see Table 3.8-1, "Inspections, Tests, Analyses, and
43 Acceptable Criteria," in Part 10 of the William S. Lee Nuclear Station, Units 1 and 2 COL
44 Application).

45
46

1 **13.3.1C.J Protective Response**

2 **13.3.1C.J.1 Regulatory Basis:** 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(10);
3 Planning Standard J requires that a range of protective actions be developed for the plume
4 exposure pathway EPZ for emergency workers and the public. In developing this range of
5 actions, consideration has been given to evacuation, sheltering, and as a supplement to these,
6 the prophylactic use of potassium iodide (KI), as appropriate. Guidelines for the choice of
7 protective actions during an emergency, consistent with Federal guidance, are to be developed
8 and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the
9 locale must be developed.

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

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

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

34

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

45 **Technical Evaluation:** In RAI 13.03-63(A), the NRC staff requested the applicant provide
46 additional information related to evacuation of onsite individuals. In response the applicant
47 provided Catawba procedure RP/O/A/5000/010, "Conducting a Site Assembly or Preparing the
48 Site for an Evacuation," as an example of procedures that will be used. Since this information is

1 not included in the emergency plan, the NRC staff has requested the applicant provided a
2 summary of the information or a reference to the procedure when developed, in the Lee
3 Emergency Plan. This issue will be tracked as **Open Item 13.03-22**. The Lee Emergency Plan
4 establishes the means and time required to warn or advise onsite individuals and individuals
5 who may be in areas controlled by the operator, including:

- 6 a. Employees not having emergency assignments
- 7 b. Visitors
- 8 c. Contractor and construction personnel
- 9 d. Other persons who may be in the public access areas on or passing through the site or
10 within the owner controlled area

11
12 **Technical Information in the Emergency Plan: [J.2]** Section J.2, "Evacuation Routes and
13 Transportation," of the Lee Emergency Plan states that evacuation routes are determined by
14 Shift Manager/Emergency Coordinator, using available information on conditions. Provisions for
15 evacuation of on-site individuals include evacuation by private automobile (15-30min. high traffic
16 density not expected). Because preplanned routes are not identified (considering contingencies
17 based on plant and radiological conditions), in **RAI 13.03-63(B)**, the NRC staff requested the
18 applicant explain why prearranged routes, coordinated with the State and local governments
19 were not arranged. This section also states that Security forces will arrange transportation for
20 those without cars. In **RAI 13.03-63(B)**, the NRC staff also requested Duke Energy provide
21 information on what type of transportation the Security Force will have available to transport
22 people without cars. The designated relocation site will have decontamination and
23 contamination control capability and equipment. Because the relocation centers are not
24 identified in the Lee Emergency Plan, **RAI 13.03-63(B)** requested information to identify where
25 the relocation center will be established. Additionally, if the relocation center is not within the
26 control of Duke Energy, when will the letters of agreement be available? In adverse conditions
27 affected individuals will be directed to a safe on-site area (as determined by the
28 Emergency/Coordinator).

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

38 **Technical Evaluation:** The staff finds the additional information provided in the applicant's
39 response to RAI 13.03-63 (B) acceptable with one exception. In RAI 13.03-63(B), the NRC staff
40 requested the applicant identify locations for relocation centers and provided any applicable
41 Letter of Agreement. In response the applicant stated that a Letter of Agreement will be
42 provided if the selected area is not under their control and the letter will be incorporated into the
43 Lee Emergency Plan prior to initial fuel load. Since the Emergency Plan requires Letters of
44 Agreement be provided, NRC staff has requested the specific locations of decontamination
45 facilities and offsite relocation centers be identified and any applicable Letters of Agreement be
46 provided. This issue will be tracked as **Open Item 13.3-23**. The Lee Emergency Plan contains
47 provisions for evacuation routes and transportation for onsite individuals to some suitable offsite
48 location, including alternatives for inclement weather, high traffic density and specific
49 radiological conditions.

1 **Technical Information in the Emergency Plan: [J.3]** Section J.3, "Personnel Monitoring and
2 Decontamination," of the Lee Emergency Plan states addresses decontamination and
3 contamination control capability and equipment that are available, but the details to determine
4 the adequacy of the capability and equipment are not provided. Appendix 6, "Emergency
5 Equipment and Supplies," is a general list of the types of equipment available, but there are no
6 details on what type of equipment is actually available, where it is stored, how often it tested and
7 inventoried. In **RAI 13.03-63(C)**, the NRC staff requested the applicant provide a summary of
8 the decontamination capabilities and equipment sufficient to assess adequacy. Relocation sites
9 will provide a location for personnel monitoring. According to Section J.2, "Evacuation Routes
10 and Transportation," the Emergency Coordinator directs contamination monitoring of personnel,
11 vehicles, and personal property arriving at the relocation site. The procedures and criteria for
12 monitoring are not addressed in the plan. In **RAI 13.03-63(C)**, the NRC staff also requested the
13 applicant provide information to identify the criteria for monitoring.

14 In response letters dated December 17 and December 23, 2008 the applicant stated that the
15 procedure for personnel and vehicle monitoring at relocation sites will be consistent with that in
16 use at other Duke Energy nuclear plants. The applicant also provided Catawba Nuclear Station
17 Procedure HP/0/B/1009/005, "Personnel/Vehicle Monitoring for Emergency Conditions," which
18 provides guidance for personnel and vehicle monitoring during a site evacuation, as attachment
19 2 to this response. The applicant also provided Catawba Nuclear Station's Procedure
20 HP/0/B/1000/006, "Emergency Equipment Functional Check and Inventory," which provides the
21 process to verify availability and readiness of RP emergency response equipment, for
22 informational purposes as an attachment to RAI response 13.03-61.

23 **Technical Evaluation:** In RAI 13.03-63(C), the NRC staff requested the applicant provide a
24 summary of the decontamination capabilities and equipment and criteria for monitoring. In
25 response the applicant provided Catawba Nuclear Station Procedure HP/0/B/1009/005,
26 "Personnel/Vehicle Monitoring for Emergency Conditions," which provides guidance for
27 personnel and vehicle monitoring during a site evacuation and Catawba Procedure
28 HP/0/B/1000/006, "Emergency Equipment Functional Check and Inventory," which provides the
29 process to verify availability and readiness of RP emergency response equipment, for
30 informational purposes. Since this information is not included in the emergency plan, the NRC
31 staff has requested the applicant provide a summary of this information or a reference to the
32 procedure when developed in the Lee Emergency Plan. This issue is tracked as **Open Item**
33 **13.03-24**. The Lee Emergency Plan provides for radiological monitoring of people evacuated
34 from the site.

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

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

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

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

1

2 **Technical Information in the Emergency Plan: [J.6.]** Section J.6, "Protective Measures," of
3 the Lee Emergency Plan covers provisions for Respiratory Protection and Engineering Controls,
4 Use of Protective Clothing, and Individual Thyroid Protection. The plan states that measures
5 are taken to minimize ingestion and or inhalation of radionuclides to minimize exposure below
6 limits. However, the measures used are not identified. In **RAI 13.03-63(D)**, the NRC staff
7 requested the applicant provide a summary of the measures to be used so an assessment of
8 the adequacy of the measure can be made. Section J.6 addresses that self contained breathing
9 apparatus (SCBAs) are used in locations where there is low oxygen or fires. Other respiratory
10 protection is available and issued by Radiation Protection or Safety and Health. The plan does
11 not address training for use of SCBAs or other respiratory protection equipment. In addition,
12 this section does not address the number of respirators available or the maintenance of the
13 equipment. In **RAI 13.03-63(D)**, the NRC staff requested the applicant provide additional
14 information on training in the use of respiratory equipment as well as the inventory and
15 maintenance of the respiratory equipment. The criteria for use of protective clothing (PCs) are
16 given, however, the location of the equipment and inventory is not addressed to ensure that the
17 PCs are available when needed. In **RAI 13.03-63(D)**, the NRC staff requested the applicant
18 provide additional information on storage and inventory of the PCs. The use of radioprotective
19 drugs (potassium iodide [KI]) is mentioned in the Lee Emergency Plan, but there are no criteria
20 for issuance, how and where it is stored and inventoried, and who makes the decision on
21 issuance. In **RAI 13.03-63(D)**, the NRC staff also requested details on these issues.

22 In response letters dated December 17 and December 23, 2008 the applicant stated that
23 Radiation Protection (RP) personnel will be responsible for monitoring the safety of personnel
24 during a Site Assembly or Site evacuation, which includes contamination monitoring at site
25 exits, and monitoring of work locations for personnel remaining on site. A description their
26 monitoring process was provided. The applicant also stated that respiratory protection will be
27 prescribed for workers that are trained, qualified, and fit tested in accordance with the
28 respiratory protection program discussed in Chapter 12 of the FSAR. The applicant further
29 stated that details regarding these procedures and quantity or locations of respiratory equipment
30 are not available. The applicant expects procedures will be similar to those in use at the
31 Catawba Nuclear Station. Catawba Nuclear Station's Procedure HP/0/B/1000/006, "Emergency
32 Equipment Functional Check and Inventory," was provided as attachment 1 to RAI response
33 13.3-061.

