13.0 CONDUCT OF OPERATIONS

13.1 Organizational Structure of Applicant

13.1.1 Introduction

The Organizational structure includes the design, construction, and preoperational responsibilities of the organizational structure. The management and technical support organization includes a description of the corporate or home office organization, its functions and responsibilities, the number and the qualifications of personnel. Its activities include facility design, design review, design approval, construction management, testing, and operation of the plant. The descriptions of the design and construction and preoperational responsibilities include the following:

- how these responsibilities are assigned by the headquarters staff and implemented within the organizational units
- the responsible working- or performance-level organizational unit
- the estimated number of persons to be assigned to each unit with responsibility for the project
- the general educational and experience requirements for identified positions or classes of positions
- early plans for providing technical support for the operation of the facility

This section also describes the structure, functions, and responsibilities of the onsite organization established to operate and maintain the plant.

13.1.2 Summary of Application

Section 13.1, "Organizational Structure of the Applicant," of the Bellefonte (BLN) Combined License (COL) Final Safety Analysis Report (FSAR) incorporates by reference Section 13.1 of the AP1000 Design Control Document (DCD), Revision 17.

In addition, in BLN COL FSAR Section 13.1, the applicant provided the following:

AP1000 COL Information Items

- BLN COL 13.1-1

The applicant provided additional information in BLN COL 13.1-1 to resolve COL Information Item 13.1-1 (COL Action Item 13.1-1). COL Action Item 13.1-1 requires the COL applicant to describe its organizational structure. BLN COL 13.1-1 describes organizational positions of the nuclear power station and owner/applicant corporations and associated functions and responsibilities.

- BLN COL 9.5-1

The applicant provided additional information in BLN COL 9.5-1, describing the fire protection program in Section 9.5.1.8. For this BLN COL item, the applicant added a new Section 13.1.1.2.10, "Fire Protection." BLN COL 9.5-1 is also addressed in Section 13.1.2.1.2.9, "Engineer in Charge of Fire Protection." BLN COL 9.5-1 provides a cross-reference to BLN COL FSAR Section 9.5.1.8.

- BLN COL 18.6-1

The applicant provided additional information in BLN COL 18.6-1, describing the qualifications of the nuclear plant technical support personnel. BLN COL 18.6-1 is addressed under Section 13.1.1.4, "Qualification of Technical Support Personnel," and Section 13.1.3.1, "Qualification Requirements." BLN COL 18.6-1 provides a cross-reference to BLN COL FSAR Section 18.6.

- BLN COL 18.10-1

The applicant provided additional information in BLN COL 18.10-1 to addresses the responsibilities of the manager in charge of nuclear training. BLN COL 18.10-1 is addressed in Section 13.1.1.3.1.9, "Manager in Charge of Nuclear Training," and Section 13.1.1.3.2.4, "Functional Manager In Charge of Training and Development." BLN COL 18.10-1 provides a cross-reference to BLN COL FSAR Section 18.10.

13.1.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is addressed within the "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design," (FSER), related to the DCD (NUREG-1793).

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

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

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

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

- Title 10 of the *Code of Federal Regulations* (CFR) 10 CFR 50.40(b), "Common Standards"

- 10 CFR 50.54, "Conditions of Licenses"

- RG 1.33, "Quality Assurance Program Requirements (Operation)"

13.1.4 Technical Evaluation

The Nuclear Regulatory Commission (NRC) staff reviewed Section 13.1 of the BLN COL FSAR and checked the referenced DCD to ensure that the combination of the DCD and the information in the COL represent the complete scope of information relating to this review topic.[1] The NRC staff's review confirmed that the information contained in the application and incorporated by reference addresses the required information relating to the organizational structure of the applicant. Section 13.1 of the AP1000 DCD is being reviewed by the staff under Docket Number 52-006. The NRC staff's technical evaluation of the information incorporated by reference related to the organizational structure of the applicant will be documented in the staff safety evaluation report (SER) on the design certification (DC) application for the AP1000 design.

The staff reviewed the information contained in the BLN COL FSAR:

AP1000 COL Information Items

- BLN COL 13.1-1

The NRC staff reviewed BLN COL 13.1-1 related to the organizational structure of the COL applicant included under Section 13.1 of the BLN COL FSAR. Section 13.1 of the BLN COL FSAR describes the organizational positions of a nuclear power plant and owner/applicant corporations and associated functions and responsibilities.

The applicant provided the following additional BLN site-specific COL information to resolve COL Information Item 13.1-1, which addresses the organizational structure of the COL applicant. COL Information Item 13.1-1 states:

> Combined License applicants referencing the AP1000 certified design will address adequacy of the organizational structure.

The commitment was also captured as COL Action Item 13.1-1 in Appendix F of the NRC staff's FSER for the AP1000 DCD (NUREG-1793), which states:

> The COL applicant will describe its organizational structure.

The applicant provided additional information as part of the BLN COL FSAR to describe the organizational positions of a nuclear power station and owner/applicant corporations and associated functions and responsibilities. The position titles used in the text are generic and describe the function of the position. The applicant stated that BLN COL FSAR Table 13.1-201, "Generic Position/Site Specific Position Cross Reference" provides a cross-reference to identify site-specific position titles.

[1] See Section 1.2.2 for a discussion on the staff's review related to verification of the scope of information to be included within a COL application that references a design certification.

The applicant added new sections and information related to the site-specific organizational structure to BLN COL FSAR Section 13.1 beyond the structure given in RG 1.206. The new section titles are:

13.1.1, “Management and Technical Support Organization”
13.1.2, “Operating Organization”
13.1.3, “Qualifications of Nuclear Plant Personnel”
Table 13.1-201, “Generic Position/Site Specific Position Cross Reference”
Table 13.1-202, “Minimum On-Duty Operations Shift Organization for Two-Unit Plant”

In addition, the applicant added a new appendix to Chapter 13 titled “Appendix 13AA Construction-Related Organization,” This appendix describes the applicant’s construction organization. Once plant operation commences, this appendix will become historical information.

The NRC staff has reviewed BLN COL 13.1-1 and concludes that the management, technical support, and operating organizations, as described, are acceptable and meet the requirements of 10 CFR 50.40(b) based on the following:

The applicant has described its organization for the management of, and its means of providing, technical support for the plant staff for the design, construction, and operation of the facility and has described its plans for managing the project and utilizing the nuclear steam system supplier (NSSS) vendor and architect-engineer (AE). These plans provide reasonable assurance that the applicant will establish an acceptable organization and that sufficient resources are available to provide offsite technical support and to satisfy the applicant's commitments for the design, construction, and operation of the facility.

The applicant has described the assignment of plant operating responsibilities; the reporting chain up through the chief executive officer; the functions and responsibilities of each major plant staff group; the proposed shift crew complement for single-unit or multiple-unit operation; the qualification requirements for members of its plant staff; and staff qualifications. In Table 1.9-202, “Conformance with SRP Acceptance Criteria,” of the BLN FSAR, the applicant noted an exception to the criteria of NUREG-0800, Section 13.1.2 – 13.1.3 that suggests resumes of personnel holding plant managerial and supervisory positions be included in the FSAR. The staff finds this exception to the criteria of NUREG-0800, Section 13.1.2 – 13.1.3 acceptable because resumes for management and principle supervisory and technical positions will be available for review after position vacancies are filled.

NUREG-0800, Section 13.1.2 – 13.1.3, “Operating Organization,” states that the applicant's operating organization is characterized as follows:

1. The applicant is technically qualified, as specified in 10 CFR 50.40(b).

2. An adequate number of licensed operators will be available at all required times to satisfy the minimum staffing requirements of 10 CFR 50.54(j).

3. On-shift personnel are able to provide initial facility response in the event of an emergency.

4. Organizational requirements for the plant manager and radiation protection manager have been satisfied.

5. Qualification requirements and qualifications of plant personnel conform to the guidance of RG 1.8.

6. Organizational requirements conform to the guidance of RG 1.33, "Quality Assurance Program Requirements (Operation)."

These findings contribute to the judgment that the applicant complies with the requirements of 10 CFR 50.40(b). That is, the applicant is technically qualified to engage in design and construction activities and to operate a nuclear power plant; that the applicant will have the necessary managerial and technical resources to support the plant staff in the event of an emergency; and that the applicant has identified the organizational positions responsible for fire protection matters and delegated the authorities to these positions to implement fire protection requirements.

- BLN COL 9.5-1

The NRC staff reviewed BLN COL 9.5-1, which describes the fire protection program as addressed in BLN COL FSAR Section 9.5.1.8. [Note: The text of the corresponding COL information item, in the AP1000 DCD, is addressed in Section 9.5 of this SER.]

The applicant added text to BLN COL FSAR Section 13.1.1.2.10, "Fire Protection," indicating that the nuclear power station is committed to maintaining a fire protection program as described in BLN COL FSAR Section 9.5.1.8, and that the site executive in charge of plant management is responsible for the fire protection program. The applicant added new text to BLN COL FSAR Section 13.1.2.1.2.9, "Engineer in Charge of Fire Protection," describing the responsibilities of the engineer in charge of the fire protection program.

The NRC staff reviewed BLN COL 9.5-1 relative to the text added in Sections 13.1.1.2.10 and 13.1.2.1.2.9 of the COL application. Based on the management descriptions provided in Sections 13.1.1.2.10 and 13.1.2.1.2.9, the staff finds the applicant's fire protection organization meets the guidance of NUREG-0800. The technical review for BLN COL 9.5-1 as it relates to the programmatic requirements is addressed in Section 9.5 of this SER.

- BLN COL 18.6-1

The NRC staff reviewed BLN COL 18.6-1, which describes the qualifications of the nuclear plant technical support personnel. The technical review for BLN COL 18.6-1 is addressed in Section 18.6 of this SER.

In Table 1.9-202, "Conformance with SRP Acceptance Criteria," of the BLN FSAR, the applicant noted an exception to the criteria of NUREG-0800, Section 13.1.1 that suggests the experience requirements of managers and supervisors of the technical support organization are included in the FSAR. The staff finds this exception to the criteria of NUREG-0800, Section 13.1.1 acceptable because the applicant added text to BLN COL FSAR Section 13.1.1.4, "Qualification of Technical Support Personnel," stating the qualifications of managers and supervisors of the technical support organization will meet the education and experience requirements described in ANSI/ANS-3.1-1993 and RG 1.8. The applicant also stated that the qualification and experience requirements of headquarters staff will be established in corporate policy and procedure manuals. This section is cross-referenced to BLN COL FSAR Section 18.6.

The applicant added text to BLN COL FSAR Section 13.1.3, "Qualification Requirements," stating, in Section 13.1.3.1, the qualifications of managers, supervisors, operators, and technicians of the operating organization will meet the education and experience requirements described in ANSI/ANS-3.1-1993 and RG 1.8. In addition, Section 13.1.3.2 states that resumes and other documentation of the qualifications and experience of initial appointees to appropriate management and supervisory positions will be available for review after position vacancies are filled. This section is cross-referenced to BLN COL FSAR Section 18.6.

The applicant added BLN COL FSAR Table 13.1-202, "Minimum On-Duty Operations Shift Organization for Two-Unit Plant." Table 13.1-202 describes the minimum composition of the operating shift crew for all modes of operation. Position titles, license requirements and minimum shift manning for the various modes of operation are addressed in Technical Specifications and will be addressed in administrative procedures.

The NRC staff reviewed the text added to BLN COL FSAR Sections 13.1.1.4 and 13.1.3.1 relative to BLN COL 18.6-1 and concludes that the qualification requirements are acceptable and meet the requirements of 10 CFR 50.40(b) based on the following:

The applicant has described its organization for the management of, and its means of providing, technical support for the plant staff for the design, construction, and operation of the facility and has described its plans for managing the project and utilizing the NSSS vendor and AE. These plans give adequate assurance that the applicant will establish an acceptable organization and that sufficient resources are available to provide offsite technical support and to satisfy the applicant's commitments for the design, construction, and operation of the facility.

- BLN COL 18.10-1

The NRC staff reviewed BLN COL 18.10-1 included under Sections 13.1.1.3.1.9, "Manager in Charge of Nuclear Training" and 13.1.1.3.2.4, "Functional Manager in Charge of Nuclear Training and Development." These sections describe the responsibilities of the site training manager relative to the site training programs required for the safe and proper operation and maintenance of the plant. This item is cross-referenced to BLN COL FSAR Section 18.10. The NRC staff concludes that the qualification requirements are acceptable and meet the requirements of 10 CFR 50.40(b) and NUREG-0800 Sections 13.1.1 and 13.1.2 – 13.1.3 because the applicant described how the training manager will carry out his or her position responsibilities for designing, developing, implementing, and maintaining training programs for the safe and proper operation and maintenance of the plant.

Additional technical review for BLN COL 18.10-1 is addressed in Section 18.10 of this SER.

13.1.5 Post Combined License Activities

There are no post-COL activities related to this section.

13.1.6 Conclusions

The NRC staff reviewed the application and checked the referenced DCD. The NRC staff's review confirmed that the applicant addressed the required information relating to the organizational structure of the applicant, and there is no outstanding information expected to be addressed in the BLN COL FSAR related to this section.

The NRC staff concludes that the information pertaining to BLN COL FSAR Section 13.1 is within the scope of the design certification and adequately incorporates by reference Section 13.1 of the AP1000 DCD, and is acceptable. Section 13.1 of Revision 17 of the AP1000 DCD is identical to Section 13.1 of Revision 15 of the AP1000 DCD, which is incorporated by reference into 10 CFR Part 52, Appendix D. This section is not affected by the changes that Westinghouse proposed in Revision 17 to the AP1000 DCD. Pursuant to 10 CFR 52.63(a)(5) and 10 CFR Part 52, Appendix D, Section VI.B.1, all nuclear safety issues relating to the organizational structure of the applicant that were incorporated by reference have been resolved.

In addition, the staff has compared the additional BLN COL information within the application to the relevant NRC regulations, acceptance criteria defined in NUREG-0800, Sections 13.1.1 and 13.1.2 - 13.1.3, and other NRC regulatory guidance. The staff concludes that the applicant is in compliance with NRC regulations. The staff determined that the information provided in BLN FSAR Section 13.1 related to BLN COL information items 9.5-1, 18.6-1, and 18.10-1 has been adequately addressed by the applicant. BLN COL information item 13.1-1 has been adequately addressed by the applicant and can be considered closed. The staff concludes that the applicant has provided sufficient information for satisfying the requirements of 10 CFR 50.40(b).

13.2 Training

13.2.1 Introduction

This section addresses the description and schedule of the training program for reactor operators and senior reactor operators, i.e., licensed operators. It addresses the scope of licensing examinations as well as training requirements. The licensed operator training program also includes the requalification programs as required in 10 CFR 50.54(i)(i-1) and 10 CFR 55.59, “Requalification.” In addition, this section of the BLN COL FSAR includes the description and schedule of the training program for non-licensed plant staff.

13.2.2 Summary of Application

Section 13.2 of the BLN COL FSAR incorporates by reference Section 13.2 of the AP1000 DCD, Revision 17.

In addition, in BLN COL FSAR Section 13.2, the applicant provides the following:

AP1000 COL Information Items

- Standard (STD) COL 13.2-1

The applicant provided additional information in STD COL 13.2-1 to resolve COL Information Item 13.2-1 (COL Action Item 13.2-1), which incorporates the provisions of NEI 06-13, “Template for an Industry Training Program,” providing the description and scheduling of the training program for plant personnel, including the requalification program for licensed operators.

- STD COL 18.10-1

The applicant provided additional information in STD COL 18.10-1 to address training for those operators involved in the Human Factors Engineering (HFE) Verification and Validation Program, using a systematic approach to training and Westinghouse Commercial Atomic Power (WCAP)-14655, "Designer's Input to the Training of the Human Factors Engineering Verification and Validation Personnel."

13.2.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is addressed within the FSER related to the DCD.

In addition, the relevant requirements of the Commission regulations for the description and schedule of the training program for licensed operators, and the associated acceptance criteria, are given in Sections 13.2.1 and 13.2.2 and Chapter 18 of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants" (SRP).

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

- 10 CFR Part 55, "Operator's Licenses"
- RG 1.8, "Qualification and Training of Personnel for Nuclear Power Plants"
- RG 1.149, "Nuclear Power Plant Simulation Facilities for Use in Operator Training and License Examinations"
- NUREG-1021, "Operator Licensing Examination Standards for Power Reactors"

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

- 10 CFR 50.120, "Training and Qualification of Nuclear Power Plant Personnel"
- 10 CFR 52.79(a)(33), "Contents of Applications; Technical Information"

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

- 10 CFR 55.13, "General Exemptions"
- 10 CFR 55.31, "How to Apply"
- 10 CFR 55.41, "Written Examinations: Operators"
- 10 CFR 55.43, "Written Examinations: Senior Operators"
- 10 CFR 55.45, "Operating Tests"

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

- 10 CFR 50.34(b), "Contents of Applications; Technical Information"
- 10 CFR 50.54(i), "Conditions of Licenses"
- 10 CFR 55.59, "Requalification"

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

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

13.2.4 Technical Evaluation

The NRC staff reviewed Section 13.2 of the BLN COL FSAR and checked the referenced DCD to ensure that the combination of the DCD and the information in the COL represent the complete scope of information relating to this review topic.[1] The NRC staff's review confirmed that the information contained in the application and incorporated by reference addresses the required information relating to the description and schedule of the training programs for nuclear plant personnel. Section 13.2 of the AP1000 DCD is being reviewed by the staff under Docket Number 52-006. The NRC staff's technical evaluation of the information incorporated by reference related to the description and schedule of the training programs for nuclear plant personnel will be documented in the staff SER on the DC application for the AP1000 design.

The staff reviewed the information contained in the BLN COL FSAR.

AP1000 COL Information Items

- STD COL 13.2-1

The NRC staff reviewed STD COL 13.2-1 related to COL Information Item 13.2-1 (COL Action Item 13.2-1) included under Section 13.2 of the BLN COL FSAR. COL Information Item 13.2-1 states:

> The Combined License applicants referencing the AP1000 certified design will develop and implement training programs for plant personnel. This includes the training program for the operations personnel who participate as subjects in the human factors engineering verification and validation. These Combined License applicant training programs will address the scope of licensing examinations as well as new training requirements.

The commitment was also captured as COL Action Item 13.2-1 in Appendix F of the NRC staff FSER for the AP1000 DCD (NUREG-1793), which states:

> The COL applicant will develop and implement training programs for plant personnel.

The applicant provided the following text to supplement Section 13.2, "Training," of the AP1000 DCD, dealing with the training program for plant personnel.

> This section incorporates by reference NEI 06-13, Technical Report on a Template for an Industry Training Program Description. See Table 1.6-201.

This technical report provides a complete training program description for use with COL applications. The staff has endorsed NEI 06-13A, Revision 1, as it provides an acceptable template for describing licensed operators and non-licensed plant staff training programs. The applicant has incorporated by reference NEI 06-13A, Revision 1.

The applicant provided the following text to supplement Section 13.2, "Training," of the AP1000 DCD, which is included in the DC amendment as part of the BLN COL FSAR to address STD COL 13.2-1, dealing with the training program for plant personnel.

> Table 13.4-201 provides milestones for training implementation.

NUREG-0800, Section 13.2.1, establishes milestones for the licensed operators and non-licensed plant staff training programs and for the licensed operator requalification training program. The BLN COL FSAR has identified those milestones in Table 13.4-201. The staff determined that this is acceptable, as the milestone information included in this table meets the criteria found in NUREG-0800.

- STD COL 18.10-1

The NRC staff reviewed STD COL 18.10-1, related to COL Information Item 18.10-1 (COL Action Item 18.10.3-1). COL Information Item 18.10-1 states:

> Combined License applicants referencing the AP1000 certified design will develop and implement training programs for plant personnel. This includes the training program for the operations personnel who participate as subjects in the human factors engineering verification and validation. These Combined License applicant training programs will address the scope of licensing examinations as well as new training requirements.

The commitment was also captured as COL Action Item 18.10.3-1 in Appendix F of the NRC staff's FSER for the AP1000 DCD (NUREG-1793), which states:

> With regard to the training program development, the COL applicant will (1) address the training program development considerations in NUREG-0711, (2) address relevant concerns identified in this report (NUREG-1793), and (3) identify the minimum documentation that the COL applicant will provide to enable the staff to complete its review.

This section refers to Sections 13.1, "Organizational Structure of Applicant" and 13.2, "Training" regarding the training program development.

The NRC staff reviewed the resolution to STD COL 18.10-1, related to staffing and qualifications included under Section 18.10 of the BLN COL FSAR. The applicant provided the referenced NRC-endorsed NEI 06-13A, Revision 1, to address COL Information Item 18.10-1.

NEI 06-13A, Revision 1 was written to provide COL applicants with a generic program description for use with COL application submittals. In a letter dated December 5, 2008, the staff stated that the training template of NEI-06-13A, Revision 1, was an acceptable means for describing licensed operator and non-licensed plant staff training programs. The staff finds the applicant's incorporation of NEI 06-13A, Revision 1 to be acceptable because it utilizes an NRC-endorsed methodology.

In Table 1.9-202, "Conformance with SRP Acceptance Criteria," of the BLN COL FSAR, the applicant identified two exceptions to the criteria of NUREG-0800, Section 13.2, which recommends following the guidance in NUREG-0711 and RG 1.149. Further, the applicant stated in Table 1.9-202 that NEI 06-13A is incorporated by reference into the BLN COL FSAR. The staff's safety evaluation report for NEI 06-13A (ML0709504790) states that NEI 06-13A complies with the guidance in NUREG-0711 and RG1.149. Therefore, the staff finds the two exceptions to the criteria in NUREG-0800, Section 13.2 to be acceptable because NEI 06-13A complies with the guidance in NUREG-0711 and RG1.149.

13.2.5 Post Combined License Activities

There are no post-COL activities related to this section.

13.2.6 Conclusion

The NRC staff reviewed the application and checked the referenced DCD. The NRC staff's review confirmed that the applicant addressed the required information relating to the description and schedule of the training program for licensed operators, and there is no outstanding information expected to be addressed in the BLN COL FSAR related to this section.

Section 13.2 of Revision 17 of the AP1000 DCD is identical to Section 13.2 of Revision 16 of the AP1000 DCD, which is incorporated by reference into 10 CFR Part 52, Appendix D. This section is not affected by the changes that Westinghouse proposed in Revision 17 to the AP1000 DCD. Pursuant to 10 CFR 52.63(a)(5) and 10 CFR Part 52, Appendix D, Section VI.B.1, all nuclear safety issues relating to the description and schedule of the training program that were incorporated by reference have been resolved.

In addition, the staff concludes that the relevant information presented within the BLN COL FSAR is acceptable and meets the guidance of NUREG-0800, Section 13.2. The staff based its conclusion on the following:

- STD COL 13.2-1, involving incorporating by reference NEI 06-13A, Revision 1, which provides an acceptable template for describing licensed operators and non-licensed plant staff training programs. The staff determined that this is acceptable, as it applies an NRC-endorsed approach.

- STD COL 18.10-1, relating to training, references Section 13.2 of the BLN COL FSAR, in which the applicant has committed to using WCAP-14655 to ensure a systematic approach to training development, and has referenced NEI 06-13A, Revision 1. The staff finds this acceptable because it applies an NRC-endorsed approach.

13.3 Emergency Planning

13.3.1 Introduction

This section addresses the emergency plans, design features, facilities, functions, and equipment necessary for emergency planning that must be considered in a COL application. The information provided by the applicant provides the basis for the evaluation of the adequacy of the onsite, State, and local emergency plans for the BLN site and a determination as to whether there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

In Part 5, "Emergency Plan" of the COL application, Tennessee Valley Authority (TVA) provided the emergency plan for responding to a broad range of radiological emergencies, including hostile actions, at the BLN Units 3 and 4 (BLN 3 and 4) site as required by 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. In addition, Part 5 includes, as supplemental information, current State and local emergency planning documents.

Part 7, “Departure and Exemptions,” addressed a departure from the information in the AP1000 DCD related to emergency response facility locations. In Part 10, “Inspections, Tests, Analyses, and Acceptance Criteria [ITAAC],” TVA provided ITAAC for those elements of emergency preparedness (EP) that cannot be completed during the COL application review stage. These elements must be completed prior to fuel load.

The Federal Emergency Management Agency (FEMA) reviewed the offsite emergency plans for the states of Alabama, Tennessee, and Georgia, the local government plans for Jackson and DeKalb counties in Alabama, and the applicant’s responses to RAIs. On May 1, 2009, FEMA provided its Interim Findings Report for Open Items (see Agencywide Documents Access and Management System [ADAMS] Accession ML091490434). The NRC staff has reviewed the FEMA report, and their overall conclusions are addressed in Section 13.3.6 of this SER.

13.3.2 Summary of Application

Section 13.3 of the BLN COL FSAR incorporates by reference Section 13.3 of the AP1000 DCD, Revision 17.

In addition, in BLN COL FSAR Section 13.3, the applicant provided the following:

Departure

- BLN DEP 18.8-1

The applicant proposed the departure from the AP1000 DCD to address new locations for the technical support center (TSC) and the operational support center (OSC) for each unit.

AP1000 COL Information Items

- STD COL 13.3-1

The applicant provided additional information in STD COL 13.3-1 addressing the need for COL applicants referencing the AP1000 certified design to address emergency planning including post-72 hour actions and communications interfaces.

- STD COL 13.3-2

The applicant provided additional information in STD COL 13.3-2 addressing the need for COL applicants referencing the AP1000 certified design to address activation of the emergency operations facility with the current operating practice and NUREG-0654/FEMA-REP-1, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.”

Supplemental Information

- STD SUP 13.3-1

The applicant provided supplemental (SUP) information to provide milestones for emergency planning implementation.

License Condition

13.03-01: The licensee shall submit a fully developed set of site-specific Emergency Action Levels (EALs) to the NRC in accordance with the NRC-endorsed version of NEI 07-01, Revision 0, with no deviations. The fully developed site-specific EAL scheme shall be submitted to the NRC for confirmation at least 180 days prior to initial fuel load (including onsite and offsite).

Onsite Emergency Plans

Part 5, "Emergency Planning," of the COL application contains the BLN 3 and 4, Emergency Plan (the BLN Emergency Plan). The BLN Emergency Plan consists of a basic plan and ten appendices. The ten appendices provide additional detailed information regarding various aspects of the BLN Emergency Plan.

Offsite Emergency Plans

Part 5, "Emergency Planning," of the COL application also addresses State and local emergency planning documents.

ITAAC

Information regarding emergency planning ITAAC is included in Part 10, "Proposed Combined License Conditions (Including ITAAC)," Revision 1, of the COL application and is evaluated in Section 13.3.1C.S of the SER.

13.3.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is addressed within the FSER related to the DCD.

In addition, the relevant requirements of the Commission regulations for emergency planning, and the associated acceptance criteria, are given in Section 13.3 of NUREG-0800.

The applicable regulatory requirements for emergency planning are as follows:

10 CFR 52.79(a)(21) and 10 CFR 52.79(a)(22)(i) require that the FSAR include emergency plans that comply with the requirements of 10 CFR 50.47 and Appendix E to 10 CFR Part 50, and certifications from State and local governmental agencies with emergency planning responsibilities. Under 10 CFR 50.47(a)(1)(ii), no initial combined license under 10 CFR Part 52 will be issued unless a finding is made by the NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. In addition, under 10 CFR 50.47(a)(2), the NRC will base its finding on a review of the FEMA findings and determinations as to whether State and local emergency plans are adequate, and whether there is reasonable assurance that they can be implemented, and on the NRC assessment as to whether the applicant's onsite emergency plans are adequate and whether there is reasonable assurance that they can be implemented.

In addition, the staff considered the applicable requirements in 10 CFR 52.77, 10 CFR 52.80, 10 CFR 50.33(g), and 10 CFR 100.21.

NUREG-0800 identifies NUREG-0654/FEMA-REP-1, Revision 1, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,” and other related guidance that the staff considered during its review.

The related acceptance criteria are identified in Section 13.3.II, "Acceptance Criteria," of NUREG-0800.

The applicable regulatory guidance for reviewing emergency preparedness as an operational program is established in Section 13.4 of NUREG-0800.

In addition, Appendix A to 44 CFR 353, "Memorandum of Understanding (MOU) Between Federal Emergency Management Agency and Nuclear Regulatory Commission Relating to Radiological Emergency Planning and Preparedness," September 14, 1993, states that FEMA is responsible for making findings and determinations as to whether offsite emergency plans are adequate and can be implemented. FEMA radiological emergency preparedness (REP) guidance documents provide guidance on various topics for use by state and local organizations responsible for radiological emergency preparedness and response. NUREG-0654/FEMA REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," provides guidance to provide a basis for state and local governments to develop radiological emergency plans.

13.3.4 Technical Evaluation

The NRC staff reviewed Section 13.3 of the BLN COL FSAR and checked the referenced DCD to ensure that the combination of the DCD and the information in the COL application represent the complete scope of information relating to this review topic.[1] The NRC staff’s review confirmed that the information contained in the application and incorporated by reference addresses the required information relating to emergency planning. Section 13.3 of the AP1000 DCD are being reviewed by the staff under Docket Number 52-006. The NRC staff’s technical evaluation of the information incorporated by reference related to emergency planning will be documented in the staff SER on the DC application for the AP1000 design.

The NRC staff reviewed the following sections of the COL application for conformance with the applicable standards and requirements identified in Section 13.3 of NUREG-0800:

- Part 2, “FSAR”
- Part 5, “Emergency Planning”
- Part 7, “Departures and Exemptions”
- Part 10, “Proposed License Conditions (Including ITAAC)”

Departure

- BLN DEP 18.8-1

The NRC staff's evaluation related to BLN DEP 18.8-1 is addressed in Attachment 13A in this section of the SER.

AP1000 COL Information Items

- STD COL 13.3-1
- STD COL 13.3-2

Supplemental Information

- STD SUP 13.3-1

The NRC staff's review of the emergency planning information related to STD COL 13.3-1, STD COL 13.3-2, and STD SUP 13.3-1 is also addressed in Attachment 13A in this section of the SER.

The NRC staff's review of the information provided in the application that is not part of the BLN Emergency Plan is addressed in Attachment 13B in this section of the SER. The NRC staff's review of the BLN Emergency Plan is addressed in Attachment 13C in this section of the SER.

In addition, the staff conducted a site area visit to the proposed BLN site. The visit included reviews of the proposed plant location and various areas within the 10-mile emergency planning zone (EPZ). This visit (see Environmental Scoping Meeting Trip Report, ML082260131) was conducted during the week of March 31 through April 5, 2008.

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

Pursuant to 10 CFR 52.79(a)(21) and 10 CFR 52.81, the staff reviewed the COL application according to the standards set out in 10 CFR Part 50, including 10 CFR 50.47 and Appendix E to 10 CFR Part 50.

FEMA has reviewed the emergency plans for the states of Alabama, Georgia, and Tennessee, the local government plans for Jackson and DeKalb counties, and provided its interim findings report. The staff has reviewed the FEMA report and based its overall findings on the FEMA findings and determinations regarding offsite emergency planning.

13.3.5 Post-Combined License Activities

The following items were identified as the responsibility of the COL holder:

License Conditions:

- Part 10, License Condition 1, "ITAAC," addresses emergency planning for BLN included in Table 3.8-1, "Emergency Planning ITAAC for Bellefonte." ITAAC for the as-built TSC and OSC are addressed in Table 3.1-1 of Tier 1 of the AP1000 DCD.

- Part 10, License Condition 3, "Operational Program Implementation," addresses implementation milestones for those operational programs whose implementation is not addressed in the regulations. The implementation milestones and requirements related to emergency planning are addressed as Item 14, "Emergency Planning," in Table 13.4-201 in Part 2, "FSAR," of the COL application.

13.3.6 Conclusions

The NRC staff reviewed the application and checked the referenced DCD. The NRC staff's review confirmed that the applicant addressed the required information relating to emergency planning, and there is no outstanding information expected to be addressed in the BLN COL FSAR related to this section.

The Westinghouse application to amend Appendix D to 10 CFR Part 52 includes changes to Section 13.3 of the AP1000 DCD, as stated in Revision 17 of the AP1000 DCD. The staff is reviewing this information on Docket Number 52-006. The results of the NRC staff's technical evaluation of the information incorporated by reference in the BLN COL FSAR will be documented in a supplement to NUREG-1793. The supplement to NUREG-1793 is not yet complete, and this is being tracked as part of Open Item 1-1. The staff will update Section 13.3 of this SER to reflect the final disposition of the DC application.

Pursuant to 10 CFR 52.80(a), the BLN 3 and 4 COL application includes the proposed inspections, tests, and analyses that the licensee shall perform, and the acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the facility has been constructed and will operate in conformity with the license, the provisions of the Atomic Energy Act, and the NRC's rules and regulations. The ITAAC that are applicable to emergency planning for BLN 3 and 4, are included in Table 3.8-1 in Part 10 of the COL application and are not acceptable.

FEMA provided its findings and determinations concerning the adequacy of offsite emergency planning and preparedness, which are based upon its review of State and local emergency plans. FEMA has identified 18 open items associated with various NUREG-0654/FEMA-REP-1 planning standard evaluation criteria in their Interim Findings Report for Open Items. As part of its findings, FEMA conditioned its final conclusion of adequacy of offsite emergency plans on closure of open items.

As the result of the open items identified by the staff and FEMA, offsite the NRC staff is unable to finalize its conclusions regarding the overall adequacy of the emergency plans for the BLN site, in accordance with applicable requirements.

Attachment 13A – COL Information Items, Supplemental Information Items and Departures

13.3.1A Introduction

This section addresses the COL information items, supplemental information items and departures associated with emergency planning.

13.3.2A Regulatory Basis

The regulatory basis of the information incorporated by reference is addressed within the FSER related to the DCD.

In addition, the relevant requirements of the Commission regulations for emergency planning, and the associated acceptance criteria, are given in Section 13.3 of NUREG-0800.

The applicable regulatory requirements for BLN DEP 18.8-1, dealing with the locations of the OSC and TSC, are established in 10 CFR 50.47(b)(8) and 10 CFR 50.34(f)(2)(xxv), and the guidance is provided in NUREG-0654/FEMA-REP-1, Revision 1, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,” and NUREG-0696, "Functional Criteria for Emergency Response Facilities.”

The applicable regulatory requirements for STD COL 13.3-1 and STD COL 13.3-2, dealing with emergency planning, are established in 10 CFR 50.47(b), 10 CFR Part 52, Appendix E to 10 CFR Part 50, 10 CFR 50.33(g), 10 CFR 52.79(a)(17), and 10 CFR 50.34(f)(2)(xxv), and the guidance is provided in NUREG-0654/FEMA-REP-1, Revision 1 and NUREG-0696, “Functional Criteria for Emergency Response Facilities.”

With respect to STD SUP 13.3-1, guidance related to implementation milestones for the emergency planning program is provided in Section 13.4, “Operational Programs,” of NUREG-0800. Specifically, the guidance is addressed in Item 14 in the Sample FSAR Table 13.4-x, “Operational Programs Required by NRC Regulation and Program Implementation,” which specifies: 1) A full-participation exercise is conducted within 2 years of scheduled date for initial loading of fuel in accordance with 10 CFR Part 50, Appendix E.IV.F.2(a)(ii); 2) An onsite exercise is conducted within 1 year before the scheduled date for initial loading of fuel in accordance with 10 CFR Part 50, Appendix E.IV.F.2(a)(ii); and 3) The applicant’s detailed implementing procedures for its emergency plan is submitted no less than 180 days before the scheduled date for initial loading in accordance with 10 CFR Part 50, Appendix E.V.

13.3.3A Technical Information in the Application

Departure

In Part 2 of the BLN COL FSAR, the applicant incorporated by reference Section 18.8, “Human System Interface Design,” of Revision 17 of the AP1000 DCD. However, the applicant identified the following departure:

- BLN DEP 18.8-1 is related to the locations of the TSC and the OSC for each unit.

The applicant proposed replacing the last sentence of the first paragraph of Section 18.8.3.5, "Technical Support Center Mission and Major Tasks," with the following:

> The Technical Support Center (TSC) location is described in the Emergency Plan.

The applicant also replaced the last sentence of the first paragraph of Section 18.8.3.6, "Operational Support Center (OSC) Mission and Major Tasks," with the following:

> The Operational Support Center (OSC) location is described in the Emergency Plan.

In Part 7, “Departures and Exemptions,” of the COL application, the applicant states in BLN DEP 18.8-1 that the TSC at BLN will not be located in the control support area (CSA) as identified in the AP1000 DCD, Section 18.8.3.5. Instead, the TSC location will be as described in the emergency plan. The discussion in BLN DEP 18.8-1 further states that the TSC location is to be in a central location such that a single TSC can serve both BLN units. Additionally, the BLN OSC is also being moved from the location identified in AP1000 DCD Sections 18.8.3.6 and 12.5.2.2 and as described in Figure 1.2-18. Instead, the OSC location will be as described in the emergency plan. The discussion further states that the OSC is being moved to the CSA vacated by the move of the TSC. The technical evaluation of this departure is in Section 13.3.1C.H.

Section 13.3 of the COL application includes the following COL information items and supplementary information related to the AP1000 DCD:

AP1000 COL Information Items

- STD COL 13.3-1

Section 13.3, “Emergency Planning,” of the BLN COL FSAR states:

> The emergency planning information is submitted to the Nuclear Regulatory Commission as a separate licensing document.
>
> Post-72 hour support actions, as discussed in DCD Sections 1.9.5.4 and 6.3.4, are addressed in DCD Sections 6.2.2, 8.3, and 9.1.3. Provisions for establishing post-72 hour action ventilation for the main control room, instrumentation and controls rooms, and direct current (dc) equipment rooms are established in operating procedures.

- STD COL 13.3-2

In Section 13.3 of the BLN COL FSAR, STD COL 13.3-2 states:

> The emergency plan describes the plans for coping with emergency situations, including communication interfaces and staffing of the emergency operations facility.

Supplemental Information

- STD SUP 13.3-1 provided milestones for emergency planning implementation in Table 13.4-201.

The applicant provided the following text to BLN COL FSAR Section 13.3 to address STD SUP 13.3-1:

> Table 13.4-201 provides milestones for emergency planning implementation.

13.3.4A Technical Evaluation

The NRC staff reviewed Section 13.3 of the BLN COL FSAR and checked the referenced DCD to ensure that the combination of the DCD and the information in the COL represent the complete scope of information relating to this review topic.[1] The NRC staff's review confirmed that the information contained in the application and incorporated by reference addresses the required information relating to emergency planning. Section 13.3 of the AP1000 DCD is being reviewed by the staff under Docket Number 52-006. The NRC staff's technical evaluation of the information incorporated by reference related to emergency planning will be documented in the staff SER on the DC application for the AP1000 design.

The staff reviewed the information contained in the BLN COL FSAR:

Departure

- BLN DEP 18.8-1

The NRC staff reviewed the applicant's justification for departure BLN DEP 18.8-1 in Part 7 of the COL application. Revision 17 to the AP1000 DCD is being reviewed by the NRC staff under Docket Number 52-006. The acceptability of the new location of the TSC is being tracked as Open Item 1-1.

Regarding the location of the OSC, while the applicant's evaluation was performed using the requirements in Section VIII of Appendix D to 10 CFR Part 52, the relocation of the OSCs (one for each unit) did not require prior NRC approval. However, the location of the OSCs is reviewed as part of the review of the onsite emergency plan and is discussed in Section 13.3.1C.H.of the SER.

AP1000 COL Information Items

- STD COL 13.3-1

The staff finds the applicant's submittal of the onsite emergency plan for BLN in Part 5, "Emergency Plan," of the COL application acceptable because it meets the requirements of Appendix E to 10 CFR Part 50.

Operating procedures to address post-72 hour support actions are being tracked by STD COL 13.5-1 in Section 13.5, "Plant Procedures," of this SER.

- STD COL 13.3-2

In RAI 13.03-38(A), the NRC staff asked the applicant to explain why the communications interfaces were not addressed. The applicant's response to RAI 13.03-38(A) stated that communications interfaces are addressed primarily in Section II.E, "Notification Methods and Procedures," and Section II.F, "Emergency Communications." Other BLN Emergency Plan sections addressing specific aspects of emergency communications include: Section II.A.1.b, "Concept of Operations, Section II.1.e, "24-hour Emergency Response Capability," Section II.G, "Public Education and Information," Section II.H, "Emergency Facilities and Equipment," Section II.L.4, "Medical Emergency Transportation," and Section II.M.3, "Changes in Organizational Structure."

In RAI 13.03-38(B), the NRC staff asked the applicant to discuss why staffing of the emergency operations facility was not addressed. The applicant's response to RAI 13.03-38(B) refers to Section H.4, "Activation and Staffing of Emergency Response Facilities [ERFs]," of the BLN Emergency Plan, which states that the ERFs are staffed and activated in accordance with emergency plan implementing procedures (EPIPs). However, the applicant did not address specific timeliness goals associated with activating and staffing the ERFs. This is designated as **Open Item 13.3-1**.

Supplemental Information

- STD SUP 13.3-1

As part of STD SUP 13.3-1, the applicant provided milestones for EP program implementation in Table 13.4-201, "Operational Programs Required by NRC Regulations," of the BLN COL FSAR. The staff finds the milestones to be acceptable as they are consistent with NUREG-0800.

