



Tennessee Valley Authority, 1101 Market Street, LP 5A, Chattanooga, Tennessee 37402-2801

October 2, 2008

10 CFR 52.79

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555

In the Matter of )  
Tennessee Valley Authority )

Docket No. 52-014 and 52-015

**BELLEFONTE COMBINED LICENSE APPLICATION – RESPONSE TO REQUEST FOR  
ADDITIONAL INFORMATION – EMERGENCY PLANNING**

Reference: Letter from Brian C. Anderson (NRC) to Andrea L. Sterdis (TVA), Request for  
Additional Information Letter No. 122 Related to SRP Section 13.03 for the  
Bellefonte Units 3 and 4 Combined License Application, dated August 8, 2008

This letter provides the Tennessee Valley Authority's (TVA) final responses to the Nuclear  
Regulatory Commission's (NRC) request for additional information (RAI) items included in the  
reference letter.

A response to each NRC request in the subject letter is addressed in the enclosure which also  
identifies any associated changes that will be made in a future revision of the BLN application.

If you should have any questions, please contact Tom Spink at 1101 Market Street, LP5A,  
Chattanooga, Tennessee 37402-2801, by telephone at (423) 751-7062, or via email at  
[tespink@tva.gov](mailto:tespink@tva.gov)

I declare under penalty of perjury that the foregoing is true and correct.

Executed on this 2nd day of Oct, 2008.

Andrea L. Sterdis  
Manager, New Nuclear Licensing and Industry Affairs  
Nuclear Generation Development & Construction

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cc: See Page 2

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URD

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S. P. Frantz, Morgan Lewis  
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RAI Response

Response to NRC Request for Additional Information letter No. 122 dated August 8, 2008  
(29) pages, including this list)

Subject: Emergency Planning in the Final Safety Analysis Report

<u>RAI Number</u>	<u>Date of TVA Response</u>
13.03-18A-E	September 8, 2008
13.03-19A-O	September 23, 2008
13.03-20A	September 23, 2008
13.03-20B, D, E	September 8, 2008
13.03-20C	This letter – see following pages
13.03-21A-C	September 8, 2008
13.03-22A-C	September 8, 2008
13.03-22D	This letter – see following pages
13.03-22E	September 23, 2008
13.03-23A-B	September 8, 2008
13.03-23C	This letter – see following pages
13.03-24A, B, D	This letter – see following pages
13.03-24C	September 23, 2008
13.03-25A, J, K, N, O, Q, R	September 23, 2008
13.03-25B, D, G-I, L, M, P	This letter – see following pages
13.03-25C	September 8, 2008 September 23, 2008
13.03-25 E, F, S	September 8, 2008
13.03-26A, C	This letter – see following pages
13.03-26B, D-F	September 23, 2008
13.03-27A	September 8, 2008
13.03-27B-E	This letter – see following pages
13.03-28A-F	September 23, 2008
13.03-29A-C	September 8, 2008
13.03-30A-D	September 8, 2008
13.03-31A-B	September 8, 2008
13.03-32A-B	September 23, 2008
13.03-33A-B	September 8, 2008
13.03-34	September 8, 2008

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<u>RAI Number</u>	<u>Date of TVA Response (cont'd)</u>
13.03-35	September 8, 2008
13.03-36A-C	September 8, 2008
13.03-37	September 8, 2008
13.03-38A-B	September 23, 2008
13.03-39A-D, G	September 8, 2008
13.03-39E, F	September 23, 2008

<u>Associated Additional Attachments / Enclosures</u>	<u>Pages Included</u>
Attachment 13.03-24B	14 pages
Attachment 13.03-24C	2 pages
Attachment 13.03-25C	35 pages
Attachment 13.03-27A	2 pages
Attachment 13.03-27B	5 pages

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**NRC Letter Dated: August 8, 2008**

**NRC Review of Final Safety Analysis Report**

**NRC RAI NUMBER: 13.03-20**

**SITE-3:** Requesting, using and accommodating emergency response support resources  
Basis: 10 CFR 50.47(b)(3); Planning Standard C; NUREG-0654/FEMA-REP-1; Evaluation  
Criterion C.1.a; Evaluation Criterion C.1.b; Evaluation Criterion C.3, Evaluation Criterion C.4  
SRP ACCEPTANCE CRITERIA: Requirement A; Acceptance Criteria 1 and 18

A. Section II.C, "Emergency Response Support and Resources," of the BLN Emergency Plan describes arrangements for Federal emergency response support and resources. Explain the criteria for when the federal assets [Federal Coordination Agency, DOE Radiological Assistance Program, Radiation Emergency Assistance Center/Training Site (REAC/TS)] will be requested and summarize the process for the requests.

B. Section II.A.1.b, "Concept of Operations - DHS/FEMA," of the BLN Emergency Plan addresses the National Response Plan, rather than the National Response Framework (NRF) that has now been implemented. Address the implementation of the NRF in the BLN Emergency Plan.

C. 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. The BLN Emergency Plan also states that other Tennessee Valley Authority (TVA) facilities could provide additional support within 1-4 hour, but those facilities are not identified nor are the criteria for when the support would be requested or how it would be requested. Summarize the location and capabilities for the fixed radiological facilities located at the BLN site. In addition, provide a list of the facilities within the TVA system that may be used during an emergency at BNL as well as the process for requesting the additional support.

D. Section II.C.4, "Other Supporting Organizations," of the BLN Emergency Plan identifies additional emergency response support from: INPO Fixed Nuclear Facility Voluntary Assistance Agreement signatories, \*Huntsville Hospital, \*Hollywood Volunteer Fire Department, \*Highlands Medical Center Emergency Medical Services, Westinghouse and REAC/TS. Certification letters are provided for the organizations marked with an "\*" in Appendix 7, "Certification Letters." No letters of agreement were found for Institute of Nuclear Power Operations (INPO), Westinghouse or REAC/TS. (Note: Section II.A.1.b, "DHS/FEMA," states that "...responsibilities of many Federal agencies are established in the National Response Plan and therefore no certification letters are required..." and Section II.L.1, "Hospital and Medical Support," states "TVA maintains an agreement with REAC/TS in Oak Ridge, TN....") Provide letters of agreement or other appropriate supporting documentation related to the emergency assistance provided by INPO, Westinghouse and REAC/TS.

E. Subsection 1.a, "Federal Response Capability," of Section II.C "Emergency Response Support and Resources" states: "The EOF Director or Radiological Assessment Manager may request FRMAC assistance directly or through the NRC (Federal Coordinating Agency)." However, requesting federal assets such as the FRMAC should be coordinated through the state based on the situation and on other factors such as a state and federal disaster declaration or similar action. In accordance with the National Response Framework, the request process for federal assistance should be as follows: utility to state; state to FEMA; FEMA to DOE; DOE to FRMAC, with all information to the NRC. If there is no disaster declaration, the NRC, as the Coordinating Agency under the Nuclear /Radiological Incident Annex of the National Response Framework, would

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contact DOE. The decision to deploy the FRMAC is coordinated between DOE and FEMA. Discuss whether paragraph subsection C.1.a should be revised, and if not, why.

**BLN RAI ID: 1347 (C)**

**BLN RESPONSE:**

A. Response previously provided.

B. Response previously provided.

C. Section 12.5 of the AP1000 Design Control Document describes the health physics facilities. Whole body counting equipment is located in a low background radiation area in the Annex Building. Analytical equipment is provided that is capable of determining beta-gamma and alpha contamination levels for both airborne radioactivity and surface contamination samples to support the monitoring criteria of the occupational radiation protection program and the environmental monitoring program as outlined in FSAR Chapter 12 and the chemistry program discussed in FSAR Subsection 13.1.1.2.4. Gamma spectroscopy analytical capabilities provide for identification of individual radionuclide contributions to sample total activity. The capability exists to analyze sample activities encountered during routine plant operation including environmental activity levels, routine in-plant airborne contamination, surface contamination, and chemistry sample levels. The capability also exists to analyze post-accident activity levels. Should the activity levels of post-accident samples exceed the analytical capabilities of the provided instrumentation, the samples may be analyzed by volume reduction, dilution, inference of activity from other measured parameters, such as exposure rates, or the samples may be transported to an offsite laboratory having suitable capabilities.

Facilities within TVA that may be utilized during an emergency at the Bellefonte Nuclear Plant consist of fixed radiological facilities at Brown's Ferry, Watts Bar, and Sequoyah Nuclear Power Plants and the Western Area Radiological Laboratory (WARL). In the event of an Alert or higher emergency classification, the Radiological Assessment Manager (RAM) reviews the emergency condition with the CECC Director and makes a determination as to the proper staffing of the Radiological Assessment staff, taking into consideration the potential or actual need for offsite dose or environmental assessment and the potential or actual need for in-plant RADCON support. The RAM is responsible for committing the support efforts of the TVA Nuclear organization to the affected plant to deal with radiological aspects of an emergency. If the TVA Nuclear organization cannot fulfill the needs of the affected plant, the RAM has the authority to seek help from other organizations within TVA. TVA currently maintains a Radiological Emergency Notification Directory (REND) that provides information addressing available emergency services and contacts. The RAM uses this information when arranging for the needed support. The RAM has the authority to commit the radiological assessment and control resources required to support emergency response activities. The RAM provides the CECC Director with periodic summaries of information needed for overall radiological accident assessment.

D. Response previously provided.

E. Response previously provided.

This response is PLANT-SPECIFIC.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

No COLA revisions have been identified associated with this response.

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**ASSOCIATED ATTACHMENTS/ENCLOSURES:**

None

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**NRC Letter Dated: August 8, 2008**

**NRC Review of Final Safety Analysis Report**

**NRC RAI NUMBER: 13.03-22**

**SITE-5: Activation and notification processes**

Basis: 10 CFR 50.47(b)(5); 10 CFR 50, Appendix E.IV.C; 10 CFR 50, Appendix E.IV.D.1;  
NUREG-0654/FEMA-REP-1; Evaluation Criterion E.3; Evaluation Criterion E.4;  
Evaluation Criterion E.7

SRP ACCEPTANCE CRITERIA: Requirements A and B; Acceptance Criteria 1, 2 and 6

A. Clarify the second paragraph of Section II.E, "Notification Methods and Procedures," of the BLN Emergency Plan. The first sentence states that elected local officials are responsible for off-site radiological emergency response. The fourth sentence indicates that the State agency providing direction and control initiates action to ... provide guidance and assistance to local governments. This implies that the State is notified first [unless it is a General Emergency (GE)] and then the State involves the local governments. Explain why this is a conservative approach for rapid mobilization and implementation of protective actions. The third paragraph states "... the Station communicates via the Operations Duty Specialist (ODS) with the State (and in the event of an initial General Emergency classification, with the affected counties)..." It is not clear whether the ODS ever communicates with the counties during a non-GE. Clarify the notification process(es) to the State and counties detailing how effective and timely implementation of protective actions is achieved if the licensee is not communicating directly with the local governments.

B. Section II.E of the BLN Emergency Plan outlines communication procedures, mobilization, message content, and follow-up messages but does not address the administrative or physical means for notifying local, State and Federal officials and agencies. Provide a list of officials by title and agency located in the Emergency Planning Zones (EPZs). Provide the local governments and position titles that will be notified by BLN when a radiological emergency occurs at the plant. Describe the procedure for and physical means for making notifications to offsite agencies.

C. In Section II.E of the BLN Emergency Plan, include potentially affected areas and populations as listed in NUREG-0654, FEMA-REP-1; Evaluation Criterion E.3. Describe the content of the applicable messages and/or notification forms.

D. 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. Explain where the communication system is located and who provides the communication. Provide information identifying the communicators, where they will be located during an emergency and how they will obtain the necessary information for the follow-up messages.

E. Section II.E.7, "Written Messages to the Public," of the BLN Emergency Plan states that TVA will assist with the development of the messages to the public. Identify the person who will assist and in what Emergency Plan Implementing Procedure (EPIP) the procedure for providing assistance will be located. Provide details on how the supporting information for written messages to the public will be provided. Discuss what position in the Emergency Response Organization (ERO) will provide this assistance and summarize the information from the EPIP on how this assistance will be provided.



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**BLN RAI ID: 1352 (D)**

**BLN RESPONSE:**

- A. Response previously provided.
- B. Response previously provided.
- C. Response previously provided.

D. Within the State of Alabama, the Alabama Emergency Management Agency (AEMA) is responsible for establishing and operating a communications network to support the Alabama Radiological Emergency Preparedness Plan. The AEMA Director maintains and operates the State Emergency Operations Center (SEOC), which is the state's communications center under emergency conditions. A dedicated direction and control circuit between the State and affected counties within the plume exposure pathway emergency planning zone is activated when the SEOC is activated. When the Jackson and DeKalb County Emergency Operations Centers (EOCs) are activated, dedicated communicators are assigned to operate these communications circuits. The in-state National Warning Systems (NAWAS) and the Radio Amateur Civil Emergency Services (RACES) may be used for emergency backup, if required.

After the SEOC is activated, the dedicated circuit is the primary means of communications and warning between the plant and state and applicable local governments. TVA's State Communicator, located in the CECC, provides regular updates to the designated communicator in the SEOC. TVA's State Communicator obtains information to be provided to the state primarily from the CECC Director and the Radiological Assessment Manager. However, the TVA State Communicator may interact as needed with other members of the TVA emergency response organization to obtain or clarify information to be provided to the state. In addition, provisions are made for the CECC Director and Radiological Assessment Manager to provide management and technical discussions with their counterparts in the SEOC, using either the dedicated circuit or commercial telephone circuits.

With regard to the locations of emergency response communications circuits, BLN Emergency plan Section II.F.1.c discusses the locations of the Emergency Notification System, Health Physics Network, Reactor Safety Counterpart Link, Protective Measures Counterpart Link, Management Counterpart Link and data links for the local area network and Emergency Response Data System. TVA maintains an Emergency Preparedness communications telephone system that links the CECC, TSC, Control Room, and affected State and local agencies. Commercial telephones provide a back-up to this system. TVA also maintains an Emergency Preparedness radio system which provides redundant radio coverage of the plume exposure pathway emergency zone. The radio system provides radiological monitoring vans with mobile communications to other van(s) and to site Radiological Control, the Technical Support Center, the Control Room and the CECC.

- E. Response previously provided.

This response is PLANT-SPECIFIC.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

No COLA revisions have been identified associated with this response.

**ASSOCIATED ATTACHMENTS/ENCLOSURES:**

None

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**NRC Letter Dated: August 8, 2008**

**NRC Review of Final Safety Analysis Report**

**NRC RAI NUMBER: 13.03-23**

**SITE-6: Communication processes**

Basis: 10 CFR 50.47(b)(6), Appendix E.IV.E; 10 CFR 50, Appendix E.IV.E.9.c; 10 CFR 50, Appendix E.IV.E.9.d; NUREG-0654/FEMA-REP-1; Evaluation Criterion F.1.a; Evaluation Criterion F.1.c; Evaluation Criterion F.1.d

SRP ACCEPTANCE CRITERIA: Requirements A and B; Acceptance Criteria 1 and 2

A. Section II.F.3, "Communication System Reliability," of the BLN Emergency Plan states "Communications with BLN field assessment teams are tested annually." Section II.F.1.f, "Description of Communication Links," uses the term "off-site monitoring teams" and NUREG-0654/FEMA-REP-1; Evaluation Criterion F.1 uses the term "radiological monitoring teams". Clarify or define "off-site monitoring teams" and "BLN field assessment teams."

B. Section II.N.2.a, "Communications Drills," states that "TVA (Tennessee Valley Authority) tests communications with Federal emergency response organizations and States within the EPZ (Emergency Planning Zone) quarterly." Explain the departure from the guidance specifying monthly tests in NUREG-0654, Evaluation Criteria N.2.a. Clarify the testing frequency from the licensee to the NRC Headquarters and the appropriate NRC Regional Office Operations Center.

C. Section II.F of the BLN Emergency Plan states that responsibilities of designated personnel for the communication systems can be found in State and local plans and in the emergency plan implementing procedures (EPIPs). Provide a summary of these responsibilities in the BLN Emergency Plan. Provide information on who is designated to use communication systems and what responsibilities they have for using those communication systems.

**BLN RAI ID: 1355 (C)**

**BLN RESPONSE:**

A. Response previously provided.

B. Response previously provided.

C. Many members of the BLN emergency response organization 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 emergency response organization are provided in the response to RAI 13.03-19 (TVA letter dated September 23, 2008).

Specified individuals in the BLN emergency response organization 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 response to RAI 13.03-22 item D above provides additional information regarding emergency communications.

This response is PLANT-SPECIFIC.

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**ASSOCIATED BLN COL APPLICATION REVISIONS:**

No COLA revisions have been identified associated with this response.

**ASSOCIATED ATTACHMENTS/ENCLOSURES:**

None

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**NRC Letter Dated: August 8, 2008**

**NRC Review of Final Safety Analysis Report**

**NRC RAI NUMBER: 13.03-24**

**SITE-7: Distribution of public information**

Basis: 10 CFR 50.47(b)(7); 10 CFR 50, Appendix E.IV.D.2; NUREG-0654/FEMA-REP-1;  
Evaluation

Criterion G.1; Evaluation Criterion G.2; Evaluation Criterion G.3.b; Evaluation Criterion G.4.b  
SRP ACCEPTANCE CRITERIA: Requirements A and B; Acceptance Criteria 1 and 2

A. Section II.G, "Public Education and Information," of the BLN Emergency Plan states that Tennessee Valley Authority (TVA) commits to coordinating with the state and local authorities to disseminate information to the public on responding to a radiological emergency at the BLN site. Section II.G.2, "Distribution and Maintenance of Public Information," gives a list of how written information may be provided to permanent residences and transient populations. Provide information on who at TVA will be responsible for coordinating with the State and local authorities and what responsibilities this individual will have. In addition, provide more specific information on how the public information will be distributed and who is responsible for creating and distributing the material.

B. 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; explain the method and times necessary for public notification. Section II.G.1, "Public Information Program," states that information provided to the public includes educational information and information addressing special needs of the handicapped; address the specific information that will be in the material. A general statement is made in Section II.G.2 that information for transient populations may be provided; explain why these methods are appropriate for the type of transient populations that will occur in the Bellefonte Emergency Planning Zone (EPZ). Provide additional information related to method and times for public notification, detailed information to be included in public educational materials, and the specific methods of dissemination of information to determine if it is appropriate for the permanent populations and transient populations in the EPZ.

C. Describe how Section II.G.3, "News Media Coordination," of the BLN Emergency Plan addresses arrangements for exchange of information among designated spokespersons. Appendix 9, "Justification for CECC (Central Emergency Control Center)," states "State and utility staff at the JIC are responsible for providing timely and accurate information concerning an emergency to the media." Explain how timely and accurate information is provided to the media. Provide detailed information regarding the timely exchanges of information and identification of designated spokespersons and details on how timely and accurate information is provided to the media during an emergency.

D. Regarding Subsection 1, "Public Information Program," of Section G., "Public Education and Information," of the Bellefonte Emergency Plan, explain how the public will be notified in an emergency and information for those who may need transportation assistance. Revision 1 of the Bellefonte Evacuation Time Estimate report states on page ES-3 that parents, relatives, and neighbors will be advised not to pick up their children at school prior to arrival of the buses dispatched for transporting the children to reception centers. Describe how the information planned to be distributed to the public addresses how they will be notified in an emergency. In addition to providing information related to special needs of the handicapped, describe how the information planned to be distributed to the public addresses information for individuals whose mobility may be impaired, such as those without transportation, in nursing homes, in day care

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centers, etc. Discuss the method that will be used to advise parents, relatives, and neighbors not to pick up their children at school prior to arrival of the buses dispatched for transporting the children to reception centers.