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

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

46 **Technical Evaluation:** In RAI 13.03-63(D), the NRC staff requested the applicant provide
47 additional information on storage and inventory of the PCs and criteria for issuance, use, and
48 storage of potassium iodide. In response the applicant provided Catawba Nuclear Station's

1 Procedure HP/0/B/1000/006, "Emergency Equipment Functional Check and Inventory," and
2 Duke Energy corporate procedure SH/0/B/2005/003, "Distribution of Potassium Iodide Tablets in
3 the Event of a Radioiodine Release," as examples. Since this information was not provided in
4 the emergency plan, the NRC staff has requested the applicant provide a summary of this
5 information or a reference the procedure when developed in the Lee Emergency Plan. This
6 issue is tracked as **Open Item 13.03-25**. For individuals remaining or arriving onsite during the
7 emergency, the Lee Emergency Plan describes provisions for:

- 8 a. Individual respiratory protection
 - 9 b. Use of protective clothing
 - 10 c. Use of radioprotective drugs (e.g., individual thyroid protection)
- 11

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

31
32 **Technical Evaluation:** The Lee Emergency Plan establishes a mechanism for recommending
33 protective actions to the appropriate State and local authorities. The mechanism includes
34 Emergency Action Levels corresponding to projected dose to the population-at-risk and with the
35 recommendations set forth in the "Manual of Protective Action Guides and Protective Actions for
36 Nuclear Incidents," (EPA-520/1-75-001). Prompt notification is made directly to the offsite
37 authorities responsible for implementing protective measures within the plume exposure
38 pathway Emergency Planning Zone.

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

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

45 **Technical Information in the Emergency Plan: [J.10.a.]** Section II.J.10.a, "Protective
46 Measure Implementation," of the Lee Emergency Plan states that maps of evacuation routes,
47 evacuation areas, and general locations of shelter areas and relocation sites are provided in
48 Appendix 4, "Evacuation Time Estimate". Pre-selected radiological sampling and monitoring

1 point locations are not identified. In **RAI 13.03-63(E)**, the NRC staff requested the applicant
2 provide the specific location of the shelter areas and relocation sites and the pre-identified
3 monitoring locations or provide and ITAAC for when those locations would be identified.

4 In response letters dated December 17 and December 23, 2008 the applicant stated that the
5 specific locations of the shelter areas or reception centers for the have not been determined,
6 only general areas where these facilities may be located. The applicant expects that the
7 facilities will be adequate to accommodate expected activities and located in a manner that
8 reduces the exposure to radiological hazards. Consideration will also be given traffic patterns
9 and the effect of evacuation on public access to the facilities. The applicant has committed to
10 provide a Letter of Agreement if the area is not under their control and incorporate the letter into
11 the emergency plan prior to fuel loading. An implementation schedule for these Programs is
12 provided in Table 13.4-201, "Operational Programs Required by NRC Regulations," included in
13 Part 2 of the COL application. The applicant also provided a map of preliminary, pre-identified
14 radiological sampling and monitoring locations attachment 3 to this response.]

15 **Technical Evaluation:** In RAI 13.03-63(E), the NRC staff requested the applicant provide the
16 specific location of the shelter areas and relocation sites and the pre-identified monitoring
17 locations or provide and ITAAC for when those locations would be identified. In response the
18 applicant stated that the specific locations of the shelter areas or reception centers for the have
19 not been determined, only general areas where these facilities may be located. The applicant
20 has committed to provide a Letter of Agreement if the area is not under their control and
21 incorporate the letter into the emergency plan prior to fuel loading. Since the emergency plan
22 requires reception centers and shelter areas be identified and any applicable Letters of
23 Agreement submitted, the NRC staff has requested this information be provided. The
24 identification of shelter and reception centers will be tracked as **Open Item 13.03-26**. The
25 submittal of any applicable Letters of Agreement will be tracked as **Open Item 13.03-27**. The
26 Lee Emergency Plan describes plans to implement protective measures for the plume exposure
27 pathway which include: maps showing evacuation routes, evacuation areas, pre-selected
28 radiological sampling and monitoring points, relocation centers in host areas, and shelter areas.

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

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

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

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

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

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

5
6 **13.3.1C.J.2 Regulatory Basis:** 10 CFR 50, Appendix E.IV., "Content of Emergency Plans,"
7 requires that the nuclear power reactor operating license applicant provide an analysis of the
8 time required to evacuate and for taking other protective actions for various sectors and
9 distances within the plume exposure pathway EPZ for transient and permanent populations.

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

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

16
17 **13.3.1C.J.3 Conclusion for Protective Response**

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

25 The NRC staff has reviewed the onsite emergency plan and the applicant's responses to RAI
26 13.03-63(A) through (E) in regards to Planning Standard J of NUREG-0654/FEMA-REP-1. The
27 NRC will determine whether this planning standard is acceptable and document its
28 determination in the Final Safety Evaluation Report (FSER), based on information the applicant
29 has provided to date, verification of Confirmatory Action Items, and the applicant's response to
30 Open Items. The staff identified the following Open Items as needing to be resolved before
31 concluding that the Lee Emergency Plan meets applicable requirements:

32 In RAI 13.03-63(A) the NRC staff requested the applicant provide additional information related
33 to evacuation of onsite individuals. In response the applicant provided Catawba procedure
34 RP/O/A/5000/010, "Conducting a Site Assembly or Preparing the Site for an Evacuation," as an
35 example of procedures that will be used. Since this information is not included in the
36 emergency plan, the NRC staff has requested the applicant provided a summary of the
37 information or a reference to it in the Lee Emergency Plan. This issue will be tracked as **Open**
38 **Item 13.03-22.**

39
40 - In RAI 13.03-63(B), the NRC staff requested the applicant identify locations for relocation
41 centers and provided any applicable Letter of Agreement. In response the applicant stated that
42 a Letter of Agreement will be provided if the selected area is not under their control and the
43 letter will be incorporated into the Lee Emergency Plan prior to initial fuel load. Since the
44 Emergency Plan requires Letters of Agreement be provided, NRC staff has requested the
45 specific locations of decontamination facilities and offsite relocation centers be identified and

1 any applicable Letters of Agreement be provided. This issue will be tracked as **Open Item 13.3-**
2 **23.**

3
4 - In RAI 13.03-63(C), the NRC staff requested the applicant provide a summary of the
5 decontamination capabilities and equipment and criteria for monitoring. In response the
6 applicant provided Catawba Nuclear Station Procedure HP/0/B/1009/005, "Personnel/Vehicle
7 Monitoring for Emergency Conditions," which provides guidance for personnel and vehicle
8 monitoring during a site evacuation and Catawba Procedure HP/0/B/1000/006, "Emergency
9 Equipment Functional Check and Inventory," which provides the process to verify availability
10 and readiness of RP emergency response equipment, for informational purposes. Since this
11 information is not included in the emergency plan, the NRC staff has requested the applicant
12 provide a summary of this information or a reference to the procedure once developed in the
13 Lee Emergency Plan. This issue is tracked as **Open Item 13.03-24**

14
15 - In RAI 13.03-63(D), the NRC staff requested the applicant provide additional information on
16 storage and inventory of the PCs and criteria for issuance, use, and storage of potassium
17 iodide. In response the applicant provided Catawba Nuclear Station's Procedure
18 HP/0/B/1000/006, "Emergency Equipment Functional Check and Inventory," and Duke Energy
19 corporate procedure SH/0/B/2005/003, "Distribution of Potassium Iodide Tablets in the Event of
20 a Radioiodine Release," as examples. Since this information was not provided in the
21 emergency plan, the NRC staff has requested the applicant provide a summary of this
22 information or a reference to the procedure once developed in the Lee Emergency Plan. This
23 issue is tracked as **Open Item 13.03-25.**

24
25 In RAI 13.03-63(E), the NRC staff requested the applicant provide the specific location of the
26 shelter areas and relocation sites and the pre-identified monitoring locations or provide and
27 ITAAC for when those locations would be identified. In response the applicant stated that the
28 specific locations of the shelter areas or reception centers for the have not been determined,
29 only general areas where these facilities may be located. The applicant has committed to
30 provide a Letter of Agreement if the area is not under their control and incorporate the letter into
31 the emergency plan prior to fuel loading. Since the emergency plan requires reception centers
32 and shelter areas be identified and any applicable Letters of Agreement submitted, the NRC
33 staff has requested this information be provided. The identification of shelter and reception
34 centers will be tracked as **Open Item 13.03-26**. The submittal of any applicable Letters of
35 Agreement will be tracked as **Open Item 13.03-27**.

36
37 Upon resolution of these items, Section J of the Lee Emergency Plan will be consistent with
38 Planning Standard J of NUREG-0654/FEMA-REP-1 and will meet the requirements of 10 CFR
39 50.47(b)(10) and Section IV. of Appendix E to 10 CFR Part 50.

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

42 **ITAAC:**

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

1
2

1 **13.3.1C.K Radiological Exposure Control**

2
3 **13.3.1C.K.1 Regulatory Basis:** 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(11)
4 requires that means for controlling radiological exposures, in an emergency, be established for
5 emergency workers. The means for controlling radiological exposures must include exposure
6 guidelines consistent with EPA "Emergency Worker and Lifesaving Activity Protective Action
7 Guides."

