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

September 22, 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) 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.

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

Executed on this 22nd day of Sep, 2008.

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

Enclosure
cc: See Page 2

D085
A445

NSIR
NRO

cc: (w/Enclosure)
J. P. Berger, EDF
E. Cummins, Westinghouse
S. P. Frantz, Morgan Lewis
M.W. Gettler, FP&L
R. C. Grumbir, NuStart
P. S. Hastings, NuStart
P. Hinnenkamp, Entergy
B. Hughes, NRC/HQ
M. C. Kray, NuStart
D. Lindgren, Westinghouse
G. D. Miller, PG&N
M. C. Nolan, Duke Energy
N. T. Simms, Duke Energy
K. N. Slays, NuStart
G. A. Zinke, NuStart

cc: (w/o Enclosure)
M. M. Comar, NRC/HQ
R. G. Joshi, NRC/HQ
R. H. Kitchen, PGN
M. C. Kray, NuStart
A. M. Monroe, SCE&G
C. R. Pierce, SNC
R. Reister, DOE/PM
L. Reyes, NRC/RII
T. Simms, NRC/HQ
J. M. Sebrosky, NRC/HQ

Enclosure
TVA letter dated September 23, 2008
RAI Responses

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

Subject: Emergency Planning in the Final Safety Analysis Report

RAI Number	Date of TVA Response
13.03-18A-E	September 8, 2008
13.03-19A-O	This letter – see following pages
13.03-20A	This letter – see following pages
13.03-20B, D, E	September 8, 2008
13.03-20C	Future – expected submittal by October 7, 2008
13.03-21A-C	September 8, 2008
13.03-22A-C	September 8, 2008
13.03-22D	Future – expected submittal by October 7, 2008
13.03-22E	This letter – see following pages
13.03-23A-B	September 8, 2008
13.03-23C	Future – expected submittal by October 7, 2008
13.03-24A, B, D	Future – expected submittal by October 7, 2008
13.03-24C	This letter – see following pages
13.03-25A, J, K, N, O, Q, R	This letter – see following pages
13.03-25B, D, G-I, L, M, P	Future – expected submittal by October 7, 2008
13.03-25C	September 8, 2008 Supplement information – this letter
13.03-25 E, F, S	September 8, 2008
13.03-26A, C	Future – expected submittal by October 7, 2008
13.03-26B, D-F	This letter – see following pages
13.03-27A	September 8, 2008
13.03-27B-E	Future – expected submittal by October 7, 2008
13.03-28A-F	This letter – see following pages
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	This letter – see following pages
13.03-33A-B	September 8, 2008
13.03-34	September 8, 2008

Enclosure
TVA letter dated September 23, 2008
RAI Responses

RAI Number	Date of TVA Response (cont'd)
13.03-35	September 8, 2008
13.03-36A-C	September 8, 2008
13.03-37	September 8, 2008
13.03-38A-B	This letter – see following pages
13.03-39A-D, G	September 8, 2008
13.03-39E, F	This letter – see following pages

Associated Additional Attachments / Enclosures	Pages Included
Attachment 13.03-24A	25 pages
Attachment 13.03-25A	14 pages
Attachment 13.03-25B	34 pages
Attachment 13.03-26A	48 pages
Attachment 13.03-26B	24 pages
Attachment 13.03-26C	19 pages
Attachment 13.03-26D	39 pages

NRC Letter Dated: August 8, 2008

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 13.03-19

SITE-2: Onsite emergency response organization assignments
Basis: 10 CFR 50(b)(2), Appendix E.IV.A.2.b; NUREG-0654/FEMA-REP-1, Evaluation Criterion B.1, Evaluation Criterion B.3, Evaluation Criterion B.5, Evaluation Criterion B.7, Evaluation Criterion B.8, Evaluation Criterion B.9
SRP ACCEPTANCE CRITERIA: Requirement A; Acceptance Criteria 1 and 18

A. BLN FSAR, Table 13.1-201, "Generic Position/Site Specific Position Cross Reference" provides generic titles and functions. Section II.B, Figure II-2, "BLN Emergency Response Organization – TSC/OSC Only" and Figure II-3, "BLN Augmented Emergency Response Organization" in the BLN Emergency Plan show the high level organizations that will be located in the Emergency Response Facilities (ERFs), but without the actual functions and titles of staff that will be located in these blocks on the diagrams. To explain how all functions in the ERFs are adequately covered, provide details of the actual functions and titles of staff that will be located in the blocks on the diagrams in Figures II-2 and II-3.

B. Section II.B.4, "Site Emergency Director Responsibilities" identifies that the SED directs the activation and notification of the onsite and offsite ERFs during an emergency. Figure II-3 is a diagram of the Central Emergency Control Center (CECC) organization but does not indicate the specific job titles for the purpose of assessing staffing. Provide additional information regarding the organization of the CECC that will be included in the Emergency Plan Implementing Procedures (EPIPs), or propose an ITAAC or license condition to track the need to develop these EPIPs.

C. Subsection II.B.8, "Support from Contractor and Private Organizations" of the BLN Emergency Plan identifies information on the principal organizations in the private sector that are part of the overall response organization. However, specific organizations are not defined and only generic references to local volunteer fire departments and engineering and technical support services are listed. Section II.B.9, "Local Emergency Response Support," of the BLN Emergency Plan identifies that TVA has established and maintains agreements for local emergency response support services, including firefighting, rescue squad, medical and hospital services. Sections of this plan outline what the basic commitments of these local agencies are and these are also addressed in the certification letters in Appendix 7, "Certification Letters." Provide the names of the volunteer fire departments, designated engineering/technical services support firms and other consultants and vendors, as well as the supporting agreements, that might be requested to provide support during an emergency, or propose an associated ITAAC in place of the agreements.

D. Subsection 5, "Plant Emergency Response Staff," of Section II.B, "On-site Emergency Organization," states that the minimum emergency response staffing in Table II-2, "Plant Staff Emergency Functions," of the BLN Emergency Plan is based upon guidance provided in Table B-1, "Minimum Staffing Requirements for NRC Licensees for Nuclear Power Plant Emergencies," of NUREG-0654. In addition, the justification provided in Subsection 5 states that the 60 and 90 minute goals for emergency response staff augmentation are consistent with those implemented for existing TVA nuclear facilities. However, Table B-1 identifies the need for a capability for additional staff within 30 and 60 minutes while Table II-2 of the BLN Emergency Plan identifies a capability for additional staff within 60 and 90 minutes. Provide a justification for extending augmentation times.

E. Table II-2, "Plant Staff Emergency Functions," in the BLN Emergency Plan indicates that the STA will perform the technical support tasks on shift at all times. However, footnote 1 states that shift staffing may vary with one or more units in cold shutdown or refueling mode as provided in FSAR Table 13.1-202, "Minimum On-duty Operations Shift Organization for Two-unit Plant." Note (1) in Table 13.1-202 states that the shift manager or another SRO on shift may also serve as the STA. The footnote also states that the combined SRO/STA position is addressed as Option 1 in NRC Generic Letter 86-04, "Policy Statement on Engineering Expertise on Shift." Discuss how the individual filling the SRO/STA combined position can handle the response tasks expected to be performed by an SRO and an STA during an emergency.

F. Table II-2, "Plant Staff Emergency Functions," in the BLN Emergency Plan indicates that there will be one health physics/chemistry technician and one individual with senior radiation protection expertise on shift at all times. However, footnote (4) states that a radiation protection technician need only be on site when there is fuel in a reactor and footnote (5) states that a chemistry technician needs to be on site during plant operation in modes other than shutdown and refueling as provided in FSAR Table 13.1-202, "Minimum On-duty Operations Shift Organization for Two-unit Plant." In light of the staffing levels specified in Table II-2, discuss the need for footnotes (4) and (5) in Table 13.1-202.

G. Table II-2, "Plant Staff Emergency Functions," in the BLN Emergency Plan indicates that there will be two non-licensed operators (NLOs) on each shift, whereas FSAR Table 13.1-202, "Minimum On duty Operations Shift Organization for Two-unit Plant" identifies a minimum number for NLOs as three. Discuss the rationale for not having three NLOs in Table II-2.

H. Table II-2, "Plant Staff Emergency Functions," in the BLN Emergency Plan states in footnote 2 that for each unaffected unit in operation, maintain one Control Room Supervisor, one Reactor Operator, and one Non-licensed Operator. FSAR Table 13.1-202, "Minimum On-duty Operations Shift Organization for Two-unit Plant" shows that with one unit in operation eight individuals are needed on duty. Discuss what functions the remaining eight individuals at the unaffected unit will perform in the event of an emergency at the other unit.

I. Pursuant to 10 CFR 50.47(b)(2), the emergency plans must meet standards concerning licensee staff augmentation methodology; additional guidance and information is provided in NUREG-0654 and NEI 99-01, Revision 4. In footnote 1 on page II-2 of the BLN Emergency Plan, deviations from staff augmentation are discussed, which appear to allow latitude to not augment the staff in some cases. Explain how the actions represented by this footnote satisfy acceptable or appropriate precautionary actions in accordance with regulations, and whether they are consistent with guidance such as sections 3.12, "Classifying Transient Events," and 3.13, "Operating Mode Applicability," of NEI 99-01, Revision 4, "Methodology for the Development of Emergency Action Levels."

J. The terms "operational" and "activated" are not defined in the BLN Emergency Plan, but appear to have specific relevance regarding emergency response facility functional capabilities. Define these terms in regard to facility functional capabilities. Discuss CECC, TSC and OSC activation, operation, and full operation time capabilities with respect to staffing levels.

K. The requirements of 10 CFR 50.47(b)(9) address dose assessment capability and use in determination for radiological protective action decision-making; further guidance is provided in NUREG-0654. Clarify whether that function is assigned to on-shift or early response personnel, as well as how this specific functional capability discussion is consistently described in the BLN Emergency Plan (for example, pages II-8 and II-17). Explain how on-shift capability for dose assessment in the determination of emergency classification, on-site protective action, and offsite protective action recommendations are specifically addressed. Provide additional information on

the specific emergency responder assignments for dose assessment on-shift, and how on-shift and augmented staff functional assignments for this activity meet or exceed NUREG-0654 augmentation guidance, as indicated on page II-12.

L. In Table II-1, "Responsibility for Emergency Response Functions," on page II-8 of the BLN Emergency Plan, explain how emergency response functions are consistently described in comparison to NUREG-0654 functional capabilities. For example, functions for firefighting, rescue, and security are missing from the table, but appear under functional capabilities in Table II-2, "Plant Staff Emergency Functions," on page II-17. Additionally, some functional capabilities listed in Table II-1 in relation to facility and classification do not appear to agree with Table II-2 functional capabilities based on personnel availability. Provide information on how these two tables describe a consistent description for functional capabilities.

M. Explain how Section II.B.1, "On-site Emergency Organization," of the BLN Emergency Plan agrees with the on-shift personnel availability or functional capabilities described in Table II-2, "Plant Staff Emergency Functions." Provide information on how the narrative in Section II.B.1 applies to personnel assignments and capabilities listed in Table II-2.

N. Table II-2, "Plant Staff Emergency Functions," describes the proposed staff augmentation capabilities for listed emergency functions.

N.1. Discuss specifically how the on-shift/per unit personnel numbers would be assigned without collateral duty assignments. Of specific interest are the repair and corrective action and radiation protection functions. Identify the total number of personnel that are not assigned collateral duties.

N.2. Describe how a 60 minute timeliness to fulfill the dose assessment function is in accordance with regulations and meets or exceeds NUREG-0654 guidance.

N.3. Clarify in the BLN Emergency Plan whether the activation time clock initiates upon declaration of the emergency classification or some other initiator.

N.4. Provide information on whether the "aide to the SED" position is a required on-shift position (or which on-shift position otherwise fulfills the notification function).

O. Appendix 2, "Radiological Monitoring and Assessment," to the BLN Emergency Plan does not describe the emergency response facilities (including the control room) where the capability to perform dose assessment resides. Provide additional information on where this capability exists and align other references accordingly in the emergency plan, in tables such as Tables II-1 and II-2.

BLN RAI ID: 1141 (A), 1332 (B), 1333 (C), 1334 (D), 1335 (E), 1336 (F), 1337 (G), 1338 (H), 1339 (I), 1340 (J), 1341 (K), 1342 (L), 1343 (M), 1344 (N), 1345 (O)

BLN RESPONSE:

A. Section II.B of the BLN Emergency Plan will be revised as shown in the Application Revisions section below to provide additional details on the emergency response organization in Figures II-2 and II-3.

B. TVA's plans for staffing of the CECC are established in TVA's "Radiological Emergency Plan, Generic Part." This plan establishes those aspects of radiological emergency planning that are consistent across TVA's fleet of nuclear power facilities. TVA will add the pertinent emergency response position titles and descriptions to the BLN Emergency Plan. The

organization chart for the CECC staff will be included in Figure II-3 as shown in the Application Revisions section below.

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

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

D. The 60 and 90 minute staff augmentation times are consistent with those currently employed by TVA for Watts Bar nuclear facility. These time frames are necessary due to the remote locations of the facility. The projected time frame for activating the CECC is 60 minutes following declaration of an Alert or higher level emergency; therefore, the CECC is capable of providing additional management, technical, and communications support to the plant staff pending activation of the TSC and OSC. TVA's experience in conducting drills and exercises and responding to emergency conditions at the existing facilities indicate that the plant staff is capable of carrying out the initial emergency response activities prior to activation of the emergency response facilities and that the proposed staff augmentation times do not adversely affect TVA's emergency response capabilities.

The NRC reviewed these extended response times for the Watts Bar facility and issued a Safety Evaluation Report (Safety Evaluation of the Tennessee Valley Authority Proposed Radiological Emergency Plan Changes for the Watts Bar Nuclear Plant, Unit 1 (TAC NO. MB9130), June 24, 2004; ML041810056), indicating that such response times could meet the requirements.

E. Generic Letter 86-04 encourages licensees to transition to a dual role SRO/STA position. TVA assumes that NRC considered both routine and emergency duties prescribed by existing regulations and guidance when promulgating Generic Letter 86-04. TVA has attempted to comply with the NRC's stated position.

With regard to the response tasks assigned to the SRO/STA, Table B-1 of NUREG-0654/FEMA-REP-1 indicates that the functions assigned to the Shift Supervisor include "Plant Operations and Assessment of Operational Aspects" and "Emergency Direction and Control (Emergency Coordinator)." The functions assigned to the STA include "Emergency Direction and Control (Emergency Coordinator)" and "Plant System Engineering, Repair and Corrective Actions." Table B-1 further indicates that the "Emergency Direction and Control (Emergency Coordinator)" function may be provided by shift personnel assigned other functions. The

individual filling the combined emergency response roles of the SRO/STA position is expected to delegate responsibilities as needed to focus on the highest priority activities as needed to protect the public health and safety. As a matter of practice, there is significant overlap between the "Plant Operations and Assessment of Operational Aspects" function and the "Plant System Engineering, Repair and Corrective Actions" function. The Shift Manager performs both of these functions on an ongoing basis as part of the routine activities of that position. In addition, as discussed in BLN Emergency Plan Section II.A.1.b., TVA has assigned responsibility for making emergency notifications to the Operations Duty Specialist, thus removing this responsibility from the Control Room staff. Therefore, the combination of these positions will not impair the emergency response capabilities of the on-shift staff.

F. The staffing levels established in FSAR Table 13.1-202 and BLN Emergency Plan Table II-2 were developed for different purposes. The actual on-shift staffing must be established to satisfy all applicable FSAR and Emergency Plan requirements. In this case, because the Emergency Plan staffing requirements exceed those of the FSAR, the Emergency Plan establishes the controlling requirements for staffing of Chemistry and Radiation Protection Technicians. The footnotes are taken directly from the SRP (NUREG-0800, SRP 13.1.2-13.1.3).

G. FSAR Table 13.1-202 addresses the minimum number of personnel required for operations of a two-unit plant. As indicated by BLN Emergency Plan Table II-2, Note 1, the on-shift staffing in this Table is cited as individuals per unit and Note 2 specifies that if one unit is shut down the number of NLOs for that Unit is reduced to 1. Thus the tables are identical although presented differently. Therefore, to satisfy the requirements of the BLN Emergency Plan, the minimum number of non-licensed operators required to support operations for a two-unit plant, with both units operating, under declared emergency conditions, is four.

H. Note 2 to Table II-2 in the BLN Emergency Plan was developed to indicate that a specified minimum level of staffing would be required for the unaffected unit irrespective of the emergency condition at the affected unit. The referenced section of FSAR Table 13.1-202 is the minimum required staffing for a two-unit plant with one unit in operation. The additional personnel, beyond those prescribed in BLN Emergency Plan Table II-2, Note 2, would be engaged in emergency response functions for the affected plant.

I. With regard to staff augmentation, 10 CFR 50.47(b) simply requires that "timely augmentation of response capabilities is available." BLN Emergency Plan Sections II.B and II.H discuss the plans for complying with this requirement. Footnote 1 on page II-2 of the BLN Emergency Plan reflects a pragmatic approach to staffing of the emergency response facilities in that TVA does not intend to staff the facilities for a condition that no longer exists and requires no follow-up action by the augmented staff.

With regard to the guidance provided in NEI 99-01, this guidance addresses whether or not the facility should declare an emergency for a transient event; it does not preclude implementation of a pragmatic approach to facility staffing. Consistent with this guidance, Footnote 1 on page II-2 of the BLN Emergency Plan indicates that the transient event would be properly classified and required notifications would be made.

J. As used in current TVA plans and procedures, the term "activate" refers to the process of mobilizing resources to the emergency response facility and preparing the facility and its staff and systems to discharge their intended functions. The term "operational" indicates that the facility is prepared to discharge the intended functions. With regard to times required to activate the facilities, this terminology may be somewhat confusing because, at the end of facility "activation," the facility is "operational." As indicated in BLN Emergency Plan Table II-2, TVA's goal for activating most of the positions that respond to the TSC and OSC is 60 minutes

following declaration of the emergency requiring the use of these facilities. Certain positions may not be filled until 90 minutes following emergency declaration. Therefore, TVA expects the TSC and OSC to be operational 60 minutes after emergency declaration and "fully operational" 90 minutes following emergency declaration.

As indicated in BLN Emergency Plan Section II.H.2, the CECC can be activated (and therefore operational) approximately 60 minutes following declaration of an Alert or higher level emergency. BLN Emergency Plan Table II-2 contains an error that may confuse the reader. For the position of "CECC Director," the targeted capability for addition should be 60 minutes, consistent with the time frame established for activating the CECC. This error will be corrected (as shown in the Application Revisions section below) in a future revision of the BLN Emergency Plan.

K. In the initial stages of emergency response activities, prior to activation of the CECC, TVA assigns dose assessment responsibilities to the Radiation Protection Shift Supervisor or his designee. Emergency dose calculations are performed in accordance with an emergency plan implementing procedure developed for that purpose. This capability is not properly delineated in BLN Emergency Plan Table II-2. Table II-2 will be revised in the next revision of the BLN Emergency Plan (as shown in the Application Revisions section below) to properly reflect this plant staff emergency response function.

L. BLN Emergency Plan Table II-1 and NUREG-0696 Table 1 address locations of specific functions and transfer of those functions due to escalation of the emergency class. BLN Emergency Plan Table II-2 and NUREG-0654/FEMA-REP-1 Table B-1 address emergency response organization staffing and staff augmentation. BLN Emergency Plan Table II-1 has been provided to replicate the licensee responsibilities provided in Table 1 of NUREG-0696. In developing this table, there was no intent to provide a line-by-line cross-reference to Table II-2, just as there is no line-by-line cross-reference between NUREG-0696 Table 1 and NUREG-0654/FEMA-REP-1 Table B-1. To the extent there are any inconsistencies, these inconsistencies arise from the source guidance documents.

With regard to firefighting, rescue, and security functions, there are no plans to transfer these functions between facilities due to escalation of the emergency class; therefore, they are not included in BLN Emergency Plan Table II-1.

M. BLN Emergency Plan Section II.B.1 discusses the on-shift plant staff and their responsibilities under emergency conditions with reference to 10 CFR 50.54(m) and the FSAR. Section II.B.1 indicates that members of the plant staff fulfill corresponding roles in the emergency response organization. Table II-2 reflects this organization. Table II-2 indicates that the Operations staff personnel are assigned to major functional area of "Plant Operations and Assessment of Operational Aspects." Health Physics and Chemistry Personnel are assigned to "Radiological Accident Assessment and Support of Operational Accident Assessment." The STA is assigned to "Plant System Engineering, Repair and Corrective Actions." Members of the maintenance organization are assigned to "Repair and Corrective Actions." Security personnel are assigned to discharge Security functions. These assignments are consistent with the individuals' normal duties as discussed in the BLN Emergency Plan. Some individuals may have additional emergency response duties, such as fire-fighting and first aid, for which they are specifically trained.

N.1 The number of individuals who do not have collateral emergency response duties has not yet been determined. Details regarding staffing of certain functions, such as fire-fighting and first aid functions, are not yet determined. Details regarding these functions will be developed based on an assessment of plant design features and TVA's operating experience with its existing nuclear

facilities such that sufficient numbers are available. Details regarding staffing of these functions and collateral duties will be developed on a schedule to support execution of the emergency exercise required by 10 CFR 50, Appendix E, Section IV.F.2.

N.2 A Senior Radiation Protection Technician on-shift performs dose assessment activities prior to activation of the CECC. Following activation of the CECC, the Dose Assessment staff in the CECC assumes responsibility for this function. In a future revision of the BLN Emergency Plan, Table II-2 will be corrected to reflect this on-shift capability as shown in the Application Revisions section below.

N.3 The activation time clock initiates upon declaration of an emergency that requires activation.

N.4 The "aide to the SED," if filled, may be filled by any knowledgeable individual assigned by the SED to carry out the required activities.

O. Consistent with TVA's "Radiological Emergency Plan, Generic Part," dose assessment functions are performed by a Senior Radiation Protection Technician on shift prior to activation of the emergency response facilities. There is no specified location for completion of this function. Following activation of the emergency response facilities, dose assessment functions are generally completed in the CECC. The CECC is staffed upon declaration of an Alert or higher level emergency.

This response is PLANT-SPECIFIC.

ASSOCIATED BLN COL APPLICATION REVISIONS:

1. COLA Part 5, BLN Emergency Plan, Section II.B.5, will be revised to add the following information after the existing text:

The responsibilities of key members of the TSC and OSC staff are outlined below:

Site Vice President

The Site Vice President serves as a corporate interface for the SED, relieving him from duties which could distract from the SED's primary purpose of plant operations and accident mitigation activities. The Site Vice President shall provide assistance in the following areas as needed:

- Provides TVA policy direction to the Site Emergency Director.
- Directs the site resources to support the Site Emergency Director in the accident mitigation activities.
- Provides direct interface on overall site response activities with:
  - NRC, FEMA, or other Federal organizations responding to the site.
  - CECC Director.
  - Onsite media.
- At his discretion, may provide interface at the appropriate offsite location on the overall site response activities with:
  - State and local agencies.
  - NRC region/corporate.
  - Joint Information Center.

- Provides support to other emergency operation centers as necessary.

Site Emergency Director

- Discharges duties as established in Section II.B.4 of this plan.

Operations Manager

- Directs operational activities.
- Informs Site Emergency Director of plant status and operational problems.
- Performs damage assessment as necessary.
- Recommends solutions and mitigating action for operational problems.

Technical Assessment Manager

- Directs onsite effluent assessment.
- Directs activities of technical assessment team.
- Projects future plant status based on present plant conditions.
- Keeps assessment team informed of plant status.
- Provides information, evaluations, and projects to Site Emergency Director.
- Coordinates assessment activities with the CECC plant assessment team.
- Provides for Plant Status Board information maintenance.

Maintenance Manager

- Directs repairs and corrective actions.
- Performs damage assessment.
- Directs activities of Operations Support Center.

Admin Assistants (TSC and OSC)

- Maintains log of events.
- Answers telephones.
- Operates facsimile machine.
- Fulfills other duties as assigned by Site Emergency Director.

TSC Communicator

- Provides information from control room to Technical Assessment team as needed.
- Completes plant data sheets as needed.

Security Manager

- Directs activities of Nuclear Security Services personnel.
- Controls access to site and control rooms.
- Reports on site accountability/evacuation as defined in BFN-EPIPs.

Radiation Protection (RP) Manager

- Directs and/or performs assessment of inplant and onsite radiological conditions.
- Directs onsite RP activities.

- Coordinates additional RP support with CECC Radiological Communicator.
- Makes recommendations for protective actions for onsite personnel.
- Maintains status map of offsite radiological conditions.
- Coordinates assessment of radiological conditions offsite with CECC Radiological Communicator.
- Maintains in-plant radiation status board.
- Coordinates briefing of maintenance teams with maintenance manager and assigns a RP Technician to accompany them if necessary.
- Makes final recommendations to the Site Emergency Director for personnel entry to radiological hazardous environment.

OSC Director

- Directs repairs and corrective actions.
- Performs damage assessment.
- Coordinates OSC Teams to provide proper briefings and accompaniment by RP as applicable.

Chemistry Manager

- Coordinates assessment of radioactive effluents with CECC Plant Assessment Team.
- Directs post-accident sampling activities.
- Directs activities of the radiochemical laboratory.
- Determines impact of incident on environment, radwaste, various effluent treatment systems.