13.3.5A Post Combined Operating License Activities

There are no post-COL activities related to this section.

13.3.6A Conclusions

The NRC staff reviewed the application and checked the referenced DCD. The NRC staff's review confirmed that the applicant addressed the required information relating to emergency planning, and there is outstanding information expected to be addressed in the BLN COL application FSAR related to this section.

The Westinghouse application to amend Appendix D to 10 CFR Part 52 includes changes to Section 13.3 of the AP1000 DCD, as stated in Revision 17 of the AP1000 DCD. The staff is reviewing this information on Docket Number 52-006. The results of the NRC staff's technical evaluation of the information incorporated by reference in the BLN COL FSAR will be documented in a supplement to NUREG-1793. The supplement to NUREG-1793 is not yet complete, and this is being tracked as part of Open Item 1-1. The staff will update Section 13.3 of this SER to reflect the final disposition of the DC application.

The NRC staff has compared the COL information items and supplemental information items in the BLN COL application to the applicable NRC regulations, acceptance criteria defined in Section 13.3 of NUREG-0800, and other NRC regulatory guides and concludes that until Open Item 13.3-1 is resolved, the applicant is not in compliance with the NRC regulations.

Attachment 13B – Introductory Emergency Planning Information

13.3.1B Introduction

This section of the SER contains the NRC staff's evaluation of emergency planning information that is required to be provided in the COL application, but does not address the applicant's plans for responding to a radiological emergency, which are evaluated in Attachment 13C in this section of the SER.

13.3.1B.1 10 CFR 50 and 52 Requirements

Regulatory Basis: 10 CFR Part 50, Appendix E, Section III, requires that the FSAR contain plans for coping with emergencies. 10 CFR 52.79(a)(21), "Contents of the applications; technical information in the final safety analysis report," and 10 CFR 50.34(b)(6)(v), "Final Safety Analysis Report," also require that the FSAR contain an onsite emergency plan that complies with 10 CFR 50.47 and Appendix E to 10 CFR Part 50.

Technical Information in the Application: Section 13.3, "Emergency Planning," of the BLN COL FSAR states in STD COL 13.3-1 that emergency planning information is submitted to the NRC as a separate licensing document. The document is Part 5, "Emergency Plan," (BLN Emergency Plan) of the COL application. Section I.B, "Scope," states the plan applies to planning for and responding to any radiological condition at BLN. Section I.C.1, "Planning Basis," of the BLN Emergency Plan states that consistent with the requirements of both 10 CFR Part 50 and 10 CFR Part 52, this plan is based on the requirements of 10 CFR 50.47, "Emergency Plans," and Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities" to 10 CFR Part 50. The BLN Emergency Plan also includes ten appendices that provide additional detailed information on various aspects of the onsite emergency plan.

Technical Evaluation: The staff finds that the BLN COL FSAR contains an emergency plan for coping with emergencies at BLN as called for in Appendix E to 10 CFR Part 50.

Regulatory Basis: 10 CFR 50.33 and 10 CFR 52.77 require in part, the submittal of State and local emergency plans.

Technical Information in the Application: The "Explanatory Notes Regarding the Emergency Plan and Supplemental Information," of the BLN Emergency Plan states that current State and local emergency planning documents are included as supplemental information. The list of State and local emergency planning documents includes:

- Alabama Emergency Operations Plan
- Alabama Radiological EP Program Plan
- Tennessee Ingestion Pathway Emergency Plan
- Georgia Radiological Emergency Plan, Annex F - Ingestion Pathway
- Table of proposed changes to the Alabama Emergency Operations Plan to address BLN
- Proposed changes to the Alabama Radiological EP Program Plan
- Proposed Jackson County Radiological Emergency Plan documents
- Proposed DeKalb County Radiological Emergency Plan documents

Technical Evaluation: The applicant submitted offsite emergency plans for State and local governmental entities that are wholly or partially in the plume exposure pathway EPZ. These State and local governmental entities include: Alabama, Jackson County and DeKalb County. The offsite emergency plans for the following State governments wholly or partially in the ingestion pathway EPZ were also submitted: Alabama, Tennessee and Georgia.

Regulatory Basis: 10 CFR Part 50.33, “Content of the application: general information. 10 CFR 50.33(g) requires, in part, a description of the plume exposure pathway and the ingestion pathway EPZs. In addition, 10 CFR 50.47(c)(2) also specifies the sizes of the EPZs.

Technical Information in the Application: Section C.2, "Emergency Planning Zones," of the BLN Emergency Plan describes plume exposure pathway and ingestion pathway EPZs. The plume exposure pathway EPZ consists of an area about 10 miles in radius around the site. Figure I-1, "Plume Exposure Pathway Emergency Planning Zone," provides an illustration of the plume exposure pathway EPZ. The plume exposure pathway EPZ is also described to be the area where the principal sources of incident-related radiation exposures are likely to be whole body gamma radiation exposures and inhalation exposures form the passing radioactive plume. In RAI 13.03-34, the NRC staff asked the applicant why the plume exposure pathway description did not include whole body external exposure to gamma radiation from deposited material as specified in NUREG-0396/EPA 520/1-78-016, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Reactors." The applicant's response provided a reference to the definition of the plume exposure pathway EPZ in the definition section of the BLN Emergency Plan. The definition of the plume exposure pathway EPZ includes whole body external exposure to gamma radiation from deposited material.

Section C.2 of the BLN Emergency Plan also includes a description of the ingestion pathway EPZ. The ingestion pathway EPZ consists of an area about 50 miles in radius around the site. Figure I-2, "Ingestion Exposure Pathway Emergency Planning Zone," provides an illustration of the ingestion exposure pathway EPZ.

In RAI 13.03-35, the NRC staff asked the applicant to discuss how the sizes and configurations of the EPZs surrounding the plant were determined in relation to the local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries. The applicant responded that the size and configuration of the EPZs were developed in cooperation with State and county agencies responsible for emergency planning considering local emergency response needs and capabilities. The applicant also stated that demography, topography, land characteristics, access routes, and jurisdictional boundaries were considered in the determination of the sizes of the EPZs.

Technical Evaluation: The responses to RAIs 13.03-34 and 13.03-35 are acceptable because the applicant followed the guidance in NUREG-0396 and the acceptance criteria in NUREG-0800. In addition, the BLN Emergency Plan describes the plume exposure pathway EPZ for the BLN site as consisting of an area about 10 miles in radius and the ingestion pathway EPZ consisting of an area about 50 miles in radius.

Regulatory Basis: 10 CFR 52.79, “Contents of the applications; technical information in the final safety analysis report.” 10 CFR 52.79(a)(22)(i) requires certifications from the State and local governmental agencies with emergency planning responsibilities that: (1) the proposed emergency plans are practicable; (2) these agencies are committed to participating in any

further development of the plans, including any required field demonstrations; and (3) these agencies are committed to executing their responsibilities under the plans in the event of an emergency.

Technical Information in the Application: Appendix 7, "Certification Letters," of the BLN Emergency Plan, includes certifications signed by the Chairman of the Jackson County Commission, the Acting Director of the Alabama Emergency Management Agency, and the President of DeKalb County that certify that: (1) the proposed emergency plans are practicable; (2) these agencies are committed to participating in any further development of the plans, including any required field demonstrations; and (3) these agencies are committed to executing their responsibilities under the plans in the event of an emergency.

Technical Evaluation: The staff finds the certifications acceptable because they meet the requirements of 10 CFR 52.79(a)(22)(i).

Regulatory Basis: 10 CFR 50.34(h)(1)(i) and 10 CFR 52.79(a)(41) require that the application include an evaluation of the facility against NUREG-0800. Section 13.3, Revision 3 of NUREG-0800, provides guidance for the review of onsite emergency plans for nuclear power plants. 10 CFR 50.34(h)(2) and (3) require that the evaluation identify and describe all differences from the acceptance criteria in Section 13.3 of NUREG-0800 and evaluate how the proposed alternatives to the criteria provide an acceptable method of complying with the Commission's regulations. Where differences exist, the evaluation should discuss how the proposed alternative provides an acceptable method of complying with Commission's regulations, or portions thereof, that underlie the corresponding acceptance criteria.

Technical Information in the Application: BLN COL FSAR Table 1.9-202, "Conformance with SRP Acceptance Criteria," in STD SUP 1.9-1 indicates that conformance with the acceptance criteria in NUREG-0800 is acceptable for Section 13.3. However, the acceptance criteria related to emergency planning in Section 13.3 of NUREG-0800 was not evaluated against Part 5 of the COL application. In RAI 13.03-37, the applicant was requested to provide an evaluation of the BLN Emergency Plan against Revision 3 of NUREG-0800. In addition, the applicant was requested to identify all differences between the BLN Emergency Plan and Section 13.3 of NUREG-0800. The applicant responded that the term acceptable, under the FSAR Position in Table 1.9-202, indicates acceptable BLN conformance with the plant or site-specific aspects of Revision 3 to Section 13.3 of NUREG-0800, as indicated in Note (f). The applicant also stated that there are no exceptions to the acceptance criteria.

Technical Evaluation: The response to RAI 13.03-37 is acceptable because it meets the guidance of NUREG-0800. The staff reviewed the applicant's evaluation of the BLN Emergency Plan against the applicable portions of Section 13.3 of NUREG-0800. The staff's evaluation confirmed that there were no differences from the acceptance criteria in Section 13.3 of NUREG-0800.

Regulatory Basis: 10 CFR 52.73, "Relationship to Other Subparts," states that the application for a COL may reference a standard design.

Technical Information in the Application: Section 13.3 of the BLN COL FSAR, states that the AP1000 DCD is incorporated by reference with departures and supplements.

Technical Evaluation: The NRC staff's evaluation of the departures and supplements is addressed in Attachment 13A in this section to the SER.

Regulatory Basis: 10 CFR 52.81, “Standards for review of applications,” states that COL applications will be reviewed according to the standards in 10 CFR Part 50 and 10 CFR Part 100. Therefore, the requirements of 10 CFR Part 100, “Reactor Site Criteria,” Subpart B, “Evaluation Factors for Stationary Power Reactor Site Applications on or after January 10, 1997,” are applicable. 10 CFR 100.1(c) requires the identification of physical characteristics unique to the proposed site that could pose a significant impediment to the development of emergency plans. 10 CFR 100.21(g),also requires that applications for site approval must identify physical characteristics unique to the proposed site that could pose a significant impediment to the development of emergency plans.

Technical Information in the Application: Appendix 4, "Evacuation Time Estimates," of the BLN Emergency Plan states that the evacuation time estimate (ETE) Report, "Bellefonte Nuclear Plant, Development of Evacuation Time Estimates," (the ETE Report) dated September 2007, describes the analyses undertaken and the results obtained by a study to develop ETEs for the proposed BLN site. Also in Appendix 4, the applicant concluded that there are no physical characteristics unique to the BLN nuclear power station site that pose a significant impediment to the development of the proposed emergency plans. This conclusion was based on the information addressed in the ETE Report for the plume exposure pathway EPZ.

Technical Evaluation: The applicant has demonstrated, through the use of the ETE Report that no physical characteristics unique to the proposed site pose a significant impediment to the development of emergency plans. The NRC staff's review of the ETE Report is in Section 13.3.1C.R, "Evacuation Time Estimates (ETE) Analysis," of this SER. The ETE Report provided an estimate of the time to evacuate the plume exposure pathway EPZ. In addition, the ETE Report examined the population distribution and transportation routes to determine whether there are any characteristics that pose a significant impediment to taking protective actions to protect the public in the event of an emergency. Populations that have special needs during an emergency are identified. In addition, no significant impediments to taking protective measures, such as egress limitations from the area surrounding the site were identified. Therefore, the staff finds that the information is acceptable and meets the requirements of 10 CFR 100.1(c) and 10 CFR 100.21(g).

13.3.1B.2 Conclusion Related to the Introductory Emergency Planning Information in the Application

The NRC staff reviewed the emergency planning information required by regulations to be in the application, but not required to be part of the BLN Emergency Plan provided in Part 5, “Emergency Plan,” of the BLN COL application. The staff reviewed the information against the applicable requirements of 10 CFR 50.33(g), 10 CFR 50.34(b)(6)(v), 10 CFR 50.34(h)(1)(i), 10 CFR 50.34(h)(2) and (3), 10 CFR 50.47(c)(2), 10 CFR 52.73, 10 CFR 52.77, 10 CFR 52.79(a)(21), 10 CFR 52.79(a)(22)(i), 10 CFR 52.79(a)(41), 10 CFR 52.81, 10 CFR 100.1(c), 10 CFR 100.21(g), and 10 CFR Part 50, Appendix E, Sections III and IV. The staff concludes that the information provided, as discussed in the technical evaluation sections above, is acceptable.

Attachment 13C - Onsite Emergency Plan

13.3.1C Introduction

The NRC evaluates emergency plans for nuclear power reactors to determine whether there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. This Attachment to Section 13.3 of this SER provides the results of the review of the onsite emergency plan for the proposed reactors at the BLN site.

BLN COL FSAR states in Section 13.3, "Emergency Planning," that the BLN 3 and 4 Emergency Plan (the BLN Emergency Plan) is contained in Part 5 of the COL application. Also included as part of the onsite emergency plan are ten appendices, which provide additional detailed information on various aspects of the BLN Emergency Plan, and an evacuation time analysis report. In addition, Part 10 of the COL application includes a set of ITAAC related to the BLN Emergency Plan.

The following sections describe the staff's evaluation of the onsite emergency plan for BLN and parallel the Planning Standards and Evaluation Criteria in NUREG-0654/FEMA-REP-1.

13.3.1C.A Assignment of Responsibility (Organizational Control)

13.3.1C.A.1 10 CFR 50.47 Requirements

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

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

Technical Information in the Emergency Plan: [A.1.a] Section II.A.1.a, "Participating Organizations," of the BLN Emergency Plan provides a general discussion of the assignment of responsibility. Participating organizations include: TVA; Alabama Emergency Management Agency; Alabama Department of Public Health; Jackson County Alabama Government Agencies; DeKalb County Alabama Government Agencies; the NRC; U.S. Department of Energy (DOE); and the U.S. Department of Homeland Security (DHS) and FEMA. However, Section II.A does not address specific county governments responsible for responding to an emergency. In RAI 13.03-18(A) the applicant was asked to identify the specific county governments and organizations that will respond to an emergency event. In response to RAI 13.03-18(A), dated September 8, 2008, and the supplemental information provided on February 6, 2009, the applicant identified specific county governments and organizations. Subsequently, the staff confirmed that Revision 1 of the BLN Emergency Plan addressed the needed information.

[2] The bracketed, alphanumeric designations used throughout this SER section identify the Evaluation Criteria for each Planning Standard in NUREG-0654/FEMA-REP-1 that were used by the staff to determine compliance with 10 CFR 50.47(b).

Section B.2, "Site Emergency Director," of the BLN Emergency Plan, states that the Shift Manager assumes the role of the Site Emergency Director (SED). However, Footnote 2 in Section A.1.b uses the term Emergency Coordinator. In RAI 13.03-18(C), the staff requested information to explain the difference between the two designations. In response to RAI 13.3-18(C), the applicant stated that the Shift Manager assumes the role of the Site Emergency Director and determines whether activation of the emergency response facilities is desirable or required based on an assessment of plant conditions. In Revision 1 of the BLN Emergency Plan, the staff confirmed that the term Emergency Coordinator was replaced by Site Emergency Director in Footnote 2. In addition, the staff confirmed that Figure II-2, “BLN Emergency Response Organization-TSC/OSC Only,” was revised to replace the term Emergency Coordinator with the term Site Emergency Director.

Technical Evaluation: The responses to RAI 13.03-18(A) and RAI 13.03-18(C) are acceptable. As described above, the BLN Emergency Plan identifies the State, local, Federal and private sector organizations (including utilities), that are intended to be part of the overall response organization for EPZs.

Technical Information in the Emergency Plan: [A.1.b] Section II.A.1.b, “Concept of Operations,” of the BLN Emergency Plan defines the concept of operations for participating organizations and TVA’s responsibilities during an emergency condition. TVA will assess plant conditions, classify the emergency, activate the Emergency Response Organization (ERO) and ERFs, support offsite assessment, make protective action recommendations (PARs), monitor, control, and mitigate plant conditions, communicate to offsite agencies and terminate emergency conditions. The involvement of State, county, and Federal governments, as well as the participation of supporting agencies in the private sector are also briefly covered in this section.

Technical Evaluation: The staff finds that the BLN Emergency Plan adequately describes the applicant’s operational role, its concept of operations, and its relationship to the total effort.

Technical Information in the Emergency Plan: [A.1.c] Section II.A.1.c, “Organizational Interrelationships,” of the BLN Emergency Plan contains a block diagram illustrating the interrelationships of all organizations participating in emergency response in Figure II-1, "Emergency Response Organization Interrelationships." The diagram does not show specific State and local agencies nor is the DOE shown in the figure. The relationships are only shown by organization and not by position or title. In RAI 13.03-18(D), the staff requested information regarding the specific positions or titles of the organizations that will interact during an emergency. In RAI 13.03-18(D), the staff also requested information to explain the line and arrow coming from NRC to the Field Monitoring Teams. In response to RAI 13.03-18(D), dated September 8, 2008 and supplemental information provided in letters dated February 6, 2009, and February 10, 2009, the applicant provided the details regarding the participating organizations. The NRC staff confirmed that Revision 1 to the BLN Emergency Plan included an acceptable description of the interrelationships with the DOE in Figure II-1, and accurate lines and arrows to connect the TSC to the Field Monitoring Teams.

Technical Evaluation: The response to RAI 13.03-18(D) is acceptable. The BLN Emergency Plan adequately illustrates the interrelationships of the participating organizations in emergency response in a block diagram and in text.

Technical Information in the Emergency Plan: [A.1.d] Section II.A.1.d, “Individual in Charge of Emergency Response,” of the BLN Emergency Plan identifies the individual in charge for coordinating the emergency response as the SED. Initially the SED position is assumed by the

Shift Manager. Once the ERFs are activated, the SED position is transitioned to the Plant Manager, relieving the Shift Manager.

Technical Evaluation: The staff finds that a specific individual was identified by title, which shall be in charge of the emergency response.

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

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

Technical Information in the Emergency Plan: [A.3.] Section II.A.3, “Written Agreements,” of the BLN Emergency Plan states Appendix 7, “Certification Letters,” includes copies of certification letters established between TVA and State and local government agencies and private sector organizations supporting the emergency response effort. The letters from TVA state “The actual emergency planning arrangements would be finalized in Letters of Agreement at a later stage in the licensing process”. In RAI 13.03-18(E), the staff requested that the applicant identify when the letters of agreement will be available and incorporated into the BLN Emergency Plan. In the supplemental information provided in response to RAI 13.03-18(E), the applicant stated that letters of agreement will be available for NRC inspection prior to the full-participation exercise to be conducted in accordance with the requirements of Appendix E to 10 CFR Part 50.

Technical Evaluation: The letters of agreement are required prior to COL issuance. Therefore, the staff requires either the letters of agreement be provided prior to COL issuance or a proposed license condition describing the applicant’s plans for providing them. This is being tracked as **Open Item 13.3-2.**

Technical Information in the Emergency Plan: [A.4.] Section II.A.4, “Continuous Operations,” of the BLN Emergency Plan discusses TVA’s capability for continuous operations by training of multiple responders for key emergency response positions (see Section II.O). The SED or CECC Director is identified as the individual from the principal organization who is in charge and has the responsibility for ensuring continuity of technical, administrative, and material resources during emergency operations.

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

13.3.1C.A.2 10 CFR Part 50, Appendix E Requirements

In determining whether the proposed emergency plan meets the applicable requirements related to the area of assignment of responsibility (organization control), the NRC staff also evaluated it against the following requirements in Appendix E to 10 CFR Part 50.

Regulatory Basis: 10 CFR Part 50, Appendix E, Section III, “The Final Safety Analysis Report,” requires that onsite emergency plans be an expression of the overall concept of operation by

describing the essential elements of advance planning that have been considered and the provisions that have been made to cope with emergency situations.

Technical Information in the Emergency Plan: FSAR Section 13.3-2 states: "The emergency plan describes the plans for coping with emergency situations, including communications interfaces and staffing of the emergency operations facility." In addition, Section I, "Introduction," of the BLN Emergency Plan describes the plans established by TVA for responding to a radiological emergency at BLN. The BLN Emergency Plan describes the organization, facilities, emergency response measures, and functional interfaces with offsite agencies which can be used to respond to a broad range of emergencies. The organization has defined responsibilities and specific authorities, which provide for effective control and coordination of the emergency response, both onsite and offsite. The organization is augmented, as required, to address situations with serious potential consequences. In addition, the BLN Emergency Plan has been coordinated with the plans of affected government agencies and private sector support organizations.

Technical Evaluation: The staff finds that the BLN Emergency Plan provides an expression of the overall concept of operation by describing the essential elements of advance planning that have been considered and the provisions that have been made to cope with emergency situations.

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

Technical Information in the Emergency Plan: Section II.A, "Assignment of Responsibility (Organizational Control)," of the BLN Emergency Plan defines assignment of responsibility. However, the BLN Emergency Plan does not state who the officials responsible for planning, ordering and controlling protective actions are. In RAI 13.03-18(B), the staff requested the applicant provide, by title, State and local officials that will be responsible for implementing offsite protective actions. In response to RAI 13.03-18(B), dated September 8, 2008, and the supplemental information in a letter dated February 6, 2009, addressed the information requested and provided the change to the text that would be incorporated into the BLN Emergency Plan. The NRC staff confirmed that Revision 1 to the BLN Emergency Plan included additional information regarding State and local officials that will be responsible for implementing offsite protective actions.

Figure II-1, "Emergency Response Organization Interrelationships," shows the interrelationships of all organizations that will be participating in emergency response. Appendix 7, "Certification Letters," addresses a certification letter signed by the supporting agencies.

Technical Evaluation: The staff finds the response to RAI 13.03-18(B) acceptable. The BLN Emergency Plan adequately identifies State and/or local officials responsible for planning, ordering, and controlling appropriate protective actions, including evacuations when necessary.

13.3.1C.A.3 Conclusion for Assignment of Responsibility (Organizational Control)

The NRC staff has reviewed the onsite emergency plan and the applicant's responses to RAIs in regards to Planning Standard A of NUREG-0654/FEMA-REP-1 and the requirements of 10 CFR 50.47(b)(1) and applicable parts of Section III and Section IV.A.8 of Appendix E to 10 CFR

Part 50. The NRC staff will make its final determination as to whether this planning standard is acceptable based on verification of applicant's response to the following open item:

- Open Item 13.3-2 was created for the applicant to address letters of agreement between TVA and State and local government agencies and private sector organizations supporting the emergency response effort.

13.3.1C.B Onsite Emergency Organization

13.3.1C.B.1 10 CFR 50.47 Requirements

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

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

Technical Information in the Emergency Plan: [B.1] Section II.B.1, "On-site Emergency Organization," of the BLN Emergency Plan states that minimum staff required to conduct routine and immediate emergency operations is maintained at the station consistent with Appendix E of 10 CFR Part 50. Figure II-2, "BLN Emergency Response Organization - TSC/OSC Only," and Figure II-3, "BLN Augmented Emergency Response Organization," in the BLN Emergency Plan show the high level organizations that will be located in the ERFs. However, sufficient details were not provided regarding the actual functions and titles of staff that will be located in these blocks on the diagrams. In RAI 13.03-19(A) the staff requested that the applicant provide details regarding staffing of the ERFs. In response to RAI 13.03-19(A), dated September 22, 2008, the applicant stated that Section II.B of the BLN Emergency Plan will be revised to provide additional details regarding the ERO in Figures II-2 and II-3. The NRC staff has confirmed that the additional information provided in the response to RAI 13.03-19(A) has been included in Revision 1 of the BLN Emergency Plan.

Technical Evaluation: With the inclusion of the additional information, the BLN Emergency Plan provides an acceptable description of the onsite emergency organization of plant staff personnel for all shifts and its relation to the responsibilities and duties of the normal staff complement.

Technical Information in the Emergency Plan: [B.2] Section II.B.2, "Site Emergency Director," of the BLN Emergency Plan states that the Shift Manager's position is staffed at all times. The Shift Manager initially assumes the duties of the SED and is responsible for initiating required emergency response actions, including notification of affected Federal, State, and local authorities and provision of PARs to offsite authorities.

Technical Evaluation: The applicant has designated an individual as the SED, who shall be on shift at all times, and who has the authority and responsibility to initiate any emergency actions, including providing PARs to authorities responsible for implementing offsite emergency measures.

Technical Information in the Emergency Plan: [B.3] Section II.B.3, “Site Emergency Director Line of Succession,” of the BLN Emergency Plan identifies the Unit Supervisor present on shift to assume the SED position until relieved by a qualified member of management if the Shift Manager is unable to fulfill the duties and responsibilities for any reason. A trained, higher level member of TVA management may assume SED responsibilities from the Shift Manager after becoming familiar with plant and radiological conditions, status of emergency response/accident mitigation efforts, and determining that the ERFs are staffed adequately enough for them to perform the designated SED functions.

Technical Evaluation: The BLN Emergency Plan identifies a line of succession for the SED position, and identifies the specific conditions for higher level utility officials assuming this function.

Technical Information in the Emergency Plan: [B.4] Section II.B.4, “Site Emergency Director Responsibilities," of the BLN Emergency Plan outlines the functional responsibilities assigned to the SED. Five of the 14 responsibilities assigned to the SED are not to be delegated. They are: classifying the emergency; authorizing notification to the Operations Duty Specialist (ODS); initial notification of the NRC; issuing PARs; and, authorizing emergency exposure limits. The CECC Director is responsible for assuming these non-delegable responsibilities. The SED or CECC Director can request assistance from any organization deemed necessary to mitigate the emergency. Section II.B.4, “Site Emergency Director Responsibilities” identifies that the SED directs the activation and notification of the onsite and offsite ERFs during an emergency. Figure II-3 is a diagram of the CECC organization. However, the specific job titles are not available to evaluate staffing adequacy. In RAI 13.03-19(B), the applicant was asked to provide additional information regarding the organization of the CECC. In response to RAI 13.03-19(B), dated September 22, 2008, the applicant stated that TVA's plans for staffing the CECC are established in TVA's "Radiological Emergency Plan, Generic Part." This plan establishes those aspects of radiological emergency planning that are consistent across TVA's fleet of nuclear power facilities. TVA will add the pertinent emergency response position titles and descriptions to the BLN Emergency Plan.

Technical Evaluation: The applicant added pertinent emergency response position titles and descriptions to Revision 1 of the BLN Emergency Plan. Therefore, the plan now establishes the functional responsibilities assigned to the SED, and clearly specifies, which responsibilities may not be delegated to other elements of the emergency organization. The NRC staff has confirmed that the additional information provided in response to RAI 13.03-19(B) has been included in Revision 1 to the BLN Emergency Plan.

Technical Information in the Emergency Plan: [B.5] Minimum on-shift staffing and goals for providing additional resources after declaration of an emergency are indicated in Table II-2, "Plant Staff Emergency Functions." Section II.B.5, “Plant Emergency Response Staff," of the BLN 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 described in EPIPs. **Open Item 13.3-3** was created to track the addition of the name of this EPIP to Appendix 5, "Emergency Plan Implementing Procedures - Topical List," of the BLN Emergency Plan.

Table II-2, "Plant Staff Emergency Functions," in the BLN Emergency Plan indicates that the Shift Technical Advisor (STA) will perform the technical support tasks on shift at all times. However, Note (1) in BLN COL FSAR Table 13.1-202, "Minimum On-duty Operations Shift Organization for Two-unit Plant," states that the shift manager or another SRO on shift may also serve as the STA. In RAI 13.03-19(E), the applicant was asked to discuss how the individual

filling the SRO/STA combined position can handle the response tasks expected to be performed by an SRO and an STA during an emergency. In response, the applicant stated that the individual filling the combined emergency response roles of the SRO/STA position is expected to delegate responsibilities as needed to focus on the highest priority activities as needed to protect public health and safety. In addition, the applicant stated that as a matter of practice, there is significant overlap between the "Plant Operations and Assessment of Operational Aspects," function and the "Plant System Engineering, Repair and Corrective Actions" function. The Shift Manager performs both of these functions on an ongoing basis as part of the routine activities of that position. The applicant concluded that the combination of these positions would not impair the emergency response capabilities of the on-shift staff.

Table II-2 also indicates that there will be one health physics/chemistry technician and one individual with senior radiation protection expertise on shift at all times. However, Footnote 4 states that a radiation protection technician need only be on site when there is fuel in a reactor. In addition, Footnote 5 states that a chemistry technician needs to be on site during plant operation in modes other than shutdown and refueling as provided in BLN COL FSAR Table 13.1-202. In RAI 13.03-19(F), the applicant was asked to discuss the need for Footnotes 4 and 5 in Table 13.1-202, in light of the staffing levels specified in Table II-2. In its response, the applicant stated that the actual on-shift staffing must be established to satisfy all applicable FSAR and emergency plan requirements. In this case, because emergency plan staffing requirements exceed those of the FSAR, the emergency plan establishes the controlling requirements for staffing the chemistry and radiation protection technician positions.

Also, Table II-2 indicates that there will be two non-licensed operators (NLOs) on each shift, whereas, BLN COL FSAR Table 13.1-202 identifies a minimum number for NLOs as three. In RAI 13.03-19(G), the applicant was asked to discuss the rationale for not having three NLOs in Table II-2. In response, the applicant stated that the minimum number of NLOs required to support operations for a two-unit plant, with both units operating, under declared emergency conditions, is four. Because Table II-2 remains unclear relative to the number of NLOs that will be on shift to support a response in the event of an emergency on a per unit basis when one or both units are shutdown, **Open Item 13.3-4** was created to track this issue.

Footnote 2 to Table II-2 states in that one Control Room Supervisor, one RO and one NLO will be maintained for each unaffected unit in operation. However, BLN COL FSAR Table 13.1-202 shows that with one unit in operation, eight individuals are needed on-duty. In RAI 13.03-19(H), the applicant was asked to discuss what functions the remaining eight individuals on the unaffected unit will perform in the event of an emergency at the other unit. The applicant responded that the additional personnel, beyond those prescribed in Footnote 2 in Table II-2 of the BLN Emergency Plan, would be engaged in emergency response functions for the affected unit.

The terms “operational” and “activated” are not defined in the BLN Emergency Plan. In RAI 13.03-19(J), the applicant was asked to define these terms with regard to facility functional capabilities. In response, the applicant stated that the term "activate" refers to the process of mobilizing resources to the emergency response facility and preparing the facility and its staff and systems to discharge their intended functions. The applicant defined the term "operational" as indicating that the facility is prepared to discharge the intended functions. The applicant further explained that TVA's goal for activating most of the positions that respond to the TSC and OSC is 60 minutes following the declaration of an emergency requiring the use of the facility. Certain positions may not be filled until 90 minutes following emergency declarations.

Therefore, TVA expects the TSC and OSC to be operational 60 minutes after emergency declaration and "fully operational" 90 minutes following emergency classification.

As indicted in Section II.H.2, "Off-site Emergency Response Facilities," of the BLN Emergency Plan, the CECC can be activated (and, therefore, operational) approximately 60 minutes following the declaration of an alert or higher level emergency. The applicant stated in response to RAI 13.03-19(J), that Table II-2 of the BLN Emergency Plan contains an error that may cause confusion. For the position of "CECC Director," the "Targeted Capability for Additions," column should read 60 rather than 90 minutes, to be consistent with the time frame established for activating the CECC. The applicant provided this correction in Revision 1 to the BLN Emergency Plan.

Table II-2 of the BLN Emergency Plan includes the dose assessment task, but the table does not identify that function as being assigned to any on-shift personnel. In RAI 13.03-19(K) and RAI 13.03-19(O), the applicant was asked to provide additional information regarding which on-shift personnel would perform the dose assessment task prior to activation of the CECC. In response, the applicant stated that in the initial stages of emergency response activities, TVA assigns the dose assessment task to the radiation protection shift supervisor or his designee. Since the on-shift dose assessment capability was not properly delineated in Table II-2 of Revision 0 to the BLN Emergency Plan, the applicant revised Table II-2 as shown in Revision 1 of the BLN Emergency Plan.

In addition, Table II-2 of the BLN Emergency Plan describes the proposed staff augmentation capabilities for listed emergency functions. In RAI 13.03-19(N), the applicant was asked to discuss how the on-shift/per unit personnel numbers would be assigned without collateral duty assignments. In response, the applicant stated that the number of individuals who do not have collateral emergency response duties has not yet been determined. Details regarding staffing of certain functions, such as fire-fighting and first aid functions, are also not yet determined. Details regarding these functions will be developed based upon an assessment of plant design features and TVA's operating experience with its existing nuclear facilities, such that sufficient numbers are available. **Open Item 13.3-5** was created to track the need for the applicant to determine the number of individuals who have collateral emergency response duties.

Section II.B, "On-site Emergency Organization," of the BLN Emergency Plan states that the minimum emergency response staffing in Table II-2, "Plant Staff Emergency Functions," of the BLN Emergency Plan is based upon guidance provided in Table B-1, "Minimum Staffing Requirements for NRC Licensees for Nuclear Power Plant Emergencies," of NUREG-0654/FEMA-REP-1. In addition, the justification provided in Section 5 states that the 60 and 90 minute goals for emergency response staff augmentation are consistent with those implemented for existing TVA nuclear facilities. In RAI 13.03-19(D), the applicant was asked to justify extending the staff augmentation times an additional 30 minutes from the times specified in NUREG-0654/FEMA-REP-1. In response, the applicant stated that these times are necessary due to the remote location of the facility. In addition, the CECC is capable of providing additional management, technical, and communications support to the plant staff pending activation of the OSC and TSC. TVA's experience in conducting drills and exercises and responding to emergency conditions at the existing facilities indicate that the plant staff is capable of carrying out the initial emergency response activities and that the proposed staff augmentation times do not adversely affect TVA's emergency response capabilities.

Technical Evaluation: This portion of the BLN Emergency Plan is unacceptable because Table II-2 remains unclear relative to the number of NLOs that will be on shift to support a

response in the event of an emergency on a per unit basis when one or both units are shutdown. The applicant needs to identify the number of individuals who have collateral emergency response duties, and the name of the EPIP that will address the positions, title and major tasks to be performed by the persons assigned to the functional areas of emergency activity at the station and needs to be added to Appendix 5, "Emergency Plan Implementing Procedures - Topical List," of the BLN Emergency Plan. This is being tracked as **Open Item 13.3-5.**

Technical Information in the Emergency Plan: [B.6] Section II.B.6, “Interfaces Between Functional Areas," of the BLN Emergency Plan and Figure II-1 of the BLN Emergency Plan identify and illustrates the interface among functional areas of the stations emergency response activity, TVA corporate support, and the affected State and local government response organizations.

Technical Evaluation: The BLN Emergency Plan specified the interfaces between and among the onsite functional areas of emergency activity, licensee headquarters support, local services support, and State and local government response organization. The interfaces were illustrated in a block diagram, and included the onsite TSC, OSC, and the applicant’s CECC.

Technical Information in the Emergency Plan: [B.7] Section II.B.7, “Corporate Support for the Plant Staff,” of the BLN Emergency Plan identifies that the SED directs the activation and notification of the onsite and offsite ERFs during an emergency. Figure II-3, "BLN Augmented Emergency Response Organization," is a diagram of the CECC organization. However, the specific job titles are not available to evaluate whether staffing is adequate. In RAI 13.03-19(B), the staff requested that the applicant provide additional detail regarding the CECC staff. The applicant's response is discussed in [B.4] above.

Technical Evaluation: The NRC staff confirmed that pertinent titles and changes were included in Revision 1 of the BLN Emergency Plan. In addition, the BLN Emergency Plan specified the corporate management, administrative, and technical support personnel who will augment the plant staff, as specified in Table B-1, in the following areas:

a. logistics support for emergency personnel, e.g., transportation, communications, temporary quarters, food and water, sanitary facilities in the field, and special equipment and supplies procurement

b. technical support for planning and re-entry/recovery operations

c. management level interface with governmental authorities

d. release of information to news media during an emergency (coordinated with governmental authorities)

Technical Information in the Emergency Plan: [B.8] Section II.B.8, “Support from Contractor and Private Organizations,” of the BLN Emergency Plan identifies information on the principal organizations in the private sector that are part of the overall response organization. However, specific organizations are not defined and only generic references to local volunteer fire departments and engineering and technical support services are listed. In RAI 13.03-19(C), staff requested the names of the volunteer fire departments, designated engineering/technical services support firms and other consultants and vendors, as well as the supporting agreements be provided. In the TVA response dated September 22, 2008, the applicant stated that

consistent with NUREG-0654/FEMA-REP-l, Section ll.B.8 of the BLN Emergency Plan lists organizations that "may be requested to provide technical assistance to and augmentation of the emergency organization." In this context, the emergency organization under discussion is the onsite emergency organization, which is the topic of NUREG-0654/FEMA-REP-1, Planning Standard ll.B. Although these organizations are identified to the extent they are currently known in the appropriate sections of the BLN Emergency Plan, TVA stated that summation of this information in the organizational sections of the plan could enhance the clarity of the Plan. Therefore, consistent with the guidance provided in NUREG-0654/FEMA-REP-1, the applicant stated that Section II.B.8 of the BLN Emergency Plan will be revised to identify Hollywood Volunteer Fire Department, Highlands Medical Center Emergency Medical Services, and Westinghouse Electric Company (WEC). Other engineering and technical services support firms, as discussed in Section II.B.8, have not yet been identified. When additional supporting organizations are identified, details regarding arrangements and supporting letters of agreement will be developed.

With regard to hospital support, Radiation Emergency Assistance Center/Training Site (REAC/TS) and Huntsville Hospital provide offsite medical support, but TVA does not consider this support to "provide technical assistance to and augmentation of the emergency organization," as discussed in NUREG-0654/FEMA-REP-1, Evaluation Criterion II.B.8. Therefore, these organizations are correctly identified in the BLN Emergency Plan, Sections II.C.1 and II.C.4, respectively, with additional discussion provided in Section II.L.

Technical Evaluation: The NRC staff has confirmed that Revision 1 to the BLN Emergency Plan identifies Hollywood Volunteer Fire Department, Highlands Medical Center Emergency Medical Services, and WEC in Section II.B.8. The response to RAI 13.03-19(C) adequately addresses the issue. However, the BLN Emergency Plan does not identify other engineering and technical services support firms that may be requested to provide technical assistance to, and augmentation of, the emergency organization. Similar to the Open Item 13.3-2 discussed in Section 13.3.1C.A.1 of this SER, the applicant should identify and provide letters of agreement for engineering and technical service support, or a proposed license condition describing the applicant’s plans for providing them. This is being tracked as **Open Item 13.3-6.**

Technical Information in the Emergency Plan: [B.9] Section II.B.9, “Local Emergency Response Support,” of the BLN Emergency Plan identifies that TVA has established and maintains agreements for local emergency response support services, including firefighting, rescue squad, medical and hospital services.

Technical Evaluation: The BLN Emergency Plan identifies the services to be provided by local agencies for handling emergencies (e.g., police, ambulance, medical, hospital, and fire-fighting organizations). The applicant provided for the transportation and treatment of injured personnel who may also be contaminated. However, copies of the arrangements and agreements reached with contractor, private, and local support agencies were not appended to the plan. The NRC staff's evaluation regarding the agreements for local emergency services is addressed in Section [A.3].

13.3.1C.B.2 10 CFR Part 50, Appendix E Requirements

In determining whether the proposed emergency plan met the applicable regulatory requirements related to the area of the onsite emergency organization, the NRC staff also evaluated it against the following requirements in Appendix E to 10 CFR Part 50.

Regulatory Basis: 10 CFR Part 50, Appendix E.IV, “Content of Emergency Plans.” 10 CFR Part 50, Appendix E.IV.A.1 requires that the emergency plan describe the normal plant operating organization.

Technical Information in the Emergency Plan: BLN COL FSAR Section 13.1 (referenced from the DCD) describes staffing. Table 13.1-201, “Generic Position/Site Specific Position Cross Reference,” provides generic titles and functions. In Section II.A, "Assignment of Responsibility (Organization Control)," of the BLN Emergency Plan, Table II-2, “Plant Staff Emergency Functions,” provides the onsite normal plant organization by position, title or expertise as related to the functional area.

Technical Evaluation: The BLN Emergency Plan describes the normal plant operating organization.

Regulatory Basis: 10 CFR Part 50, Appendix E.IV, “Content of Emergency Plans.” 10 CFR Part 50, Appendix E.IV.A.2.a requires that the emergency plan describe the onsite ERO with a detailed discussion of the authorities, responsibilities, and duties of the individual(s) who will take charge during an emergency.

Technical Information in the Emergency Plan: Section II.B, “On-Site Emergency Organization,” of the BLN Emergency Plan discusses the onsite ERO. Information on staff complement can be found in BLN COL FSAR Section 13.1 and Table 13.1-201. The SED will be in charge of the response effort. A line of succession and general responsibilities are outlined in Sections II.B.3, “Site Emergency Director Line of Succession,” and II.B.4, “Site Emergency Director Responsibilities," of the BLN Emergency Plan.

Technical Evaluation: The BLN Emergency Plan describes the onsite ERO with a detailed discussion of the authorities, responsibilities, and duties of the individual(s) who will take charge during an emergency.