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

12 **Technical Information in the Emergency Plan: [K.1.a-g]** Section II.K.1, "On-site Exposure
13 Guidelines and Authorizations," of the Lee Emergency Plan discusses implementation of
14 guidelines from EPA-400-R-92-001, Table 2.2 "Guidance on Dose Limits for Workers
15 Performing Emergency Services," in the Lee Emergency Plan, Table II-4, "Emergency Worker
16 Exposure Guidelines." The Emergency Coordinator, in consultation with senior Radiological
17 Protection personnel, is responsible for authorizing on-site emergency exposures that would
18 result in doses in excess of occupational dose limits in 10 CFR 20. Exposures in excess of 10
19 CFR 20 limits are limited to individuals who are properly trained and knowledgeable of the tasks
20 to be performed and the risks associated with the exposures. Selection criteria for volunteer
21 emergency workers are outlined. In the absence of extenuating circumstances listed in Table II-
22 4, routine dose limits are applied to activities including those listed above.

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

- 26 a. removal of injured persons
27 b. undertaking corrective actions
28 c. performing assessment actions
29 d. providing first aid
30 e. performing personnel decontamination
31 f. providing ambulance service
32 g. providing medical treatment services

33
34 **Technical Information in the Emergency Plan: [K.2.]** Section II.K.2, "Radiation Protection
35 Program," of the Lee Emergency Plan refers to Chapter 12 of the Lee Nuclear Station FSAR for
36 a description of the Lee Nuclear Station Radiation Protection Program (RPP), which is claimed
37 to be consistent 10 CFR 20. Section II.K.1 of the Lee Emergency Plan describes the provisions
38 made for implementation of emergency exposure guidelines. No details of the Radiation
39 Protection Program (RPP) are provided in this section. In **RAI 13.03-64(A) and (B)**, the NRC
40 staff requested the applicant provide a summary of the occupational radiation protection
41 programs outlined in the FSAR, the AP1000 DCD, NEI 07-08, "Guidance for Ensuring That
42 Occupational Radiation Exposures Are As Low As Is Reasonably Achievable (ALARA),"
43 Revision 0 and NEI 07-03, "Guidance for Radiation Protection Program Description."

44 [With regard to RAI 13.03-64 \(A\)](#), in response letters dated December 17 and December 23,
45 2008 the applicant provided a description of their procedure for requesting exposures in excess
46 of occupational dose limits. The applicant also provided Catawba Nuclear Station procedure,
47 RP/0/A/5000/018, "Emergency Worker Dose Extension," as information in Attachment 1 to this
48 response. The applicant expects that a similar process will be established for the Lee Facility via

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

4 With regards to **RAI 13.03-64 (B)**, in response letters dated December 17 and December 23,
5 2008 the applicant stated that a summary of the Lee Radiation Protection Program (RPP) is
6 provided in FSAR Appendix 12AA. Milestones for the development of the RPP are provided in
7 Table 13.4-201. Procedures are discussed in FSAR Section 13.5.2.2.1. The processes for
8 authorizing and implementing emergency dose constraints consistent with EPA guidance are
9 discussed in Section II.K of the Lee Emergency Plan. The applicant also stated that compliance
10 with the RPP is maintained under emergency conditions. Procedures are discussed in more
11 detail in response to RAI Site-11(A). The applicant further stated that variations from routine
12 Radiation Protection practices may be implemented on a case-by-case basis, consistent with
13 ERO management direction and the provisions of 10 CFR 20.1001(b).

14 The RPP in the FSAR incorporates by reference material from the AP1000 DCD and NEI 07-08,
15 to support ALARA principles for exposure criteria, and NEI 07-03 Generic FSAR Template,
16 Appendix 12AA, to develop RPP.
17

18 **Technical Evaluation:** The staff finds the additional information provided in the applicant's
19 response to RAI 13.03-64 (B) to be acceptable and therefore resolved. In RAI 13.03-64(A) the
20 NRC staff requested the applicant provide a summary of the occupational radiation protection
21 programs. In response the applicant provided a description of their procedure for requesting
22 exposures in excess of occupational dose limits. The applicant also provided Catawba Nuclear
23 Station procedure, RP/0/A/5000/018, "Emergency Worker Dose Extension," as information in
24 Attachment 1 to this response. Since the emergency plan did not contain this information, the
25 NRC staff has requested the applicant provide a summary of this information or reference to the
26 procedure once developed in the Lee Emergency Plan. This issue will be tracked as **Open**
27 **Item 13.03-28**. The Lee Emergency Plan provides an onsite radiation protection program to be
28 implemented during emergencies, including methods to implement exposure guidelines. The
29 Lee Emergency Plan identifies individual(s), by position or title, who can authorize emergency
30 workers to receive doses in excess of 10 CFR Part 20 limits. A procedure is established for
31 permitting onsite volunteers to receive radiation exposures in the course of carrying out
32 lifesaving and other emergency activities. These procedures include expeditious decision
33 making and a reasonable consideration of relative risks. **Additional technical interface**
34 **information is located at SRP Section 12.5, "Operational Radiation Protection Program."**

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

47 **Technical Evaluation:** The Lee Emergency Plan describes provisions for 24-hour-per-day
48 capability to determine the doses received by emergency personnel involved in any nuclear

1 accident, including volunteers. Provisions are also described for the distribution of dosimeters,
2 both self-reading and permanent record devices.

3
4 **Technical Information in the Emergency Plan: [K.3.b.]** Section II.K.3, “Dosimetry and Dose
5 Assessment,” of the Lee Emergency Plan states that “Station procedures establish guidance for
6 wearers to periodically read their self-reading dosimeters...,” and “Duke Energy maintains
7 individual dose records in accordance with the requirements of 10 CFR 20 and the radiation
8 protection program and its supporting procedures”. Cursory review of Chapter 12 of the FSAR
9 (the RPP) fails to disclose any significant discussion of maintenance of dose records or
10 supporting procedures in this area. In **RAI 13.03-64(C)**, the NRC staff requested the applicant
11 provide a list and summary of applicable implementing procedures. The Lee Emergency Plan
12 does not discuss contingency plans for accessing dose records should normal access be
13 precluded by post-accident conditions. In **RAI 13.03-63(D)**, the NRC staff requested the
14 applicant provide a description or summary of contingency plans for dosimetry services
15 (including recordkeeping), loss of power, instrument failure, inadvertent contamination, etc.

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

29 With regards to **RAI 13.03-64 (D)**, in response letters dated December 17 and December 23,
30 2008 the applicant stated that the Dose Records Coordinator (DRC) Supervisor in the OSC
31 responsible for maintaining the emergency dose records in accordance with the OSC Activation
32 Procedure. The applicant included applicable portions of the Catawba procedure as attachment
33 2 to this response. The applicant anticipates that a similar procedure will be developed for the
34 Lee facility. The applicant further stated that immediate approximations of external dose may
35 be derived from self-indicating dosimeters during an emergency. Records of dosimeter readings
36 may be maintained on log sheets or other record form. Individual dose records are maintained
37 on plant computer systems. If they are not available during an emergency the OSC activation
38 procedures requires that copies of the Daily Dose Report be gathered for the TSC and OSC
39 upon activation. The FSAR addresses Radiation Protection procedures as discussed in the
40 response to RAI Site-11(B).]

41 **Technical Evaluation:** In RAI 13.03-64(C), the NRC staff requested the applicant provide a list
42 and summary of applicable implementing procedures for determining dose and maintenance of
43 dose records. In response the applicant provided Duke Procedure SH/0/B/2001/001, "Internal
44 Dose Assessment" which determines "dose received from internal exposures to radioactive
45 material received while working at a Duke Energy facility." Since this information is not provided
46 in the emergency plan, the NRC staff has requested that the applicant provide a summary of
47 this information or a reference to the procedure once developed in the Lee Emergency Plan.
48 This issue will be tracked as **Open Item 13.03-29**.

1 In RAI 13.03-63(D), the NRC staff requested the applicant provide a description or summary of
2 contingency plans for dosimetry services (including recordkeeping), loss of power, instrument
3 failure, inadvertent contamination, etc. In response the applicant provided applicable portions of
4 the Catawba procedure as an example. Since this information is not provided in the emergency
5 plan, the NRC staff has requested that the applicant provide a summary of this information or a
6 reference to the procedure once developed in the Lee Emergency Plan. This issue will be
7 tracked as **Open Item 13.03-30**. The Lee Emergency Plan ensures that dosimeters are read at
8 appropriate frequencies and provide for maintaining dose records for emergency workers
9 involved in any nuclear accident.