**BLN RAI ID: 1146 (A), 1356 (B), 1358 (D)**

**BLN RESPONSE:**

A. NUREG-0654/FEMA-REP-1, Revision 1, Planning Standard II.G establishes guidance for maintaining a coordinated program to educate affected members of the public regarding emergency notification methods and actions. TVA distributes educational material on an annual basis to each commercial and residential address within the Plume Exposure Pathway emergency planning zone (EPZ). This material is also available online via the TVA Nuclear website.

TVA's Manager, State and Local Programs, Nuclear Emergency Preparedness is responsible for coordinating emergency planning efforts, including creation and distribution of public informational materials, with State and local authorities for the Bellefonte site.

B. The response to item A above provides additional information regarding provision of emergency educational information to the permanent residents within the Bellefonte Nuclear Plant plume exposure pathway emergency planning zone (EPZ). Section II.G.2 of the Bellefonte Emergency Plan indicates that information for transient populations will be provided and may include public postings and publications provided in hotels, motels, and campgrounds. Attachment 13.03-24B is an example of the printed material provided to residences and commercial establishments in the Browns Ferry Nuclear Plant EPZ. A similar publication will be developed and distributed to residences and commercial establishments in the BLN plume exposure pathway EPZ. TVA also provides fixed information signs at public use areas, such as boat ramps, parks, and campgrounds, located within the plume exposure pathway EPZ. These signs provide information regarding the proximity of the facility, emergency notification methods, emergency response activities, sources of emergency information, and evacuation route markings. The information will be similar to the signs used for the Browns Ferry Nuclear Plant EPZ, a sample of which is provided in Attachment 13.03-24C.

Printed material distributed to each commercial and residential address in the EPZ will contain information for persons with special needs. Pre-addressed, postage paid cards will be included in the annual publications. Directions will instruct those with special needs to complete and mail the cards. These cards will enable local emergency officials to maintain current lists of individuals who would need special assistance in the event of an emergency. Details regarding the creation and distribution of emergency preparedness and response informational materials for the public 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.

C. Response previously provided.

D. Subsection II.E.6 of the Bellefonte Emergency Plan provides a discussion on how the public will be notified in an emergency. The primary method of alerting the public is by sounding the Prompt Notification System which includes an outdoor warning system, measures for notifying special facilities and notification of the public by sirens located throughout the Plume Exposure EPZ. Details regarding activation of the Prompt Notification System are included in Annex E of the Jackson County and DeKalb County Radiological Emergency Response Plans. Written pre-planned messages (intended for transmittal to the public via radio and television) are consistent with the classification scheme. They are released to the media by the State Coordinator of

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Emergency Management or Local Coordinator of Emergency Services or designated representatives. The messages give instructions with regard to specific actions to be taken by the occupants of the inhabited area. The messages give instruction on the aspects of sheltering, thyroid blocking, evacuation, the nature of the emergency, and recommended protective actions.

Printed material currently distributed to each commercial and residential address in the Plume Exposure Pathway EPZ for TVAs other nuclear plants contain information pertaining to the evacuation of school children. These publications explain that local school systems maintain evacuation plans that will be implemented prior to the evacuation of the general public. These plans detail how the students will be transported to locations outside the EPZ. The printed material explains that parents should review their school's plan to get specific details on where the children will be relocated and when they can be picked up. The responses to items A and B above provide additional information regarding provision of emergency educational information to the public. Details regarding the creation and distribution of emergency preparedness and response informational materials for the public 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.

Information related to the evacuation of school children is broadcast in accordance with Annex C of the Jackson and DeKalb County Radiological Emergency Response Plans. This annex includes scripted Press Releases including direction for parents to pick up school children at designated reception centers.

The response to part B of this RAI discusses how information for persons with special needs is provided. The pre-addressed, postage paid cards provide a method so local emergency officials can maintain a current list of individuals who would need special assistance in the event of an emergency. Annex J of the Jackson County and DeKalb County Radiological Emergency Response Plans also contain details regarding the evacuation of persons with special needs.

This response is PLANT-SPECIFIC.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

No COLA revisions have been identified associated with this response.

**ASSOCIATED ATTACHMENTS/ENCLOSURES:**

Attachment 13.03-24B

Attachment 13.03-24C

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**NRC Letter Dated: August 8, 2008**

**NRC Review of Final Safety Analysis Report**

**NRC RAI NUMBER: 13.03-25**

**SITE-8: Emergency facilities and equipment**

Basis: 10 CFR 50(b)(8), Appendix E.IV.E.4; 10 CFR 50, Appendix E.VI. Emergency Response Data System; 10 CFR 50.47(b)(8), 10 CFR 50.34(f)(2)(xxv), 10 CFR 50.55a(h); NUREG-0654/FEMA-REP-1; Evaluation Criterion H.4; Evaluation Criterion H.6; Evaluation Criterion H.9; Evaluation Criterion H.10; Evaluation Criterion H.11; and NUREG-0696 and Supplement 1 to NUREG-0737

SRP ACCEPTANCE CRITERIA: Requirements A and B; Acceptance Criteria 1, 2, 4, 5, and 12

A. The BLN Emergency Plan does not state that the Technical Support Center (TSC) will be the primary communications center during an emergency. Discuss whether the TSC is the primary communications center during an emergency.

B. 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 interchange between the TSC and control room personnel. Appendix 6, "Emergency Equipment and Supplies," provides a general list of equipment located in the emergency response facilities (ERFs); provide additional information to describe how the supplies are adequate. Provide additional information on the protective equipment located in the TSC.

C. Address whether there are security barriers between the TSC and the Main Control Rooms (MCRs) and provide additional information regarding any such security barriers.

D. Appendix 10, "Technical Support Center Description," discusses the availability of portable radiation monitors to staff in the TSC. The presence of trip levels is not discussed, but a statement is made that system allows for detailed analysis of plant conditions. Section II.I.9, "Measuring Radioiodine Concentrations," states that field teams have portable air samplers capable of detecting radioiodine at the specified levels. Clarify whether they are also used in the TSC. Clarify whether the TSC has continuous monitoring with trip levels to notify staff of inhabitable conditions and clarify whether the TSC will have portable air samplers for detecting radioiodine.

E. Section II.H.1, "On-Site Emergency Response Facilities," of the BLN Emergency Plan states that in the event that all off-site and on-site AC power is unavailable, the TSC could be evacuated and the TSC management function transferred to a location unaffected by the radiation release. Discuss the potential locations to be considered if the TSC must be moved.

F. Section II.H.1, "On-site Emergency Response Facilities," states that the display capability in the TSC includes a workstation that, at a minimum, is capable of displaying the parameters that are required of a Safety Parameter Display System (SPDS). The Bellefonte Emergency Plan states that the SPDS function is described in Section 18.4, "Functional Requirements Analysis and Allocation," of the Tier 2 Material in AP1000 DCD, Revision 16, but it is actually described in 18.8.2, "Safety Parameter Display System (SPDS)," of the AP1000 DCD, Revision 16. Discuss the appropriateness of the reference to Section 18.4 in this section of the BLN Emergency Plan.

G. The introductory information contained in Section II.H, "Emergency Facilities and Equipment," of the BLN Emergency Plan states that the Control Rooms, OSCs and TSC were designed to meet the intent of the guidance in NUREG-0737, Supplement 1, "Clarification of TMI Action Plan Requirements." Provide a summary of the information in the BLN Emergency Plan that describes how the plan meets the intent of the guidance in NUREG-0737, Supplement 1.

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H. Section II.H., "Emergency Facilities and Equipment," of the BLN Emergency Plan states that the Main Control Rooms and OSCs were designed to meet the intent of the guidance in NUREG-0696, "Functional Criteria for Emergency Response Facilities." Provide a summary of the information in the BLN Emergency Plan to describe how the plan meets the intent of the guidance in NUREG-0696.

I. Section II.H., "Emergency Facilities and Equipment," of the BLN Emergency Plan states that the TSC was designed to meet the intent of the guidance in NUREG-0696, "Functional Criteria for Emergency Response Facilities." Provide a summary of the information in the BLN Emergency Plan to describe how it meets the intent of the guidance in NUREG-0696. For example, explain how the following items from NUREG-0696 related to the TSC are addressed in the BLN Emergency Plan: (a) Address training of TSC staff to follow procedures; (b) Address management plans, facility staffing and task assignments of TSC personnel; (c) Provide a detail staffing plan for the TSC to address the overall management of licensee resources and the continuous evaluation and coordination of licensee activities during and after an accident; (d) Provide the TSC staff assignments to address that TSC management of licensee onsite and offsite radiological monitoring, to perform radiological evaluations, and to interface with offsite officials. Address whether the personnel assigned to the TSC varies according to the emergency class; (e) Address procedures for and training of personnel to use the data systems and instrumentation and include limitations of instrumentation; (f) Address how TSC staff maintain proficiency (participation in drills); and (g) Address whether there are means for facsimile transmission capability between the CECC, TSC and NRC Operations Center.

J. In accordance with SRP Section 15.0.3 (Acceptance Criterion 3) the staff reviews whether the total calculated radiological consequences in the TSC for the postulated fission product releases fall within the exposure acceptance criteria specified in GDC 19 of 5 rem TEDE (0.05 Sv) for the duration of the design basis accidents (DBAs). Provide the radiological consequence analyses for the Bellefonte TSC for the postulated DBAs. The DBAs are listed and evaluated in Chapter 15 of the certified AP1000 DCD, Revision 15 and in the AP1000 Design Certification Amendment Application (AP1000 DCD, Revision 16). The radiological analyses should include, but are not limited to, the following parameters:

1. TSC ventilation air inlet and recirculation flow rates
2. HEPA filter and charcoal adsorber fission product removal efficiencies
3. TSC unfiltered air in-leakage rate
4. Atmospheric dispersion factors ( $\chi/Q$  values) at TSC air intake
5. TSC occupancy factors
6. TSC free air volume
7. Occupant breathing rate
8. Description of the ventilation design

K. Explain how the following items from NUREG-0696 that are related to the CECC are addressed in the BLN Emergency Plan: (a) Address training of CECC staff to follow procedures; (b) Address management plans, facility staffing and task assignments of CECC personnel; (c) Provide a detail staffing plan for the CECC to address the overall management of licensee resources and the continuous evaluation and coordination of licensee activities during and after an accident; (d) Provide the CECC staff assignments to address that CECC management of licensee onsite and offsite radiological monitoring, to perform radiological evaluations, and to interface



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with offsite officials. Address if the personnel assigned to the CECC varies according to the emergency class; (e) Address procedures for and training of personnel to use the data systems and instrumentation and include limitations of instrumentation; (f) Address how CECC staff maintain proficiency (participation in drills); (g) Address the size of the working space in the CECC; and (h) Address whether there are means for facsimile transmission capability between the CECC, TSC and NRC Operations Center.

L. A general list of the types of radiological monitoring equipment provided for field monitoring team use is included in Appendix 6, "Emergency Equipment and Supplies." Provide additional information regarding the radiological equipment for field team use to explain its adequacy to support the field monitoring capability described in Section II.I.7, "Field Monitoring Capability."

M. Protective clothing and respirators are discussed in section II.J, "Protective Response." Communication is covered in sections II.E, "Notification Methods and Procedures," and II.F, "Emergency Communications." Provide additional information to explain the adequacy of protective clothing and respirators and communication equipment in the OSC.

N. Guidance provided in Section 2.2, "Location," in NUREG-0696 states that the walking time from the TSC to the control room to the control room should not exceed 2 minutes. In addition, the 2-minute travel time does not include time required to put on any radiological protective gear, but it does include the time required to clear any security checkpoints. Section H., "Emergency Facilities and Equipment," of the BLN Emergency Plan states that a single TSC for both units will be located in the basement of the Maintenance Support Building. Appendix 10, "Technical Support Center Description," states that the TSC may not be within a two-minute walk of either units' control room. In addition, Appendix 10 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 interchange between the TSC and control room personnel. Provide a figure/drawing that shows the proximity of the TSC with respect to the control room. Discuss the time it would take to walk from the TSC to the control room.

O. The introductory paragraph in Appendix 9, "Justification for CECC," of the BLN Emergency Plan, states that since the early 1980's, TVA has used a centralized concept for providing the Emergency Operations Facility (EOF) function. Consistent with this approach, the BLN Emergency Plan relies on the use of the Central Emergency Control Center (CECC) as the EOF for the Bellefonte Nuclear Plant. On March 19, 1981, the NRC approved the CECC concept with certain provisions. In a letter to Mr. H.G. Parris, Manager of Power, dated March 19, 1981, the NRC informed TVA of the need to provide certain details regarding the near-site EOF for each site. The details related to the EOF trailer(s) and the need for TVA to submit specific elements according to Action Plan III.A.1.2. (relates to NUREG-0737, "Clarification of TMI Action Plan Requirements," action items). Specifically, (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

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communications capabilities to perform their functions; and ready access to functional displays of EOF data and to displays of plant records and historical data. Discuss the justification provided in Appendix 9 with respect to the provisions related to the CECC concept contained in the NRC letter dated March 19, 1981.

P. 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 FSAR Section 2.3.3, "Onsite Meteorological Measurement Programs." Please describe the distribution of meteorological data to the emergency response facilities, to the NRC and to the States. In addition, discuss whether there is an on-site backup meteorological data system to provide wind speed and direction when data are not available from the primary system. Also, describe how the National Weather Services is to be contacted, what data are to be requested, and how the data should be interpreted to get information that is representative of the BLN site. In sum: provide information on the acquisition and distribution of meteorological information representative of the BLN site to emergency response facilities, the NRC, and the states and a discussion on obtaining and evaluating meteorological information in the event data from the primary meteorological data system is unavailable.

Q. BLN Design Control Document (DCD), Tier 2, Chapter 7.7, "Control and Instrumentation Systems," discusses most of the plant control and instrumentation systems. BLN Final Safety Analyses Report (FSAR), Chapter 2.3.3, "Onsite Meteorological Measurement Programs," and Section II.H.8, "Meteorological Instrumentation and Procedures," of the BLN Emergency Plan discuss meteorological data collection, instrumentation, inspection, maintenance and other capabilities. DCD Tier 2, Chapter 11.5, "Radiation Monitoring," and Section II.I.2, "Plant Monitoring Systems," of the BLN Emergency Plan discuss radiation monitoring and plant monitoring systems. DCD Tier 2, Chapter 7, "Instrument and Controls," discusses containment parameter monitoring. BLN DCD Tier 1 Chapter 3.5, "Radiation Monitoring," describes area radiation monitors and their locations. Provide information to: 1) Verify that data points can be transmitted for reactor core and coolant system conditions; reactor containment conditions; radioactivity release rates; and plant meteorological tower data; 2) Verify that a separate data feed will be provided for each reactor unit. If the emergency response data system (ERDS) is to communicate with a safety system, verify that appropriate isolation devices will exist at these interfaces; 3) Verify that the system is capable of transmitting ERDS parameters in no more than 60 seconds or no less than 15 seconds; 4) Verify that the link control and data transmission is established in a compatible format with Nuclear Regulatory Commission (NRC) receiving equipment; 5) Verify that any hardware or software changes that affect the transmitted data points identified in the ERDS Data Point Library will be submitted to the NRC within 30 days after the changes are completed; 6) Verify that hardware and software changes that could affect the transmission format and computer communication protocol to the ERDS will be provided to the NRC at least 30 days prior to the modification; 7) Verify that an ERDS implementation program plan has or will be submitted to the NRC.

R. BLN DEP18.8-1 states that the Operational Support Center (OSC) location will be described in the applicant's emergency plan. In section H.1, "On-site Emergency Response Facilities," of the BLN Emergency Plan, it states that the OSCs are located in the space designated in the AP 1000 DCD for the TSC. Section 1.2.5, "Annex Building," of the AP1000 DCD refers to the Annex Building as being as described in Figures 1.2-17 through 1.2-20. However, these figures are blank in Revision 16. Provide figure/drawing(s) of the location of the OSC in the Annex Building(s). This figure/drawing, or a similar one, should also be included in the BLN Emergency Plan.

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S. Discuss the intended role of the TSC with regard to its location and mitigation strategies for events that could potentially result in the loss of large areas of the plant due to explosion or fire.

**BLN RAI ID: 1359 (B), 1361 (D), 1364 (G), 1365 (H), 1366 (I), 1369 (L), 1370 (M), 1373 (P)**

**BLN RESPONSE:**

A. Response previously provided.

B. Inventories of protective equipment in the TSC are consistent with those identified in Browns Ferry EPIP-12, "Emergency Equipment and Supplies," which provides listings of emergency equipment and supplies typically provided to support emergency response organization activities. Browns Ferry EPIP-12 is provided for information as an attachment to this response (Attachment 13.03-25C).

Adequacy of the supplies and equipment is provided by establishment of initial types and quantities of supplies and equipment based on an assessment of:

- The positions to be staffed in the emergency response organization and their locations, responsibilities, activities, and technical, administrative and communications needs;
- The likely progression of individuals and teams through and near the facility during execution of their emergency response roles and the types and quantities of supplies and equipment needed to support execution of these activities;
- The current state of technology with regard to communications, monitoring and protective equipment;
- Interface points between the facilities and between the plant and its offsite support organizations; and
- The locations, types and quantities of supplies and equipment provided at TVA's existing nuclear facilities. These inventories have been refined through years of use during response to drills, exercises, and actual emergency conditions.

The ongoing adequacy of the supplies and equipment is provided by assessing feedback received during drills, exercises, and actual emergency events and from industry operational events. Inventories of supplies and equipment are modified as needed, consistent with this feedback.

Additional information is included in Section 7.2 of the TSC design description document (see Attachment 13.03-25A previously provided with TVA letter dated September 23, 2008).

C. Response previously provided.

D. Under emergency conditions that could result in adverse radiological consequences in one or more of the emergency response facilities, the facilities are periodically monitored as necessary to characterize and report the radiological hazards to appropriate levels of emergency response organization management. Required radiological monitoring activities may be performed by installed equipment or by trained technicians using portable equipment. Air sample analysis may be performed by installed equipment, at the on-site radiological laboratory, or by using portable equipment similar to that provided to the field teams for detecting radioiodine for off-site surveys. Personnel assigned to perform habitability surveys are dispatched from the OSC. The appropriate portable radiation survey instruments and air samplers may be stored in or near the TSC or OSC or in another location convenient for use by the monitoring personnel.

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The TSC design description attached to this response provides information concerning direct radiation and airborne monitoring equipment in Section 7.9 of the TSC design description document (See Attachment 13.03-25A previously provided with TVA letter dated September 23, 2008). 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. If there is reason to believe that radiiodine is present in the TSC atmosphere, monitoring for airborne radioiodine is accomplished by one or more technicians dispatched from the OSC with a portable air sampler with appropriate sample media and monitoring equipment.