Regulatory Basis: 10 CFR Part 50, Appendix E.IV, “Content of Emergency Plans.” 10 CFR Part 50, Appendix E.IV.A.2.b requires that the emergency plan describe the onsite ERO with a detailed discussion of the plant staff emergency assignments.

Technical Information in the Emergency Plan: Information in the BLN Emergency Plan pertaining to this requirement is addressed in the section related to Evaluation Criteria B.3, B.4 and B.5.

Technical Evaluation: The technical evaluation of information pertaining to the description of the onsite ERO is included in the technical evaluation section for Evaluation Criteria B.3, B.4 and B.5.

Regulatory Basis: 10 CFR Part 50, Appendix E.IV, “Content of Emergency Plans.” 10 CFR Part 50, Appendix E.IV.A.2.c requires that the emergency plan describe the onsite ERO 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: Information in the BLN Emergency Plan pertaining to this requirement is addressed in the section related to Evaluation Criteria B.3, B.4 and B.5.

Technical Evaluation: The technical evaluation of information pertaining to the description of the onsite ERO is included in the technical evaluation section for Evaluation Criteria B.3, B.4 and B.5.

Regulatory Basis: 10 CFR Part 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR Part 50, Appendix E.IV.A.4 requires that the emergency plan identify, by position and function to be performed, the persons in 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: Information in the BLN Emergency plan pertaining to the persons responsible for making dose projections is addressed in the technical information section for Evaluation Criteria B.6.

Technical Evaluation: The technical evaluation of information pertaining to the persons responsible for making dose projections is addressed in the technical evaluation section for Evaluation Criteria B.6.

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

Technical Information in the Emergency Plan: Table II-2, "Plant Staff Emergency Functions," of the BLN Emergency Plan, outlines plant staff emergency functions. Staff with technical expertise will assemble in the TSC to assess and provided recommendations to the control room. Section II.B, states that additional staff with expertise deemed beneficial can be designated to assist by the CECC Director if necessary. Contractors that may be contacted by the SED, if necessary, are listed in Section II.B.8, "Support from Contractor and Private Organizations," of the BLN Emergency Plan.

Technical Evaluation: The staff finds that the BLN Emergency Plan identifies employees of the licensee with special qualifications for coping with emergency conditions that may arise. Other persons with special qualifications, such as consultants, who are not employees of the licensee, and who may be called upon for assistance for emergencies were also identified.

13.3.1C.B.3 Conclusion for Onsite Emergency Organization

On the basis of its review of the onsite emergency plan as described above for onsite emergency organization, the NRC staff concludes that the information provided in the BLN Emergency Plan is not consistent with Planning Standard B of NUREG-0654/FEMA-REP-1. Therefore, the information is not acceptable and does not meet the requirements of 10 CFR 50.47(b)(2) and Sections IV.A.1, A.2.a, A.2.b, A.2.c, A.4, and A.5 of Appendix E to 10 CFR Part 50.

The NRC will determine whether this planning standard is acceptable and document its determination in the FSER based on information the applicant has provided to date and its response to the following open items:

- Open Item 13.3-3 was created to track the addition of the name of the EPIP that will contain the positions, title and major task to be performed by personnel assigned to the functional areas of emergency activity at the station to Appendix 5 of the BLN Emergency Plan.

- Because Table II-2 remains unclear relative to the number of NLOs that will be on shift to support a response to an emergency on a per unit basis when one or both units are shutdown, Open Item 13.3-4 was created to track this issue.

- Open Item 13.3-5 was created to track the need for the applicant to determine the number of individuals who have collateral emergency response duties.

- Open Item 13.3-6 (also discussed in Section 13.3.1C.A.1) has been created to address the identification of other engineering and technical services support firms that may be requested to provide technical assistance to, and augmentation of, the emergency organization in the BLN Emergency Plan.

13.3.1C.C Emergency Response Support and Resources

13.3.1C.C.1 10 CFR 50.47 Requirements

In determining whether the proposed emergency plan met the applicable regulatory requirements in 10 CFR 50.47(b)(3), the NRC staff evaluated it against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1.

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

Technical Information in the Emergency Plan: [C.1.a and b] Section II.C, “Emergency Response Support and Resources,” Section II.C.1.a, “Federal Response Capability,” of the BLN Emergency Plan states that the CECC Director or Radiological Assessment Manager may request Federal Radiological Monitoring and Assessment Center (FRMAC) assistance directly or through the NRC for offsite radiological monitoring support. Section II.C.1.b states that DOE Oak Ridge may provide radiological monitoring assistance (DOE Radiological Assistance Program). DOE Oak Ridge may provide medical support from the REAC/TS. The FRMAC Advance Party could arrive at the BLN site within 3 to 4 hours following the order to deploy, based on driving time. NRC assistance from their offices in Atlanta, Georgia, could arrive 7 to 8 hours following notification (reduced by air travel). Section II.A.1.b addresses the National Response Plan, rather than the National Response Framework (NRF), which has now been implemented. In RAI 13.03-20(A, B, and E), the staff requested that the applicant address implementation of the NRF. In their letter dated September 8, 2008, and the supplemental information provided February 6, 2009, TVA stated that consistent with NRF, the processes for requesting Federal assistance may vary depending on whether or not a disaster declaration has

been issued. As indicated in the Nuclear/Radiological Incident Annex of the NRF, the request for FRMAC assistance could originate with the coordinating agency (NRC) or with State, tribal, or local governments. Details regarding the request for Federal assets are included in State and local emergency plans. TVA will continually evaluate response capabilities against current needs to determine the necessity for Federal assistance. Any TVA request for Federal assistance would be directed to the NRC from the CECC Director or Radiological Assessment Manager and would be dependent on specific conditions that may arise during an emergency. TVA currently maintains an agreement with the REAC/TS for supporting services for dose assessment of whole-body exposures to ionizing radiation at its other operating nuclear power plants. A similar agreement is expected to be developed for BLN. Under TVA's current agreement with REAC/TS, REAC/TS shall be contacted when verification is obtained that known or suspected ionizing radiation exposure of a patient exceeds 5 rem. This communication is based upon the order of an attending physician in coordination with a health physicist.

Also, in the letter dated September 8, 2008, TVA stated that the second paragraph under the heading DHS/FEMA in Section II.A.1.b will be revised from the National Response Plan to read National Response Framework. In addition, TVA stated in the letter that the BLN Emergency Plan is incorrect in stating that the CECC Director and Radiological Assessment Manager may request FRMAC assistance directly. Consistent with the NRF, the processes for requesting FRMAC assistance may vary depending on whether or not a disaster declaration has been issued. As indicated in Table 3 of the Nuclear/Radiological Incident Annex of the NRF, the request for FRMAC assistance could originate with the coordinating agency (NRC) or with State, tribal, or local governments. Therefore, any TVA request for Federal assistance would be directed to the NRC from the CECC Director or Radiological Assessment Manager. Therefore, TVA stated that Section II.C.1.a of the BLN Emergency Plan will be clarified accordingly in a future revision of the COL application to read:

> The CECC Director or Radiological Assessment Manager may request FRMAC assistance through the NRC (Federal Coordinating Agency).

Also, TVA stated that Reference 5 in Section III, "References and Appendices," of the BLN Emergency Plan will be changed to read:

> U.S. Department of Homeland Security, "National Response Framework," January 2008.

In addition, in the letter dated February 6, 2009, TVA proposed to revise Section II.C.1 in its entirety. **Confirmatory Item 13.3-1** was created to track the revision of Section II.C.1 of the BLN Emergency Plan as proposed.

Technical Evaluation: The staff has confirmed that the applicant adequately described the Federal resources expected and who is authorized to request Federal assistance in Sections II.A.1.b and Reference 5 in Section III in Revision 1 to the BLN Emergency Plan. Therefore, the responses to RAI 13.03-20(B) and RAI 13.03-20(E) are acceptable. However, the proposed text has not been included in a revision of the BLN Emergency Plan. Therefore, Section C.1 of the BLN Emergency Plan is acceptable, pending resolution of Confirmatory Item 13.3-1.

Technical Information in the Emergency Plan: [C.1.c] Section II.C.1.c of the BLN Emergency Plan states that facilities and resources needed to support the Federal response through the

CECC will be provided. This includes office space and telephones. TVA will also provide limited office space and telephone communications facilities for NRC personnel in the TSC.

Technical Evaluation: Section II.C.1.c of the BLN Emergency Plan describes provisions for incorporating the Federal response capability into its operation plan; including specific licensee, State and local resources available to support the Federal response.

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

Technical Evaluation: Section II.C.2.a of the BLN Emergency Plan states that the applicant will prepare for the dispatch of a representative to principal offsite governmental emergency operations centers (EOCs).

Technical Information in the Emergency Plan: [C.3] Section II.C.3, “Radiological Laboratories,” of the BLN Emergency Plan states that the station has mobile monitoring and assessment capabilities, in addition to fixed facilities for gross counting and spectral analysis. There is no additional detail on the location and abilities of the fixed facilities. In RAI 13.03-20(C), the staff requested that the applicant provide information related to what facilities in the TVA system would be available during an emergency, what criterion would be used to determine when the additional facilities would be needed, and a description of the process to request additional aid. TVA stated in its response letter dated October 2, 2008, and in supplemental information dated February 6, 2009, that Section 12.5 of the AP1000 DCD describes the health physics facilities. Also in the letter dated February 6, 2009, the applicant provided revised text for Section II.C.3 of the BLN Emergency Plan.

Technical Evaluation: The response to RAI 13.03-20(C) is acceptable. However, while the proposed text is acceptable, **Confirmatory Item 13.3-2** was created to track the inclusion of the revised text for the first paragraph of Section II.C.3 in the BLN Emergency Plan. Therefore, Section II.C.3 of the BLN Emergency Plan adequately discusses radiological laboratories and their general capabilities and expected availability to provide radiological monitoring and analyses services, which can be used in an emergency, pending resolution of Confirmatory Item 13.3-2.

Technical Information in the Emergency Plan: [C.4] Section II.C.4, “Other Supporting Organizations,” of the BLN Emergency Plan identifies additional emergency response support from: Institute of Nuclear Power Operations (INPO) Fixed Nuclear Facility Voluntary Assistance Agreement signatories, Huntsville Hospital, Hollywood Volunteer Fire Department, Highlands Medical Center Emergency Medical Services WEC and REAC/TS. No letters of agreement were provided for INPO, WEC or REAC/TS. In RAI 13.03-20(D), the staff requested that the applicant provide letters of agreement or other appropriate supporting documentation related to the emergency assistance provided by INPO, WEC and REAC/TS. In its letter dated September 8, 2008, TVA stated that Appendix 7 of the BLN Emergency Plan will be revised to include letters of agreement with the following organizations: INPO, WEC and REAC/TS.

Technical Evaluation: Letters of agreement have not been provided for the three emergency response support organizations discussed above. **Open Item 13.3-7** will track the need for incorporation of letters of agreement with INPO, WEC and REAC/TS in the BLN Emergency Plan.

13.3.1C.C.2 10 CFR Part 50, Appendix E Requirements

In determining whether the proposed emergency plan meets the applicable regulatory requirements related to the area of emergency response support and resources, the NRC staff also evaluated it against the following requirements in Appendix E to 10 CFR Part 50.

Regulatory Basis: 10 CFR Part 50, Appendix E, Section III, “The Final Safety Analysis Report,” requires that plans incorporate information about the emergency response roles of supporting organizations and offsite agencies. The information in the onsite emergency plan shall be sufficient to provide assurance of coordination among the supporting groups and with the licensee.

Technical Information in the Emergency Plan: Section II.C of the BLN Emergency Plan describes expected support from the Federal government. TVA provides facilities and resources needed to support the Federal response through the CECC. Section II.C also describes additional emergency response support, as needed, from the Institute of Nuclear Power Operations, Huntsville hospital, Hollywood Volunteer Fire Department, Highlands Medical Center Emergency Medical Services, Westinghouse, and the Radiation Emergency Assistance Center/Training Site.

Technical Evaluation: The staff finds that the BLN Emergency Plan incorporates information about the emergency response roles of supporting organizations and offsite agencies. The information in the onsite emergency plan is sufficient to provide assurance of coordination among the supporting groups and with the licensee.

Regulatory Basis: 10 CFR Part 50, Appendix E.IV, “Content of Emergency Plans.”
10 CFR Part 50, Appendix E.IV.A.6 requires a description of the local offsite services to be provided in support of the licensee’s emergency organization.

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

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

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

Technical Information in the Emergency Plan: Section II.C.1, “Federal Response Capability,” of the BLN Emergency Plan provides basic information related to expected support from the following Federal agencies: FRMAC, DOE-Oak Ridge and REAC/TS and the NRC.

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

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

13.3.1C.C.3 Conclusion for Emergency Response Support and Resources

The NRC staff has reviewed the onsite emergency plan in regards to Planning Standard C of NUREG-0654/FEMA-REP-1 and 10 CFR Part 50, Appendix E, IV.A.7. The NRC will determine whether this planning standard is acceptable based on verification of the following confirmatory items, and the applicant's response to the open item.

- Open Item 13.3-7 will track the need for incorporation of letters of agreement with the INPO, WEC and REAC/TS in the BLN Emergency Plan.

- Confirmatory Item 13.3-1 was created to track the revision of Section II.C.1 of the BLN Emergency Plan as proposed.

- Confirmatory Item 13.3-2 was created to track the inclusion of the revised text for the first paragraph of Section II.C.3 in the BLN Emergency Plan.

13.3.1C.D Emergency Classification System

13.3.1C.D.1 10 CFR 50.47 Requirements

In determining whether the proposed emergency plan met the applicable regulatory requirements in 10 CFR 50.47(b)(4), the NRC staff evaluated it against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1.

Regulatory Basis: 10 CFR 50.47, “Emergency Plans.” 10 CFR 50.47(b)(4) requires that a standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters.

Technical Information in the Emergency Plan: [D.1 and D.2] Section D, "Emergency Classification System," of the BLN Emergency Plan states that for BLN, the initiating conditions (ICs) include the conditions provided in NEI 07-01, "Methodology for Development of Emergency Action Levels, Advanced Passive Light Water Reactors," Revision 0, as it applies to AP1000 facilities and postulated accidents identified in the FSAR. Appendix 1, "Emergency Action Levels," of the BLN Emergency Plan provides the parameter values and equipment status that are indicative of each emergency class. The applicant also proposed ITAAC 1.1.1, which states that the specific parameters identified in Appendix 1 have been retrieved and displayed in the control room, TSC, and CECC. ITAAC 1.1.2 states that the ranges available in the control room, TSC, and CECC encompassed the values for the specific parameters identified in the EALs in Section 5 of Appendix 1 of the BLN Emergency Plan.

The Executive Summary of Appendix 1 to the BLN Emergency plan states that the set of EALs and ICs are based on the industry guidance provided in NEI 07-01, Revision 0, draft dated September 2007. In RAI 13.03-40, the NRC staff requested that the applicant address its plans to finalize the required EAL scheme.

In response to RAI 13.03-40, the applicant provided a revised Section D, and proposed a license condition to submit a fully developed set of site-specific EALs in accordance with the NRC-endorsed version of NEI 07-01, Revision 0, with no deviations. The NRC notes that NEI 07-01, Revision 0, has not been endorsed. Until the applicant references an NRC-endorsed methodology for developing its site-specific EAL scheme, the NRC cannot find the license condition acceptable. Thus, the staff created **Open Item 13.3-8** to track the applicant’s reference to an NRC-endorsed methodology and the inclusion of the proposed license condition in the COL application.

Letters of Certification with State and local governments are included in Appendix 7, "Certification Letters," of the BLN Emergency Plan. These letters state that the signature on the letter indicates that the parties concurred with the emergency classification system, initiating conditions, and emergency action levels for BLN. EALs and ICs, based upon the September 2007 draft of NEI 07-01, are included in the BLN Emergency Plan as Appendix 1, "Emergency Action Levels." However, NEI 07-01 has not been endorsed by the NRC. In RAI 13.03-21(B), the staff asked the applicant to discuss when the initial EALs will be discussed and agreed upon, with State and local governmental authorities. In its response, the applicant did not state when the initial EALs (reflecting the NRC-endorsed methodology) will be discussed and agreed upon, with State and local governmental authorities. Therefore, the staff requires either confirmation that the initial EALs were discussed and agreed upon or provide a proposed license condition describing the applicant’s plans for obtaining agreement. This is being tracked as **Open Item 13.3-9.**

Technical Evaluation: The staff finds that the applicant's proposed overview of its EAL scheme and its general list of licensee actions at each emergency classification level and its commitment to control the EALs by 10 CFR 50.54(q) are acceptable because they are consistent with the guidance provided in NUREG-0654/FEMA-REP-1. However, the applicant has not proposed a staff-approved standard emergency classification and action level scheme. Therefore, the staff finds that Evaluation Criteria D.1 and D.2 have not been met.

The NRC staff's technical evaluation of emergency planning ITAAC is addressed in Section 13.3.1C.S, "Emergency Planning ITAAC."

13.3.1C.D.2 10 CFR Part 50, Appendix E Requirements

In determining whether the proposed emergency plan met the applicable regulatory requirements related to the area of emergency classification system, the NRC staff also evaluated it against the following requirements in Appendix E to 10 CFR Part 50.

Regulatory Basis: 10 CFR Part 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR Part 50, Appendix E.IV.B requires that emergency action levels that are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, be developed. The EALs shall be based on in-plant conditions and instrumentation in addition to onsite and offsite radiation monitoring information. These initial EALs shall be discussed and agreed on by the applicant or licensee and State and local governmental authorities.

Technical Information in the Emergency Plan: Section D.2, "Emergency Action Levels," of the BLN Emergency Plan incorporates by reference NEI 07-01 that is intended to provide the parameter values and equipment status that are indicative of each emergency class.

Technical Evaluation: NEI 07-01, Revision 0, has not been approved by the NRC. As discussed in the previous section, **Open Item 13.3-8** was created to track this issue.

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

Technical Information in the Emergency Plan: Appendix 1 of the BLN Emergency Plan describes the entire spectrum of EALs and ICs that involve the alerting or activating of progressively larger segments of the total emergency organization. EALs (based not only on onsite and offsite radiation monitoring information but also on readings from a number of sensors that indicate a potential emergency, such as the pressure in containment and the response of the emergency core cooling system) for notification of offsite agencies.

Technical Evaluation: NEI 07-01, Revision 0, has not been approved by the NRC. As discussed in the previous section, **Open Item 13.3-8** was created to track this issue.

13.3.1C.D.3 Conclusion for Emergency Classification System

An emergency classification and EAL scheme has not been established by the applicant. Specific instruments, parameters or equipment status are not shown for establishing each emergency class. The BLN Emergency Plan does not identify the parameter values and equipment status for each emergency class. On the basis of its review of the BLN Emergency Plan as described above for the emergency classification system, the NRC staff concludes that the information provided is not consistent with Planning Standard D of NUREG-0654/FEMA-REP-1. Therefore, the information is not acceptable and does not meet the requirements of 10 CFR 50.47(b)(4) and Sections IV.B and C of Appendix E to 10 CFR Part 50.

The NRC staff will make its final determination as to whether this planning standard is acceptable based on verification of the confirmatory items and the applicant's response to the following open items:

Open Items:

- Open Item 13.3-8 was created to track the applicant's reference to an NRC-endorsed methodology and the inclusion of the proposed license condition in the COL application.

- Open Item 13.3-9 was created to track when the final version of the initial EALs will be discussed and agreed upon, with State and local governmental authorities.

113.3.1C.E Notification Methods and Procedures

13.3.1C.E.1 10 CFR 50.47 Requirements

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

Regulatory Basis: 10 CFR 50.47, "Emergency plans." 10 CFR 50.47(b)(5) requires that procedures be established for notification by the licensee of State and local response organizations, and for notification of emergency personnel by all response organizations. In addition, the content of initial and follow-up messages to response organizations and the public needs to be established. Also, the means to provide early notification and clear instruction to the populace in the plume exposure pathway EPZ needs to be established.

Technical Information in the Emergency Plan: [E.1] Section II.E, "Notification Methods and Procedures" of the BLN Emergency Plan states that onsite emergencies are immediately reported to the Shift Manager on duty. Offsite response is the responsibility of local government officials in accordance with the State plans. Procedures for notification of State and local response organizations and licensee emergency responders reference the pre-planned messages in the State plans. Notification is initiated by the SED within 15 minutes of emergency declaration. The NRC is notified following notification of State and local authorities and within one hour of declaration of an emergency. The notification system consists of a primary and a back-up system maintained through the use of commercial telephones. Additional information related to the notification system is addressed in Section II.F.1,

"Descriptions of Communication Links," of the BLN Emergency Plan. In RAI 13.03-22(A), the NRC staff requested additional information regarding the process to notify State and local authorities. In response, the applicant provided the titles of the local government contacts who will be notified in the event of an emergency. The applicant also provided a description of the procedure and means for notifying local governments in the event of an emergency. In addition, the applicant proposed a revision to Section II.E.1, "Notification of State and Local Authorities." The staff found the RAI response acceptable because it meets the guidance in NUREG-0654/FEMA-REP-1. The staff created **Confirmatory Item 13.3-3** to track the incorporation of the proposed revision to Section II.E.1 of the BLN Emergency Plan.

Appendix 5, "Emergency Plan Implementing Procedures - Topical List," of the BLN Emergency Plan includes an EPIP titled, "Notification Associated with Emergency Conditions," that will describe how the material in Section II.E.1 of the BLN Emergency Plan will be implemented. ITAAC Acceptance Criteria 2.1.1, 2.1.2, 2.1.3 and 2.1.4 were proposed to confirm that a means exist to notify responsible State and local organizations within 15 minutes after the licensee declares an emergency.

Technical Evaluation: The staff finds that the BLN Emergency Plan refers to procedures, which describe mutually agreeable bases for notification of response organizations, consistent with the emergency classification and action level scheme, pending acceptable resolution of Confirmatory Item 13.3-3. These procedures will include the means for verification of messages. The NRC staff's evaluation of ITAAC Acceptance Criteria 2.1.1, 2.1.2, 2.1.3 and 2.1.4 is addressed in Section 13.3.1C.S of this SER.

Technical Information in the Emergency Plan: [E.2] Section II.E.2, “Notification and Mobilization of Licensee Response Organizations,” of the BLN Emergency Plan is directed by the SED. The plant has an evacuation alarm and a Remote Warning System. There is redundant notification through the paging system and an automated telephone system. A siren tone generator and public address system speakers can be activated from the control room in case of emergency (see AP1000 DCD Section 9.5.2.2). ERO personnel are notified by the EP Paging System. ITAAC Acceptance Criterion 2.2 was proposed to confirm the capability to notify the BLN ERO using the EP Paging System.

Technical Evaluation: The BLN Emergency Plan addresses procedures for alerting, notifying, and mobilizing emergency response personnel. Appendix 5, "Emergency Plan Implementing Procedures - Topical List," of the BLN Emergency Plan addresses an EPIP titled, "Notification Associated with Emergency Conditions," that will describe how the material in Section E.2 of the BLN Emergency Plan will be implemented. The NRC staff's evaluation of ITAAC Acceptance Criteria 2.2 is in Section 13.3.1C.S of this SER.

Technical Information in the Emergency Plan: [E.3] Section II.E.3, “Message Content,” of the BLN Emergency Plan states that the content of the messages has been established in conjunction with the State and local governments and include the class of emergency, whether a release is in progress, and any recommended protective measures. In RAI 13.03-22(C), the staff requested that the applicant provide detailed information related to the content of the messages/notification. In the letter dated September 8, 2008, and supplemental information dated February 6, 2009, TVA stated that the notification form, which has been accepted by the affected State and local authorities, is included in the notification procedures and completed by the ODS based on information provided by the SED. This form includes PARs, which are identified by the affected geographical sector designations as provided on the plume exposure pathway EPZ maps in both the BLN Emergency Plan and in the Evacuation Time Estimate

Report. Identification of these sectors also serves to identify the affected areas and populations. Examples of the existing General Emergency notification forms used for TVA's operating nuclear plants were provided as an attachment to RAI 13.03-22(A) to the letter dated September 8, 2008. The supplemental information provided text that will be included in a revision to the BLN Emergency Plan. The text discusses implementing procedures that will be established.

Technical Evaluation: The BLN Emergency Plan, in conjunction with State and local organizations, discusses the contents of the initial emergency messages to be sent from the plant. The staff found that the information related to messages was incomplete. In RAI 13.03-22(C), the staff requested additional information regarding the content of the initial emergency messages. In response, the applicant provided a description of the content of the messages that were planned to be used to notify State and local governments and proposed text to revise Section II.E.3. The staff finds the response to RAI 13.03-22(C) acceptable because it meets the guidance of NUREG-0654/FEMA-REP-1. The staff created **Confirmatory Item 13.3-4** to track the incorporation of the proposed revised text for Section II.E.3 into the BLN Emergency Plan.

Technical Information in the Emergency Plan: [E.4] Section II.E.4, “Follow-up Messages to Off-site Authorities,” of the BLN Emergency Plan states that there are dedicated communications for continuous communication allowing regular updates. Communication with designated authorities is to be continuous with updates approximately every 60 minutes.

Follow-up messages from the plant to affected State and local authorities include information as negotiated with the responsible authorities to the extent the information is available and appropriate. The nature of the information provided is consistent with the requirements of the State emergency plan. The information provided may include any or all of the information specified in NUREG-0654/FEMA-REP-1, Evaluation Criterion E.4.a-n, based upon the type of incident, needs of the affected agencies, and information requested.

Technical Evaluation: Consistent with NUREG-0654/FEMA-REP-1, the staff finds that the BLN Emergency Plan makes provisions for follow-up messages from the facility to offsite authorities, which address the following information, as appropriate to the event:

a. location of incident and name and telephone number (or communications channel identification) of caller

b. date and time of incident

c. class of emergency

d. type of actual or projected release (airborne, waterborne, surface spill), and estimated duration/impact times

e. estimate of quantity of radioactive material release or being released, and the points and height of releases

f. other available and pertinent information regarding the release

g. meteorological conditions (wind speed and direction, stability class, precipitation, if any)

h. actual or projected exposure rates at site boundary; projected integrated dose at site boundary

i. projected exposure rate and integrated dose at the projected peak and at 2, 5 and 10 miles, including sector(s) affected

j. significant in-plant radiological impacts

k. licensee emergency response actions underway

l. recommended emergency actions, including protective measures

m. requests for any needed onsite support by offsite organizations

n. prognosis for worsening or termination of event, based on plant conditions

Technical Information in the Emergency Plan: [E.6] Section II.E.6, “Instructions to the Public in the Plume Exposure EPZ,” of the BLN Emergency Plan states that the Prompt Notification System is used that includes an outdoor warning system designed to meet the acceptance criteria of Section B of Appendix 3, NUREG-0654/FEMA-REP-1, Revision 1. As a back-up, State and local plans maintain the alert mechanism via systems such as emergency vehicles, automated dialing systems, and public address systems to also alert the public to monitor commercial broadcasts for emergency information. Each county controls the activation of the outdoor warning system within its boundaries. The applicant proposed EP-ITAAC Program Element 2.3 to confirm the means to notify and provide instructions to the populace in the plume exposure pathway EPZ.

Technical Evaluation: Consistent with the guidance of NUREG-0654/FEMA-REP-1, the BLN Emergency Plan establishes administrative and physical means, and the time required for notifying and providing prompt instructions to the public in the plume exposure pathway EPZ. The NRC staff's evaluation of proposed EP-ITAAC Program Element 2.3 is addressed in Section 13.3.1C.S of this SER.

Technical Information in the Emergency Plan: [E.7] Section II.E.7, “Written Messages to the Public,” of the BLN Emergency Plan states that written pre-planned messages are released to the local media by the State Coordinator of Emergency Management or Local Coordinator of Emergency Services. The messages give instruction to specific actions to be taken, the nature of the emergency and recommended protective actions, including sheltering, evacuation, and the use of potassium iodide, as appropriate. The BLN Emergency Plan also states that TVA will assist with the development of the messages. In RAI 13.03-22(E), the staff requested that the applicant provide additional information regarding who will assist in developing supporting information for written messages to the public. TVA’s response dated September 22, 2008, and supplemental information dated February 6, 2009, stated that TVA's efforts to support provision of emergency information to the public are outlined in TVA's CECC-EPIP-1, "Central Emergency Control Center (CECC) Operations." This procedure was included as an attachment to RAI 13.03-25 response. TVA expects to extend the requirements of CECC-EPIP-1 to include BLN on a schedule that supports execution of the emergency exercise required by 10 CFR Part 50, Appendix E, Section IV.F.2.

Technical Evaluation: The BLN Emergency Plan does not clearly describe who will assist in developing supporting information for written messages to the public. The proposed revision of

Section II.E.7 in the response to RAI 13.03-22(E) is acceptable to the staff because the additional information provided meets the guidance in NUREG-0654/FEMA-REP-1. However, **Confirmatory Item 13.3-5** has been created to track the incorporation of the proposed revised text for Section II.E.7 in the BLN Emergency Plan.

13.3.1C.E.2 10 CFR Part 50, Appendix E Requirements

In determining whether the proposed emergency plan met the applicable regulatory guidance related to the area of notification methods and procedures, the NRC staff also evaluated it against the following requirements in Appendix E to 10 CFR Part 50.

Regulatory Basis: 10 CFR Part 50, Appendix E.IV, "Content of Emergency Plans."
10 CFR Part 50, Appendix E.IV.C requires that the communication steps to be taken to alert or activate emergency personnel under each class of emergency be described.

Technical Information in the Emergency Plan: Section 13.3.1C.E.1 of the SER, Evaluation Criterion [E.2], discusses the technical information in the BLN Emergency Plan that addresses the alerting and activating of the ERO.

Technical Evaluation: Section 13.3.1C.E.1 of the SER, Evaluation Criterion [E.2], addresses the NRC staff's technical evaluation regarding the alerting and activating of the ERO.

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

Technical Information in the Emergency Plan: Evaluation Criterion [E.1] in this section of the SER discusses the technical information in the BLN Emergency Plan that addresses the administrative and physical means for notifying local, State, and Federal officials and agencies. Evaluation Criterion [E.6] in this section of the SER discusses the technical information regarding the prompt notification of the public.

Technical Evaluation: Evaluation Criterion [E.1] The staff finds acceptable the BLN Emergency Plan description of the administrative and physical means for notifying local, State, and Federal officials and agencies because it meets the guidance in NUREG-0654/FEMA-REP-1. The NRC staff's evaluation of the means for notifying the public is addressed in Evaluation Criterion [E.6].

Regulatory Basis: 10 CFR Part 50, Appendix E.IV, "Content of Emergency Plans."
10 CFR Part 50, Appendix E.IV.D.3 requires that a licensee shall have the capability to notify responsible State and local governmental agencies within 15 minutes after declaring an emergency.

Technical Information in the Emergency Plan: Evaluation Criterion [E.1] in this section of the SER outlines communication procedures, mobilization, message content (see State plans), and follow-up messages for notification of State and local response organizations within 15 minutes of an emergency being declared.

Technical Evaluation: Evaluation Criterion [E.1] includes the NRC staff's evaluation of the applicant's capability to notify responsible State and local governmental agencies within 15 minutes after declaring an emergency.

13.3.1C.E.3 Other Regulatory Requirements

Regulatory Basis: 10 CFR 50.72(a)(3) requires that the licensee notify the NRC immediately after notification of the appropriate State or local agencies and not later than one hour after the time the licensee declares an emergency.

Technical Information in the Emergency Plan: Section II.E.1 of the BLN Emergency Plan states that the NRC will be notified as soon as is practical following the notification of the State and local authorities and within one hour of the declaration of an emergency, including escalation or termination of any declaration. A footnote in the BLN Emergency Plan states that in the event of a security-related attack on the site by a hostile force, a brief notification (site name, emergency classification, if determined, and nature of threat) is provided to the NRC following notification of the designated State and local authorities and within approximately 15 minutes of the discovery of the event.

Technical Evaluation: The NRC staff finds acceptable that the BLN Emergency Plan adequately describes that the licensee will notify the NRC immediately after notification of the appropriate State and local agencies and not later than one hour after the time the license declares one of the emergency classes because it meets the guidance in NUREG-0654/FEMA-REP-1.

13.3.1C.E.4 Conclusion for Notification and Procedures

The NRC staff has reviewed the onsite emergency plan in regards to Planning Standard E of NUREG-0654/FEMA-REP-1 and the applicable portions of 10 CFR 50, Appendix E.IV. The NRC staff will make its final determination as to whether this planning standard is acceptable based on the applicant's responses to the following confirmatory items:

Confirmatory Items:

- Confirmatory Item 13.3-3 has been created to track the incorporation of the proposed revised text for Section II.E.1 in the BLN Emergency Plan.

- Confirmatory Item 13.3-4 has been created to track the incorporation of the proposed revised text for Section II.E.3 in the BLN Emergency Plan.

- Confirmatory Item 13.3-5 has been created to track the incorporation of the proposed revised text for Section II.E.7 in the BLN Emergency Plan.

13.3.1C.F Emergency Communications

13.3.1C.F.1 10 CFR 50.47 Requirements

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

Regulatory Basis: 10 CFR 50.47, “Emergency plans.” 10 CFR 50.47(b)(6) requires that provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.

Technical Information in the Plan: [F.1] Section II. F, "Emergency Communications," of the BLN Emergency Plan states that responsibilities of designated personnel for the communications systems can be found in the EPIPs. In RAI 13.03-23(C), the staff requested that the applicant provide additional information regarding who is designated to use communications systems and what responsibilities they have for using those communications systems. The applicant's response stated that many members of the BLN ERO may be called upon to use one or more communications systems in the course of executing their assigned tasks. Their responsibilities for use of these systems include use of proper communications protocols and techniques and ensuring clarity and accuracy of transmitted and received communications. Communications responsibilities of specific positions in the BLN ERO are provided in the response to RAI 13.03-19. Specified individuals in the BLN ERO are dedicated to full-time communications positions. These positions include the State Communicator and the TSC Communicator. The responsibilities of these positions are provided in response to RAI 13.03-19. The applicant's response to RAI 13.03-22(D) provides additional information regarding emergency communications.

Section F, "Emergency Communications," of the BLN Emergency Plan addresses the station communications systems. TVA maintains systems and procedures that provide for prompt communications between its ERFs and between the site and offsite ERFs. Dedicated communicators are available to maintain a continuous channel of communications with the NRC and to provide regular updates to State and local officials approximately every 60 minutes, when conditions change or as otherwise agreed.

Communications systems are designed to provide redundant means to communicate with essential areas of the station during normal operation and under accident conditions. Communications systems vital to operation and safety are designed so that failure of one component would not impair the reliability of the total communications system. This is accomplished in the station by using diverse systems. The EPIPs define the responsibilities of designated personnel for use of the communications systems.

The communications systems include those systems described in Section 9.5.2 of the AP1000 DCD and the following emergency communications systems:

- EP Telephone System. The EP telephone system includes communications equipment installed at the site and the CECC, a number of leased commercial circuits, and privately owned circuits connecting each nuclear site to the required locations.

- EP Paging System: The EP paging system is an automated paging system, which is used to automatically page key personnel during nuclear emergencies. It is computer-activated via dedicated terminals located in the Control Room at each nuclear site and the ODS’s office in Chattanooga, which are manned 24 hours a day. The EP paging system has provisions to periodically monitor its own performance to detect and report equipment failures.

- Radio Communications System (Onsite): The in-plant repeater system enables transmission without interruption to various areas of the plant. A separate radio located

in the plant Central Alarm Station is a direct link to the local law enforcement officials. Portable two-way radios are available for additional site communications. The EP radio system is a very high frequency (VHF) mobile radio system, which provides redundant radio coverage of the 10-mile emergency zone. It provides radiological monitoring vans with mobile communications to other van(s) and to Radiological Control personnel, the TSC, the Control Room, and the CECC.

- Telephone Switching Equipment: The telephone switching equipment consists of one or more switching centers equipped with fully redundant common logic and redundant power sources. The majority of plant telecommunications services are served from this switching equipment.

Technical Evaluation: The staff finds the applicant's communication plans for emergencies include organizational titles and alternates for both ends of the communication links and meets the guidance in NUREG-0654/FEMA-REP-1. The applicant described reliable primary and backup means of communication for the response organization. The communications systems between the station and State and local governments are compatible with one another. The staff's evaluation of the technical information related to station communications systems is located in Section 9.5.2, "Intra-plant and Plant-to-offsite Communications," of this SER.

Technical Information in the Emergency Plan: [F.1.a] Section F.1.a of the BLN Emergency Plan states that TVA maintains capabilities for 24 hours per day emergency notification to the State and county emergency response network. In addition, all State/County Warning Points are manned 24 hours per day.

Technical Evaluation: The staff finds that the information in the BLN Emergency Plan addresses provisions for 24-hour per day notification to and activation of the State/local emergency response network; and at a minimum, a telephone link and alternate, including 24-hour per day manning of communications links that initiate emergency response actions is acceptable because it meets the guidance described in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [F.1.b] Section II.F.1.a of the BLN Emergency Plan states that TVA maintains capabilities for 24 hour per day emergency notification to the State and county emergency response network. Section II.F.1.b states that communication links exist between CECC and State Emergency Management Agencies and State Emergency Management Agencies to County Emergency Management Agencies.

Technical Evaluation: The staff finds the BLN Emergency Plan description of the communication plans that include provisions for emergency communications with contiguous State/local governments in the EPZs acceptable because it meets the guidance described in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [F.1.c] Section II.F of the BLN Emergency Plan provides communication system descriptions and communications with the NRC. Section II.N.2.a, "Communications Drills," states that communications testing with Federal EROs is performed quarterly.

Technical Evaluation: The staff finds the BLN Emergency Plan description of the communication plans that include provisions for emergency communications, as needed with Federal EROs, is acceptable because it meets the guidance provided in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [F.1.d] Section II.F.1.d of the BLN Emergency Plan states that TVA provides the capability for communications between the Control Room or TSC and the CECC, and county and State EOCs. Section II.F.1.f states that communications between the TSC/CECC and offsite monitoring teams are via radio. Section II.F.3, "Communication System Reliability," states “Communications with BLN field assessment teams are tested annually.” Section II.F.1.b identifies communication links (CECC to State Emergency Management Agencies, CECC to each nuclear site, and State Emergency Management Agencies to Counties Emergency Management Agencies).

The applicant proposed EP-ITAAC Program Element 3.1 to test the capabilities to verify that the means exist for communications among the control room, TSC, EOF (CECC), principal State and local EOCs and radiological field assessment teams.

Technical Evaluation: The staff finds the BLN Emergency Plan description of the communication plans that included provisions for emergency communications between the nuclear facility and the CECC, State and local EOCs, and radiological monitoring teams acceptable because it meets the guidance described in NUREG-0654/FEMA-REP-1. The adequacy of the proposed EP-ITAAC Program Element 3.1 is addressed in Section 13.3.1C.S, “Emergency Planning ITAAC.”

Technical Information in the Emergency Plan: [F.1.e] Section II.F.1.e of the BLN Emergency Plan refers back to Section II.E.2, “Notification and Mobilization of Licensee Response Organizations,” for notification, alerting and activation of emergency response personnel in the TSC, OSC and CECC.

Technical Evaluation: The staff finds the BLN Emergency Plan description of the emergency communication plans that include provisions for alerting or activating emergency personnel in each response organization acceptable because it meets the guidance provided in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [F.1.f] Section II.F.1.c of the BLN Emergency Plan identifies dedicated communications with the NRC through the Emergency Notification System (ENS), Health Physics Network (HPN), Reactor Safety Counterpart Link (RSCL), Protective Measures Counterpart Link (PMCL), Emergency Response Data System (ERDS), Management Counterpart Link (MCL), and Local Area Network (LAN) systems. Section F.1.f identifies communications between Control Room/TSC/CECC to the NRC Operations Center via the ENS or private telephone and to the regional office via the normal private capability. Communication between the TSC/CECC and offsite monitoring teams is by radio.

The applicant has proposed EP-ITAAC Program Element 3.2 to test the communications capabilities of the ERFs to NRC headquarters and regional offices.

Technical Evaluation: The communication plans for emergencies addresses provision for communication by the licensee with NRC headquarters and NRC Regional Office Emergency Operations Centers and the CECC and radiological monitoring team assembly area. The adequacy of proposed EP-ITAAC Program Element 3.2 is addressed in Section 13.3.1C.S, “Emergency Planning ITAAC.”

Technical Information in the Emergency Plan: [F.2] Section II.F.2, “Communication with Fixed and Mobile Medical Support Facilities,” of the BLN Emergency Plan identifies commercial

telephone for fixed facilities and radio for ambulance communications between the site and medical support facilities.

Technical Evaluation: The staff finds that the BLN Emergency Plan adequately ensures that a coordinated communication link exists for fixed medical support facilities and ambulance service(s) because it meets the guidance described in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [F.3] Section II.F.3, :Communication System Reliability," of the BLN Emergency Plan states that onsite communication systems are periodically tested and that dedicated telephone lines are checked according to specified schedules. Section II.H.10, “Emergency Equipment and Supplies,” states that emergency equipment is periodically tested and references Appendix 6 of the BLN Emergency Plan. Appendix 6, "Emergency Equipment and Supplies,” includes communications equipment on the emergency kit inventory. Section II.N.1.b, “Exercises,” states that TVA conducts a biennial exercise that tests emergency equipment and communications networks and public notification systems. Appendix 3, "Public Alert and Notification System,” states that complete cycle tests are performed annually, and as required for formal exercises.