11 **Technical Information in the Emergency Plan: [K.5.a.]** Section II.K.5.a, “Decontamination
12 Action Levels,” of the Lee Emergency Plan states that Duke Energy implements procedures and
13 has supplies. It does not state what the decontamination levels are, who decides how and
14 when to decontaminate, etc. In **RAI 13.03-64(C)**, the NRC staff requested the applicant provide
15 a list and summary of applicable implementing procedures. The Lee Emergency Plan does not
16 reference the RPP in this area or describe any procedures related to decontamination. In **RAI**
17 **13.03-64(A)**, the NRC staff requested the applicant provide a summary of the occupational
18 radiation protection programs outlined in the FSAR, the AP1000 DCD, NEI 07-08, “Guidance for
19 Ensuring That Occupational Radiation Exposures Are As Low As Is Reasonably Achievable
20 (ALARA),” Revision 0 and NEI 07-03, “Guidance for Radiation Protection Program Description.”
21 **Additional information received in response to RAIs 13.03-64 (A) and (C) are summarized in**
22 **Section K.2 and Section K.3.b above.**

23 **Technical Evaluation:** **The staff found the additional information provided in the applicant’s**
24 **response to RAIs 13.03-64 (A) and (C) to be acceptable and therefore resolved.** The Lee
25 Emergency Plan specifies action levels for determining the need for decontamination.
26

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

40 With regards to **RAI 13.03-64 (E)**, in response letters dated December 17 and December 23,
41 2008 the applicant stated that procedures define contaminated areas as areas accessible to
42 individuals where removable surface contamination is greater than or equal to 1000
43 disintegrations per minute (dpm)/100 square cm (beta, gamma), but less than 50,000 dpm/100
44 square cm or greater than or equal to 20 dpm/100 square cm (alpha), but less than 2000
45 dpm/100 square cm. The response also discusses procedures for surveying equipment/items
46 and personnel, decontamination of equipment and the return of equipment to normal use.
47 Equipment/items removed from radiologically controlled areas are surveyed with automated
48 equipment or portable instrumentation. The applicant also stated that Duke Energy follows EPRI
49 Guidelines for Industry Response to Personnel Contaminants. Personnel are considered to be

1 contaminated if the instrumentation detects approximately 400 dpm or higher. Levels used at
2 the Lee Nuclear Station will be consistent with those used at other Duke nuclear stations.
3 Decontamination methods are established in Radiation Protection procedures and are
4 implemented under the direction of trained Radiation Protection personnel. The FSAR
5 addresses the Radiation Protection program and Procedures with respect to decontamination
6 as discussed in the response to RAI 13.03-64 (B).

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

22 **Technical Evaluation:** The staff finds the additional information provided in the applicant's
23 response to RAI 13.03-64 (E) acceptable and therefore resolved. In RAI 13.03-64(F), the NRC
24 staff requested the applicant provide a summary of the occupational radiation protection
25 programs outlined in the FSAR, the AP1000 DCD, NEI 07-08, and NEI 07-03. In response the
26 applicant stated that the bulk of the emergency equipment and supplies will be stored in the
27 established emergency response facilities. The applicant will determine initial storage locations
28 based on an assessment of plant layout and their experience operating nuclear power plants.
29 Locations may be changed based on assessments of plant emergency operations, drills, and
30 exercises. Since the emergency plan requires the location of emergency equipment and
31 supplies be provided, the NRC staff has requested this information be provided. This issue will
32 be tracked as **Open Item 13.03-31**. The Lee Emergency Plan establishes the means for
33 radiological decontamination of emergency personnel wounds, supplies, instruments and
34 equipment, and for waste disposal.
35

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

44 In response letters dated December 17 and December 23, 2008 the applicant stated that
45 access to the protected area is maintained by the Security force. The security plans and
46 associated procedures are discussed in Part 8 of the COL application. Milestones associated
47 with the implementation of the Security program are presented in FSAR Table 13.4-201.
48 Chapter 12 of the Lee Nuclear Station FSAR describes the radiation protection program,
49 applicable to contamination control measures, consistent with the requirements of 10 CFR Part

1 20. FSAR Appendix 12AA provides a summary of the Lee Radiation Protection Program; FSAR
2 Table 13.4-201 addresses milestones associated with the development of the Radiation
3 Protection Program; and FSAR Section 13.5.2.2.1 provides a discussion of Radiation Protection
4 procedures.

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

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

11
12 **Technical Information in the Emergency Plan:** [K.6.a] Section K.6.a, "Contamination Control
13 Measures," of the Lee Emergency Plan discusses access control in the event of an emergency
14 by stating that requirement for site access control is established in the FSAR and Security Plan.
15 State and local agencies will control access to the owner controlled area consistent with State
16 and local plans.

17
18 **Technical Evaluation:** The Lee Emergency plan provides onsite contamination control
19 measures including area access control.

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

26 In response letters dated December 17 and December 23, 2008 the applicant stated that
27 procurement support located in the EOF is responsible for ensuring adequate supplies of food
28 and water are available to the ERO. Food and water would be made available on-site through
29 acquisition of supplies under Duke commercial arrangements and subsequent transportation of
30 supplies to the site, using either vendor or Duke-supplied transport. The applicant expects that
31 distribution of food and water under emergency conditions would be made on an ad-hoc basis.
32 The applicant also stated that procedures are likely to be limited to the existing Duke corporate
33 procedure, assigning responsibility to the procurement support assigned to the EOF. The
34 applicant expects procedure SR/0/B/2000/002 will be modified to incorporate the Lee Nuclear
35 Station on a schedule that supports execution of the emergency exercise required by 10 CFR
36 50, Appendix E, Section IV.F.2.]

37 **Technical Evaluation:** In RAI 13.03-64(H), the NRC staff requested the applicant provide a list
38 and summary of applicable implementing procedures related to transport of non-contaminated
39 off-site supplies. In response the applicant provided Duke corporate procedure
40 SR/0/B/2000/002 which discusses the assignment of responsibility of procurement support to
41 the EOF. Since this information is not provided in the emergency plan, the NRC staff has
42 requested that the applicant provide a summary of this information or a reference to the
43 procedure once developed in the Lee Emergency Plan. This issue will be tracked as **Open**
44 **Item 13.03-32**. The Lee Emergency Plan provides onsite contamination control measures
45 including drinking water and food supplies.

46
47 **Technical Information in the Emergency Plan:** [K.6.c] Section K.6.c, "Contamination Control
48 Measures," of the Lee Emergency Plan states that areas and items are permitted to return to

1 normal use following conduct of appropriate surveys and verification that the contamination
2 levels meet criteria specified in the RPP or its supporting procedures. In **RAI 13.03-64(I)**, the
3 NRC staff requested additional information on radiological surveys and to summarize Radiation
4 Protection Program criteria for decontamination.

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

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

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

27 In response letters dated December 17 and December 23, 2008 the applicant stated that the
28 Lee Facility would use decontamination procedures similar to those in use at other Duke
29 Facilities. Personnel and vehicle monitoring during a site evacuation will be conducted in
30 accordance with Catawba Procedure HP/0/B/1009/005, "Personnel/Vehicle Monitoring for
31 Emergency Conditions" which includes provisions for dressing contaminated individuals in
32 protective clothing. The applicant expects that a procedure similar to Catawba Nuclear Station's
33 Procedure HP/0/B/1000/006, "Emergency Equipment Functional Check and Inventory," which
34 provides the process to verify availability and readiness of RP emergency response equipment
35 will also be implemented for the Lee Facility. The applicant also stated that the location of
36 relocation facilities has not been determined nor has the facility design been finalized. The
37 applicant has committed that these details will be established on a schedule that supports
38 execution of the emergency exercise required by 10 CFR 50, Appendix E, Section IV.F.2. Open
39 Items 13.03-24 and 25 were written to track the identification of relocation centers and the
40 submittal of any applicable Letters of Agreement. Emergency plan implementing procedures
41 will be developed on a schedule that supports NRC inspection activities and execution of the
42 emergency exercise required by Section IV.F.2 of 10 CFR 50, Appendix E.

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

48

1 **13.3.1C.K.2 Conclusion for Radiological Exposure Control**

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

6 The NRC staff has reviewed the onsite emergency plan and the applicant's responses to RAI
7 13.03-64(A) through (J) in regards to Planning Standard K of NUREG-0654/FEMA-REP-1. The
8 NRC will determine whether this planning standard is acceptable and document its
9 determination in the Final Safety Evaluation Report (FSER), based on information the applicant
10 has provided to date, verification of Confirmatory Action Items, and the applicant's response to
11 Open Items. The staff identified the following Open Item as needing to be resolved before
12 concluding that the Lee Emergency Plan meets applicable requirements:

13 - In RAI 13.03-64(A) the NRC staff requested the applicant provide a summary of the
14 occupational radiation protection programs. In response the applicant provided a description of
15 their procedure for requesting exposures in excess of occupational dose limits. The applicant
16 also provided Catawba Nuclear Station procedure, RP/0/A/5000/018, "Emergency Worker Dose
17 Extension," as information in Attachment 1 to this response. Since the emergency plan did not
18 contain this information, the NRC staff has requested the applicant provide a summary of this
19 information or reference to the procedure, once developed, in the Lee Emergency Plan. This
20 issue will be tracked as **Open Item 13.03-28**.

21 - In RAI 13.03-64(C), the NRC staff requested the applicant provide a list and summary of
22 applicable implementing procedures for determining dose and maintenance of dose records. In
23 response the applicant provided Duke Procedure SH/0/B/2001/001, "Internal Dose Assessment"
24 which determines "dose received from internal exposures to radioactive material received while
25 working at a Duke Energy facility." Since this information is not provided in the emergency plan,
26 the NRC staff has requested that the applicant provide a summary of this information or a
27 reference to the procedure once developed in the Lee Emergency Plan. This issue will be
28 tracked as **Open Item 13.03-29**.

29 - In RAI 13.03-63(D), the NRC staff requested the applicant provide a description or summary of
30 contingency plans for dosimetry services (including recordkeeping), loss of power, instrument
31 failure, inadvertent contamination, etc. in response the applicant provided applicable portions
32 of the Catawba procedure as an example. Since this information is not provided in the
33 emergency plan, the NRC staff has requested that the applicant provide a summary of this
34 information or a reference to the procedure once developed in the Lee Emergency Plan. This
35 issue will be tracked as **Open Item 13.03-30**.]