OSC Mechanical Supervisor

- Directs OSC (Mechanical).
- Performs damage and repair assessment.

Technical Assessment Team Leader

- Performs systems assessment as directed by Technical Assessment Manager.
- Determines condition of reactor and nuclear fuel.
- Acts as plant assessment team leader.

OSC I/C Supervisor

- Directs OSC (Instrumentation).
- Performs damage and repair assessment.

OSC Electrical Supervisor

- Directs OSC (Electrical).
- Performs damage and repair assessment.

NRC Coordinator

- Acts as primary liaison with onsite NRC personnel.
- Updates NRC personnel on plant status.

- Provides information requests from NRC to TSC personnel.

Operations Specialist

- Provides operational knowledge for status evaluation of plant systems.
- Provides advice regarding technical specifications, system response, safety limits, etc.
- Assists in development of recommended solutions to developing problems.

Emergency Preparedness Manager

- Advises Site Emergency Director regarding overall radiological emergency plan, use of implementing procedures, emergency equipment availability, and coordination with CECC.
- Confirms site emergency centers are operating properly.

Site Engineering Manager

- Serves as the primary interface with Engineering.
- Provides for additional engineering support during and/or following a radiological emergency.
- Coordinates the design and construction of emergency equipment and structures as necessary.

Technical Assessment Team

- Prepares and provides periodic current assessments on plant conditions and provides this information to the CECC plant assessment team.
- Projects future plant status based on present plant conditions.
- Provides technical support to plant operations on mitigating actions.

Technicians, Craftsmen, and Security Force personnel

- Discharge their duties in accordance with EPIPs and directions provided by assigned managers and supervisors.

2. COLA Part 5, BLN Emergency Plan, Section II.B.7, will be revised by adding the following after the existing text:

The responsibilities of key members of the CECC staff are outlined below:

CECC Director

- Has overall responsibility and authority for adequate TVA response to affected State/Local governments in protecting the health and safety of the public.
- Directs and coordinates TVA emergency response.
- Makes protective action recommendations to the State.
- Reviews and approves TVA press releases (excluding initial report of event).
- Reviews adequacy of information to news media/public; and act as the primary point of contact for official TVA positions or recommendations.
- Notification of key individuals of the condition and severity of the events; information relative to the plant status, and radiological impacts.
- Notification of protective measures available to emergency responders; NRC, DOE, INPO, insurance underwriters, and the appropriate Federal, State, and local agencies

- Provides points of contact for key types of information from the CECC; and
- Establishes 24- hour/day operations, if required.

Assistant CECC Director

- An optional position that may be filled at the CECC Director's discretion to assist him in carrying out his duties. This position will be filled by a person qualified as CECC Director.

Emergency Planning Staff Representative

- Advises the CECC Director regarding all aspects of the Emergency Plan.
- Confirms the CECC is set up and operating properly.
- Assists the CECC Director in operating the CECC by evaluating, compiling, documenting, and posting data concerning the emergency situation.

State Communicator

- Acts as TVA's primary communicator to the State.
- Clarifies information discrepancies and provides pertinent information related to plant status, onsite response, and TVA dose assessment to the State.
- Assists in providing TVA resource assistance.
- Provides the State with technical advice as necessary.
- Assists the State Liaison (a State government representative) in briefings and coordinating responses to State inquiries.

TVA State Liaison

- Acts as the CECC representative to the SEOC to interpret technical aspects of the emergency condition.
- Informs the CECC on State problems, requests, and actions.

CECC Plant Assessment Manager

- Maintains contact with the SED or Technical Assessment Manager and coordinates any necessary support.
- Requests assistance from other TVA organizations or NSSS vendors as needed.
- Provides technical support for planning and reentry/recovery operations.
- Briefs the CECC Director on information pertaining to plant status and any protective actions indicated for the public, based upon an assessment of plant status by the CECC and TSC assessment teams.
- Receives periodic status reports from the site and provides them to the CECC Director and other TVA support organizations.
- Makes recommendations to the SED on actions to be considered by the site to mitigate the problem based upon the assessment of plant status by the CECC Assessment Team.

Plant Assessment Coordinator

- Coordinates the plant status assessment activities in the Plant Assessment Area.
- Directs overall plant assessment function and reports results to the Plant Assessment Manager.

The plant information needed by the coordinator and his plant assessment team is provided by a continuous telephone communications hookup with plant emergency staff.

CECC Plant Assessment Team

- Provides a periodic evaluation of plant status information for input back to the TSC and the CECC Plant Assessment Manager.
- Draw upon their knowledge of plant information, procedures, core damage assessment, and industry analysis to evaluate the assessments provided by the site in terms of current and long-range plant conditions.
- Apply their evaluation and independent assessment to provide needed data for developing any necessary protective action recommendations for the public.
- Serve as an engineering/operations/core damage assessment consultant for the plant and reply to plant inquiries based on the available information
- Selects appropriate safety parameters for trending and maintains the CECC trend boards.
- Maintain a detailed log of the sequence of events during the emergency.
- Assists the CECC with other site-related communication needs, as necessary.

Resource Support Coordinator

- Maintains communications with other technical personnel to coordinate support as necessary.
- Coordinates support from other TVA organizations such as legal, medical, finance, and procurement.
- Coordinates requests for support from other organizations outside TVA such as equipment vendors and INPO.
- Coordinates arrangements for special equipment and supplies.

Engineering Representative

- Provides a point of contact in the CECC for onsite and offsite Engineering.
- Provides necessary engineering support as needed from the Engineering organization.

Public Information Manager

- Coordinates the decision to activate the JIC with the CECC Director, the General Manager, Client Communications, and SEOC.
- Provides the TVA Chief Spokesperson and the JIC Information Staff with information to inform the public and news media about an emergency.
- Informs the CECC Director of TVA's Public Information activities in response to an emergency.
- Coordinates all news release drafts with the State and Federal agencies participating at the JIC and secures approval of the CECC Director prior to making a release to the media.
- Coordinates the decision to establish the JIC with the SEOC.

JIC Liaison

- Responsible for contacting responding agencies and transmitting information for coordination.

- Establishes and maintains an information flow from the JIC or Site Communications to the CECC.

Information Writers

- Gather information from the CECC officers and technical advisor and prepare written statements based on that information.
- Develop information releases for the approval of the CECC Director for release to TVA employees.

Radiological Assessment Manager (RAM)

- Briefs the CECC Director on matters concerning offsite and onsite radiological conditions.
- Provides consultation, technical assistance, and obtains additional services as may be required for plant Radiological Protection and offsite environmental radiological surveys.
- Conducts radiological monitoring in the environment for areas potentially affected by the emergency and evaluates the radiological information to determine the extent of actual or probable hazard to the public or environment.
- Responsible for radiation dose management, including emergency dose authorizations, for personnel under RAM direction and control.
- Provides technical support to the CECC Director for formulating protective actions for the public based on radiological conditions.

Radiological Assessment Coordinator (RAC)

- Coordinates dose assessment, environs, and meteorological assessment activities in the Radiological Assessment Area (RAA).
- Directs the overall RAA function and communicates assessment results to the Radiological Assessment Manager.
- Provides protective action recommendations based on dose assessments and field measurements to the RAM.
- Provides information to the TSC on dose projections, recommended offsite protective activities, environs measurements, and meteorological conditions.
- Coordinates requests for additional Radiological Protection equipment and personnel.

Environmental Assessor

- Directs the TVA environs monitoring and assessment activities and coordinates the TVA field monitoring effort with the appropriate State agency.
- Coordinates the analysis of offsite environs samples with WARL.
- Provides technical support for planning and reentry/recovery operations.
- Coordinates with Dose Assessor regarding the results of the environmental assessments.
- Provides environmental monitoring results to the Radiological Assessment Coordinator or RAM for formulation of protective action recommendations to the CECC Director.

Dose Assessor

- Initiates and performs dose assessment activities during the radiological emergency and recovery and reentry phase.
- Consults with appropriate State agencies to resolve significant differences in assessments.

- Coordinates with Environmental Assessor regarding the predicted position, exposure levels, concentrations, and duration of radiological effluents.
- Provides dose assessment results to the Radiological Assessment Coordinator or RAM for formulation of protective action recommendations to the CECC Director.

Technical Advisors

- Provides technical assistance and explanation to the State Communicator, Public Information Staff, and Public Information Manager to release accurate information to the public and state agencies.

Boardwriter(s)

- Maintains the CECC Status Boards and EPZ maps with the most current information.

Management Services

- Makes arrangements for and provides for clerical support, food, TVA transportation services, lodging, supplies, drawings, and controlled documents.
- Authorized to issue checks for payment for emergency services of outside firms.

3. COLA Part 5, BLN Emergency Plan, Section II.B.8, first paragraph, will be revised from:

The principal organizations in the private sector that are part of the overall response organization are:

- Local Volunteer Fire Departments.
- Designated engineering/technical services support firms.

To read:

The principal contractor and private sector organization that are part of the overall response organization are:

- Hollywood Volunteer Fire Department.
- Highlands Medical Center Emergency Medical Services.
- Westinghouse Electric Company.
- Designated engineering/technical services support firms.

4. COLA Part 5, BLN Emergency Plan, Table II-2, in the column "Targeted Capability for Addition," the row for "CECC Director" will be revised from:

Major Tasks	Position, Title, or Expertise	On shift[1]	Targeted Capability for Addition	
			60 min	90 min
CECC Director	Senior Manager			1

To read:

Major Tasks	Position, Title, or Expertise	On shift[1]	Targeted Capability for Addition	
			60 min	90 min
CECC Director	Senior Manager		1	

5. COLA Part 5, BLN Emergency Plan, Table II-2, the row for "Dose Assessment" will be revised from:

Major Tasks	Position, Title, or Expertise	On shift[1]	Targeted Capability for Addition	
			60 min	90 min
Dose Assessment	Senior Radiation Protection		1	

To read:

Major Tasks	Position, Title, or Expertise	On shift[1]	Targeted Capability for Addition	
			60 min	90 min
Dose Assessment	Senior Radiation Protection	1[3]	1	

6. COLA Part 5, BLN Emergency Plan, Figure II-2, will be replaced with the following:

Figure II-2 –BLN Emergency Response Organization - TSC/OSC only

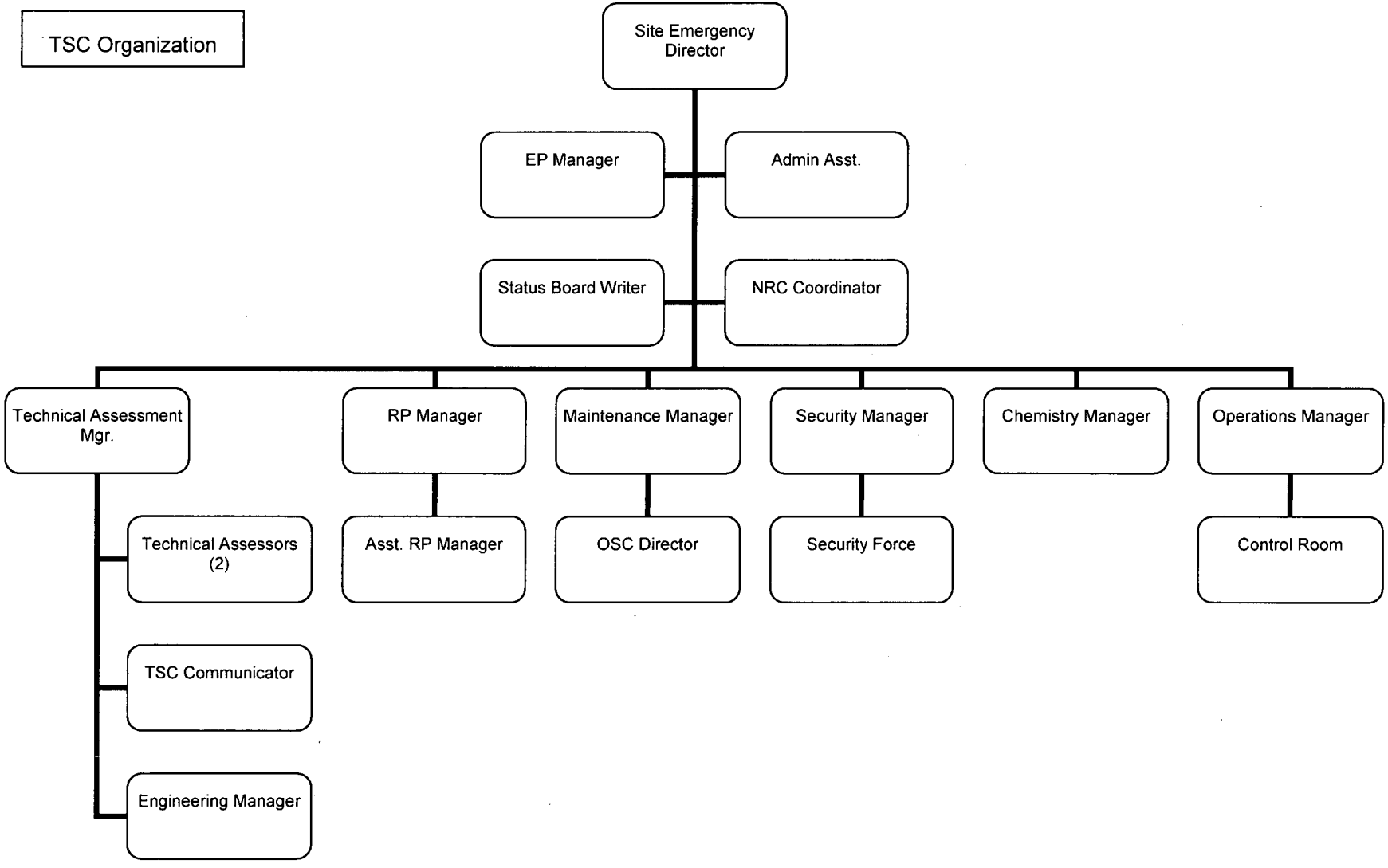
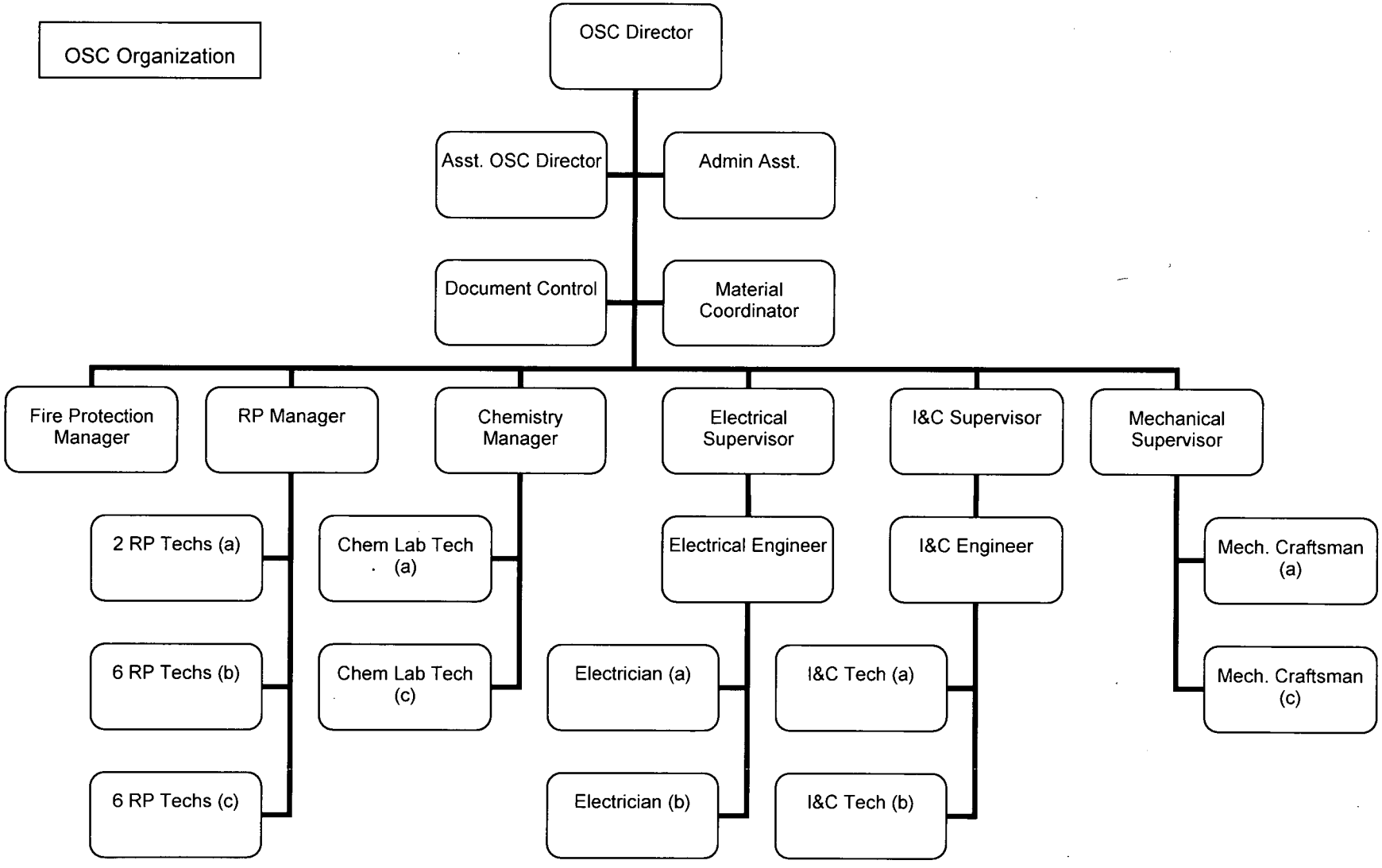
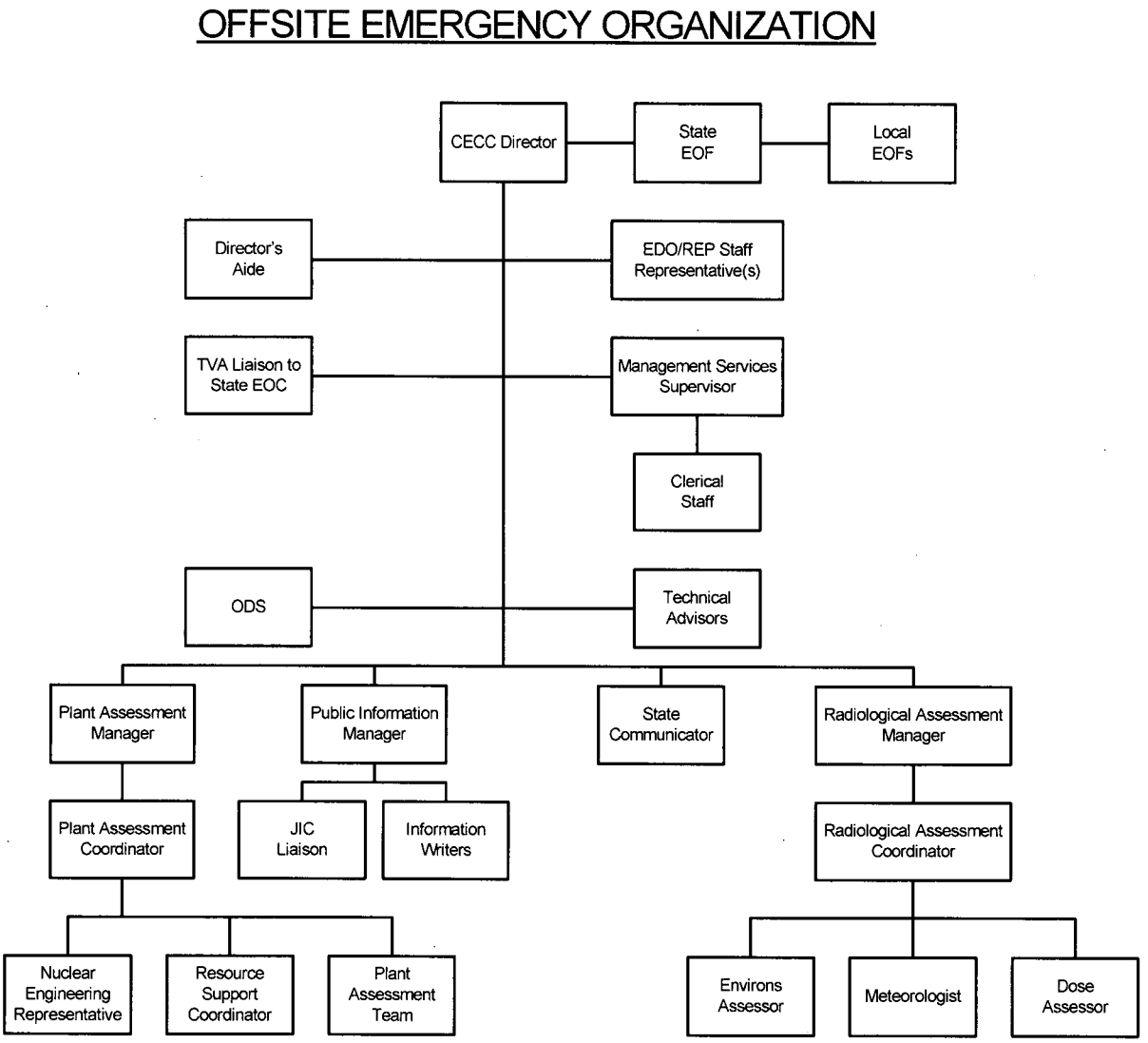


Figure II-2 (cont'd) –BLN Emergency Response Organization - TSC/OSC only



7. COLA Part 5, BLN Emergency Plan, Figure II-3, will be replaced with the following:

Figure II-3: Offsite Emergency Organization



(a) on-shift

(b) augment within approximately 60 minutes of declaration

Enclosure
TVA letter dated September 22, 2008
RAI Responses

ASSOCIATED ATTACHMENTS/ENCLOSURES:

None

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 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: 1142 (A)

BLN RESPONSE:

A. Consistent with the National Response Framework (NRF), the processes for requesting federal assistance may vary depending on whether or not a disaster declaration has been issued. As indicated in Table 3 of the Nuclear/Radiological Incident Annex of the NRF, the request for FRMAC assistance could originate with the coordinating agency (NRC) or with State, tribal, or local governments. Details regarding the request for federal assets are contained in the State and local emergency plans. TVA will continually evaluate response capabilities against current needs to determine the necessity for federal assistance. Any TVA request for Federal assistance would be directed to the NRC from the CECC Director or Radiological Assessment Manager and would be dependent on specific conditions that may arise during an emergency.

TVA currently maintains an agreement with the REAC/TS for supporting services for dose assessment of whole-body exposures to ionizing radiation at its other operating nuclear power plants. A similar agreement is expected to be developed for the Bellefonte Nuclear Plant; however, specific details of this agreement may change based on applicable industry guidance and TVA's experience in nuclear plant operations. Under TVA's current agreement with REAC/TS, REAC/TS shall be contacted when verification is obtained that known or suspected ionizing radiation exposure of a patient exceeds 5 REM. This communication is based upon the order of an attending physician in coordination with a health physicist.

B. Response previously provided.

C. Future response.

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.

ASSOCIATED ATTACHMENTS/ENCLOSURES:

None

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.

BLN RAI ID: 1353 (E)

BLN RESPONSE:

A. Response previously provided.

B. Response previously provided.

C. Response previously provided.

D. Future response.

E. TVA's efforts to support provision of emergency information to the public are outlined in TVA's CECC-EPIP-1, "Central Emergency Control Center (CECC) Operations." This procedure is included as Attachment 13.03-25B in response to RAI 13.03-25. TVA's efforts in this regard include the following:

- The CECC Director notifies Federal, State, and local agencies in accordance with established procedures and to keep them fully informed of the emergency. The Director also reviews anticipated state actions and discusses these actions with the State. The CECC Director approves the State Update Form, which is prepared by the State Communicator and approves CECC news releases.
- TVA provides support for a State Liaison in the CECC. The State Liaison role in the CECC is to observe events taking place, licensee response actions, and advise the State agencies appropriately throughout the emergency. The State Liaison receives assistance as necessary from the State Communicator. The State Liaison can also coordinate State support for TVA.
- The CECC Director coordinates with the Plant Assessment Manager the selection of people to serve as a technical advisor to the Public Information Manager and staff and also to the State Communicator in the CECC. Radiation Protection and/or Plant Operations advisors may also be selected to be sent to the appropriate State Emergency Operations Center. The advisors are responsible for providing a nontechnical interpretation of the event for the CECC Public Information Staff.

TVA expects to extend the requirements of CECC-EPIP-1 to the Bellefonte Nuclear Plant on a schedule that supports execution of the emergency exercise required by 10 CFR 50, Appendix E, Section IV.F.2.

This response is PLANT-SPECIFIC.

ASSOCIATED BLN COL APPLICATION REVISIONS:

No COLA revisions have been identified associated with this response.