Technical Evaluation: The staff finds the BLN Emergency Plan acceptable because it describes the conduct of periodic testing of the entire emergency communications system consistent with the guidance provided in NUREG-0654/FEMA-REP-1.

In determining whether the proposed emergency plan met the applicable regulatory requirements related to the area of emergency communications, the NRC staff also evaluated it against the following requirements in Appendix E to 10 CFR Part 50.

13.3.1C.F.2 10 CFR Part 50, Appendix E Requirements

Regulatory Basis: 10 CFR Part 50, Appendix E.IV, “Content of Emergency Plans.”
10 CFR Part 50, Appendix E. IV.E.9 requires at least one onsite and one offsite communications system; each system having a backup power source.

Technical Information in the Emergency Plan: Section II.F.3, “Communication System Reliability,” of the BLN Emergency Plan states that the onsite communication systems have diverse power supplies. There is also a statement that failure of normal power supplies does not impact offsite communications because there is backup power. Additional information concerning communications systems and backup power can be found in AP1000 DCD Section 9.5.2, "Communication System."

Technical Evaluation: The staff finds acceptable that the BLN Emergency Plan states that at least one onsite and one offsite communications systems, each system having a backup power source, is provided and meets the guidance described in NUREG-0654/FEMA-REP-1.

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

a. Provision for communications with contiguous State/local governments in the plume exposure pathway EPZ. Such communications shall be tested monthly.

b. Provision for communications with Federal EROs. Such communications systems shall be tested annually.

c. Provision for communications among the nuclear power reactor control room, the onsite TSC, and the EOF; and among the nuclear facility, the principal State and local EOCs, and the field assessment teams. Such communications systems shall be tested annually.

d. Provisions for communications by the licensee with NRC Headquarters and the appropriate NRC Regional Office Operations Center from the nuclear power reactor control room, the onsite TSC, and the EOF. Such communications shall be tested monthly.

Technical Information in the Emergency Plan: (Appendix E.IV.E.9.a) Section II.N.2.a, "Communications Drills," of the BLN Emergency Plan states that communication testing with State and local governments in the plume exposure pathway EPZ is performed monthly. (Appendix E.9.b) Section II.N.2.a, "Communications Drills," also states that communications testing with Federal EROs is performed quarterly.

(Appendix E.IV.E.9.c) Section II.F.1.b of the BLN Emergency Plan identifies communication links (CECC to State Emergency Management Agencies, CECC to each nuclear site, and State Emergency Management Agencies to Counties Emergency Management Agencies). Section II.F.1.d of the BLN Emergency Plan also states that TVA provides the capability for communications between Control Room or TSC and the CECC, county and State EOCs.

Section II.F.1.f of the BLN Emergency Plan states that communications between the TSC/CECC and the offsite monitoring teams is via radio. Section II.F.3 states "Communications with BLN field assessment teams are tested annually." The term "field assessment team" appears to be inconsistent with "offsite monitoring teams" that is used in Section II.F.1.f and the term "radiological monitoring teams" used in NUREG-0654/FEMA-REP-1; Evaluation Criterion F.1. In RAI 13.03-23(A), the staff requested the applicant provide clarification or definitions of "offsite monitoring teams" and "BLN field assessment teams." In the September 8, 2008, response, the applicant stated that the BLN Emergency Plan, the terms "offsite monitoring teams" and "field assessment teams" are used interchangeably and are also used consistent with the term "radiological monitoring teams" as used in NUREG-0654/FEMA-REP-1, Evaluation Criterion II.F.1.

(Appendix E.IV.E.9.d) Section II. F.1.f, "Description of Communication Links," of the BLN Emergency Plan states that "Communications between Control Room/TSC/CECC to the NRC Operations Center is via the ENS or private telephone and to the regional office via the normal private capability." Section II.N.2.a, "Communications Drills," states that "TVA tests communications with States within the ingestion pathway EPZ on a quarterly basis." The quarterly frequency for this activity is consistent with the guidance provided in the corresponding section of NUREG-0654/FEMA-REP-1.

Section II.N.2.a of the BLN Emergency Plan, does not address periodic testing of communications from the licensee to the NRC Headquarters and the appropriate NRC Regional Office Operations Center. These communications systems are required to be tested monthly in accordance with 10 CFR Part 50, Appendix E, Section IV.E.9.d. In RAI 13.03-23(B), the staff requested that the applicant provide clarification regarding the testing frequency from the

licensee to the NRC Headquarters and the appropriate NRC Regional Office Operations Center. In response, the applicant provided additional information but did not address testing of communications from the licensee to the NRC Headquarters and the appropriate NRC Regional Office Operations Center on a monthly basis. **Open Item 13.3-10** was created to track the addition of the communications link testing frequency from the licensee to the NRC Headquarters and the appropriate NRC Regional Office Operations Center in the BLN Emergency Plan.

Technical Evaluation: The applicant's communication plans have arrangements for emergencies, including titles and alternates for those in charge at both ends of the communication links and the primary and backup means of communication. These arrangements included provision for monthly communications with contiguous State/local governments in the plume exposure pathway EPZ; provisions for annual communications with Federal EROs; provision for annual communications among the nuclear power reactor control room, the onsite TSC, and the EOF, and among the nuclear facility, the principal State and local EOCs, and the field assessment teams. Provisions for monthly communications by the licensee with NRC Headquarters and the appropriate NRC Regional Office Operations Center from the nuclear power reactor control room, the TSC, and the CECC has not been addressed and **Open Item 13.3-11** was created to track the issue.

13.3.1C.F.3 Other Regulatory Requirements

Regulatory Basis: 10 CFR 50.72(c)(3) requires that with respect to the telephone notifications made under 10 CFR 50.73(a) and (b), in addition to making the required initial notification, each licensee, shall during the course of the event, maintain an open, continuous communication channel with the NRC Operations Center upon request of the NRC.

Technical Information in the Emergency Plan: The technical information related to maintaining an open, continuous communication channel with the NRC is addressed in Evaluation Criterion [F.1] above.

Technical Evaluation: The NRC staff's evaluation of this requirement is addressed in Evaluation Criterion [F.1] above.

Regulatory Basis: Generic Letter (GL) 91-14, "Emergency Communications," provides guidance that the following communications paths be provided: ENS, HPN, RSCL, PMCL, ERDS, MCL, and LAN. The guidance in GL 91-14 also states that guaranteed power be provided for the emergency communications equipment in accordance with NRC Bulletin 80-15, "Possible Loss of Emergency Notification System (ENS) with Loss of Offsite Power."

Technical Information in the Emergency Plan: Section II.F.1.c of the BLN Emergency Plan discusses each of the listed communications paths (ENS, HPN, RSCL, PMCL, ERDS, MCL, and LAN access). Section II.F.3 discusses system reliability. Section 9.5.2.2.3.1.1 of the BLN COL FSAR states that the design addresses the recommendations of IE Bulletin BL-80-15. Section F states that the communications systems includes those systems described in Section 9.5.2, "Communication System," of the AP1000 DCD.

Technical Evaluation: The staff finds the BLN Emergency Plan acceptable because it states that the following communications paths are provided: ENS, HPN, RSCL, PMCL, ERDS, MCL, and LAN access. The BLN Emergency Plan also states that guaranteed power to the emergency communications equipment in accordance with NRC Bulletin 80-15, "Possible Loss

of Emergency Notification System (ENS) with Loss of Offsite Power," is provided and meets the guidance described in applicable portions of GL 91-14.

13.3.1C.F.4 Conclusion for Emergency Communications

On the basis of its review of the onsite emergency plan as described above for emergency communications, the NRC staff concludes that the information provided in the BLN Emergency Plan is not consistent with Planning Standard F of NUREG-0654/FEMA-REP-1 and the requirements of Appendix E. Therefore, not all the information in Section F is acceptable and meets the requirements of 10 CFR 50.47(b)(6), and Section IV.E.9 of Appendix E to 10 CFR Part 50.

The NRC will determine whether this planning standard is acceptable and document its determination in the FSER, based on information the applicant has provided to date and its response to the following open items:

Open Items:

- Open Item 13.3-10 was created to track the addition of the communications link testing frequency from the licensee to the NRC Headquarters and the appropriate NRC Regional Office Operations Center in the BLN Emergency Plan.

- Open Item 13.3-11 was created to track the addition of the communications link testing frequency from the licensee to the NRC Headquarters and the appropriate NRC Regional Office Operations Center.

13.3.1C.G Public Education and Information

13.3.1C.G.1 10 CFR 50.47 Requirements

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

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

Technical Information in the Emergency Plan: [G.1] Section II.G.1, "Public Information Program," of the BLN Emergency Plan states that TVA coordinates with affected State and local authorities to disseminate emergency response information to members of the public in the plume exposure pathway EPZ on an annual basis. Information provided to the public includes educational information on radiation, point of contact for additional information, protective measures (evacuation routes, relocation centers, sheltering, respiratory protection, and radioprotective drugs) and information addressing special needs of the handicapped. Distribution methods may include providing informational publications such as brochures or calendars through mailings to individual households in the plume exposure pathway EPZ.

Emergency information may also be distributed in telephone directories and utility bills, through public information postings and information distributed via local media outlets.

Technical Evaluation: The staff finds acceptable that the BLN Emergency Plan provides for a coordinated periodic (at least annually) dissemination of information to the public regarding how they will be notified and what their actions should be in an emergency. Means for accomplishing this dissemination are adequately described because it meets the guidance provided in applicable portions of GL 91-14.

Technical Information in the Emergency Plan: [G.2] Section II.G.2, "Distribution and Maintenance of Public Information," of the BLN Emergency Plan lists how written information may be provided to permanent residences and transient populations. However, RAI 13.03-24(A) requested additional information regarding the methods and times for public notification. In the response dated October 2, 2008, and the supplemental information provided February 6, 2009, TVA stated that it distributes educational material on an annual basis to each commercial and residential address in the plume exposure pathway EPZ. This material is also available online via the TVA Nuclear website. TVA's Manager, State and Local Programs, Nuclear EP is responsible for coordinating emergency planning efforts, including creation and distribution of public informational materials, with State and local authorities for the BLN site.

In addition, Section II.G.2, "Distribution and Maintenance of Public Information," of the BLN Emergency Plan discusses the distribution of the information to permanent residents and transient populations. In RAI 13.03-24(B), the NRC staff requested additional information regarding who will be responsible for coordinating with State and local authorities to disseminate EP information to the public. In response to RAI 13.3-24(A) and RAI 13.03-24(B), the applicant stated that Section II.G.2 of the BLN Emergency Plan would be revised to reflect the additional information provided in response to RAI 13.03-24(A) and RAI 13.03-24(B).

In RAI 13.03-24(D), the applicant was asked to provide additional information regarding those who may need transportation assistance. In response, the applicant stated that pre-addressed, postage paid cards provide a method for local officials to maintain a current list of individuals who would need special assistance in the event of an emergency. In the supplemental information provided on February 10, 2009, TVA also stated that a publication (with content similar to emergency public information calendars distribute to residents living near other TVA nuclear plants) will be developed and distributed in the BLN plume exposure pathway prior to exceeding 5 percent of rated thermal power. The information will have cards that people with special needs will mail in to assist local emergency officials in providing special assistance. Additionally, fixed information signs will be posted in public areas in the plume exposure pathway EPZ prior to power exceeding 5 percent.

Technical Evaluation: The NRC staff finds the BLN Emergency Plan and the responses to RAI 13.03-24(A), RAI 13.03-24(B), and RAI 13.03-24(D) and the supplemental information for these RAIs acceptable and provides an adequate description of the coordinated, periodic (at least annually) dissemination of information to the public regarding how they will be notified and what their actions should be in an emergency. Means for accomplishing this dissemination may include, but are not necessarily limited to: information in the telephone book; periodic information in utility bills; posting in public areas; and publications distributed on an annual basis. The staff created **Confirmatory Item 13.3-6** to ensure the applicant revises Section II.G.2 of the BLN Emergency Plan.

The NRC staff finds that the BLN Emergency Plan describes a public information program that provides the permanent and transient adult population in the plume exposure EPZ an adequate opportunity to become aware of the information annually. The program includes provision for written material that is likely to be available in a residence during an emergency. The BLN Emergency Plan describes the updating of disseminated information at least annually. Signs or other measures are used to disseminate to transient populations in the plume exposure pathway EPZ appropriate information that would be helpful if an emergency or accident occurs. Such notices refer the transient to the telephone directory or other source of local emergency information and guide the visitor to appropriate radio and television frequencies.

However, the staff finds the distribution of public information prior to exceeding 5 percent of rated thermal power to be unacceptable. The staff has determined that this program needs to be implemented and demonstrated in concert with the full-participation exercise in accordance with 10 CFR Part 50, Appendix E, IV.F.2 and the applicant's commitment to the NUREG-0654/FEMA-REP-1, Appendix 3, "Means for Providing Prompt Alerting and Notification of Response Organizations and the Public," Section B, "Criteria for Acceptance." The staff created **Open Item 13.3-12** to track the need for the applicant to propose an EP-ITAAC that addresses the distribution of public information prior to fuel load.

Technical Information in the Emergency Plan: [G.3.a and b] Section II.G.3, "News Media Coordination," of the BLN Emergency Plan states that the Joint Information Center (JIC) is located in the TVA Chattanooga Office Complex. ITAAC Acceptance Criterion 4.1 also specifies the JIC as being located in the TVA Chattanooga Complex. The CECC Director acts as the primary point of contact for official TVA positions or recommendations. Revision 30 of CECC-EPIP-14, "Nuclear Emergency Public Information Organization and Operations," was attached to the letter dated October 2, 2008. CECC-EPIP-14 contains drawings in Appendix C that identify a number of media work spaces.

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan acceptably designates the points of contact and physical locations for use by news media during an emergency. The NRC staff also finds acceptable that the BLN Emergency Plan describes space, which may be used for a limited number of the news media at the EOF because it meets the guidance provided in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [G.4.a] Section II.G.3, News Media Coordination," of the BLN Emergency Plan indicates that the Public Information Manager has access to all the required information related to the emergency and provides that information to the TVA Chief Spokesperson. The TVA Chief Spokesperson is responsible for dissemination of information to the public and news media. The Public Information Manager coordinates information with designated members of the State and local emergency response.

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan acceptably identifies a spokesperson who should have access to all necessary information because it meets the guidance provided in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [G.4.b] Section II.3.b, "News Media Coordination," of the BLN Emergency Plan states that the Public Information Manager coordinates news release drafts with State and Federal agencies participating at the JIC. In RAI 13.03-24(C), the NRC staff requested that the applicant provide detailed information regarding the timely exchanges of information and identification of designated spokespersons. Also in RAI 13.03-24(C), the staff requested that the applicant provide details on how timely and

accurate information is provided to the media during an emergency. In its response dated September 22, 2008, and supplemental information dated February 6 and 10, 2009, TVA stated that the public information responsibilities of emergency response personnel located at the plant site, the CECC, and the JIC are described in a corporate procedure applicable to TVA's operating nuclear plants. CECC-EPIP-14 is designed to describe the public information responsibilities of emergency response personnel located at the plant site, the CECC, and the JIC. It also describes how the JIC will be set up, staffed, and activated/deactivated when it is determined such a facility is necessary. In the letter dated February 6, 2009, that applicant stated that Section II.G.4, "Information Exchange," would be revised to reflect the information provided in response to RAI 13.03-24(C).

Technical Evaluation: The NRC staff finds the additional information in response to RAI 13.03-24(7C) and the information in the BLN Emergency Plan adequately describe established arrangements for timely exchange of information among designated spokespersons in accordance with the guidance in NUREG-0654/FEMA-REP-1. The staff created **Confirmatory Item 13.3-7** to ensure the applicant revises Section II.G.4 of the BLN Emergency Plan.

Technical Information in the Emergency Plan: [G.4.c] Section II.G.4.c, “Information Exchange,” of the BLN Emergency Plan states that contact between the designated spokespersons and by the activities of a licensee liaison in the JIC serves to control rumors. When rumors are identified, the licensee liaison contracts appropriate organizations to obtain and disseminate accurate information. Updated information is provided to elected official and regulatory agencies through public affairs and governmental affairs departments.

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan acceptably describes coordinated arrangements for dealing with rumors consistent with the guidance provided in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [G.5] Section II.G.5, “News Media Training,” of the BLN Emergency Plan addresses training that is conducted once each calendar year. TVA coordinates this training with State authorities. The annual training provides information regarding emergency plans, radiation hazards, and points of contact for release of public information to media organizations.

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan acceptably describes coordinated programs that will be conducted at least annually to acquaint news media with the emergency plans, information concerning radiation, and points of contact for release of public information in an emergency consistent with the guidance provided in NUREG-0654/FEMA-REP-1.

13.3.1C.G.2 10 CFR Part 50, Appendix E Requirements

In determining whether the proposed emergency plan met the applicable regulatory requirements related to the area of "Public Education and Information," the NRC staff also evaluated it against the following requirements in Appendix E to 10 CFR Part 50.

Regulatory Basis: 10 CFR Part 50, Appendix E.IV, “Content of Emergency Plans.” 10 CFR Part 50, Appendix E.IV.D.2 requires that provisions be described for yearly dissemination to the public in the plume exposure pathway EPZ of basic emergency planning information, such as the methods and times required for public notification and the protective

actions planned if an accident occurs, general information as to the nature and effects of radiation, and a listing of local broadcast stations that will be used for dissemination of information during an emergency be developed. In addition, signs or other measures shall also be used to disseminate to any transient population in the plume exposure pathway EPZ appropriate information that would be helpful if an accident occurs.

Technical Information in the Emergency Plan: The technical information in the BLN Emergency Plan that addresses this regulation is in Section 13.3.1C.G.1 Evaluation Criterion [G.2] of this SER.

Technical Evaluation: The NRC staff's technical evaluation of the material related to this requirement is addressed in Section 13.3.1C.G.1 Evaluation Criterion [G.2] of this SER.

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

The NRC staff will determine whether this planning standard is acceptable based on verification of the following open item and confirmatory items:

Open Item:

- Open Item 13.3-12 was created to track the need for the applicant to propose an EP-ITAAC that addresses the distribution of public information prior to fuel load.

Confirmatory Items:

- Confirmatory Item 13.3-6 was created to track the revision of Section II.G.2 of the BLN Emergency Plan.

- Confirmatory Item 13.3-7 was created to track the revision of Section II.G.4 of the BLN Emergency Plan.

13.3.1C.H Emergency Facilities and Equipment

13.3.1C.H.1 10 CFR 50.47 Requirements

In determining whether the proposed emergency plan met the applicable regulatory requirements in 10 CFR 50.47(b)(8), the NRC staff evaluated it against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1. In addition, the NRC staff evaluated the proposed emergency plan against the guidance[3] in Supplement 1 to NUREG-0737, "Clarification of TMI Action Plan Requirements."

Regulatory Basis: 10 CFR 50.47, “Emergency plans.” 10 CFR 50.47(b)(8) requires that adequate emergency facilities and equipment to support the emergency response be provided and maintained.

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[3] The numerical designations in parentheses used in this section of the SER identify the paragraphs in Supplement 1 to NUREG-0737, “Clarification of TMI Action Plan Requirements,” (GL-82-33) used by the staff to determine compliance with 10 CFR 50.47(b)(8).

Technical Information in the Emergency Plan: [H.1] (8.2.1.a, b and c) The introductory information in Section H of the BLN Emergency Plan state that the TSC is designed to meet the intent of Supplement 1 to NUREG-0737. Section II.H.1 states that the mission of the TSC is to provide an area and resources for use by personnel providing plant management and technical support to the plant operating staff during emergency evolutions. The TSC relieves the ROs of peripheral duties and communications not directly related to reactor system manipulations and prevents congestion in the Control Room. Communications needs are provided for the staff in the TSC, and between the TSC and the plant, including the Control Room and OSC, the CECC, TVA management, offsite authorities (including the NRC), and the public. Figure A10-1, "BLN TSC Layout," in Appendix 10, "Technical Support Center Description," of the BLN Emergency Plan, identifies a work area for NRC staff. Appendix 10 also states that the TSC will contain the records needed to perform the functions of the EOF when the EOF is not operational. Appendix 10, "Technical Support Center Description," of the BLN Emergency Plan states that operations at this facility are directed by the TSC Manager/Site Emergency Director when the TSC is operational.

The TSC is common for BLN 3 and 4 and is not located in the nuclear island CSA as described in the AP1000 DCD, but is located in the Maintenance Support Building to provide centralized response management oversight for the site. Consequently, the applicant proposed departure, BLN DEP 18.8-1, in Section 10, "Departures and Exemption Requests," of the COL application to address the alternate location for the TSC. Appendix 10 also states the TSC provides working space for the personnel assigned to the TSC at the maximum level of occupancy. The working space is sized for a minimum of 25 persons. Minimum size of working space is approximately 75 square feet per person. In addition, ITAAC Acceptance Criterion 5.1.1 will confirm that the TSC has been located in the Maintenance Building. Also, Item 1 in ITAAC Table 3.1-1 in the AP1000 DCD, Revision 17 will confirm that the TSC has at least 1875 square feet of floor space.

Due to the new, proposed TSC location, Appendix 10, "Technical Support Center Description," of the BLN Emergency Plan states that the TSC may not be within a two-minute walk of either unit's Control Room as identified in NUREG-0696. The appendix also states that the ability to retrieve plant data and displays available in the Control Room, coupled with the sophisticated communications systems, preclude the need for frequent face-to-face interchanges between the TSC and Control Room personnel. RAI 13.03-25(N) requested a plant layout drawing that shows the location of the TSC in relation to the Control Rooms. In response, TVA stated that general site arrangement drawings were provided in BLN COL FSAR Chapter 1, "Introduction and General Description of the Plant," and that Figure 1.1-202, "Site Layout," provides a detailed site layout showing the proximity of the TSC (located in the Maintenance Support Building) in relation to the Control Rooms. In addition, TVA stated that estimates indicate that the walking time between the TSC and Control Rooms should not exceed five minutes.

(8.2.1.j) The TSC is designed to provide a location for plant management and technical support staff to assemble and provide support to the control room. Responsibilities of the TSC are covered in Section II.A, "Assignment of Responsibility (Organization Control)." In RAI 13.03-38(B), additional information was requested regarding the timing of the activation of the CECC. In response, the applicant referred to Section H.4 of the BLN Emergency Plan, which states that the ERFs, which include the TSC, are staffed and activated in accordance with EPIPs. The staff created **Open Item 13.3-1** (See Section 13.3.4A) for the applicant to incorporate, in the BLN Emergency Plan, the specific timing goals for activating and staffing the TSC.

Appendix 10, "Technical Support Center Description," of the BLN Emergency Plan states that the TSC is established consistent with the guidance provided in NUREG-0696, "Functional Criteria for Emergency Response Facilities." RAI 13.03-25(I) requested additional information regarding the description of the TSC. In its response, TVA stated that additional design information on the proposed TSC is provided in an attachment to the response to RAI 13.03-25(A). This document, included with the letter dated September 22, 2008, provides the key design considerations established for the TSC including availability, size, layout and location, staffing, design habitability, communications, the electrical system, lighting, instrumentation, technical data system, heating, ventilation and air conditioning, fire protection and detection, and records. The staff finds the applicant provided an adequate description of the TSC design consistent with the guidance in NUREG-0654/FEMA-REP-1 and thus is acceptable.

(8.2.1.d, e and f) Appendix 10 of the BLN Emergency Plan also states that the TSC is designed in accordance with the Uniform Building Code (UBC) to withstand earthquakes and high winds. Support facilities are located in the TSC to support long term operation of the TSC. The TSC is environmentally controlled to provide room air temperature, humidity, and cleanliness appropriate for personnel and equipment. The ventilation system includes high efficiency particulate air (HEPA) filters and charcoal filters. The ventilation system is designed to maintain exposures at or below 5 rem total effective dose equivalent (TEDE) as defined in 10 CFR 50.2 for the duration of an accident. The TSC structure, shielding, and ventilation system are also designed to protect the TSC personnel from radiological hazards. The ventilation system is operated in accordance with approved procedures and is manually controlled from the TSC.

In addition, Appendix 10 of the BLN Emergency Plan states that portable radiation monitors are available to personnel in the TSC. RAI 13.03-25(D) requested that the applicant clarify whether the TSC has continuous monitoring with alarms to notify staff of inhabitable conditions. In response, the applicant stated that the TSC is equipped with a continuous air monitor or similar monitoring device capable of providing an alarm function if airborne particulate radioactivity levels exceed a pre-established alarm level. **Confirmatory Item 13.3-8** was created to track the incorporation of the information provided in the RAI response regarding continuous monitoring with alarms information into the BLN Emergency Plan. In addition, ITAAC Acceptance Criterion 5.1.2 will confirm that the TSC includes radiation monitors and a ventilation system with a HEPA and charcoal filter.

Equipment and supplies are provided in accordance with Appendix 6, "Emergency Equipment and Supplies," of the BLN Emergency Plan. Appendix 6, "Emergency Equipment and Supplies," of the BLN Emergency Plan provides a general list of equipment located in the ERFs, including the TSC. Because the list was not specific enough to determine whether the supplies were adequate, RAI 13.03-25(B) requested information regarding protective equipment located in the TSC. The applicant responded that inventories of protective equipment in the TSC are consistent with those identified in Browns Ferry's EPIP-12, "Emergency Equipment and Supplies," which provides listings of emergency equipment and supplies typically provided to support ERO activities. Browns Ferry's EPIP-12 was provided for information as an attachment to the response. The staff finds the applicant’s proposal to provide the specific list of equipment in an EPIP consistent with those identified in Browns Ferry’s EPIP-12 to be acceptable because it meets the guidance in NUREG-0654/FEMA-REP-1. The staff created **Confirmatory Item 13.3-9** to track the addition of the title of a procedure similar to Browns Ferry's EPIP-12, "Emergency Equipment and Supplies," to the BLN Emergency Plan.

(8.2.1.g) The TSC has reliable voice communications to the control room, the OSC, the EOF, and the NRC. Provisions for communications with State and local operations centers are also provided in the TSC. The communications facilities include the means for reliable primary and backup communication. The TSC serves as the primary onsite communications center when activated during an emergency.

(8.2.1.h) Section 13.3.1B.8 of this SER addresses plant data that is available in the TSC via the SPDS. Section 1.9, "Three Mile Island Issues," in Section 1.9, "Compliance with Regulatory Criteria," of the AP1000 DCD states the purpose of the plant SPDS is to display important plant variables in the Control Room in order to assist in rapidly and reliably determining the safety status of the plant. In addition, displays are available at the operator workstations, the remote shutdown workstation, and at the TSC.

(8.2.1.h and k) Appendix 10 of the BLN Emergency Plan also describes the technical and operational data and information that is available for each BLN unit in the TSC. The TSC is equipped with a computer system, which provides source term and meteorological data and technical data displays to allow TSC personnel to perform detailed analysis and diagnosis of abnormal plant conditions, including assessment of any significant release of radioactivity to the environment. EP-ITAAC Acceptance Criterion 6.4 has been proposed to ensure the meteorological data is available in the TSC. Also, HFE is incorporated into the design of the TSC related to the display and availability of plant data.

(8.2.1.i) In addition, Appendix 10 of the BLN Emergency Plan states that the TSC has ready access to plant records and provides a list of specific documents procedures reports, and drawings that will be maintained in the TSC.

Appendix 10 of the BLN Emergency Plan states that the TSC is provided with reliable power and backup power supplies. Lighting is powered by the normal and backup electrical supply system. An emergency battery operated lighting system is installed. Power for vital information systems is provided by reliable power supplies including a battery backed Uninterruptible Power Supply (UPS) system. Section 18.8.3.5 in Revision 17 of the AP1000 DCD states that the UPS provides approximately two hours of backup power supply to the TSC displays if ac power becomes unavailable. EP-ITAAC Acceptance Criterion 5.1.3 was proposed to confirm back-up electrical supply is available for the TSC. Section II-H.1, “On-Site Emergency Response Facilities,” states that in the event that all offsite and onsite alternating current (ac) power is unavailable, the TSC could be evacuated and the management function transferred to an unaffected location.

In RAI 13.03-25(E), the staff requested additional information regarding the transfer of the management function in the event the TSC were evacuated. In response, the applicant stated that the most likely location to which the TSC management function would be transferred is the Control Room of the affected unit. Because of the potential heat load limitations in the Control Room during a loss of power event, the number of people that may occupy the Control Room may be limited. The staff created **Open Item 13.3-13** to track the issue related to the transfer of the TSC management function to the Control Room of the affected unit and Control Room heat loading.

The staff requested additional information related to the habitability of the TSC in RAI 13.03-25(J) as well as an assessment of the radiological consequence analysis for the personnel in the TSC for the postulated fission product releases as a result of the design basis accidents (DBAs). In its response, the applicant provided the radiological consequence analysis

for the TSC personnel, complete with the parameters and assumptions used in the analysis. The applicant also provided the TSC design description document as an attachment to RAI 13.03-25 response. The result of the applicant's analysis calculated a radiation dose of 1.42 rem TEDE due to the fission product release from the containment shell to the TSC air intake as a result of the postulated LOCA, meeting the acceptance criterion of 5 rem TEDE. The applicant stated that the postulated LOCA bounds all other DBAs and the calculated X/Q values from the containment shell to the TSC air intake bound those from the plant vent to the TSC air intake for the postulated LOCA. Also, in its response to RAI 02.03.04-05, the applicant provided TSC X/Q values for BLN 3 and 4. The applicant calculated TSC X/Q values using the guidance provided in RG 1.194, "Atmospheric Relative Concentrations for Control Room Radiological Habitability Assessments at Nuclear Power Plants," and the NRC ARCON96 computer code. ARCON96 computer code input files are provided in an electronic format as an attachment to the RAI response.

Additionally, Section II.N.2.f, "Combined Functional Drills," of the BLN Emergency Plan discusses functional drills, which include management and coordination of emergency response, accident assessment, protective action decision making, and plant system repair and corrective actions. The TSC staff participates in these drills to maintain their proficiency.

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(8.3.1.a and b) Section H.1, "On-site Emergency Response Facilities," of the BLN Emergency Plan states that the OSC (one for each unit) provides a centralized area and the necessary supporting resources for the assembly of designated operations support personnel during emergency conditions. Designated plant support personnel, as indicated in Section II.B of the BLN Emergency Plan, assemble in the designated OSC to provide support to both the Control Room and TSC. The primary function of the OSC staff is to dispatch assessment, corrective action, and rescue personnel to locations in the plant, as directed by the TSC and Control Room. Personnel reporting to the OSC can also be assigned duties in support of emergency operations. Section II.B.6, "Plant Emergency Response Staff," of the BLN Emergency Plan states that Figure II-2, "BLN Emergency Response Organization-TSC/OSC Only," illustrates the plant staff emergency organization. The figure identifies the OSC Director as directing the OSC staff and reporting to the SED. Section II.B.5 of Revision 1 to the BLN Emergency Plan states that the OSC Director directs repair teams, performs damage assessment, and coordinates OSC teams to provide proper briefings and accompaniment by radiation protection personnel as applicable.

BLN DEP 18.8-1 states that the OSC location will be described in the applicant's emergency plan. Section H.1, "On-site Emergency Response Facilities," of the BLN Emergency Plan states that the OSCs are located in the space designated in the AP1000 DCD for the Control Support Area. The introductory information in Section H of the BLN Emergency Plan states that the OSCs are designed to meet the intent of Supplement 1 to NUREG-0737. The applicant proposed EP-ITAAC Acceptance Criterion 5.1.4 to confirm that the OSC is in a location separate from the control room.

(8.3.1.c) Section H.1 of the BLN Emergency Plan also states that the OSC provides the resources for communicating with the Control Room and the TSC. RAI 13.03-25(H) requested additional information regarding communications capabilities in the OSC. In response, the applicant stated that Section II.F of the BLN Emergency Plan discusses communications capabilities between the OSC and Control Rooms that are maintained via telephones connected through the telephone switching equipment. Also, Section II.F addresses back-up

communications capabilities provided by the VHF radio system. These communication capabilities permit personnel reporting to the OSC to be assigned to duties in support of emergency operations.

The OSC is not designed to remain habitable under all projected emergency conditions. However, implementing procedures make provisions for relocating the OSC as needed, based on ongoing assessments of plant conditions and facility habitability. The SED directs relocation of the OSC, if required.

Technical Evaluation:

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The applicant stated that the postulated LOCA bounds all other DBAs and the calculated X/Q values from the containment shell to the TSC air intake bound those from the plant vent to the TSC air intake for the postulated LOCA. The staff verified the applicant's analysis by performing an independent radiological consequence assessment for the TSC. The staff finds reasonable assurance that the BLN TSC meets the acceptance criterion of 5 rem TEDE. Therefore, the staff finds the response to RAI 13.03-25(J) acceptable.

The staff finds the applicant's response to RAI 13.03-25(N), regarding the TSC layout and location in relation to the Control Rooms, acceptable because it meets the guidance in NUREG-0654/FEMA-REP-1.

BLN DEP 18.8-1 from the AP1000 DCD, Tier 2 material, that addresses a new location for the TSC, is discussed in Attachment 13A in this section of the SER. Current regulatory guidance in NUREG-0696 states that the walk between the TSC and the Control Room should not exceed 2 minutes. However, TVA has stated that the walk between the TSC and Control Room should not exceed five minutes. The guidance in NUREG-0696 is based upon the potential need for face-to-face communications between TSC and Control Room personnel to maintain effective management interaction and technical information exchange. The BLN Emergency Plan describes dedicated and diverse communications capabilities between the Control Rooms, TSC, OSC, and the CECC. In addition, the communications systems in the station have diverse and back-up power supplies. While the transit time is greater than that specified in NUREG-0696, the enhancements to the communications and instrumentation provide an acceptable alternative to the guidance in NUREG-0696 and is acceptable. The applicant proposed EP-ITAAC Program Element 3.1 to test the communications between the Control Room and TSC. Section 13.3.1B.8 of this SER addresses plant data that is available in the TSC via the SPDS. Section 1.9, "Compliance with Regulatory Criteria," in the AP1000 DCD states that the purpose of the plant SPDS is to display important plant variables in the Control Room in order to assist in rapidly and reliably determining the safety status of the plant. In addition, displays are available at the operator workstations, the remote shutdown workstation, and at the TSC. The attachment to RAI 13.03-25(A) describes the data system that will support the TSC function.

The staff had previously considered the "2 minute walking time" criterion associated with the TSC location as part of the development of the emergency planning ITAAC. EP-ITAAC Acceptance Criterion 8.1.2 in Table C.II.1 B1, "Emergency Planning - Generic Inspections, Tests, Analyses and Acceptance Criteria (EP-ITAAC)," of RG 1.206 includes a statement that advanced communication capabilities may be used to satisfy the two minute travel time. The staff evaluated the appropriateness and acceptability of providing flexibility related to the

2-minute walking time between the TSC and Control Room, including the advances in communication technologies since NUREG-0696 was published in 1981. In addition, having a common TSC that supports multiple reactor units and is located a moderate distance (i.e., more than 2 minutes) from the Control Room presents distinct advantages. From a support and functional standpoint, the staff finds that the applicant's proposed TSC location is acceptable subject to a demonstration of adequacy during the full participation exercise (EP-ITAAC Acceptance Criteria 8.1.2.1 and 8.1.2.2). Section 13.3.1B.8 of this SER addresses plant data that is available in the TSC via the SPDS. The AP1000 DCD states that the purpose of the plant safety parameter display console (or SPDS) is to display important plant variables in the Control Room in order to assist in rapidly and reliably determining the safety status of the plant. In addition, displays are available in the TSC.

With respect to the TSC HFE design, Section 18.2.1, "Human Factors Engineering Program Goals, Scope, Assumptions, and Constraints," of this SER, discusses the acceptability of the implementation and verification of applicable TSC displays in accordance with the AP1000 HFE program.

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The staff finds that the applicant's response to RAI 13.03-25(H) is acceptable because it describes the communications capabilities in the OSC consistent with the guidance in Supplement 1 to NUREG-0737. In summary, the staff finds the BLN Emergency Plan adequately describes the OSC in accordance with the guidance in NUREG-0654/FEMA-REP-1 and Supplement 1 to NUREG-0737.

Central Emergency Control Center/Emergency Operations Facility

Technical Information in the Emergency Plan: [H.2] (8.4.1.a) Section H.2, "Off-site Emergency Response Facilities," of the BLN Emergency Plan states that the purpose of the CECC and associated CECC staff is to provide the facilities and manpower for evaluating, coordinating, and directing the overall activities involved in coping with a radiological emergency. During an emergency, the CECC Director and his staff review the response to the emergency by TVA and the appropriate State agencies to facilitate execution of an effective and cooperative effort. The CECC Director is responsible for providing TVA's recommended protective actions to the appropriate State officials. The CECC staff coordinates with other TVA emergency centers to facilitate an effective TVA effort in response to an emergency situation. The CECC staff also provides an accurate description of the emergency situation for TVA management and public information. In addition, the CECC coordinates with offsite Federal agencies, such as the NRC and DOE, to provide availability of additional outside resources to TVA. In RAI 13.03-25(K), the applicant was requested to provide additional information regarding the CECC. In response, the applicant stated that TVA currently maintains a series of Emergency Plan Implementing Procedures for use in the CECC (CECC EPIPS). CECC EPIP -1, "Central Emergency Control Center Operations," is designed to direct the CECC Director and staff to provide consistent, accurate, and timely response to an event. This procedure further serves to identify the necessary information to provide prompt, accurate, PARs to appropriate State authorities. The procedure includes information regarding management, staffing, and operation of the CECC for the operating nuclear stations. Revision 47 of the CECC EPIP-1 was attached to the response. The applicant stated that TVA expects to revise CECC EPIP-1, or institute a similar one, to address the BLN site as needed to support NRC inspection and audit functions associated with the execution of the EP exercise required by 10 CFR Part 50, Appendix E, Section IV.F.2.

The introductory paragraph in Appendix 9 of the BLN Emergency Plan states that since the early 1980's, TVA has used a centralized concept for providing the EOF function. Consistent with this approach, the BLN Emergency Plan relies on the use of the CECC as the EOF for BLN. The CECC is located in the TVA Chattanooga Office Complex in Chattanooga, Tennessee. It is designed to house the CECC Director and his staff during an emergency situation. Included in the CECC are areas for the Plant Systems Assessment, Radiological Assessment, Information Staff, and the TVA ODS. The CECC is designed to serve as the central point for information collection, assessment, and transfer during an emergency. The CECC is provided with direct communication links with State emergency response centers, other TVA EROs, the plant sites, the JIC, and offsite Federal and State organizations.

The CECC can be activated in about 60 minutes of the declaration of an alert or higher level emergency. Section II.F of this plan provides a description of the communications capabilities provided in the CECC.

(8.4.1.b) Appendix 9, "Justification for the CECC," of the BLN Emergency Plan states that because the CECC is more than 10 miles from any of the TVA nuclear stations, no radiological monitoring equipment is required.

(8.4.1.c, d, e and i) Appendix 9 of the BLN Emergency Plan also states that the CECC includes space for Alabama liaisons reporting to the CECC. Workspace has been provided for the NRC that is co-located with decision-makers, radiological assessment, and accident assessment personnel. The applicant proposed EP-ITAAC Acceptance Criterion 5.2.1 to confirm that the CECC has at least 243 square meters (2,625 square feet). Appendix 9 also states that the CECC is used for TVA's existing nuclear stations at Browns Ferry, Sequoyah, and Watts Bar, and that the CECC has proven to be an effective facility for implementing the nuclear station emergency plans. The introductory paragraph in Appendix 9, states that on March 19, 1981, the NRC approved the CECC concept with certain provisions. In a letter dated March 19, 1981, the NRC informed TVA of the need to provide a facility near each site for the NRC's use. The letter stated that: (1) The EOF trailer(s) should be able to be positioned and operational within two hours of being notified that the NRC Regional Director (now Regional Administrator) and site team are departing for a site. (2) There should be a discussion of the location(s) where the trailer(s) will be stored and where the trailer(s) will be positioned and operational. In the latter case, discuss the relationship of the location to projected release dispersion patterns. (3) There should be a description of the data availability and the communication capability in the EOF trailer(s). (4) There should be adequate space available (on the order of 1500 square feet) to accommodate the NRC site team and a FEMA liaison individual with an appropriate TVA complement. The space should be configured to provide for: a work area for EOF personnel; EOF data system equipment needed to receive and transmit data from/to other locations; performing repair, maintenance, and service equipment, displays and instrumentation; ready access to communications equipment by all EOF personnel who need communications capabilities to perform their functions; and ready access to functional displays of EOF data and to displays of plant records and historical data. In RAI 13.03-25(O), the applicant was requested to discuss the justification provided in Appendix 9 with respect to the provisions related to the CECC concept in the NRC letter dated March 19, 1981. In the response to RAI 13.03-25(O), the applicant stated that the BLN Emergency Plan will be revised to address the provisions specified by the NRC relative to the CECC concept.