36 - In RAI 13.03-64(F), the NRC staff requested the applicant provide a summary of the
37 occupational radiation protection programs outlined in the FSAR, the AP1000 DCD, NEI 07-08,
38 and NEI 07-03. In response the applicant stated that the bulk of the emergency equipment and
39 supplies will be stored in the established emergency response facilities. The applicant will
40 determine initial storage locations based on an assessment of plant layout and their experience
41 operating nuclear power plants. Locations may be changed based on assessments of plant
42 emergency operations, drills, and exercises. Since the emergency plan requires the location of
43 emergency equipment and supplies be provided, the NRC staff has requested this information
44 be provided. This issue is tracked as **Open Item 13.03-31**.

45 - In RAI 13.03-64(H), the NRC staff requested the applicant provide a list and summary of
46 applicable implementing procedures related to transport of non-contaminated off-site supplies.
47 In response the applicant provided Duke corporate procedure SR/0/B/2000/002 which

1 discusses the assignment of responsibility of procurement support to the EOF. Since this
2 information is not provided in the emergency plan, the NRC staff has requested that the
3 applicant provide a summary of this information or a reference to the procedure once developed
4 in the Lee Emergency Plan. This issue will be tracked as **Open Item 13.03-32**.

5 Upon resolution of this Open Item, Section K of the Lee Emergency Plan will be consistent with
6 Planning Standard K of NUREG-0654/FEMA-REP-1 and will meet the requirements of 10 CFR
7 50.47(b)(11).

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

10

11

1 **13.3.1C.L Medical and Public Health Support**

2

3 **13.3.1C.L.1 Regulatory Basis:** 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(12);
4 Planning Standard L requires that arrangements be made for medical services for contaminated
5 injured individuals.

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

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

23 [In response letters dated December 17 and December 23, 2008 the applicant stated letters of](#)
24 [agreement will be established and incorporated into the Lee Emergency Plan prior to receipt of](#)
25 [nuclear fuel at the site.](#)

26 **Technical Evaluation:** [RAI 13.03-65 was submitted requesting information on when the](#)
27 [agreements will be finalized between Duke Energy and the medical support providers. In](#)
28 [response the applicant stated letters of agreement will be established and incorporated into the](#)
29 [Lee Emergency Plan prior to receipt of nuclear fuel at the site. Since the emergency plan](#)
30 [requires that Letters of Agreement be included in the plan, the NRC staff has requested Letters](#)
31 [of Agreement be provided when available. This issue is tracked as **Open Item 13.03-33**.](#) The
32 Lee Emergency Plan describes arrangements for local and backup hospital and medical
33 services having the capability for evaluation of radiation exposure and uptake, including
34 assurance that persons providing these services are adequately prepared to handle
35 contaminated individuals.

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

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

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

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

16

17 **13.3.1C.L.2 Regulatory Basis:** 10 CFR 50, Appendix E.IV., “Content of Emergency Plans.”
18 10 CFR 50, Appendix E.IV.E.5. requires that arrangements be made for the services of
19 physicians and other medical personnel qualified to handle radiation emergencies on-site.

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

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

33

34 **13.3.1C.L.3 Regulatory Basis:** 10 CFR 50, Appendix E.IV., “Content of Emergency Plans.”
35 10 CFR 50, Appendix E.IV.E.6. requires that arrangements be made for transportation of
36 contaminated injured individuals from the site to specifically identified treatment facilities outside
37 the site boundary.

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

1 signed certification letters between Piedmont Medical Center and Upstate Carolina Medical
2 Center.
3

4 **Technical Evaluation:** The Lee Emergency Plan describes arrangements made for the
5 services of physicians and other medical personnel qualified to handle radiation emergencies
6 on-site.
7

8 **13.3.1C.L.4 Regulatory Basis:** 10 CFR 50, Appendix E.IV., "Content of Emergency Plans."
9 10 CFR 50, Appendix E.IV.E.7. requires that arrangements be made for treatment of individuals
10 injured in support of licensed activities on the site at treatment facilities outside the site
11 boundary.

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

19 **Technical Evaluation:** The Lee Emergency Plan describes arrangements made for treatment
20 of individuals injured in support of licensed activities on the site at treatment facilities outside the
21 site boundary.
22

23 **13.3.1C.L.5 Conclusion for Medical and Public Health Support**

24 The NRC staff has reviewed the onsite emergency plan and the applicant's responses to RAI
25 13.03-65 in regards to Planning Standard L of NUREG-0654/FEMA-REP-1. The NRC will
26 determine whether this planning standard is acceptable and document its determination in the
27 Final Safety Evaluation Report (FSER), based on information the applicant has provided to
28 date, verification of Confirmatory Action Items, and the applicant's response to Open Items. The
29 staff identified the following Open Item as needing to be resolved before concluding that the Lee
30 Emergency Plan meets applicable requirements:

31 - In RAI 13.03-65 was submitted requesting information on when the agreements will be
32 finalized between Duke Energy and the medical support providers. In response the applicant
33 stated letters of agreement will be established and incorporated into the Lee Emergency Plan
34 prior to receipt of nuclear fuel at the site. Since the emergency plan requires that Letters of
35 Agreement be included in the plan, the NRC staff has requested Letters of Agreement be
36 provided when available. This issue is tracked as **Open Item 13.03-33.**
37

38 Upon resolution of these items, Section I of the Lee Emergency Plan will be consistent with
39 Planning Standard I of NUREG-0654/FEMA-REP-1 and will meet the requirements of 10 CFR
40 50.47(b)(12) and Section IV.E.5., E.6., and E.7. of Appendix E to 10 CFR Part 50.
41

1 **13.3.1C.M Recovery and Reentry Planning and Post-accident Operations**

2

3 **13.3.1C.M.1 Regulatory Basis:** 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(13);
4 Planning Standard M requires that general plans for recovery and reentry be developed.

5 The NRC staff evaluated the emergency plan against NUREG-0654/FEMA-REP-1, Planning
6 Standard M, "Recovery and Reentry Planning and Post-Accident Operations." Planning
7 Standard M provides the detailed evaluation criteria that the staff considered in determining
8 whether the emergency plan meets the applicable regulatory requirement in 10 CFR
9 50.47(b)(13).

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

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

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

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

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

3 **Technical Evaluation:** The staff finds the additional information provided in the applicant's
4 response to RAI 13.03-66 (A) acceptable and therefore resolved. The Lee Emergency Plan
5 contains the position/title, authority and responsibilities of individuals who will fill key positions in
6 the facility recovery organization. The organization includes technical personnel with
7 responsibilities to develop, evaluate and direct recovery and reentry operations.

8

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

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

26 **Technical Evaluation:** In RAI 13.03-66(B) was submitted requesting information on the
27 recovery organization. In response the applicant provided Duke Energy's Corporate Procedure
28 RP/0/B/5000/025, "Recovery and Reentry Procedure," as man example of the structure of the
29 recovery organization. Since this information was not included in the emergency plan, the NRC
30 staff has requested the applicant provide a summary of this information or a reference to the
31 procedure in the Lee emergency Plan. This issue will be tracked as **Open Item 13.03-34**. The
32 Lee Emergency Plan specifies the means for informing members of the response organizations
33 that a recovery operation is to be initiated, and of any changes in the organizational structure
34 that may occur.

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

42 In response letters dated December 17 and December 23, 2008 the applicant stated that the
43 Radiological Assessment Manager will communicate with South Carolina Department of Health
44 and Environmental Control and the North Carolina Department of Environment and Natural
45 Resources/Radiation Protection Section via liaison personnel that are assigned within the EOF
46 to periodically update estimates of total population exposure using population distribution data.

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

4
5 **13.3.1C.M.2 Regulatory Basis:** 10 CFR 50, Appendix E.IV., "Content of Emergency Plans."
6 10 CFR 50, Appendix E.IV.H. requires that the criteria to be used to determine when, following
7 an accident, reentry of the facility would be appropriate or when operation could be resumed be
8 described.

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

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

19
20 **13.3.1C.M.3 Conclusion for Recovery and Reentry Planning and Post-accident**
21 **Operations**

22 The NRC staff has reviewed the onsite emergency plan and the applicant's responses to RAI
23 13.03-66(A) through (C) in regards to Planning Standard M of NUREG-0654/FEMA-REP-1.
24 The NRC will determine whether this planning standard is acceptable and document its
25 determination in the Final Safety Evaluation Report (FSER), based on information the applicant
26 has provided to date, verification of Confirmatory Action Items, and the applicant's response to
27 Open Items. The staff identified the following Open Item as needing to be resolved before
28 concluding that the Lee Emergency Plan meets applicable requirements:

29 - RAI 13.03-66(B) was submitted requesting information on the recovery organization. In
30 response the applicant provided Duke Energy's Corporate Procedure RP/0/B/5000/025,
31 "Recovery and Reentry Procedure," as man example of the structure of the recovery
32 organization. Since this information was not included in the emergency plan, the NRC staff has
33 requested the applicant provide a summary of this information or a reference to the procedure in
34 the Lee emergency Plan. This issue is tracked as **Open Item 13.03-34**.

35
36 Upon resolution of these items, Section M of the Lee Emergency Plan will be consistent with
37 Planning Standard M of NUREG-0654/FEMA-REP-1 and will meet the requirements of 10 CFR
38 50.47(b)(13) and Section IV.H. of Appendix E to 10 CFR Part 50.