E. Response previously provided.

F. Response previously provided.

G. The Bellefonte Emergency Plan acknowledges the intent of meeting guidance for the design of the Control Rooms, OSCs, and TSC provided in Supplement 1 to NUREG-0737, as applicable. The Emergency Plan incorporates the design of the AP1000 Control Room and OSC by reference. These designs have been approved in the Final Safety Evaluation Report (FSER) for the AP1000 Certified Design (NUREG-1793). In the FSER, the NRC staff concluded, "that the information provided in the AP1000 DCD pertaining to the TSC, OSC, and decontamination room is consistent with the guidance identified in Regulatory Guide 1.101. Thus, the staff finds that the applicant's design meets the applicable requirements of 10 CFR 50.34(f)(2)(xxv), 10 CFR 50.47(b)(8), 10 CFR 50.47(b)(11), and Subsections IV.E.3 and IV.E.8 to 10 CFR 50, Appendix E." Although an FSER for Revision 16 to the AP1000 DCD has not yet been issued by the NRC, the design of these facilities has not changed from that previously accepted by NRC. TVA has elected to locate the TSC in an alternative location. A design description addressing the criteria provided in Section 8.2.1 of Supplement 1 to NUREG-0737 is included as Appendix 10 of the Emergency Plan. The design continues to satisfy the accepted criteria established in the AP1000 DCD with the exception of being within a 2-minute walk of the Control Room. Detailed design information on the proposed TSC is provided in Attachment 13.03-25A (previously provided with TVA letter dated September 23, 2008).

Criteria related to the Control Room design provided in Supplement 1 to NUREG-0737 are addressed in various sections of the AP1000 DCD and are not repeated in the Emergency Plan.

Guidance concerning the OSC is provided in section 8.3 of Supplement 1 to NUREG-0737. The FSER acknowledges that the AP1000 adequately addresses the criteria (8.3.1.a) that the OSCs will be on-site and separate from the Control Rooms. The separation criterion is reflected in Section II.H.1, which states that "The OSCs are located in the space designated in the AP1000 DCD for the TSC in each unit's Annex Building." Figure II-2 indicates the OSC Director is responsible for coordinating and assigning personnel to tasks designated for the OSC. Criterion 8.3.1.b regarding the assembly function of the OSC is addressed in Section II.H.1. The need for reliable communications with the TSC and Main Control Room is also discussed in Section II.H.1 (criterion 8.3.1.c). Communications between the OSC and the TSC and Control Room are maintained via telephones connected through the telephone switching equipment as discussed in BLN Emergency Plan Section II.F. Back-up communication capability is provided via the VHF radio system, also discussed in BLN Emergency Plan Section II.F.

H. The BLN Emergency Plan acknowledges the intent of meeting guidance for the design of the Control Rooms, OSCs, and TSC provided in NUREG-0696, as applicable. NUREG-0696 provides a brief discussion of Control Room function during an emergency, but is not applicable to Control Room design.

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The Emergency Plan relies on the design of the AP1000 Control Room. These designs have been approved in the Final Safety Evaluation Report (FSER) for the AP1000 Certified Design (NUREG-1793). In the FSER, the NRC staff concluded, "that the information provided in the AP1000 DCD pertaining to the TSC, OSC, and decontamination room is consistent with the guidance identified in Regulatory Guide 1.101. Thus, the staff finds that the applicant's design meets the applicable requirements of 10 CFR 50.34(f)(2)(xxv), 10 CFR 50.47(b)(8), 10 CFR 50.47(b)(11), and Subsections IV.E.3 and IV.E.8 to 10 CFR 50, Appendix E." Although an FSER for Revision 16 to the AP1000 DCD has not yet been issued by the NRC, the design of these facilities has not changed from that previously accepted by NRC.

NUREG-0696 criteria 3.1 and 3.2 associated with functionality and habitability of the OSCs are described in Section II.H.1 of the Emergency Plan. This section of the Emergency Plan also mentions that the OSC provides the resources for communicating with the Control Room and TSC. Communications between the OSC and the TSC and Control Room are maintained via telephones connected through the telephone switching equipment as discussed in BLN Emergency Plan Section II.F. Back-up communication capability is provided via the VHF radio system, also discussed in BLN Emergency Plan Section II.F.

I. TVA has elected to locate the TSC in an alternative location. A design description addressing the criteria provided in Sections 2.1 through 2.10 of NUREG-0696 is included as Appendix 10 of the Emergency Plan. The design satisfies the criteria established in the AP1000 DCD with the exception of being within a 2-minute walk of the Control Room. Additional design information on the proposed TSC is provided in Attachment 13.03-25A (previously provided with TVA letter dated September 23, 2008).

a. Consistent with the guidance offered in NUREG-0696, Section 2.3, the TSC is staffed with technical, engineering, and senior plant management to provide ongoing support to the Control Room(s) during an emergency. Section II.O of the Emergency Plan discusses TVA's emergency response training program. As indicated in II.O.2, training of TVA emergency response personnel is addressed in plant procedures. Training on adherence to procedures (cited in paragraph (a) of this RAI), is integral to the Non-Licensed Plant Staff Training Program and Reactor Operator Training Program. An implementation schedule for these Programs is provided in Table 13.4-201, "Operational Programs Required by NRC Regulations," included in Part 2 of the COL application.

Emergency Response Training and Qualification is further discussed in Subsection II.O.4 of the Emergency Plan, which specifically states, "TVA implements a program to provide position-specific emergency response training for designated members of the emergency response organization." This program includes accident assessment personnel. The training procedure requires TSC staff to receive an overview of the site Emergency Plan and training on facility operations, technical assessment function, and task-specifics consistent with assigned duties. This task-specific training would, for example include use of data systems and instrumentation, including the limitation of instrumentation for assigned personnel.

b. The responses to RAI 13.03-19A and RAI 13.03-19B (previously provided with TVA letter dated September 23, 2008) address management plans, facility staffing, and task assignments of TSC personnel,

c. The responses to RAI 13.03-19A and RAI 13.03-19B (previously provided with TVA letter dated September 23, 2008) provide a detailed staffing plan for the TSC to address the overall management of licensee resources and the continuous evaluation and coordination of licensee activities during and after an accident. As discussed in BLN Emergency Plan Section II.A.4,

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TVA maintains capability for continuous operations through training of multiple responders for key emergency response positions, these multiple responders are organized into teams that can be rotated through multiple shifts as needed to provide for extended emergency response operations.

d. With regard to minimum TSC staffing and considerations for increased staffing based on emergency classification, TVA currently has no plans to establish a structured program to implement such a process. However, the plans and procedures do contain provisions for designated emergency response organization managers to request additional management, technical and administrative support from internal and external organizations as needed to assess and mitigate the emergency condition.

e. Section II.N of the Emergency Plan provides considerable detail on the Bellefonte exercise and drill program. As indicated in this section, TVA implements this program, in part, to “maintain emergency response skills.” In Subsection II.N.1.b, one of the purposes for the biennial exercise is to “Evaluate familiarity of emergency organization personnel with their duties.” Subsection II.N.2 addresses maintaining adequate emergency response capabilities between biennial exercises by conducting drills, “including a least one drill involving a combination of some of the principal function areas of emergency response capabilities.” These principal emergency response functions specifically include accident assessment. The primary objectives of these drills are explicitly identified:

- Verify that facilities, equipment, and communication systems function as required.
- Demonstrate the adequacy of station procedures used during an emergency.
- Familiarize station emergency response personnel with planned emergency response actions.
- Disclose deficiencies which may require corrective action.

Additionally, Subsection II.N.2.f summarizes “Combined Functional Drills” which include management and coordination of emergency response, accident assessment, protective action decision making, and plant system repair and corrective actions. TSC staff participate in these exercises and drills, which ultimately maintain their proficiency.

Consistent with TVA’s experience at its operating sites, the functions served by facsimile transmission between the CECC, TSC, and NRC Operations Center will be supported at the Bellefonte TSC. However, given that the TSC will not be operational for a number of years, TVA will consider that advancements in telecommunications technology in meeting these functions before incorporating any specific data/document transmission system into the TSC and CECC.

J. Response previously provided.

K. Response previously provided.

L. As indicated in Appendix 6 of the Bellefonte Emergency Plan, TVA will establish and maintain inventories of emergency equipment and supplies. Field teams will be provided instruments needed to perform direct radiation dose rate measurements, surface contamination surveys, and particulate and radioiodine air monitoring. For further information regarding emergency supplies and equipment, refer to the response to item B above.

M. As indicated in Appendix 6 of the Bellefonte Emergency Plan, TVA will establish and maintain inventories of emergency equipment and supplies. 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, SCBAs, etc.) in order for

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the OSC to be able to perform assigned tasks. For further information regarding emergency supplies and equipment, refer to the response to item B above.

N. Response previously provided.

O. Response previously provided.

P. The Emergency Plan indicates that information necessary for protective action decision making and dose assessment is available in those TVA Emergency Response Facilities where this information is required. The following meteorological information is available in the Control Rooms, TSC, and EOF:

- Wind speed (at 10 m and 54 m)
- Wind direction (at 10 m and 54 m)
- Ambient air temperature (at 10 m and 54m)

There is no on-site backup meteorological data system to provide wind speed and direction if data are not available from the meteorological data system. As indicated in Subsection II.H.6.a, TVA acquires meteorological data from the National Weather Service (NWS) when the primary system is unavailable. As is the case in procedures for the existing nuclear plants, TVA contacts NWS by commercial telephone to obtain these data. The CECC Meteorologist is responsible for interpreting data received from NWS for applicability to the Bellefonte site.

As discussed in Subsection II.E.4.g of the BLN Emergency Plan, "Meteorological conditions, including wind speed and direction, stability class, and precipitation" are provided during follow up notifications to the State and locals. Subsection II.F.1.c states, "Health Physics Network (HPN): Provides for communications regarding radiological and meteorological conditions, assessments, trends, and protective measures. HPN lines are located in the TSC and CECC."

Q. Response previously provided.

R. Response previously provided.

S. Response previously provided.

This response is PLANT-SPECIFIC.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

No COLA revisions have been identified associated with this response.

**ASSOCIATED ATTACHMENTS/ENCLOSURES:**

Attachment 13.03-25C

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**NRC Letter Dated: August 8, 2008**

**NRC Review of Final Safety Analysis Report**

**NRC RAI NUMBER: 13.03-26**

**SITE-9: Plant systems and instrumentation**

Basis: 10 CFR 50.47(b)(9); NUREG-0654/FEMA-REP-1; Evaluation Criterion I.1; Evaluation Criterion I.2; Evaluation Criterion I.3; Evaluation Criterion I.4; Evaluation Criterion I.5; Evaluation Criterion I.6; Evaluation Criterion I.7; Evaluation Criterion I.8; Evaluation Criterion I.10; Supplement 1 to NUREG-0737, Section 6.1.b. - Control Room; Post-accident sampling capability

SRP ACCEPTANCE CRITERIA: Requirement A; Acceptance Criteria 1, 4, 5, 27 and 28

A. Section II.I of the BLN Emergency Plan does not specifically call out Type A, B, etc. variables or reference Regulatory Guide 1.97. Provide a summary of emergency preparedness –related instrumentation found in the Control Room that is available for use in emergency classification, dose assessment, and post-accident sampling and analysis.

B. Appendix 2, “Radiological Assessment and Monitoring,” of Section 3.0, “Design Description: Atmospheric Transport and Diffusion Assessment,” of the BLN Emergency Plan 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 is claimed to be consistent with the radionuclide mixes used by the RASCAL 2.1 code (NUREG/CR-5247, 1994) and the release fractions are claimed to be consistent with NUREG-1465 (Draft for comment 1992). Note that several updates to the RASCAL code have been published since 1994 and the final version of NUREG-1465 was published in 1995. Justify the application’s use of the older information and systems in the estimation of source terms for a new reactor.

C. Appendix 2, Section 3.0 of the BLN Emergency Plan describes the dose assessment programs. Three codes are used for dose assessment. While these codes meet established criteria for dose assessment codes, they are outdated. On page A2-8 of Appendix 2, there is a statement that the codes are programmed in VAX FORTRAN and that VAX FORTRAN exceeds American National Standards Institute (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. Explain why these dose assessment codes will be used.

D. 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. 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. Implementing procedures provide guidance for field monitoring teams’ performance of monitoring activities. However, the procedures are not available for review. Describe the capability to maintain monitoring teams in the field in the event of a protracted release and assessing hazards. Describe the maximum response capability and time required to reach this capability. List procedures related to field teams and summarize each.

E. Section II.I.10, “Relating Measured Parameters to Dose Rates,” of the BNL Emergency Plan states that details of the capability to measure parameters to dose rates are set forth in Appendix 2, “Radiological Assessment and Monitoring,” and involve use of the dose assessment models



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and procedures generally described in that appendix. Provide a specific list of procedures used to relate measured parameters to dose rates for key isotopes and for comparing integrated dose estimates with U.S. Environmental Protection Agency (EPA) protective action guides.

F. Appendix 2, "Atmospheric Transport and Diffusion Assessment," states on page A2-5 that plume rise is estimated using the guidance in Regulatory Guide 1.111 (1977). However, Regulatory Guide 1.111 is intended for routine releases. Regulatory Guide 1.145 (1983) sets forth guidance for evaluating atmospheric dispersion for accidental releases. Discuss the use of Regulatory Guide 1.111 instead of 1.145 for estimating plume height during an accident.

**BLN RAI ID: 1148 (A), 1378 (C)**

**BLN RESPONSE:**

A. Section 7.5 of Tier 2 of the AP1000 DCD discusses the selection of monitored variables based on guidance provided in Regulatory Guide 1.97. This information is not addressed in the Emergency Plan. The variables and instrument design criteria selected for the AP1000 are described in subsections 7.5.2 and 7.5.3 of the DCD. Subsection 7.5.4 discusses the equipment that processes the safety-related display information and makes it available to the operator.

With regard to emergency preparedness-related instrumentation, Appendix 1 of the Emergency Plan provides details related to instrumentation used for emergency classification. This instrumentation is summarized below:

Plant Vent Radiation Monitor	VFS-RICA-103
Plant Vent Radiation (Mid Range Gas)	VFS-RIA-104A
Plant Vent Radiation (High Range Gas)	VFS-RIA-104B
Turbine Island Vent Radiation Monitor	TDS-JE-RE001
Gaseous Radwaste Discharge Radiation	WGS-RICA-017
Liquid Radwaste Discharge Radiation	WLS-RIA-229
Wastewater Discharge Radiation	WWS-JE-RE021
Steam Generator Blowdown Radiation	BDS-RE-010 BDS-RE-011
Main Steam Line Radiation Monitor	SGS-RIA-026, RIA-027
Service Water Blowdown Radiation	SWS-RIA-008
Containment Air Filtration Exhaust Radiation	VFS-MA-02A, MA-02B
Fuel Handling Area Exhaust Radiation Monitor	VAS-RE 001
Containment High Range Radiation Monitor	PXS-JE-RE-160, 161, 162, 163
Spent Fuel Pool Level	
Low-Low Alarm	SFS-LICA-19A/B/C

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Main Control Room Area Monitor	RMS-JE-RE010
Technical Support Center Area Monitor	RMS-JE-RE016
Central Alarm Station Area Monitor	RMS-JE-RE009
Containment Sump Level	WLS-LICR-034, 035, 036
RCS Temperature	RCS-TI-135A, 135B
Pressurizer Level	RCS-LT-200
RPV Level	RCS-LT-160A, 160B
Containment Pressure	PCS-PI-012, 013, 014
Containment Hydrogen	VLS-AE-001, 002, 003
Containment Pressure Hi/Hi Alarm	PCS-PI-005, 006, 007
PIP Busses	ECS-ES-1, 2
1E DC Busses	IDSA-EA-1, EA-2; IDSB-EA-1, EA-2, EA-3; IDSC-EA-1, EA-2, EA-3; IDSD-EA-1, EA-2
Liquid Sample Radiation Monitor	PSS-RICA-050

Appendix 2 of the Emergency Plan provides information regarding atmospheric transport and diffusion assessment. As discussed in Section 3.0, four main release types are used in the dose assessment code: reactor coolant system (RCS) coolant, gap, core damage, and core melt. The existing software used by TVA for its operating nuclear plants has not yet been modified to include the Bellefonte Nuclear Plant AP1000 reactor design. Plant Vent and Turbine Island Vent effluent monitors are used to measure the magnitude of monitored releases from the plant during normal and accident conditions. Data from these monitors are used in the dose assessment software. Further details regarding these instruments are discussed in the AP1000 Design Control Document, Section 11.5.3.

Procedures for post-accident sampling and analysis are operations oriented (rather than emergency planning procedures) and are addressed by COL Information Item 13.5-1. However, the variables utilized in these procedures are consistent with the variables described above and in section 7.5 of the DCD.

B. Response previously provided.

C. The RED, BRED and FRED codes described for use in the Appendix 2 of the Bellefonte 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

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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 where a three-dimensional dose assessment is needed.

D. Response previously provided.

E. Response previously provided.

F. Response previously provided.

This response is PLANT-SPECIFIC.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

No COLA revisions have been identified associated with this response.

**ASSOCIATED ATTACHMENTS/ENCLOSURES:**

None

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RAI Response

**NRC Letter Dated: August 8, 2008**

**NRC Review of Final Safety Analysis Report**

**NRC RAI NUMBER: 13.03-27**

**SITE-10: Evacuation provisions and actions**

Basis: 10 CFR 50.47(b)(10); NUREG-0654/FEMA-REP-1; Evaluation Criterion J.1; Evaluation Criterion J.2; Evaluation Criterion J.3; Evaluation Criterion J.5; Evaluation Criterion J.6; Evaluation Criterion J.10

SRP ACCEPTANCE CRITERIA: Requirement A; Acceptance Criterion 1

A. Address the time necessary to warn people outside the Protected Area. Provide a discussion on the time it will take to notify personnel and visitors outside the protected area but within the owner controlled area after identification of an emergency.

B. Section J.2, "Evacuation Routes and Transportation," states that evacuation routes are determined by Shift Manager/Site Emergency Director (SED), using available information on conditions. Provisions for evacuation of on-site individuals include evacuation by private automobile (15-30 minute high traffic density is not expected). Since preplanned routes are not identified (considering contingencies based on plant and radiological conditions), coordination with the State and local governments was not arranged. The security force will arrange transportation for those without cars. Provide information on what type of transportation the security force will have available to transport people without cars. The designated relocation site will have decontamination and contamination control capability and equipment. If the relocation center is not within the control of Tennessee Valley Authority (TVA), state when the letters of agreement will be available. In adverse conditions affected individuals will be directed to a safe on-site area (as determined by the SED). Explain why prearranged routes, coordinated with the State and local governments were not identified in the BLN Emergency Plan. Provide information identifying where the relocation center will be established. Additionally, if the relocation center is not within the control of TVA, state when the letters of agreement will be available.

C. Section J.2 of the BLN Emergency Plan addresses decontamination and contamination control capability and equipment that are available. Appendix 6 is a general list of the types of equipment available; provide details on what type of equipment is actually available, where it is stored, how often it tested and inventoried. According to Section J.2, the SED directs contamination monitoring of personnel, vehicles, and personal property arriving at the relocation site. Provide a summary of the decontamination capabilities and equipment sufficient to assess their adequacy, and provide information on the procedures and criteria used for personnel and other monitoring.

D. Section J.6, "Protective Measures," of the BNL Emergency Plan states that measures are taken to minimize ingestion and or inhalation of radionuclides to minimize exposure. Identify the measures used. Section J.6 states that self contained breathing apparatus (SCBAs) are used in locations where there is low oxygen or a fire. Other respiratory protection is available and issued by Radiation Protection or Safety and Health Services. Address training for use of SCBAs or other respiratory protection equipment. In addition, address the number of respirators available and the maintenance of the equipment. The criteria for use of protective clothing (PCs) are given; provide the location of the equipment and inventory to ensure that the PCs are available when needed. The use of radioprotective drugs (potassium iodide [KI]) is mentioned in the BLN Emergency Plan; identify the criteria for issuance, how and where it is stored and inventoried, and who makes the decision on issuance. In sum: provide a summary of the measures to be used and explain the adequacy of the measures used to minimize exposure, provide additional information on training in the use of respiratory equipment as well as the inventory and maintenance of the equipment and on storage and inventory of PCs, and provide criteria for

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issuance of KI, how and where it is stored and inventoried, and who makes the decision on issuance.