(8.4.1.f and g) Appendix 9 of the BLN Emergency Plan also addresses the communications systems available in the CECC. The systems include central office trunks, tie-lines, digital services, privately-owned/maintained microwave systems, privately-owned fiber-optic systems,

NRC Emergency Telecommunications System phones, and the EP Radio System. The emergency communications systems at the CECC are designed to provide a reliable, timely flow of information between the parties having an emergency response role. The single facility results in commonality of communications and interface with offsite officials and liaisons. The EP Telephone System continues to be the primary means of communicating changes in event classification and PARs to the states and counties. This system operates on a combination of the TVA telecommunications network and leased circuits. The offsite communications network is used to communicate with Federal, State, and other supporting agencies. Access to these agencies is provided through several redundant, diverse routes. This diversity provides offsite routing through more than one type of facility. These facilities include, but are not limited to, commercial facilities such as central office trunks, tie-lines and digital services, plus privately owned and maintained microwave and fiber-optic systems. The offsite telecommunications network is designed to facilitate traffic in the most fail-safe manner to the EROs. ENS and HPN (NRC FTS 2000 System) telephones provide communications from each site TSC, Control Room, and the CECC to the NRC Headquarters and regional offices. These telephones are tested on a periodic basis consistent with the BLN Emergency Plan. The EP radio system is a VHF mobile radio system, which provides redundant radio coverage of the 10-mile emergency zone. The applicant provides radiological monitoring vans with mobile communications to other van(s) and to the following locations: Radiological Control, TSC, Control Room at each plant and the CECC.

Various plant parameters are available to the CECC staff via a connection through TVA's CECC computer network. Data available at the CECC provides a snapshot of data from each unit's integrated set of plant data as described in Chapter 18 of the AP1000 DCD. Plant data can be displayed at the CECC. These data are sufficient to perform accident assessment and evaluate the potential onsite and offsite environmental consequences of an emergency at the BLN site. The computers in the Dose Assessment Area are capable of running the dose projection computer programs Radiological Emergency Dose (RED), Forecast Radiological Emergency Dose (FRED), and Back-calculation Radiological Emergency Dose (BRED), and accessing plant status data. Hourly and 15-minute average meteorological data from the plant Environmental Data Station are available to the CECC, TSC, State, and level recorder controller (LRC). The CECC computer system provides access of up to the most recent 168 hours of this data. A meteorologist in the CECC provides meteorological information to the CECC staff, in support of offsite dose projections. The applicant proposed EP-ITAAC Acceptance Criterion 6.4 to confirm the availability of BLN site meteorological data in the CECC.

The CECC draws its primary power from commercial power. A loss of commercial power should not impact any of the voice or data communications equipment located in the CECC. Common TVA telecommunications infrastructure that supports CECC functions, including, but not limited to, fiber optic transmission equipment, telephone switching equipment and data network routers, is configured to operate from at least one and usually multiple backup power sources in the event of a loss of commercial power. These backup sources include generator, dc battery and UPS systems.

(8.4.1.h) Hard copies of key reference materials are maintained in the CECC. In addition, station design documentation, plant drawings, FSAR, procedures, etc. are available via LAN connection from the Business Support Library. The following information is available for BLN at the CECC/EOF: plant technical specifications; plant operating procedures; emergency operating procedures (EOPs); FSAR; up-to-date licensee, State and local emergency response plans; and offsite population distribution data..

(8.4.1.j) Appendix 9 of the BLN Emergency Plan states that the CECC is provided with normal industrial security and processes are already established to upgrade security during activation.

(8.4.1.k) With respect to the CECC/EOF HFE design, SER Section 18.2.1 discusses the acceptability of the implementation and verification of applicable CECC/EOF displays in accordance with the AP1000 HFE program.

Technical Evaluation:

Central Emergency Control Center/Emergency Operations Facility

The staff finds the response to RAI 13.03-25(K) acceptable because it provides additional information related to the CECC that fully describes the management, staffing, equipment, infrastructure, and operation in accordance with Supplement 1 to NUREG-0737.

The applicant has identified that the CECC is used for TVA's existing nuclear stations at Browns Ferry, Sequoyah, and Watts Bar, and that the CECC has proven to be an effective facility for implementing the nuclear station emergency plans. The introductory paragraph in Appendix 9 to the BLN Emergency Plan states that on March 19, 1981, the NRC approved the CECC concept with certain provisions. The NRC staff confirmed that provisions related to the CECC concept in the NRC letter dated March 19, 1981, were added to Appendix 9 in Revision 1 to the BLN Emergency Plan. The staff found the response to RAI 13.03-25(O) acceptable because it meets the guidance in Supplement 1 to NUREG-0737.

Because the CECC is located greater than 25 miles from the BLN TSC, Commission approval is required by SRM-SECY-96-170. The staff is preparing its request for Commission approval. This is being tracked as **Open Item 13.3-14**.

Technical Information in the Emergency Plan: [H.4] Section H.4, "Activation and Staffing of Emergency Response Facilities," of the BLN Emergency Plan states that ERFs are staffed and activated in accordance with emergency plan implementing procedures. Staffing of the CECC is addressed in Section II.B.7, "Corporate Support for the Plant Staff." Notification of staff is described in Section II.E.2, "Notification and Mobilization of Licensee Response Organizations." In addition, Section II.H.4, “Activation and Staffing of Emergency Response Facilities," describes the activation of the ERFs.

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan describes the timely activation and staffing of the CECC; thus it is acceptable and meets the guidance in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [H.5] Section II.H.5, "On-site Monitoring Systems," of the BLN Emergency Plan states that TVA maintains and operates onsite monitoring systems needed to provide data that is essential for initiating emergency measures and performing accident assessment. The section also includes, by reference, specific sections of the AP1000 DCD, Revision 17, to address monitoring systems for geophysical phenomena, radiological conditions, plant processes, and fire hazards. Geophysical phenomena are described in Section 3.7.4 of the AP1000 DCD, Revision 17, and the corresponding section of the BLN COL FSAR. Radiological monitoring systems can be found in Sections 11.5, "Radiation Monitoring," and 12.3, "Radiation Protection Design Features," of the AP1000 DCD, Revision 17, and the corresponding sections of the BLN COL FSAR. A supply of portable radiation monitoring and sampling equipment and emergency response equipment (Section II.H,

Appendix 6) are available. Plant process monitoring systems are described in Section 11.5 of the AP1000 DCD and the corresponding section of the BLN COL FSAR. Plant fire monitoring systems are described Section 9.5.1, "Fire Protection System," of the AP1000 DCD, Revision 17, and the corresponding section of the BLN COL FSAR.

Technical Evaluation: The staff finds acceptable that the BLN Emergency Plan describes onsite monitoring systems that are used to initiate emergency measures, as well as those to be used for conducting assessment and meets the guidance provided in NUREG-0654/FEMA-REP-1. The equipment includes:

a. geophysical phenomena monitors
b. radiological monitors
c. process monitors
d. fire and combustion products detectors

Technical Information in the Emergency Plan: [H.6] Section II.H.6, “Access to Data from Monitoring Systems,” of the BLN Emergency Plan states that TVA acquires meteorological data from the National Weather Service (NWS) during periods when the primary system is unavailable. Back-up seismic data is available from the U.S. Geological Survey. Flooding data is available from the National Oceanic and Atmospheric Association (NOAA) hydro-meteorological reports. Other data sources, such as commercial media outlets, may also be used.

The BLN Offsite Dose Calculation Manual (ODCM) describes the monitoring systems. The routine Environmental Radiological Monitoring equipment includes multiple radioiodine and particulate continuous monitors and thermoluminescent dosimeters or other dose integrating devices. The dosimeters are posted and collected in accordance with Table 1 of Revision 1 of the Branch Technical Position (BTP) included in GL 79-65, "Environmental Monitoring for Direct Radiation." The ODCM provides the locations of posted dosimeters and air samplers.

In addition to the monitoring systems, equipment, and radiological laboratory facilities provided at the plant, TVA maintains arrangements to obtain back-up radiological monitoring and analysis from offsite organizations. Section II.A, "Assignment of Responsibility (Organization Control)," of the BLN Emergency Plan provides a description of these arrangements and the capabilities of the affected organizations and facilities. Appendix 7, "Certification Letters," of the BLN Emergency Plan provides copies of the available certification letters from these support organizations. In RAI 13.03-18(E), the NRC staff asks the applicant to discuss when the letters of agreement with private sector organizations supporting the emergency response effort will be available and incorporated into the BLN Emergency Plan. The applicant has committed to providing letters of agreement in the BLN Emergency Plan prior to the full-participation exercise. The letters of agreement are required prior COL issuance. Therefore, the staff requires either the letters of agreement be provided prior to COL issuance or a proposed license condition describing the applicant’s plans for providing them. This is being tracked as **Open Item 13.3-2.**

Technical Evaluation: Except for providing letters of agreement with private sector organizations, the staff finds that the BLN Emergency Plan adequately describes provisions to acquire data from, or for emergency access to, offsite monitoring and analysis equipment and therefore meets the guidance in NUREG-0654/FEMA-REP-1. The staff’s evaluation of the BLN ODCM is in Section 11.5.3 of this SER.

Technical Information in the Emergency Plan: [H.7] A general list of the types of radiological monitoring equipment provided for field team use is included in Appendix 6, "Emergency Equipment and Supplies." of the BLN Emergency Plan.

Technical Evaluation: The staff finds that the BLN Emergency Plan adequately describes offsite radiological monitoring equipment in the vicinity of the nuclear facility in the BLN Emergency Plan, thus meeting the guidance provided in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [H.8] Section II.H.8, “Meteorological Instrumentation and Procedures,” and Appendix 2, “Radiological Assessment and Monitoring,” of the BLN Emergency Plan briefly discuss meteorological data acquisition and evaluation. There is a more detailed discussion in BLN COL FSAR Section 2.3.3, “Onsite Meteorological Measurement Programs." In RAI 13.03-25(P), the staff requested additional information regarding the availability of backup meteorological data. In its response, the applicant stated that there is no onsite backup meteorological data system to provide wind speed and direction if data are not available from the meteorological data system. However, the applicant stated that Section II.H.6.a of the BLN Emergency Plan addresses the acquisition of meteorological data from the NWS when the primary system is unavailable.

Technical Evaluation: The response to RAI 13.03-25(P) regarding backup meteorological data is acceptable. Section 2.3.3, “Onsite Meteorological Measurement Programs,” of the BLN COL FSAR and Section II.H.8, “Meteorological Instrumentation and Procedures,” of the BLN Emergency Plan discuss meteorological data collection, instrumentation, inspection, maintenance and other capabilities. The staff finds acceptable that the BLN Emergency Plan adequately describes meteorological instrumentation and provisions to obtain representative current meteorological information from other sources because it meets the guidance in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [H.9] Information describing the OSC is provided in Section II.H.1, "On-site Emergency Response Facilities," and Appendix 6, "Emergency Equipment and Supplies," of the BLN Emergency Plan. The introduction to Section H.1 states that the OSC was designed to meet the intent of the guidance in NUREG-0696, ”Functional Criteria for Emergency Response Facilities," and the clarification in NUREG-0737, Supplement 1. TVA filed for a departure from the AP1000 DCD (BLN DEP 18.8-1) as listed in Part 7, "Departures and Exemption Requests," of the COL application, to move the OSC to the CSA initially designated for the TSC. Additional information regarding the operation of the OSC can be found in AP1000 DCD Section 18.8.3.6, "Operational Support Center Mission and Major Tasks." Protective clothing and respirators are discussed in Section II.J, "Protective Response." However, the detail in the section is not sufficient to determine that the protective equipment is adequate. Communication is covered in Sections II.E, "Notification Methods and Procedures," and II.F, "Emergency Communications." However, the detail provided is not sufficient to determine that adequate communications are available in the OSC. In RAI 13.03-25(M), the staff requested additional information related to protective clothing, respirators and communication equipment in the OSC. In its response, the applicant stated that the OSC will be provided a variety of protective clothing (e.g., coveralls, boots, gloves, etc.) and respiratory protection equipment (e.g., full-face respirators with particulate filters and iodine cartridges, self-contained breathing apparatus, etc.) in order for the OSC to be able to perform assigned tasks. **Open Item 13.3-15** was created to track the inclusion of information related to protective clothing and respirators and communication equipment in the OSC in the BLN Emergency Plan.

Technical Evaluation: The BLN Emergency Plan does not adequately describe supplies, including: respiratory protection, protective clothing, and communications equipment for personnel present in the OSC.

Technical Information in the Emergency Plan: [H.10] Section II.H.10, “Emergency Equipment and Supplies,” of the BLN Emergency Plan states that TVA conducts inspection, inventory, and appropriate operational tests of emergency equipment and instruments at least once each calendar quarter. These requirements will be covered in the implementing procedures when they are finished 180 days prior to fuel loading. Reserves are maintained to replace instruments removed for calibration or repair. The scope and responsibilities for performing these tests are provided in administrative procedures.

Technical Evaluation: The staff finds acceptable that the BLN Emergency Plan describes provisions to inspect, inventory and operationally check emergency equipment/instruments at least once each calendar quarter and after each use. Sufficient reserves of instruments/equipment to replace those which are removed from emergency kits for calibration or repair are addressed. Calibration of equipment is adequately described to be at intervals recommended by the supplier of the equipment and meets the guidance provided in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [H.11] Appendix 6, "Emergency Equipment and Supplies," of the BLN Emergency Plan states that TVA establishes and maintains inventories of emergency equipment and supplies for use by emergency response personnel in the ERFs and by TVA's offsite field monitoring teams. The actual inventories are based upon the activities that occur in, or are dispatched from, each individual facility. Actual inventories are established in inventory lists in accordance with implementing procedures. Appendix 6 provides a typical emergency kit inventory list.

Technical Evaluation: The staff finds that the BLN Emergency Plan describes emergency kits in the following general categories: protective equipment, communications equipment, radiological monitoring equipment and emergency supplies and meets the guidance provided in NUREG-0654/FEMA-REP-1.

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

Technical Evaluation: The staff finds acceptable that the BLN Emergency Plan establishes a central point for the receipt and analysis of all field monitoring data and coordination of sample media and meets the guidance provided in NUREG-0654/FEMA-REP-1.

13.3.1C.H.2 10 CFR Part 50, Appendix E Requirements

In determining whether the proposed emergency plan met the applicable regulatory requirements related to the area of emergency facilities and equipment, the NRC staff also evaluated it against the following requirements in Appendix E to 10 CFR Part 50.

Regulatory Basis: 10 CFR Part 50, Appendix E.IV, “Content of Emergency Plans.”
10 CFR Part 50, Appendix E.IV.E.1 requires that there be equipment at the site for personnel monitoring.

Technical Information in the Emergency Plan: Technical information related to equipment at the site for personnel monitoring is discussed in Section 13.3.1C.K.1 of this SER.

Technical Evaluation: The staff's technical evaluation of the equipment at the site for personnel monitoring is addressed in Section 13.3.1C.K.1, "Radiological Exposure Control," of this SER.

Regulatory Basis: 10 CFR Part 50, Appendix E.IV, “Content of Emergency Plans.” 10 CFR Part 50, Appendix E.IV.E.2 requires equipment for determining the magnitude of and for continuously assessing the impact of the release of radioactive materials to the environment.

Technical Information in the Emergency Plan: Section II.4, "Relationship between Effluent Monitor Reading and Exposure and Contamination Levels," of the BLN Emergency Plan states that dose assessment procedures include the relationship between effluent monitor readings and onsite and offsite exposures and contamination for various meteorological conditions. Appendix 2, "Radiological Assessment and Monitoring," provides a description of the emergency dose assessment program used at BLN.

Technical Evaluation: The staff finds acceptable that the BLN Emergency Plan describes equipment for determining the magnitude of and for continuously assessing the impact of the release of radioactive materials to the environment and meets the guidance described in NUREG-0654/FEMA-REP-1.

Regulatory Basis: 10 CFR Part 50, Appendix E.IV, “Content of Emergency Plans.” 10 CFR Part 50, Appendix E.IV.E.3 requires facilities and supplies at the site for decontamination of onsite individuals.

Technical Information in the Emergency Plan: Appendix 6, "Emergency Equipment and Supplies," of the BLN Emergency Plan states that TVA establishes and maintains inventories of emergency equipment and supplies for use by emergency response personnel. In addition, Appendix 6 states that actual inventories are established in inventory lists in accordance with implementing procedures. In RAI 13.03-11(C), the applicant was requested to provide additional detail regarding decontamination equipment and supplies that would be available for decontaminating onsite individuals. In response, the applicant stated that a procedure similar to Browns Ferry's EPIP-14, "Radiological Control Procedures," would be provided for the BLN site. The staff finds the applicant’s proposal to provide a procedure similar to the specific list of equipment in an EPIP consistent with those identified in Browns Ferry’s EPIP-14 to be acceptable because it meets the guidance in NUREG-0654/FEMA-REP-1. The staff created **Confirmatory Item 13.3-10** to track the addition of the title of a procedure similar to Browns Ferry's EPIP-14 to the BLN Emergency Plan.

Technical Evaluation: The BLN Emergency Plan does not adequately identify facilities and supplies at the site for decontamination of onsite individuals.

Regulatory Basis: 10 CFR Part 50, Appendix E.IV, “Content of Emergency Plans.” 10 CFR Part 50, Appendix E.IV.E.4 requires facilities and medical supplies at the site for appropriate emergency first aid treatment.

Technical Information in the Emergency Plan: Onsite first aid capability is discussed in Section II.L.2, "Medical and Public Health Support" of the BLN Emergency Plan. Supplies are discussed in Appendix 6, "Emergency Equipment and Supplies." However, in RAI 13.03-29(C),

the staff requested additional information regarding facilities and medical supplies to treat onsite medical emergencies. In response, the applicant referenced two offsite facilities and services that will be available and stated that the onsite locations for medical-related activities are not currently known. The staff created **Open Item 13.3-16** to track the description of the facilities and medical supplies at the site for appropriate emergency first aid treatment in the BLN Emergency Plan.

Technical Evaluation: The staff finds that the BLN Emergency Plan does not identify facilities and medical supplies at the site for appropriate emergency first aid treatment.

Regulatory Basis: 10 CFR Part 50, Appendix E.IV, “Content of Emergency Plans.” 10 CFR Part 50, Appendix E.IV.E.8 requires an onsite TSC and an EOF from which effective direction can be given and effective control can be exercised during an emergency.

Technical Information in the Emergency Plan: The technical information related to this regulation is addressed in Section 13.3.1C.H.1 of this SER.

Technical Evaluation: The technical evaluation related to the onsite TSC and the EOF is addressed in Section 13.3.1C.H.1 of this SER.

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

Technical Information in the Emergency Plan: Section II.P, "Responsibility for the Planning Effort," of the BLN Emergency Plan describes the periodic review and update of the emergency plan. Section II.P.7, "Implementing Procedures," discusses the review and audit of the implementing procedures.

Technical Evaluation: The staff finds the BLN Emergency Plan adequately describes the provisions to be employed to ensure that the emergency plan, and its implementing procedures, and emergency equipment and supplies are maintained up-to-date consistent with the guidance described in NUREG-0654/FEMA-REP-1.

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

10 CFR Part 50, Appendix E.VI, “Emergency Response Data System,” also requires that onsite hardware be provided at each unit by the licensee to interface with the NRC receiving system. Software, which will be made available by the NRC, will assemble the data to be transmitted and transmit data from each unit via an output port on the appropriate data system.

Technical Information in the Emergency Plan: Section F.1.c of the BLN Emergency Plan states that ERDS allows transmittal of reactor parametric data from the site to the NRC. ERDS data is transmitted from the PCS computer, via modem, to the NRC Operations Center. Section F.1.g of the BLN Emergency Plan states that TVA activates ERDS within one hour of the declaration of an alert or higher emergency classification. Appendix 9, "Justification for CECC," states that the NRC will have access to plant data through the CECC computer system and ERDS. RAI 13.03-25(Q) requested additional information regarding the requirements of 10 CFR Part 50, Appendix E, Section VI. In response, the applicant stated that ERDS will be developed on a schedule in compliance with the implementation requirements of 10 CFR Part 50, Appendix E, Section VI.

Technical Evaluation: The staff finds the BLN Emergency Plan adequately discusses ERDS in general terms consistent with the requirements of 10 CFR Part 50, Appendix E, Section VI, The staff created an open item related to the need for the applicant to propose an ITAAC regarding the establishment of communications with the regional NRC EOC and ERDS between the onsite computer and the NRC Operations Center. This open item is discussed in more detail in Section 13.3.1C.S of this SER.

13.3.1C.H.3 Conclusion for Emergency Facilities and Equipment

On the basis of its review of the onsite emergency plan as described above for emergency facilities and equipment, the NRC staff concludes that the information provided in the BLN Emergency Plan is not consistent with Planning Standard H of NUREG-0654/FEMA-REP-1. Therefore, the information is unacceptable and does not meet the requirements of 10 CFR 50.47(b)(8) and Sections IV.E.1, E.2, E.3, E.4, E.8, G, and VI of Appendix E to 10 CFR Part 50.

The NRC staff will determine whether this planning standard is acceptable based on verification of the following open items and confirmatory items:

Open Items:

- Open Item 13.3-13 was created to track the issue related to the transfer of the TSC management function to the Control Room of the affected unit and Control Room heat loading.

- Open Item 13.3-14 was created to track the staff's request for Commission approval of the location of the CECC greater than 25 miles from the BLN TSC.

- Open Item 13.3-15 was created to track the inclusion of information related to protective clothing and respirators and communication equipment in the OSC in the BLN Emergency Plan.

- Open Item 13.3-16 was created to track the description of the facilities and medical supplies at the site for appropriate emergency first aid treatment in the BLN Emergency Plan.

Confirmatory Items:

- Confirmatory Item 13.3-8 was created to track the incorporation of the information provided in the RAI response regarding continuous monitoring with alarms information into the BLN Emergency Plan.

- Confirmatory Item 13.3-9 was created to track the addition of the title of a procedure similar to Browns Ferry's EPIP-12 to Appendix E of the BLN Emergency Plan.

- Confirmatory Item 13.3-10 was created to track the addition of the title of a procedure similar to Browns Ferry's EPIP-14 to the BLN Emergency Plan.

13.3.1.C.I Accident Assessment

13.3.1C.I.1 10 CFR Part 50 Requirements

In determining whether the proposed emergency plan met the applicable regulatory requirements in 10 CFR 50.47(b)(9), the NRC staff evaluated it against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1.

Regulatory Basis: 10 CFR 50.47, “Emergency plans.” 10 CFR 50.47(b)(9) requires that adequate methods, systems and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition be in use.

Technical Information in the Emergency Plan: [I.1] Section II.I.1, “Parameters Indicative of Emergency Conditions,” of the BLN Emergency Plan states that Appendix 1, "Emergency Action Levels," of the BLN Emergency Plan describes the plant system and effluent parameter values that are indicative of off-normal conditions. Appendix 1, which is based on draft NEI 07-01, Revision 0, lists off-normal and accident conditions and plant instrumentation used to determine emergency initiating conditions. In addition, Section II.I.1 also states that the instruments needed to indicate emergency conditions and their capabilities are set forth in the plant procedures.

Technical Evaluation: NEI 07-01 has not been approved by the NRC. As discussed in Section 13.3.1C.D, "Emergency Classification System," of this SER, the staff created **Open Item 13.3-8** to track the applicant’s reference to an NRC-endorsed methodology and the inclusion of the proposed license condition in the COL application.

Technical Information in the Emergency Plan: [I.2] Section II.I.2, “Plant Monitoring Systems," of the BLN Emergency Plan describes methods of making initial and continuing assessments of plant conditions through the course of an accident. EP-ITAAC Acceptance Criterion 6.1 was proposed to confirm the use of selected monitoring parameters identified in the EALs to assess simulated, degraded plant conditions and initiate protective actions during an exercise or drill.

Technical Evaluation: The staff finds that the descriptions of the methods of making initial and continuing assessment of plant conditions through the course of an accident are acceptable because they meet the guidance in NUREG-0654/FEMA-REP-1. The evaluation of EP-ITAAC Acceptance Criterion 6.1 is in Section 13.3.1C.S of this SER.

Technical Information in the Emergency Plan: [I.3] Section II.I.3, “Determination of Source Term and Radiological Conditions,” of the BLN Emergency Plan refers to Appendix 2, "Radiological

Assessment and Monitoring," for descriptions of the means for relating various measured parameters, including containment radiation monitor reading, to the source term available for release in plant systems and effluent monitor readings to determine the magnitude of the release of radioactive materials. Section 3.0, "Design Description: Atmospheric Transport and Diffusion Assessment," of Appendix 2 lists five basic release types. Four of the release types have fixed radionuclide composition; the user can specify the composition for the fifth type. The radionuclide composition for the four types having fixed composition are consistent with the radionuclide mixes used by the RASCAL 2.1 Code (NUREG/CR-5247, 1994) and the release fractions are consistent with NUREG-1465, "Accident Source Terms for Light-Water Nuclear Power Plants," (Draft for comment 1992). RAI 13.03-26(B) requested justification regarding the use of dated information and systems in the estimation of source terms. The applicant's response stated that although the references for the assumptions used in the estimation of source terms are somewhat dated, a review of later references indicates little change in the assumed values. For example, RASCAL 3.0 Code (NUREG-1741; 2001) still references NUREG-1465 (1992) for release fractions. Similarly, the core inventories in RASCAL 3.0 are from reference NUREG-1228 (1998) in both RASCAL 2.1 and RASCAL 3.0 Codes. Therefore, the radionuclide mixes and release fractions used in the codes described in the BLN Emergency Plan are consistent with the RASCAL 3.0 Code.

The fixed release types are reactor coolant, gap, core damage, and core melt. The source term may also be specified as noble gas or I-131 release rate. EP-ITAAC Acceptance Criterion 6.2.1 was proposed to confirm that a methodology to determine the source term of releases of radioactive materials in plant systems has been established. The staff created an open item to track the need for the applicant to modify the proposed EP-ITAAC to be consistent with Table 14.3.10-1, "Emergency Planning-Generic Inspections, Tests, Analyses, & Acceptance Criteria (EP-ITAAC)," of NUREG-0800, which specifies the need for a "means" to determine the source term rather than a "methodology" as identified by the applicant in EP-ITAAC Criterion 6.2.1. This open item is discussed in more detail in Section 13.3.1C.S of this SER.

Technical Evaluation: The staff finds the description of the means for relating various measured parameters to the source term acceptable, because it meets the guidance in NUREG-0654/FEMA-REP-1. The open item is discussed in more detail in Section 13.3.1C.S of this SER.

Technical Information in the Emergency Plan: [I.4] Section II.I.4, "Relationship Between Effluent Monitor Reading and Exposure and Contamination Levels," of the BLN Emergency Plan introduces the dose assessment capability. Appendix 2, Section 3.0, "Design Description: Atmospheric Transport and Diffusion Assessment," describes the dose assessment programs.

Three codes are used for dose assessment. On page A2-8 of Appendix 2, there is a statement that the codes are programmed in VAX FORTRAN and that VAX FORTRAN exceeds ANSI Standards. The ANSI Standard referenced is a 1978 standard. Further, the codes have to be run using a VAX emulator and code output is displayed using software to emulate a Tektronix Color Graphics Terminal. RAI 13.03-26(C) requested justification for using an older version of dose assessment codes. The applicant stated that the RED, BRED and FRED codes described for use in Appendix 2, "Atmospheric Transport and Diffusion Assessment," of the BLN Emergency Plan have been in use by TVA since the early 1980s. The codes were developed "in-house" and are maintained as quality-related software. TVA's designation of software as "quality-related" indicates that the software is an integral part of a quality-related, but not safety-related, plant system or component and is essential to the performance of that function.

Controls applied to quality-related software include: Software Requirements Specifications; Software Verification and Validation; User Documentation; and Software Service Requests.

Implementation of these controls ensures the software's ongoing compliance with the applicable performance specifications. The RED, BRED, and FRED codes have undergone numerous revisions/updates to keep current with regulatory and industry guidance. In addition, the use of the emulation software mentioned above allows the input/output process to be consistent with current technology. The use of "in-house" software enables revisions to be made to fully integrate the code output into the dynamic dose assessment decision making process. For example, the BRED code was developed in 1993 to address a need to back-calculate a source term based on field measurements.

The dose assessment capability now includes web access to the National Atmospheric Release Advisory Center (NARAC) model through Lawrence Livermore National Laboratory when a three-dimensional dose assessment is needed.

Fifteen minute and hourly meteorological data from the BLN meteorological tower are used to estimate atmospheric concentrations and surface contamination in the environment. Using these data, the codes model temporal variations in meteorological conditions.

EP-ITAAC Acceptance Criterion 6.3 was proposed to confirm that a methodology has been provided to establish the relationship between effluent monitor readings and onsite and offsite exposures and contamination for various meteorological conditions.

Technical Evaluation: The staff created an open item to track the need for the applicant to modify the proposed EP-ITAAC to be consistent with Table 14.3.10-1 of NUREG-0800, which specifies the need for a “means” to establish the relationship between effluent monitoring readings and onsite and offsite exposures rather than a “methodology” as identified by the applicant in EP-ITAAC Criterion 6.3. This open item is discussed in more detail in Section 13.3.1C.S of this SER.

Technical Information in the Emergency Plan: [I.5] Section II.H.6.a, “Access to Data from Monitoring Systems,” Section II.H.8, “Meteorological Instrumentation and Procedures,” and Appendix 2, “Radiological Assessment and Monitoring,” of the BLN Emergency Plan briefly discuss meteorological data acquisition and evaluation. There is a more detailed discussion in BLN COL FSAR Section 2.3.3, “Onsite Meteorological Measurement Programs.” In addition, Section II.E.4.g of the BLN Emergency Plan states that meteorological conditions, including wind speed and direction, stability class, and precipitation, are provided during follow up notifications to State and local governmental organizations. Further, Section II.F.1.c of the BLN Emergency Plan states that the HPN provides for communications regarding radiological and meteorological conditions, assessments, trends, and protective measures with the NRC. Additionally, HPN lines are located in the TSC and CECC. Also, EP-ITAAC Acceptance Criterion 6.4 was submitted to confirm the availability of meteorological data in the Control Rooms, TSC, and CECC. The staff’s evaluation of this ITAAC is discussed in Section 13.3.1C.S of this SER.

Technical Evaluation: The evaluation of the applicant's capability to acquire and evaluate meteorological information is discussed in Section 13.03.1C.H, "Emergency Response Facilities and Equipment," in this SER. There are provisions for access to meteorological information by CECC, the TSC, the Control Room and the NRC. The applicant has provisions to make available to State and local governmental organizations suitable meteorological data. Additional

technical interface information is located at SER Section 2.3.3, “Onsite Meteorological Measurements Programs,” and 7.5, “Meteorological Instrumentation.”

Technical Information in the Emergency Plan: [I.6] Section II.I.6, “Determination of Release Rates and Projected Doses When Installed Instruments are Inoperable or Off-Scale” of the BLN Emergency Plan states that plant implementing procedures establish processes for estimating release rates and projected doses when instrumentation used for assessments is not available. The section also states that these implementing procedures include two considerations: 1) estimated releases based upon field monitoring data; and 2) surrogate instrumentation and methods to estimate the extent of fuel damage.

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan acceptably addresses the development of a methodology for determining the release rate/projected doses if the instrumentation used for assessment are off-scale or inoperable consistent with the guidance provided in NUREG-0654/FEMA-REP-1. The staff created **Open Item 13.3-17** to track the need for the applicant to add the title of the implementing procedures that will establish the processes for estimating release rates and projected doses when instrumentation used for assessments is not available to the BLN Emergency Plan.

Technical Information in the Emergency Plan: [I.7] Section II.I.7, “Field Monitoring Capability,” of the BLN Emergency Plan briefly describes the field monitoring capability. Implementing procedures provide guidance for field monitoring teams’ performance of monitoring activities. However, the procedures are not available for review. Therefore, RAI 13.03-26(D) requested additional information related to field monitoring capabilities. TVA’s response stated that emergency plan implementing procedures for BLN have not yet been written. CECC-EPIP-9, "Emergency Environmental Radiological Monitoring," describes radiological monitoring during or after an emergency at any of the operating TVA nuclear facilities. TVA expects to employ this, or a similar procedure, for BLN in the future. Topics discussed in this procedure include: activation; field operations; communications; electrical power supplies; air sampling; terrestrial samples; and operational readiness. TVA would typically dispatch two field monitoring teams at a site area or general emergency. CECC-EPIP-9, Revision 35, was attached to the response for informational purposes. Maintaining monitoring teams for a protracted release would be handled on a situation-specific basis. Teams could be relieved at any time if individual dose limits are approached. Shift changes would be planned when shift duration is determined. Maximum response capability would be dictated based on the specific situation and is not pre-planned. TVA currently operates three nuclear facilities and could draw on trained radiation protection staffs from these facilities to support emergency response at any affected nuclear facility. Offsite monitoring efforts are coordinated with the State of Alabama and may be augmented by Federal resources as discussed in the BLN Emergency Plan. Timing required for augmented staffing of field teams is identified in Table II-2 of the BLN Emergency Plan.

Instrumentation typically available for field deployment is listed in Appendix 6, "Emergency Equipment and Supplies,” and Section II.B, “On-Site Emergency Organization.” Table II-2 of the BLN Emergency Plan indicates that 2 individuals should be available for offsite field monitoring within 60 minutes, and 2 more individuals should be available within 90 minutes.

Technical Evaluation: The staff finds that the information provided in the response to RAI 13.03-26(D) and the information in the BLN Emergency Plan adequately describe the capability and resources for field monitoring in the plume exposure EPZ and is acceptable because it meets the guidance in NUREG-0654/FEMA-REP-1. The staff created **Open Item 13.3-18** to track the need for the applicant to add the title of the implementing procedure

that will describe radiological monitoring during, or after, an emergency to the BLN Emergency Plan.

Technical Information in the Emergency Plan: [I.8] Section II.I.8, “Assessing Hazards through Liquid or Gaseous Release Pathways,” of the BLN Emergency Plan states that actual or potential magnitude and locations of radiological hazards are assessed by field teams consistent with the procedures of Section II.I.7, "Field Monitoring Capability." Section II.I.7 also states that implementing procedures provide guidance for field monitoring teams’ performance of monitoring activities. EP-ITAAC Acceptance Criterion 6.5 was proposed to confirm that a methodology has been established to provide rapid assessment of the magnitude and locations of any radiological hazards through the liquid or gaseous release pathways. The staff created an open item to track the need for the applicant to modify the proposed EP-ITAAC to be consistent with Table 14.3.10-1 of NUREG-0800, which specifies the need for a “means” to make a rapid assessment of any radiological hazards rather than a “methodology” as proposed by the applicant in EP-ITAAC Criterion 6.5. This open item is discussed in more detail in Section 13.3.1C.S of this SER.

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan adequately describes the methods, equipment and expertise to make rapid assessments of the actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways because it meets the guidance provided in NUREG-0654/FEMA-REP-1. The methods include activation, notification means, field team composition, transportation, communication, monitoring equipment, and estimated deployment times.

Technical Information in the Emergency Plan: [I.9] Section II.I.9, “Measuring Radioiodine Concentrations,” of the BLN Emergency Plan states that equipment typically available to field teams is listed in Appendix 6, “Emergency Equipment and Supplies," of the BLN Emergency Plan. It includes air samplers, appropriate sample media, and analysis equipment, stated to be capable of detecting radioiodine concentrations at or below 1E-07 microcuries per milliliter under field conditions. The applicant proposed EP-ITAAC Program Element 6.6 to demonstrate the use of field survey instrumentation capable to detect airborne concentrations of radioiodine as low as 1E-07 microcuries per cubic centimeter. The staff’s evaluation of EP-ITAAC Program Element 6.6 is discussed in Section 13.3.1C.S of this SER.

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan adequately describes a capability to detect and measure radioiodine concentrations in air in the plume exposure EPZ as low as 1E-07 microcuries/cubic centimeter under field conditions because it meets the guidance provided in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [I.10] Section II.I.10, “Relating Measured Parameters to Dose Rates,” and Appendix 2, "Radiological Assessment and Monitoring,” of the BLN Emergency Plan describe the means for relating various plant parameters to offsite dose rates including dose assessment models and procedures. RAI 13.03-24(E) requested additional information on how the applicant relates measured parameters to dose rates. TVA’s response states that for TVA's operating nuclear plants, CECC-EPIP-8, "Dose Assessment Staff Activities During Nuclear Plant Radiological Emergencies," provides instructions for preparing PARs. Also, CECC-EPIP-1 "Central Emergency Control Center (CECC) Operations," CECC-EPIP-6, "CECC Plant Assessment Staff Procedure for Alert, Site Area Emergency, and General Emergency," and CECC-EPIP-7, "CECC Radiological Assessment Staff Procedure for Alert, Site Area Emergency, and General Emergency," discuss the necessary information to provide for prompt, accurate, public PARs to appropriate State authorities. The PARs logic

diagram used by TVA includes radiological dose considerations and is provided in Appendix H of CECC-EPIP-1, Appendix C of CECC-EPIP-6, and Appendix A of CECC-EPIP-7. CECC-EPIP-6, Revision 30, CECC-EPIP-7, Revision 30, CECC-EPIP-8, Revision 31, were provided for informational purposes.

Radiation protection personnel are responsible for directing implementation of these procedures under emergency conditions. The applicant proposed EP-ITAAC Acceptance Criterion 6.7 to confirm the means for relating contamination levels and airborne activity levels to dose rates and gross radioactive measurements for specified isotopes have been established. The staff's evaluation of EP-ITAAC Acceptance Criterion 6.7 is discussed in Section 13.3.1C.S of this SER.

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan adequately establishes a means for relating the various measured parameters (e.g., contamination levels, water and air activity levels) to dose rates for key isotopes and gross radioactivity measurements because it meets the guidance provided in NUREG-0654/FEMA-REP-1. The BLN Emergency Plan adequately describes provisions for estimating integrated dose from the projected and actual dose rates and for comparing these estimates with the protective action guides. The detailed provisions will be described in separate procedures.

13.3.1C.I.2 10 CFR Part 50, Appendix E Requirements

In determining whether the proposed emergency plan met the applicable regulatory requirements related to the area of accident assessment, the NRC staff also evaluated it against the following requirements in Appendix E to 10 CFR Part 50.

Regulatory Basis: 10 CFR Part 50, Appendix E.IV, "Content of Emergency Plans." 10 CFR Part 50, Appendix E.IV.B requires that the means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials be described.

Technical Information in the Emergency Plan: Section II.I.3, "Determination of Source term and Radiological Conditions," of the BLN Emergency Plan describes the BLN capability to assess the magnitude and consequences of releases.

Technical Evaluation: The staff's evaluation of Section II.I.3 is addressed in Evaluation Criterion [I.3] of this SER.

13.3.1C.I.3 Conclusion for Accident Assessment

On the basis of its review of the onsite emergency plan as described above for accident assessment, the NRC staff concludes that the information provided in the BLN Emergency Plan is not consistent with Planning Standard I of NUREG-0654/FEMA-REP-1. Some information is unacceptable and does not meet the requirements of 10 CFR 50.47(b)(9) and Section IV.B of Appendix E to 10 CFR Part 50.

The NRC staff will determine whether this planning standard is acceptable based on verification of the following open items:

- Open Item 13.3-17 was created to track the need for the applicant to add the title of the implementing procedures that will establish the processes for estimating release rates

and projected doses when instrumentation used for assessments is not available to Appendix 5 of the BLN Emergency Plan.

- Open Item 13.3-18 was created to track the need for the applicant to add the title of the implementing procedure that will describe radiological monitoring during, or after, an emergency to Appendix 5 of the BLN Emergency Plan.

- Open Item 13.3-8 was created to track the applicant's reference to an NRC-endorsed methodology for EALs and the inclusion of the proposed license condition in the COL application.

13.3.1C.J Protective Response

13.3.1C.J.1 10 CFR 50.47 Requirements

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

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

Technical Information in the Emergency Plan: [J.1] Section J.1, "On-Site Notification," of the BLN Emergency Plan indicates that individuals in the protected area are notified by the plant public address system and audible warning systems. In high noise areas, visible warning signals or personal notifications are used. Individuals located outside of the protected area are notified by audible warnings, activities of security, and, if needed, local law enforcement personnel. Information on the warning systems, and response actions, are provided through plant training programs, visitor orientation, escort instructions, posted instructions, or in the audible messages. Individuals in the protected area are notified within 15 minutes of the declaration of an emergency. RAI 13.03-27(A) requested information regarding the timing to notify people outside the protected area. In the September 8, 2008, response and supplemental information dated February 6, 2009, the applicant stated that personnel and visitors outside the protected area, but in the owner controlled area, are notified of an emergency through the use of an onsite siren system, public address systems in buildings, and security sweeps conducted by security personnel. TVA anticipates that the necessary security sweeps can be completed within one hour of the decision to evacuate non-essential personnel from the site. The supplemental information included revised text for Section II.J.1 to be included in the BLN Emergency Plan.

The staff created **Confirmatory Item 13.3-11** to track that the revised text for Section II.J.1 has been included in the BLN Emergency Plan.

The applicant proposed EP-ITAAC Acceptance Criteria 7.1.1 to confirm that, during a drill or exercise, notification and instructions are provided to onsite workers and visitors in the protected

area over the plant public announcement system. The applicant proposed EP-ITAAC Acceptance Criteria 7.1.2 to confirm that, during a drill or exercise, audible warnings are provided to individuals outside the protected area, but within the owner controlled area.