39

1 **13.3.1C.N Exercises and Drills**

2 **13.3.1C.N.1 Regulatory Basis:** 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(14);
3 Planning Standard N requires that periodic exercises be conducted to evaluate major portions of
4 emergency response capabilities, periodic drills be conducted to develop and maintain key
5 skills, and deficiencies identified as a result of exercises or drills be corrected.

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

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

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

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

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

39

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

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

3

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

14

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

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

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

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

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

4 e. Health physics drills - Health physics drills will be conducted semi-annually and will
5 involve response to, and analysis of, simulated elevated airborne and liquid samples and
6 direct radiation measurements in the environment. The Lee Emergency Plan also describes
7 provisions for including State response organizations in these drills. On an annual basis, an
8 analysis of in-plant liquid samples with actual elevated radiation levels including use of the
9 post-accident sampling system will be included in health physics drills.
10

11 **Technical Evaluation:** (Waiting rewrite from Moody) [Taken from the Bellefonte SER
12 **Section N.2.a]** The Lee Emergency Plan also states that in addition to the biennial exercise,
13 drills will be conducted, at the frequencies indicated below: (a) Communication drills -
14 Communications with State and local governments within the plume exposure pathway
15 Emergency Planning Zone will be tested monthly. Communications with Federal emergency
16 response organizations and States within the ingestion pathway will be tested quarterly.
17 Communications between the nuclear facility, State and local emergency operations centers,
18 and field assessment teams will be tested annually. In addition, the Lee Emergency Plan states
19 that communication drills will also include the aspect of understanding the content of messages.

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

28 **Technical Evaluation:** Fire drills will be conducted in accordance with
29 the plant technical specifications.
30

31 **Technical Information in the Emergency Plan: [N.2.c.]** Section II.N.2.c, "Medical Emergency
32 Drills," of the Lee Emergency Plan states that medical emergency drills that include a simulated
33 contaminated injured individual, transportation to off-site facilities, and participation by the local
34 medical support agencies are performed annually.
35

36 **Technical Evaluation:** A medical emergency drill involving a simulated contaminated
37 individual that contains provisions for participation by the local support services agencies (i.e.,
38 ambulance and offsite medical treatment facility) will be conducted annually. Lee Emergency
39 Plan also states that the offsite portions of the medical drill may be performed as part of the
40 required biennial exercise.
41

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

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

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

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

13 **Technical Evaluation:** Health physics drills will be conducted semi-annually and will involve
14 response to, and analysis of, simulated elevated airborne and liquid samples and direct
15 radiation measurements in the environment. The Lee Emergency Plan also describes
16 provisions for including State response organizations in these drills. On an annual basis, an
17 analysis of in-plant liquid samples with actual elevated radiation levels including use of the post-
18 accident sampling system will be included in health physics drills.
19

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

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

- 27 a. The basic objective(s) of each drill and exercise and appropriate evaluation criteria
- 28 b. The date(s), time period, place(s) and participating organizations
- 29 c. The simulated events
- 30 d. A time schedule of real and simulated initiating events
- 31 e. A narrative summary describing the conduct of the exercises or drills to include such
32 things as simulated casualties, offsite fire department assistance, rescue of personnel,
33 use of protective clothing, deployment of radiological monitoring teams, and public
34 information activities
- 35 f. A description of the arrangements for and advance materials to be provided to official
36 observers
37

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

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

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

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

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

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

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

15 **Technical Evaluation:** Section II.N.3.e, “Conduct of Drills and Exercises,” of the Lee
16 Emergency Plan states that a narrative summary describing the overall integration of scenario
17 events such as simulated causalities, off-site assistance, rescue of personnel, use of protective
18 equipment, simulated activity and radiation levels and deployment of monitoring teams is
19 included in scenario materials.
20

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

24 **Technical Evaluation:** Section II.N.3.f, “Conduct of Drills and Exercises,” of the Lee
25 Emergency Plan states that a description of the arrangement made for, and advance materials
26 to be provided to, the facilitators is included in scenario materials.
27

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

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

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

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

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

5
6 **13.3.1C.N.2 Regulatory Basis:** 10 CFR 50, Appendix E.IV., "Content of Emergency Plans."
7 10 CFR 50, Appendix E.IV.F.2. requires that the emergency plan describe provisions for the
8 conduct of emergency preparedness exercises and that exercises test the adequacy of timing
9 and content of implementing procedures and methods, test emergency equipment and
10 communications networks, test the public notification system, and ensure that emergency
11 organization personnel are familiar with their duties. [If applicable: Use of a site-specific
12 simulator is used for some exercises.]

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

21 **Technical Evaluation:** The Lee Emergency Plan describes provisions for the conduct of
22 emergency preparedness exercises and specifies that exercises test the adequacy of timing
23 and content of implementing procedures and methods, test emergency equipment and
24 communications networks, test the public notification system, and ensure that emergency
25 organization personnel are familiar with their duties. [If applicable: The Lee Emergency Plan
26 also describes the use of a site-specific simulator use for some exercises.]

27
28 **13.3.1C.N.3 Regulatory Basis:** 10 CFR 50, Appendix E.IV., "Content of Emergency Plans."
29 10 CFR 50, Appendix E.IV.F.2.b. requires that each licensee at each site conduct an exercise of
30 its onsite emergency plan every 2 years. The exercise may be included in the full participation
31 biennial exercise. In addition, the licensee shall take actions necessary to ensure that adequate
32 emergency response capabilities are maintained during the interval between biennial exercises
33 by conducting drills, including at least one drill involving a combination of some of the principal
34 functional areas of the licensee's onsite emergency response capabilities. The principal
35 functional areas of emergency response include activities such as management and
36 coordination of emergency response, accident assessment, protective action decision-making,
37 and plant system repair and corrective actions. During these drills, activation of all of the
38 licensee's emergency response facilities (Technical Support Center (TSC), Operations Support
39 Center (OSC), and the Emergency Operations Facility (EOF)) would not be necessary,
40 licensees would have the opportunity to consider accident management strategies, supervised
41 instruction would be permitted, operating staff would have the opportunity to resolve problems
42 (success paths) rather than have controllers intervene, and the drills could focus on onsite
43 training objectives.

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

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

5
6 **Technical Evaluation:** The Lee Emergency Plan states that an exercise of its onsite
7 emergency plan will be conducted every 2 years. In addition, the Lee Emergency Plan
8 describes actions that will be taken to ensure that adequate emergency response capabilities
9 are maintained during the interval between biennial exercises by conducting drills, including at
10 least one drill involving a combination of some of the principal functional areas of the licensee's
11 onsite emergency response capabilities. The principal functional areas of emergency response
12 include activities such as management and coordination of emergency response, accident
13 assessment, protective action decision-making, and plant system repair and corrective actions.
14 During these drills, the Lee Emergency Plan states that activation of all of the licensee's
15 emergency response facilities (TSC, OSC, and EOF) would not be necessary. However,
16 emergency response personnel would have the opportunity to consider accident management
17 strategies, supervised instruction would be permitted, operating staff would have the opportunity
18 to resolve problems (success paths), and the drills will focus on onsite training objectives.

19
20 **13.3.1C.N.4 Regulatory Basis:** 10 CFR 50, Appendix E.IV., "Content of Emergency Plans."
21 10 CFR 50, Appendix E.IV.F.2.c. requires that offsite plans for each site shall be exercised
22 biennially with full participation by each offsite authority having a role under the plan. Where the
23 offsite authority has a role under a radiological response plan for more than one site, it shall fully
24 participate in one exercise every 2 years and shall, at least, partially participate in other offsite
25 plan exercises in this period. If two different licensees whose licensed facilities are located
26 either on the same site or on adjacent, contiguous sites, and that share most of the elements
27 defining co-located licensees, each licensee shall:

- 28 a. Conduct an exercise biennially of its onsite emergency plan
- 29 b. Participate quadrennially in an offsite biennial full or partial participation exercise
- 30 c. Conduct emergency preparedness activities and interactions in the years between its
31 participation in the offsite full or partial participation exercise with offsite authorities, to test
32 and maintain interface among the affected state and local authorities and the licensee. Co-
33 located licensees shall also participate in emergency preparedness activities and interaction
34 with offsite authorities for the period between exercises.

35
36 **Technical Information in the Emergency Plan:** Section II.N.1, "Exercises," of the Lee
37 Emergency Plan discusses participation frequencies and participant involvement. These
38 exercises are to be conducted in accordance with NRC and FEMA requirements. Section
39 II.N.2, "Drills," of the Lee Emergency Plan states that Duke Energy, upon request, allows
40 affected State and local governments located within the plume EPZ to participate in drills. Drills
41 are conducted between biennial exercises to maintain adequate emergency response
42 capabilities.

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

45
46 **13.3.1C.N.5 Regulatory Basis:** 10 CFR 50, Appendix E.IV., "Content of Emergency Plans."
47 10 CFR 50, Appendix E.IV.F.2.e. requires that licensees enable any State or local Government

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

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

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

9

10 **13.3.1C.N.6 Regulatory Basis:** 10 CFR 50, Appendix E.IV., "Content of Emergency Plans."
11 10 CFR 50, Appendix E.IV.F.2.f. states that remedial exercises will be required if the emergency
12 plan is not satisfactorily tested during the biennial exercise, such that NRC, in consultation with
13 FEMA, cannot find reasonable assurance that adequate protective measures can be taken in
14 the event of a radiological emergency. The extent of State and local participation in remedial
15 exercises must be sufficient to show that appropriate corrective measures have been taken
16 regarding the elements of the plan not properly tested in the previous exercises.