E. Appendix 4, "Evacuation Time Estimate," of the BLN Emergency Plan provides maps of evacuation routes, evacuation areas, and assumed locations of shelter areas and reception centers. Identify preselected radiological sampling and monitoring point locations. Provide the specific locations of the shelter areas and the reception centers and the pre-identified monitoring locations or provide an Inspections, Tests, Analyses and Acceptance Criteria (ITAAC) for when those locations will be identified.

**BLN RAI ID: 1382 (B), 1383 (C), 1384 (D), 1385 (E)**

**BLN RESPONSE:**

A. Response previously provided.

B. Affected individuals evacuate the site via personal vehicles. If an individual does not have access to personal transportation, either the affected individual or the Security Force makes arrangements for transportation with another evacuating individual.

Currently, there are two access/egress roads at the Bellefonte Nuclear Plant site. Each of these roads intersects U.S. 72. The south exit route intersects with U.S. 72 approximately 1.5 miles east of the Bellefonte Nuclear Plant. The north exit route intersects with U.S. 72 approximately 1.5 miles north of the site. During an emergency requiring site evacuation, the appropriate evacuation route is determined based on a number of considerations including potential or existing radiological hazards, local weather conditions, traffic, etc. Upon determination of the appropriate evacuation route, the local authorities are notified of the designated route. The relocation center 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 plant evacuation on public evacuation activities. The relocation center 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 relocation 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 regarding the relocation center 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.

C. At the Bellefonte Nuclear Plant, 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. If radiological conditions warrant, technicians survey vehicles and personnel leaving the site using portable friskers or equivalent equipment as well as smear techniques for vehicles.

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RAI Response

An example of the type of procedures that may be used for decontamination and contamination control in response to an emergency at the Bellefonte Nuclear Plant, TVA Browns Ferry EPIP-14, "Radiological Control Procedures," was previously provided for informational purposes (Attachment 13.03-24A with TVA letter dated September 23, 2008). EPIP-14 describes the actions and responsibilities of Radiation Protection (RP) personnel during a radiological emergency. The procedure contains instructions for RP personnel following declaration of an emergency. The procedure also contains instructions for RP personnel during Site Assembly and Evacuation and when operating the Alternate Personnel Decontamination Facility. An equivalent procedure would be provided for the Bellefonte Nuclear Plant as indicated in BLN Emergency Plan, Appendix 6.

D. Consistent with practices at TVA's other operating nuclear power plants, at an Alert class of emergency or higher, Radiation Protection (RP) personnel periodically perform radiation, airborne (particulate and iodine), and contamination surveys of the assembly areas inside the Protected Area, if radiological conditions warrant. During a Site Area Emergency (SAE) or General Emergency (GE) RP personnel periodically perform radiation, contamination and airborne surveys as necessary to determine whether radiological hazards exist in on-site Emergency Response Facilities. Additionally, an RP technician accompanies any personnel dispatched into areas of potential radiological hazards during an Alert, SAE, or GE. Contaminated individuals are evacuated to another location for decontamination. Eating, drinking, smoking and chewing are prohibited in radiological areas.

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 and SCBA 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 self-contained breathing apparatus. 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 the Bellefonte Nuclear Plant similar to those provided at the Browns Ferry Plant, as discussed in the response to item B above. These details will be established considering the design features of the AP1000 and based on TVA's experience operating three other nuclear plant sites. These details 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.

Consistent with TVA's experience at its other operating nuclear power plants, protective clothing inventories are maintained in or in close proximity to the Operations Support Center (OSC) and inventories conducted each calendar year. For further information regarding emergency supplies and equipment, refer to the response to item B above.

TVA maintains corporate procedures regarding criteria for the issuance of Potassium Iodide (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

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CECC-EPIP-9 was provided for informational purposes in response to RAI 13.03-26 above (previously provided with TVA letter dated September 23, 2008).

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 the Bellefonte Nuclear Plant when operational. According to this procedure, if the TSC RP 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 an RP supply area and Radiological Emergency Plan Van instrument kits.

E. TVA has determined the general areas where the shelter areas or reception centers for the Bellefonte Nuclear Plant 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.

Preliminary, pre-identified radiological sampling and monitoring locations are identified on the attached map (Attachment 13.03-27A) and are summarized on the attached table (Attachment 13.03-27B).

This response is PLANT-SPECIFIC.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

No COLA revisions have been identified associated with this response.

**ASSOCIATED ATTACHMENTS/ENCLOSURES:**

Attachment 13.03-27A

Attachment 13.03-27B

Attachment 13.03-24B  
TVA Letter Dated October 2, 2008  
RAI Responses

**Attachment 13.03-24B**

(14 pages, including this cover sheet)

**BROWNS FERRY NUCLEAR PLANT**

(Printed Material Provided to Public)



# 2008 BROWNS FERRY

EMERGENCY INFORMATION: STATE OF ALABAMA, LAUDERDALE COUNTY EMERGENCY MANAGEMENT AGENCY, LAWRENCE COUNTY EMERGENCY MANAGEMENT AGENCY,  
LIMESTONE COUNTY EMERGENCY MANAGEMENT AGENCY, MORGAN COUNTY EMERGENCY MANAGEMENT AGENCY, TENNESSEE VALLEY AUTHORITY



Dear Browns Ferry Neighbor,

As in the past, the Tennessee Valley Authority, the State of Alabama, and your local Emergency Management Agency have provided you with a calendar that contains important information about Browns Ferry Nuclear Plant and photographs of the Tennessee Valley region.

This calendar contains updated information reflecting additions and changes over the past year. This information will help you better understand Browns Ferry and the emergency plans that have been developed for your protection. Please keep the calendar in a convenient place and readily available. Any previous calendars or brochures concerning emergency information or instructions about Browns Ferry should be discarded.

We realize that some Browns Ferry neighbors have needs that would require special assistance in the unlikely event of an emergency at the plant. Therefore, we have included a card for you to fill out and return if such assistance is needed.

For your convenience, the card has been pre-addressed, and the postage has been paid. In order for emergency officials to maintain a current list of persons who would need assistance, this card must be returned immediately, even though you may have sent a card from a previous calendar or brochure.

If you have any questions about this material, please call one of the numbers listed below, and we will be glad to answer them for you.

**Brian O'Grady, Vice President**  
Browns Ferry Nuclear Plant  
Tennessee Valley Authority










**Bruce P. Baughman, Director**  
Alabama Emergency Management Agency  
State of Alabama

**Donald E. Williamson, M.D.,**  
State Health Officer  
Alabama Department of Public Health  
State of Alabama

FOR QUESTIONS ABOUT THIS MATERIAL

Lauderdale County Emergency Management Agency: **760-6363**; Lawrence County Emergency Management Agency: **974-7641**;  
Limestone County Emergency Management Agency: **232-2631** or **232-1530** (after hours); Morgan County Emergency Management Agency: **351-4620** or **353-2515** (after hours);  
Tennessee Valley Authority: **729-7698** (inside local calling area), **800-467-1388** (outside calling area)



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## THE PROMPT NOTIFICATION SYSTEM

We expect Browns Ferry Nuclear Plant to operate safely. However, if an incident occurs at the plant, TVA will notify state and local officials at once.

In-depth plans have been prepared by TVA, the State of Alabama, and your local Emergency Management Agency to protect your health and safety, and this calendar is a part of those plans. We want you to be prepared, know what the sirens mean, and know what you should do if you hear them.

The Prompt Notification System is a means of informing the public with sirens and tone-alert radios and providing information through local radio and television stations that are a part of the Emergency Alert System (EAS) and NOAA weather radio messages.

The fixed sirens can be heard within a 10-mile radius of Browns Ferry. If needed, the Prompt Notification System will be activated to quickly inform you and the rest of the public of any potential threat. The sirens and other warning systems are operated by your local Emergency Management Agency. The sirens may be used to warn residents of an emergency other than an incident at Browns Ferry. For example, the sirens may be used to warn the public of floods, tornadoes, or other natural or man-made disasters. If you hear a long, steady siren tone, turn to your local radio or television station for news and instructions and check on your neighbors.

If there is an emergency, information will be given over local radio and television stations. If emergency information is not being broadcast and sirens are sounding, there may be a problem with the siren system. If you note a problem with one of the sirens, please call your county Emergency Management Agency using the numbers listed inside the front cover.



## IF YOU HEAR THE SIRENS

**Check it out** – it could be only a test. Siren tests occur in your area on the second Monday of each month at 9:15 a.m. The sirens may not be tested if there is severe weather in your area.

**Tune to one of your local radio or television stations and listen for instructions.** These local radio and television stations will carry the emergency broadcasts. Initially, information also will be broadcast over the NOAA weather radio system (162.400 and 162.475 MHz). Remember, if you are not sure about the sirens, assume the warning is real.

**Lauderdale County:** WQLT-FM (107.3);  
WSBM-AM (1340)

**Lawrence County:** WALW-FM (98.3)

**Limestone County:** WVNN-AM (770); WZYP-FM (104.3); WKAC-AM (1080); WTZT (ZTV-Channel 11)

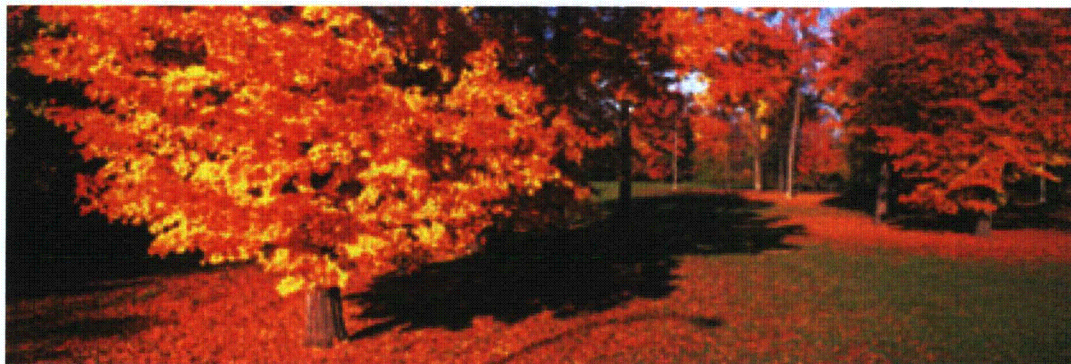
**Morgan County:** WWTM-AM (1400); WDRM-FM (102.1); WAJF-AM (1490)

**Check on your neighbors.**

**If the warning involves an incident at Browns Ferry,** you might be advised by radio, television, or police loudspeakers to go indoors and close all windows, doors, and other sources of outside air. If so, stay indoors and turn to page 2 for additional information. If you are asked to leave (evacuate) your area, turn to page 2 for additional information.

**Do not use the phone** unless absolutely necessary. The phone lines need to be open for emergency workers.

**Do not call 911** for information if you hear the sirens.





## IF YOU ARE ADVISED TO TAKE SHELTER INDOORS

- Go indoors and stay there.
- Close all doors and windows.
- Shut off all systems that draw outside air into the house such as furnaces, air conditioners, fireplace vents, and dampers.
- Stay tuned to your local EAS radio or television station (see page 1). These are the best sources for information and instruction.
- If you must go outside, protect your breathing. Place a damp cloth or towel over your nose and mouth.
- If you are told that it is safe to go outside, try to check on your neighbors. They may not have heard the announcements.
- Do not use the phone unless you have a special emergency and need help. Leave the lines open for official business.



## IF YOU ARE ASKED TO LEAVE (EVACUATE) THE AREA

- Stay calm and do not rush. Evacuation can work properly and reduce your risk if you act safely and calmly.
- Take a few items with you. Gather personal items you or your family might need, using the checklist on page 7.
- Turn off lights, appliances, and water.
- As you leave, lock your house and tie a white cloth or white towel on your front door to let emergency workers know everyone has left the area.
- Please leave your pets at home (preferably indoors) with plenty of food and water. If you must bring your pet to a reception center, it must be in a pet carrier or other sturdy container. Pets will not be allowed in the public shelters.
- Use your own transportation or, if possible, ride with a neighbor. Keep car windows and air vents closed and listen to a local radio station.
- Use the map on page 3 of this calendar to find the sector in which you live and the evacuation route you should follow. (Write this information in the space provided next to the map.)
- Follow the evacuation routes shown on the map. Go to the nearest reception center and register as an evacuee. If you become separated from your family, ask the locating service at the reception center to help you find your relatives.

### Schoolchildren

Children in schools within the 10-mile planning zone

(EPZ) will be given top priority during an emergency. Your local school system has an evacuation plan which will be implemented prior to the evacuation of the general public. These plans detail how the students will be transported with supervision to designated locations outside the EPZ. Parents should review their school's plan to get specific details on where the children will be relocated and when they can be picked up.

Local radio stations will broadcast school information during an emergency.

### Where to go

It is important that you follow the evacuation routes shown on the map. These routes are marked with blue and white evacuation signs. Go to a reception center within your own county.

Even if you do not plan to stay in a public shelter, you should register as an evacuee. It is important that you register for accountability.

### While you are away

Law enforcement officers will secure the evacuated areas to protect homes and businesses. Homes and buildings with white towels on the front door will be checked often. ONLY authorized persons will be allowed into the evacuated areas.

Officials of the Alabama Department of Public Health will monitor the affected areas, and you will be notified when to return home.

**BROWNS FERRY EVACUATION MAP AND ROUTES**

It is important that you follow the evacuation routes shown on the map. The 10-mile Emergency Planning Zone (EPZ) is divided into sectors. For quick reference, locate the sector in which you live or work and write it in the space provided below. Sector descriptions are listed on pages 4 and 5.

The evacuation routes for each sector are described on page 6. If an evacuation is ordered, locate the number for your sector and follow that route. Law enforcement personnel will patrol these roads and provide any assistance or guidance you need.

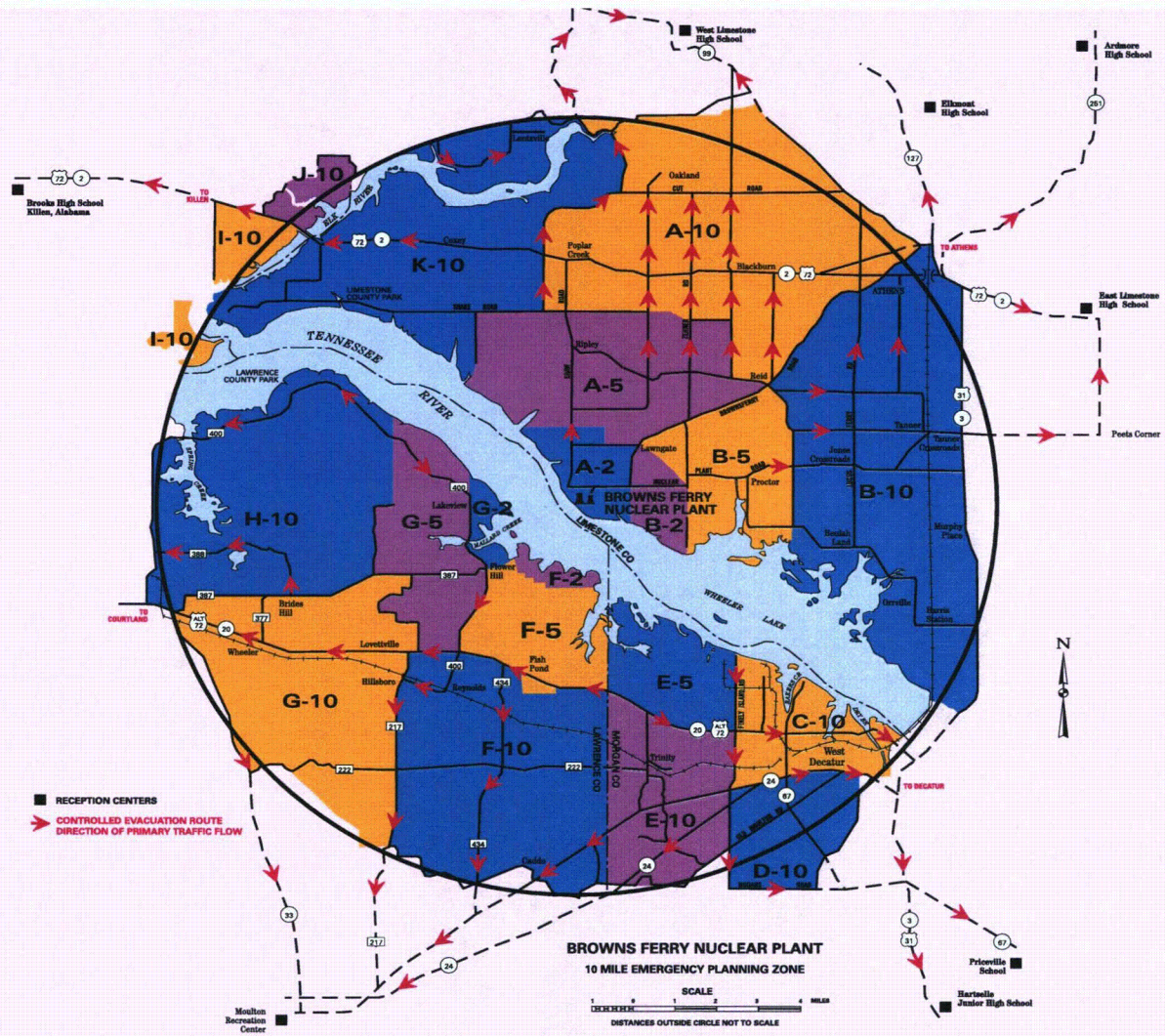
Local radio and TV stations will tell you the location of the reception center serving your area.

MY SECTOR NUMBER IS:

--	--

HOME

WORK





## BROWNS FERRY EMERGENCY PLANNING ZONE SECTORS

### Two-Mile Zone

#### Sector A-2 – Limestone County

Beginning at Poplar Creek and the Tennessee River, proceed east on dirt road past Shaw Road 3/4 mile, south on Mack Road to Lawngate Road, east on Lawngate Road, then south on Browns Ferry Road. Continue due south to north bank of the Tennessee River.

#### Sector B-2 – Limestone County

Follow power line north from Tennessee River to Cow Ford Road, then to the intersection of Nuclear Plant Road, continue northwest to intersection of Lawngate and Browns Ferry Roads, south on Browns Ferry Road, then south to the Tennessee River.

#### Sector F-2 – Lawrence County

Beginning on County Road 387 (east of Flower Hill), go southeast along the Wheeler Reservation boundary to the shoreline of the south side of the Tennessee River, then go northwest along the shoreline until it meanders back to the point of beginning at County Road 387.

#### Sector G-2 – Lawrence County

Beginning at a point on County Road 400 at Flower Hill at intersection of County Road 387, go east on County Road 387 to the south shoreline of the Tennessee River, then go west along the shoreline to the Mallard Creek Bridge (County Road 400). Proceed north on County Road 400 to power line, continue due north from power line to the south shoreline of the Tennessee River, then go east along the shoreline of the Tennessee River as it meanders around the Mallard Creek Public Use Area, and back to the Mallard Creek Bridge on County Road 400.

### Five-Mile Zone

#### Sector A-5 – Limestone County

Follow Petty Branch north to Friend Road, then east on Snake Road. Proceed east southeast to Grubbs Road, then east on Grubbs Road, south on Blackburn Road to Reid Road, southeast on Reid Road to Browns Ferry Road, southwest on Browns Ferry Road, west on Lawngate Road 3/4 mile, north on Mack Road 1/2 mile, then due west to Poplar Creek and the Tennessee River.