Technical Evaluation: The staff finds the response to the RAI and the information in the BLN Emergency Plan that describe the means and time required to warn or advise onsite individuals and individuals who may be in areas controlled by the operator, including employees not having emergency assignments, visitors, and other persons who may be in the public access areas, passing through the site, or in the owner controlled area acceptable because they meet the guidance provided in NUREG-0654/FEMA-REP-1.

The NRC staff's evaluation of EP-ITAAC Acceptance Criteria 7.1.1.and 7.1.2 is addressed in Section 13.3.1C.S of this SER.

Technical Information in the Emergency Plan: [J.2] Section J.2, “Evacuation Routes and Transportation,” of the BLN Emergency Plan states that evacuation routes are determined by the Shift Manager/SED, using available information regarding conditions. Provisions for evacuation of onsite individuals include evacuation by private automobile. RAI 13.03-27(B) requested an explanation regarding why provisions for evacuation routes for onsite individuals were not identified. In the supplemental response dated February 10, 2009, the applicant addressed two access/egress routes at the BLN site. Because the applicant did not provide a proposed revision to the BLN Emergency Plan that addresses the two access/egress routes at the BLN site, the staff created **Open Item 13.3-12**.

Affected individuals evacuate the site by personal vehicle. If any individual onsite does not have access to a personal vehicle, the security force makes arrangements for transportation with another evacuating individual.

Section J.2 also states that should a site evacuation be inadvisable via either designated evacuation route due to inclement weather, high traffic density, or radiological conditions, the affected individuals will be directed to a safe onsite area for accountability and, if necessary, contamination monitoring and decontamination.

Technical Evaluation: The staff finds that the description of transportation for onsite individuals is acceptable because it meets the guidance in NUREG-0654/FEMA-REP-1. However, the BLN Emergency Plan does not address provisions for evacuation routes for onsite individuals to some suitable offsite location, including alternatives for inclement weather, high traffic density and specific radiological conditions.

Technical Information in the Emergency Plan: [J.3] Section J.3, "Personnel Monitoring and Decontamination," of the BLN Emergency Plan states that the SED directs contamination monitoring of personnel, vehicles, and personal property arriving at the designated assembly area when there is the likelihood that individuals and their property may have become contaminated before or during the site evacuation.

Technical Evaluation: The staff finds that the BLN Emergency Plan adequately addresses provisions for radiological monitoring of people evacuated from the site because it meets the guidance provided in NUREG-0654/FEMA-REP-1.

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

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan adequately provides for the evacuation of onsite non-essential personnel in the event of a site or general emergency and provides a decontamination capability because it meets the guidance described in NUREG-0654/FEMA-REP-1.

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

Technical Evaluation: The staff finds that the BLN Emergency Plan adequately provides for a capability to account for all individuals onsite at the time of the emergency, ascertain the names of missing individuals within 30 minutes of the start of an emergency, and account for all onsite individuals continuously, thereafter because it meets the guidance described in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [J.6] Section J.6, “Protective Measures,” of the BLN Emergency Plan covers provisions for respiratory protection and engineering controls, use of protective clothing, and individual thyroid protection. The BLN Emergency Plan states that measures are taken to minimize ingestion and or inhalation of radionuclides to keep exposures below limits. However, the measures used are not identified; therefore, RAI 13.03-27(C) requested a summary of the measures to be used so an assessment of the adequacy of the measure can be made. In the response dated October 2, 2008, and the supplemental information dated February 10, 2009, TVA stated that at BLN, TVA expects to employ methods in use at its other operating nuclear power plants. In any emergency event, efforts are made to evacuate non-essential personnel prior to development of plant conditions that may expose these personnel to non-routine levels of radiation and radioactive materials. If radiological conditions warrant, radiation protection technicians are dispatched to site access control points established by security personnel. Technicians survey vehicles and personnel leaving the site using portable friskers or equivalent equipment as well as smear techniques for vehicles. The supplemental information also states that the actions and responsibilities of radiation protection personnel following an emergency declaration and instructions for these personnel would be included in the BLN 3 and 4 EPIP addressing decontamination and contamination control. The title provided in Appendix 5 of the BLN Emergency Plan for this procedure is "Radiation Protection Under Emergency Conditions."

The use of radioprotective drugs (KI) is mentioned in the BLN Emergency Plan, but there are no criteria for issuance, how and where it is stored and inventoried, and who makes the decision on issuance. RAI 13.03-27(D) requested details on these issues. TVA maintains corporate procedures regarding criteria for the issuance of KI. In accordance with current TVA corporate procedures applicable to the TVA nuclear facilities, if field personnel are expected to receive a cumulative dose to the thyroid (from inhalation of radioactive iodine), which might exceed 10 rem, then a dose regimen of KI should be considered. Because field monitoring teams have the greatest potential need for thyroid blocking, KI should be administered at the time of initial dispatch. Authorization shall be provided by the most senior member of radiation protection available on a timely basis. Otherwise, current TVA corporate procedures authorize teams to self-administer KI in accordance with TVA protective action levels included in corporate

procedures. CECC-EPIP-9, "Emergency Environmental Radiological Monitoring," addresses the issuance of KI to field personnel. A copy of the current CECC-EPIP-9 was provided for informational purposes. TVA's Browns Ferry EPIP-14, "Radiological Control Procedures," provides the process for issuing KI to onsite personnel during a radiological emergency. This process will be employed at BLN when operational. According to this procedure, if the TSC Radiation Protection Manager has reason to believe that site personnel are projected to receive a cumulative dose to the thyroid from inhalation of radioactive iodine in excess of 10 rem, the exposed personnel should be started immediately on a dose regimen of KI. KI will be stored in a radiation protection supply area and radiological emergency plan van instrument kits. The supplemental information addressed that this information would be included in the appropriate EPIPs. The title provided in Appendix 5 of the BLN Emergency Plan for this procedure is "Radiation Protection Under Emergency Conditions."

Section J.6 of the BLN Emergency Plan also states that self-contained breathing apparatus (SCBA) are used in locations where there is low oxygen or fires. Training requirements for TVA nuclear personnel are established in a corporate training procedure applicable to the TVA nuclear facilities. The procedure establishes requirements for radiological respirator training. Radiological respirator training is required only if the person is expected to use an air purifying or supplied air respirator. SCBA training is required only if the person is expected to use a SCBA. In addition to training on specific respiratory protection equipment, individuals authorized to use respiratory protection must be medically qualified and pass a "fit test" for the equipment they are authorized to use. TVA will provide a quantity and locations of SCBAs or other respiratory equipment to be used at BLN similar to those provided at the Browns Ferry Plant. The title provided in Appendix 5 of the BLN Emergency Plan for this procedure is "Radiation Protection Under Emergency Conditions." This procedure will be provided to NRC for review at least 180 days prior to the scheduled date for initial fuel load.

Technical Evaluation: The staff finds the responses to RAI 13.03-27(C) and RAI 13.03-27(D) adequate because they meet the guidance in NUREG-0654/FEMA-REP-1. The staff also finds acceptable the BLN Emergency Plan description for individual respiratory protection, use of protective clothing, and use of radioprotective drugs (e.g., individual thyroid protection) because it also meets the guidance in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [J.7] Section J.7, “Protective Action Recommendations and Bases,” of the BLN Emergency Plan states that the SED or CECC Director is responsible for recommending offsite protective actions to the affected States and counties. The State and local governments are responsible for notification of the public and implementation of protective measures. PARs are required to be made within 15 minutes of notification of an emergency. Guidance is based on NUREG-0654/FEMA-REP-1, Supplement 3. Public PARs are based on plant conditions, estimated offsite doses, or some combination of both. The Radiological Assessment Manager is responsible for making dose projections. When radiation levels in the containment atmosphere are significant, a scoping analysis is performed to determine what recommendations would be made if containment integrity were lost. Total Effective Dose Equivalent (TEDE) and Committed Dose Equivalent (CDE) thyroid doses are calculated at various distances from the plant (site boundary, 2, 5, 10 miles and beyond) and are compared to Protective Action Guides shown in Table II-3, Protective Action Guides." Based on these comparisons, PARs are developed by the Radiological Assessment Manager. If these recommendations involve sheltering or evacuation of the public around the plant, the CECC Director is informed.

Technical Evaluation: The staff finds the BLN Emergency Plan description for establishing a mechanism for recommending protective actions to the appropriate State and local authorities acceptable because it meets the guidance in NUREG-0654/FEMA-REP-1. The staff also finds the BLN Emergency Plan description regarding prompt notification directly to the offsite authorities responsible for implementing protective measures in the plume exposure pathway EPZ acceptable because it meets the guidance in NUREG-0654/FEMA-REP-1. The mechanism includes EALs corresponding to projected dose to the population-at-risk and with the recommendations set forth in EPA-400-R-92-001, “Manual of Protective Action Guides and Protective Actions for Nuclear Incidents.” The staff notes that the BLN EALs are not yet approved. Consequently, the staff created **Open Item 13.3-8** to track the applicant’s reference to an NRC-endorsed methodology and the inclusion of the proposed license condition in the COL application.

Technical Information in the Emergency Plan: [J.8] Section II.J.8, “Evacuation Time Estimates,” of the BLN Emergency Plan states that a summary of the ETE is included in Appendix 4, "Evacuation Time Estimates," with maps of evacuation routes and population information.

Technical Evaluation: The staff finds the summary of the ETE included in Appendix 4 of the BLN Emergency Plan acceptable because it meets the guidance in NUREG-0654/FEMA-REP-1. The staff’s evaluation of the ETE report is addressed in Section 13.3.1C.R of this SER.

Technical Information in the Emergency Plan: [J.10.a] Section II.J.10.a, “Protective Measure Implementation” of the BLN Emergency Plan states that maps of evacuation routes, evacuation areas, and general locations of shelter areas and relocation sites are provided in Appendix 4, “Evacuation Time Estimate.” RAI 13.03-27(E) requested a description of the location of shelter areas and relocation sites. The applicant's response dated October 2, 2008, and supplemental information provided in a letter dated February 10, 2009, stated that the applicant has determined the general areas where the shelter areas or reception centers for BLN may be located. Shelter areas and reception centers will be located in a manner that reduces the exposure of evacuating individuals to radiological hazards arising from the emergency condition. Consideration will also be given to prevailing traffic patterns and the effect of the area evacuation on public access to the facilities. Shelter areas and reception centers will be provided with adequate facilities and equipment to accommodate expected activities, including registering and sheltering relocated individuals, parking of vehicles, monitoring individuals and vehicles, and providing decontamination services, if needed. These details will be established considering TVA's experience operating three other nuclear plant sites and the proximity of available facilities. If the shelter areas and reception centers are not under the control of TVA, a letter of agreement will be provided. Any letters of agreement that are received will be available and incorporated into the BLN Emergency Plan prior to receipt of nuclear fuel at the site. Details addressing locations of shelter areas and reception centers will be developed on a schedule that supports NRC inspection activities and execution of the emergency exercise required by 10 CFR Part 50, Appendix E, Section IV.F.2. However, the applicant did not identify the locations of shelter areas and reception centers. Therefore, the staff created **Open Item 13.3-20** to track identification of shelter areas and reception centers on a map in the BLN Emergency Plan.

RAI 13.03-27(E) also requested a description of the pre-selected radiological sampling and monitoring point locations. In response, the applicant provided preliminary, pre-identified radiological sampling and monitoring locations on a map and a summary provided on a table attached to the RAI response. The staff created **Open Item 13.3-21** to track the final

descriptions of pre-selected radiological sampling and monitoring point locations in the BLN Emergency Plan.

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan does not contain maps that show evacuation routes, evacuation areas, pre-selected radiological sampling and monitoring points, relocation centers in host areas, and shelter areas.

Technical Information in the Emergency Plan: [J.10.b] Section II.J.10.b of the BLN Emergency Plan states that Appendix 4 to the plan provides a map of the plume exposure pathway EPZ illustrating population distribution around the facility by evacuation area. Appendix 4 also provides a map of the plume exposure pathway EPZ illustrating population distribution around the facility in a sector format.

Technical Evaluation: The NRC staff finds acceptable that the BLN Emergency Plan contains maps that show population distribution around the nuclear facility by evacuation areas consistent with the guidance described in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [J.10.c] Section II.J.10.c of the BLN Emergency Plan states that warnings to the public in the plume exposure pathway EPZ are the responsibility of State and local officials, and are assisted by the State Department of Police upon request. The primary method of warning the public is by the use of the Prompt Notification System (PNS). Section E.6, "Instructions to the Public in the Plume Exposure Pathway," of the BLN Emergency Plan provides additional information regarding design of the PNS system.

Technical Evaluation: The staff finds the description in the BLN Emergency Plan regarding the means for notifying all segments of the transient and resident population acceptable because it meets the guidance in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [J.10.m] Section II.J.10.m of the BLN Emergency Plan states that this evaluation criterion does not apply to the licensee, but to State and local plans. However, the section goes on to state that specific PARs, based on NUREG-0654/FEMA-REP-1, Supplement 3 and on plant and meteorological conditions, are included in an implementing procedure. In addition, Section II.J.8 and Appendix 4 of the BLN Emergency Plan provide discussions of the ETE report that has been prepared for the plume exposure pathway EPZ. In Appendix 5, "Emergency Plan Implementing Procedures - Topical List," the applicant identified an EPIP titled "Protective Action Recommendations," as being applicable to Evaluation Criterion J.10. Also, in EP-ITAAC Acceptance Criteria 8.1.1.1 and 8.1.1.2, the applicant proposed that an exercise objective related to PARs will be demonstrated.

Technical Evaluation: The staff finds the BLN Emergency Plan description of the choice of recommended protective actions for the plume exposure pathway during emergency conditions acceptable because it meets the guidance in NUREG-0654/FEMA-REP-1. Details related to PARs will be provided in an EPIP.

13.3.1C.J.2 Conclusion for Protective Response

On the basis of its review of the onsite emergency plan as described above for protective response, the NRC staff concludes that the information provided in the BLN Emergency Plan is not acceptable and does not meet the requirements of 10 CFR 50.47(b)(10) and Section IV of Appendix E to 10 CFR Part 50.]

The NRC staff will determine whether this planning standard is acceptable based on verification of the following open items and confirmatory items:

Open Items:

- Open Item 13.3-20 was created to track that the applicant has developed a map showing shelter areas and reception centers and included it in the BLN Emergency Plan.

- Open Item 13.3-21 was created to track the final descriptions of pre-selected radiological sampling and monitoring point locations in the BLN Emergency Plan.

Confirmatory Items:

- Confirmatory Item 13.3-11 was created to track that the revised text for Section II.J.1 has been included in the BLN Emergency Plan.

- Confirmatory Item 13.3-12 was created to track the inclusion of the two access/egress routes in the BLN Emergency Plan.

13.3.1C.K Radiological Exposure Control

13.3.1C.K.1 10 CFR 50.47 Requirements

In determining whether the proposed emergency plan met the applicable regulatory requirements in 10 CFR 50.47(b)(11), the NRC staff evaluated it against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1.

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

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

Technical Evaluation: The staff finds that the BLN Emergency Plan adequately establishes onsite exposure guidelines consistent with the guidance in EPA-400-R-92-001 for removal of injured persons, undertaking corrective actions, performing assessment actions, providing first aid, performing personnel de-contamination, providing ambulance service, and providing medical treatment services consistent with the guidance in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [K.2] Section II.K.2, “Radiation Protection Program,” of the BLN Emergency Plan refers to Chapter 12, "Radiation Protection," of the BLN COL FSAR for a description of the BLN radiation protection program (RPP), which states that it is consistent with 10 CFR Part 20. Section II.K.1 of the BLN Emergency Plan describes the provisions made for implementation of emergency exposure guidelines.

Section II.K of the BLN Emergency Plan describes processes for authorizing and implementing emergency dose constraints consistent with EPA guidance. Appendix 5 of the BLN Emergency Plan indicates that one of the topical areas to be addressed by Emergency Plan Implementing Procedures is "Radiation Protection Under Emergency Conditions." The procedure or procedures in this topical area address radiation protection issues that are specific to emergency conditions, such as area entry and exit requirements in the absence of radiological work permits, special survey requirements, suspension of routine administrative dose control levels, and specific respiratory protection and protective clothing requirements. Other variations from routine radiation protection procedures may be implemented on a case-by-case basis, consistent with ERO management direction and the provisions of 10 CFR 20.1001(b). Appendix 5 of the BLN Emergency Plan identifies that EPIP, "Personnel Monitoring," will address how the statements in Section K.2 of the BLN Emergency Plan will be implemented.

Technical Evaluation: The BLN Emergency Plan provides an onsite RPP to be followed during emergencies, including methods to implement exposure guidelines. The BLN Emergency Plan identifies individual(s), by position or title, who can authorize emergency workers to receive doses in excess of 10 CFR Part 20 limits. EPIPs will permit onsite volunteers to receive radiation exposures in the course of carrying out lifesaving and other emergency activities. These procedures will include expeditious decision-making and a reasonable consideration of relative risks. For these reasons, the staff finds that the applicant adequately addressed Evaluation Criterion [K.2] of NUREG-0654/FEMA-REP-1. Additional information regarding the onsite RPP is located in SER Section 12.5, "Operational Radiation Protection Program."

Technical Information in the Emergency Plan: [K.3.a] Section II.K.3, “Dosimetry and Dose Assessment,” of the BLN Emergency Plan states that self-reading and cumulative type dosimeters are provided to all personnel involved in emergency onsite response. Dose records are maintained and checked throughout the emergency. A personnel radiation dosimetry program with the capability to determine both external and internal doses consistent with 10 CFR Part 20 is maintained. The external dosimetry program includes provisions and requirements for use with both permanent record and self-reading dosimeters. Implementing procedures associated with the BLN Emergency Plan establish requirements for distributing dosimeters to emergency responders, including individuals from offsite locations. Appendix 5 of the BLN Emergency Plan identifies that EPIP, "Personnel Monitoring," will address how the statements in Section K.3 of the BLN Emergency Plan will be implemented.

Technical Evaluation: The staff finds the description in the BLN Emergency Plan regarding provisions for 24-hour-per-day capability to determine the doses received by emergency personnel involved in any radiological emergency, including volunteers acceptable because it meets the guidance in NUREG-0654/FEMA-REP-1. The staff finds the description of the provisions for the distribution of dosimeters, both self-reading and permanent record devices acceptable because it also meets the guidance in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [K.3.b] Section II.K.3, “Dosimetry and Dose Assessment,” of the BLN Emergency Plan states that station procedures establish guidance for wearers to periodically read their self-reading dosimeters, and that TVA maintains individual

dose records in accordance with the requirements of 10 CFR Part 20, the RPP and its supporting procedures. RAI 13.03-28(B) asked the applicant to discuss the maintenance of dose records or supporting procedures in this area. In response, the applicant stated that individual dose records are typically maintained on plant computer systems and are likely to be available throughout many emergency conditions. In the event that these records are not available under emergency conditions, radiation protection personnel may rely on an individual's knowledge of his current yearly accumulated dose prior to authorizing emergency assignments. In addition, Appendix 5 of the BLN Emergency Plan identifies that EPIP, "Personnel Monitoring," will address the implementation of the material in Section K.3 of the BLN Emergency Plan.

In addition, Section 12.5, "Operational Radiation Protection Program," addresses the reading of dosimeters and maintenance of emergency worker dose records.

Technical Evaluation: The staff finds acceptable the description in the BLN Emergency Plan regarding the need to read dosimeters at appropriate frequencies and provides for maintaining dose records for emergency workers involved in any radiological emergency because it meets the guidance in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [K.5.a] Section II.K.5.a, “Decontamination Action Levels,” of the BLN Emergency Plan addresses personnel and area decontamination. RAI 13.03-28(C) asks the applicant to identify specific decontamination action levels that will be used in an emergency. The response provided on September 22, 2008, states that current TVA procedures establish requirements for decontamination of personnel, equipment, and areas when removable contamination levels exceed 1,000 disintegrations per minute (dpm) per 100 square centimeters (cm) beta-gamma or 20 dpm/100 square cm alpha and release of the affected personnel, equipment, and areas from radiological controls is desirable. Items and areas may be returned to unrestricted use when removable contamination levels have been reduced below the stated guidelines. Some exceptions may be implemented for contaminated personnel under the direction of a Radiation Protection Supervisor. The established contamination guidelines are consistent with industry standards.

Technical Evaluation: The staff finds the information provided in the RAI response regarding action levels for determining the need for decontamination acceptable; however, the applicant did not propose to add this information to the BLN Emergency Plan. The staff created **Open Item 13.3-22** to track the incorporation of the information in the RAI response related to decontamination levels into the BLN Emergency Plan.

Technical Information in the Emergency Plan: [K.5.b] Section II.K.5, “Decontamination Action Levels,” of the BLN Emergency Plan states that TVA will implement procedures that describe the decontamination of onsite emergency personnel wounds, supplies, instruments, equipment, and for waste disposal. Appendix 5 of the BLN Emergency Plan identifies that EPIP, "Decontamination," will address how the material in Section K.5 of the BLN Emergency Plan will be implemented.

RAI 13.03-28(D) requested information regarding decontamination supplies and storage. In response, the applicant stated that with respect to storage locations for emergency equipment and supplies, TVA expects that the bulk of the equipment and supplies to be stored in the established ERFs - the Control Room, TSC, and OSC. Additional supplies may be stored at locations expected to be convenient for use by emergency response personnel, such as in or adjacent to the Radiological Controlled Area access and egress areas and decontamination areas. Initial storage locations are determined based on an assessment of plant layout and

TVA's operating plant experience; these locations may be changed based on assessments of plant emergency operations, drills, and exercises.

Technical Evaluation: The staff determined that the BLN Emergency Plan adequately describes provisions for radiological decontamination of emergency personnel wounds, supplies, instruments and equipment, and for waste disposal, thus meeting the guidance described in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [K.6.a] Section K.6.a, “Contamination Control Measures,” of the BLN Emergency Plan discusses access control in the event of an emergency by stating that requirements for site access control are established in the FSAR and Security Plan. State and local agencies will control access to the owner controlled area consistent with State and local plans. In RAI 13.03-28(E), the applicant was asked to discuss the control of access to contaminated onsite areas in additional detail. In response, the applicant stated that the security force would maintain control of the protected area in accordance with security procedures.

Technical Evaluation: The guidance in Evaluation Criterion [K.6] relates to the control of access to contaminated areas and not site access control. The staff created **Open Item 13.3-23** for the applicant to address the control of access to contaminated onsite areas in the BLN Emergency Plan.

Technical Information in the Emergency Plan: [K.6.b] Section K.6.b, “Contamination Control Measures,” of the BLN Emergency Plan states that CECC staff will make arrangements for transport of non-contaminated offsite supplies in the event of contamination. RAI 13.03-28(F) requested additional information regarding control measures for drinking water and food supplies. In response, the applicant proposed revised text for Section K.6.b.

The staff created **Confirmatory Item 13.3-13** to track that Subsection K.6.b of the BLN Emergency Plan has been revised as specified in the response to RAI 13.03-28(F).

Technical Evaluation: The staff finds the description in the BLN Emergency Plan and RAI response regarding onsite contamination control measures for drinking water and food supplies acceptable because it meets the guidance in NUREG-0654/FEMA-REP-1, pending resolution of Confirmatory Item 13.3-13.

Technical Information in the Emergency Plan: [K.6.c] Section K.6.c, “Contamination Control Measures,” of the BLN Emergency Plan states that areas and items are permitted to return to normal use following conduct of appropriate surveys and verification that the contamination levels meet criteria specified in the RPP or its supporting procedures.

Technical Evaluation: The staff finds acceptable the BLN Emergency Plan description of onsite contamination control measures, including criteria for permitting return of areas and items to normal use because it meets the guidance described in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [K.7.] Section II.K.7, “Decontamination of Relocated Site Personnel,” of the BLN Emergency Plan describes provisions for protective clothing, contamination monitoring, including decontamination of radioiodine contamination on the skin at the designated relocation site. A general description of the equipment and supplies that are typically available is included in Appendix 6, "Emergency Equipment and Supplies."

Technical Evaluation: The staff determined that the BLN Emergency Plan adequately describes the capability for decontaminating relocated onsite personnel, including provisions for extra clothing and decontaminants suitable for the type of contamination expected, with particular attention given to radioiodine contamination of the skin because it meets the guidance described in NUREG-0654/FEMA-REP-1.

13.3.1C.K.2 Conclusion for Radiological Exposure Control

The NRC staff has reviewed the onsite emergency plan against Planning Standard K of NUREG-0654/FEMA-REP-1. The NRC staff will make its final determination as to whether this planning standard is acceptable based on the applicant's response to the following open items and verification of confirmatory item:

Open Items:

- Open Item 13.3-22 was created to track the incorporation of decontamination action levels in Section 5 of the BLN Emergency Plan.

- Open Item 13.3-23 has been created for the applicant to address the control of access to contaminated areas in Section K.6.a of the BLN Emergency Plan.

Confirmatory Item:

- Confirmatory Item13.3-13 was created to track that Section K.6.b of the BLN Emergency Plan has been revised as specified in the response to RAI 13.03-28(F).

13.3.1C.L Medical and Public Health Support

13.3.1C.L.1 10 CFR 50.47 Requirements

In determining whether the proposed emergency plan met the applicable regulatory requirements in 10 CFR 50.47(b)(12), the NRC staff evaluated it against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1.

Regulatory Basis: 10 CFR 50.47, "Emergency Plans." 10 CFR 50.47(b)(12) requires that arrangements be made for medical services for contaminated injured individuals.

Technical Information in the Emergency Plan: [L.1] Section II.L.1, "Hospital and Medical Support," of the BLN Emergency Plan states that TVA has established an agreement with Huntsville Hospital in Huntsville, Alabama to provide medical services for injured personnel. Radiation monitoring equipment, dosimeters, and protective clothing are available at the Huntsville Hospital. Huntsville Hospital maintains the capability to evaluate the radiation exposure and/or uptake of accident victims and to handle contaminated victims due to training courses supported by TVA. Section II.O, "Radiological Emergency Response Training," states that TVA provides or supports training for affected hospital, ambulance/rescue personnel. Periodic drills, exercises, and materiel support are provided consistent with agreements to be developed with medical support providers (see Section II.N, "Exercises and Drills").
RAI 13.03-29(A) requested information regarding when the agreements will be finalized between TVA and the medical support providers. TVA responded that Appendix 7, "Certification

Letters," will be revised in a future revision of the COL application to indicate that these letters of agreement will be available and incorporated into the BLN Emergency Plan prior to receipt of nuclear fuel at the site. As a result, **Open Item 13.3-2** was created to track the incorporation of letters of agreement into the BLN Emergency Plan.

TVA maintains an agreement with REAC/TS in Oak Ridge, Tennessee for backup medical support. A Radiological Control technician, with appropriate instrumentation, will normally accompany the contaminated injured personnel to the hospital. Appendix 7 contains signed certification letters between Huntsville Hospital and Highlands Medical Center in Scottsboro, Alabama.

Technical Evaluation: A letter of agreement with Huntsville Hospital is not available at this time in the licensing process for BLN. The letters of agreement are required to be included in the emergency plan. Therefore, the applicant must provide the letters of agreement prior to COL issuance or propose an ITAAC or a license condition describing the applicant's plans for providing them. This is being tracked as **Open Item 13.3-2.**

Technical Information in the Emergency Plan: [L.2] Section II.L.2, "On-Site First Aid Capability," of the BLN Emergency Plan states that a trained Medical Emergency Response Team (MERT) is maintained at the site to provide 24 hours first aid support. At a minimum, the MERT personnel are multi-media first aid trained. Medical services are also available from the Hollywood (AL) Volunteer Fire Department and the Huntsville Hospital as discussed in the BLN Emergency Plan. MERT training is consistent with Section II.O, "Radiological Emergency Response Training," and drills and exercises are consistent with Section II.N. Appendix 6 of the BLN Emergency Plan provides a brief description of first aid supplies/equipment.
RAI 13.03-29(B) requested that TVA provide additional details regarding the first aid supplies available for emergency response. In a letter dated February 6, 2009, the applicant proposed to revise the text for Section II.L.2 by adding specific details related to first aid supplies and equipment. The staff created **Confirmatory Item 13.3-14** to track the incorporation of the revised text for Section II.L.2 into the BLN Emergency Plan.

Section II.L.2 also states that first aid stations are located throughout the plant providing the normal complement of first aid supplies and equipment necessary to treat those injuries not involving hospitalization or professional medical services.

Technical Evaluation: The NRC staff finds the revised text acceptable because it meets the guidance in NUREG-0654/FEMA-REP-1. The staff finds the proposed text for Section II.L.2 acceptable pending resolution of Confirmatory Item 13.3-14.

Technical Information in the Emergency Plan: [L.4] Section II.L.4, "Medical Emergency Transportation," of the BLN Emergency Plan identifies the Hollywood Volunteer Fire Department as providing initial offsite support for a medical emergency and Highlands Medical Center Emergency Medical Services providing ambulance transport of contaminated injured personnel. Contaminated injured personnel are suitably clothed or prepared to prevent the spread of contamination in the transporting vehicle. Communication can be maintained from the station to the site ambulance or to the ambulance through the dispatching station. Response team members have received training concerning transportation of contaminated injured individuals. The approximate time to transport a patient to Huntsville Hospital is 45 minutes. The estimated time for local rescue squads to arrive at the station is 30 minutes. Appendix 7, "Certification Letters," of the BLN Emergency Plan includes signed certification letters between Huntsville Hospital and Highlands Medical Center.

Technical Evaluation: The staff finds that the BLN Emergency Plan adequately describes the arrangements made for transportation of contaminated injured individuals from the site to specifically identified treatment facilities outside the site boundary because it meets the guidance described in NUREG-0654/FEMA-REP-1.

13.3.1C.L.2 10 CFR Part 50, Appendix E Requirements

In determining whether the proposed emergency plan met the applicable regulatory requirements related to the area of medical and public health support, the NRC staff also evaluated it against the following requirements in Appendix E to 10 CFR Part 50.

Regulatory Basis: 10 CFR Part 50, Appendix E.IV, “Content of Emergency Plans.” 10 CFR Part 50, Appendix E.IV.E.5 requires that arrangements be made for the services of physicians and other medical personnel qualified to handle radiation emergencies onsite.

Technical Information in the Emergency Plan: Section II.L.2, “On-Site First Aid Capability,” of the BLN Emergency Plan states that a trained MERT is maintained at the site to provide 24 hour first aid support. As a minimum, the MERT personnel are multi-media first aid trained. Medical services are also available from Hollywood Volunteer Fire Department and Huntsville Hospital facilities. TVA provides for first aid team readiness through training consistent with Section II.O and drills and exercises consistent with Section II.N of the BLN Emergency Plan. Appendix 6, Emergency Equipment and Supplies," of the BLN Emergency Plan provides a brief description of first aid supplies/equipment.

Technical Evaluation: The staff finds that the BLN Emergency Plan adequately describes arrangements made for the services of physicians and other medical personnel qualified to handle radiation emergencies onsite because it meets the guidance described in NUREG-0654/FEMA-REP-1.

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

Technical Information in the Emergency Plan: Section II.L.4, “Medical Emergency Transportation,” of the BLN Emergency Plan identifies the Hollywood Volunteer Fire Department and Highlands Medical Center Emergency Medical Services providing transport of contaminated injured personnel. Contaminated injured personnel are suitably clothed or prepared to prevent the spread of contamination in the transporting vehicle. Communication can be maintained from the station to the site ambulance or to the ambulance through the dispatching station. Response team members have received training concerning transportation of contaminated injured individuals. The approximate time to transport a patient to Huntsville Hospital is 45 minutes. The estimated time for local rescue squads to arrive at the station is 30 minutes. Appendix 7, "Certification Letters," includes signed certification letters between Huntsville Hospital and Highlands Medical Center.

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan adequately describes the arrangements made for transportation of contaminated injured individuals from the site to specifically identified treatment facilities outside the site boundary because it meets the guidance described in NUREG-0654/FEMA-REP-1.

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

Technical Information in the Emergency Plan: Section II.L.1, “Hospital and Medical Support,” of the BLN Emergency Plan states that TVA has established an agreement with Huntsville Hospital in Huntsville, Alabama to provide medical services for injured personnel. TVA maintains an agreement with REAC/TS in Oak Ridge, Tennessee for backup medical support. Section II.L.4, “Medical Emergency Transportation,” identifies the Hollywood Volunteer Fire Department providing initial offsite support for a medical emergency and Highlands Medical Center Emergency Medical Services providing ambulance transport of contaminated injured personnel.

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan adequately describes arrangements made for treatment of individuals injured in support of licensed activities on the site at treatment facilities outside the site boundary because it meets the guidance described in NUREG-0654/FEMA-REP-1.

13.3.1C.L.3 Conclusion for Medical and Public Health Support

The NRC staff has reviewed the onsite emergency plan in regards to Planning Standard L of NUREG-0654/FEMA-REP-1 and 10 CFR 50, Appendix E.IV. The NRC will determine whether this planning standard is acceptable based on the applicant's response to the following open item and confirmatory item:

Open Item:

- Open Item 13.3-2 was created to track the incorporation of letters of agreement between TVA and the medical support providers into the BLN Emergency.

Confirmatory Item:

- Confirmatory Item 13.3-14 was created to track the incorporation of the revised text for Section II.L.2 into the BLN Emergency Plan.

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

13.3.1C.M.1 10 CFR 50.47 Requirements

In determining whether the proposed emergency plan met the applicable regulatory requirements in 10 CFR 50.47(b)(13), the NRC staff evaluated it against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1.

Regulatory Basis: 10 CFR 50.47, “Emergency plans.” 10 CFR 50.47(b)(13) requires that general plans for recovery and re-entry be developed.

Technical Information in the Emergency Plan: [M.1] Section II.M, “Recovery and Re-Entry,” of the BLN Emergency Plan states that plans for recovery and re-entry will be developed. The

section states that the following are addressed in the plans and procedures: guidance for a range of recovery and re-entry activities, including; responsibilities for recovery/re-entry decision-making, including decisions for relaxing protective measures based on existing and potential hazardous conditions; means for informing members of the ERO that recovery operations are to be initiated and related changes in the organizational structure; and methods for periodically updating estimates of total population exposure. The individual or organization responsible for recovery plans and procedures is not provided in the BLN Emergency Plan. In RAI 13.03-30(A), the staff requested that the applicant provide additional information on who has the responsibility for the recovery and re-entry processes/activities. The applicant's response dated September 8, 2008, and supplemental information dated February 6, 2009, stated that the decision to enter the recovery phase is made by the SED with concurrence from the CECC Director and the Chief Nuclear Officer and Executive Vice President. Following the decision to enter into the recovery phase, the Chief Nuclear Officer and Executive Vice President or his designee direct the overall recovery effort. As discussed in the BLN Emergency Plan, the State of Alabama has the authority for actions taken offsite; however, TVA serves as an important source of technical and analytical assistance for the State in offsite monitoring and sampling needed to determine the extent and methods of offsite recovery. The Chief Nuclear Officer and Executive Vice President (or his designee) serves as the State's contact for coordination of TVA's efforts in offsite monitoring, sampling and recovery. The supplemental information provided the text that will be reflected in the revision to the BLN Emergency Plan.

Section II.M.2, "Recovery Organization," of the BLN Emergency Plan identifies criteria used to determine when re-entry is permissible or operation can resume. The criteria include: station parameters no longer indicate a potential or actual emergency exists; the release of radioactivity is controllable, does not exceed permissible levels, and does not present a credible danger to the public; and the station is capable of sustaining itself in a long term shutdown condition. Section II.M.3, "Changes in Organizational Structure," of the BLN Emergency Plan states that the recovery process is implemented when the ERO managers and State and Federal agencies determine the station is stable.

Technical Evaluation: While the proposed text change to the third paragraph of Section II.M.2 related to recovery organization decision-making is acceptable because it meets the guidance described in NUREG-0654/FEMA-REP-1, **Confirmatory Item 13.3-15** was created to track the incorporation of the text into the next revision of the BLN Emergency Plan.

Technical Information in the Emergency Plan: [M.2] Section II.M.2, "Recovery Organization," of the BLN Emergency Plan discusses the basis and procedure for the development of a recovery organization. The recovery organization follows TVA's corporate requirements including the TVA Radiological Emergency Plan. In RAI 13.03-30(B), the staff requested the positions and titles of the recovery organization and authority and responsibilities for the facility recovery organization. In a letter dated September 8, 2008, and supplemental information dated February 6, 2009, TVA provided additional information on the recovery organization and the supplemental information provided the text that would be added in the next revision to the BLN Emergency Plan.

Technical Evaluation: While the proposed text change to the fifth paragraph of Section II.M.2 related to the positions and titles of the members of the recovery organization is acceptable, because it meets the guidance described in NUREG-0654/FEMA-REP-1, **Confirmatory Item 13.3-16** was created to track the incorporation of the text into the next revision of the BLN Emergency Plan.

Technical Information in the Emergency Plan: [M.3] Section II.M.3, “Changes in Organizational Structure," of the BLN Emergency Plan states that the CECC Director notifies the NRC Operations Center, the State EOC, and the local EOCs, that the emergency has been terminated and any required recovery has commenced. RAI 13.03-30(C) requested information on notification of emergency response personnel that the emergency has been terminated and that a recovery organization has been implemented. In the RAI response dated September 8, 2008, TVA stated that the notification methods and procedures are discussed in Section II.E, "Notification Methods and Procedures" of the BLN Emergency Plan.

Technical Evaluation: [M.3] The staff finds that the BLN Emergency Plan adequately specifies the means for informing members of the response organizations that a recovery operation is to be initiated consistent with the guidance described in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [M.4] Section II.M.4, “Updating Total Population Exposure During Recovery Operations,” of the BLN Emergency Plan addresses evaluating total population dose. Using Appendix 2, "Radiological Assessment and Monitoring," of the BLN Emergency Plan, the Dose Assessment Team will determine population doses using exposure from ground contamination, inhalation of re-suspended radioactivity and ingestion of radioactivity in vegetables and milk. The results of this activity will be provided as recommendations for evacuation sector clearance and re-entry. RAI 13.03-30(D) requested additional information regarding who will make the recommendations to the State and local governments and to whom in those organizations they will make the recommendations. In the response dated September 8, 2008, and supplemental information dated February 6, 2009, TVA stated that the CECC Director is responsible for communication of recommendation on evacuation and re-entry. The supplemental information provided revised text for the BLN Emergency Plan.

Technical Evaluation: The staff finds that the proposed change to Section II.M.4 related to who will make the recommendations to the State and local governments and to whom in those organizations they will make the recommendations is acceptable because it meets the guidance described in NUREG-0654/FEMA-REP-1. The staff created **Confirmatory Item 13.3-17** to track the incorporation of the text into the next revision of the BLN Emergency Plan.

13.3.1C.M.2 10 CFR Part 50, Appendix E Requirements

In determining whether the proposed emergency plan met the applicable regulatory guidance related to the area of recovery and re-entry planning and post-accident operations, the NRC staff also evaluated it against the following requirements in Appendix E to 10 CFR Part 50.

Regulatory Basis: 10 CFR Part 50, Appendix E.IV, “Content of Emergency Plans.”
10 CFR Part 50, Appendix E.IV.H requires that the criteria to be used to determine when, following an accident, re-entry of the facility would be appropriate or when operation could be resumed be described.

Technical Information in the Emergency Plan: Section II.M.2, "Recovery Organization," of the BLN Emergency Plan identifies criteria used to determine when re-entry is permissible or operation can resume. The criteria include: station parameters no longer indicate a potential or actual emergency exists; the release of radioactivity is controllable, does not exceed permissible levels, and does not present a credible danger to the public; and the station is capable of sustaining itself in a long term shutdown condition. Section II.M.3, “Changes in Organizational

Structure," of the BLN Emergency Plan states that the recovery process is implemented when the ERO managers and State and Federal agencies determine the station is stable.

Technical Evaluation: The staff determined that the BLN Emergency Plan adequately describes the criteria to be used to determine when, following an accident, re-entry of the facility would be appropriate or when operation could be resumed because it meets the guidance provided in NUREG-0654/FEMA-REP-1.

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

The NRC staff has reviewed the onsite emergency plan in regards to Planning Standard M of NUREG-0654/FEMA-REP-1 and 10 CFR 50, Appendix E.IV. The NRC staff will make its final determination as to whether this planning standard is acceptable based on the applicant's responses to the following confirmatory items:

Confirmatory Items:

- Confirmatory Item 13.3-15 was created to track the incorporation of the proposed text change to the third paragraph of Section II.M.2 related to recovery organization decision-making into the BLN Emergency Plan.

- Confirmatory Item 13.3-16 was created to track the incorporation of the proposed text change to the fifth paragraph of Section II.M.2 related to the positions and titles of the members of the recovery organization into the next revision of the BLN Emergency Plan.

- Confirmatory Item 13.3-17 was created to track the incorporation of the proposed text change to Section II.M.4 related to who will make the recommendations to the state and local governments and to whom in those organizations they will make the recommendations into the next revision of the BLN Emergency Plan.

13.3.1C.N Exercises and Drills

13.3.1C.N.1 10 CFR 50.47 Requirements

In determining whether the proposed emergency plan met the applicable regulatory requirements in 10 CFR 50.47(b)(14), the NRC staff evaluated it against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1.