ASSOCIATED ATTACHMENTS/ENCLOSURES:

None

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 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: 1357 (C)

BLN RESPONSE:

A. Future submittal.

B. Future submittal.

C. Section II.G.4 of the Emergency Plan addresses arrangements for the exchange of information among designated spokespersons. The public information responsibilities of emergency response personnel located at the plant site, the Central Emergency Control Center (CECC), and the Joint Information Center (JIC) are described in a corporate procedure applicable to TVA's operating nuclear plants. CECC-EPIP-14, "Nuclear Emergency Public Information Organization and Operations," is designed to describe the public information responsibilities of emergency response personnel located at the plant site, the CECC, and the Joint Information Center (JIC). It also describes how the JIC will be set up, staffed, and activated/deactivated when it is determined such a facility is necessary. Revision 30 of CECC-EPIP-14 is attached for informational purposes (Attachment 13.03-24A).

CECC EPIP-14 will be modified to incorporate the Bellefonte Nuclear Plant on a schedule that supports execution of the emergency exercise required by 10 CFR 50, Appendix E, Section IV.F.2.

D. Future submittal.

This response is PLANT-SPECIFIC.

ASSOCIATED BLN COL APPLICATION REVISIONS:

No COLA revisions have been identified associated with this response.

ASSOCIATED ATTACHMENTS/ENCLOSURES:

Attachment 13.03-24A

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.

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 (χ/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 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 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 metrological 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.

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: 1147 (A), 1360 (C), 1367 (J), 1368 (K), 1371 (N), 1372 (O), 1374 (Q), 1375 (R)

BLN RESPONSE:

A. The TSC serves as the primary on-site communications center when activated during an emergency. As discussed in BLN Emergency Plan Subsection II.H.1:

> The mission of the TSC is to provide an area and resources for use by personnel providing plant management and technical support to the plant operating staff during emergency evolutions. The TSC relieves the reactor operators of peripheral duties and communications not directly related to reactor system manipulations and prevents congestion in the Control Room. Communications needs are provided for the staff within the TSC, and between the TSC and the plant (including the control room and OSC), the CECC, TVA management, outside authorities (including the NRC), and the public.

These specific provisions clearly indicate that when the TSC is activated, it serves as the primary on-site communications center during an emergency. Additional information is included in Section 1.1 of the TSC design description document (Attachment 13.03-25A).

B. Future submittal.

C. Response was provided in TVA initial response to BLN-RAI-LTR-122. Additional information has been provided in Section 7.3 of the TSC design description document (Attachment 13.03-25A).

D. Future submittal.

E. Response previously provided.

F. Response previously provided.

G. Future submittal.

H. Future submittal.

I. Future submittal.

J. Standard Review Plan 15.0.3 states that the radiation protection design of the Technical Support Center (TSC) is acceptable if the total calculated radiological consequences for the postulated fission product release fall within the 5 rem TEDE exposure acceptance criteria specified for the control room for the duration of the accident. Atmospheric dispersion factors (χ/Q) values are a required input to radiological evaluations. The response to RAI 02.03.04-05 (response to BLN-RAI-LTR-119) provides the description of the methodology, inputs, assumptions, and calculated atmospheric dispersion factors (χ/Q values) for the Bellefonte Units 3 and 4 TSC.

The radiological consequence calculation for the Bellefonte Units 3 and 4 TSC uses the methodology of Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," and the RADTRAD (Radionuclide Transport and Removal and Dose Estimation) 3.03 Code (NUREG/CR-6604 including Supplements 1 and 2). RADTRAD 3.03 calculates fission product transport and removal along with the resulting radiation doses at selected receptors.

As discussed in the response to RAI 02.03.04-05, the limiting AP1000 offsite radiological consequences are associated with the LOCA with core melt (AP1000 DCD, Table 15.6.5-3). Therefore a LOCA release from the containment shell is conservatively assumed in the TSC radiological analysis. The RADTRAD 3.03 input parameters used in the Bellefonte TSC radiological analysis are discussed below.

Core Source Terms and Releases

For an assumed LOCA with core melt at an AP1000, the release of activity to the containment consists of two parts. The initial release is the activity contained in the reactor coolant system. This is followed by the release of core activity. The reactor coolant is assumed to have activity levels consistent with operation at the Technical Specification limits of 280 μCi/gm dose equivalent Xe-133 and 1.0 μCi/gm dose equivalent I-131 (AP1000 DCD). Based on Regulatory Guide 1.183, for a plant using leak-before-break methodology, the release of coolant into the containment can be assumed to last for ten minutes. The AP1000 is a leak-before-break plant (AP1000 DCD); however, for simplicity, the delay of 10 minutes before reactor coolant system blow down into the containment is conservatively neglected in this analysis.

The release of activity from the fuel takes place in two stages. First is the gap release, which is assumed to occur at the end of the primary coolant release phase and to continue over a period of half an hour. The second stage is that of the in-vessel core melt, in which the bulk of the activity releases associated with the accident occur. The in-vessel release phase lasts for 1.3 hours.

Core inventories of fission products are from ORIGEN calculations for the AP1000 at end of the fuel cycle at 102-percent power, 3468 MWe (AP1000 DCD). The source term model applied in the RADTRAD 3.03 calculation is based on Regulatory Guide 1.183 guidance.

The RADTRAD 3.03 nuclide inventory is limited to sixty isotopes with decay and daughter data. The default PWR 60-isotope, 9-element NUREG-1465 nuclide data file was used in this analysis. Data from the RADTRAD 3.03 TID14844 default data file for the Xe131m and Xe133m isotopes was added in place of the data for Co58 and Co60 in order to better represent the AP1000 inventory. A normalized core power was assumed and the AP1000 inventory for each nuclide (AP1000 DCD, Table 15A-3) was substituted for the default inventory.

The guidance in Regulatory Guide 1.183, suggests the following chemical forms for the released iodine:

Species Distribution

Form	Fraction (%)
CsI as aerosol	95
Elemental	4.85
Organic	0.15

Assumptions regarding release fractions applied are consistent with Regulatory Guide 1.183.

PWR Core Inventory Fraction Released Into Containment

Group	Gap Release Phase	Early In-vessel Phase	Total
Noble Gases	0.05	0.95	1.0
Halogens	0.05	0.35	0.4
Alkali Metals	0.05	0.25	0.3
Tellurium Metals	0.00	0.05	0.05
Ba, Sr	0.00	0.02	0.02
Noble Metals	0.00	0.0025	0.0025
Cerium Group	0.00	0.0005	0.0005
Lanthanides	0.00	0.0002	0.0002

Containment Sump Iodine Re-evolution

If the pH is maintained above 7, very little (less than 1%) of the dissolved iodine is converted to elemental iodine (Regulatory Guide 1.183). The AP1000 passive core cooling system provides sufficient tri-sodium phosphate to the post-LOCA cooling solution to maintain the solution pH at 7.0 or greater following a LOCA (AP1000 DCD). As such, this analysis did not consider any impact to the TSC due to iodine re-evolution from the containment sump.

Dose Conversion Factors

The effective dose conversion factors for the TEDE calculations are based on Federal Guidance Report (FGR) 11 (1989) and FGR 12 (1993). In most cases, these DCFs are taken directly from FGR 11 and 12;

however, in some cases, the DCFs applied include the DCFs of the isotope's decay products. This is consistent with the RADTRAD 3.03 code manual as noted in NUREG/CR-6604 Table 1.4.3.3-2.

Atmospheric Dispersion Factors

The TSC atmospheric dispersion factors were provided in response to NRC letter BLN-RAI-LTR-119, RAI 02.03.04-05.

Breathing Rate and Occupancy Factors

The breathing rates applied in the calculation of the inhalation dose were consistent with those reported for the control room in Section 4.2.6 of Regulatory Guide 1.183 and are given in the table below.

Breathing Rates (m^3/s)

Time Period	Control Room
0 to 8 hours	3.47E-04
8 to 24 hours	3.47E-04
1 to 30 days	3.47E-04

The TSC occupancy factors are consistent with those reported for the control room in Section 4.2.6 of Regulatory Guide 1.183 and are tabulated below.

Control Room Occupancy Factors

Time Period	Occupancy Factor
0 to 24 hours	1.0
1 to 4 days	0.6
4 to 30 days	0.4

In-Containment Activity Removal Processes

The AP1000 does not include active systems for the removal of activity from the containment atmosphere. The containment atmosphere is depleted of elemental iodine and of particulates as a result of natural processes within the containment. Appendix 15B of the AP1000 DCD provides a discussion of the models and assumptions used in calculating the AP1000 natural deposition removal coefficients. An elemental iodine deposition removal coefficient of 1.7 is determined. The removal coefficient for particulates is a function of time. The aerosol removal coefficients in the AP1000 containment following a design basis LOCA with core melt are given in Table 15B-1 of the AP1000 DCD. Since there is a limit of ten time intervals in the RADTRAD 3.03 input for aerosol removal coefficients, Table 15B-1 was simplified as given in the table below. Removal coefficients were rounded to two decimal places and then conservatively small removal coefficients were selected for ten time intervals ending at 24 hours.

Aerosol Removal Coefficients Following a Design Basis LOCA with Core Melt

Time Interval (hours)	Removal Coefficient (hr^{-1})
0 - 0.631	0.84
0.631 – 0.801	0.78
0.801 – 1.171	0.66
1.171 – 1.475	0.55
1.475 – 1.776	0.45
1.776 – 2.371	0.38
2.371 – 4.276	0.29
4.276 – 5.362	0.35
5.362 – 24.0	0.46
24 - 720	0.0

The AP1000 DCD identifies a maximum decontamination factor for elemental iodine of 200. An overall DF of 200 is achieved at 4.276 hours. Thus, at 4.276 hours the value of the elemental spray removal coefficient, λ_e, was set to zero.

Credit was also assumed for aerosol removal from containment cracks representing assumed containment leakage paths. The aerosol removal efficiency due to this "impaction" removal process is given as 80% in Table 15.6.5-2 of the AP1000 DCD.

TSC HVAC System

The design of the TSC and TSC ventilation system is described in the Technical Support Center Design Description Document (Attachment 13.03-25A). The volume of the TSC is given as a maximum of 35,700 ft^3. The TSC heating, ventilation and air conditioning (HVAC) system is manually isolated from the normal outdoor air intake when a high gaseous radioactivity concentration is detected in the TSC supply air duct. A maximum normal outside airflow of 1925 cfm is assumed for 30 seconds prior to initiation of supplemental air filtration units. Two trains of filter units are provided in the TSC HVAC system for defense in depth. Only one train is needed during emergency conditions. Each train is designed to provide a total nominal flow (fresh air + recirculation) of 4,000 cfm to the TSC. Filtered fresh air is limited to 860 cfm. A positive pressure of at least 1/8 inch water gauge is maintained. It is assumed that 25 cfm is required to maintain this positive pressure. Unfiltered inleakage to the TSC is given as 90 cfm; therefore the leakage from the TSC to the environment would be 925 cfm (860 cfm fresh air supply + 90 unfiltered inleakage – 25 cfm pressurization). Each supplemental air filtration unit includes a high efficiency filter bank, an electric heating coil, a charcoal adsorber with upstream HEPA filter bank, a downstream postfilter bank and a fan. Consistent with the main control room HVAC design, each charcoal adsorber has an efficiency of 90% for elemental and organic iodine and 99% for particulates.

Containment Release Pathways

The AP1000 containment release pathways to the environment are the containment purge line and containment leakage. During the initial part of the accident, before the containment is isolated, it is assumed that containment purge is in operation and that activity is released through this pathway until the purge valves are closed. No credit is taken for the filters in the purge exhaust line. The containment purge

flow rate is 8800 cfm. It requires 30 seconds for isolation of the purge subsequent to an accident (AP1000 DCD).

The majority of the postulated AP1000 releases due to the LOCA are the result of containment leakage. The containment is assumed to leak at its design leak rate, 0.1 percent by volume per day, for the first 24 hours and at half that rate for the duration of the accident, 30 days. The volume of the containment is 2.06E+06 ft^3 (AP1000 DCD).

Consistent with the AP1000 DCD, it is assumed that core cooling is accomplished by the passive core cooling system, which does not pass coolant outside of containment. Therefore, no recirculation leakage path is modeled in the TSC radiological consequence analysis.

Other Sources of Radiation

The direct radiation and sky-shine doses for the control room (per the AP1000 DCD, Table 15.6.5-3) are assumed to also be applicable to the technical support center. This is a reasonable and conservative assumption given the proximity of the TSC to adjacent structures and the design of the TSC. The TSC boundary walls, floor, and ceiling are sized for a minimum thickness of 2'-6" solid concrete to be consistent with structural designs for the modules of the auxiliary building (Attachment 13.03-25A).

In addition, at the time the LOCA occurs, there is the potential for a coincident loss of spent fuel pool cooling with the result that the pool could reach boiling and a portion of the radioactive iodine in the spent fuel pool could be released to the environment. The control room dose for this scenario given in the AP1000 DCD, Subsection 15.6.5.3.8.2, is conservatively included in the TSC dose consequences.

TSC Radiological Consequences

The bounding technical support center (TSC) radiological consequences determined for a postulated LOCA with core melt at either Bellefonte Nuclear Plant Units 3 or 4 are given below. The TSC radiological consequences for the postulated accident fall within the GDC 19 exposure acceptance criteria; therefore, it can be concluded that the radiation protection design of the TSC is acceptable.

TSC Radiological Consequences of a LOCA with Core Melt

TSC Dose Contributor	TEDE Dose (rem)
Airborne Activity Entering the TSC	0.87
Direct Radiation from Adjacent Structures	0.15
Sky-shine	0.01
Spent Fuel Pool Boiling	0.01
Total	**1.04**

K. TVA has used the CECC for emergency response for its nuclear plants since 1982. The CECC staff has demonstrated their ability to effectively respond to a spectrum of simulated emergency conditions for diverse reactor technologies. Section II.O of the Emergency Plan discusses TVA's program for training of TVA emergency response personnel for the Bellefonte Nuclear Plant, which includes the CECC staff. In the response to item I of this RAI, TVA discussed its approach to training, management, and staffing for the TSC. This same framework applies to the CECC. Training on adherence to procedures as discussed above 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 are 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 in effect for TVA's operating nuclear plants identifies key CECC functions and requires the CECC staff to receive an overview of the site Emergency Plan and task-specific training consistent with assigned duties. Depending on the identified function, additional training may be required of assigned CECC staff on facility operations, technical assessment function, or protective action recommendation decision making. Task-specific training would, for example include use of data systems and instrumentation, including the limitations of instrumentation, for assigned personnel.

With regard to management plans, facility staffing, and task assignments of CECC personnel, the Emergency Plan shows the functional organization of the CECC in Figure II-3. Table II-2 provides detailed information of staffing the Bellefonte emergency response organization. TVA currently maintains a series of Emergency Plan Implementing Procedures for use in the CECC (CECC EPIPs). CECC EPIP-1, "Central Emergency Control Center Operations," is designed to direct the CECC Director and staff to provide consistent, accurate, and timely response to the events of an accident. This procedure further serves to identify the necessary information to provide for prompt, accurate, public protective action recommendations to appropriate State authorities. This procedure includes information on management, staffing, and operation of the CECC for its operating nuclear plants. Revision 47 of CECC EPIP-1 is attached for informational purposes (Attachment 13.03-25B).

Specific details regarding when CECC EPIP-1 will be modified to incorporate the Bellefonte Nuclear Plant are not available. TVA expects to complete revision of this procedure, or institution of a similar procedure, to address Bellefonte Nuclear Plant as needed to support NRC inspection and audit functions associated with the execution of the emergency exercise required by 10 CFR 50, Appendix E, Section IV.F.2

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. CECC staff participate in these exercises and drills, which ultimately maintain their proficiency.

As indicated in Appendix 9 of the Emergency Plan, "The CECC size has proven to be adequate during drills and exercises for TVA's nuclear facilities." The floor space in the CECC is more than 3,500 square feet, which is sufficient to accommodate more than forty-five emergency response personnel from TVA, the State, and NRC.

The CECC currently has facsimile transmission capability between the CECC, TSCs, and NRC Operations Center, which is used for TVA's existing operating plants. TVA expects to continue to provide this functionality for the Bellefonte Nuclear Plant. However, given that the Bellefonte Nuclear Plant will not be operational for a number of years, TVA will consider advancements in telecommunications technology in meeting these functions before incorporating any specific data/document transmission system into the TSC and CECC.

L. Future submittal.

M. Future submittal.

N. General site arrangement drawings were provided in Part 2 of the COL application. Figure 1.1-202 provides a detailed site layout showing the proximity of the TSC (located in the Maintenance Building) in relation to the Control Rooms. TVA estimates that the walking time between the TSC and Control Rooms should not exceed five minutes.

O. TVA considered its experience operating the CECC for many years for the Browns Ferry, Sequoyah, and Watts Bar Nuclear Plants. The NRC has never used the EOF trailer(s) during any exercises in which they have participated. In addition, the Region II NRC emergency response plan includes no discussion recognizing these facilities exist or how they will be staffed. Therefore, TVA omitted the EOF trailer for the Bellefonte COL Application Emergency Plan.

Recognizing that this previous commitment exists, TVA has decided to designate space in the Bellefonte Training Center for on-site NRC EOF response. Accordingly, TVA will revise Part 5 of the COL application to identify that the following will be available to the NRC site team:

(1) The Local Recovery Center will be located at the Bellefonte Training Center and operational within two hours of being notified that the NRC Regional Administrator and site team are departing for the site.

(2) The same data available at the EOF will be available at the Local Recovery Center.

(3) At least 1500 square feet will be designated to accommodate the NRC site team and a FEMA liaison individual with an appropriate TVA complement. The space will 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 the EOF personnel who need communications capabilities to perform their functions; and ready access to functional displays of EOF data and to displays of plant records and historical data.

P. Future submittal.

Q. A variety of information on data systems and ERDS was requested in this section of the RAI. Specifically, information related to the following was requested:

1. Transmission of data points for reactor and core coolant system conditions; reactor containment conditions, radioactivity release rates; and plant meteorological tower data.
2. A separate data feed for each reactor unit and verification that if the emergency response data system (ERDS) is to communicate with a safety system, appropriate isolation devices will exist at these interfaces.
3. ERDS parameters can be transmitted in no more than 60 seconds or no less than 15 seconds.
4. Link control and data transmission in a compatible format with Nuclear Regulatory Commission (NRC) receiving equipment.
5. Hardware or software changes that affect the transmitted data points identified in the ERDS Data Point Library are submitted to the NRC within 30 days after the changes are completed.

6. Hardware and software changes that could affect the transmission format and computer communication protocol to the ERDS are provided to the NRC at least 30 days prior to the modification.
7. An ERDS implementation program plan will be provided submitted to the NRC.

Details regarding this information consider the design features of the AP1000 and are based on TVA's experience operating three other nuclear plant sites. The ERDS is to be developed on a schedule in compliance with the implementation requirements of 10 CFR Part 50, Appendix E, Section VI.

R. TVA does not include site layout drawings in its nuclear plant emergency plans or implementing procedures. This information will be included in procedures and training for OSC personnel. Figures 1.2-17 through 1.2-20 are not blank, but are included in Part 9 of the application. They were withheld from the public version of the DCD because they contained sensitive material. This information is available to the reviewers through the processes and procedures established by the NRC for such material.

S. Response previously provided.

This response is PLANT-SPECIFIC.

ASSOCIATED BLN COL APPLICATION REVISIONS:

COLA Part 5, Bellefonte Nuclear Plant, Units 3 & 4 COL Application Emergency Plan, Appendix 9 will be revised to include a new section:

Local Recovery Center

(1) The Local Recovery Center is located at the Bellefonte Training Center and operational within two hours of being notified that the NRC Regional Administrator and site team are departing for a site.

(2) The same data available at the EOF is available at the Local Recovery Center.

(3) At least 1500 square feet is designated to accommodate the NRC site team and a FEMA liaison individual with an appropriate TVA complement. The space is 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 the EOF personnel who need communications capabilities to perform their functions; and ready access to functional displays of EOF data and to displays of plant records and historical data.

ASSOCIATED ATTACHMENTS/ENCLOSURES:

Attachment 13.03-25A

Attachment 13.03-25B

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 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: 1377 (B), 1379 (D), 1380(E), 1381 (F)

BLN RESPONSE:

A. Future submittal.

B. Although the references for the assumptions used in the estimation of source terms are somewhat dated, review of later references indicate little change in the assumed values. For example, RASCAL 3.0 code (NUREG-1741; 2001) still references NUREG-1465 (1992) for release fractions. Similarly, the core inventories in RASCAL 3.0 are from reference NUREG-1228 (1998) in both RASCAL 2.1 and RASCAL 3.0 codes. Therefore, the radionuclide mixes and release fractions used in the codes described in the Bellefonte Emergency Plan are consistent with the RASCAL 3.0 code.

C. Future submittal.

D. Emergency Plan Implementing Procedures for the Bellefonte Nuclear Plant have not yet been written. CECC-EPIP-9, "Emergency Environmental Radiological Monitoring," describes radiological monitoring during or after an emergency at any of the operating TVA nuclear facilities. TVA expects to employ this or a similar procedure for the Bellefonte Nuclear Plant in the future. Topics discussed in this procedure include: activation; field operations; communications; electrical power supplies; air sampling; terrestrial samples; and operational readiness. TVA would typically dispatch two field monitoring teams at a Site Area or General Emergency. CECC-EPIP-9, Revision 35, has been attached for informational purposes. (Attachment 13.30-26A).

Maintaining monitoring teams for a protracted release would be handled on a situation-specific basis. Teams could be relieved at any time if individual dose limits are approached. Shift changes would be planned when shift duration is determined. Maximum response capability would be dictated based on the specific situation and is not pre-planned. TVA currently operates three nuclear facilities and could draw on trained radiation protection staffs from these facilities to support emergency response at any affected nuclear facility. Off-site monitoring efforts are coordinated with the State of Alabama and may be augmented by Federal resources as discussed in the Emergency Plan. Timing required for augmented staffing of field teams is identified in Table II-2 of the Emergency Plan.

E. For TVA's operating nuclear plants, CECC-EPIP-8, "Dose Assessment Staff Activities During Nuclear Plant Radiological Emergencies," provides instructions for preparing Protective Action Recommendations. CECC-EPIP-1, "Central Emergency Control Center (CECC) Operations," CECC-EPIP-6, "CECC Plant Assessment Staff Procedure for Alert, Site Area Emergency, and General Emergency," and CECC-EPIP-7, "CECC Radiological Assessment Staff Procedure for Alert, Site Area Emergency, and General Emergency," discuss the necessary information to provide for prompt, accurate, public protective action recommendations to appropriate State authorities. The protective action recommendations logic diagram used by TVA includes radiological dose considerations and is provided in Appendix H of CECC-EPIP-1, Appendix C of CECC-EPIP-6, and Appendix A of CECC-EPIP-7.

CECC-EPIP-6, Revision 30 (Attachment 13.03-26B), CECC-EPIP-7, Revision 30 (Attachment 13.03-26C), CECC-EPIP-8, Revision 31, (Attachment 13.03-26D) are provided for informational purposes. CECC-EPIP-1 was provided in response to RAI 13.03-25, this letter.

F. Section 1.3.2 of Regulatory Guide 1.145 provides guidance for evaluating stack releases including determination of effective stack height. It states that the effective stack height may be determined "using

the same procedures as described in regulatory position 2.a of Regulatory Guide 1.111." These are the same procedures used to determine plume rise in the accident models.

This response is PLANT-SPECIFIC.

ASSOCIATED BLN COL APPLICATION REVISIONS:

No COLA revisions have been identified associated with this response.

ASSOCIATED ATTACHMENTS/ENCLOSURES:

Attachment 13.03-26A

Attachment 13.03-26B

Attachment 13.03-26C

Attachment 13.03-26D

NRC Letter Dated: August 8, 2008

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 13.03-28

SITE-11: Contamination control and dose limits
Basis: 10 CFR 50.47(b)(11); NUREG-0654/FEMA-REP-1; Evaluation Criterion K.1.a; Evaluation Criterion K.2; Evaluation Criterion K.3.a; Evaluation Criterion K.3.b; Evaluation Criterion K.5.a; Evaluation Criterion K.5.b; Evaluation Criterion K.6; Evaluation Criterion K.6.b; Evaluation Criterion K.6.c; Evaluation Criterion K.7
SRP ACCEPTANCE CRITERIA: Requirement A; Acceptance Criterion 1

A. In Section II.K of the BLN Emergency Plan, provide details of the Radiation Protection Program (RPP). Provide a summary of the portions of the occupational radiation protection programs outlined in the Final Safety Analysis Report (FSAR), the Design Control Document (DCD), NEI 07-08, and NEI 07-03 that are relevant to radiation protection during emergencies at BLN. Describe BLN exceptions, clarifications, and extensions to the RPP related to emergency conditions. List applicable procedures or provide an ITAAC to track when the list will be available.

B. Section II.K.3, "Dosimetry and Dose Assessment," of the BNL Emergency Plan states that "Station procedures establish guidance for wearers to periodically read their self-reading dosimeters...," and "TVA (Tennessee Valley Authority) maintains individual dose records in accordance with the requirements of 10 CFR 20 and the radiation protection program and its supporting procedures". Discuss the maintenance of dose records. List the procedures related to reading dosimeters and the maintenance of emergency worker dose records. Identify and discuss contingency plans for accessing dose records should post-accident conditions preclude normal access.