#### Sector B-5 – Limestone County

Follow power line from Tennessee River to Cow Ford Road, north to the intersection of Nuclear Plant Road, northwest across county to intersection of Lawngate and Browns Ferry Road. Proceed north on Browns Ferry Road to Reid Road, southeast on Reid Road 1 1/4 miles to Neely Road, south on Neely Road, then due south to the mouth of Mud Creek and the Tennessee River.

#### Sector E-5 – Morgan County

Beginning at the intersection of Lawrence County line and State Highway 20, go north along County line to the Limestone County line on the Tennessee River, east along the County line (on water) to Finley Island Road, south on Finley Island Road to State Highway 20, west on Highway 20 to point of beginning.

#### Sector F-5 – Lawrence County

Beginning at Flower Hill on County Road 400 go east on County Road 387 to the Wheeler Reservation boundary, then follow the Wheeler Reservation boundary to the Lawrence-Morgan County line. Follow the Lawrence-Morgan County line south to State Highway 20, then go west on State Highway 20 to County Road 432 to the intersection of County Road 433, then west and north on County Road 433 until it intersects again with State Highway 20. Go west on State Highway 20 to the intersection of County Road 400, then north on County Road 400 to Flower Hill.

#### Sector G-5 – Lawrence County

Beginning at Flower Hill proceed south on Mallard Creek Road (County Road 400) to State Highway 20. Go west on State Highway 20 approximately one mile to County Road 383, north approximately 3/4 mile to the intersection of County Road 384, then west, north, and east along County Road 384. Go back to County Road 383, then north on County Road 383 to the intersection of County Road 387, then west approximately one mile on County Road 387 to intersection of County Road 423. Go north and east to the end of County Road 423, then due north to the Lawrence County line on the Tennessee River, then east southeast along the Lawrence County line to the power line on County Road 400, then south on Mallard Creek Road (County Road 400), back to Flower Hill.

## Ten-Mile Zone

### Sector A-10 — Limestone County

Starting at Elk River Mills Dock, follow 10-mile EPZ to Elk River Mills Road east to Big Creek. Follow secondary road north of Big Creek to Buck Island Road, then south on Buck Island Road to Athens, south on Jefferson Street, southwest on Browns Ferry Road to Reid, west 1 mile on Reid Road, then north for 1 1/2 miles on Blackburn Road. Proceed west on Grubbs Road, then northwest to Snake Road, north on Gordon Road to New Cut Road; follow New Cut Road to Baker Hill Road, then north on Baker Hill Road; follow Elk River Mills Road to the Elk River Mills Dock.

### Sector B-10 — Limestone County

Starting at a point due south of Mud Creek, go north on Neely Road from Bridgeforth Road to Browns Ferry Road, northeast on Browns Ferry Road to intersection of Jefferson and Washington Streets in Athens, east on Washington Street to Clinton Street. Follow Clinton Street to Highway 72, proceed east on Highway 72 to Highway 31, south on Highway 31 to Highway 20, southeast on Highway 20 to the Tennessee River.

### Sector C-10 — Morgan County

Beginning at Limestone County line and Finley Island Road, go south on Finley Island Road to Woodall Road, south on Woodall Road to State Highway 24, east on Highway 24 to Moulton Street (Highway 24). Go east on Moulton Street to the railroad, north on the railroad to the Tennessee River, northwest on river to Finley Island Road and Limestone County.

### Sector D-10 — Morgan County

Beginning at Woodall Road and Highway 24, go south on Woodall Road to Modaus Road, east on Modaus Road to Danville Road, north on Danville Road to Moulton Street, west on Moulton Street and Highway 24 to Woodall Road and Highway 24.

### Sector E-10 — Morgan County

Beginning at intersection of State Highway 20 and

Lawrence County line, go south along County line to Modaus Road, east along Modaus to Old Moulton Road, then northeast on Old Moulton Road to Woodall Road, north on Woodall Road to State Highway 20, west on Highway 20 to Lawrence County line.

### Sector F-10 — Lawrence County

Beginning on State Highway 20 at the Lawrence-Morgan County line, go west on State Highway 20 to County Road 432, then south on 432 to the intersection of County Road 433, then west and north on County Road 433 until it intersects again with State Highway 20. Go west on State Highway 20 to the intersection of County Road 217, then south on County Road 217 to the intersection of County Road 301 at Sulphur Spring. Follow County Road 301 until the road runs into County Road 299, then follow County Road 299 until road runs into County Road 214; remain on County Road 214 east to Lawrence-Morgan County line, then north along the Lawrence-Morgan County line to the point of beginning on State Highway 20.

### Sector G-10 — Lawrence County

Beginning at the intersection of State Highway 20 and County Road 383, go north on County Road 383 to intersection of County Road 384, then north and east along County Road 384 back to County Road 383. Go north on County Road 383 to the intersection of County Road 387, then west on Brides Hill Road (County Road 387) to State Highway 20, then west on State Highway 20 to the intersection of State Highway 33. Proceed south on State Highway 33 to the intersection of County Road 222, then east on County Road 222 to the intersection of County Road 294, then follow a line southeast by Blowing Springs Branch to the intersection of County Road 217 at Sulphur Springs. Go north on County Road 217 to State Highway 20, then east on State 20 to point of beginning.

### Sector H-10 — Lawrence County

Beginning at the intersection of Brides Hill Road (County Road 387) in the vicinity of Terry Heights subdivision, go

east along County Road 387 5.4 miles to County Road 423, then north to the end of County Road 423. Proceed due north to the Lawrence County line at the Tennessee River, then westerly along the county line to a point due north of the TVA Public Use Area, then south to the Spring Creek Road bridge. Follow Spring Creek Road (County Road 400) south to County Road 389, south on County Road 389 to Jefferson Street, then east on Jefferson Street to State Highway 33, to Terry Heights subdivision.

### Sector I-10 — Lauderdale County

Beginning at Elk River Bridge at U.S. Highway 72, go west to County Road 77, south on County Road 77 to Barnett Road, south on Barnett Road to curve in the road, then a southwest angle to the intersection of County Road 632 and County Road 91. Go north on County Road 91 to intersection of Longshore Drive, then south on Longshore Drive into Tennessee River to Lauderdale County Line. Follow Lauderdale County Line east then north to beginning point at U.S. 72 at Elk River Bridge.

### Sector J-10 — Lauderdale County

Beginning at Elk River Bridge at U.S. Highway 72, go west on U.S. Highway 72 to County Road 70, north on County Road 70 to the intersection of County Road 70 and County Road 566, then east on County road 566 to Richter Road at Lauderdale County line. Go south on Richter Road following Lauderdale County line into Elk River and then following Lauderdale County line to beginning point at Elk River Bridge at U.S. Highway 72.

### Sector K-10 — Limestone County

From a point on the Tennessee River and TVA Public Use Area to Elk River State Park go north along the Lauderdale County line to the 10-mile EPZ and Lauderdale County line intersection, along 10-mile EPZ line to the Elk River Mills Dock, south on Elk River Mills Road to Baker Hill Road. Proceed southwest on New Cut Road, south on Gordon Road to Snake Road to Friend Road, south on Friend Road to Friend Branch and the Tennessee River.





## EVACUATION ROUTES

FOLLOW THE EVACUATION ROUTES SHOWN ON THE MAP. TRAFFIC MAY ALSO BE DIRECTED BY EMERGENCY WORKERS. GO TO THE NEAREST RECEPTION CENTER AND REGISTER AS AN EVACUEE.

### **I-10 Lauderdale County**

Take County Road 91, County Road 70, and County Road 77 to U.S. Highway 72. Proceed west to Brooks High School in Killen.

### **J-10 Lauderdale County**

Take County Road 70 to U.S. Highway 72 West to Brooks High School in Killen.

### **F-2, F-5 Lawrence County**

Take shortest route to State Highway 20 (Alternate U.S. 72). Go west on State Highway 20 to County Road 217 to State Highway 24. Go west on State Highway 24 to State Highway 157, south on State Highway 157 to Court Street, west on Court Street. Follow instructions of Traffic Control personnel to the Moulton Recreation Center.

### **F-10 Lawrence County**

Travel south to State Highway 24. Go west on State Highway 24 to State Highway 157. Turn south on State Highway 157. Follow instructions of Traffic Control personnel to the Moulton Recreation Center.

### **G-2 Lawrence County**

Travel south to State Highway 20. Go west on State Highway 20 to County Road 217, south on County Road 217 to State Highway 24, west on State Highway 24 to State Highway 157. Go south on State Highway 157 to Court Street. Turn west on Court Street to the Moulton Recreation Center.

### **G-5 Lawrence County**

Take the most direct route to County Road 400, then proceed east on County Road 400 to State Highway 20. Go west on State Highway 20 to County Road 217, south on County Road 217 to State Highway 24, west on State Highway 24 to State Highway 157, where you

will be directed to the Moulton Recreation Center.

### **G-10 Lawrence County**

Travel to State Highway 20. Go west on State Highway 20 to State Highway 33, then south on State Highway 33 to the Moulton Recreation Center.

### **H-10 Lawrence County**

Proceed west to County Road 400, then south on County Road 400 to County Road 389. Go south on County Road 389 to State Highway 20, east on State Highway 20 to State Highway 33, south on State Highway 33 to the Moulton Recreation Center.

### **A-2 Limestone County**

Proceed north and follow the Evacuation Route signs to the Reception Center at West Limestone High School.

### **A-5 Limestone County**

Proceed north and follow the Evacuation Route signs to the Reception Center at West Limestone High School or proceed northeast to the Reception Center at Elkmont High School.

### **A-10 Limestone County**

Proceed north and follow the Evacuation Route signs to the Reception Center at West Limestone High School or proceed northeast to the Reception Center at Elkmont High School.

### **B-2 Limestone County**

Proceed east and follow the Evacuation Route signs to the Reception Center at East Limestone High School.

### **B-5 Limestone County**

Proceed east and follow the Evacuation Route signs to the Reception Center at East Limestone High School or

proceed northeast to the Reception Center at Ardmore High School.

### **B-10 Limestone County**

Proceed east and follow the Evacuation Route signs to the Reception Center at East Limestone High School or proceed northeast to the Reception Center at Ardmore High School.

### **K-10 Limestone County**

Proceed north and follow the Evacuation Route signs to the Reception Center at West Limestone High School.

### **E-5 Morgan County**

Travel south on Finley Island Road or east on State Highway 20 to Woodall Road, then south to Modaus Road. Go east on Modaus Road to State Highway 67, east on State Highway 67 to U.S. Highway 31, south on U.S. 31 to Hartselle Junior High School.

### **E-10 Morgan County**

Travel east on State Highway 24 to Woodall Road, south on Woodall Road to Modaus Road, then east to State Highway 67. Go east on State Highway 67 to U.S. Highway 31, then south on U.S. Highway 31 to Hartselle Junior High School.

### **C-10 Morgan County**

Travel east on State Highway 20 or 24 to U.S. Highway 31. Go south on Highway 31 to State Highway 67, then east on Highway 67 to Priceville School.

### **D-10 Morgan County**

Take shortest route to either Danville Road or Old Moulton Road to State Highway 67. Go east on State Highway 67 to U.S. Highway 31, south on U.S. Highway 31 to Hartselle Junior High School.



## IF YOU NEED SPECIAL HELP

Your health and safety are very important to us. We realize that some of you who live near Browns Ferry Nuclear Plant may have special needs. To assist and provide care for those of you who are medically disabled or handicapped, we must make certain plans.

If you or someone you know who lives within 10 miles of Browns Ferry needs special help, please fill out and mail one of the two cards provided in this calendar. After you have answered the questions on the card, drop it in a mailbox. The card is pre-addressed, and the postage has been paid. You need to mail this card as soon as possible so proper arrangements can be made.

**Please fill out the card and mail it even if you may have previously returned a card.** This will enable your emergency officials to maintain a current list of individuals who would need assistance. If you have any questions or need additional cards, please contact one of the Emergency Management Agencies listed to the right.

**Lauderdale County  
Emergency  
Management Agency  
760-6363**

**Lawrence County  
Emergency  
Management Agency  
974-7641**

**Limestone County  
Emergency  
Management Agency  
232-2631**

**Morgan County  
Emergency  
Management Agency  
351-4620**



## FOR FARMERS AND HOME GARDENERS

If an incident occurs at Browns Ferry Nuclear Plant, your local Emergency Management Agency will provide directions on contacting your Agricultural Extension Agent for information on how to protect your crops and livestock. For more information, listen to your local radio and TV stations.

### Your crops

- An unharvested crop is hard to protect. However, normal harvesting and processing may still be possible if time permits.
- Crops already harvested will be safer if they are stored inside.
- You should wash and peel vegetables and fruits from your garden before use if they were not already harvested.

### To protect your livestock

- Provide as much shelter as possible. If you do not have enough space in barns or sheds, use natural shelters such as wooded areas or road underpasses.
- Provide plenty of food and water and make sure shelters are well ventilated.
- Milk animals should be given first priority.
- Use stored feed when possible.



## EMERGENCY SUPPLIES CHECKLIST

To help you prepare for any type of emergency, we have provided two lists of supplies. One list is items you may need to keep in your home to aid your response. The second list is supplies to take with you if you are asked to leave the area. Check the supplies you would need and add supplies not listed.

### Emergency supplies for your home

- Weather alert radio
- First-aid kit
- Toolbox
- Candles and matches
- Portable radio, flashlight, extra batteries
- \_\_\_\_\_

### Evacuation supplies

- This calendar
- Medicine or any special medication
- Personal health products (shaving cream, toothbrush)
- Special diet food
- Blankets and pillows
- Cash, checkbook, credit cards, important papers
- Items for children (favorite toy, books)
- Change of clothing
- \_\_\_\_\_

If given potassium iodide tablets: During a nuclear emergency, you might be exposed to radiation that could harm your thyroid gland. Therefore, public health officials may give you potassium iodide tablets (KI). The tablets can reduce the amount of radioactive iodine collecting in your thyroid gland.

The tablets will be given only to those persons from the affected areas who may have been exposed to radioactive iodine. It is important that you know the sector that you evacuated from, and that you read and understand the consent form you will receive prior to taking the tablets. Take the tablets only as directed, and call your Public Health Office if you have questions.



## GENERAL INFORMATION

### How emergencies are classified

If there is an incident at Browns Ferry Nuclear Plant, it will be placed in one of four categories that have been established by the United States Nuclear Regulatory Commission and adopted by the State of Alabama and TVA.

For your information and reference, here are the four emergency levels in order from least to most severe.

1. **A Notification of Unusual Event** is the least serious of the four classifications. Because of strict federal regulations, any event out of the ordinary is reported to federal, state, and local authorities. The event poses no risk to you or to plant employees. It means that a minor problem exists. Appropriate officials and personnel are notified.
2. **An Alert** is declared when an event has occurred that could reduce the level of safety of the plant, but backup plant systems are available. Emergency agencies are notified and asked to stay in touch, but no action by the public is necessary.
3. **A Site-Area Emergency** is declared when there is a problem with plant safety systems and a release of some radioactivity into the air or water is possible. The sirens may be sounded. You should listen to radio and television stations for information and instructions.
4. **A General Emergency** is declared when an event at the plant has caused a loss of several safety systems that could lead to a release of radiation. State and local authorities would take action to protect the residents living near the plant. People in affected areas would be advised by authorities to stay indoors or to evacuate.



## GLOSSARY

**Background radiation** – This is radiation from natural sources. It comes from the sun's rays and it's in the ground, building materials, and the human body.

**Core** – The central part of a nuclear reactor that contains the uranium fuel.

**Fission** – The nuclear process in which a heavy atom, such as uranium, splits into fragments.

**Fuel assembly** – A collection of rods that contain the nuclear fuel pellets. The fuel pellets produce heat to make the steam used to generate electricity.

**Fuel pellets** – Thimble-sized uranium dioxide pellets used in nuclear power generation. Each pellet contains about the same amount of energy as that produced from burning one ton of coal. A modern reactor core may contain up to 17.5 million pellets.

**Fuel rods** – Hollow tubes that contain stacks of uranium dioxide fuel pellets. These rods are bundled together to form fuel assemblies.

**Half-life** – The time required for a radioactive substance to lose one-half of its radioactivity. Half-life can vary from minutes to years, depending on the substance.

## WHAT IS RADIATION?

Radiation is energy traveling in the form of invisible particles or rays after the breakdown of radioactive atoms. Everyone is exposed to small amounts of radiation every day. Air, water, food, and sunshine are a few sources of natural background radiation. Most people receive a dose of about 300 to 400 millirems of background radiation a year. "Millirem" is a term used to measure the effect of radiation on the human body.

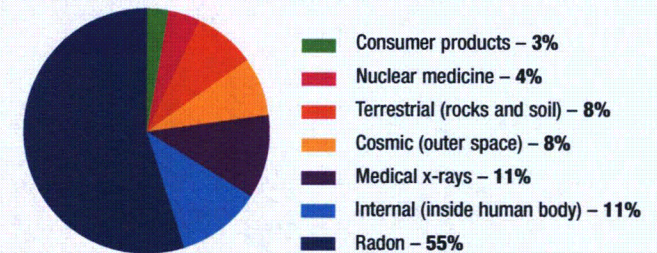
Radiation also comes from other sources. Color televisions produce about 1 millirem of radiation every year. Medical procedures such as x-rays and diagnostic tests can result in 20 to several thousand millirems of radiation a year, depending on a person's treatment for disease or injury.

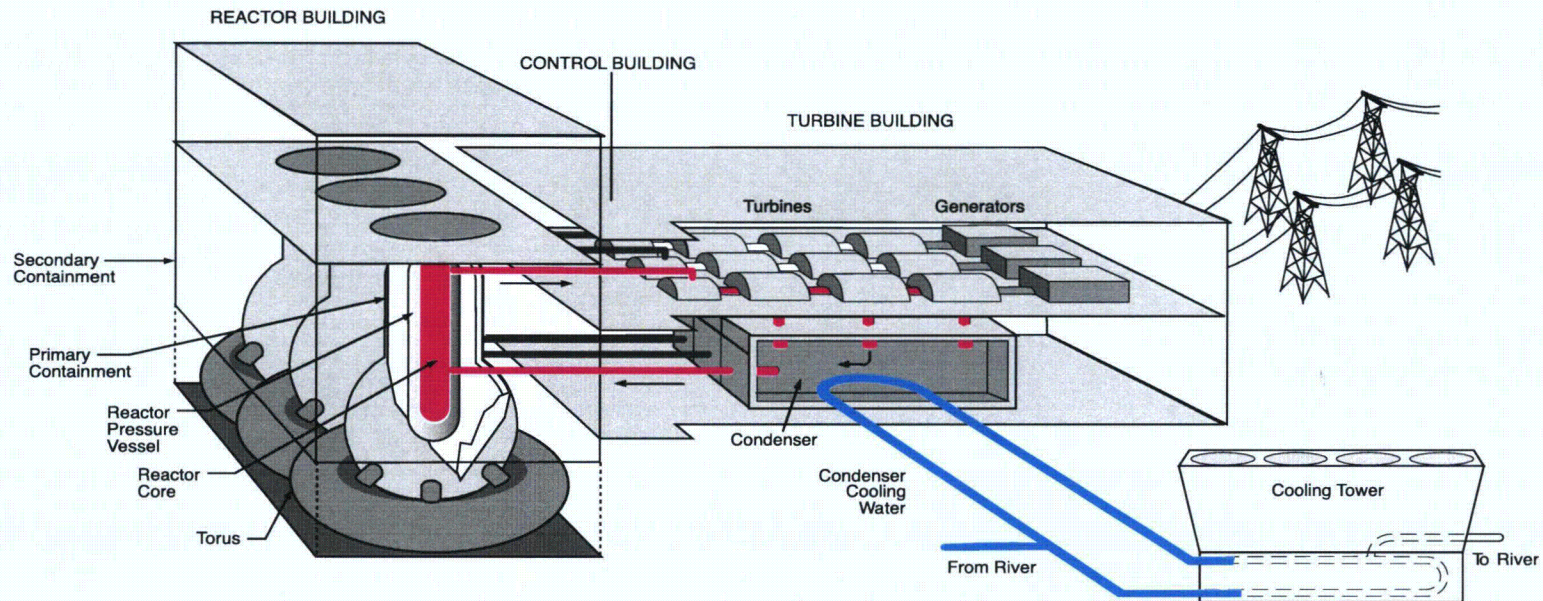
People are concerned about radiation exposure because it can alter or damage human-cell structure. That is why workers at nuclear power plants are carefully monitored and trained to limit their exposure to a level that is as low as is reasonably achievable. The Nuclear Regulatory Commission, which issues licenses to all nuclear power plants, has set a maximum safe individual dose of 5,000 millirems a year, measured over the entire body. To avoid coming even close to this level, TVA

work procedures set an administrative limit of 1,000 millirems per year for any worker, with any additional dose requiring written approval.