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

23

24 In response letters dated December 17 and December 23, 2008 the applicant has revised
25 Section II.N.c, "Remedial Exercises," to include a discussion on remedial exercises to read as
26 follows: "A remedial exercise is required, if it is determined that the emergency plan was not
27 satisfactorily tested during the biennial exercise such that the NRC cannot find reasonable
28 assurance that adequate protective measures can be taken in the event of a radiological
29 emergency."
30

31 **Technical Evaluation:** The staff finds the clarification provided in the applicant's response to
32 RAI 13.03-67 acceptable. **Confirmatory Action NRC 13.03-06** was created to track this
33 revision. The Lee Emergency Plan states that remedial exercises will be conducted if the
34 emergency plan is not satisfactorily tested during the biennial exercise, such that NRC, in
35 consultation with FEMA, cannot find reasonable assurance that adequate protective measures
36 can be taken in the event of a radiological emergency. The extent of State and local
37 participation in remedial exercises will be sufficient to show that appropriate corrective
38 measures have been taken regarding the elements of the plan not properly tested in the
39 previous exercises. **Additional technical interface information can be located in SRP Section**
40 **17.5, "Corrective Action Program."**

41

42 **13.3.1C.N.7 Regulatory Basis:** 10 CFR 50, Appendix E.IV, "Content of Emergency Plans."
43 10 CFR 50, Appendix E.IV.F.2.g requires that all training, including exercises, provide for formal
44 critiques in order to identify weak or deficient areas that need correction. Any weaknesses or
45 deficiencies must be identified and corrected.

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

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

12

13 **13.3.1C.N.8 Conclusion for Exercises and Drills**

14 **If applicable:** As discussed above, the applicant needs to provide the bases for why ITAAC 8.1
15 will demonstrate the sufficiency of the Lee Emergency Plan. The NRC will determine whether
16 this planning standard is acceptable and document its determination in the FSER, based on
17 information the applicant has provided to date and its response to Open Item -----.]

18 The NRC staff has reviewed the onsite emergency plan and the applicant's responses to RAI
19 13.03-67 in regards to Planning Standard N of NUREG-0654/FEMA-REP-1. The NRC will
20 determine whether this planning standard is acceptable and document its determination in the
21 Final Safety Evaluation Report (FSER), based on information the applicant has provided to
22 date, verification of Confirmatory Action Items, and the applicant's response to Open Items. The
23 staff identified the following Confirmatory Action as needing to be resolved before concluding
24 that the Lee Emergency Plan meets applicable requirements:

25 - The applicant has revised Section II.N.c, to include a discussion on remedial exercises.
26 **Confirmatory Action NRC 13.03-06** was created to track this revision.

27
28 Upon resolution of these items, Section N of the Lee Emergency Plan will be consistent with
29 Planning Standard N of NUREG-0654/FEMA-REP-1 and will meet the requirements of 10 CFR
30 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
31 training of Appendix E to 10 CFR Part 50.

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

34

35 **ITAAC:**

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

42
43

1 **13.3.1C.O Radiological Emergency Training**
2

3 **13.3.1C.O.1 Regulatory Basis:** 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(15);
4 Planning Standard O requires that radiological emergency response training be provided to
5 those who may be called on to assist in an emergency.

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

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

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

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

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

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

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

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

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

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

24 **[O.4.b.]** Section II.O.4.a, "Emergency Response Training and Qualification," of the Lee
25 Emergency Plan states that Duke Energy implements a program to provide position-specific
26 training for Personnel responsible for accident assessment. Content of the training program is
27 appropriate for the duties and responsibilities of the assigned position.
28

29 **[O.4.c.]** Training Section II.O.4.a, "Emergency Response Training and Qualification," of the Lee
30 Emergency Plan states that Duke Energy implements a program to provide position-specific
31 training for radiological monitoring and analysis personnel. Content of the training program is
32 appropriate for the duties and responsibilities of the assigned position.
33

34 **[O.4.d.]** Training Section II.O.4.a, "Emergency Response Training and Qualification," of the Lee
35 Emergency Plan states that Duke Energy implements a program to provide position-specific
36 training for police, security and firefighting personnel. Content of the training program is
37 appropriate for the duties and responsibilities of the assigned position. Off-site police and
38 firefighting personnel receive training consistent with Section II.O.1.a "Off-site Emergency
39 Response Training," of the Lee Emergency Plan.
40

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

45 **[O.4.f.]** Training Section II.O.4.a, "Emergency Response Training and Qualification," of the Lee
46 Emergency Plan states that Duke Energy implements a program to provide position-specific
47 training for first aid and rescue teams. Content of the training program is appropriate for the
48 duties and responsibilities of the assigned position.
49

1 **[O.4.g.]** Section II.O.4.a, “Emergency Response Training and Qualification,” of the Lee
2 Emergency Plan states that Duke Energy provides position-specific training for local support
3 services/emergency service personnel. Content of the training program is appropriate for the
4 duties and responsibilities of the assigned position. Section II.O.1.a, “Off-site Emergency
5 Response Training,” of the Lee Emergency Plan describes off-site emergency response
6 personnel training.
7

8 **[O.4.h.]** Training Section II.O.4.a, “Emergency Response Training and Qualification,” of the Lee
9 Emergency Plan states that Duke Energy implements a program to provide position-specific
10 training for medical support personnel. Content of the training program is appropriate for the
11 duties and responsibilities of the assigned position.
12

13 **[O.4.i.]** Training Section II.O.4.a, “Emergency Response Training and Qualification,” of the Lee
14 Emergency Plan states that Duke Energy implements a program to provide position-specific
15 training for cooperate office support personnel. Content of the training program is appropriate
16 for the duties and responsibilities of the assigned position.
17

18 **[O.4.j.]** Training Section II.O.4.a, “Emergency Response Training and Qualification,” of the Lee
19 Emergency Plan states that Duke Energy implements a program to provide position-specific
20 training for emergency communicators. Content of the training program is appropriate for the
21 duties and responsibilities of the assigned position.
22

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

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

36 **Additional technical interface information is located at SRP Section 13.2.2, “Training Program.”**
37

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

44 **Technical Evaluation:** The Lee Emergency Plan describes provisions for the initial and annual
45 retraining of personnel with emergency response responsibilities. **Additional technical interface**
46 **information is located at SRP Section 13.2.2, “Training Program.”**
47

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

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

18
19 In addition, a radiological orientation training program is to be made available to local services
20 personnel; e.g., local emergency services/Civil Defense, local law enforcement personnel, local
21 news media persons.

22 **Technical Information in the Emergency Plan:** Section II.O.1, “Radiological Emergency
23 Response Training, General,” of the Lee Emergency Plan states that the training program
24 provides for initial training and retraining for individuals assigned emergency response duties.
25 Section II.O.1.a, “Off-site Emergency Response Training,” of the Lee Emergency Plan describes
26 training of off-site personnel likely to provide assistance at Lee Nuclear Station during an
27 emergency. Training addresses: scope of the Lee Emergency Plan; emergency classification;
28 notification methods; basic radiation protection; individuals in response organizations who direct
29 on-site activities; definition of support roles; and, station access procedures. Section O.1.2,
30 “On-site Emergency Response Training,” of the Lee Emergency Plan states that the training
31 program includes those individuals that may be called upon to respond to an emergency.
32 Training is performed prior to assignment to a position which includes practical drills consistent
33 with Section II.N, “Exercise and Drills,” of the Lee Emergency Plan. Section II.O.4.a,
34 “Emergency Response Training and Qualification,” of the Lee Emergency Plan states that Duke
35 Energy implements a program to provide position-specific training for emergency response
36 directors and coordinators. Content of the training program is appropriate for the duties and
37 responsibilities of the assigned position.
38

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

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

- 1 c. Radiological monitoring teams
- 2 d. Fire control teams (fire brigades)
- 3 e. Repair and damage control teams
- 4 f. First aid and rescue teams
- 5 g. Medical support personnel
- 6 h. Licensee's headquarters support personnel
- 7 i. Security personnel

8
9 In addition, a radiological orientation training program is to be made available to local services
10 personnel; e.g., local emergency services/Civil Defense, local law enforcement personnel, local
11 news media persons. **Additional technical interface information is located at SRP Section**
12 **13.2.2, "Training Program."**
13

14 **13.3.1C.O.3 Regulatory Basis:** 10 CFR 50, Appendix E.IV., "Content of Emergency Plans."
15 10 CFR 50, Appendix E.IV.F.2.g. requires that all training, including exercises, provide for
16 formal critiques in order to identify weak or deficient areas that need correction. Any
17 weaknesses or deficiencies that are identified are to be corrected.