C. Section II.K.5.a, "Decontamination Action Levels," of the BNL Emergency Plan states that TVA implements procedures and has supplies. State what the decontamination levels are and who decides how and when to decontaminate. Reference the RPP in this section and describe any procedures related to decontamination. Specify decontamination levels for personnel, equipment, and areas. Provide criteria for returning personnel and items to normal use.

D. Section II.K.5, "Decontamination Action Levels," of the BNL Emergency Plan states that TVA implements procedures for decontamination of on-site emergency personnel wounds, etc., and refers to the general list of decontamination supplies found in Appendix 6, "Emergency Equipment and Supplies," of the BLN Emergency Plan. Describe any procedures related to decontamination of wounds, etc. Provide a list of procedures that address means available for decontamination of surfaces, equipment, and personnel. Describe plant facilities that provide the means for decontamination. Describe the means of handling wastes resulting from decontamination. Where will the emergency equipment and supplies be stored?

E. Section K.6.a, "Contamination Control Measures," of the BLN Emergency Plan discusses access control in the event of an emergency by stating that requirements for site access control are established in the FSAR and Security Plan. Law enforcement agencies will control access to the owner controlled area consistent with State and local plans. Discuss the control of access to the protected area in the event of an emergency and provide a list of implementing procedures related to access control.

F. Section K.6.b, "Contamination Control Measures," of the BLN Emergency Plan states that Central Emergency Control Center (CECC) staff will make arrangements for transport of non-contaminated offsite supplies in event of contamination. Provide implementing procedures. Describe how uncontaminated water and food will be made available onsite should onsite water and food become contaminated. List any procedures to be followed in obtaining and distributing uncontaminated food and water supplies.

BLN RAI ID: 1151 (A), 1386 (B), 1387 (C), 1388 (D), 1389 (E), 1390 (F)

BLN RESPONSE:

A. FSAR Appendix 12AA provides a summary of the BLN Radiation Protection Program (RPP). FSAR Table 13.4-201 addresses milestones associated with the Radiation Protection Program. FSAR Subsection 13.5.2.2.1 provides a discussion of Radiation Protection procedures. Part 10 of the COL Application discusses ITAAC associated with the Radiation Protection Program. The Emergency Plan need not include secondary information that is redundant with that provided in the Design Control Document, FSAR, and other portions of the COL application.

With regard to exceptions, clarifications, and extensions to the RPP related to emergency conditions, compliance with the site RPP is maintained, to the extent practical, under emergency conditions. Section II.K of the COL Emergency Plan describes processes for authorizing and implementing emergency dose constraints consistent with EPA guidance. Appendix 5 of the COL Emergency Plan indicates that one of the topical areas to be addressed by Emergency Plan Implementing Procedures is "Radiation Protection Under Emergency Conditions." The procedure or procedures in this topical area address radiation protection issues that are specific to emergency conditions, such as area entry and exit requirements in the absence of radiological work permits, special survey requirements, suspension of routine administrative dose control levels, and specific respiratory protection and protective clothing requirements. Other variations from routine Radiation Protection procedures may be implemented on a case-by-case basis, consistent with ERO management direction and the provisions of 10 CFR 20.1001(b). FSAR Table 13.4-201 addresses milestones associated with emergency plan implementing procedures.

B. Under emergency conditions, immediate approximations of individual external radiation doses may be derived from readings of individual self-indicating dosimeters (e.g., pocket dosimeters, electronic dosimeters, or other devices as dictated by evolutions in dosimeter technology). Immediate assessments of internal radiation doses may be derived from correlation of air sample results with area occupation times. Records of individual dosimeter readings related to emergency response activities may be maintained on available log sheets or other record forms pending termination of emergency conditions and restoration of routine personal dosimeter reading, bioassay, and recordkeeping activities. Individual dose records are typically maintained on plant computer systems and are likely to be available throughout many emergency conditions. In the event that these records are not available under emergency conditions, Radiation Protection personnel may rely on an individual's knowledge of his current yearly accumulated dose prior to authorizing emergency assignments.

With regard to procedures addressing reading of dosimeters and maintenance of emergency worker dose records, the FSAR addresses Radiation Protection procedures as discussed in the response to item A of this RAI.

C. Current TVA procedures establish requirements for decontamination of personnel, equipment, and areas when removable contamination levels exceed 1,000 disintegrations per minute per 100 square centimeters (dpm/100 cm^2) beta-gamma or 20 dpm/100 cm^2 alpha and release of the affected personnel, equipment, and areas from radiological controls is desirable. Items and areas may be returned to unrestricted use when removable contamination levels have been reduced below the stated guidelines. Some exceptions may be implemented for contaminated personnel under the direction of a Radiation Protection Supervisor. The established contamination guidelines are consistent with industry standards. TVA expects that these levels would be used at the Bellefonte Nuclear Plant, but these levels may change based on ongoing industry experiences and changes in relevant guidance. Decontamination methods are established in Radiation Protection procedures and are implemented under the direction of trained Radiation Protection personnel. With regard to procedures related to decontamination, the FSAR addresses the Radiation Protection program as discussed in the response to item A of this RAI.

D. With regard to procedures related to decontamination, the FSAR addresses the Radiation Protection program as discussed in the response to item A of this RAI.

AP1000 DCD Section 1.2 provides a description of plant facilities that provide the means for decontamination of both personnel and equipment and the means for handling of radioactive wastes. In Section 13.3.3.1 of NUREG-1793, NRC indicated that "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 Part 50, Appendix E."

With regard to storage locations for emergency equipment and supplies, TVA expects that the bulk of the equipment and supplies to be stored in the established emergency response facilities – the Control Room, TSC, and OSC. Additional supplies may be stored at locations expected to be convenient for use by emergency response personnel, such as within or adjacent to RCA access and egress areas and decontamination areas. Initial storage locations are determined based on an assessment of plant layout and TVA's operating plant experience; these locations may be changed based on assessments of plant emergency operations, drills, and exercises.

E. The Security force maintains control of access to the protected area in accordance with Security procedures. FSAR Table 13.4-201 addresses milestones associated with the Security program.

F. In accordance with TVA corporate procedures, the Resources Support Coordinator bears responsibility for availability of adequate supplies of food and water to the emergency response organization. Food and water is made available on-site through acquisition of supplies under TVA commercial arrangements and subsequent transportation of supplies to the site, using either vendor or TVA-supplied transport.

With regard to procedures for distribution of food and water under emergency conditions, TVA expects that these arrangements are made on an ad-hoc basis. Therefore, the applicable procedures are likely to be limited to the existing TVA corporate procedure, assigning responsibility to the Resources Support Coordinator.

This response is PLANT-SPECIFIC.

ASSOCIATED BLN COL APPLICATION REVISIONS:

No COLA revisions have been identified associated with this response.

ASSOCIATED ATTACHMENTS/ENCLOSURES:

None

NRC Letter Dated: August 8, 2008

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 13.03-32

SITE-15: Training program for emergency responders, instructors and directors and coordinators
Basis: 10 CFR 50.47(b)(15); 10 CFR 50, Appendix E.IV. F.1; 10 CFR 50, Appendix E.IV.F.2.g; NUREG-0654/FEMA-REP-1; Evaluation Criterion O.1.a; Evaluation Criterion O.2; Evaluation Criterion O.3; Evaluation Criterion O.4; Evaluation Criterion O.4.a; Evaluation Criterion O.4.b; Evaluation Criterion O.4.c; Evaluation Criterion O.4.d; Evaluation Criterion O.4.e; Evaluation Criterion O.4.f; Evaluation Criterion O.4.g; Evaluation Criterion O.4.h; Evaluation Criterion O.4.i; Evaluation Criterion O.4.j
SRP ACCEPTANCE CRITERIA: Requirement A; Acceptance Criteria 1 and 2

A. Discuss training specifically related to radiological training for on-site personnel and explain who is responsible for ensuring that assigned emergency response personnel are adequately trained. Summarize the overall content and administration of the BLN Emergency Plan training program. Describe both the knowledge-based and performance-based training.

B. Section II.O.3, "First Aid Team Training," of the BLN Emergency Plan states that Medical Emergency Response Team (MERT) members that would provide medical emergency treatment receive training from the Safety and Emergency Response Training Academy. Describe the equivalency between the training from the Safety and Emergency Response Training Academy and the Red Cross Multi-Media training.

BLN RAI ID: 1155 (A), 1397 (B)

BLN RESPONSE:

A. Training requirements for TVA emergency response organization personnel are established in a corporate training procedure which is applicable to the TVA nuclear facilities. The procedure establishes requirements for training frequency, instructor qualifications, conduct of training and retraining, examinations, and training program updates and evaluations. The procedure establishes training requirements for both TVA and non-TVA personnel (i.e., State and local agency emergency response personnel).

The procedure provides matrices that link specific ERO functions to the training courses required to fulfill those functions. Training elements included in the matrix for on-site responders include Radiological Emergency Plan Overview, Facility Operations, Technical Assessment Function, Task Specifics, and Classification and PAR Decision-Making. Task-specific training elements include OSC Teams, Medical Emergency Response, Environs Monitoring, Post-Accident Sampling, Radiological Protection Response Actions, Dose Assessment, and multiple position-specific tasks. Training elements for CECC positions include Overview, Facility Operations, Technical Assessment function, PAR Decision-Making, and multiple position-specific tasks. Task-specific training for both on-site and CECC positions includes reviews of any position specific checklists or assigned duties.

Examination requirements include a means of evaluating individual or group task performance of applicable objectives. Individual mastery of performance-based objectives is assessed through evaluation of emergency response drills and exercises. The procedure also establishes a minimum passing score of written examinations and requirements for generation of new examinations on an established frequency. The procedure provides for removal of individuals from ERO responsibilities if they are unable to successfully complete the required examination(s).

The site Emergency Preparedness Manager is responsible for review and approval of training courses associated with on-site ERO positions. The Manager, EP Program Planning and Implementation, is

responsible for review and approval of training courses associated with Central Emergency Control Center positions and for oversight of offsite training programs.

The emergency preparedness training program does not include training in specialized technical skills or basic technical and personal protective qualifications (e.g., discipline-specific training in use of individual instruments or basic training in use of respiratory protective equipment). Assigned site management personnel are responsible for ensuring assigned personnel maintain the required qualifications consistent with the corresponding routine and emergency response duties of subordinate personnel. Many of these training elements, such as basic radiation protection topics, are addressed in site access training or in position-specific training programs, many of which are addressed in INPO-accredited training programs.

B. NUREG-0654/FEMA-REP-1, Revision 1, Evaluation Criterion II.O.3 establishes guidance for use of Red Cross Multi-Media Training for licensee first aid team responders. This guidance was published in 1980. In the interim, Red Cross Multi-Media Training has been superseded by other courses. Because the suggested Red Cross Multi-Media course no longer exists, TVA is unable to provide a direct correlation between its own training program and the Red Cross Multi-Media training course. However, TVA notes that the Red Cross Multi-Media training program was intended to train a layperson to recognize simple first aid situations and provide minimal first aid care until the arrival of a professional medical response team. The Red Cross Multi-Media training course was an 8 to 16 hour program. Members of TVA's Medical Emergency Response Team complete a 120-hour program and are certified by the National Registry of Emergency Medical Technicians (NREMT) to meet the educational and examination requirements set forth by the U.S. Department of Transportation guidelines and the curriculum implemented by the National highway Traffic Safety Administration under the National EMS Scope of Practice Model. Therefore, the content of the required Medical Emergency Response Team (MERT) training course far exceeds the requirements of the superseded Red Cross Multi-Media training course.

This response is PLANT-SPECIFIC.

ASSOCIATED BLN COL APPLICATION REVISIONS:

No COLA revisions have been identified associated with this response.

ASSOCIATED ATTACHMENTS/ENCLOSURES:

None

NRC Letter Dated: August 8, 2008

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 13.03-38

SITE-21: COL Information Items
Basis: 10 CFR 50.47 and Appendix E to 10 CFR Part 50
SRP ACCEPTANCE CRITERIA: Requirements A and B; Acceptance Criteria 1 and 2

A. COL Action Item 13.3-1 in NUREG-1793, "Final Safety Evaluation Report Relating to Certification of the AP1000 Standard Design," and the Tier 2 Material in the AP1000 DCD state in part that the COL applicants that reference the AP1000 certified design will address communication interfaces associated with the TSC. Explain how this aspect of the COL Action Item is captured in STD COL 13.3-1.

B. COL Action Item 13.3.3.3.5-1 in NUREG-1793, "Final Safety Evaluation Report Relating to Certification of the AP1000 Standard Design," and Section 13.3.1, "Combined License Information Item," of the Tier 2 Material in the AP1000 DCD state: "Combined license applicants referencing the AP1000 certified design will address activation of the emergency operations facility consistent with current operating practice and NUREG-0654/FEMA-REP-1." Section 13.3, "Emergency Planning," of Part 2, "FSAR," states in STD COL 13.3-2: "The emergency plan describes the plans for coping with emergency situations, including communication interfaces and staffing of the emergency operations facility." Discuss the relationship between the information in NUREG-1793 and the Tier 2 Material and STD COL 13.3-2. For example, while COL Action Item 13.3.3.3.5-1 addresses activation of the emergency operations facility, STD COL 13.3-2 addresses staffing and communication interfaces of the emergency operations facility.

BLN RAI ID: 1161 (A), 1401 (B)

BLN RESPONSE:

A. COL Action Item 13.3-1 in NUREG-1793 and Subsection 13.3.1 of the AP1000 DCD address communications interfaces associated with emergency planning in general. Although communications interfaces in the TSC comprise one subset of this information, these references do not specifically address the TSC.

STD COL 13.3-1 indicates, in part, that, "The emergency planning information is submitted to the Nuclear Regulatory Commission as a separate licensing document." Therefore, the COL Emergency Plan is expected to address the communications interfaces associated with emergency planning consistent with STD COL 13.3-1. The COL Emergency Plan addresses communications interfaces primarily in Section II.E, which discusses emergency notification methods, and Section II.F, which discusses various emergency communication systems, their locations, reliability, and periodic tests. The COL Emergency Plan addresses specific aspects of emergency communications in numerous additional sections, including Sections II.A.1.b, II.A.1.e, II.G, II.H, II.L.4, and II.M.3.

B. Within the Bellefonte COL Emergency Plan, the concept of "activation" as used in NUREG-1793 and the AP1000 DCD includes the activities of notifying the appropriate emergency response personnel, staffing the emergency response facility, establishing the required communications interfaces, and declaring the facility to be operational. With regard to the Central Emergency Control Center (CECC) (which functions as the EOF), these activities are addressed in COL Emergency Plan Sections II.A.1.b, II.A.1.d, II.B.7, II.E, II.F, II.H.2, and II.H.4.

This response is PLANT-SPECIFIC.

ASSOCIATED BLN COL APPLICATION REVISIONS:

No COLA revisions have been identified associated with this response.

ASSOCIATED ATTACHMENTS/ENCLOSURES:

None

NRC Letter Dated: August 8, 2008

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 13.03-39

ITAAC-22: ITAAC
Regulatory Basis: 10 CFR 52.80(a)
SRP ACCEPTANCE CRITERIA: Requirement E; Acceptance Criterion 23

A. Some EP ITAAC will be completed for Unit 3 before those for Unit 4. To allow closure of the common ITAAC for both units when Unit 3 is constructed (so that the common ITAAC would not need to stay open until Unit 4 is constructed), was the development of separate ITAAC tables for each unit considered?

B. In Table 3.8-1, "Inspections, Tests, Analyses, and Acceptance Criteria," in Part 10 of the COL Application, Acceptance Criterion 6.3 ends with the words "for various radiological conditions." Table 14.3.10-1, "Emergency Planning Generic Inspections, Tests, Analyses, and Acceptance Criteria," of Section 14.3.10, "Emergency Planning Generic Inspections, Tests, Analyses, and Acceptance Criteria," of NUREG-0800, "Standard Review Plan," contains corresponding Acceptance Criteria 9.3 that ends with the words "for various meteorological conditions." Justify the wording difference between Acceptance Criterion 6.3 in the COL Application and corresponding Acceptance Criterion 9.3 in NUREG-0800.

C. Table 3.8-1, "Inspections, Tests, Analyses, and Acceptance Criteria," in Part 10 of the COL Application, each acceptance criterion is prefaced with the phrase "A report exists that confirms ..." The goal of ITAAC Acceptance Criteria is to be objective criteria that can be demonstrated to have been met prior to fuel load. The Acceptance Criteria must be specific and sufficiently objective, in order to clearly identify what the requirements are, and to provide the ability to determine whether they have been met. In RIS 2008-05, "Lessons Learned to Improve Inspections, Tests, Analyses, and Acceptance Criteria Submittal," February 27, 2008, the following guidance is provided in regard to the use of such a phrase:

> If applicants use the phrase, "a report exists and concludes that ...," they should consider specifying the scope and the type of report. For example, they should explain whether the scope of the report includes the design, the as-built construction (as reconciled with the design), or any other information.

The use of the phrase "A report exists that confirms ..." in the Acceptance Criteria does not clearly describe how verification is actually conducted to confirm that the acceptance criteria are met. An area that might be appropriate for using a report to confirm that various ITAAC have been met is Planning Standard 8.0, "Exercises and Drills," for which an Exercise Report could serve to verify that various exercise-related ITAAC (e.g., exercise objectives) have been met.

Consistent with RIS 2008-05, discuss the type and scope of the reports cited in ITAAC Table 3.8-1, including how the report will serve to provide accurate and reliable confirmation that the Acceptance Criteria have been met, or consider removing the words "A report exists that confirms" from the Table, to create specific and sufficiently objective Acceptance Criteria and leave open the specific method(s) that the licensee will use to confirm that the ITAAC acceptance criteria have been met.

D. Table 3.8-1, "Inspections, Tests, Analyses, and Acceptance Criteria," in Part 10, "Proposed Combined License Conditions (Including ITAAC," of the COL Application provides four separate acceptance criteria for planning standard 8.0, "Exercises and Drills." Address the following questions pertaining to the full-participation exercise, and the applicable guidance provided in Regulatory Guide (RG) 1.206, Appendix B, Table C.II.1-B1, "Emergency Planning – Generic Inspection, Test, Analysis, and Acceptance Criteria (EP-ITAAC)."

D.1 Table C.II.1-B1 acceptance criterion 14.1.3 addresses offsite exercise objectives associated with the full participation exercise. Explain why Table 3.8-1 does not include an acceptance criterion to reflect the offsite exercise objectives associated with the full participation exercise, and how this is consistent with the intent of this generic ITAAC. Either provide the appropriate acceptance criterion, or explain why it is not necessary.

D.2 Table 2.3-1 acceptance criteria 8.1.2.1 and 8.1.2.2 appear to address Table C.II.1-B1 acceptance criterion 14.1.2. Explain why 8.1.2.2 does not include the word "successfully" in regard to emergency response personnel performing their assigned responsibilities.

D.3 Table C.II.1-B1 acceptance criterion 14.1.2 includes the bracketed statement that "[t]he COL applicant will identify responsibilities and associated acceptance criteria." Explain why Table 3.8-1 (acceptance criteria 8.1.2.1 and/or 8.1.2.2) does not identify any responsibilities and associated acceptance criteria, in relation to onsite emergency response personnel successfully performing their assigned responsibilities. Either provide the appropriate acceptance criterion, or explain why it is not necessary.

D.4 Table C.II.1-B1 acceptance criterion 14.1.1 includes the bracketed statement that "[t]he COL applicant will identify exercise objectives and associated acceptance criteria." Table 3.8-1 acceptance criterion 8.1.1.2 states that exercise objectives, including acceptance criteria, address each of the 8 listed emergency planning program elements. However, Table 3.8-1 does not identify (in the acceptance criteria) what the exercise objectives and associated acceptance criteria are (as called for in Table C.II.1-B1) in order to clearly identify what the requirements are, and to provide the ability to determine whether they have been met. For the full participation exercise acceptance criteria in Table 3.8-1, provide specific exercise objectives and associated acceptance criteria, consistent with Table C.II.1-B1. Either provide the appropriate acceptance criterion, or explain why it is not necessary.

E. EP Program Element 3.2 of Table 3.8.1, "Inspections, Tests, Analyses, and Acceptance Criteria," states that the means exists for communications from the control room, TSC, and EOF to NRC Headquarters and regional office EOCs (including establishment of the Emergency Response Data System (ERDS) between the onsite computer system and the NRC Operations Center. The "Inspection, Tests, and Analysis" for the EP Program Element is a note that states that the ITAAC for these communications systems are addressed in Table 3.1-1, "Inspections, Tests, Analyses, and Acceptance Criteria," of the Tier 1 Material in the AP1000 Design Control Document, Rev.16. However, ITAAC number 2 in Table 3.1-1, "Inspections, Tests, Analyses, and Acceptance Criteria," states that the TSC has voice communication equipment for communication with the control room, EOF, OSC, and NRC. Provide additional details regarding the establishment of communications with the regional NRC EOC and ERDS between the onsite computer and the NRC Operations Center.

F. Table C.II.1-B1, " Emergency Planning-Generic Inspection, Test, Analysis, and Acceptance Criteria (EP-ITAAC)," in Appendix C.II.1-B, "Development Guidance for Emergency Planning ITAAC," to Regulatory Guide 1.206 contains the generic EP-ITAAC table. The table lists 17 Planning Standards and the accompanying EP Program Elements, Inspection, Tests, Analysis, and Acceptance Criteria. Explain how the COL application EP-ITAAC addresses the following generic ITAAC Planning Standards:

1. Assignment of Responsibility-Organizational Control--10 CFR 50.47(b)(1) An inspection of the implementing procedures or staffing rosters will be performed.

2. Onsite Emergency Organization--10 CFR 50.47(b)(2) An inspection of the implementing procedures or staffing rosters will be performed.

3. Emergency Response Support and Resources--10 CFR 50.47(b)(3) Provide letters of agreement or other documentation that demonstrates arrangement have been made for requesting and effectively using assistance resources, arrangements to accommodate local and state staff at the licensee's near

site Emergency Operations Facility have been made, and other organizations capable of augmenting the planned response have been identified.

4. Radiological Exposure Control--10 CFR 50.47(b)(11) A test will be performed of the capabilities

5. Medical and Public Health--10 CFR 50.47(b)(12) A test will be performed of the capabilities

6. Recovery an Reentry Planning and Post Accident Operations --10 CFR 50.47(b)(13) A report exists that confirms the Recovery and Reentry and Post Accident Operations plans have been demonstrated.

7. Radiological Emergency Response Training--10 CFR 50.47(b)(15) An inspection will be performed to verify the emergency response training program meets the applicable standards for those who may be called upon to assist in an emergency and that procedures for the conduct and evaluation of the training program exist and records of training offered and conducted exists.

8. Responsibility for Planning Effort: Development, Periodic Reviews, and Distribution of Emergency Plan --10 CFR 50.47(b)(16) An inspection of the Emergency Plan distribution will be performed to insure all agencies identified in the Emergency Plan have been provided a copy of the final, approved plan and any subsequent revisions, changes, supplements, or amendments.

9. Implementing Procedures: 10 CFR Part 50, Appendix E.V. An inspection of the submittal letter will be performed to insure all required implementing procedures are adequately addressed.

Discuss why ITAAC were not developed for the above Planning Standards, or propose an ITAAC.

G. Table C.II.1-B1, " Emergency Planning-Generic Inspection, Test, Analysis, and Acceptance Criteria (EP-ITAAC)," in Appendix C.II.1-B, "Development Guidance for Emergency Planning ITAAC," to Regulatory Guide 1.206 contains the generic EP-ITAAC table. EP Planning Standard 5.0, "Notification Methods and Procedures," states in associated Acceptance Criteria 5.3:

> "The means for notifying and providing instructions to the public are demonstrated to meet the design criteria as stated in the emergency plan. (The COL applicant will identify specific capabilities.)

The BLN COL Emergency Plan states in Chapter II.E.6, "Instructions to the Public in the Plume Exposure EPZ," states:

> "The Alert Notification System includes an outdoor warning system, measures for notifying special facilities, and notification of the public. This system is designed to meet the acceptance criteria of Section B of Appendix 3, NUREG-0654/FEMA REP-1."

Provide additional information regarding the alert notification system design to meet the guidance provided in Appendix 3 to NUREG-0654/FEMA REP-1, or propose an ITAAC.

BLN RAI ID: 1405 (E), 1406 (F)

BLN RESPONSE:

A. Response previously provided.

B. Response previously provided.

C. Response previously provided.

D. Response previously provided.

E. Communications with the regional NRC EOC is possible utilizing the commercial telephone system. The ERDS plant performance data is collected by the AP1000 Plant Monitoring System (PMS) and then

provided to the NRC Operations Center. Because the PMS design is not finalized, the exact protocol for transmitting the data is not yet finalized, but the DCD, Tier 1, ITAAC represents a commitment to provide data to the NRC supporting oversight and assessment.

F. TVA relied on the Emergency Planning (EP) ITAAC agreed to between the NRC staff and industry documented in SECY-05-0197, "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria." One of the stated purposes of SECY-05-0197 was to "Allow the use of proposed generic emergency planning/emergency preparedness (EP) inspections, tests, analyses, and acceptance criteria (ITAAC) as a model for inclusion in COL applications."