A nuclear power plant's containment building, reactor vessel, and fuel assemblies are barriers designed to contain radiation and protect plant workers and persons living near the plant from any exposures to elevated levels of radiation. Repeated surveys around TVA's operating nuclear plants have shown no detectable increase in radiation above normal background levels.

### SOURCES OF RADIATION





## HOW BROWNS FERRY WORKS

Browns Ferry operates much like a fossil-fueled power plant. In a fossil plant, coal, oil, or gas is burned to make heat. The heat turns water into steam, the steam drives a turbine, and the turbine spins an electrical generator, producing electric power.

The operation is the same at Browns Ferry, except the heat is provided by a process called fission, and the fuel is uranium. The uranium is sealed inside long metal tubes, called fuel rods. These rods are placed into the reactor vessel, making up the fuel core.

When a uranium atom is struck by a small particle called a neutron, it can give off heat and more neutrons. Those neutrons can strike other uranium atoms, causing them to continue the chain reaction.

The reaction is started and stopped by control rods that can be moved in and out of the fuel core. These control rods are made of a material that absorbs neutrons. When inserted into the core, they stop the chain reaction.

It is physically IMPOSSIBLE for the nuclear fuel at Browns Ferry to explode like a nuclear bomb. The fuel for Browns Ferry and other similar nuclear power plants is only about 3 to 5 percent fissionable uranium. Nuclear weapons have in excess of 90 percent fissionable uranium. The illustration above shows how the heat from the fission process is used to make steam and generate electricity at Browns Ferry.

Water (pink) is pumped through the core and heated by the fuel. The water boils in the reactor to produce steam. The steam is piped to the turbine, where the

force of the expanding steam turns the turbine.

To produce electricity, the turbine turns the generator, which is an electromagnet inside a coil of wire. After the steam passes through the turbine, the steam is cooled back into water by circulating around tubes carrying cool water (blue) from Wheeler Reservoir.

The condensed steam, which is now water, is pumped back to the reactor to repeat the cycle. The condenser cooling water may be passed through the cooling towers before it is returned to the reservoir.

The reactor coolant water is radioactive and is NOT allowed to mix with the condenser cooling water that is returned to the reservoir.

Attachment 13.03-24C  
TVA Letter Dated October 2, 2008  
RAI Responses

**Attachment 13.03-24C**

(2 pages, including this cover sheet)

BROWNS FERRY NUCLEAR PLANT  
TRANSIENT INFORMATION SIGN

# **Round Island RECREATIONAL AREA -----N O T I C E-----**

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This area is within 10 miles of Browns Ferry Nuclear Plant. In the unlikely event of an accident that would require the public to take action, people at this location would be notified by one of the following means:

Alabama Game and Fish Department personnel would cruise the river with public address equipment.

Local law enforcement personnel would enter the area and use sirens and loudspeakers.

A siren located in the area would be sounded. Sirens are normally tested at the second Monday of each month between 9:00 a.m. and 9:30 a.m.

If you are alerted by any of the above, you should:

Follow the instructions of law enforcement or Game and Fish Department personnel, if present.

Obtain information and instructions by tuning to a local emergency broadcast station.

If you have no radio and local governmental personnel are not present, leave the area following the blue Browns Ferry evacuation route signs.

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For further information on these emergency plans, please contact:  
Limestone County Emergency Management Agency  
256-232-2631

Obtain information and instructions by tuning to a local emergency broadcast station: WZYP - Athens, Alabama - FM 104.

For further information regarding Browns Ferry Nuclear Plant, you are invited to call the TVA Community Relations Line at 1-800-467-1388.

**TENNESSEE VALLEY AUTHORITY**

Attachment 13.03-25C  
TVA Letter Dated October 2, 2008  
RAI Responses

**Attachment 13.03-25C**

(35 pages, including this cover sheet)

**BROWNS FERRY NUCLEAR PLANT - EPIP-12  
EMERGENCY EQUIPMENT AND SUPPLIES**



TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT

**EMERGENCY PLAN IMPLEMENTING PROCEDURE**

**EPIP-12**

**EMERGENCY EQUIPMENT AND SUPPLIES**

**REVISION 7**

PREPARED BY: RANDY WALDREP

PHONE: 2038

RESPONSIBLE ORGANIZATION: EMERGENCY PREPAREDNESS

APPROVED BY: TONY ELMS

DATE: 06/25/2008

EFFECTIVE DATE: 07/01/2008

LEVEL OF USE: REFERENCE USE

**QUALITY-RELATED**

**HISTORY OF REVISION/REVIEW**

<u>REV. NO.</u>	<u>REVISED PAGES</u>		<u>REASON FOR CURRENT REVISION</u>
00	ALL	IC-01	The revision is being conducted to renumber procedure which was EPIP-17 to EPIP-12 for standardization issues. Revised records section for standardization and removed FRED Manuals from the TSC inventories.
01	All	IC-02	Format EPIP to EPIP Writers Guide specifications and standardize the contents of the procedure according to the guidance provided by the EP Peer Team.
2	All	IC-03	This revision is to correct identified typographical errors, change RADCON to Radiation Protection, clarify some checklists, add emergency dosimetry packages for BREs to Appendix L, as well as make general editorial changes.
3	31	IC-04	Revised Appendix O to include the addition of 5 SCBA and spare masks and air cylinders in the 1A Shutdown Board Room, change number of SCBA, Fire Apparatus from 4 to 5, add line for 5 SCBA, Fire Apparatus #2, and line for 5 spare air cylinders for Fire Apparatus and Fire Apparatus #2. Added TI-88 to the procedure list for TSC. This revision also included editorial changes. Converted from W95 to XP.
4	7,13	IC-05	Converted document from W95 to XP. Additionally, added TI-394 to procedure listing in Appendix A for the Technical Support Center and Nextel radios, spare batteries, and battery charger to inventory for Appendix D for Local Recovery Center.
5	8, 25, 29,	IC-06	Added inventory items to I&C and Electrical tool boxes (Appendix M). Removed sets of EMI, UEMI, and UMMI from TAT Area inventory and revised wording related to EOI Appendices/SAMG Flowcharts and Appendices to indicate they are available for all three units (Appendix A, page 4 of 4).
6	8, 31	IC-07	Revised Appendix A, "Technical Support Center", (page 4 of 4 for the Technical Assessment Team Area) to include TI-394 and EOI Flowcharts as part of the Procedures inventory. Revised Appendix O, "Emergency Use SCBA Inventory" to reflect the movement of the SCBA units in the Fire Equipment Stairwell to the Service Building. Additionally, revised the appendix to reflect more specific information on location of SCBAs relative to the Fire Engine on which they are located.
7	1,6, 8,9,13, 14, 23	IC-08	(NA Audit SSA0804) Deleted paragraph 3.1.A.2 which addressed the option ("may be posted") of posting current inventory copies at cabinet locations since inventories are not typically posted at cabinet locations. Added functional checks for fax machine and copier to Appendix D. Changed reference to REP Van 4 to REP Van 6 on Appendix K. (BFN-EP-08-SS10) Added EP maps as a part of inventory items on Appendix E. Changed reference to SPDS from ICS throughout the procedure.

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## 1.0 INTRODUCTION

### 1.1 Purpose

The purpose of this instruction is to comply with the requirements of the Radiological Emergency Plan for periodic inspection and maintenance of equipment and supplies.

## 2.0 REFERENCES

### 2.1 Industry Documents

- A. NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants"
- B. 10 CFR 50, Code of Federal Regulations Appendix E, Emergency Planning and Preparedness for Production and Utilization Facilities Part IV.E.9.d
- C. NRC Regulatory Issue Summary 2000-11: "NRC Emergency Telecommunications System"
- D. NUREG-0696, "Functional Criteria for Emergency Response Facilities"

### 2.2 Plant Instructions

- A. TVA Radiological Emergency Plan
- B. CECC EPIP-9, "Emergency Environmental Radiological Monitoring Procedures"
- C. FP-0-000-INS005, "Quarterly Inspection of Emergency Equipment"

## 3.0 INSTRUCTIONS

### 3.1 Conduct of Inventories

#### A. General Information

1. Inventories and functional checks shall be conducted in accordance with the frequencies provided in paragraph 3.4, "Responsible Organizations".
2. The individuals performing the inventory shall complete the appendices as indicated and make arrangements to correct any items found unsatisfactory.
3. Completed appendices will be forwarded prior to the end of the quarter or inventory period in which they are due to the Browns Ferry Nuclear (BFN) Emergency Preparedness (EP) Manager for review and record.
4. Personnel conducting the tasks will provide legible documentation of results.
5. Individuals conducting the inventory shall list any unsatisfactory condition and the disposition in the remarks section of the applicable appendices. Deficient, outdated, or missing items shall be replaced as soon as possible.
6. The BFN EP Manager is responsible for ensuring the overall state of readiness of supplies and equipment identified in this procedure.
7. The BFN EP Manager, or his designee, shall review all appendices and concur with results by signature.
8. Monthly or quarterly shall be defined as prescribed in the Radiological Emergency Plan. Terms such as once every calendar quarter or month invokes that the task should be conducted within the timeframe of a physical quarter or month

### 3.2 Completion of Appendices

#### A. Form Completion

1. A check mark in the "SAT" column will represent that the item(s) being inventoried meets the operable condition and/or minimum quantities were observed.
2. If the "As Found" condition of items differ from the expected condition, comments in the "Remarks" column of the appendix should be recorded and in enough detail clearly communicate the conditions found and actions taken. Comments such as the following - "batteries missing" do not document the full action taken. Comments for this example should read: "Batteries missing, replaced on Feb 5, 04".

#### B. Unexpected Conditions

1. All unexpected "As Found" conditions shall be corrected as soon as possible. If circumstances do not allow prompt correction, the BFN EP Manager shall be notified. Once the condition(s) has been corrected, the applicable form shall be completed.
2. For instances where the "As Found" condition(s) results in the initiation of another accepted plant corrective action process such as a "Problem Evaluation Report" (PER), "Trouble Ticket", "Work Order", "Work Request", etc., the appendices may be closed following the documentation of the action taken. The unsatisfactory condition will be tracked by the corrective action process.
3. "As found" and quantities at less than minimum specified and/or functional testing issues generally do not rise to the levels described in SPP 3.1 if promptly corrected. However, any items deemed to meet the criteria of SPP 3.1 shall be documented under SPP 3.1.

#### C. Special Checks

1. Special checks of certain material in the cabinets shall be performed. The following checks shall be made where applicable:
  1. The protective clothing and heat/moisture sensitive materials shall be checked for deterioration.
  2. The smoke tubes and aspirator bulbs shall be checked for deterioration and that the tubes have not been broken or used.
  3. Replace all flashlight batteries at the end of shelf-life with fresh batteries. (Do not discard batteries. Return them to the tool room.)
  4. Check to determine that flashlights are operable.
2. The emergency equipment stored in cabinets may be provided with a lock or plastic seal as a means of controlling access or determining that the cabinet has not been opened.

3.3 Special Inventories

Special inventories and/or functional checks shall be conducted in addition to routine activities when items or equipment maintained by this procedure has been affected by a drill/exercise, training, or actual emergency. These special inventories shall be performed at a reasonable time following the activity. These special inventories may also be used as the routine inventory.

3.4 Responsible Organizations

Responsible Organizations (as designated below) shall conduct inventories at the specified frequencies.

<b>Apdx</b>	<b>Frequency</b>	<b>Description</b>	<b>Responsible Org.</b>
A	Calendar Quarter	Technical Support Center	EP
B	Calendar Quarter	Operations Support Center	EP
C	Calendar Quarter	Main Control Room	EP
D	Calendar Quarter	Local Recovery Center	EP
E	Calendar Quarter	Radiation Protection Equipment	Radiation Protection
F	Calendar Quarter	Onsite Decontamination	Radiation Protection
G	Calendar Year	Protective Clothing	Radiation Protection
H	Calendar Quarter	Agreement Hospital Cabinet Inventory	EP
I	Monthly (per REP)	Monthly Testing Of Communications Equipment	EP
J	Quarterly (per REP)	Quarterly Administrative Checks And Reviews (Quarterly per REP & Once per Calendar Quarter)	EP
K	Calendar Quarter	Review of Inventories Performed in other Procedures	EP
L	Calendar Quarter	Emergency Dosimetry	Radiation Protection
M	Calendar Quarter	Maintenance Emergency Tool Box Inventory	Maintenance
N	Calendar Quarter	Alternate Decontamination Facility	EP
O	Calendar Quarter	Emergency Use SCBA Inventory	Fire Operations

#### 4.0 RECORD RETENTION

##### 4.1 Emergency Records

The materials generated due to the declaration of an emergency classification are considered Lifetime Retention Non-QA records. These records shall be forwarded to the BFN EP Manager who shall submit any records deemed necessary to demonstrate performance to the Corporate EP Manager for storage.

##### 4.2 Drill and Exercise Records

The materials deemed necessary to demonstrate performance of key actions during drills are considered Non-QA records. These records shall be forwarded to the EP Manager who shall retain records deemed necessary to demonstrate six-year plan performance for six years. The EP Manager shall retain other records in this category for three years

##### 4.3 Emergency Equipment and Supply Records

The appendices/checklists in this instruction are NON-QA documents and will be retained by the BFN EP Manager for at least three years.

#### 5.0 ILLUSTRATIONS / APPENDICES

- Appendix A - Technical Support Center
- Appendix B - Operations Support Center
- Appendix C - Main Control Rooms
- Appendix D - Local Recovery Center
- Appendix E - Radiation Protection Equipment
- Appendix F - Onsite Decontamination
- Appendix G - Protective Clothing
- Appendix H - Agreement Hospital Cabinet Inventory
- Appendix I - Monthly Testing of Communications Equipment
- Appendix J - Quarterly Administrative Checks and Reviews
- Appendix K - Review of Inventories Performed by other Procedures
- Appendix L - Emergency Dosimetry
- Appendix M - Maintenance Emergency Tool Box Inventory
- Appendix N - Alternate Decontamination Facility
- Appendix O - Emergency Use SCBA Inventory

LAST TEXT

**TECHNICAL SUPPORT CENTER**

**SUPPLIES**

SAT	Min	Description	Remarks
	Asrtd	Office/Desktop Supplies	
	Asrtd	Dry board Supplies	
	6	Calculators, (Scientific)	
	12	Flashlights	
	24	Batteries (D-Cells) Best used by Date: _____ / _____	
	24	Batteries (AA) Best used by Date: _____ / _____	
	5	Telephone Headsets (in workspace)	
	3	Telephone Headsets (Spares)	
	12	Grease Pencils	
	4 pk	Copier Paper	
	1 Roll	Thermal Paper for Tracking Board	
	1	Accountability Roster (Current Rev)	
	1 ea	TSC Position Notebooks - Check for uncontrolled or out-of-date materials in notebooks or TSC area	
	2	ASME Steam Tables	

**MAPS**

SAT	Min	Description	Remarks
	1	2 Mile Map *Latest Rev. _____	
	1	10 Mile Evac Sect. Map *Latest Rev. _____	
	2	10 Mile Sample Point Map *Latest Rev. _____	
	1	50 Mile Sample Point Map *Latest Rev. _____	
	1 set	Radiation Protection Survey Maps	

\* Verify wall maps are the latest revision (see EPIL-1)

**COMMUNICATIONS BRIDGES**

SAT	Description		Remarks
	Verify bridges are functional by calling numbers listed on two phones and ensuring clear communications.		
	√	<b>#</b>	
		<b>Bridge</b>	
		101 Ops Bridge - Talk	
		102 Ops Bridge - Listen	
		103 RadCon Bridge	



TECHNICAL SUPPORT CENTER

FUNCTIONAL CHECKS

SAT	Description	Remarks																												
	Verify key phones for TSC are functional by calling numbers listed in the REND																													
	Verify CECC ring-down is functional by calling CECC Director Position																													
	Verify Fixed Satellite Phone is functional by calling known good phone number																													
	Verify CECC terminal/printer is functional by printing current Met Data																													
	Verify copier is functional by copying a page																													
	Verify Zetron radio is functional using handheld radio																													
	Verify incoming fax is functional by faxing to Outgoing Fax																													
	Verify outgoing fax is functional by faxing to Incoming Fax																													
	Verify clocks are functional by checking current time																													
	Verify signs are functional by changing to one or more classifications and observing																													
	Verify TSC printer is functional by printing test page																													
	Verify all SPDS/Personal Computer (PC) terminals are functional																													
√	<table border="1"> <thead> <tr> <th>Position</th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>Operations Mgr. SPDS</td> <td></td> <td></td> <td></td> </tr> <tr> <td>RP Mgr. SPDS</td> <td></td> <td></td> <td></td> </tr> <tr> <td>RP Area SPDS</td> <td></td> <td></td> <td></td> </tr> <tr> <td>TSC Area SPDS</td> <td></td> <td></td> <td></td> </tr> <tr> <td>TSC Clerical PC</td> <td></td> <td></td> <td></td> </tr> <tr> <td>SAMG Area PC</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Position				Operations Mgr. SPDS				RP Mgr. SPDS				RP Area SPDS				TSC Area SPDS				TSC Clerical PC				SAMG Area PC				
Position																														
Operations Mgr. SPDS																														
RP Mgr. SPDS																														
RP Area SPDS																														
TSC Area SPDS																														
TSC Clerical PC																														
SAMG Area PC																														

EMERGENCY CENTER PA SYSTEM

SAT	Description	Remarks
	VERIFY operability TSC/OSC Public Address System by:	
	ACTIVATE the system from the TSC	
	Stage someone in the TAT Area and OSC	
	BROADCAST "a test message". Confirm that message was heard.	
	OSC	
	TSC TAT Area	

## APPENDIX A

Page 3 of 4

## TECHNICAL SUPPORT CENTER

## PROCEDURES

*SAT	Min	Description	Remarks
	4	REP (Radiological Emergency Plan)	
	2	REND	
	2	CECC EIPs	
	11	BFN EIPs	
	1 Set	Severe Accident Management Guidelines Flowcharts (SAMGs)	
	1 Set	Technical Support Guidelines	
	1 Set	Emergency Operating Instructions (EOI) Flowcharts	
	1 Set	EOI Program Manual	
	1 Set	Radiological Control Instructions	
	1 Set	Abnormal Operating Instructions	
	1	AL Radiological Response Plan	
	1	Multi-Jurisdictional Radiological Emergency Response Plan TEMA	
	1 Set	Alarm Response Procedures	
	1 Set	Operating Instructions	
	1 Set	Technical Specifications	
	1 Set	Technical Requirements	
	1 Set	Safe Shutdown Instructions	
	1 Set	Final Safety Analysis Report	
	1	Fire Protection Report	
	1	Users Manual - Emergency Paging System	
	1	Users Manuals - Meteorological Data Print Program	
	1	Users Manual - Meteorological Data Display	
	1	Operators Manual Zetron Radio Console	
	1 set	Plant Drawings	
	1	TI-88	
	1	TI-394	

\* Verify presence of procedures only. Document Control ensures current revision.