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

Technical Information in the Emergency Plan: [N.1.a] Section II.N.1, "Exercises," of the BLN Emergency Plan states that exercises, simulating an emergency that results in offsite radiological releases requiring response by offsite authorities, are conducted on a biennial basis in a manner that tests the major elements of the plans and preparedness organizations. Exercises verify integrated capabilities; test adequacy of timing and content of implementing procedures; test emergency equipment and communications networks, public notification system; evaluate emergency organization personnel's familiarity with their duties; and disclose

deficiencies. Section N.1.a, “Exercise Scope and Frequency,” of the BLN Emergency Plan states that TVA conducts emergency exercises in accordance with NRC and FEMA requirements (e.g., 10 CFR 50.47(b)(14) and 44 CFR 350.9).

Technical Evaluation: [N.1.a] The staff finds the BLN Emergency Plan acceptable because it states that exercises will test the integrated capability and a major portion of the basic elements existing in EP plans and organizations in accordance with the guidance described in NUREG-0654/FEMA-REP-1. In addition, the EP exercise will simulate an emergency that results in offsite radiological releases, which would require response by offsite authorities. The staff also finds the BLN Emergency Plan acceptable because it states that exercises will be conducted as set forth in NRC and FEMA rules.

Technical Information in the Emergency Plan: [N.1.b] Section II.N.1b, “Exercise Scenarios and Participation,” of the BLN Emergency Plan states that exercise scenarios are varied in a manner that tests the major elements of the plans and preparedness organizations within a six-year period.

Exercises are conducted biennially and include: emergency classification of at least site area emergency; mobilization of as many elements of the State, local, and station plans as is reasonably achievable without mandatory public participation; and invitation for involvement of Federal emergency response agencies at least once every five years. An unannounced and/or off-hours exercise is conducted at least once every six years. Within planning limitations, some exercises are conducted under adverse weather conditions. Exercises verify integrated capabilities; test adequacy of timing and content of implementing procedures; test emergency equipment and communications networks, public notification system; evaluate ERO personnel response; and disclose deficiencies. Section II.N.4, “Exercise and Drill Evaluation,” of the BLN Emergency Plan states that TVA conducts a critique as soon as practicable following each exercise. Section II.N.5, “Drill and Exercise Critiques,” of the BLN Emergency Plan states that within 60 days of the exercise, a Post-Exercise Critique Report shall be issued, including suggested corrective actions.

Technical Evaluation: The BLN Emergency Plan states that exercises will include mobilization of State and local personnel and resources adequate to verify the capability to respond to an accident scenario requiring response. The BLN Emergency Plan states that the scenario will be varied from year to year such that all major elements of the plans and preparedness organizations are tested in a five-year period. The BLN Emergency Plan describes provisions to start an exercise between 6:00 p.m. and 4:00 a.m. once every six years. The BLN Emergency Plan also states that exercises will be conducted under various weather conditions and that some exercises will be unannounced. The staff determined that the descriptions of the exercise scenarios and participation in the BLN Emergency Plan are acceptable because they meet the guidance described in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [N.2] Section II.N.2, “Drills,” of the BLN Emergency Plan states that drills shall be controlled and observed by individuals qualified to conduct and evaluate the drill. Drills are used to consider accident management strategies, provide supervised instruction, allow the operating staff to resolve problems and focus on internal training objectives. One or more drills may be included as portions of an exercise. Communications tests are conducted quarterly with Federal organizations and annually with State and local EOCs and field assessment teams. Section II.A.1, “Emergency Organization,” of the BLN Emergency Plan indentifies participating organizations. Communications drills and

tests evaluate the operability of the communications systems and the ability to understand message content.

Technical Evaluation: The staff finds the BLN Emergency Plan acceptable because it states that a drill is a supervised instruction period aimed at testing, developing and maintaining skills in a particular operation, and that a drill is often a component of an exercise in accordance with the guidance in NUREG-0654/FEMA-REP-1. In addition, the BLN Emergency Plan states that a drill will be supervised and evaluated by a qualified drill instructor.

Technical Information in the Emergency Plan: [N.2.a] Section II.N.2.a, "Drills," of the BLN Emergency Plan states that communication drills evaluate both the operability of the communications systems and the ability to understand message content. Monthly tests are conducted with State and local governments in the plume EPZ; quarterly tests are conducted with Federal EROs and States in the ingestion EPZ; and annual tests are conducted between the facility, State and local EOCs, and field assessment teams.

Technical Evaluation: The staff finds the BLN Emergency Plan acceptable because it states that communications with State and local governments in the plume exposure pathway EPZ will be tested monthly in accordance with the guidance in NUREG-0654/FEMA-REP-1. Communications with Federal EROs and States in the ingestion pathway EPZ will be tested quarterly. Communications between the nuclear facility, State and local EOCs, and field assessment teams will be tested annually. In addition, the staff finds the BLN Emergency Plan acceptable because it states that communication drills and tests will also ensure that the content of messages is understood.

Technical Information in the Emergency Plan: [N.2.b] Section II.N.2.b, "Fire Drills," of the BLN Emergency Plan states that fire drills are conducted as required by Section 9.5.1 of the BLN COL FSAR. BLN COL FSAR Section 9.5.1.8.2.2, "Fire Brigade Training," states that training is conducted by qualified individuals and consists of classroom instruction supplemented with periodic classroom retraining, practice in fire fighting, and fire drills.

Technical Evaluation: The NRC staff finds the BLN Emergency Plan acceptable because it states that fire drills will be conducted in accordance with the BLN COL FSAR, which meets the guidance in NUREG-0654/FEMA-REP-1. The staff's evaluation of fire drills is discussed in Section 9.5 of this SER.

Technical Information in the Emergency Plan: [N.2.c] Section II.N.2.c, "Medical Emergency Drills," of the BLN Emergency Plan states that medical emergency drills that include a simulated contaminated injured individual and participation by the local medical support agencies are performed at least once each calendar year.

Technical Evaluation: The staff finds the BLN Emergency Plan acceptable because it states that a medical emergency drill involving a simulated contaminated individual includes provisions for participation by the local support services agencies (i.e., ambulance and offsite medical treatment facility) will be conducted annually in accordance with the guidance in NUREG-0654/FEMA-REP-1. In addition, the staff finds the BLN Emergency Plan acceptable because it states that the offsite portions of the medical drill may be performed as part of the required biennial exercise in accordance with the guidance in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [N.2.d] Section II.N.2.d, "Radiochemistry Drills," of the BLN Emergency Plan states that radiochemistry drills, involving both onsite and offsite

radiological monitoring activities are conducted at least once each calendar year. Radiochemistry drills include the use of appropriate procedures for collecting and analyzing samples and recording results; collection and analysis of the sample media for which the facility is responsible; communications with monitoring teams; and recordkeeping activities. Drills may be coordinated with State and local organizations or conducted separately.

Technical Evaluation: The NRC staff finds the BLN Emergency Plan acceptable because it states that plant environs and radiological monitoring drills (onsite and offsite) will be conducted annually in accordance with the guidance in NUREG-0654/FEMA-REP-1. These drills will include collection and analysis of all sample media (e.g., water, vegetation, soil and air), and provisions for communications and record keeping.

Technical Information in the Emergency Plan: [N.2.e] Section II.N.2.e, “Radiological Control Drills,” of the BLN Emergency Plan states that onsite radiological control drills that include response to, and analysis of, simulated elevated airborne and liquid activity levels and elevated area radiation levels in the environment are conducted at least semi-annually, with a maximum allowable grace period of 25 percent.

Technical Evaluation: The NRC staff finds the BLN Emergency Plan acceptable because it states that health physics drills will be conducted semi-annually and will involve response to, and analysis of, simulated elevated airborne and liquid samples and direct radiation measurements in the environment in accordance with the guidance in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [N.3] Section II.N.3.a, “Conduct of Drills and Exercises,” of the BLN Emergency Plan states that basic performance objectives and evaluation criteria are included in scenario materials. The emergency exercise is initiated and supervised by designated facilitators. Facilitators are responsible for: providing information to the participants to allow realistic analysis of the simulated events and to provide a basis for rational decision-making, providing information on a real-time basis, and executing the exercise in a manner that allows free play and independent decision-making on the part of the participants.

Technical Evaluation: The staff finds the BLN Emergency Plan acceptable because it describes how exercises and drills will be carried out to allow free play for decision-making and to meet exercise objectives in accordance with the guidance in NUREG-0654/FEMA-REP-1. The staff also finds the BLN Emergency Plan acceptable because it states that the scenarios for use in exercises and drills will include, but are not limited to, the basic objective(s) of each drill and exercise and appropriate evaluation criteria in accordance with the guidance in NUREG-0654/FEMA-REP-1.

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

Technical Evaluation: The staff finds acceptable that the BLN Emergency Plan adequately states that the scenarios for use in exercises and drills will include the date(s), time period, place(s) and participating organizations consistent with the guidance described in NUREG-0654/FEMA-REP-1.

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

Technical Evaluation: The staff finds that the BLN Emergency Plan adequately states that the scenarios for use in exercises and drills will include simulated events consistent with the guidance described in NUREG-0654/FEMA-REP-1.

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

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan adequately states that the scenarios for use in exercises and drills will include a time schedule of real and simulated initiating events consistent with the guidance described in NUREG-0654/FEMA-REP-1.

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

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan adequately states that the scenarios for use in exercises and drills will include a narrative summary describing the conduct of the exercises or drills to include such things as simulated casualties, offsite fire department assistance, rescue of personnel, use of protective clothing, deployment of radiological monitoring teams, and public information activities consistent with the guidance described in NUREG-0654/FEMA-REP-1.

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

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan adequately states that the scenarios for use in exercises and drills will include a description of the arrangements for and advance materials to be provided to official observers consistent with the guidance described in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [N.4] Section II.N.4, "Exercise and Drill Evaluation," of the BLN Emergency Plan states that TVA makes arrangements for exercises to be critiqued by Federal, State, and local observers/evaluators. Critiques are conducted as soon as practicable following each exercise and include selected TVA, NRC, State, local and other participants and observers/evaluators. Because it appeared that only facilitators fill out the critique sheets, RAI 13.03-31(A) requested clarification regarding instructors/evaluators and facilitator roles in the critique. In the response dated September 8, 2008, and supplemental information dated February 6, 2009, TVA stated that facilitators are responsible for guiding and evaluating drill and exercise performance and proposed a revision to the second paragraph of Section II.N.4 to clarify the roles of facilitators and observers.

Technical Evaluation: While the proposed text change to the second paragraph of Section II.N.4 to clarify the roles of facilitators and observers/evaluators meets the guidance in

NUREG-0654/FEMA-REP-1, the staff created **Confirmatory Item 13.3-18** to track the incorporation of the text into the next revision of the BLN Emergency Plan.

Technical Information in the Emergency Plan: [N.5] Section II.N.5, “Drill and Exercise Critiques,” of the BLN Emergency Plan states that TVA records input from the critique participants, evaluates the need for changes to the plan, procedures, equipment, facilities, and other components of the program and develops an action plan to address the identified substantive issues. Within 60 days of the exercise a Post-Exercise Critique Report shall be issued, including suggested corrective actions. Identified corrective actions are assigned for implementation.

Technical Evaluation: The staff finds that the BLN Emergency Plan adequately establishes a means for evaluating observer and participant comments on areas needing improvement because it meets the guidance described in NUREG-0654/FEMA-REP-1.

13.3.1C.N.2 10 CFR Part 50, Appendix E Requirements

In determining whether the proposed emergency plan met the applicable regulatory requirements related to the area of "Exercises and Drills," the NRC staff also evaluated it against the following requirements in Appendix E to 10 CFR Part 50.

Regulatory Basis: 10 CFR Part 50, Appendix E.IV, “Content of Emergency Plans.”
10 CFR Part 50, Appendix E.IV.F.2 requires that the emergency plan describe provisions for the conduct of emergency preparedness exercises and that exercises test the adequacy of timing and content of implementing procedures and methods, test emergency equipment and communications networks, test the public notification system, and ensure that emergency organization personnel are familiar with their duties.

Technical Information in the Emergency Plan: Section II.N.1, “Exercises,” of the BLN Emergency Plan states that exercises simulating an emergency that results in offsite radiological releases requiring response by offsite authorities, are conducted on a biennial basis in a manner that tests the major elements of the plans and preparedness organizations. Exercises are used to verify integrated capabilities; test adequacy of timing and content of implementing procedures; test emergency equipment and communications networks, public notification system; evaluate emergency organization personnel’s familiarity with their duties; and disclose deficiencies. Section N.1.a, “Exercise Scope and Frequency,“ of the BLN Emergency Plan states that TVA conducts emergency exercises in accordance with NRC and FEMA requirements in 10 CFR 50.47(b)(14) and 44 CFR 350.9, respectively.

Technical Evaluation: The staff finds that the BLN Emergency Plan adequately describes provisions for the conduct of emergency preparedness exercises and specifies that exercises test the adequacy of timing and content of implementing procedures and methods, test emergency equipment and communications networks, test the public notification system, and ensure that emergency organization personnel are familiar with their duties because it meets the guidance in NUREG-0654/FEMA-REP-1.

Regulatory Basis: 10 CFR Part 50, Appendix E.IV, “Content of Emergency Plans.”
10 CFR Part 50, Appendix E.IV.F.2.e requires that licensees enable any State or local government located in the plume exposure pathway EPZ to participate in the licensee’s drills when requested by such State or local government.

Technical Information in the Emergency Plan: Section II.N.2, “Drills,” of the BLN Emergency Plan states that TVA, upon request, allows affected State and local governments located in the plume EPZ to participate in drills.

Technical Evaluation: The NRC staff finds acceptable that the BLN Emergency Plan describes that the applicant will enable any State or local government located in the plume exposure pathway EPZ to participate in the licensee’s drills when requested by such State or local government because this meets the guidance in NUREG-0654/FEMA-REP-1.

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

Technical Information in the Emergency Plan: Section II.N.1.b, “Exercise Scenarios and Participation,” of the BLN Emergency Plan states that TVA plans and conducts remedial exercises if the emergency plan is not satisfactorily tested during the biennial exercise, such that NRC, in consultation with FEMA, cannot find reasonable assurance that adequate protective measures can be taken in the event of a radiological emergency. TVA coordinates with the affected State and local authorities to facilitate their participation to demonstrate that appropriate corrective measures have been taken regarding the elements of the plan not properly tested in the previous exercises.

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan is acceptable because it adequately states that remedial exercises will be conducted if the emergency plan is not satisfactorily tested during the biennial exercise, such that NRC, in consultation with FEMA, cannot find reasonable assurance that adequate protective measures can be taken in the event of a radiological emergency because it meets the guidance described in NUREG-0654/FEMA-REP-1. The extent of State and local participation in remedial exercises will be sufficient to show that appropriate corrective measures have been taken regarding the elements of the plan not properly tested in the previous exercises.

13.3.1.C.N.3 Conclusion for Exercises and Drills

The NRC staff has reviewed the onsite emergency plan in regards to Planning Standard N of NUREG-0654/FEMA-REP-1 and the requirements of 10 CFR Part 50, Appendix E.IV.F.2, 2.e, and 2.f. The NRC staff will make its final determination as to whether this planning standard is acceptable based on the applicant's response to the following confirmatory item:

Confirmatory Item:

- Confirmatory Item 13.3-18 was created to track the incorporation of the proposed text change to the second paragraph of Section II.N.4 to clarify the roles of facilitators and observers/evaluators into the next revision of the BLN Emergency Plan.

13.3.1C.O Radiological Emergency Training

13.3.1C.O.1 10 CFR 50.47 Requirements

In determining whether the proposed emergency plan met the applicable regulatory requirements in 10 CFR 50.47(b)(15), the NRC staff evaluated it against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1.

Regulatory Basis: 10 CFR 50.47, "Emergency plans." 10 CFR 50.47(b)(15) requires that radiological emergency response training be provided to those who may be called on to assist in an emergency.

Technical Information in the Emergency Plan: [O.1.a] Section II.O.1, "Radiological Emergency Response Training, General," of the BLN Emergency Plan states that the BLN training program provides for initial training and retraining for individuals who have been assigned emergency response duties. Section II.O.1.a, "Off-site Emergency Response Training," of the BLN Emergency Plan describes training of offsite personnel likely to provide assistance at BLN during an emergency. The training includes the scope of the BLN Emergency Plan, emergency classification, notification methods, basic radiation protection, and station access procedures. Section II.O.2, "On-site Emergency Response Training," of the BLN Emergency Plan states that plant training requirements for TVA personnel who may be called upon to respond to an emergency are established by procedure.

Technical Evaluation: The NRC staff finds the BLN Emergency Plan acceptable because it describes the emergency response training to be provided for the offsite emergency organizations that may be called upon to provide assistance in the event of an emergency in accordance with the guidance in NUREG-0654/FEMA-REP-1. Additional information on training is located at SER Section 13.2.2, "Training Program."

Technical Information in the Emergency Plan: [O.2] Section II.O.1, "Radiological Emergency Response Training, General," of the BLN Emergency Plan states that the training program provides for initial training and retraining for individuals assigned emergency response duties. Section II.O.2, "On-site Emergency Response Training," and Section II.O.4, "Emergency Response Training and Qualification," of the BLN Emergency Plan address the emergency response training program for TVA personnel who may be called upon to respond to an emergency. Section II.O.4, "Emergency Response Training and Qualification," of the BLN Emergency Plan states that TVA conducts a program, in accordance with plant training procedures, for instructing and qualifying personnel who implement the BLN Emergency Plan. Plant training procedures establish the scope, nature, and frequency of the required training and qualification measures and may include drills. RAI 13.03-32(A) requested additional information regarding radiological training for onsite personnel, and the responsibility for ensuring assigned emergency response personnel are adequately trained. In the response dated September 22, 2008, and supplemental information dated February 6, 2009, TVA stated that training requirements for TVA ERO personnel are established in a corporate training procedure, which is applicable to the TVA nuclear facilities. The procedure establishes requirements for training frequency, instructor qualifications, conduct of training and retraining, examinations, and training program updates and evaluations. In the supplemental information dated February 6, 2009, the applicant also provided a revision to Section II.O.2, "On-site Emergency Response Training," of the BLN Emergency Plan stating that training requirements for TVA ERO personnel are established in a corporate training procedure, which is applicable to all TVA nuclear facilities.

Technical Evaluation: The staff finds the proposed text change to Section II.O.2 related to onsite ERO training acceptable in accordance with NUREG-0654/FEMA-REP-1. The staff created **Confirmatory Item 13.3-19** to track the incorporation of the text into the next revision of the BLN Emergency Plan. Additional information on training is located at SER Section 13.2.2, "Training Program."

Technical Information in the Emergency Plan: [O.3] Section II.L.2, "On-Site First Aid Capability," of the BLN Emergency Plan states that TVA maintains a multi-media first aid trained MERT. Section II.O.3, "First Aid Team Training," of the BLN Emergency Plan states that MERT members assigned to render treatment during a medical emergency receive training from the Safety and Emergency Response Training Academy, consistent with the projected hazards and events. RAI 13.03-32(B) requested additional information regarding the equivalency between the training provided by the Safety and Emergency Response Training Academy and the Red Cross Multi-Media training. In a letter dated September 22, 2008, TVA stated that a Red Cross Multi-Media course no longer exists. Members of TVA's MERT complete a 120-hour program and are certified by the National Registry of Emergency Medical Technicians (NREMT) to meet the educational and examination requirements set forth by the U.S. Department of Transportation guidelines and the curriculum implemented by the National Highway Traffic Safety Administration under the National Emergency Medical Services (EMS) Scope of Practice Model. Therefore, the content of the required MERT training course far exceeds the requirements of the superseded Red Cross Multi-Media training course. In supplemental information dated February 6, 2009, the applicant proposed revised text for Section II.O.3 of the BLN Emergency Plan that incorporates the above information related to the training of MERT personnel.

Technical Evaluation: The staff finds the proposed text change to Section II.O.3 related to first aid training acceptable in accordance with NUREG-0654/FEMA-REP-1. The staff created **Confirmatory Item 13.3-20** to track the incorporation of the text into the next revision of the BLN Emergency Plan.

Technical Information in the Emergency Plan: [O.4] Section II.O.4, "Emergency Response Training and Qualification," of the BLN Emergency Plan states plant training procedures establish the scope, nature, and frequency of the required training and qualification measures and may include drills.

Section O.4 also states that TVA implements a program to provide position-specific emergency response training for designated members of the ERO. The content of the training program is appropriate for the duties and responsibilities of the assigned position. The affected positions include:

a. Emergency response directors and coordinators
b. Accident assessment personnel
c. Radiological monitoring and analysis personnel
d. Police, security and fire-fighting personnel
e. Damage control/repair/corrective action teams
f. First aid/rescue teams
g. Medical support personnel
h. Corporate office support personnel
i. Emergency communicators

Technical Evaluation: The NRC staff finds the BLN Emergency Plan descriptions of a training program for instructing and qualifying personnel who will implement radiological emergency response plans acceptable because they are consistent with NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [O.4.a] Section II.O.4.a, “Emergency Response Training and Qualification,” of the BLN Emergency Plan states that TVA implements a program to provide position-specific training for emergency response directors and coordinators.

Technical Evaluation: The NRC staff finds the BLN Emergency Plan description of specialized initial training for directors and/or coordinators of the plant emergency organization acceptable because it is consistent with NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [O.4.b] Section II.O.4.a, “Emergency Response Training and Qualification,” of the BLN Emergency Plan states that TVA implements a program to provide position-specific training for accident assessment personnel.

Technical Evaluation: The staff finds the specialized initial training describing personnel responsible for accident assessment, including control room shift personnel acceptable, because it is consistent with NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [O.4.c] Section II.O.4.a, “Emergency Response Training and Qualification,” of the BLN Emergency Plan states that TVA implements a program to provide position-specific training for radiological monitoring and analysis personnel.

Technical Evaluation: The staff finds the specialized initial training describing radiological monitoring teams acceptable because it is consistent with NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [O.4.d] Section II.O.4.a, “Emergency Response Training and Qualification,” of the BLN Emergency Plan states that TVA implements a program to provide position-specific training for police, security and fire-fighting personnel. Content of the training program is appropriate for the duties and responsibilities of the assigned position. Section II.O.1.a, “Off-site Emergency Response Training,” of the BLN Emergency Plan describes offsite police and fire-fighting personnel training. Section II.N.2.b, “Fire Drills,” of the BLN Emergency Plan states that fire drills are conducted as required by Section 9.5.1 of the BLN COL FSAR. BLN COL FSAR Section 9.5.1.8.2.2, “Fire Brigade Training,” states that training is conducted by qualified individuals and consists of classroom instruction supplemented with periodic classroom retraining, practice in fire fighting, and fire drills.

Technical Evaluation: The staff finds the description of the specialized initial training for fire, police and security personnel acceptable because it is in accordance with NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [O.4.e] Section II.O.4.a, “Emergency Response Training and Qualification,” of the BLN Emergency Plan states that TVA implements a program to provide position-specific training for damage control/repair/corrective action teams.

Technical Evaluation: The staff finds that the specialized initial training described for repair and damage control teams is acceptable because it meets the guidance described in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [O.4.f] Section II.O.3, "First Aid Team Training," of the BLN Emergency Plan states that MERT members that provide medical emergency treatment receive training from the Safety and Emergency Response Training Academy.

Technical Evaluation: The staff finds that the specialized initial training described for first aid and rescue teams is acceptable because it meets the guidance described in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [O.4.g] Section II.O.4.a, "Emergency Response Training and Qualification," of the BLN Emergency Plan states that TVA implements a program to provide position-specific training for local support services/emergency service personnel.

Technical Evaluation: The staff finds that the specialized initial training described for local support services/emergency service personnel is acceptable because it meets the guidance described in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [O.4.h] Section II.O.4.a, "Emergency Response Training and Qualification," of the BLN Emergency Plan states that TVA implements a program to provide position-specific training medical support personnel.

Technical Evaluation: The staff finds that the specialized initial training described for medical support personnel is acceptable because it meets the guidance described in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [O.4.i] Section II.O.4.a, "Emergency Response Training and Qualification," of the BLN Emergency Plan states that TVA implements a program to provide position-specific training for corporate office support personnel.

Technical Evaluation: The staff finds that the specialized initial training described for corporate support personnel is acceptable because it meets the guidance described in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [O.4.j] Section II.O.4.a, "Emergency Response Training and Qualification," of the BLN Emergency Plan states that TVA implements a program to provide position-specific training for emergency communicators.

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan is acceptable because it addresses the specialized initial training described for emergency communicators in accordance with NUREG-0654/FEMA-REP-1. Additional technical interface information is located at SER Section 13.2.2, "Training Program."

Technical Information in the Emergency Plan: [O.5] Section II.O.1, "Radiological Emergency Response Training, General," of the BLN Emergency Plan states that the training program provides for initial training and retraining for individuals assigned emergency response duties. Section II.O.5 of the BLN Emergency Plan states that TVA conducts, or supports the conduct of, annual retraining for those categories of emergency response personnel listed in Section II.O of the BLN Emergency Plan.

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan is acceptable because it describes the provisions for the initial and annual retraining of personnel with emergency response responsibilities in accordance with NUREG-0654/FEMA-REP-1.

13.3.1C.O.2 10 CFR Part 50, Appendix E Requirements

In determining whether the proposed emergency plan met the applicable regulatory requirements related to the area of radiological emergency response training, the NRC staff also evaluated it against the following requirements in Appendix E to 10 CFR Part 50.

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

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

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

Technical Information in the Emergency Plan: Section [O.4] above addresses the technical information in the BLN Emergency Plan related to the requirements in 10 CFR Part 50, Appendix E.IV.F.1 regarding position-specific emergency response training. In addition, Section [O.1.a] above addresses training for local services personnel.

Technical Evaluation: The NRC staff's evaluation of the position-specific emergency response training program described in the BLN Emergency Plan is also addressed in Section [O.4] above. The staff's evaluation of the training for local services personnel is addressed in Section [O.1.a] above.

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

Technical Information in the Emergency Plan: Evaluation Criterion [N.4] in this section of the SER discusses the technical information in the BLN Emergency Plan that addresses exercise critiques and the correction of identified deficiencies.

Technical Evaluation: Evaluation Criterion [N.4] addresses the NRC staff's technical evaluation regarding exercise critiques and the correction of identified deficiencies.

13.3.1C.O.3 Conclusion for Radiological Emergency Training

The NRC staff has reviewed the onsite emergency plan in regards to Planning Standard O of NUREG-0654/FEMA-REP-1 and the requirements of 10 CFR Part 50, Appendix E.IV.F.1 and 2.g. The NRC staff will determine whether this planning standard and the applicable requirements of 10 CFR Part 50, Appendix E are acceptable based on the applicant's response to the following confirmatory items:

Confirmatory Items:

- Confirmatory Item 13.3-19 was created to track the incorporation of the proposed text change to Section II.O.2 related to onsite ERO training into the next revision of the BLN Emergency Plan.

- Confirmatory Item 13.3-20 was created to track the incorporation of the proposed text to Section II.O.3 related to first aid training into the next revision of the BLN Emergency Plan.

13.3.1C.P Responsibility for the Planning Effort: Development

13.3.1C.P.1 10 CFR 50.47 Requirements

In determining whether the proposed emergency plan met the applicable regulatory requirements in 10 CFR 50.47(b)(16), the NRC staff evaluated it against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1.

Regulatory Basis: 10 CFR 50.47, “Emergency plans.” 10 CFR 50.47(b)(16) requires that the emergency plan describe the responsibilities for emergency plan development, review, and distribution. In addition, planners must be properly trained.

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

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan is acceptable because it adequately describes the training that will be provided for individuals responsible for the planning effort in accordance with NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [P.2] Section II.P.2, “Responsibility for Radiological Emergency Response Planning,” of the BLN Emergency Plan states that the Site Executive, Plant Management is the overall authority for ensuing that there is an appropriate level of EP at the site. The responsibility for the actual planning effort is delegated to the Emergency Preparedness Manager.

Technical Evaluation: The staff finds that the BLN Emergency Plan is acceptable because it identifies the individual by title with the overall authority and responsibility for radiological emergency response planning in accordance with NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [P.3] Section II.P.3, "Emergency Preparedness Manager," of the BLN Emergency Plan describes the Emergency Preparedness Manager position. The individual is responsible for developing and updating the Emergency Plan and coordinating with other response organizations.

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan is acceptable because it designates an Emergency Preparedness Manager with responsibility for the development and updating of emergency plans and coordination of these plans with other response organizations in accordance with NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [P.4] Section II.P.4, "Plan Reviews and Updates," of the BLN Emergency Plan states that the BLN Emergency Plan is updated as needed and certified to be current on an annual basis. The main resource for identifying the need to change the plan is through drills and exercises.

Technical Evaluation: The staff finds that the BLN Emergency Plan is acceptable because it adequately describes provisions for updating the emergency plan and agreements as needed, and reviewing and certifying it to be current on an annual basis, thus meeting the guidance in NUREG-0654/FEMA-REP-1. In addition, the updating provisions described take into account changes identified by drills and exercises.

Technical Information in the Emergency Plan: [P.5] Section II.P.5, "Distribution of Revised Plans," of the BLN Emergency Plan states that the Emergency Preparedness Manager, or designee, makes needed changes to the BLN Emergency Plan. The pages that are changed are marked and dated to indicate the change. The BLN safety review committee reviews and approves the changes. If the changes are judged to decrease the effectiveness of the BLN Emergency Plan according to the requirements of 10 CFR 50.47(b) or 10 CFR Part 50, Appendix E, then the changes are submitted to the NRC for approval in accordance with the requirements in 10 CFR 50.54(q). The approved revised plans are distributed through the BLN document control organization.

Technical Evaluation: The NRC staff finds acceptable that the BLN Emergency Plan adequately states that the emergency response plans and approved changes to the plan will be forwarded to all organizations and appropriate individuals with responsibility for implementation of the plan in accordance with the guidance provided in NUREG-0654/FEMA-REP-1. The BLN Emergency Plan also states that revised pages will be dated and marked to show where changes have been made.

Technical Information in the Emergency Plan: [P.6] Section II.P.6, "Supporting Plans," of the BLN Emergency Plan provides a list of the supporting State and county plans.

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan is acceptable because it contains a detailed listing of supporting plans and their source in accordance with the guidance provided in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [P.7] Appendix 5, "Emergency Plan Implementing Procedures," of the BLN Emergency Plan provides a topical listing of EPIPs that

support the plan. However, the BLN Emergency Plan refers to procedures that do not appear to be listed in the topical list. In RAI 13.03-33(A), the staff requested that the applicant provide information regarding procedures that are discussed in the plan, but not listed in Appendix 5. In the September 8, 2008, response to the RAI, the applicant stated that Appendix 5 of the BLN Emergency Plan provides a list of broad topics to be addressed in the EPIPs. TVA did not intend for this list to be construed as a list of procedure titles or narrow subject areas. In the response, TVA provided a table that addressed each procedure subject provided in the RAI and a related matrix showing the procedure subject and the related TVA procedural provisions topical area.

Technical Evaluation: According to NUREG-0654/FEMA-REP-1, Evaluation Criterion P.7, "each plan shall contain an appendix listing, by title, procedures required to implement the plan." The staff created **Open Item 13.3-24** to track the need for the applicant to provide a list of EPIPs, by title, in the BLN Emergency Plan. The staff finds the proposed text acceptable pending resolution of Open Item 13.3-24.

Technical Information in the Emergency Plan: [P.8] The BLN Emergency Plan format directly follows the format of NUREG-0654, Revision 1. Appendix 8, "Cross-References to Regulations, Guidance, and State and Local Plans," provides a cross reference for regulatory guidance (includes Appendix E) and NUREG-0654.

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan is acceptable because it includes a table of contents in accordance with the guidance provided in NUREG-0654/FEMA-REP-1. In addition, the staff finds that the BLN Emergency Plan also includes a cross-reference listing to the evaluation criteria, thus meeting the guidance in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [P.9] Section II.P.9, "Emergency Plan Audits," of the BLN Emergency Plan describes TVA's independent assessment of the BLN EP program. The assessment is performed by an internal TVA organization that is not named in the BLN Emergency Plan. The organization oversees the performance of periodic independent audits of the EP program consistent with 10 CFR 50.54(t). Frequency of the periodic audits is based on an assessment of performance, but all elements of the EP program must be reviewed at least once every 24 months.

Section II.P.9 also states that an audit is performed after a change occurs in personnel, procedures, equipment, or facilities that potentially could adversely affect EP, but no longer than 12 months after the change. Audit results are documented and improvement recommendations sent to TVA management. TVA's Records Management shall file and maintain records of this for five years.

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan describes arrangements for, and conducts independent reviews of the EP program at least every 12 months. The review will include the emergency plan, its implementing procedures and practices, training, readiness testing, equipment, and interfaces with State and local governments. Management controls are described for evaluation and correction of review findings. The result of the review, along with recommendations for improvements, will be documented, reported to appropriate licensee corporate and plant management, and involved Federal, State and local organizations, and retained for a period of five years. Therefore, the staff finds that the description provided in Section II.P.9 of the BLN Emergency Plan is acceptable because it meets the guidance in NUREG-0654/FEMA-REP-1.

Technical Information in the Emergency Plan: [P.10] Section II.P.10, "Emergency Telephone Numbers," of the BLN Emergency Plan states that the Emergency Preparedness Manager (or designee) is responsible for performing a quarterly review of the telephone numbers in emergency response procedures and for ensuring required revisions are completed.

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan is acceptable because it provides for updating telephone numbers in emergency procedures at least quarterly in accordance with the guidance provided in NUREG-0654/FEMA-REP-1.

13.3.1C.P.2 10 CFR Part 50, Appendix E Requirements

In determining whether the proposed emergency plan met the applicable regulatory requirements related to the area of responsibility for the planning effort: development, periodic review and distribution of emergency plans, the NRC staff also evaluated it against the following requirements in Appendix E to 10 CFR Part 50.

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

Technical Information in the Emergency Plan: Section II.P.1, "Training," of the BLN Emergency Plan states that training is provided to the Emergency Preparedness Manager and staff supporting the manager. The training includes formal education, professional meetings, industry meetings, plant specific training and other activities.

Section II.P.2, "Responsibility for Radiological Emergency Response Planning," of the BLN Emergency Plan states that the Site Executive, Plant Management is the overall authority for ensuing that there is an appropriate level of EP at the site. The responsibility for the actual planning effort is delegated to the Emergency Preparedness Manager.

Section II.P.4, "Plan Reviews and Updates," of the BLN Emergency Plan states that review and update of the BLN Emergency Plan is as needed and certified to be current on an annual basis. The main resource in identifying the need to change the plan is through drills and exercises.

Section II.P.5, "Distribution of Revised Plans," of the BLN Emergency Plan discusses distribution of the revised plans. The Emergency Preparedness Manager, or designee, makes needed changes to the BLN Emergency Plan. The pages that are changed are marked and dated to indicate the change. The BLN safety review committee reviews and approves the changes. If the changes are judged to decrease the effectiveness of the BLN Emergency Plan according to the requirements of 10 CFR 50.47(b) or 10 CFR Part 50, Appendix E, then the changes are submitted to the NRC for approval, in accordance with the requirements in 10 CFR 50.54(q). The approved revised plans are distributed through the BLN document control organization.

Technical Evaluation: The NRC staff finds that the BLN Emergency Plan is acceptable because it adequately describes provisions to be employed to ensure that the emergency plan, its implementing procedures, and emergency equipment and supplies are maintained up-to-date in accordance with the guidance provided in NUREG-0654/FEMA-REP-1.

13.3.1C.P.3 Conclusion for Responsibility for the Planning Effort: Development, Periodic Review and Distribution of Emergency Plans

The NRC staff has reviewed the onsite emergency plan in regards to Planning Standard P of NUREG-0654/FEMA-REP-1 and 10 CFR Part 50, Appendix E.IV.G. The NRC will determine whether this planning standard is acceptable and the applicable requirements of Appendix E to 10 CFR Part 50 are met based on the review of the applicant's responses to the following open item:

Open Item:

- Open Item 13.3-24 was created to track the need for the applicant to provide a list of emergency plan implementing procedures, by title, in the BLN Emergency Plan.

13.3.1C.Q Hostile Action-Based Considerations

13.3.1C.Q.1 Regulatory Basis for Hostile Action-Based Considerations

Section 13.3 of NUREG-0800 states the following:

> The reviewer should verify that onsite staffing, facilities, and procedures are adequate to accomplish actions necessary in response to a security event, and the emergency plan and/or procedures reflect the specific site needs.
>
> The reviewer should verify that the application contains EALs to ensure that a site-specific, security event results in an emergency classification declaration of at least a notification of unusual event. The classification scheme should also reflect the strategy for escalation to a higher-level event classification.

13.3.1C.Q.2 Technical Information in the Emergency Plan

Section J.6, "Protective Measures," of the BLN Emergency Plan addresses protective measures in the event of a hostile attack against the site. Section J.6 states that in the event of a hostile attack against the site, conditions may dictate initiation of protective measures other than personnel assembly, accountability and evacuation. The SED will make decisions regarding appropriate protective measures based on an evaluation of site conditions, including input from the security force. If, based on the judgment of the SED, personnel assembly, accountability, and evacuation may result in undue hazards to site personnel; the SED may direct other protective measures, including:

- evacuation of personnel from areas and buildings perceived as high-value targets
- site evacuation by opening, while continuing to defend, security gates
- dispersal of key personnel
- onsite sheltering
- staging of ERO personnel in alternate locations pending restoration of safe conditions
- implementation of accountability measures following restoration of safe conditions

The EALs described in Section 13.3.1C.D of this SER address security threats, events, and hostile actions for each emergency class. However, since the information provided did not address certain aspects of the EAL scheme, in RAI 13.03-40, the applicant was requested to

provide additional information related to its EAL scheme. The applicant's response to this RAI is addressed in Section 13.3.1C.D, "Emergency Classification System," of this SER.

13.3.1C.Q.3 Technical Evaluation

The staff finds the description of onsite staffing and facilities necessary to respond to a security event acceptable because it meets the guidance in NUREG-0800.

The applicant did not address procedures to accomplish actions necessary in response to a security event that reflect the specific site needs as specified in NUREG-0800. The staff created **Open Item 13.3-25** to track this issue.

The BLN Emergency Plan contains EALs to ensure that a site-specific, security event results in an emergency classification declaration of at least a notification of unusual event. The classification scheme reflects the strategy for escalation to a higher-level event classification. As discussed in Section 13.3.1C.D, the staff created **Open Item 13.3-8** to track the applicant's reference to an NRC-endorsed methodology and the inclusion of a proposed license condition in the COL application.

13.3.1C.Q.4 Conclusion for Hostile Action-Based Considerations

On the basis of its review of the onsite emergency plan as described above, the NRC staff cannot conclude that the information provided in the BLN Emergency Plan is consistent with those portions of Section 13.3 in NUREG-0800 related to hostile action-based considerations. The NRC will determine whether this emergency planning area is acceptable and document its determination in the FSER, based upon information the applicant has provided to date and its response to the open item as follows:

Open Item:

- The applicant did not address procedures to accomplish actions necessary in response to a security event that reflect the specific site needs. Open Item 13.3-25 was created to track this issue.

13.3.1C.R Evacuation Time Estimate (ETE) Analysis

13.3.1C.R.1 Regulatory Basis

10 CFR 52.79(a)(21) refers to 10 CFR 50, Appendix E Section IV, "Content of Emergency Plans," requires that the applicant provide an analysis of the time required to evacuate and for taking other protective actions for various sectors and distances within the plume exposure pathway EPZ for transient and permanent populations.

The NRC staff evaluated the ETE Report against Appendix 4, "Evacuation Time Estimates within the Plume Exposure Pathway Emergency Planning Zone," to NUREG-0654/FEMA-REP-1. Appendix 4 includes detailed guidance that the staff considered in determining whether the ETE analysis meets the applicable regulatory requirements in Appendix E to 10 CFR Part 50.

13.3.1C.R.2 Technical Information in ETE Analysis

The applicant provided an analysis of the time required to evacuate the plume exposure pathway EPZ and for taking other protective actions for various sectors and distances within the plume exposure pathway EPZ for transient, permanent, and special facility populations. The report titled "Bellefonte Nuclear Plant Development of Evacuation Time Estimates," dated September 2007, (the ETE Report) was provided as a separate document in Part 5, "Emergency Plan," of the COL application as supplemental information to the BLN Emergency Plan (ADAMS Accession ML090290438 through ML090290464).

In RAI 13.03-12, the applicant was requested to clarify assumptions related to the calculations for icy weather conditions. In response, the applicant stated that the assumption of 15 percent reduction in highway capacity during icy conditions was based on research findings on rain and snow. The applicant changed the 15 percent reduction during icy conditions to 20 percent. However, the applicant did not state whether this change had been used in Scenario 8, the only scenario with icy weather conditions.

13.3.1C.R.3 Technical Evaluation of the ETE Analysis

The ETE Report was reviewed by the NRC staff. The results of the review of the ETE Report are contained in a draft Technical Evaluation Report dated April 13, 2009 (ADAMS Accession ML091530481). The staff created **Open Item 13.3-26** to track the need for the applicant to clarify whether the revised traffic capacity factor was used in the ETE calculations for Scenario 8 and, if not, how using the revised traffic capacity factor would impact the ETE results.