TVA recognizes that additional EP ITAAC were included in the guidance offered in Regulatory Guide 1.206, but found that the additional ITAAC were already adequately addressed in the set of EP ITAAC proposed, as discussed below:

Items 1 and 2: Responsibilities for performance of an integrated emergency response are demonstrated during an evaluated exercise as required by COLA Part 10 (ITAAC) Table 3.8-1, item 8.0. The Emergency Plan contains descriptions of the response team staffing and responsibilities. The clarifying note added to acceptance criteria 8.1.2.1 and 8.1.2.2, as discussed in TVA's earlier response to the question in D.2 of this RAI, strengthens the acceptance criteria.

Item 3: The Emergency Plan submitted as Part 5 of the COLA included Certification Letters in which supporting organizations have documented their commitment to support the licensee. The integrated response is also demonstrated in the evaluated exercise required by ITAAC Table 3.8-1, item 8.0.

Item 4: An evaluated exercise as required by ITAAC Table 3.8-1, item 8, requires Protective Action Guidelines to be utilized. The Protective Action Guidelines for emergency workers are often included and demonstrated during evaluated exercises. Most often NRC Emergency Planning Inspection teams confirm that implementing procedures include dose extension and approval guidance for emergency workers. The use of inspection procedures and exercise demonstrations are the preferred way to confirm this emergency planning standard.

Item 5: The Emergency Plan contains an agreement from Huntsville Hospital addressing arrangements for treating contaminated injured workers. Testing of medical capabilities is not included as an ITAAC; however, this capability must be tested annually as required by COL Emergency Plan subsection II.N.2.c.

Item 6: Emergency Plan implementing procedures are required to include recovery and reentry guidance. NRC Emergency Planning inspections confirm the guidance exists in licensee procedures. ITAAC Table 3.8-1, acceptance criterion 8.1.1.2 specifically lists Recovery and Reentry as an element to be tested.

The NRC Emergency Planning Inspectors periodically observe emergency planning training, inspect training records and compare rosters with training records to confirm individuals are completing required training. This method of verification is the accepted practice to confirm licensee actions are acceptable. Additionally, the effectiveness of training is specifically addressed through the exercise performance demonstrations required in ITAAC Table 3.8-1 acceptance criterion 8.1.2.2.

Item 8: The NRC Emergency Planning Inspectors periodically confirm emergency plan implementing procedures are distributed to supporting agencies and response centers. This is an important activity, but is administrative in nature and not appropriate for an ITAAC.

Item 9: Emergency Plan implementing procedures are required to be submitted to the NRC at least 180 days prior to the scheduled date for initial fuel loading under Section V of Appendix E to 10 CFR 50. This section states "No less than 180 days before... the scheduled date for initial loading of fuel for a combined license under part 52 of this chapter, the applicant's or licensee's detailed implementing procedures for its emergency plan shall be submitted to the Commission as specified in § 50.4." There is

no need for, or regulatory basis for requiring, a license condition that merely duplicates an existing regulation.

G. 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

Attachment 13.03-24A

(25 pages including cover sheet)

CECC-EPIP-14

NUCLEAR EMERGENCY PUBLIC INFORMATION ORGANIZATION AND OPERATIONS

Tennessee Valley Authority CENTRAL EMERGENCY CONTROL CENTER EMERGENCY PLAN IMPLEMENTING PROCEDURES	Title NUCLEAR EMERGENCY PUBLIC INFORMATION ORGANIZATION AND OPERATIONS	CECC EPIP-14 REV. 30 Effective Date: 2-20-2008

QUALITY RELATED

WRITTEN BY: John Parshall (*Signature*) REVIEWED BY: Thomas E. Adkins (*Signature*) 2-12-08 (*Date*)

PLAN EFFECTIVENESS DETERMINATION PERFORMED BY: John Parshall (*Signature*) 2-12-08 (*Date*)

CONCURRENCES

Concurrence Signature	Date
☒ **Manager, EP Program Planning and Implementation** John Parshall	2-12-08
☒ **Manager, Emergency Preparedness** B. K. Marks	2-12-08

APPROVAL

APPROVED BY: James R. Douet (*Signature*) Vice President, Nuclear Support (*Title* *Organization*) 2-12-08 (*Date*)

CECC-EPIP-14
NUCLEAR EMERGENCY PUBLIC INFORMATION
ORGANIZATION AND OPERATIONS
REVISION LOG

Rev. No.	Date	Revised Pages
0	3/22/88	All (Formerly IP-21; changed from IPD to EPIP)
1	7/8/88	Page 1
2	12/12/88	All
3	7/13/89	All
4	6/20/90	All--(Formerly EPIP-13) (Former EPIP-14 transferred to EPIP-15)
5	9/14/90	Page 9 (only)
6	5/21/91	All--combined with EPIP-15 (CANCELLED) and EPIP-16 (CANCELLED). Title changed.
7	05/15/92	App.C, Pgs.1-6 revised. New coversheet & rev. log added. All pages issued.
8	07/02/93	Pgs. 2-5; App. A, pgs. 1-3; App. B, pg. 2; App. C, pg. 1; App. D, pg. 1, App. E, pg. 1; App. G, pg. 1 added. All pages issued.
9	09/30/93	Pgs. 1-5; App. A, pgs. 1-3; App. B, pgs. 1-2, 4-5; All pages issued.
10	11/09/93	App. C, pgs. 1-5; all pages issued.
11	11/30/94	Pgs. 2-5; App. A, pgs. 1-3; all pages issued.
12	11/01/95	Revised to indicate current layout of the SQN/WBN JIC; all pages issued.
13	5/30/96	App. A, App. B, App. C, App. H; annual review, telephone numbers removed because they are contained in the REND, add FFD Call-in Form; all pages issued.
14	11/5/96	Add duties for Site Specialist and Site VP, instructions for JIC setup, staffing and activation/deactivation, organization and title changes, update JIC drawings, add telephone numbers to SQN JIC App., editorial changes; all pages issued.
15	12/20/96	Page 4, add statement to functional test electronic equipment after JIC setup; editorial and organizational changes; all pages issued.
16	5/30/97	Page 3, add CECC Liaison duty to coordinate with employee communication; page 4 clarify sources of clerical support; App. A update call tree; App. C update BFN JIC drawings and telephone numbers; all pages issued.

CECC-EPIP-14
NUCLEAR EMERGENCY PUBLIC INFORMATION
ORGANIZATION AND OPERATIONS
REVISION LOG (Continued)

Rev. No.	Date	Revised Pages
17	10-6-97	Update organization titles, add information about SQN/WBN JIC activation, update JIC drawings and telephone numbers; all pages issued.
18	6/9/98 ~~6/4/98~~ *RR*	Annual review. Organization changes, editorial changes, update JIC activation instructions, add instruction to include dated material to inventory process, update call tree, update JIC layout drawings. All pages issued.
19	2/22/99	Annual review. Organizational changes, editorial changes, SQN/WBN JIC drawing update. All pages issued.
20	5/20/99	Update contents for BFN Security and add contacts for video support. All pages issued.
21	11/15/99	Update instructions for set up of the BFN and SQN/WBN JICs, update BFN JIC diagrams. All pages issued.
22	9/8/00	Annual review. Editorial changes. All pages issued.
23	2/5/01	Annual review. Editorial changes, organizational change updates. All pages issued.
24	2/13/02	Annual review. Organizational change update, editorial changes.
25	04/24/03	Annual review. All pages issued.
26	2/26/04	Annual review. All pages issued.
27	5/21/04	Revised to reflect change of SQN/WBN JIC telephone service to TVA service. All pages issued.
28	2/4/05	Annual Review. Add Quality Related designation to cover page. Minor editorial changes and updates.
29	4/18/05	Add "Quality Related" to cover page and update BFN JIC telephone numbers.
30	2/20/08	Annual review updated for organizational and title changes. Corrected minor typographical errors.

NUCLEAR EMERGENCY PUBLIC INFORMATION ORGANIZATION AND OPERATIONS

1.0 PURPOSE

This implementing procedure describes the public information responsibilities of emergency response personnel located at the plant site, the Central Emergency Control Center (CECC), and the Joint Information Center (JIC). It also describes how the JIC will be setup, staffed and activated/deactivated when it is determined such a facility is justified.

2.0 SCOPE

This implementing procedure applies to all nuclear emergency public information response staff and activities during a declared emergency at any TVA nuclear plant.

3.0 REFERENCES

3.1 10 CFR 50, Appendix E

3.2 NUREG-0654; FEMA REP-1, Rev. 1

3.3 Radiological Emergency Plan (REP)

4.0 DEFINITIONS

4.1 CECC - Central Emergency Control Center

4.2 JIC - Joint Information Center

4.3 EDO - Emergency Duty Officer

* 4.4 TVA NPG - TVA Nuclear Power Group

4.5 NEPIT - Nuclear Emergency Public Information Team

* 4.6 CEO - Chief Executive Officer

* 4.7 CG&VR - Communications, Government and Valley Relations (Communications)

5.0 RESPONSIBILITIES

* 5.1 The EVP, CG&VR, or designee is responsible for directing TVA's overall public information
* activities and ensuring that the CEO is informed of public information activities relating to a declared emergency at any TVA nuclear plant.

5.2 The Senior Manager, Business Communications is responsible for coordinating the activation and deactivation of the JIC with the CECC Director.

* Revision

5.3 * The CECC Director is responsible for approving emergency news statements after the CECC is activated and for coordinating JIC activation/deactivation with the Senior Manager, Business Communications.

* 5.4 CG&VR is responsible for coordinating near-site media and public information activities.

* 5.5 The Site Vice President is the information contact for CG&VR and serves as the spokesperson for media briefings at or near the site.

6.0 ORGANIZATION

6.1 When an emergency is declared, members of the Nuclear Emergency Public Information Team will staff positions at the site, the CECC, and the JIC, as necessary, to provide information to the media and public.

6.2 The JIC for Sequoyah Nuclear Plant and Watts Bar Nuclear Plant is located in the Missionary Ridge Building at the TVA Chattanooga Office Complex. The JIC for Browns Ferry Nuclear Plant is located in the Fine Arts Building at the J.C. Calhoun Jr. College which is south of Athens, Alabama on U.S. Highway 31.

7.0 NOTIFICATION

7.1 The Operations Duty Specialist notifies the Nuclear Emergency Public Information Duty Officer whenever an event at one of the TVA Nuclear plants is classified as Notification of Unusual Event, Alert, Site Area Emergency, or General Emergency.

7.2 The Nuclear Emergency Public Information Duty Officer will notify the appropriate Site Communications Consultant, the Senior Manager, Business Communications, and TVA News Bureau.

8.0 ACTIVATION AND COORDINATION

8.1 The NEPIT will provide personnel who have met their fitness-for-duty requirements and whose training is current to staff the CECC at an Alert or higher emergency classification.

8.2 Upon notification of an Alert or higher emergency classification, the Nuclear Emergency Public Information Duty Officer will notify the CECC Information Manager.

8.3 In close coordination with the CECC Director, the Senior Manager, Business Communications, will determine, based on news media and public interest, and the severity of the incident if and when the JIC should be activated. This decision will be coordinated with the State Emergency Management Agency.

8.4 The Senior Manager, Business Communications, will notify the JIC Director of the decision to activate the JIC.

* Revision

8.5 The JIC Director will implement JIC activation by contacting the JIC Activation Manager and the key JIC staff members in accordance to Appendix A.

9.0 CECC STAFFING RESPONSIBILITIES

9.1 The CECC Public Information Manager will coordinate the overall public information response to an emergency when the CECC is operational and will keep the CECC Director and staff informed of related public information activities.

9.2 The Writer prepares news statements on the declared emergency.

9.3 Technical Advisors will be provided to assist the CECC Public Information Manager and staff in understanding technical information and plant conditions and will assist in the coordination of information with the TVA Spokesperson and JIC technical advisors.

9.4 The Liaison coordinates information with the appropriate Site Communications Consultant and with State and Federal agencies until the JIC is operational.

9.5 The Liaison coordinates information with employee communications.

9.6 The CECC Clerical staff is responsible for clerical support to the CECC Public Information work area.

10.0 JIC SETUP, STAFFING AND ACTIVATION RESPONSIBILITIES

10.1 JIC Director is responsible for implementing JIC activation, declaring the TVA part of the JIC operational, and managing the overall operation of the JIC and all TVA public information activities near the site after JIC activation. The JIC Director will coordinate the decision to deactivate the JIC with the Senior Manager, Business Communications, the CECC Director, and offsite agencies.

10.2 TVA Chief Spokesperson, designated by the CECC Director, represents TVA at news conferences and JIC coordination meetings during declared nuclear emergencies.

10.3 Technical Advisors will be provided to the JIC to assist the TVA Chief Spokesperson in obtaining and understanding plant conditions and conduct informal technical briefings at the JIC.

10.4 The JIC Information Manager directs the activities of the media, public information, broadcast, and media monitoring teams; and coordinates the exchange of information with Federal, State, and local public information officers in the JIC and with the CECC.

10.5 Representatives from the WTCI-TV45 JIC Audio-visual team will be responsible for setting up and operating broadcast equipment. They will store, transport and set up table skirts for both the Calhoun College and the Chattanooga Office Complex stages. They will be responsible for videotaping news briefings, and for assisting news media with broadcast-related requests.

10.6 Public Information Representatives are responsible for communicating with members of the public requesting information on the emergency and coordinating information with State representatives.

10.7 Media Representatives assist the news media at the JIC and those contacting the JIC for information.

10.8 Personnel assigned to the Media Monitoring team will monitor media broadcasts for information on a declared emergency and will report rumors and misinformation to the JIC Information Manager.

10.9 The JIC Graphic Artist provides graphics for use in news briefings.

10.10 JIC Clerical personnel are responsible for providing support to the JIC staff.

10.11 The JIC Activation Manager will organize the Setup Team, ensure leased or otherwise available copy machines are obtained, transport designated equipment to the JIC, and will be responsible for the physical setup of the JIC using Appendix B or C (which describes the layout of the JIC to be activated). These layout drawings will be used to position the telephones, fax machines, copy machines, personal computers, video monitors, tables and chairs within the rooms. The Activation Manager or his designee shall be responsible for physical adjustment within the JIC should it be determined necessary during operations. All electronic equipment will be functionally tested upon setup.

The Setup Team is responsible for the correction of equipment problems during setup and JIC operations, should that be necessary. The Team will also provide any additional supplies, equipment or materials needed for operations either from TVA or commercial resources.

Activation of the JIC is neither as automatic nor as time sensitive as the CECC since it is based on a judgment of media interest and plant conditions by the Senior Manager, Business Communications. With staff members coming from various areas, time is available to procure needed supplies, equipment, or materials from the considerable resources of TVA or from commercial sources. Therefore, it is not the planning intent to maintain every possible needed item in storage. Supplies that deteriorate with time will be stored at minimum levels and supplemented locally in the event of JIC activation.

10.11.1 Much of the equipment for setup of the SQN/WBN JIC is located in the Missionary Ridge Place building of the Chattanooga Office Complex in a basement storage cage along the east wall of the Mechanical/Electrical Room 7 (MER-7). Keys to this storage are located with the Chattanooga Office Complex Facilities JIC Activation Manager, and the Corporate Emergency Preparedness State and Local Program Office. Facilities or Security personnel can direct personnel unfamiliar with this location. Personal computer(s) and printer(s) for the SQN/WBN JIC will be supplied from the Emergency Preparedness office/storage on LP6 or from other TVA computer sources
* as needed. Set up of the computers will be provided by Information Services.

10.11.2 Some materials and equipment for setup of the BFN JIC at Calhoun Community College is located in a storeroom behind the audio booth of the Barnwood Studio in the Fine Arts Building. Keys to this storage is located with the Activation Manager, Site Communications consultant and EP State and Local Program Staff. Mounted charts, graphics and maps are located in this location. The majority of the supplies and equipment such as fax machines, telephones, back up PC system, and media monitoring devices will be stored on the BFN site in the Equipment Storage room for JIC which is located at the BFN Facilities Complex. Keys to this storage are located with the BFN
* Facilities Managers Office, the BFN Emergency Preparedness Office and the CG&VR Site Office. The necessary JIC equipment stored at this location will be transported to the JIC by the Activation Manager's team. Additional commercial sources will be used as needed.

10.11.3 A personal computer/printer for the BFN JIC will be maintained in a state of readiness at the IS office located in the BFN Training Center by the BFN IS Manager or representative, who will also set up and test the personal computer equipment as part of the JIC activation.

10.11.4 Media work room equipment for the BFN JIC will be stored in the BFN onsite equipment storage room. Work room equipment for the SQN/WBN JIC will be stored in the basement storage cage along the east wall of the Mechanical/Electrical Room 7 (MER-7) and the Emergency Preparedness office/storage on the 6th floor, Lookout Place.

10.11.5 If the BFN JIC is activated, the BFN JIC Activation manager and/or team is responsible for the transportation of the fax machines, telephones, media monitoring equipment, PC systems, copiers, and other stored JIC equipment and materials to the JIC at Calhoun Community College. Audio/visual equipment and Stage Table skirt is transported by WTCI-TV45. The following equipment and software:

- Briefcase with software, manual and projector items (JIC)
- Laptop computer for Spokesperson Technical Advisor (JIC)
- Laptop computer for Graphic use (JIC)
- Projector (JIC)
- Laptop computer for State Technical Advisor (SRMAC)

from the EP office/storage utilized for JIC graphic displays is picked up at the EP office/storage
* and transported by the Chattanooga CG&VR personnel to the JIC. They will also return it to the EP office/storage when the JIC is deactivated.

If the SQN/WBN JIC is activated, the COC Facilities JIC Activation manager and/or team is responsible for the transfer of the fax machines, telephones, media monitoring equipment, copiers, and other stored JIC equipment and materials to the JIC in the COC. Audio/visual equipment is transported by WTCI-TV45. Equipment and software utilized from the Emergency Preparedness office/storage for the JIC graphic displays is transported to the JIC and set up by Nuclear Computer Staff personnel.

* Revision

11.0 SHIFT CHANGES

* 11.1 All personnel assigned to the TVA NPG emergency facilities are responsible for signing in, notifying their supervisors, receiving status briefings and assignments, and logging in the time that their positions are operational.

* 11.2 All personnel departing TVA NPG emergency facilities are responsible for briefing their replacements on emergency status and tasks, turning in logs, notifying their supervisors prior to leaving the facility, and verifying the time they are to report for the next shift.

12.0 DEACTIVATION OF JIC

12.1 The Senior Manager, Business Communications, will determine, based on news media and public interest, when the JIC should be deactivated. This decision will be closely coordinated with the CECC Director and the State Emergency Management Agency.

12.2 All personnel are responsible for ensuring that equipment and work areas are returned to non-emergency status, for turning in emergency logs, and notifying supervisor when work areas are deactivated.

* 12.3 CG&VR is responsible for ensuring that office supplies are restocked in storage boxes and that contents of each box are ready for future use. Dated material, such as calendars and maps, will be removed if found in the storage boxes.

12.4 The JIC Activation Manager will oversee the deactivation of the JIC, to include the disconnection of the telephones, fax machines, computers, printers and other equipment transported from the site and storage rooms. All equipment and office supplies in storage boxes will be returned to its designated storage place by the involved Setup Teams, or designated group/agency.

APPENDICES

Appendix A - Nuclear Emergency Public Information Call Tree

Appendix B - JIC Layout for Sequoyah and Watts Bar

Appendix C - JIC Layout for Browns Ferry

Appendix D - Fitness-for-Duty Program Administration

* Revision

APPENDIX A
Page 1 of 3

NUCLEAR EMERGENCY PUBLIC INFORMATION CALL TREE

NOTIFICATION OF UNUSUAL EVENT

Operations Duty Specialist . . . . . notifies
- Nuclear Emergency Public Information Duty Officer

Nuclear Emergency Public Information Duty Officer . . . . . notifies
- Appropriate Site Communications Consultant
- Senior Manager, Business Communications
- TVA News Bureau (Knoxville)

ALERT, SITE AREA EMERGENCY, GENERAL EMERGENCY

Operations Duty Specialist . . . . . notifies
- Nuclear Emergency Public Information Duty Officer

Nuclear Emergency Public Information Duty Officer . . . . . notifies
- Appropriate Site Communications Consultant
- CECC Information Manager to be selected from the staffing list in the Radiological Emergency Notification Directory to begin activating the CECC staff.
- Senior Manager, Business Communications
- TVA News Bureau (Knoxville)

CECC Information Manager . . . . . notifies
- Writer
- Liaison

APPENDIX A
Page 2 of 3

NOTE: The Senior Manager, Business Communications or designee, shall make the decision to activate the Joint Information Center based on the conditions at the plant and the level of media interest.

The decision to activate the JIC shall be coordinated with the CECC Director (if the facility is activated) and the appropriate State Emergency Management Agency.

	CECC Director	751-1614 or 751-1680
	Tennessee Emergency Management Agency	615-741-0001 or 1-800-262-3300
*	Alabama Emergency Management Agency	205-280-2312 (Primary)
*		800-843-0699 (Alt)

Following decision for activation of the JIC, the Senior Manager, Business Communications, shall notify the JIC Director (to be selected from staffing list in the Radiological Emergency Notification Directory) to begin activation and staffing of the center.

* Revision

APPENDIX A
Page 3 of 3
NUCLEAR EMERGENCY PUBLIC INFORMATION CALL TREE

WHEN NOTIFIED TO ACTIVATE THE JIC

JIC Director . . . . . notifies

- Appropriate JIC Activation Manager, as identified in the Radiological Emergency Notification Directory.
- JIC Information Manager
- CECC Public Information Manager to obtain JIC Technical Advisors and TVA Spokesperson
- Media Representatives
- JIC Graphic Artist

JIC Activation Manager . . . . . notifies

- TVA Police, Muscle Shoals (BFN) or TVA Police, Chatt. (SQN/WBN)
- Receptionist from TVAP staff (SQN/WBN)
- Telecommunications
- BFN IS Manager
- For BFN, Contact Calhoun College (256) 306-2550 or 306-2701 during normal hours (256) 306-2574 or 2575 after hours, weekends and holidays.