**TECHNICAL SUPPORT CENTER  
TECHNICAL ASSESSMENT TEAM AREA**

**FUNCTIONAL CHECKS**

SAT	Description	Remarks
	Verify key phones for TSC are functional by calling numbers listed in the REND	
	Verify Plant Assessment ring-down is functional by calling CECC Plant Assessment Team position	
	Verify fax is functional by sending and receiving a fax	
	Verify TAT SPDS terminal is functional	

**PROCEDURES**

*SAT	Min	Description	Remarks
	1	REP (Radiological Emergency Plan)	
	1	REND	
	2	BFN EIPs	
	1 Set	Operating Instructions	
	1 Set	Technical Specifications	
	1 Set	Technical Requirements	
	1	EOI Appendices (all three units)	
	1	SAMG Flowcharts and Appendices (all three units)	
	1	SPCC Plan	
	1 Set	Plant Drawings	
	1	TI-394	
	1 Set	EOI Flowcharts	

\* Verify presence of procedures only. Document Control ensures current revision.

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

Review/Approval: EP Manager \_\_\_\_\_ Date: \_\_\_\_\_

**OPERATIONS SUPPORT CENTER**

**SUPPLIES (OSC)**

SAT	Min	Description	Remarks
	Asrtd	Office/Desktop Supplies	
	Asrtd	Dry Board Supplies	
	6	Calculators, (Scientific)	
	1	Camera	
	12	Flashlights	
	24	Batteries (D-Cells) Best used by Date: ____ / ____ / ____	
	24	Batteries (AA) Best used by Date: ____ / ____ / ____	
	4	Telephone Headsets (in workspace)	
	2	Telephone Headsets (Spares)	
	12	Grease Pencils	
	4 pk	Copier Paper	
	1 Roll	Thermal Paper for Tracking Board	
	1	Accountability Roster (Current Rev)	
	1 ea	OSC Position Notebooks - Check for uncontrolled or out-of-date materials in notebooks or OSC area	

**FUNCTIONAL CHECKS (OSC)**

SAT	Description	Remarks																				
	Verify key phones for OSC are functional by calling numbers listed in the REND																					
	Verify copier is functional by copying a page																					
	Verify OSC Zetron radio is functional using handheld radio																					
	Verify RP Zetron radio is functional using handheld radio																					
	Verify fax is functional by sending and receiving a fax																					
	Verify clocks are functional by checking current time																					
	Verify signs are functional by changing observing correct time																					
	Verify OSC Printer is functional by printing test page																					
	Verify all SPDS/Personal Computer (PC) terminals are functional																					
√	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">Position</th> <th style="width: 15%;"></th> <th style="width: 15%;"></th> <th style="width: 15%;"></th> <th style="width: 15%;"></th> </tr> <tr> <td>Status Board SPDS</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>RP Area SPDS</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Maint. Area PC</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		Position					Status Board SPDS					RP Area SPDS					Maint. Area PC				
Position																						
Status Board SPDS																						
RP Area SPDS																						
Maint. Area PC																						

**OPERATIONS SUPPORT CENTER**

**EMERGENCY CENTER PA SYSTEM (OSC)**

SAT	Description	Remarks
	<b>VERIFY</b> operability OSC/OSC Staging Area Public Address System by:	
	<b>ACTIVATE</b> the system from the OSC	
	<b>Stage</b> someone in the OSC Staging Area	
	<b>BROADCAST</b> "a test message". Confirm that message was heard.	
	OSC Staging Area	
	OSC	

**RADIOS**

SAT	Min	Description	Remarks
	10	Hand held radios	
	10	Radio batteries	
	10	Radio battery chargers	

**OPERATIONS SUPPORT CENTER**

**SUPPLIES (OSC Staging Area)**

SAT	Min	Description	Remarks
	Asrtd	Office/Desktop Supplies	
	Asrtd	Dry Board Supplies	
	1	Calculators, (Scientific)	
	12	Flashlights	
	24	Batteries (D-Cells) Best used by Date: ____ / ____	
	1	Accountability Roster (Current Rev)	
	1 ea	OSC Staging Area Position Notebooks - Check for uncontrolled or out-of-date materials in notebooks or OSC Staging Area	

**FUNCTIONAL CHECKS (OSC Staging Area)**

SAT	Description	Remarks
	Verify key phones for OSC Staging Area are functional by calling numbers listed in the REND	

**ICE VESTS (OSC Staging Area)**

SAT	Min	Description	Remarks
	12	Ice vests	
	72	Ice packs for vests	

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

Review/Approval: EP Manager \_\_\_\_\_ Date: \_\_\_\_\_

**MAIN CONTROL ROOMS**

**FUNCTIONAL CHECKS (UNIT 1/2 MCR)**

SAT	Description	Remarks
	Verify key phones for MCR are functional by calling numbers listed in the REND	
	Verify ODS ring-down is functional by calling ODS position	
	Verify Fixed Satellite Phone is functional by calling known good phone number	
	Verify the Emergency Paging System terminal is functional by activating the "touch-screen" and receiving an anticipated response	
	Test the Control Room Communicator portable phone by dialing a good phone number	

**FUNCTIONAL CHECKS (UNIT 3 MCR)**

SAT	Description	Remarks
	Verify key phones for MCR are functional by calling numbers listed in the REND	
	Verify ODS ring-down is functional by calling ODS Position	
	Verify Fixed Satellite Phone is functional by calling known good phone number	
	Test the Control Room Communicator portable phone by dialing a good phone number	

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

Review/Approval: EP Manager \_\_\_\_\_ Date: \_\_\_\_\_

**LOCAL RECOVERY CENTER**

**SUPPLIES**

SAT	Min	Description	Remarks
	Asrtd	Office/Desktop Supplies	
	Asrtd	Dry Board Supplies	
	4	Calculators (Scientific)	
	12	Flashlights	
	24	Batteries (D-Cells) Expires ___ / ___	
	10	Nextel Radios	
	10	Spare batteries for Nextel Radios	
	1	Charger for Nextel Radio batteries	

**FUNCTIONAL CHECKS**

SAT	Description	Remarks
	Verify key phones for LRC are functional by calling numbers listed in the REND	
	Verify CECC terminal/printer is functional by printing current Met data	
	Verify the LRC SPDS terminal is functional	
	Verify that the Portable Satellite Telephone is functional	
	Verify fax is functional by sending and receiving a fax	
	Verify copier is functional by copying a page	

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

Review/Approval: EP Manager \_\_\_\_\_ Date: \_\_\_\_\_



**RADIATION PROTECTION (RP) EQUIPMENT**

**NOTE**

Survey instrumentation, counting equipment, air samplers, dosimeters and other RP equipment is maintained in calibration by the Western Area Labs. Conduct of this inventory **DOES** include verification that instruments are within calibration dates.

**RADIOLOGICAL CONTROL LABORATORY - SERVICE BUILDING**

SAT	Min	Description	Remarks
	1	Alpha Survey Meter (500,000 cpm)	
	1	Neutron dose rate survey meter (5,000 mR/hr)	
	2	High Range Survey Instrument (1,000 R/hr with extendible probe)	
	2	Ion Chamber Survey Meters (50 R/h)	
	2	Frisker Type Survey Meters (50,000 cpm)	
	1	Mini-Scaler	
	1	Shielded Detector (Located in Radcon Area, Service Building, el. 565')	
	2	High Volume Air Samplers	
	1	Low Volume Air sampler	
	10	Silver Zeolite Cartridges NOTE: 10 year shelf life if packaging is unopened Date of Manufacture: ___ / ___	
	1 Bx	Smears	
	1	Calculator	
	8	Flashlights	
	16	Batteries (D-Cell) Expires: ___ / ___	
	2 Bx	Particulate Air Filters	
	12	Pens	
	2000	KI Tablets Expires: ___ / ___ (Located in RP Supply Cage)	

**MAPS**

SAT	Min	Description	Remarks
	1	2 Mile Map *Latest Rev. ___	
	1	10 Mile Evac Sect. Map *Latest Rev. ___	
	1	10 Mile Sample Point Map *Latest Rev. ___	
	1	50 Mile Sample Point Map *Latest Rev. ___	

**RADIATION PROTECTION (RP) EQUIPMENT**

**NOTE**

Survey instrumentation, counting equipment, air samplers, dosimeters and other RP equipment is maintained in calibration by the Western Area Labs. Conduct of this inventory **DOES** include verification that instruments are within calibration dates.

**RADIOLOGICAL CONTROL LABORATORY – CONTROL BUILDING**

SAT	Min	Description	Remarks
	1	Alpha Survey Meter (500,000 cpm)	
	1	Neutron dose rate survey meter (5,000 mR/hr)	
	2	High Range Survey Instrument (1,000 R/hr with extendible probe)	
	2	Ion Chamber Survey Meters (50 R/h)	
	2	Frisker Type Survey Meters (50,000 cpm)	
	1	Mini-Scaler	
	1	Shielded Detector	
	2	High Volume Air Samplers	
	1	Low Volume Air Samplers	
	10	Silver Zeolite Cartridges NOTE: 10 year shelf life if packaging is unopened Date of Manufacture: ___ / ___	
	1 Bx	Smears	
	1	Calculators	
	8	Flashlights	
	16	Batteries (D-Cell) Expires: ___ / ___	
	2 Bx	Particulate Air Filters	
	12	Pens	

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

Review/Approval: EP Manager \_\_\_\_\_ Date: \_\_\_\_\_

**ONSITE DECONTAMINATION**

**DECONTAMINATION ROOM**

SAT	Min	Description	Remarks
	2 bx	Disposable Gloves	
	2 bx	Gauze Pads	
	1 pkg	Cotton Swabs	
	2 btl	Saline Solution	
	12	Surgical Brushes	
	2 btl	Shampoo	
	5 bar	Soap	
	1 bx	Laundry detergent	
	1 btl	Soap (liquid abrasive)	
	2 can	Mechanic's Hand Cleaner	
	1 can	Shaving Cream	
	5	Razors	
	2 bx	Paper Bath Towels	
	1 pr	Scissors	
	5	Petri Dishes	
	2 roll	Duct Tape	
	10 pr	Paper Coveralls	
	10 pair	Shoes (various sizes, RP discretion)	

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

Review/Approval: EP Manager \_\_\_\_\_ Date: \_\_\_\_\_

**PROTECTIVE CLOTHING**

**OSC STAGING AREA**

SAT	Min	Description	Remarks
	40 pr	Coveralls - Various sizes	
	25 pr	Rubber overshoes - Various sizes	
	25 pr	Rubber gloves - Various sizes	
	25	Surgeon caps	
	25	Hoods	
	25 pr	Cotton Glove Inserts	
	25 pr	Booties	
	1 box	Vinyl gloves (surgeon)	
	8 roll	Duct tape and/or masking tape	

**NOTE:** Protective clothing inventory (i.e. coveralls, rubber overshoes, rubber gloves, surgeon's cap, hood, cotton glove inserts, booties) may be substituted with pre-packaged disposable protective clothing packages approved by Radiation Protection.

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

Review/Approval: EP Manager \_\_\_\_\_ Date: \_\_\_\_\_

APPENDIX H  
Page 1 of 2

AGREEMENT HOSPITAL CABINET INVENTORY

**Huntsville Hospital**

**Decatur General**

SAT	Min	Description	Remarks
	10 pr	Shoe covers (booties)	
	10 pk	Dress out packages	
	3	Surgical gowns	
	2 bx	Surgical gloves	
	4 rolls	Surgical tape for dress-out - 2 inch	
	1 set	Floor coverings (hospital specific)	
	1 roll	Heavy duty paper (3 foot wide)	
	2 rolls	2 inch duct tape	
	1 roll	Radiation Warning symbol tape (2 inch)	
	2	Step off pads	
	8	Radiological barrier posting signs	
	1	Radiological barrier rope or ribbon (spool)	
	5	Traffic cones	
	10	Large rad waste plastic bags	
	10	Medium rad waste plastic bags	
	1	Radioactive material label tape	
	1	Decontamination table, backboard and bottles (min. total capacity of 10 gallons)	
	1	Flexible funnel with drain hose	
	1	Decontamination media /soap product	
	12	Cotton swabs	
	20	Zip lock bags for sample collection	
	10	Labels for sample bags	
	2	Scissors	
	1	Wall poster with decontamination steps	

**AGREEMENT HOSPITAL CABINET INVENTORY**

**NOTE**

Survey instrumentation, counting equipment, air samplers, dosimeters and other RP equipment is maintained in calibration by the Western Area Labs. Conduct of this inventory **DOES** include verification that instruments are within calibration dates.

SAT	Min	Description	Remarks
	2	Hospital specific booklet (1 at desk, 1 in cabinet) Last Update: ____ / ____ / ____	
	1	NCRP # 65 Reference Handbook	
	10	TLDs	
	1	Wound probe with cable	
	10	Electronic dosimeters and tray	
	200	Smears	
	12	Radioactive Material tags	
	1	Masslin mop and 20 cloths	

SAT	Min	Description	Serial Number	Calibration Due
	1	Bicron Surveyor 50		
	1	Bicron Surveyor 50		
	1	Bicron ISM (RSO-5 or 50)		

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

Review/Approval: EP Manager \_\_\_\_\_ Date: \_\_\_\_\_

**MONTHLY TESTING OF COMMUNICATIONS EQUIPMENT**

**NOTES**

1. Obtain Shift Manager approval before conducting testing on Main Control Room telephones or equipment
2. Report failures immediately to (1) the Shift Manager and (2) the NRCOC at 9-1-301-951-0550.
3. Initial Trouble Ticket, Work Request, etc. for repairs.
4. Upon completion of repairs, repeat check on affected telephones. If test is satisfactory, inform the Shift Manager and the NRCOC.

**TECHNICAL SUPPORT CENTER**

SAT	Description	Remarks
	<b>VERIFY</b> operability of the NRC ENS System by contacting the NRC on the Emergency Notification System (ENS) line in the TSC TVA Area (2273) and confirming dial tone on others ENS Phones.	
	Dial the NRC utilizing the sticker on the ENS phone in the TVA Area. Ensure that communications are understandable.	
	Request that the NRC return your call. Supply appropriate telephone number	
	VERIFY return call received	
	VERIFY dial tones at the following TSC locations	
	TVA – Health Physics Network (HPN) (2212)	
	NRC - Reactor Safety Counterpart Link (RSCL) (3757)	
	NRC - Protective Measures Counterpart Link (PMCL) (3758)	
	NRC – Management Counterpart Link (MCL) (3759)	
	NRC – Emergency Notification System (ENS) (2273)	
	NRC - Health Physics Network (HPN) (2212)	
	NRC – Local Area Network (LAN) dial-up line (3760)	

**MAIN CONTROL ROOM**

SAT	Description	Remarks
	VERIFY operability by confirming dial tone on the two NRC ENS phones in the MCR upon the completion of the TSC test.	
	U1/U2 (2273)	
	U3 (2273)	

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

Review/Approval: EP Manager \_\_\_\_\_ Date: \_\_\_\_\_

**QUARTERLY ADMINISTRATIVE CHECKS AND REVIEWS**  
(REP Quarterly)

**NOTES**

The "Call-Out List" contains active Emergency Responders by emergency response position. The list is utilized as a tool for the manual call-out of emergency responders. The list is a non-QA record.

**CALL-OUT LIST**

SAT	Description	Remarks
	<b>Verify</b> the phone numbers and pager numbers listed in the BFN REP Call-Out List.	
	<b>DISTRIBUTE</b> corrected copies to the Unit 1 Main Control Room, and place one in the EP files.	

**NOTES**

The "Emergency Access List" contains the names of individuals which are allowed access to the protected area during radiological emergencies at BFN for the purposes of serving in the emergency response organization. The list is a non-QA record.

**EMERGENCY ACCESS LIST**

SAT	Description	Remarks
	<b>PRINT</b> and <b>PROVIDE</b> five copies of the BFN Emergency Access List to Nuclear Security for distribution.	

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

Review/Approval: EP Manager \_\_\_\_\_ Date: \_\_\_\_\_



**QUARTERLY ADMINISTRATIVE CHECKS AND REVIEWS**  
(Once per Calendar Quarter)

**EPIP TELEPHONE NUMBERS IN PROCEDURES**

SAT	Description	Remarks
	REVIEW the phone numbers in the BFN EIPs once per calendar quarter for accuracy.	