In addition, based on its review of the ETE Report, the staff requested and received additional information. The applicant provided the information in an ETE Report Supplement dated February 27, 2009 (ADAMS Accession ML090650633). The staff finds the information in the ETE Report Supplement acceptable because it meets the guidance in NUREG-0654/FEMA-REP-1.

13.3.1C.R.4 Conclusion for the BLN ETE Report

On the basis of its review of the report titled, “Bellefonte Nuclear Plant Development of Evacuation Time Estimates,” dated September 2007, (the ETE Report), described above, the NRC staff concludes that the information provided in the ETE Report is not consistent with those portions of Section 13.3 in NUREG-0800, related to the ETE analysis. Therefore, the ETE Report is unacceptable and does not meet the applicable requirements of 10 CFR Part 50, Appendix E.IV.

The staff identified the following open item as needing to be resolved before concluding that the ETE Report meets applicable requirements:

Open Item:

- The staff needs clarification of whether the revised traffic capacity factor was used in the ETE calculations for Scenario 8 and, if not, how using the revised traffic capacity factor would impact the ETE results. The staff will continue to track this as **Open Item 13.3-26**.

13.3.1C.S Emergency Planning ITAAC

13.3.1C.S.1 Regulatory Basis: The staff considered the following regulatory requirement and guidance in the evaluation of the information in the COL application related to emergency

planning ITAAC: 10 CFR 52.80, “Contents of applications; additional technical information.” 10 CFR 52.80(a) requires that the application contain proposed inspections, tests, and analyses; Table 14.3.10-1, "Emergency Planning Generic Inspections, Tests, Analyses, and Acceptance Criteria," of NUREG-0800; and Staff Requirements Memorandum to SECY-05-197, in which the Commission approved the use of generic EP-ITAAC.

13.3.1C.S.2 Technical Information Related to the Emergency Plan: The applicant provided EP-ITAAC in Table 3.8-1 in the COL application. The applicant incorporated by reference the AP1000 DCD, which includes some EP-related ITAAC in Table 3.1-1. The staff’s evaluation is in a supplement to NUREG-1793.

In Table 3.8-1, Acceptance Criterion 6.3 ends with the words "for various radiological conditions." However, corresponding Acceptance Criteria 9.3 in Table 14.3.10-1, "Emergency Planning Generic Inspections, Tests, Analyses, and Acceptance Criteria," of NUREG-0800 ends with the words "for various meteorological conditions." In RAI 13.03-39(B), the applicant was asked to justify the wording difference between Acceptance Criterion 6.3 in the COL application and corresponding Acceptance Criterion 9.3 in NUREG-0800. In response, the applicant stated that Acceptance Criterion 6.3 will be corrected to end with the words "for various meteorological conditions."

Also in Table 3.8-1, acceptance criterion is frequently prefaced with the phrase “A report exists that confirms ....” In RIS 2008-05, “Lessons Learned to Improve Inspections, Tests, Analyses, and Acceptance Criteria Submittal,” February 27, 2008, the following guidance is provided in regard to the use of such a phrase.

If applicants use the phrase, “a report exists and concludes that ...,” they should consider specifying the scope and the type of report. For example, they should explain whether the scope of the report includes the design, the as-built construction (as reconciled with the design), or any other information.

Consistent with the guidance provided in RIS 2008-05, the applicant was asked in RAI 13.03-39(C) to discuss the type and scope of the reports cited in Table 3.8-1, including how the report will serve to provide accurate and reliable confirmation that the acceptance criteria have been met, or consider removing the words “A report exists that confirms…” from the table, to create specific and sufficiently objective acceptance criteria. In response to RAI 13.03-39(C), the applicant stated that the phrase, "a report exists that confirms…" will be removed from Acceptance Criteria 1.1.1, 1.1.2, 4.1, 5.1.1, 5.1.2, 5.1.3, 5.1.4, 5.2.1, 5.2.2, 6.2.1, 6.3, 6.4, 6.5, and 6.7. The staff finds this response acceptable because it provides an objective acceptance criteria as described in Table 14.3.10-1 of NUREG-0800.

Table 3.8-1 also provides four separate acceptance criteria for Planning Standard 8.0, “Exercises and Drills.” In RAI 13.03-39, additional information was requested regarding the full-participation exercise. In RAI 13.03-39(D1), the applicant was requested to provide additional information regarding the need for ITAAC-related offsite exercise objectives associated with the full participation exercise as specified in Table 14.3.10-1, "Emergency Planning Generic Inspections, Tests, Analyses, and Acceptance Criteria," of NUREG-0800. In response, the applicant stated that an acceptance criterion related to offsite exercise objectives is inappropriate, since ITAAC are to be performed by the licensee. **Open Item 13.3-27** was created to track the need for a proposed ITAAC regarding offsite exercise objectives being met following the full participation exercise.

In RAI 13.03-39(D2), the NRC staff requested that the applicant explain why the word "successfully" was not included in Acceptance Criterion 8.1.2.2 as specified in Table 14.3.10-1 of NUREG-0800. In response, the applicant stated that objective criteria are described in Acceptance Criteria 8.1.2.1 and 8.1.2.2 that can be met, and that the term "successfully" is subjective.

In RAI 13.03-39(D3), the staff requested additional information regarding the onsite response organization. In response, the applicant stated that the following clarifying note will be added to Acceptance Criteria 8.1.2.1 and 8.1.2.2:

> Note 1: Applicant emergency response organization assigned responsibilities are specified in Sections II.B.1 through II.B.7 of the COL Application Emergency Plan.

In RAI 13.03-39(D4), the staff requested that the applicant provide specific full participation exercise objectives and associated acceptance criteria. In response, the applicant stated, in part, that since it will be several years before the full participation exercise, the development of specific exercise objectives will be undertaken when the exercise planning effort is initiated with State and local agencies. Table 14.3.10-1 of NUREG-0800 specifies the need for specific, onsite, full participation exercise objectives and associated acceptance criteria. The staff identified this as **Open Item 13.3-28**.

EP Program Element 3.2 of Table 3.8.1, states that the means exists for communications from the control room, TSC, and EOF to NRC Headquarters and regional office EOCs (including establishment of the ERDS between the onsite computer system and the NRC Operations Center). The "Inspections, Tests, and Analyses" for this EP Program Element contains a note that states that the ITAAC for these communications systems are addressed in Table 3.1-1, "Inspections, Tests, Analyses, and Acceptance Criteria," in the AP1000 DCD, Revision 17. In RAI 13.03-39(E), the applicant was asked to provide information regarding the applicant's capability to establish communications with the regional NRC EOC and for ERDS between the onsite computer and the NRC Operations Center. In response to RAI 13.03-39(E), the applicant stated, in part, that the ERDS plant performance data is collected by the AP1000 Plant Monitoring System (PMS) and then provided to the NRC Operations Center. The applicant also stated that since the PMS is not finalized, the exact protocol for transmitting the data is not yet finalized. The staff identified the need for additional information regarding the applicant's capability to establish communications with the regional NRC EOC and for ERDS between the onsite computer and the NRC Operations Center as **Open Item 13.3-29**.

In RAI 13.03-39(F), the applicant was asked to discuss why EP-ITAAC were not developed for 8 of the 17 Planning Standards described in Table 14.3.10-1 of NUREG-0800. In response, the applicant stated that the additional ITAAC were addressed in the proposed set of EP-ITAAC in the COL application. The staff finds this response unacceptable because the applicant has not addressed the following acceptance criteria from Table 14.3.10-1 of NUREG-0800, specifically:

- Acceptance criteria 1.1, "Assignment of Responsibility" identifies the need for either an emergency plan implementing procedure or a staffing roster that demonstrates that staff exists to provide a 24-hour per day emergency response capability. This is **Open Item 13.3-30**.

- Acceptance criteria 2.1, “Onsite Emergency Organization,” identifies the need for either an emergency plan implementing procedure or a staffing roster that demonstrates that staff exists to provide minimum and augmented on-shift staffing levels. This is **Open Item 13.3-31**.

- Acceptance criteria 11.1 through 11.4, "Radiological Exposure Control," identifies that a means exists to provide onsite radiation protection; a 24-hour per day capability to determine the doses received by emergency personnel and maintain dose records; to decontaminate relocated onsite and emergency personnel, including waste disposal; and to provide onsite contamination control measures. This is **Open Item 13.3-32**.

- Acceptance criteria 16.1, "Responsibility for the Planning Effort; Development, Periodic Review, and Distribution of Emergency Plans," identifies the need to confirm that emergency plans have been distributed to all organizations and appropriate individuals with responsibility for implementation of the plans. This is **Open Item 13.3-33**.

- Acceptance criteria 17.1, "Implementing Procedures," identifies the need to provide detailed implementing procedures for the onsite emergency plan no less than 180 days prior to fuel load. This is **Open Item 13.3-34**.

- Acceptance criteria 9.2, “Accident Assessment,” identifies that a means exists to determine the source term of releases of radioactive material within plant systems, and the magnitude of the release of radioactive materials based on plant system parameters and effluent monitors. This is **Open Item 13.3-35**.

- Acceptance criteria 9.3, “Accident Assessment,” identifies that a means exists to continuously assess the impact of the release of radioactive materials to the environment, accounting for the relationship between effluent monitor readings, and onsite and offsite exposures and contamination for various meteorological conditions. This is **Open Item 13.3-36**.

- Acceptance criteria 9.7, “Accident Assessment,” identifies that a means exists to make rapid assessment of actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways. This is **Open Item 13.3-37**.

13.3.1C.S.3 Technical Evaluation of the Proposed Emergency Plan EP-ITAAC: The onsite emergency plan with EP-ITAAC was submitted as required by 10 CFR 52.80(a). The staff used the generic EP-ITAAC in Table 14.3.10-1 of NUREG-0800 to review the applicant’s proposed ITAAC.

The staff confirmed that the incorrect wording in EP-ITAAC Acceptance Criterion 6.3 was corrected in Revision 1 to Table 3.8-1. Therefore, the applicant's response to RAI 13.03-39(B) is acceptable because proposed EP-ITAAC acceptance criteria 6.3 meet the guidance in Table 14.3.10-1 of NUREG-0800.

In addition, the staff confirmed that the applicant deleted the phrase "a report exists that confirms…" from EP-ITAAC acceptance criteria 1.1.1, 1.1.2, 4.1, 5.1.1, 5.1.2, 5.1.3, 5.1.4, 5.2.1, 5.2.2, 6.2.1, 6.3, 6.4, 6.5, and 6.7 in Revision 1 to Table 3.8-1. Therefore, the applicant's response to RAI 13.03-39(C) and the above EP-ITAAC acceptance criteria are acceptable because they meet the guidance in Table 14.3.10-1 of NUREG-0800.

The response to RAI 13.03-39(D2) provided sufficient additional information and is acceptable because it meets the guidance in Table 14.3.10-1 of NUREG-0800. Relative to RAI 13.03-39(D3), the staff confirmed that Note 1 related to the assigned responsibilities of the onsite ERO was added to EP-ITAAC acceptance criteria 8.1.2.1 and 8.1.2.2 in Revision 1 to Table 3.8-1 in Part 10 of the COL application. Therefore, the applicant's response to RAI 13.03-39(D3) is acceptable because it meets the guidance in Table 14.3.10-1 of NUREG-0800.

13.3.1C.S.4 Conclusion for the Emergency Plan ITAAC

On the basis of its review of the proposed EP-ITAAC in Part 10 of the BLN COL application as described above, the NRC staff concludes that that information is not consistent with Table 14.3.10-1 of NUREG-0800.

The NRC staff will determine whether this planning standard is acceptable based on resolution of the following open items:

- Open Item 13.3-27 proposing an EP-ITAAC regarding offsite exercise objectives being met following the full participation exercise.

- Open Item 13.3-28 proposing an EP-ITAAC related to exercise objectives and acceptance criteria for the full participation exercise.

- Open Item 13.3-29 proposing an EP-ITAAC regarding the establishment of communications with the regional NRC EOC and ERDS between the onsite computer and the NRC Operations Center. (relates to Sections F and H)

- Open Item 13.3-30 proposing an EP-ITAAC that addresses an emergency plan implementing procedure or staffing roster that demonstrates that staff exists to provide a 24-hour per day emergency response capability.

- Open Item 13.3-31 proposing an EP-ITAAC that addresses an emergency plan implementing procedure or staffing roster that demonstrates that staff exists to provide minimum and augmented on-shift staffing levels.

- Open Item 13.3-32 proposing an EP-ITAAC that addresses the need to provide onsite radiation protection; a 24-hour per day capability to determine the doses received by emergency personnel and maintain dose records; to decontaminate relocated onsite and emergency personnel, including waste disposal; and to provide onsite contamination control measures.

- Open Item 13.3-33 proposing an EP-ITAAC that addresses an inspection of the emergency plan distribution list to insure that all organizations and appropriate individuals with responsibility for implementing the plan have been provided a copy of the final, approved plan.

- Open Item 13.3-34 proposing an EP-ITAAC that addresses the need to provide detailed implementing procedures for the onsite emergency plan no less than 180 days prior to fuel load.

- Open Item 13.3-35 proposing an EP-ITAAC that addresses a means exists to determine the source term of releases of radioactive material within plant systems, and the magnitude of the release of radioactive materials based on plant system parameters and effluent monitors.

- Open Item 13.3-36 proposing an EP-ITAAC that addresses a means exists to continuously assess the impact of the release of radioactive materials to the environment, accounting for the relationship between effluent monitor readings, and onsite and offsite exposures and contamination for various meteorological conditions.

- Open Item 13.3-37 proposing an EP-ITAAC that addresses a means exists to make rapid assessment of actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways.

13.4 Operational Programs (Related to RG 1.206, Section C.III.1, Chapter 13, C.I.13.4, "Operational Program Implementation")

13.4.1 Introduction

In SECY-05-0197, dated October 28, 2005, the NRC staff detailed its plan for reviewing operational programs in a COL application. The Commission approved the NRC staff's plan in the related Staff Requirements Memorandum (SRM), dated February 22, 2006. Although numerous programs support the operation of a nuclear power plant, SECY-05-0197 focused on those programs that meet the following three criteria:

1. Required by regulation
2. Reviewed in a COL application
3. Inspected to verify program implementation as described in the FSAR

The programs that meet the above criteria are collectively referred to as "operational programs" and are identified in SECY-05-0197.

13.4.2 Summary of Application

Section 13.4 of the BLN COL FSAR, Revision 1, incorporates by reference Section 13.4 of the AP1000 DCD, Revision 17.

In addition, in BLN COL FSAR Section 13.4 and in BLN COL FSAR, Part 10, License Conditions 3 and 6, the applicant provided the following:

AP1000 COL Information Item

- STD COL 13.4-1

The applicant provided additional information in STD COL 13.4-1 to address COL Information Item 13.4-1 and COL Action Item 13.4-1, identified in NUREG-1793, Appendix F, "Combined License Action Items." This item states that COL applicants referencing the AP1000 certified design will address each operational program.

License Conditions

- Part 10, License Condition 3, "Operational Program Implementation"
- Part 10, License Condition 6, "Operational Program Readiness"

Both license conditions are related to STD COL 13.4-1. License Condition 3 addresses implementation milestones for those operational programs whose implementation is not addressed in the regulations. License Condition 6 includes the timing of information related to operational programs to support NRC inspection activities.

13.4.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is addressed within the FSER related to the DCD.

The regulatory basis of the supplemental information presented in this application is identified in the individual chapters of this SER that address the evaluations of the specific operational programs, (which are itemized in the next section), as clarified by the regulatory guidance in SECY-05-0197 and RG 1.206.

13.4.4 Technical Evaluation

The NRC staff reviewed Section 13.4 of the BLN COL FSAR and checked the referenced DCD to ensure that the combination of the DCD and the information in the COL represent the complete scope of information relating to this review topic.[1] The NRC staff's review confirmed that the information contained in the application and incorporated by reference addresses the required information relating to operational programs. Section 13.4 of the AP1000 DCD is being reviewed by the staff under Docket Number 52-006. The NRC staff's technical evaluation of the information incorporated by reference related to operational programs will be documented in the staff SER on the DC application for the AP1000 design.

The staff reviewed the information contained in the BLN COL FSAR:

AP1000 COL Information Item

- STD COL 13.4-1

The applicant provided supplemental information by adding the following statement to Section 13.4 of the BLN COL FSAR:

> Operational programs are specific programs that are required by regulations. Table 13.4-201 lists each operational program, the regulatory source for the program, the section of the FSAR in which the operational program is described, and the associated implementation milestone(s).

The applicant proposed the following license conditions in Part 10 of the BLN COL FSAR:

License Conditions

- License Condition 3, "Operational Program Implementation"

  The licensee shall implement the programs or portions of programs identified in Table 13.4-201 on or before the associated milestones in Table 13.4-201.

  A. Construction Initiation – The licensee shall implement each operational program identified below prior to initiating construction of nuclear safety or security related structures, systems, or components.
     A.1 – Fitness for Duty (Construction)

  B. 18 Months Prior to Fuel Load – The licensee shall implement each operational program identified below at least 18 months prior to the scheduled date of initial fuel load.
     B.1 – Reactor Operator Training
     B.2 – Non-Licensed Plant Staff Training

  C. Receipt of materials – The licensee shall implement each operational program identified below prior to initial receipt of byproduct, source, or special nuclear materials onsite (excluding Exempt Quantities as described in 10 CFR 30.18).
     C.1 – Radiation Protection (applicable portions)

  D. Fuel Receipt – The licensee shall implement each operational program identified below prior to initial receipt of fuel onsite.
     D.1 – Fire Protection (applicable portions)
     D.2 – Radiation Protection (applicable portions)
     D.3 – Security Program (applicable portions)

  E. Construction Testing – The licensee shall implement each operational program identified below prior to initial construction testing.
     E.1 – Initial Test Program – Construction Testing

F. Preoperational Testing – The licensee shall implement each operational program identified below prior to initial preoperational testing.
   F.1 – Initial Test Program – Preoperational Testing

G. Fuel Loading – The licensee shall implement each operational program identified below prior to initial fuel load.
   G.1 – Environmental Qualification
   G.2 – Pre-Service Testing
   G.3 – Process and Effluent monitoring and Sampling
   G.4 – Radiation Protection (applicable portions)
   G.5 – Motor-Operated Valve Testing
   G.6 – Fire Protection
   G.7 – Fitness for Duty (Operations)
   G.8 – Containment Leakage Rate Testing Program

H. Startup Testing – The licensee shall implement each operational program identified below prior to initial startup testing.
   H.1 – Initial Test Program – Startup Testing

I. MODE 4 – Not used.

J. Initial Criticality – The licensee shall implement each operational program identified below prior to initial criticality.
   J.1 – Reactor Vessel Material Surveillance

K. Waste Shipment – The licensee shall implement each operational program identified below prior to initial radioactive waste shipment.
   K.1 – Radiation Protection

License Condition 6, "Operational Program Readiness"

The licensee shall submit to the appropriate Director of the NRC, a schedule, no later than 12 months after issuance of the COL, that supports planning for and conduct of NRC inspections of operational programs listed in the operational program FSAR Table 13.4-201. The schedule shall be updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until either the operational programs in the FSAR table have been fully implemented or the plant has been placed in commercial service, whichever comes first.

a. This schedule shall include a submittal schedule for the emergency planning implementing procedures to the NRC consistent with 10 CFR Part 50, Appendix E, Section V.

[Note: License Condition 6 includes Sections b. through d., which are not repeated here because the information in these sections is not related to the operational programs evaluated in this SER section.]

The following table is a compilation of the information provided by the applicant in BLN COL FSAR Table 13.4-201 and includes the specific locations in this SER where the specific operational programs are evaluated. The information in this table is used by the NRC

staff to evaluate the acceptability of the supplemental information added by STD COL 13.4-1 and the proposed license conditions.

Operational Program	Implementation Milestone(s)	Implementation Requirement(s)	Bellefonte SER Section(s)
1. Inservice Inspection Program	Prior to commercial service.	10 CFR 50.55a(g); ASME XI IWA-2430(b)	5.2.4, 5.4.2, 6.6
2. Inservice Testing Program	After generator online on nuclear heat.	10 CFR 50.55a(f), ASME OM Code	3.9.6, 5.2.4
3. Environmental Qualification Program	Prior to initial fuel load.	License Condition	3.11
4. Preservice Inspection Program	Completion prior to initial plant start-up.	10 CFR 50.55a(g); ASME XI IWB-2200(a)	5.2.4, 5.4.2, 6.6
5. Reactor Vessel Material Surveillance Program	Prior to initial criticality.	License Condition	5.3.2
6. Preservice Testing Program	Prior to initial fuel load.	License Condition	3.9.6
7. Containment Leakage Rate Testing Program	Prior to initial fuel load.	License Condition	TBD*
8. Fire Protection Program	Prior to receipt of fuel onsite. Prior to initial fuel load.	License Condition	9.5.1
9. Process and Effluent Monitoring and Sampling Program	Prior to initial fuel load.	License Condition	11.4, 11.5
10. Radiation Protection Program (including as low as reasonably achievable (ALARA) practices)	1. Prior to initial receipt of byproduct, source, or special nuclear materials (excluding Exempt Quantities as described in 10 CFR 30.18). 2. Prior to receipt of fuel onsite. 3. Prior to initial fuel load. 4. Prior to first shipment of radioactive waste.	License Condition	12.1, 12.5

Operational Program	Implementation Milestone(s)	Implementation Requirement(s)	Bellefonte SER Section(s)
11. Non-Licensed Plant Staff Training Program	18 months prior to scheduled date of initial fuel load.	10 CFR 50.120(b)	13.2
12. Reactor Operator Training Program	18 months prior to scheduled date of initial fuel load.	License Condition	13.2
13. Reactor Operator Requalification Program	Within 3 months after the date the Commission makes the finding under 10 CFR 52.103(g).	10 CFR 50.54 (i-1)	13.2
14. Emergency Planning	Full participation exercise conducted within 2 years of scheduled date for initial loading of fuel. Onsite exercise conducted within 1 year before the scheduled date for initial loading of fuel. Applicant's detailed implementing procedures for its emergency plan submitted at least 180 days prior to scheduled date for initial loading of fuel.	10 CFR Part 50, Appendix E, Section IV.F.2.a(ii) 10 CFR Part 50, Appendix E, Section IV.F.2.a(ii) 10 CFR Part 50, Appendix E, Section V	13.3

Operational Program	Implementation Milestone(s)	Implementation Requirement(s)	Bellefonte SER Section(s)
15. Security Program:			
Physical Security Program	Prior to receipt of fuel onsite.	License Condition	TBD*
Safeguards Contingency Program	Prior to receipt of fuel onsite.	License Condition	
Training and Qualification Program	Prior to receipt of fuel onsite.	License Condition	
Fitness for Duty Program (Construction Management and Oversight Personnel)	Prior to initiating construction.	License Condition	
Fitness for Duty Program (Construction - Workers and First Line Supv.)	Prior to initiating construction.	License Condition	
Fitness for Duty Program (Operation)	Prior to initial fuel load.	License Condition	
16. Quality Assurance Program – Operation	COL issuance.	10 CFR 50.54(a)(1)	17.1 through 17.5
17. Maintenance Rule	Prior to fuel load authorization in accordance with 10 CFR 52.103(g).	10 CFR 50.65(a)(1)	17.6
18. Motor-Operated Valve Testing	Prior to initial fuel load.	License Condition	3.9.6

Operational Program	Implementation Milestone(s)	Implementation Requirement(s)	Bellefonte SER Section(s)
19. Initial Test Program	Prior to the first construction test being conducted for the Construction Test Program. Prior to the first preoperational test for the Preoperational Test Program. Prior to initial fuel load for the Startup Test Program.	License Condition	14

*Note: There are several BLN SER sections in the above table marked TBD, because the SER sections for the corresponding operational program are not yet available.

The NRC staff's review of the acceptability of the supplemental information added by STD COL 13.4-1 and the proposed license conditions is based on four considerations. The first consideration is the acceptability of the individual operational programs, including the implementation of the different phases of these operational programs. The second consideration is whether the applicant correctly identified those operational programs whose implementation requirements are not addressed in the regulations, and, therefore, need to be included in License Condition 3. The third consideration is whether the applicant correctly specified in License Condition 6 the timing of information related to operational programs to support NRC inspection activities. The fourth consideration is whether the list of operational programs in BLN COL FSAR Table 13.4-201 is complete.

In regard to the first consideration, the SER sections referenced in the above table address the NRC staff's regulatory evaluation of the individual operational programs. For each of these operational programs, the staff has either concluded that the applicant has satisfied the applicable regulatory guidance (including the implementation requirements when specified in the regulations), or the staff's review is still ongoing. For those operational program reviews that are ongoing, the staff's final conclusions will be provided in the SER sections referenced in the above table at a later date.

In regard to the second consideration, the NRC staff verified that those operational programs, whose implementation requirements are not specified in the regulations, are captured in License Condition 3.

In regard to the third consideration, the NRC staff compared License Condition 6 to the recommended license condition in SECY-05-0197 related to the timing of information to support NRC inspection activities of operational programs. The staff finds that the applicant used language similar to the recommended license condition specified in SECY-05-0197 to develop License Condition 6. It should be noted that License Condition 6 addresses additional scheduler requirements (Sections b. through d.) that are not related to the operational programs evaluated in this section of the SER, and, therefore, are not evaluated in this SER section.

In regard to the fourth consideration, the NRC staff compared the operational programs provided by the applicant in BLN COL FSAR Table 13.4-201 (included in the above table) to the operational programs specified in SECY-05-0197. The staff finds that the applicant has included all the operational programs specified in SECY-05-0197, including the two operational programs (Motor-Operated Valve Testing Program and the Safeguards Contingency Program) added by the NRC to the list of operational programs provided by the NEI in its letter dated August 31, 2005.

There are differences between BLN COL FSAR Table 13.4-201 and the table of operational programs in SECY-05-0197 with respect to implementation milestone information. The first difference is the SECY paper states that there are no required implementation milestones in the regulations for the Maintenance Rule Program and the Quality Assurance Program (Operation), while BLN COL FSAR Table 13.4-201 references regulations that require implementation milestones for these two programs. The staff has reviewed the regulation references provided by the applicant and concludes that they do provide appropriate requirements for implementation milestones. Further support for this conclusion is the regulatory guidance in Section C.I.13.4 of RG 1.206. The example table located in this section of the RG references the same implementation regulatory guidance for the Maintenance Rule Program and the Quality Assurance Program (Operation) as does BLN COL FSAR Table 13.4-201.

The second difference is that the SECY paper states that 10 CFR Part 50, Appendix J, specifies implementation requirements for the Containment Leakage Rate Testing Program, while BLN COL FSAR Table 13.4-201 states that the implementation milestones for this program will be controlled by a license condition. The staff has reviewed the implementation milestone proposed in License Condition 3 for the Containment Leakage Rate Testing Program, and finds that it is more stringent than the regulatory guidance in Appendix J. Therefore, the staff finds this difference to be acceptable.

The applicant added an operational program to BLN COL FSAR Table 13.4-201, the Initial Test Program, which is not in the list of operational programs specified in SECY-05-0197. The option of adding operational programs to this list is specifically allowed by SECY-05-0197. Further support for the acceptability of adding the Initial Test Program is that the example table located in Section C.I.13.4 of RG 1.206 also lists this operational program.

Therefore, the NRC staff concludes that the additional information (STD COL 13.4-1) provided by the applicant in BLN COL FSAR Section 13.4, in conjunction with the conditions specified in BLN COL FSAR, Part 10, License Conditions 3 and 6, complies with the applicable regulatory guidance provided in SECY-05-0197.

13.4.5 Post Combined License Activities

The following items were identified as the responsibility of the COL holder:

- Part 10, License Condition 3, “Operational Program Implementation,” addresses implementation milestones for those operational programs whose implementation is not addressed in the regulations.

- Part 10, License Condition 6, “Operational Program Readiness,” includes the timing of information related to operational programs to support NRC inspection activities.

13.4.6 Conclusion

The NRC staff reviewed the application and checked the referenced DCD. The NRC staff's review confirmed that the applicant addressed the required information relating to operational programs, and there is no outstanding information expected to be addressed in the BLN COL FSAR related to this section.

The Westinghouse application to amend Appendix D to 10 CFR Part 52 includes changes to Section 13.4 of the AP1000 DCD, as stated in Revision 17 of the AP1000 DCD. The staff is reviewing this information on Docket Number 52-006. The results of the NRC staff's technical evaluation of the information incorporated by reference in the BLN COL FSAR will be documented in a supplement to NUREG-1793. The supplement to NUREG-1793 is not yet complete, and this is being tracked as part of Open Item 1-1. The staff will update Section 13.4 of this SER to reflect the final disposition of the DC application.

The staff concludes that the relevant information presented in the BLN COL FSAR is acceptable based on the regulatory guidance addressed in SECY-05-0197, in conjunction with the applicable regulations specified in the individual sections of this SER that evaluated each of the operational programs discussed above. The staff based its conclusion on the following:

- STD COL 13.4-1, as related to operational programs, is acceptable because each of the operational programs in BLN COL FSAR Table 13.4-201 has either been found acceptable by the NRC staff in other sections of this SER, as noted in Section 13.4.4 above, or is currently under review. For those operational program reviews that are ongoing, the staff's final conclusions will be provided in the SER sections referenced in the above table at a later date. In addition, the guidance in SECY-05-0197 and RG 1.206 was used to verify that the applicant's list of operational programs is complete.

- License Condition 3, as related to the implementation requirements for those operational programs, is acceptable because it includes all operational programs whose implementation requirements are not addressed in the regulations, in accordance with the regulatory guidance in SECY-05-0197 and RG 1.206.

- License Condition 6, as it relates to the timing of information related to operational programs to support NRC inspection activities, is acceptable because it complies with the regulatory guidance in SECY-05-0197.

13.5 Plant Procedures

13.5.1 Introduction

Descriptions of the administrative and operating procedures that the applicant uses to ensure routine operating, off-normal, and emergency activities are conducted in a safe manner are provided. The applicant in its plant procedures provided a brief description of the nature and content of the procedures and a schedule for the preparation of appropriate written administrative and operating procedures. The applicant delineated in the description of the procedures the functional position for procedural revision and approval prior to implementation. Inspection of procedures will occur as part of the construction inspection program.

13.5.2 Summary of Application

Section 13.5 of the BLN COL FSAR incorporates by reference Section 13.5 of the AP1000 DCD, Revision 17.

In addition, in BLN COL FSAR, the applicant provided the following:

AP1000 COL Information Item

- STD COL 13.5-1

The applicant provided additional information in Section 13.5 (STD COL 13.5-1) to resolve COL Information Item 13.5-1 (COL Action Item 13.5-1), which addresses plant procedures.

13.5.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is addressed within the FSER related to the DCD.

In addition, the relevant requirements of the Commission regulations for plant procedures, and the associated acceptance criteria, are given in Sections 13.5.1.1 and 13.5.2.1 of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants" (SRP).

The applicable regulations and regulatory guidance are as follows:

- 10 CFR Part 50.34(a), "Preliminary Safety Analysis Report"
- 10 CFR Part 50.34(b), "Final Safety Analysis Report"
- Regulatory Guide (RG) 1.33, "Quality Assurance Program Requirements (Operation)"

13.5.4 Technical Evaluation

The NRC staff reviewed Section 13.5 of the BLN COL FSAR and checked the referenced DCD to ensure that the combination of the DCD and the information in the COL represent the complete scope of information relating to this review topic.[1] The NRC staff's review confirmed that the information contained in the application and incorporated by reference addresses the required information relating to plant procedures. Section 13.5 of the AP1000 DCD is being reviewed by the staff under Docket Number 52-006. The NRC staff's technical evaluation of the information incorporated by reference related to plant procedures will be documented in the staff SER on the DC application for the AP1000 design.

The staff reviewed the information contained in the BLN COL FSAR.

In Table 1.9-202, "Conformance with SRP Acceptance Criteria," of the BLN COL FSAR, the applicant identified two exceptions to the criteria of NUREG-0800, Section 13.5, which recommends providing a schedule for procedure development in the FSAR, and including a description of procedures to be used by operators in the FSAR. The guidance of NUREG-0800, Section 13.5.2.1, states that while the submittal should describe the different classifications of procedures that operators will use, it is not necessary that each applicant's procedures conform precisely. In addition, the procedures, regardless of title or classification, are to be available to

accomplish the functions identified in RG 1.33. NUREG-0800 makes allowance for "general areas." The staff finds the two exceptions to the criteria of NUREG-0800, Section 13.5, to be acceptable because the applicant's procedure classification follows the guidance in NUREG-0800, Section 13.5.

AP1000 COL Information Item

- STD COL 13.5-1, addressing plant procedures

The applicant provided the following additional information to resolve COL Information Item 13.5-1, which addresses the plant procedures of the COL applicant. COL Information Item 13.5-1 states:

> Combined License applicants referencing the AP1000 certified design will address plant procedures including the following:
>
> - Normal operation
> - Abnormal operation
> - Emergency operation
> - Refueling and outage planning
> - Alarm response
> - Maintenance, inspection, test and surveillance
> - Administrative
> - Operation of post-72 hour equipment

The commitment was also captured as COL Action Item 13.5-1 in Appendix F of the staff's FSER for the AP1000 DCD (NUREG-1793).

The applicant provided additional text in BLN COL FSAR Section 13.5 to describe the administrative, operating and maintenance procedures that the operating organizational staff uses to conduct routine operating, abnormal, and emergency activities in a safe manner.

In BLN COL FSAR Section 13.5, the applicant described the different classifications of procedures that the operators will use, including normal, abnormal, emergency, refueling and outage, and alarm response procedures. The staff finds this information acceptable because it meets the criteria in NUREG-0800, Chapter 13.5.2.1.

In BLN COL FSAR Section 13.5, the applicant stated that the format and content of procedures are controlled by the applicable AP1000 writer's guideline. The DCD, Section 13.5.1, describes a referenced document, APP-GW-GLR-040, "Plant Operations Maintenance and Surveillance Procedures," dated August 23, 2007, which includes the AP1000 writer's guidelines. The staff finds this acceptable because the applicant-provided procedure format and content are consistent with the guidance in NUREG-0800, Section 13.5.2.1.

In BLN COL FSAR Section 13.5.1, the applicant describes the nature and content of administrative procedures for both Category (A) - Controls, and Category (B) - Specific Procedures. The staff finds this acceptable because the listed procedures are consistent with the guidance in NUREG-0800, Section 13.5.1.1.

In BLN COL FSAR Section 13.5.2, the applicant stated that EP procedures are discussed in the Emergency Plan and that security procedures are discussed in the Security Plan. The

evaluation of EP procedures may be found in Section 13.3 of this SER. The evaluation of security procedures is found in Section 13.6 of this SER.

In BLN COL FSAR Section 13.5.2, the applicant stated the Quality Assurance Program description (QAPD) provides a description of procedural requirements for maintenance, instrument calibration and testing, inspection, and material control. The evaluation of QAPD procedures is found in Section 17.5 of this SER.

In BLN COL FSAR, Section 13.5.2.1, the applicant stated that information related to EOPs is addressed in the DCD. The DCD, Section 13.5.1, describes the program for developing and implementing EOPs and the required content of EOPs procedures in the referenced document, APP-GW-GLR-040. In addition, this information clarifies the procedure development program (PDP) as described in the procedures generation package (PGP) for EOPs, provides a description of the EOP verification and validation (V&V) program, and describes the program for training operators on EOPs, including an explanation of how the recommendations of TMI Action Plan, Item I.C.1, will be met. The staff finds the program for developing and implementing EOPs acceptable because it meets the criteria in NUREG-0800, Section 13.5.2.1.

13.5.5 Post Combined License Activities

There are no post-COL activities related to this section.

13.5.6 Conclusion

The NRC staff reviewed the application and checked the referenced DCD. The NRC staff's review confirmed that the applicant addressed the required information relating to plant procedures, and there is no outstanding information expected to be addressed in the BLN COL FSAR related to this section.

The Westinghouse application to amend Appendix D to 10 CFR Part 52 includes changes to Section 13.5 of the AP1000 DCD, as stated in Revision 17 of the AP1000 DCD. The staff is reviewing this information on Docket Number 52-006. The results of the NRC staff's technical evaluation of the information incorporated by reference in the BLN COL FSAR will be documented in a supplement to NUREG-1793. The supplement to NUREG-1793 is not yet complete, and this is being tracked as part of Open Item 1-1. The staff will update Section 13.5 of this SER to reflect the final disposition of the DC application.

In Table 1.9-202 of the BLN COL FSAR, the applicant identified two exceptions to the criteria of NUREG-0800, Section 13.5, related to providing FSAR descriptions of, and a development schedule for, procedures to be used by operators. The guidance of NUREG-0800, Section 13.5.2.1, makes allowances for "general areas," stating that while the FSAR submittal should describe the different classifications of procedures used by operators, it is not expected that each applicant's procedures conform precisely. The staff finds the two exceptions to be acceptable because the applicant's procedure classification follows the guidance in NUREG-0800, Section 13.5.

In addition, the staff concludes that the relevant information presented within the BLN COL FSAR is acceptable and meets the recommendations of NUREG-0800, Section 13.5.2.1. The staff based its conclusion on the following:

- STD COL 13.5-1, as related to plant procedures, is acceptable because it describes the procedures used by the applicant's operating organizational staff to conduct routine operating, abnormal, and emergency activities in a safe manner, in accordance with the regulatory guidance in NUREG-0800, Section 13.5.2.1.

13.6 Physical Security

Section 13.6 of this SER contains evaluations associated with the Security Plan, which consists of the Physical Security Plan, the Training and Qualification Plan, and the Safeguards Contingency Plan, and describes the comprehensive physical security program for Bellefonte Units 3 and 4. These evaluations are related to: (1) training and qualification of security personnel; (2) physical security organization; (3) access controls, including physical barriers; (3) arrangements with law enforcement authorities for assistance in responding to security threats; (4) searches of personnel and packages; (5) a means of detection, assessment, delay and response; (6) selection of personnel for security purposes; and (7) the implementation schedule for the physical security program.

In 2009, the NRC codified several security orders, including EA-03-086, "Design Basis Threat Order" dated April 29, 2003 (DBT Order); Order EA-02-261, "Access Authorization Order" dated January 7, 2003 (Access Authorization Order); and Order EA-03-039, "Security Personnel Training and Qualification Requirements Order" dated April 29, 2003 (Training Order). Because the codification of these security orders was scheduled to occur during the NRC staff's review of the Bellefonte Units 3 and 4 COLA, the review of the Security Plan was deferred until after this security order codification was complete. As such, the NRC staff does not intend to issue Section 13.6 with the SER with open items for Bellefonte Units 3 and 4. Instead, the staff intends to provide this section of the SER at a later time. The staff's review of the Security Plan is currently in progress, and its completion is being tracked as **Open Item 13.6-1**.

13.7 Fitness For Duty

Section 13.7 of this SER contains evaluations associated with the Fitness for Duty (FFD) Program, which is implemented and maintained in two phases; the construction phase program and the operating phase program.

In 2009, the NRC codified Order EA-03-038, "Fitness-for-Duty Requirements Order" dated April 29, 2003 (FFD Order), which revised 10 CFR Part 26, “Fitness for Duty Programs.” Because the codification of this security order, and subsequent revision to 10 CFR Part 26 were scheduled to occur during the NRC staff’s review of the Bellefonte Units 3 and 4 COLA, the review of the FFD Program was deferred until after this rulemaking activity was complete. As such, the NRC staff does not intend to issue Section 13.7 with the SER with open items for Bellefonte Units 3 and 4. Instead, the staff intends to provide this section of the SER at a later time. The staff’s review of the FFD Program is currently in progress, and its completion is being tracked as **Open Item 13.7-1**.

13.7 Fitness For Duty

Section 13.7 of this SER contains evaluations associated with the Fitness for Duty (FFD) Program, which is implemented and maintained in two phases; the construction phase program and the operating phase program.

In 2009, the NRC codified Order EA-03-038, "Fitness-for-Duty Requirements Order" dated April 29, 2003 (FFD Order), which revised 10 CFR Part 26, “Fitness for Duty Programs.” Because the codification of this security order, and subsequent revision to 10 CFR Part 26 were scheduled to occur during the NRC staff’s review of the Bellefonte Units 3 and 4 COLA, the review of the FFD Program was deferred until after this rulemaking activity was complete. As such, the NRC staff does not intend to issue Section 13.7 with the SER with open items for Bellefonte Units 3 and 4. Instead, the staff intends to provide this section of the SER at a later time. The staff’s review of the FFD Program is currently in progress, and its completion is being tracked as **Open Item 13.7-1**.

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Accession No.: ML090750609 Memo: ML091740613 Letter: ML091740610

OFFICE	DNRL/NWE1/LA	DNRL/NWE1/PM	DCIP/COLP/BC	DCIP/COLP	DCIP/COLP	DCIP.COLP
NAME	KGoldstein	BAnderson	MJunge	RPelton	JKellum	MLintz
DATE	08/31/09	08/31/09	08/31/09	09/02/09	08/31/09	08/31/09
OFFICE	NSIR/DPR/DDEP	NSIR/DPR/DDEP	NSIR/DPR/DDEP	OGC	DNRL/NWE1/BC	
NAME	KWilliams	DBarss	RMoody	JMartin	SCoffin	
DATE	09/01/09	09/01/09	09/01/09	09/03/09	09/08/09	

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