JIC Information Manager . . . . . notifies

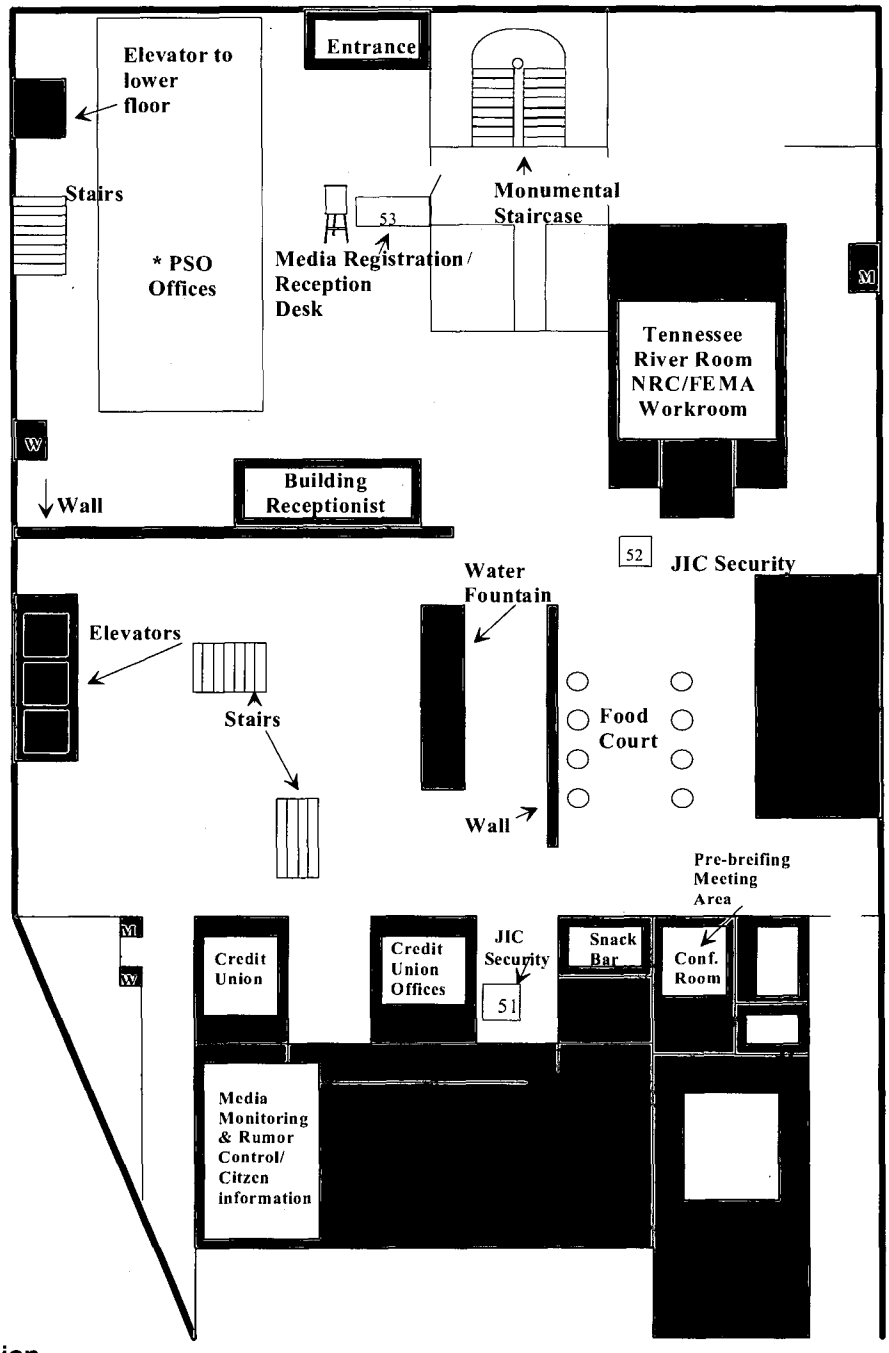
- JIC Lead Clerical
- Media Monitors
- JIC Public Information Representatives
- JIC Audio-Visual Representative of WTCI-TV 45 in Chattanooga, as identified in the Radiological Emergency Notification Directory

JIC Lead Clerical . . . . . notifies

- JIC Clerical Support (including receptionist for BFN)

APPENDIX B
Page 1 of 5

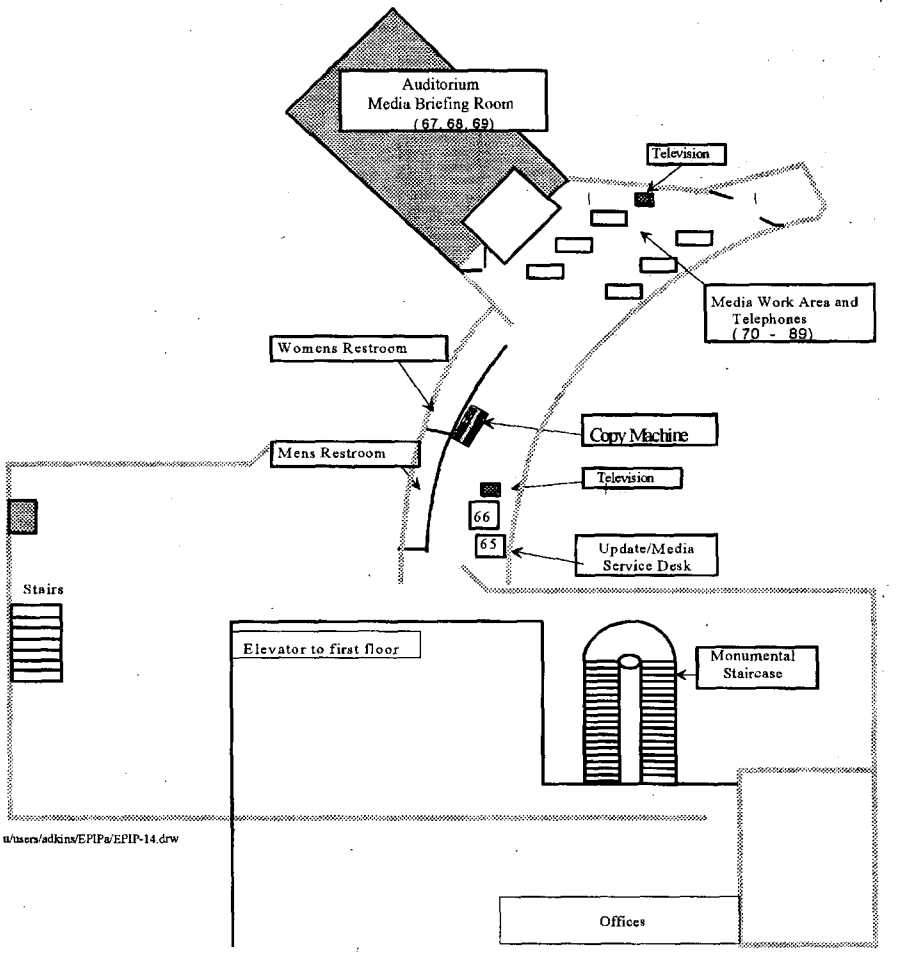
Sequoyah/Watts Bar JIC
Chattanooga Office Complex
First Floor



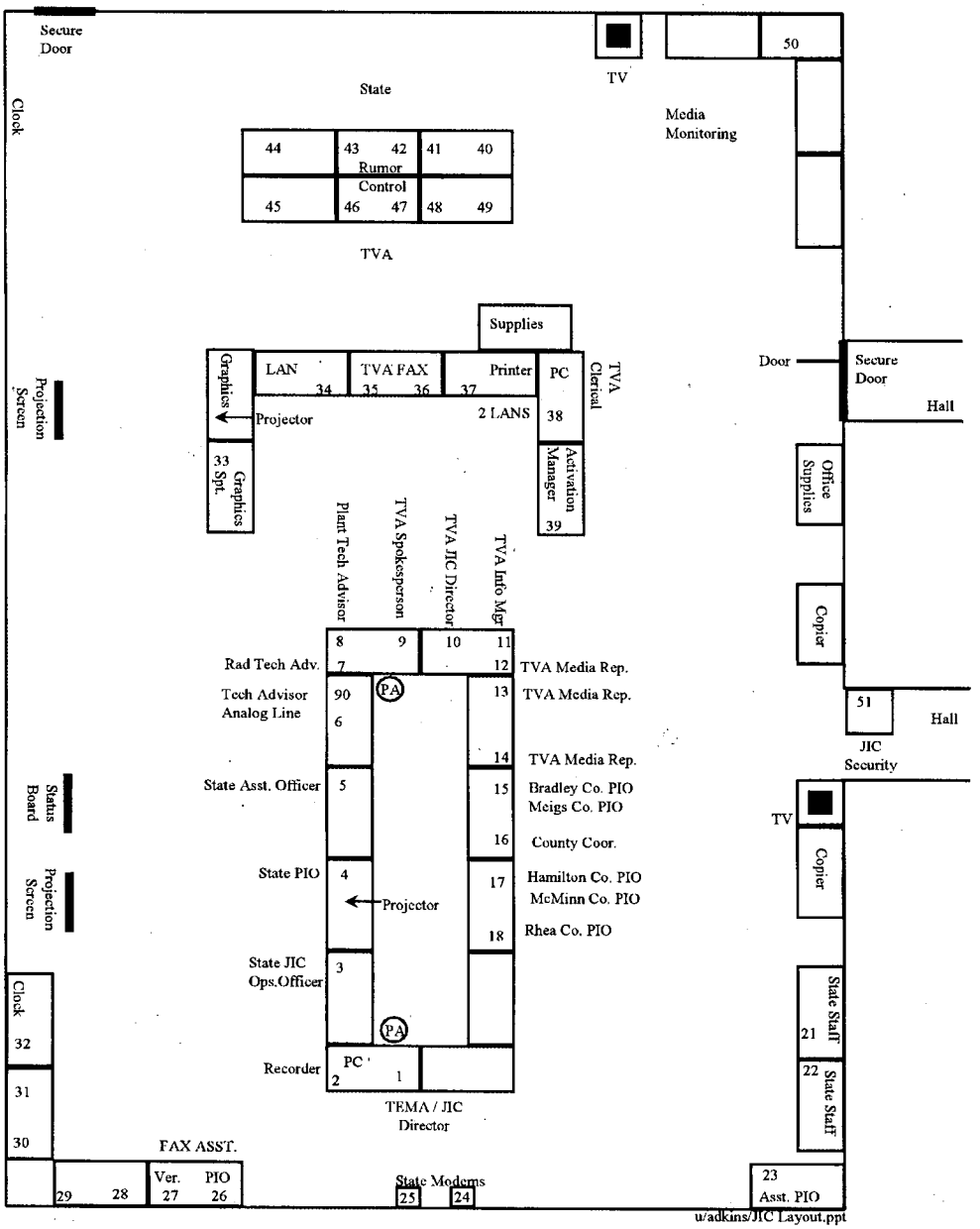
* Revision

APPENDIX B
Page 2 of 5

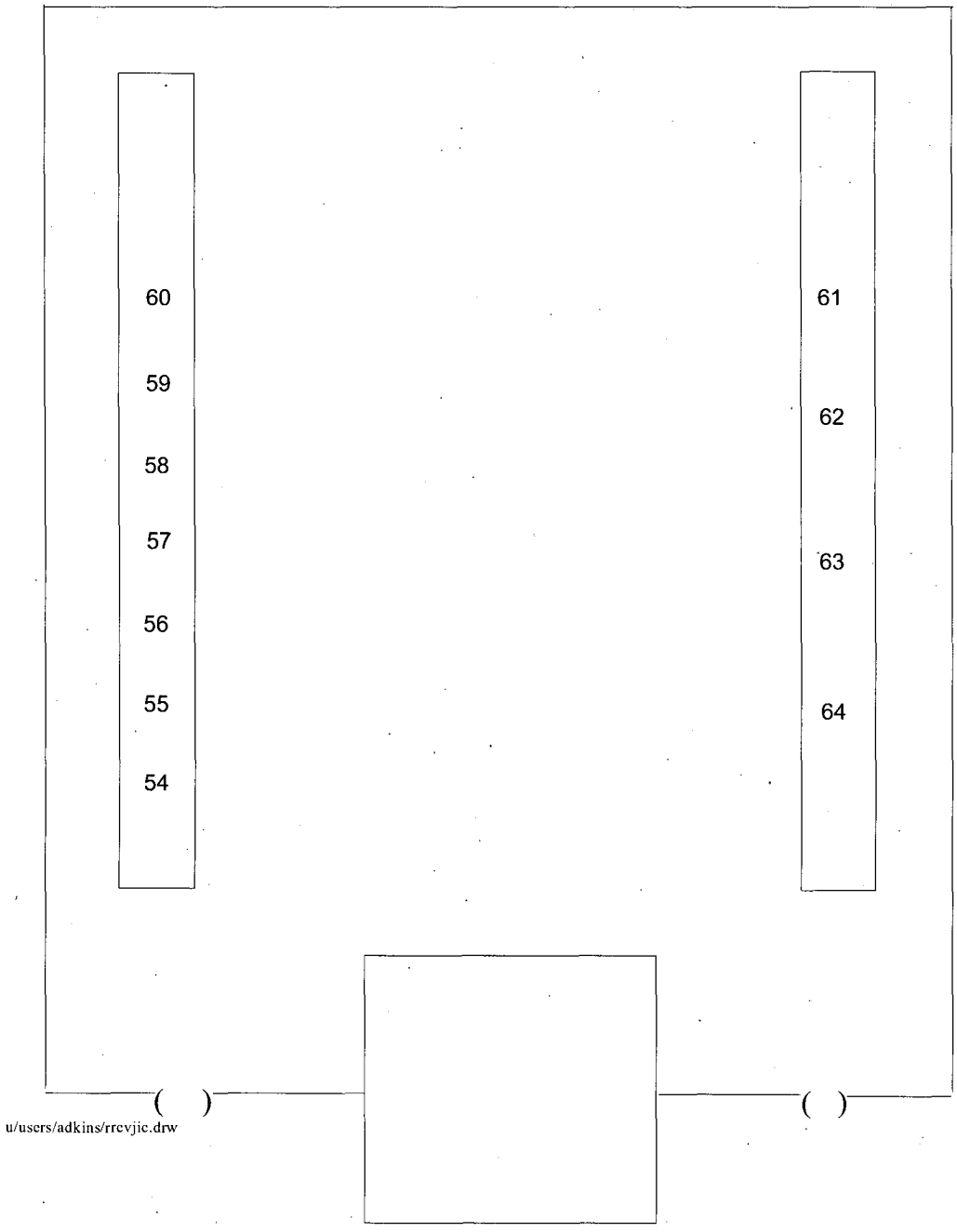
Sequoyah/Watts Bar Joint Information Center
Chattanooga Office Complex
Lower Level



APPENDIX B
Page 3 of 5
TEMA/TVA Work Area & Citizens Information/Rumor Control and Media Monitoring



APPENDIX B
Page 4 of 5
NRC/FEMA Work Areas in Tennessee River Room



APPENDIX B
Page 5 of 5
JIC TELEPHONE LIST

Area Code for all numbers is (423)

TEMA\TVA WORK ROOM
1. 751-1579, TEMA JIC Director
2. 751-1585, Recorder
3. 751-1583, TEMA JIC Ops Officer
4. 751-1586, State PIO
5. 751-1584, State Assist. Officer
6. 751-1557, Spare
7. 751-1550, TVA Rad. Tech. Adv.
8. 751-1549, TVA Plant Tech Adv.
9. 751-1548, TVA Spokesperson
10. 751-1551, TVA JIC Director
11. 751-1555, TVA Information Mgr.
12. 751-1556, TVA Rep. Media
13. 751-1558, TVA Media Rep.
14. 751-1560, TVA Media Rep.
15. 751-1582, Bradley Co. PIO
    Meigs Co. PIO
16. 751-1581, County Coordinator
17. 751-1580, Hamilton Co. PIO
    McMinn Co. PIO
18. 751-1596, Rhea Co. PIO
19. 634-3174, Conference Bridge
20. 634-3151, TEMA Ring down
21. 751-1591, State Rad. Health PIO
22. 751-1590, State Communication
23. 751-1589, State Assist. PIO
90. 751-1603, Tech Advisor Analog Line
24. 634-3163, TEMA Modem
25. 634-3164, TEMA Modem
26. 751-1588, State Assist. PIO
27. 751-1595, State Fax Verify
28. 751-1594, State Fax
29. 751-1593, State Fax
30. 751-1592, State Fax
31. 751-1524, State Fax
32. 751-1523, State Fax
33. 751-1587, Graphic Support
34. 751-1552, Spare
35. 751-1567, TVA Fax
36. 751-1566, TVA Fax
37. 751-1553, TVA PC/Printer Op.
38. 751-1554, TVA Clerical
39. 751-1562, Activation Manager

CITIZENS INFORMATION CENTER/
RUMOR CONTROL
40. 751-1599, TEMA
41. 751-1546, TEMA
42. 751-1545, TEMA
43. 751-1544, TEMA
44. 751-1547, TEMA
45. 751-1542, TVA
46. 751-1543, TVA
47. 751-1541, TVA
48. 751-1597, TVA
49. 751-1598, TVA

MEDIA MONITORING
50. 751-1568, Media Monitors

JIC SECURITY
51. 751-1569, Primary Security/Staff register
52. 751-1559, Security

MEDIA REGISTRATION/RECEPTION DESK
53. 751-1564

NRC/FEMA WORK AREA
54. 751-1748, Analog line
55. 751-1540, NRC
56. 751-1575, NRC
57. 751-1574, NRC
58. 751-1573, NRC
59. 751-1572, NRC
60. 751-1571, NRC
61. 751-1576, FEMA
62. 751-1615, FEMA
63. 751-1669, FEMA
64. 751-1678, FEMA

UPDATE/MEDIA SERVICE DESK
65. 751-1578
66. 751-1577

AUDITORIUM MEDIA BRIEFING
67. 751-3612, (Rear)
68. 751-8616, Backstage
69. 751-2376, Backstage

MEDIA WORK AREA
70. 751-1480
71. 751-1481
72. 751-1482
73. 751-1483
74. 751-1484
75. 751-1485
76. 751-1486
77. 751-1487
78. 751-1488
79. 751-1489
80. 751-1490
81. 751-1491
82. 751-1492
83. 751-1493
84. 751-1494
85. 751-1495
86. 751-1496
87. 751-1497
88. 751-1498
89. 751-1499

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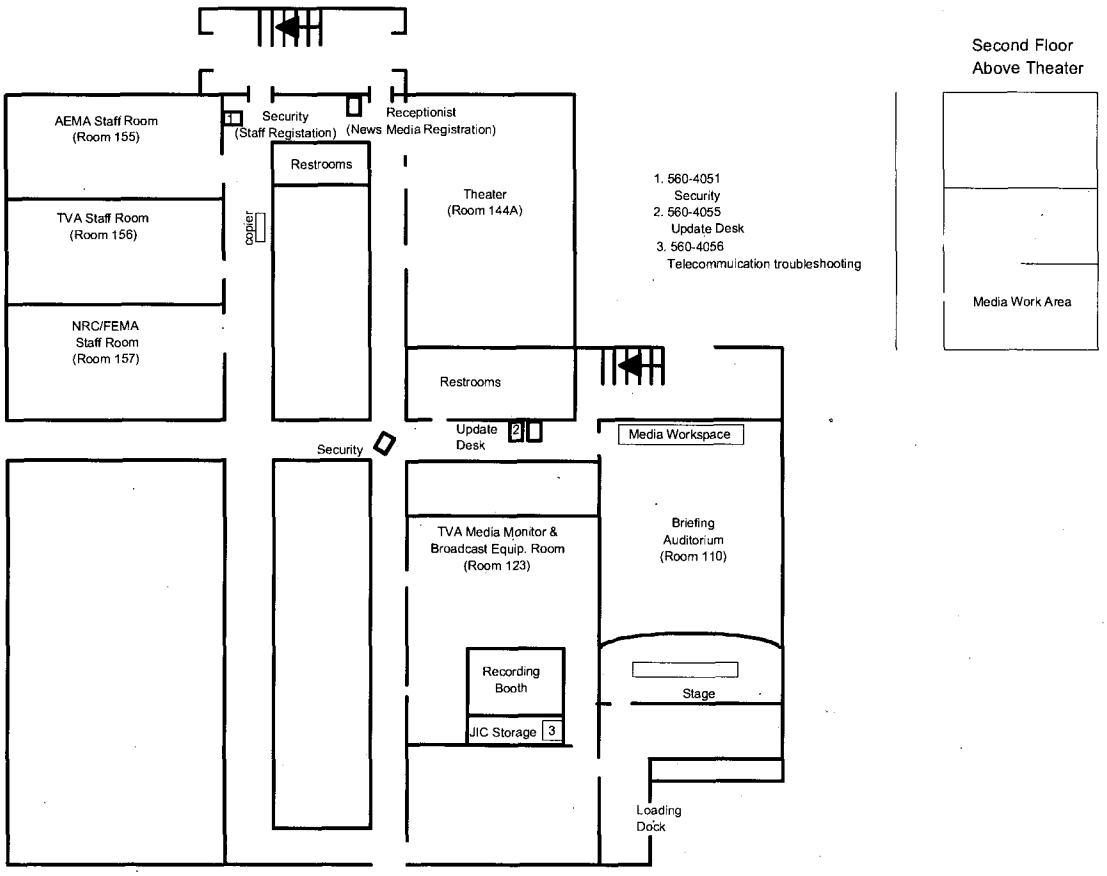
Browns Ferry Joint Information Center

J.C. Calhoun College
Decatur, Alabama
Fine Arts Building



Note: All telephone area codes are 256

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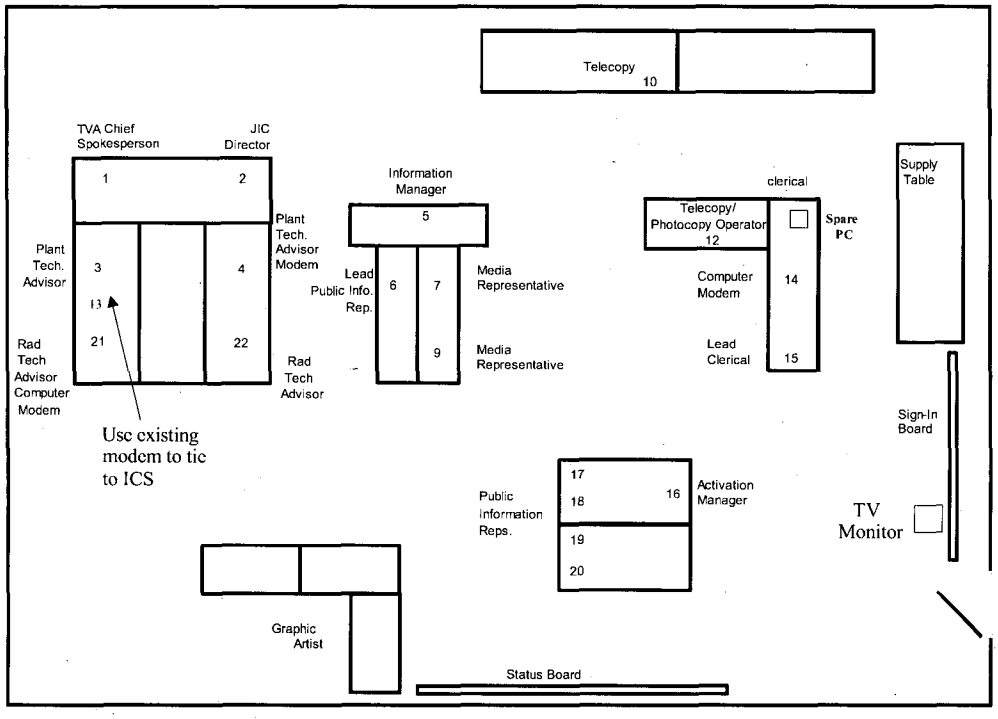
Browns Ferry
Joint Information Center

TVA Staff Room



1. 560-4033 Spokesperson
2. 560-4032 Director
3. 560-4036 Plant Tech. Advisor
4. 560-4037 Plant Tech Adv. Modem
5. 560-4039 Info Manager
6. 5604042 Spare
7. 560-4040 Media Rep
8. Used elsewhere (AEMA)
9. 560-4041 Media Rep
10. 560-4049 Telecopy
11. Used elsewhere (AEMA)
12. 560-4048 Telecopy Operator
13. 560-4038 Tech Adv dataline
14. 560-4057 Computer Modem
15. 560-4030 Lead Clerical
16. 560-4047 Activation Mgr.
17. 560-4045
18. 560-4044
19. 560-4043
20. 5604046

Public Info Reps.