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

Review/Approval: EP Manager \_\_\_\_\_ Date: \_\_\_\_\_

REVIEW OF INVENTORIES PERFORMED BY OTHER PROCEDURES (QUARTERLY)

**AMBULANCE MEDICAL SUPPLIES: (FIRE OPERATIONS)**

FP-0-000-INS005 Once per Calendar Quarter inspection of emergency equipment performed

Date: \_\_\_\_\_

**EMERGENCY VAN SUPPLIES: (RP)**

CECC-EPIP 9 Appendix H performed

Truck 6 Date: \_\_\_\_\_

Truck 5 Date: \_\_\_\_\_

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

Review/Approval: EP Manager \_\_\_\_\_ Date: \_\_\_\_\_

## APPENDIX L

Page 1 of 1

## EMERGENCY DOSIMETRY

## PACKAGES FOR ACCESS CONTROL POINT

SAT	Min	Description	Remarks
	25	Packets each containing the following: <ul style="list-style-type: none"> <li>• TLDs (Verify Current Quarter)</li> <li>• Self-Reading Dosimeter (Rezero)</li> <li>• Potassium Iodide Tablet (in Foil packet)</li> <li>• Emergency Worker Information Card</li> </ul>	

## PACKAGES FOR PERIMETER SECURITY CHECKPOINT

SAT	Min	Description	Remarks
	50	Packets each containing the following: <ul style="list-style-type: none"> <li>• TLDs (Verify Current Quarter)</li> <li>• Self-Reading Dosimeter (Rezero)</li> <li>• Potassium Iodide Tablet (in Foil packet)</li> <li>• Emergency Worker Information Card</li> </ul>	

## PACKAGES FOR NUCLEAR SECURITY BRES (12)

SAT	Min	Description	Remarks
	1 package in each BRE	Packets each containing the following: <ul style="list-style-type: none"> <li>• TLDs (Verify Current Quarter)</li> <li>• Self-Reading Dosimeter (Rezero)</li> <li>• Potassium Iodide Tablet (in Foil packet)</li> <li>• Emergency Worker Information Card</li> </ul>	

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

Review/Approval: EP Manager \_\_\_\_\_ Date: \_\_\_\_\_

**MAINTENANCE EMERGENCY TOOL BOX INVENTORY**

**ELECTRICAL TOOL BOX (1 OF 1)**

Tool Box T1616000001 SAT	Tool Box T1616000002 SAT	Min	Description	Remarks
		2	Pliers, Needle Nose, 6"	
		2	Pliers, Diagonal, 6"	
		2	Tester, Circuit, 24.0"	
		2	Rule, Folding, Carpenters, Outside Reading, 6'	
		2	Pliers, Tongue & Groove, 10", #430 Channel Locks	
		2	Screwdriver, STD Tip, .25" Tip, X 8.0" Long	
		2	Screwdriver, STD Tip, .313" Tip, X 4.0" Long	
		2	Screwdriver, STD Tip, .125" Tip, X 6.0" Long	
		2	Pliers, Lineman's, 9.0"	
		2	Screwdriver, STD Tip, .25" Tip, X 6.0" Long	
		2	Screwdriver, Phillips Tip, #2 Tip, 4" Blade	
		2	Screwdriver, Holding, .25" X 6" (Klein)	
		2	Wrench, Adjustable, 10.0"	
		1	Flashlight	
		1	500 Volt Megger	
		1	VOM	
		1	Amp Probe	
		1	Cable Splicer's Kit	
		1	Roll Eelectrical Tape	
		1	Wire Strippers	

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

Review/Approval: EP Manager \_\_\_\_\_ Date: \_\_\_\_\_

**MAINTENANCE EMERGENCY TOOL BOX INVENTORY**

**MECHANICAL TOOL BOX (1 OF 1)**

Tool Box T1633000001 SAT	Tool Box T1633000002 SAT	Min	Description	Remarks
		1	Flux, Soldering	
		1	Chisel, Cold, .4375" Cut	
		1	Wrench Set, Combo, 0.250"-1.250"	
		1	Wrench Set, Hex Key (Allen), 0.187"-0.375"	
		1	Wrench Set, Hex Key (Allen), Folding, 0.050"-0.187"	
		1	Socket Set, .375"	
		1	Hammer, Ball Pein, 12 oz	
		1	Punch, Pin, .188"	
		1	Punch, Pin, .125"	
		1	Pliers, Tongue & Groove, 9" #420 Channel Locks	
		1	Screwdriver, Phillips Tip, Round Shank, #2 Tip X 4.0" Blade	
		1	Screwdriver, Phillips Tip, Round Shank, #2 Tip X 1.50" Blade	
		1	Screwdriver, STD Tip, .25" Tip X 6.0" Long	
		1	Screwdriver, STD Tip, .25" Tip X 12.0" Long	
		1	Wrench, Pipe, 12"	
		1	Wrench, Adjustable, 12"	
		1	Pliers, Needle Nose, W/Side Cutter, 8"	
		1	Pliers, Slip Joint, 10"	
		1	Flashlight	

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

Review/Approval: EP Manager \_\_\_\_\_ Date: \_\_\_\_\_

**MAINTENANCE EMERGENCY TOOL BOX INVENTORY**

**I & C TOOL BOX (1 OF 3)**

Tool Box T1617000001 SAT	Tool Box T1617000002 SAT	Min	Description	Remarks
		1	Pliers, Tongue & Groove, 9, #42 Channel Locks	
		1	Screwdriver, STD Tip, .25" Tip, X 6.0" Long	
		1	Screwdriver, Jewelers, Set of Six, .25"-.100" Mfg. Starrett	
		1	Screwdriver, Holding, .25" X 6" (Klein)	
		1	Cord, Extension, 110 V 100'	
		1	Wrench Set, Hex Key (Allen), Folding, 0.050"-0.187"	
		1	Wrench, Ignition, Set	
		1	Wrench, Valve Wheel, Number 0, 8.0"X.50"X.656"	
		1	Socket, Set, 1/4" DR., SL/DW, 3/16" to 9/16"	
		1	Driver, Nut, Set, Fractional 1/4" to 1/2"	
		1	Wrench, Set, Hex key, .028" to 5/8"	
		1	Cutter, Tube, .125" to .625"	
		1	Cutter, Tube, .125" to 1.125"	
		1	Pliers, Diagonals, 6"	
		1	Pliers, Lineman, 7"	
		1	Pliers, Needle Nose, 7"	
		1	Pliers, Tongue & Groove, #430 CL.	
		1	File, Half Round, 4" Smooth	
		1	File, Round, 6" Smooth	
		1	Puller, Fuse, Midget	
		1	Puller, Fuse, 100A-250V	
		1	Screwdriver, Phillips, #1x3"	
		1	Screwdriver, Phillips, #2x4"	
		1	Screwdriver, Flat, 1/8x2.25"	
		1	Screwdriver, Flat, 1/4x6"	

APPENDIX M  
Page 4 of 5

## MAINTENANCE EMERGENCY TOOL BOX INVENTORY

## I &amp; C TOOL BOX (2 OF 3)

Tool Box T1617000001 SAT	Tool Box T1617000002 SAT	Min	Description	Remarks
		1	Screwdriver, Flat, 1/4x4"	
		1	Screwdriver, Flat, 5/16x6"	
		1	Screwdriver, holding, SM/pocket Clip	
		1	Screwdriver, Holding, 3/16x6"	
		1	Screwdriver, holding, 1/4x8"	
		1	Wrench, Adjustable, 4"	
		1	Wrench, Adjustable, 6"	
		1	Wrench, Adjustable, 8"	
		1	Wrench, Combo, 3/8"	
		1	Wrench, Combo, 7/16"	
		1	Wrench, Combo 1/2"	
		1	Wrench, Combo, 9/16"	
		1	"Wrench, Combo,5/8"	
		1	Wrench, Combo, 11/16"	
		1	Wrench, Combo, 3/4"	
		1	Wrench, Flare Nut, 1/2"-9/16"	
		1	Wrench, Flare Nut, 5/8"-11/16"	
		1	Wrench, Flare Nut, 3/4"-1"	
		1	Wrench, Flare Nut, 7/8"-1 1/8"	
		1	Flashlight	

**MAINTENANCE EMERGENCY TOOL BOX INVENTORY**

**I & C TOOL BOX (3 OF 3)**

**NOTES**

The following items are supplied by the I & C Shop, if restock is necessary.

Tool Box T1617000001 SAT	Tool Box T1617000002 SAT	Min	Description	Remarks
		2	* Tube Fitting, 1/4" M NPT to 3/8" tube comp	
		2	* Tube Fitting, 1/4" F NPT to 1/4" tube comp	
		2	* Tube Fitting, 3/8" comp to 3/8" comp	
		2	* Tube Fitting, 1/4" comp to 1/4" comp	
		2	* Tube Fitting, Tee, 1/4" comp	
		1	Tape, Electrical, Scotch 33 Black	
		2	Jumpers, Banana, 2' orange w/clips	
		1 Pk	Tywraps, 3/16" X 8"	
		1 Pk	Tywraps, 1/8" X 4"	
		1	Valve Wrench, Custom Made, I & C Specs.	
		1	Snoop, Bottle, 8 oz	
		1	Ideal Wire Stripper (8-20 gauge)	
		1	Hyde Wire Stripper w/sheath	

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

Review/Approval: EP Manager \_\_\_\_\_ Date: \_\_\_\_\_



**ALTERNATE DECONTAMINATION FACILITY**

**POWER SERVICE SHOP #4-TVA, MUSCLE SHOALS RESERVATION**

<b>SAT</b>	<b>Min</b>	<b>Description</b>	<b>Remarks</b>
	2 Pkg	Cotton Tipped Swabs	
	1 Box	Square Gauze	
	1 Box	Detergent	
	12	Surgical Brushes	
	2 Can	Hand Cleaner	
	2 Btl	Shampoo	
	100	Paper Bath Towels	
	36 pr	Coveralls (various sizes)	
	24 pr	Tennis Shoes (various sizes)	

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

Review/Approval: EP Manager \_\_\_\_\_ Date: \_\_\_\_\_

APPENDIX O  
Page 1 of 1  
**EMERGENCY USE SCBA INVENTORY**

**CAUTION**

The 5 SCBA units located in the 4kV Shutdown Bd. Rm. "C" are required for 10 CFR 50 Appendix R Support.

SAT	Min	Description	Remarks
	5	SCBA, Unit 1 Control Room	
	3	SCBA face pieces, 2 Large (Gold Rim), 1 Small (Gray Rim), Unit 1 Control Room	
	5	SCBA, Unit 2 Control Room	
	3	SCBA face pieces, 2 Large (Gold Rim), 1 Small (Gray Rim), Unit 2 Control Room	
	5	SCBA, Unit 3 Control Room	
	3	SCBA face pieces, 2 Large (Gold Rim), 1 Small (Gray Rim), Unit 3 Control Room	
	15	Air Cylinders, Service Building Elevation 565	
	10	SCBA, Fire Equipment Cabinet Turbine Building - 557'	
	10	Air Cylinders, Fire Equipment Cabinet Turbine Building - 557'	
	5	SCBA, 1A Shutdown Bd Rm	
	3	SCBA face pieces, 2 Large (Gold Rim), 1 Small (Gray Rim), 1A Shutdown Bd Rm	
	5	SCBA, 4kV Shutdown Bd Rm "C"	
	3	SCBA face pieces, 2 Large (Gold Rim), 1 Small (Gray Rim), 2A Shutdown Bd Rm	
	5	SCBA, 3A Electrical Board Room	
	3	SCBA face pieces, 2 Large (Gold Rim), 1 Small (Gray Rim), 3A Shutdown Bd Rm	
	5	SCBA, Fire Equipment Rack - Service Building - Elevation 565	
	3	SCBA, Fire Equipment Cabinet - Service Building - Elevation 565	
	2	SCBA, RP Emergency Cart	
	5	SCBA, Fire Apparatus - Engine 1	
	5	Air Cylinders, Fire Apparatus - Engine 1	
	5	SCBA, Fire Apparatus - Engine 2	
	5	Air Cylinders, Fire Apparatus - Engine 2	

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

Review/Approval: EP Manager \_\_\_\_\_ Date: \_\_\_\_\_

LAST PAGE

Attachment 13.03.27A  
TVA Letter Dated October 2, 2008  
RAI Responses

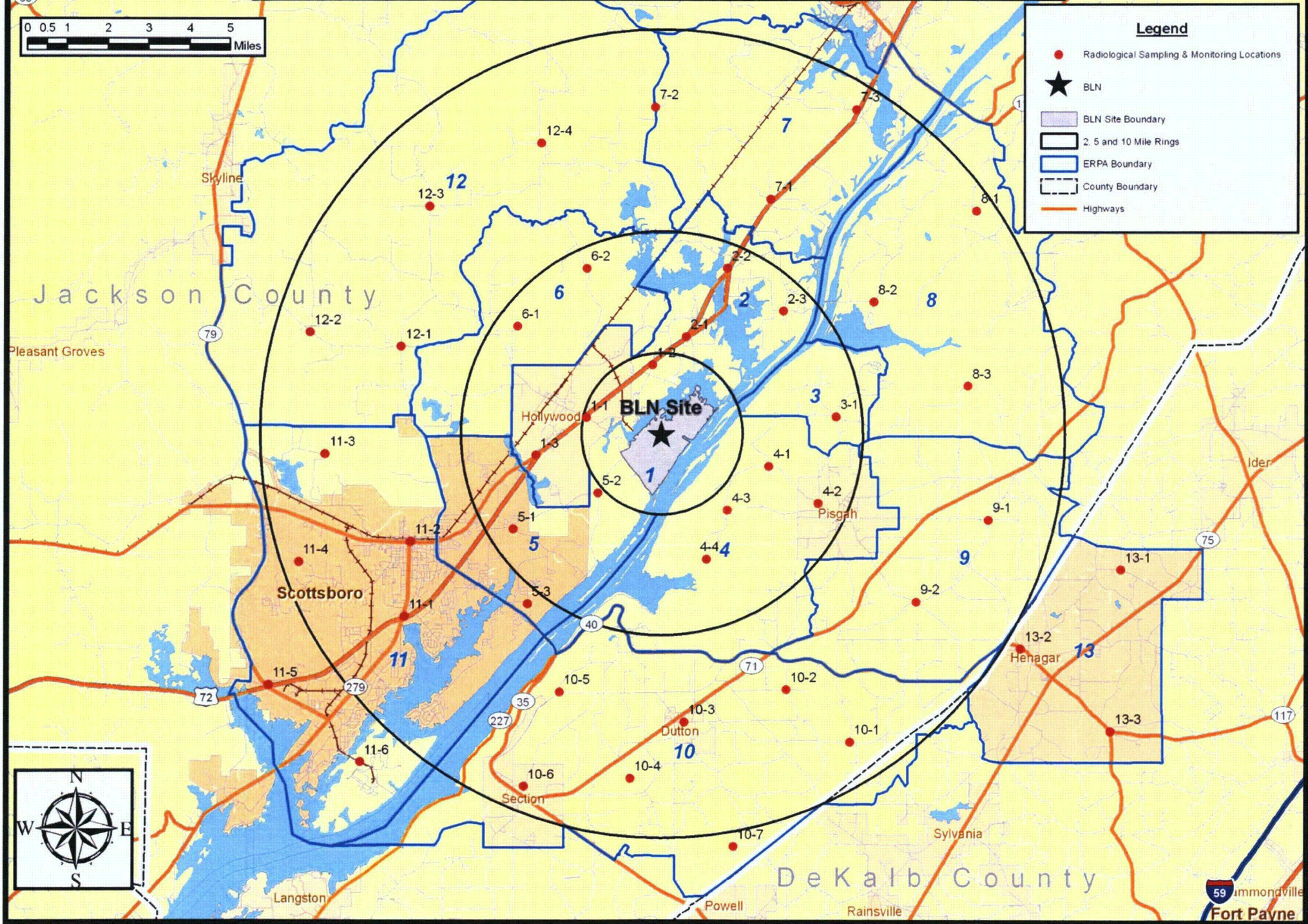
**Attachment 13.03-27A**

(2 pages, including this cover sheet)

Map of Radiological Sampling and Monitoring Locations

# Radiological Sampling and Monitoring Locations

Preliminary - Subject to Change



Attachment 13.03.27B  
TVA Letter Dated October 2, 2008  
RAI Responses

**Attachment 13.03-27B**  
(5 pages including cover sheet)

Table of Radiological Sampling and Monitoring Locations

## Bellefonte Nuclear Power Plant

Table: Radiological Sampling and Monitoring Locations

Sample Media	ID (Based on ERPA Section)	Longitude (N)	Latitude (W)	Distance from BLN (Miles)	Direction	Location
Radiological	1-1	85°57'28"	34°43'6.5"	1.90	WNW	SR 33 & US 72
	1-2	85°55'43"	34°44'15.17"	1.74	N	SR 113 & US 72
	1-3	85°58'47.93"	34°42'17.46"	3.19	W	SR 279 & US 72
	2-1	85°54'50.68"	34°44'51.5"	2.50	NNE	SR 213 & US 72 - South of Mud Creek
	2-2	85°53'46.74"	34°46'19.43"	4.39	NNE	SR 213 & US 72 - North of Mud Creek
	2-3	85°52'18.2"	34°45'25.1"	3.20	NE	CR 46 & SR 116
	3-1	85°50'55.25"	34°43'8.32"	4.33	E	CR 359 & CR 457
	4-1	85°52'42.07"	34°42'4.38"	2.74	ESE	CR 369 & CR 88
	4-2	85°51'22.87"	34°41'16.06"	4.26	ESE	CR 432 & CR 88
	4-3	85°53'45.65"	34°41'7.34"	2.50	SE	CR 88 90 degree curve at transmission corridor west of Pisgah
	4-4	85°54'17.98"	34°40'4.12"	3.29	SSE	Transmission Corridor South of CR 88

## Bellefonte Nuclear Power Plant

Table: Radiological Sampling and Monitoring Locations (cont.)

Sample Media	ID (Based on ERPA Section)	Longitude (N)	Latitude (W)	Distance from BLN (Miles)	Direction	Location
	5-1	85°59'22.44"	34°40'41.9"	4.36	WSW	SR 33 & Snodgrass Rd
	5-2	85°57'9.11"	34°41'30.23"	2.17	SW	SR 33 & CR 186
	5-3	85°58'59.56"	34°39'5.99"	5.39	SW	Carter St & Talley St
	6-1	85°59'17.36"	34°45'4.22"	4.47	NW	SR 229 90 degree turn east of SR 33
	6-2	85°57'27.27"	34°46'19.79"	4.48	NNW	SR 42
	7-1	85°52'39.16"	34°47'49.17"	6.40	NNE	SR 231 & US 72
	7-2	85°55'40.11"	34°49'49.03"	8.36	N	CR 562 & CR 35
	7-3	85°50'23.32"	34°49'45.55"	9.16	NNE	SR 137 & US 72
	8-1	85°49'55.82"	34°45'36.78"	8.81	NE	End of CR 81
	8-2	85°48'51.73"	34°45'24.2"	6.97	ENE	SR 491 & CR 673
	8-3	85°47'28.16"	34°43'47.92"	7.66	E	End of CR 126 North of Market St.
	9-1	85°46'56.19"	34°40'54.62"	8.39	ESE	SR 61 & SR 83
	9-2	85°48'48.46"	34°39'8.17"	7.57	ESE	SR 83 & CR 288

## Bellefonte Nuclear Power Plant

Table: Radiological Sampling and Monitoring Locations (cont)

Sample Media	ID (Based on ERPA Section)	Longitude (N)	Latitude (W)	Distance from BLN (Miles)	Direction	Location
	10-1	85°50'32.37"	34°36'37"	8.93	SSE	SR 16 & SR 22
	10-2	85°52'12.64"	34°37'15.18"	7.04	SSE	SR 123 & CR 384
	10-3	85°54'52.14"	34°36'32.67"	7.15	S	SR 71 & Main St
	10-4	85°56'17.15"	34°20'37"	8.58	S	End of SR 408 South of SR 71
	10-5	85°58'8.69"	34°37'11.54"	6.87	SSW	CR 390 & Scenic Drive
	10-6	85°59'5"	34°35'9.83"	9.40	SSW	Williams St. & Hodge Rd
	10-7	85°53'35.11"	34°33'52.18"	10.38	S	CR 406 & CR 406 East of CR 51
	11-1	86°2'11.39"	34°38'49.64"	7.84	SW	S Broad St & US 72
	11-2	86°2'3.03"	34°40'25.56"	6.82	WSW	S Broad St & E Willow St
	11-3	86°4'17.82"	34°42'18.91"	8.39	W	CR 737 & CR 531



## Bellefonte Nuclear Power Plant

Table: Radiological Sampling and Monitoring Locations (cont)

Sample Media	ID (Based on ERPA Section)	Longitude (N)	Latitude (W)	Distance from BLN (Miles)	Direction	Location
	11-4	86°4'58.15"	34°39'59.76"	9.58	WSW	North end of Christie Dr
	11-5	86°5'46.11"	34°37'19.54"	11.61	WSW	SR 79 & US 72
	11-6	86°3'20.91"	34°35'40.03"	10.89	SW	Goose Pond Dr & Industrial Park
	12-1	86°2'18.29"	34°44'38.42"	6.84	WNW	SR 470 & SR 21
	12-2	86°4'42.16"	34°56'56.59"	9.11	WNW	SR 21 & SR 28
	12-3	86°1'35.78"	34°47'39.36"	8.10	NW	SR 32 & SR 33
	12-4	85°58'39.57"	34°49'1.47"	7.80	NNW	CR 239 & CR 29
	13-1	85°43'29.1"	34°39'50.31"	11.86	ESE	Roberts Rd & Fleming Rd
	13-2	85°46'5.36"	34°38'7.92"	11.41	ESE	Henagar Middle School
	13-3	85°43'45.09"	34°36'21.77"	13.33	ESE	SR 40 & CR 85