18 **Technical Information in the Emergency Plan:** Section II.O.4, "Emergency Response
19 Training and Qualification" of the Lee Emergency Plan states that training programs may
20 include practical drills consistent with Section II.N, "Exercises and Drills," of the Lee Emergency
21 Plan. Instructors or evaluator immediately correct any erroneous action. If appropriate,
22 performance consistent with procedure will be demonstrated.
23

24 **Technical Evaluation:** The Lee Emergency Plan provides for formal critiques of exercises in
25 order to identify weak or deficient areas that need correction. Any weaknesses or deficiencies
26 that are identified will be corrected. **Additional technical interface information is located at SRP**
27 **Section 13.2.2, "Training Program."**
28

29 **13.3.1C.O.4 Conclusion for Radiological Emergency Training**

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

36 The applicant has committed to meet the following license conditions and ITAAC, with the
37 associated dates, for the emergency preparedness program:
38

1 **13.3.1C.P Responsibility for the Planning Effort: Development, Periodic Review**
2 **and Distribution of Emergency Plans**

3
4 **13.3.1C.P.1 Regulatory Basis:** 10 CFR 50.47, “Emergency Plans.” 10 CFR 50.47(b)(16);
5 Planning Standard P requires that the emergency plan describe the responsibilities for
6 emergency plan development and review and for distribution of the emergency plans. In
7 addition, planners must be properly trained.

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

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

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

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

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

30 **Technical Information in the Emergency Plan: [P.3.]** Section II.P.3, “Emergency Planning
31 Manager,” of the Lee Emergency Plan, describes the Emergency Planning Manager position.
32 The incumbent is responsible for developing and updating the Emergency Plan and
33 coordinating with other response organizations.

34 **Technical Evaluation:** The Lee Emergency Plan designates an Emergency Planning
35 Coordinator with responsibility for the development and updating of emergency plans and
36 coordination of these plans with other response organizations.

37 **Technical Information in the Emergency Plan: [P.4.]** Section II.P.4, “Plan Reviews and
38 Updates,” of the Lee Emergency Plan states that the Lee Emergency Plan is updated as
39 needed and certified to be current on an annual basis. The main resource to identifying the
40 need to change the plan is through drills and exercises.

41 **Technical Evaluation:** The Lee Emergency Plan describes provisions for updating the
42 emergency plan and agreements as needed, and reviewing and certifying it to be current on an
43 annual basis. In addition, the updating provisions described take into account changes
44 identified by drills and exercises.

45 **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

1 Emergency Planning Manager or designee makes needed changes to the Lee Emergency Plan.
2 The pages that are changed are marked and dated to indicate the change. The Lee Nuclear
3 Station Site Vice President reviews and approves the changes. Changes to the Lee Emergency
4 Plan are submitted to NRC for approval in accordance with the requirements in 10 CFR
5 50.54(q). The approved revised plans are distributed through the Lee Nuclear Station
6 document control organization.

7 **Technical Evaluation:** The Lee Emergency Plan states that the emergency response plans
8 and approved changes to the plan will be forwarded to all organizations and appropriate
9 individuals with responsibility for implementation of the plan. The Lee Emergency Plan also
10 states that revised pages will be dated and marked to show where changes have been made.
11

12 **Technical Information in the Emergency Plan: [P.6.]** Section II.P.6, "Supporting Plans," of
13 the Lee Nuclear Station Emergency, provides a list of the State and county plans.

14 **Technical Evaluation:** The Lee Emergency Plan contains a detailed listing of supporting plans
15 and their source.
16

17 **Technical Information in the Emergency Plan: [P.7.]** Appendix 5, "Implementing
18 Procedures" of the Lee Emergency Plan provides topical listing of EIPs that support the plan,
19 however, the Lee Emergency Plan calls out procedures that do not appear to be listed in the
20 topical list. In **RAI 13.03-69(A)**, the NRC staff requested the applicant provide information about
21 procedures that are discussed in the plan, but listed in Appendix 5.

22 In response letters dated December 17 and December 23, 2008 the applicant stated that
23 Emergency plan implementing procedures (EIPs) are addressed in FSAR Table 13.4-201 and
24 in Licensing Condition #6, Operational Programs, Part 10, of the COL Application. Detailed
25 EIPs will be submitted at least 180 days prior to initial fuel loading. These EIPs will address:
26 source term determination, assessment of radioactive release to the environment, assessment
27 of actual and potential radiological hazards through liquid or gaseous releases, and comparison
28 of projected and actual dose rates to protective action guidelines. The applicant also stated that
29 the list of topic areas in Appendix 5 is not to be viewed as a list of procedures. Each topic area
30 may include multiple procedures. The applicant provided a list of applicable procedures
31 covered under topic areas presented in Appendix 5.

32 **Technical Evaluation:** The staff finds the additional information provided in the applicant's
33 response to RAI 13.03-69 (A) acceptable and therefore resolved. The Lee Emergency Plan
34 contains as an appendix, a listing of the procedures by title that are required to implement the
35 plan. The listing includes the section(s) of the plan to be implemented by each procedure.
36

37 **Technical Information in the Emergency Plan: [P.8.]** The format for this Emergency Plan
38 directly follows the format of NUREG-0654, Rev. 1. Appendix 8, "Cross-References to
39 Regulations, Guidance, and State and Local Plans," provides a cross reference for regulatory
40 requirements (includes Appendix E) and NUREG-0654.

41 **Technical Evaluation:** The Lee Emergency Plan contains a table of contents. In addition, the
42 Lee Emergency Plan contains a cross-reference listing to the Evaluation Criteria in NUREG-
43 0654/ FEMA-REP-1.

44 **Technical Information in the Emergency Plan: [P.9.]** Section II.P.9, "Emergency Plan
45 Audits," describes Duke Energy's Nuclear Performance Assessment organizations independent
46 audit of the Lee Nuclear Station emergency preparedness program. The organization oversees

1 the performance of, periodic independent audits of the emergency preparedness program
2 consistent of 10 CFR 50.54(t). Frequency of the periodic audits is based on an assessment of
3 performance, but all elements of the EP program must be reviewed at least once every 24
4 months. Section II.P.9 states the independent audit must be conducted at least every 12
5 months. In **RAI 13.03-69(B)**, the NRC staff requested the applicant provide an explanation for
6 the audits being conducted not less than once every 24 months. An audit is performed after a
7 change occurs in personnel, procedures, equipment, or facilities that potentially could adversely
8 affect EP, but no longer than twelve months after the change. Audit results are documented
9 and improvement recommendations sent to Lee Nuclear Station facility and Duke Energy
10 management. Duke Energy's Records Management shall file and maintain records of this for
11 five years.

12 In response letters dated December 17 and December 23, 2008 the applicant stated Periodic
13 audits will be conducted at 12 month intervals in accordance with 10 CFR 50.54(t)(1)(i) as
14 stated but the interval may be extended to 24 months, as provided in 10 CFR 50.54(t)(1)(ii),
15 based upon an assessment of Licensee performance indicators. First tier indicators from NEI
16 99-02 and Second Tier indicators developed by Duke, were provided with the response.

17 **Technical Evaluation:** The staff finds the additional information provided in the applicant's
18 response to RAI 13.03-69 (B) acceptable and therefore resolved. The Lee Emergency Plan
19 describes arrangements for and conducts of independent reviews of the emergency
20 preparedness program at least every 12 months. The review will include the emergency plan,
21 its implementing procedures and practices, training, readiness testing, equipment, and
22 interfaces with State and local governments. Management controls are described for evaluation
23 and correction of review findings. The result of the review, along with recommendations for
24 improvements, will be documented, reported to appropriate licensee corporate and plant
25 management, and involved Federal, State and local organizations, and retained for a period of
26 five years.

27 **Technical Information in the Emergency Plan: [P.10.]** Section II.P.10, "Emergency
28 Telephone Numbers," of the Lee Emergency Plan, states that the Emergency Planning
29 Manager (or designee) is responsible for performing a quarterly review of the telephone
30 numbers in emergency response procedures and for ensuring required revisions is completed.

31 **Technical Evaluation:** Section II.P.10, "Emergency Telephone Numbers," of the Lee
32 Emergency Plan, states that the Emergency Planning Manager (or designee) is responsible for
33 performing a quarterly review of the telephone numbers in emergency response procedures and
34 for ensuring required revisions is completed.
35

36 **13.3.1C.P.2 Regulatory Basis:** 10 CFR 50, Appendix E.IV., "Content of Emergency Plans."
37 10 CFR 50, Appendix E.IV.G. requires the description of provisions to be employed to ensure
38 that the emergency plan, its implementing procedures, and emergency equipment and supplies
39 are maintained up-to-date.

40 **Technical Information in the Emergency Plan:** Emergency plans are updated as needed on
41 an annual basis. Equipment, discussed in Appendix 6, "Emergency Equipment and Supplies," is
42 inventoried based on implementing procedures.

43 **Technical Evaluation:** The Lee Emergency Plan describes provisions to be employed to
44 ensure that the emergency plan, its implementing procedures, and emergency equipment and
45 supplies are maintained up-to-date.
46

1 **13.3.1C.P.3 Conclusion for Responsibility for the Planning Effort: Development,**
2 **Periodic Review and Distribution of Emergency Plans**

3 On the basis of its review of the onsite emergency plan and responses to RAI 13.03-69(A) and
4 (B) as described above for responsibility for the planning effort, the NRC staff concludes that the
5 information provided in the Lee Emergency Plan is consistent with Planning Standard P of
6 NUREG-0654/FEMA-REP-1. Therefore, the information is acceptable and meets the
7 requirements of 10 CFR 50.47(b)(16) and Section IV.G. of Appendix E to 10 CFR Part 50.

8