21. 560-4035 Rad Tech Computer Modem
22. 560-4034 Rad Tech Advisor

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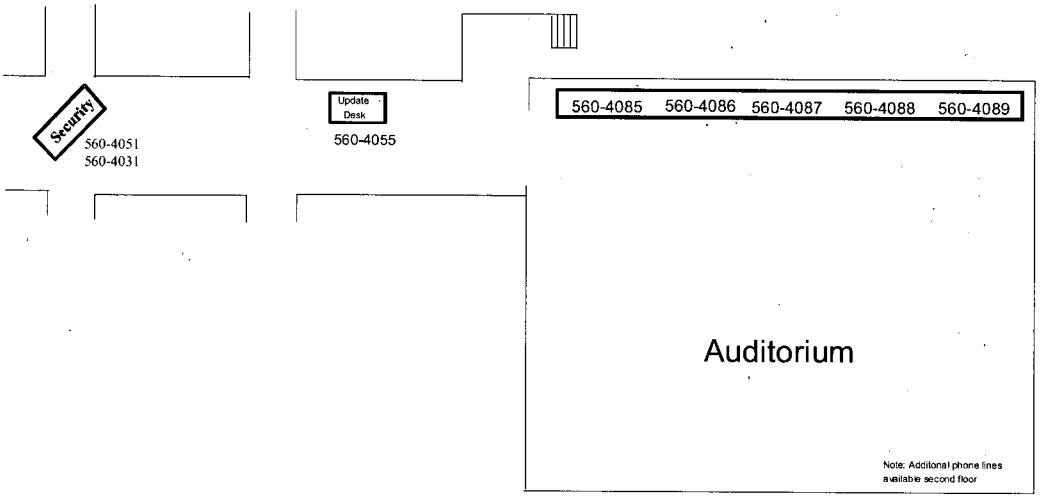
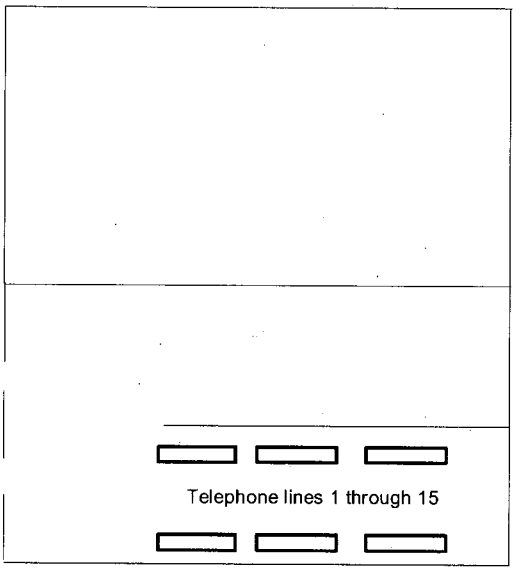
Browns Ferry
Joint Information Center

Media Work Space - First Floor



Media Work Space - Second Floor
(Above Theater)



1. 560-4090
2. 560-4091
3. 560-4092
4. 560-4093
5. 560-4094
6. 560-4095
7. 560-4096
8. 560-4097
9. 560-4098
10. 560-4099
11. 560-4100
12. 560-4101
13. 560-4102
14. 560-4103
15. 560-4104

RevIP14 DRW

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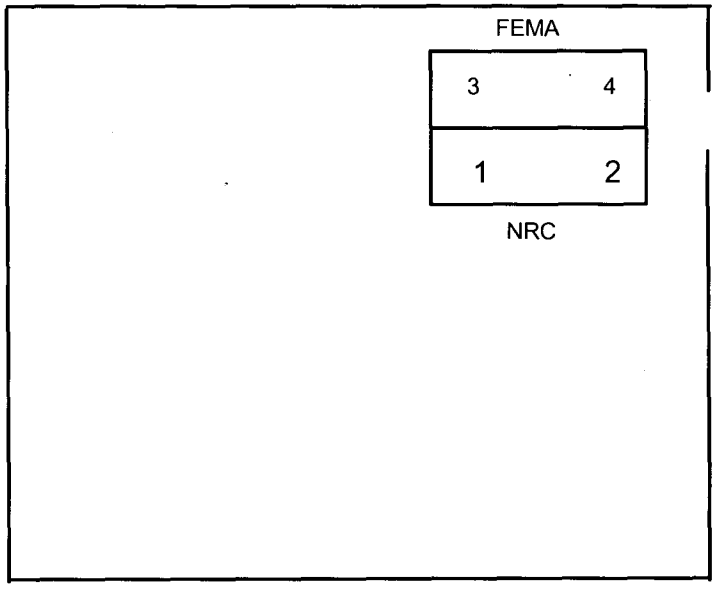
Browns Ferry
Joint Information Center

NRC/FEMA Staff Room



1. 560-4082
2. 560-4081
3. 560-4083
4. 560-4084

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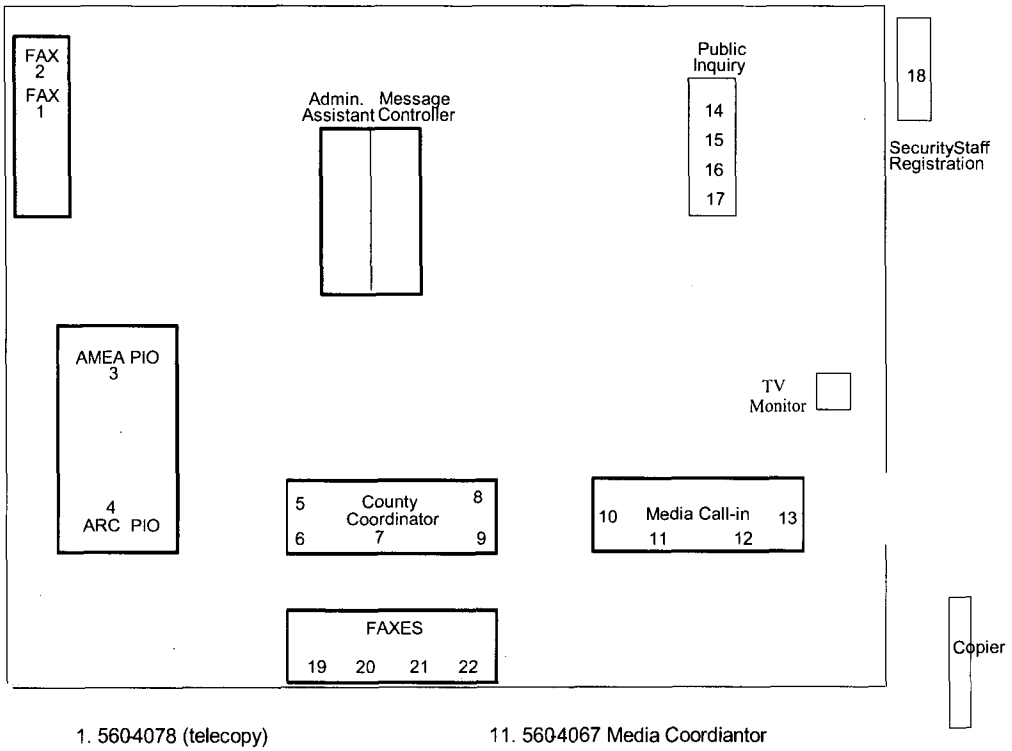
Browns Ferry
Joint Information Center

AEMA Staff Room



1. 5604078 (telecopy)
2. 5604079 (telecopy)
3. 5604060 AEMA PIO
4. 5604061 ARC PIO
5. 5604066 Lauderdale Co. Coordinator
6. 5604064 Limestone Co. Coordinator
7. 5604065 Lawrence Co. Coordinator
8. 5604062 Madison Co. Coordinator
9. 5604063 Morgan Co. Coordinator
10. 5604070 Media Coordinator.
11. 5604067 Media Coordiantor
12. 5604068 Media Coordinator
13. 5604069 Media Coordiantor
14. 5604074 Public Inquiry
15. 5604071 Public Inquiry
16. 5604072 Public Inquiry
17. 5604073 Public Inquiry
18. 5604051 Security/Staff Registration
19. 5604075 (Telecopy)
20. 5604076 (Telecopy)
21. 5604077 (Telecopy)
22. 5604080 (Telecopy)

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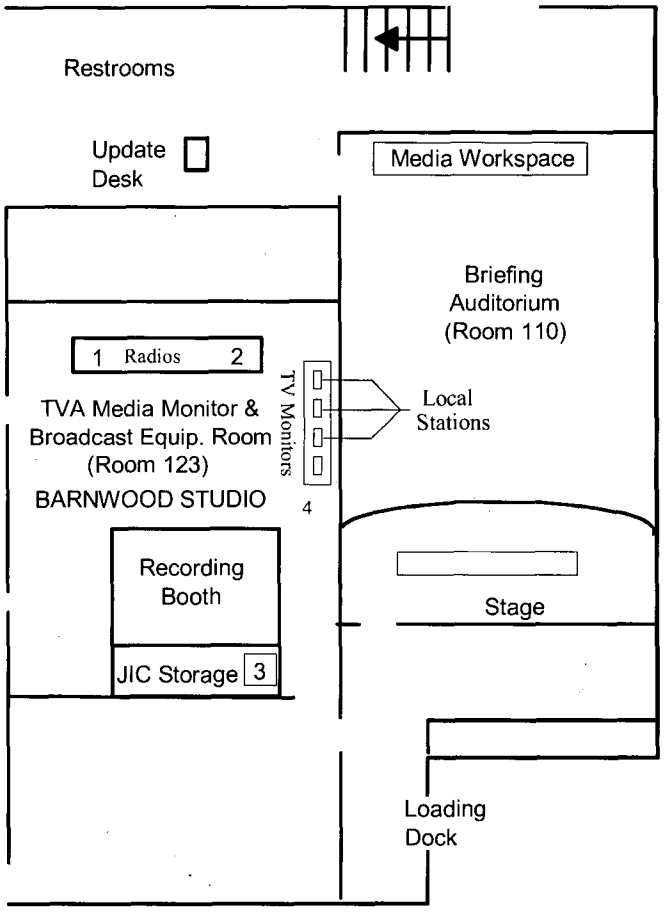
BROWNS FERRY
JOINT INFORMATION CENTER
TVA MEDIA MONITORING AND BROADCAST SPACE



1. 560-4053 Media Monitoring/Broadcast Equipment
2. 560-4052 Media Monitoring/Broadcast Equipment
3. 560-4056 Telecommunication Troubleshooting
4. 560-4054 Auditorium Broadcast Room

APPENDIX D

FITNESS-FOR-DUTY
PROGRAM ADMINISTRATION

TVA NUCLEAR POWER
CALL-IN SHEET

Person Calling: _____ Date: _____

Name	Time Called	Time Needed to Report	Alcohol 5 Hrs. Prior to Report (Y/N)	Fit for Duty (Y/N)	Duty Official Comments

Attachment 13.03-25A
TVA letter dated September 22, 2008
RAI Responses

Attachment 13.03-25A

(14 pages including cover sheet)

TECHNICAL SUPPORT CENTER DESIGN DESCRIPTION DOCUMENT

TECHNICAL SUPPORT CENTER

DESIGN DESCRIPTION DOCUMENT

BELLEFONTE UNITS 3 AND 4

Table of Contents i
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8.0 TSC Communications 4
9.0 TSC Electrical 5
10.0 TSC Lighting 6
11.0 TSC Instrumentation and Control 6
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15.0 TSC Records 9
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Bellefonte Nuclear Plant, Units 3 & 4
Technical Support Center
Design Description Document

Introduction

This design description document provides the key design considerations established for the Technical Support Center supporting two Westinghouse AP1000 reactor plants at one site, which is a departure from the Design Control Document as noted in the BLN FSAR Section 18.8.

The information in this document shall not be used for procurement of equipment or construction.

Bellefonte Nuclear Plant, Units 3 & 4
Technical Support Center
Design Description Document

1.0 General System Description

1.1. General Description

The Technical Support Center (TSC) is an onsite facility from which management and technical support is provided to control room (CR) personnel during emergency conditions, and is the primary onsite communications center for the plant during the emergency (Ref. 16.3.1, Section 2.1).

2.0 Functions

2.1. The functions of the TSC include the following:

- Provide plant management and technical support personnel (including the appropriate number of NRC personnel) to assist plant operations personnel located in the control room during any emergency. The Site Emergency Director (SED) and the NRC representative are located in the same general area to promote proper communications
- Relieve the reactor operators of peripheral duties and communications not directly related to reactor control
- Prevent congestion in the control room during emergencies
- Perform Central Emergency Control Center (CECC) functions until the CECC is operational
- Provide communications capabilities with the control room, other emergency response facilities (ERF), and offsite locations

(Ref. 16.3.1, Section 2.1)

2.2. The function of the TSC is to provide space, telephone communications, and administrative services for NRC personnel. (Ref. 16.2, II.C.1.c)

2.3. The TSC performs CECC functions for the Alert Emergency class and for the Site Area Emergency class and General Emergency class until the CECC is functional. (Ref. 16.3.2, Section 8.2.1.a)

3.0 TSC Availability

3.1. The TSC has an operational unavailability goal of 0.01 that is applicable when the reactor is above cold shutdown status. (Ref. 16.3.1, Section 1.5)

3.2. During startup of any unit, and during normal operation of any unit, the TSC is available for use.

3.3. In the event of an emergency, the TSC is activated in accordance with the Emergency Plan.

4.0 TSC Size, Layout and Location

4.1. The TSC is common to both AP1000 units on the site. It is designed to accommodate the required personnel to support an event on either unit.

4.2. The TSC is located in the BLN maintenance support building sited in the northwest corner of the site, just north of the BLN Unit 3, within the protected area.

4.3. The TSC provides working space, without crowding, for the personnel assigned to the TSC at the maximum level of occupancy. The working space is sized for a minimum of 25 persons. Minimum size of working space is approximately 75 ft^2 per person (Ref. 16.3.1, Section 2.4). For dose assessment purposes, the BLN TSC is limited to a maximum volume of 35,700 cubic feet. This is consistent with the volume requirements for the control room (Ref. 16.1.1, Tier 2, Table 15.6.5-2).

4.4. The TSC is equipped with the following miscellaneous equipment and materials:

- Conference table with chairs consistent with occupancy loads
- Chairs for panels and consoles associated with information display and communication equipment
- Desks, benches, and chairs consistent with occupancy loads
- Photographs, slides, and maps covering the site out to the emergency planning zone boundary.
- Toilet/lavatory facilities

4.5. The TSC shall be as close as possible to the control room, preferably located with the same building. The walking time from the TSC to the control room shall not exceed two minutes. (Ref. 16.3.1, Section 2.2)

The BLN TSC is not located in the nuclear island, but is located in the maintenance support building to provide centralized response management oversight for the site. This is a departure from the DCD as noted in BLN FSAR Section 18.8. This design description document provides the justification for the TSC location and transit time:

> Exception to NUREG-0696 criteria section 2.2 that the TSC will be within a two minute walk from the control room. (Ref. 16.3.1).
>
> Departure from the DCD designating individual TSCs for each unit and their specified location in the Control Support Area. (Ref. 16.1.1, Tier 2, Section 18.8.3.5).

The ability to retrieve all plant data and displays available in the control room coupled with sophisticated communications systems preclude the need for frequent face-to-face interchange between the TSC and control room personnel. The additional benefit of managing licensee emergency response from a single TSC is a major consideration for this departure from the DCD.

NRC Staff approval is required prior to implementing a change in this information by relocating the TSC to an independent structure. NRC Staff approval of this change will be documented via NRC approval of the COL application.

5.0 TSC Staffing

5.1. The level of staffing of the TSC may vary according to the severity of the emergency condition. The staffing for each emergency class is fully detailed in the licensee's Emergency Plan. (Ref. 16.3.1, Section 2.3)

6.0 TSC Design

6.1. Consistent with NUREG-0737, the technical support center is nonsafety-related and is not required to be available after a safe shutdown earthquake. (Ref. 16.1.1, Tier 2, Section 18.8.3.5)

6.2. The TSC is able to withstand the most adverse conditions reasonably expected during the design life of the plant including adequate capabilities for earthquakes, high winds (other than tornadoes), and floods. (Ref. 16.3.1, Section 2.5)

6.3. The equipment and facilities comprising the TSC do not perform any safety-related function. The design ensures that any fault or malfunction of the TSC equipment does not compromise any safety-related structures, systems or components.

6.4. The maintenance support building housing the TSC has a nominal grade elevation above the design basis flood level for the site. To prevent flooding of the TSC due to localized events (heavy rain, tank/system failures) the basement walls are extended above grade and the grade sloped to drain water away from the building and into site drainage ditches.

6.5. The TSC need not meet seismic Category I criteria or be qualified as an engineered safety feature (ESF). Normally, a well-engineered structure will provide an adequate capability to withstand earthquakes. Winds and floods with a 100-year-recurrence frequency are acceptable as a design basis. (Ref 16.3.1, Section 2.5)

6.6. The TSC is designed for structural loads in accordance with the International Building Code (IBC), current edition.

6.7. In the event of an accident at one unit requiring activation of the TSC, safe operation or shutdown of the other unit is not jeopardized by activation of the TSC.

6.8. Consistent with the AP1000 DCD, Section 18.2.1.3, the AP1000 human factors engineering program is applied to the Technical Support Center as appropriate.

6.9. The design of the TSC structure includes provisions to minimize unfiltered leakage. This is accomplished by cast-in-place concrete construction for wall, floors, and ceilings with joints sealed to minimize leakage. Penetrations are sealed such that the HVAC system can maintain a positive pressure within the TSC during emergency operation. For dose assessment purposes, unfiltered leakage shall be a maximum of 90 cfm consistent with the assumptions for the control room and control support area. (Ref. 16.1.1, Tier 2, Table 15.6.5-2)

7.0 TSC Habitability

7.1. TSC shielding is sufficient to ensure that the total dose to occupants does not exceed the requirements of General Design Criterion 19 and Standard Review Plan 6.4 for the duration of the accident. The TSC boundary walls, floor, and ceiling are a minimum thickness of 2'-6" solid concrete, consistent with the structural designs for the modules of the auxiliary building. (Ref. 16.1.1, Tier 2, Section 3.8.4.1.2)

7.2. The TSC is provided with respiratory protective equipment and personnel protective clothing for staff that must travel between the TSC and the control room under adverse radiological conditions, and to allow personnel to continue to function during the presence of low-level airborne radioactivity or radioactive surface contamination. (Ref. 16.3.1, Section 2.6)

7.3. Provisions are made for the safe and timely movement of personnel between the TSC and the control room under emergency conditions. There are no major security barriers between these two facilities other than access control stations for the TSC and control room. (Ref. 16.3.1, Section 2.2)

7.4. Sufficient potassium iodide is provided for use by TSC personnel (Ref. 16.3.1 Section 2.6)

7.5. A TSC radiation monitoring system provides area radiation monitors and HVAC supply radiation monitors, and is separate from the AP1000 radiation monitoring system.

7.6. The TSC is designed to limit exposure of its occupants in accordance with the Emergency Plan. This is accomplished through a combination of shielding, filtering and carbon adsorption in the HVAC system.

7.7. The TSC is provided with radiological protection and monitoring equipment necessary to assure that radiation exposure to any person working in the TSC does not exceed 5 rem whole body, or its equivalent to any part of the body, for the duration of the accident. (Ref. 16.3.2, Section 8.2.1.f)

7.8. The TSC has the same radiological habitability as the control room under accident conditions (Ref. 16.3.1, Section 2.6).

7.9. To ensure adequate radiological protection of TSC personnel, installed or portable radiation monitoring systems are available to personnel in the TSC. These systems, continuously indicate radiation dose rates and airborne radioactivity concentrations inside the TSC while it is in use during an emergency. These monitoring systems include local alarms with trip levels set to provide early warning to TSC personnel of adverse conditions that may affect the habitability of the TSC. Detectors are able to distinguish the presence or absence of radioiodines at concentrations as low as 10^{-7} microcuries/cc. (Ref. 16.3.1, Section 2.6)

8.0 TSC Communications

8.1. Communications in the TSC are provided consistent with the Emergency Plan and FSAR subsection 9.5.2.

8.2. The TSC has reliable voice communication equipment for communication with the control room, emergency operations facility, OSC, and the U.S. Nuclear Regulatory Commission (Ref. 16.1.1, Tier 1, Section 3.1, Item 2); and with the State and local operations centers (Ref. 16.2, Section II.H.1).

9.0 TSC Electrical

9.1. Sufficient alternate or backup power sources are provided to maintain continuity of TSC functions and to immediately resume data acquisition, storage, and display of TSC data if loss of the primary TSC power sources occurs. (Ref. 16.3.1, Section 2.8)

9.2. TSC power supplies need not meet safety-grade or Class 1E requirements. (Ref. 16.3.1, Section 2.8)

9.3. The TSC electrical subsystem is not a safety-related system, nor is it required for the safe shutdown of any unit.

9.4. The TSC is provided with a dedicated diesel powered backup generator. The required electrical capacity and fuel requirements will be determined during detailed design.

9.5. The TSC electrical distribution system includes the following equipment:

9.5.1. The normal maintenance support building AC power bus for non-vital TSC loads.

9.5.2. A TSC AC essential power bus with normal incoming service from the maintenance support building AC power bus and essential incoming service from the TSC diesel generator for vital TSC loads, which are supplied through motor control center breakers or starters, or through transformers for lower voltage equipment.

9.5.3. An Uninterruptible Power System (UPS) for vital 120 VAC loads.

9.5.4. Lighting and miscellaneous panel boards supplied from transformers provide non-vital and vital 120 VAC power.

9.6. The existing non-Class 1E, onsite AC electrical power system supplies the normal AC power to the TSC. In the event this source is lost, AC power for essential loads is supplied from the TSC diesel generator located adjacent to the maintenance support building housing the TSC.

9.7. The TSC is provided with reliable power and backup power sources. Lighting is powered by the normal and backup electrical supply system. An emergency battery operated lighting system is installed. Power for vital information systems is provided by reliable power sources including a battery backed uninterruptible power supply system (UPS).

9.8. An uninterruptible power supply system provides approximately two hours of backup power supply to the TSC displays should ac power become unavailable. (Ref. 16.1.1, Tier 2, Section 18.8.3.5)

9.9. The TSC electrical equipment load does not degrade the capability or reliability of any safety-related power source. Circuit transients or power supply failures and fluctuations do not cause a loss of any stored data vital to the TSC functions.

Sufficient alternate or backup power sources are provided to maintain continuity of TSC functions and to immediately resume data acquisition, storage, and display of TSC data if loss of the primary TSC power sources occurs. (Ref. 16.3.1, Section 2.8)

9.10. The TSC vital 120 VAC Uninterruptible Power System (UPS) is powered from a 125 VDC to 120 VAC inverter supplied from a 125 VDC battery. The 125 VDC battery is sized to maintain vital AC power for 2 hours in the event of a loss of normal AC power; however the TSC diesel generator automatically starts and provides power in the event of a loss of normal AC power.

9.11. Vital 120 VAC Uninterruptible Power System (UPS) provides power for computers, display monitors, communication devices and other vital loads. The 120V UPS includes a DC to 120 VAC inverter, supplied from batteries.

10.0 TSC Lighting

10.1. Power for the normal lighting system is provided from the normal source of power for the TSC.

10.2. Essential lighting is provided and is integrated into the normal lighting pattern. Power for essential lighting is provided from a TSC diesel-generator-backed source.

10.3. Self-contained, battery-operated emergency lighting is provided as backup to the normal lighting. Battery capacity provides a minimum of 3 hours of continuous operation. Power for this emergency lighting is provided from a TSC diesel-generator-backed source.

11.0 TSC Instrumentation and Control

11.1. Instrumentation is provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems. Data originates from plant data utilized by the control room.

11.2. TSC instrumentation, data system equipment, and power supplies need not meet safety grade or Class 1E requirements. (Ref. 16.3.1, Section 2.8)

11.3. The TSC is equipped with a support equipment control panel. This panel contains, as a minimum, controls for the TSC HVAC system and alarms and indication for the following:

- HVAC equipment switches, valves and damper position switches, and indicator lights
- HVAC high filter differential pressure alarms and low airflow alarms.
- Area radiation monitors and alarms.

11.4. The radiation monitoring systems includes local alarms with trip levels set to provide early warning to TSC personnel of adverse conditions that may affect the habitability of the TSC (Ref. 16.3.1, Section 2.6)

12.0 TSC Technical Data System

12.1. The TSC technical data system receives, stores, processes, and displays information from both AP1000 units, as needed to perform the TSC function. (Ref. 16.3.1, Section 2.9)

12.2. As a minimum, the set of Type A, B, C, D, and E variables as defined in IEEE 497-2002 (Ref. 16.4.2); as specified by Regulatory Guide 1.97, Revision. 4, "Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants" are available for display and printout in the TSC for both units. (Ref. 16.3.1, Section 2.9)

12.3. Plant parameters listed in DCD Tier 1, Table 2.5.4-1, Data Display and Processing System, with a "YES" in the "DISPLAY" column can be retrieved in the TSC for both units. (Ref. 16.1.1, Tier 1, Section 3.1, Item 3).

12.4. The TSC is equipped with a computer system and equipment which provides source term, meteorological data and technical data displays to enable TSC personnel to perform detailed analysis and diagnosis of abnormal plant conditions, including assessment of any significant release of radioactivity to the environment.

13.0 TSC HVAC

13.1. The primary functions of the onsite technical support center (TSC) heating, ventilation, and air-conditioning (HVAC) system are to provide normal environmental control for personnel and computer operational requirements; and to provide environmental control for habitability through filtration of potentially radioactive particulates and adsorption of iodine during emergency conditions.

13.2. The TSC HVAC system does not have a safety-related function during normal and emergency plant operations. The HVAC system is designed so that failure of the system and/or components will not prevent safe reactor shutdown nor compromise operation of any safety-related systems.

13.3. The TSC HVAC is designed to satisfy the indoor temperature and humidity conditions as required for the CSA.

- TSC Temperature: 67°F – 78°F
- TSC Humidity: 25% – 60% RH

(Ref. 16.1.1, Tier 2, Sections 9.4.1.1.2) *[In order to design to comparable levels of habitability as the AP1000 Control Room, design factors for the Control Support Area (CSA) are incorporated into the design for the TSC.]*

13.4. The TSC HVAC System is designed to control exposures to occupants of the TSC in accordance with the Emergency Plan. (Ref. 16.2, Section II.H.1)

13.5. The design of the HVAC system incorporates the capability of filtering potentially contaminated outdoor air introduced for ventilation to the building following a post-accident radiological release.

13.6. The TSC HVAC isolates the TSC from the normal outdoor air intake and provides filtered outdoor air to pressurize the TSC to a positive pressure of at

least 1/8 inch water gauge when a high gaseous radioactivity concentration is detected in the supply air duct. (Ref. 16.1.1, Tier 2, Section 9.4.1.1.2)

13.7. One train of filter units is provided for emergency conditions. This train is designed to provide a total nominal flow of 4,000 cfm to the TSC. Outside filtered air is limited to 860 cfm for dose assessment purposes. A maximum normal outside airflow of 1925 cfm is assumed for 30 seconds following initiation of the filter units in the dose assessment model. (Ref. 16.1.1, Tier 2, Table 15.6.5-2). This airflow bounds the maximum ventilation airflow of 17 cfm per person as required by ASHRAE Standard 62. (Ref. 16.4.1)

13.8. For dose assessment, each charcoal adsorber has an efficiency of at least 90% for elemental iodine and organic iodine. For particulate, the dose assessment efficiency is at least 99%. This provides consistency to the design assessment for the control room. (Ref. 16.1.1, Tier 2, Table 15.6.5-2)

13.9. The TSC HVAC system has a reliability such that the TSC has an operational unavailability of 0.01 when any of the reactors are above cold shutdown status. (Ref. 16.3.1, Section 1.5)

13.10. The TSC ventilation systems functions in a manner similar to the control room ventilation system. The TSC ventilation system need not be seismic Category I qualified, redundant, instrumented in the control room, or automatically activated to fulfill its role. The TSC ventilation system includes high-efficiency particulate air (HEPA) filters and charcoal filters (Ref. 16.3.1, Section 2.6).

13.11. Normal operation of the TSC HVAC system consists of a supply air unit that processes outdoor air and recirculated air for delivery through ducts to the conditioned spaces. The battery and toilet rooms are provided with separate exhaust fan systems. The TSC ventilation system is operated in accordance with approved procedures and is manually controlled from the TSC.

13.12. The TSC HVAC system enters an emergency mode of operation upon initiation of a manual isolation signal. The battery and toilet room fans are automatically de-energized. The outside air isolation damper to the supply unit closes. The isolation dampers in the toilet and battery room exhaust ducts also close, and the outside air damper to the filtration unit opens.

13.13. During the emergency mode of operation, all outside air passes through the preadsorber unit, then through the filtration unit mixed with return air from the building. The filtration unit is to process approximately 25 percent of the total air circulated by the supply system. A sufficient quantity of outside air is introduced to maintain the pressure 0.125-in water gauge above atmospheric pressure.

13.14. Riveted tray-type charcoal adsorber cells are not used, in order to conform to IE Bulletin 80-03 (Ref. 16.5.1).

14.0 TSC Fire Protection and Detection System

14.1. Fire protection and detection for the TSC is consistent with the BLN fire protection program.

15.0 TSC Records

15.1. The TSC has a complete and up-to-date repository of plant records and procedures at the disposal of TSC personnel to aid in their technical analysis and evaluation of emergency conditions. In particular, up-to-date as-built drawings of the plant systems are provided to diagnose sensor data, evaluate data inconsistencies, and identify and counteract faulty plant system elements. (Ref. 16.3.1, Section 2.10)

15.2. The TSC personnel have access to up-to-date records, operational specifications, and procedures. The documents maintained in the TCS include, but are not limited to:

- Plant technical specifications
- Plant operating procedures
- Emergency operating procedures
- Final Safety Analysis Reports
- System piping and ventilation diagrams and heating, ventilation, and air conditioning (HVAC) flow diagrams.
- Piping Area Drawings
- Records needed to perform the functions of the CECC when it is not operational
- Up-to-date, as-built drawings, schematics, and diagrams showing conditions of plant structures and systems down to the component level, and the In-plant locations of these systems.

In addition, copies of the above-listed documents and the following documents are available in BLN Document Control:

- Plant operating records
- Plant Review Board records and reports

(Ref. 16.3.1, Section 2.10)

The above records are updated as necessary to maintain currency and completeness. Operations at this facility are directed by the TSC Manager/Site Emergency Director when the TSC is operational.

15.3. Records viewing/reproduction equipment is available in the TSC.

16.0 References

16.1. Westinghouse Documents

16.1.1. APP-GW-GL-700, Revision. 16, "AP1000 Design Control Document"

16.2. Combined License Application Emergency Plan

16.3. NUREGS

16.3.1. NUREG-0696, "Functional Criteria For Emergency Response Facilities"

16.3.2. NUREG-0737, Supplement No. 1

16.4. Codes and Standards

16.4.1. ASHRAE Standard 62, "Ventilation for Acceptable Indoor Air Quality"

16.4.2. IEEE 497-2002, "IEEE Standard Criteria for Accident Monitoring Instrumentation for Nuclear Power generating Stations"

16.5. Others

16.5.1. IE Bulletin 80-03, "Loss of Charcoal from Type II, 2 inch, Tray Adsorber Cells"

Attachment 13.03-25B

(34pages including cover sheet)

CECC EPIP-1

CENTRAL EMERGENCY CONTROL CENTER (CECC) OPERATIONS

Tennessee Valley Authority CENTRAL EMERGENCY CONTROL CENTER EMERGENCY PLAN IMPLEMENTING PROCEDURES	Title CENTRAL EMERGENCY CONTROL CENTER (CECC) OPERATIONS	CECC EPIP-1 Page 1 of 33 REV. 47 Effective Date: 06-30-2008

QUALITY RELATED

WRITTEN BY: Thomas E. Adkins (*Signature*) REVIEWED BY: John Parshall (*Signature*) 6-25-08 (*Date*)

PLAN EFFECTIVENESS DETERMINATION PERFORMED BY: Thomas E. Adkins (*Signature*) 6-25-08 (*Date*)

CONCURRENCES

Concurrence Signature	Date
☒ **Manager, EP Program Planning and Implementation** John Parshall	6-26-08
☒ **Manager, Emergency Preparedness** J. Parshall for BKM	6-26-08

APPROVAL

APPROVED BY: Heyward R. Rogers (*Signature*) VP, Nuclear Support (*Title* *Organization*) 6/29/08 (*Date*)

REVISION LOG

Rev. No.	Date	Description of Revision
0	3/22/88	All (Formerly IP-18. Changed from IPD to EPIP)
1	11/18/88	1, Appendix A
2	4/26/89	All
3	7/13/89	Appendix A
4	10/26/89	2, Appendix A
5	5/23/90	All (formerly EPIP-5)
6	7/2/90	Appendix C, Pg. 1 (only)
7	9/14/90	Pg. 5; App. D, Pg. 3; App. G, Pg. 1; App I, Pg. 1
8	5/21/91	App. A, Pg. 1,5; App. C, Pg. 1, App. D, Pgs. 1-3; App. G, Pgs. 3-4; App. H, Pgs. 1-2; App. I, Pg. 2
9	10/17/91	App. C, Pg. 1; App. D, Pg. 2; App. G, Pg. 1.
10	05/15/92	App. E, Pg. 2 revised; new coversheet & rev. log added. All pages issued.
11	05/26/92	Page 5
12	11/25/92	App. B, Pg. 1; App. G, Page 1 of 4
13	03/08/93	App. I, Pages 1-2
14	05/17/93	2-5, App. A, Pg. 1; App. B, Pg. 1; App. D, Pgs. 1-4; App. H deleted.
15	07/19/93	Appendix D, Pgs. 1-5. All pages issued.
16	09/13/93	Appendix C, Pg. 1; Appendix G, Pg. 2. All pages issued.
17	11/30/93	Pgs. 1 & 5; App. A, Pg. 3; App. C, Pgs. 2 & 3; App. D, Pgs. 1-3; App. E deleted; App. I changed to App. H; App. J changed to App. I.
18	04/19/94	Pgs. 1-5; App. A, Pgs. 1-5; App. B; App. C, Pgs. 1-3; App. D, Pgs. 1-2; App. F; App. G, Pgs. 1-4; App. H, Pgs. 1-2; App. I
19	6/26/95	Pgs. 1 and 5; App. A, Pgs. 2 and 4; App. E; all pages issued.
20	11/01/95	Revised PAR Diagram. All pages issued.

REVISION LOG (Continued)

Rev. No.	Date	Description of Revision
21	10/30/96	Revised PAR Diagram, revise State Update Form, revise CECC Dir. Checklist, add telephone suspended rate activation/deactivation information. Put EPIP in new format. All pages issued.
22	4/7/97	Annual review, editorial changes, revise CECC Director checklist. Identify positions that can fill TVA spokesperson position. All pages issued.
23	3/6/98	Annual review, remove old appendix B and relabel app. C - H as app. B - G. On page 1 of old app. F clarify order of CECC Dir Notifications. All pages issued.
24	11/20/98	Add instruction for CECC Director to inform SED where the State has been notified of an emergency classification change. Add EAL designator to State Update Form, update Alabama telephone area code prefix. All pages issued.
25	2/22/99	Revise PAR diagram, add CECC Director duty to request federal assistance through the NRC. Annual review. All pages issued.
26	5/1/99	Revise PAR diagram. All pages issued.
27	5/20/99	Revise instructions for suspended rate telephone line activation. All pages issued.
28	7/16/99	Pages 6, 16, and 26 were revised to ensure complete PAR information is provided to the State. On page 19 an editorial correction was made. All pages issued.
29	11/15/99	Changes made to make forms easier to use (App. B, E. F and H) and for clarity. Phone numbers updated in Appendix G. Added reference to ITSC, editorial changes. All pages issued.
30	8/17/00	Annual review. Revise PAR diagram. All pages issued.
31	10/2/00	Add listing of all evaluation sectors for each plant to Appendix H. Add step to CECC Director checklist to announce classification changes to the CECC staff and to the TVA spokesperson. All pages issued.
32	11/13/00	Clarify responsibilities of the CECC Director and the State Communicator concerning transmittal of hard copy information related to classifications and PARs to the State.

REVISION LOG (Continued)

Rev. No.	Date	Description of Revision
33	2/5/01	Correct PAR diagram. All pages issued.
34	3/30/01	Annual review. Add new PAR diagram. Add CECC Director briefing instruction. Add instruction for RAM to monitor rad. EAL trigger point. Editorial changes. All pages issued.
35	9/7/01	Revise Appendix H. All pages issued.
36	6/13/02	Annual review. Add Agency Control Center information, add TPS notification, revise State Update Form, update State Communicator Checklist, revise suspended rate telephone information, revise CECC Directors PAR Form to incorporate elements from the RAD Assessment PAR Form which was combined with this form. All Pages issued.
37	3/31/03	Procedure put in new format. Annual review comments incorporated Position checklists updated. KI recommendation added to Appendix All pages issued.
38	10/28/03	Added Assistant CECC Director responsibilities, revised PAR forms, and updated State Communicator Checklist and State Update form.
39	5/21/04	Revised to indicate replacement of CECC telephone records and replacement of SQN/WBN JIC telephone service with TVA service. All pages issued.
40	9/28/04	Revised position titles to reflect TVAN Corporate reorganization.
41	2/4/05	Annual review. Add Quality Related designation to cover page. Add information to Appendix L that a key to the DCRM area is available in the ODS area key box.
42	4/18/05	Remove instruction for use of BFN JIC suspended rate telephone service because this option is no longer being used there.
43	6/10/05	Revise PAR Diagram and PAR forms to include specific sheltering recommendation for short term release.
44	10/02/06	Annual review. Titles, clarifications, and typos corrected throughout. Changed FRERP to NRP. Enhanced App. A to include actions normally taken by EDO. Added "this is a drill" to appropriate forms. Deleted Appendix N. All pages issued.
45	09/11/07	Incorporated PER 128049 CA#1, Removed references to SNE, Changed TVAN to TVA Nuclear Power Group (NPG), fixed typos, upgraded from W95, annual review, changed sequence for CECC Dir activation ckecklist, Removed PIO from minimum staffing.
46	11/6/07	Corrected typo on App J to read after event classification.

REVISION LOG (Continued)

Rev. No.	Date	Description of Revision
47	06/30/08	Add instruction for use of Safeguards Information within the CECC.

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CENTRAL EMERGENCY CONTROL CENTER (CECC) OPERATIONS

1.0 PURPOSE

This procedure is designed to direct the CECC Director and staff to ensure consistent, accurate, and timely response to the events of an accident. This procedure further serves to identify the necessary information to provide for prompt, accurate, public protective action recommendations to appropriate State authorities.

2.0 SCOPE

This procedure covers anticipated requirements of the CECC Director and staff during an emergency classification of Notification of Unusual Event (if it is decided to staff or partially staff the CECC), Alert, Site Area Emergency, or General Emergency.

3.0 STAFFING

Responsibilities for CECC staff are contained in Attachments to this procedure as well as in other CECC EPIPs. The CECC Director may also obtain assistance from other organizations within TVA. Representatives from these organizations may report to the CECC if requested by the CECC Director. Representatives and notification information are provided in the REND.

3.1 Activation and Notification

The initial notification of an event comes from the ODS via the Emergency Paging System, or by manual call out. Activation of non-duty personnel for unscheduled work shall meet FFD criteria and be documented using Appendix M.

3.2 Emergency Duty Officer (EDO)

The EDO is responsible for establishing initial operability of the CECC upon activation of the center. This position will obtain information from the ODS pertinent to the event and make this information available to key CECC positions. The EP Staff will advise the CECC Director on the REP, notification requirements and operation of the CECC. A checklist for this position is provided in Appendix A

3.3 CECC Director/Assistant CECC Director

The CECC Director is responsible for directing TVA's overall response to the emergency.

An Assistant CECC Director (who is qualified as a CECC Director) may be used to assist the CECC Director in the accomplishment of position duties. The CECC Director, at his discretion, may delegate the accomplishment of duties to the Assistant CECC Director including signature authority.

The CECC Director ensures that Federal, State, and local agencies are notified in accordance with established procedures and that they are kept fully informed of all aspects of the emergency. The Director reviews with the Plant Assessment and Radiological Assessment Managers the onsite and offsite consequences of the accident and assesses the adequacy and need for measures taken for protection of the public. The Director coordinates TVA's efforts with State and Federal agencies involved in the offsite aspects of the emergency and requests any required federal assistance through the NRC.

Checklists for the CECC Director are provided in Appendices B through G. After the appropriate level of CECC activation the CECC Director is responsible for the following:

- Approves all press releases developed in the CECC.
- Notifies the appropriate state authority of any emergency classification upgrades.
- Makes any required Protective Action Recommendations (PARs) to the appropriate state authority using Appendix I.
- Maintains control of Safeguards Information within the CECC.

3.4 Plant Assessment Manager

Plant Assessment Manager Responsibilities are contained in CECC EPIP-6.

3.5 Radiological Assessment Manager

Radiological Assessment Manager responsibilities are contained in CECC EPIP-7.

3.6 Public Information Manager

Public Information Manager responsibilities are contained in CECC EPIP-14.

3.7 State Communicator

The State Communicator shall ensure that all information required by State authorities to perform their assessment function and carry out necessary protective actions is being provided to them in a timely and accurate manner (see Appendix K). The CECC Director shall review for accuracy and approve all information being transmitted to the State in hardcopy form. (This excludes the automatic transmittal of the radiological assessment working information such as met data, dose code runs, plume plots, and field measurements sent to the State Radiological Health Assessors.) Checklists for this position are provided in Appendix J.

3.8 TVA Liaison to the State

For a classification of SITE AREA EMERGENCY OR GENERAL EMERGENCY, the CECC Director will coordinate with the REP staff representative the selection of a TVA liaison to the State Emergency Operations Center (EOC) in Tennessee or the SRMAC in Alabama. The CECC Director will authorize travel to the State facilities for the purpose of providing technical information, advice, and interpretation to State personnel. The TVA Liaison will also ensure that the State is getting all required information from the CECC.

Primary duties of the TVA Liaison to the State facilities are as follows:

- Technical explanations and clarification on plant status.
- Assist the State by keeping them informed of available TVA resources.
- Assist the State in describing/clarifying TVA's response to the emergency, understanding TVA's emergency organization, key TVA staff positions, etc.
- Maintains contact with the CECC State Communicator to ensure that all required information is being provided by the CECC.

3.9 Technical Advisors

The CECC Director will coordinate with the Plant Assessment Manager the selection of people to serve as a technical advisor to the Public Information Manager and staff and also to the State Communicator in the CECC. RADCON and/or Plant Operations advisors may also be selected to be sent to the appropriate State Emergency Operations Center. The advisors will be responsible for providing a nontechnical interpretation of the event for the CECC Public Information Staff.

If the JIC is to be staffed, the CECC Director will coordinate with the Plant Assessment and Radiological Assessment Managers the selection of radiological health and plant operations advisors to serve as technical advisors to the TVA spokesperson located there. These people will be responsible for assisting the TVA spokesperson in interpreting the approved press releases and events taking place.

3.10 Management Services Supervisor

The Management Services Supervisor oversees clerical and administrative support to the CECC. A checklist for this position is provided in Appendix L.

3.11 State Liaison (State Government Representative)

The State Liaison role in the CECC is to observe events taking place, licensee response actions, and advise the State agencies appropriately throughout the emergency. He will receive assistance as necessary from the State Communicator. The State Liaison can also coordinate State support for TVA.

3.12 Provisions for NRC

Provisions have been made to provide workspace for a contingent of NRC staff in the CECC. These provisions include the NRC's Emergency Telecommunications System. The following dedicated phones are available: Health Physics Network (HPN), Reactor Safety Counterpart Link (RSCL), Protective Measures Counterpart Link (PMCL), Management Counterpart Link (MCL), Emergency Notification System (ENS), Local Area Network (LAN). HPN and ENS extensions are provided for TVA use as required.

4.0 CECC RESPONSIBILITIES

4.1 Evaluation of Conditions

The CECC staff maintains an awareness of plant conditions to assess the impact on the environment, the site, and to provide technical and logistical support to the site.

4.2 Interface with the State

The CECC provides the State with information on the emergency classification, plant conditions, offsite radiological conditions and Protective Action Recommendations (PARs). The State provides the CECC with information concerning State activities in response to the emergency.

4.3 Protective Action Recommendations

The CECC evaluates plant and radiological conditions and develops Protective Action Recommendations to be provided to the State to assist with decision making for the protection of the health and safety of the public.

4.4 Public Information

The CECC ensures timely and accurate information is provided to the public. The CECC will coordinate efforts with offsite authorities.

4.5 Safeguards Information

The CECC ensures that proper control of Safeguards Information is maintained within the CECC. Use and discussion of Safeguards Information should be restricted to the small CECC Conference Room where access to the information can be limited to authorized personnel unless directed by the CECC Director.

4.6 Regulatory Interface

The NRC role in the CECC is to observe and advise as appropriate with licensee decisions and actions.

The CECC Director may request that the National Response Plan (NRP) be activated via the NRC.

4.7 Termination of the Emergency

The CECC Director will inform each emergency center when the SED has terminated the emergency and planning for the recovery phase has begun.

Upon termination of the emergency, the CECC Director and staff will make themselves available to the TVA, NRC, and other official event reviewers for review of the accident.

Appropriate recovery efforts shall be initiated upon termination of the emergency. The Senior Vice President, Nuclear Operations, or his designee, will direct the overall recovery efforts for response to an emergency in accordance with the general guidelines provided in the REP and CECC-EPIP-16. As judgment and events determine, additional resources outside of TVA may be required to mitigate the consequences of an emergency.

5.0 REFERENCES

Radiological Emergency Plan (REP)

6.0 ABBREVIATIONS AND DEFINITIONS

ACC - Agency Control Center
AEMA - Alabama Emergency Management Agency
CECC - Central Emergency Control Center
EDO - Emergency Duty Officer
EOC - Emergency Operations Center
FCC - Field Coordination Center
ITSC - Information Technology Service Center
JIC - Joint Information Center
NCO - Nuclear Central Office
NRC - Nuclear Regulatory Commission
NRP - National Response Plan
ODS - Operations Duty Specialist
R/H - Radiological Health
RMCC - Radiological Monitoring Control Center
SRMAC - State Radiological Monitoring and Assessment Center
TEMA - Tennessee Emergency Management Agency
TSC - Technical Support Center

APPENDIX A
(Page 1 of 2)
EMERGENCY DUTY OFFICER (EDO) AND EP STAFF CHECKLIST

	Check box when action complete	Action
1		Upon reporting to the CECC review with the ODS the status of the following items and ensure any required actions are performed: ☐ State notification of the event. ☐ CECC staffing response (review automated pager response and use REND). ☐ Event forms copies and distributed. ☐ SED informed of State notification. ☐ CECC Police have activated CECC access and are responding.
2	☐	Activate the CECC PA located in the room behind the LP 6 ODS console (3 power switches inside locked cabinet).
3	☐	Turn on the 8 video projectors.
4	☐	Ensure the State is provided updated information within one hour from the time of the initial event classification.
5	☐	Place proper EPZ maps on the walls.
6	☐	Check the telephone recorder in the computer room.
7	☐	Call Facilities at 751-3775 or the TVA Operator to have light points E16018 & E16019 in the CECC turned on during non-business hours.
8	☐	Establish contact with the CECC Director.
9	☐	Take telephones off of "night mode" on switchboard operator's console.
10	☐	Confirm TVA Police [751-3783] has activated CECC access system and has officers responding. If needed, provide them handheld radios from cabinet behind switchboard operator.
11	☐	Review the automated paging system and perform follow up calls as necessary using the REND. Note that communications support personnel may not carry TVA pagers and may need to be called out.
12	☐	For BFN events, check on status of BFN Plant Assessment Team leader.
13	☐	Test PAT Boardwriter's cordless headset (console at switchboard operator's desk).
14	☐	Set the electronic displays to the local time of the affected plant and to the current emergency classification (instructions by clerical CRT).
15	☐	Ensure the State Communicator position is filled.
16	☐	Inspect the ERDS terminal. If ERDS is not transmitting to the NRC, verify the NRC has been contacted.
17	☐	Ensure the CECC status boards are being updated.
18	☐	Assist with Management Services Duties until additional staffing arrives.
19	☐	Assist CECC staff as required.

Completed by	Name:	Date:

APPENDIX A
(Page 2 of 2)
EMERGENCY DUTY OFFICER (EDO) AND EP STAFF CHECKLIST

GENERAL OPERATIONS

1. Advises the CECC Director regarding all aspects of the REP and operation of the CECC. Confirms the CECC is set up and operating properly.
2. Assists the CECC Director in operating the CECC by evaluating, compiling, documenting, and posting data concerning the emergency situation.
3. Assists the CECC Director in ensuring that all required State notifications are made for emergency classifications and PARs.
4. Ensures the CECC Status Boards are being completed and kept current.
5. Assists CECC staff as requested.

TERMINATION

1. Inform parties previously notified.
2. Remind CECC staff to complete individual Termination checklists.
3. Assist CECC Director with transition into Recovery (refer to REP and CECC EPIP-16).
4. Assemble documentation in support of a post event review, including audio recordings and CECC card reader access logs.
5. Restock materials and complete inventory lists if required.
6. Prepare post-event documentation.

APPENDIX B
(Page 1 of 2)
CECC DIRECTOR RESPONSIBILITIES FOR CECC ACTIVATION AND OPERATION

CECC ACTIVATION

	Check box when action complete	Action
1	☐	Review initial conditions from Operation Duty Specialist (ODS) incident form. Initiating Event (NOUE, Alert, etc.) declared at: _____ Event based on EAL: _____
2	☐	Establish target time for CECC to be operational (not to exceed 1 hour from declaration of emergency.) **Target Operational Time:** _____
3	**Record Time** ----------	Establish contact with the appropriate State agency SQN & WBN - TEMA; BFN - Alabama Radiation Control
4	**Record Time** ----------	When the following positions (minimal staffing) are staffed confer with them to obtain a history of the event, verify if there has been any release of radioactivity, and verify the current condition of the plant. ☐ CECC Director ☐ Plant Assessment Manager or Plant Assessment Coordinator or PAT Member ☐ Rad Assessment Manager or Rad Assessment Coordinator ☐ Dose Assessor ☐ State Communicator **Declare** the **CECC operational and inform the following** that you are **assuming responsibilities for making PARs and Primary contact with the State and the site**. ☐ Site Emergency Director (SED) ☐ State ☐ CECC Staff (PA Announcement) ☐ ODS
5	☐	If the Agency Command Center (ACC) is activated then assign an Assistant CECC Director (from the pool of Primary or Assistant CECC Directors) as the TVA Nuclear Power Group (NPG) representative.
6	☐	Direct the ODS to inform the Senior Management Executive of the CECC activation.
7	☐	Conduct initial CECC briefing (see position notebook).
8	☐	When the event terminates refer to checklist (see EPIP-16)

Completed by	Name:	Date:

APPENDIX B
(Page 2 of 2)
CECC DIRECTOR RESPONSIBILITIES FOR CECC ACTIVATION AND OPERATION

GENERAL OPERATIONS

1. Log key events and major actions taken. Maintains accurate records of decisions made and actions started and completed.

2. Consult with SED on EALs, major site actions, and plant conditions.

3. Conduct briefings. The CECC Director should initially and periodically (approximately hourly) remind the CECC staff of the need for accuracy and consistency in the development and review of technical information, news releases, PARs, and State Update forms. The CECC staff should be reminded of the effect of various distractions (such as time restraints, noise, stress, and attention to competing tasks) can have on accuracy and efficiency. The Director should stress the need for the staff to manage distractions in a manner to prevent negative impacts on the accuracy of written, oral, and electronic communication from the CECC.

4. Coordinate with the JIC Spokesperson times of anticipated JIC briefings and provide status updates prior to the JIC briefings.

5. Ensures that Federal, State, and local agencies are notified in accordance with established procedures and that they are kept fully informed of all aspects of the emergency. Review anticipated state actions and discuss with State.

6. The CECC Director is authorized to request Federal assistance through the National Response Plan (NRP) via the NRC.

7. Commits TVA resources and provides necessary information to assist the State, Federal, and local agencies to the extent possible.

8. Coordinates TVA's efforts with State and Federal agencies involved in the offsite aspects of the emergency.

9. Should operations be expected to last for an extended period, the CECC Director originates a schedule for relief. The duties of CECC staff should only pass to individuals identified as alternates for those positions. The Management Services Supervisor may be used to perform notifications of relief personnel.

10. When possible have CECC Staff monitor TSC briefings via telephone.

11. Ensures Safeguards Information is properly maintained.

APPENDIX C
(Page 1 of 1)
EMERGENCY CLASSIFICATION UPGRADE FORM

TO: ☐ **Alabama:** (Send to both Alabama locations listed below)
Alabama Radiation Control Agency, Montgomery, AL
Alabama Radiation Control Agency, Decatur, AL (Director & TVA Liaison)

☐ **Tennessee:** TEMA, Nashville, TN (SEOC Director, TVA Liaison & Radiological Health)

1 ☐ This is a Drill ☐ This is an Actual Event - Repeat - This is an Actual Event

2. ☐ **NOUE** ☐ **ALERT** ☐ **SITE AREA EMERGENCY** ☐ **GENERAL EMERGENCY**

3. **Affected Units:** **BFN** U-1 ☐, U-2 ☐, U-3 ☐; **SQN** U-1 ☐, U-2 ☐; **WBN** U-1 ☐

4. **EAL Designator:** _____

5. **Event Declared:** Time: _____ Date: _____

6. **Protective Action Recommendation**

☐ None

☐ CECC Director's Protective Action Recommendation. (Attach EPIP-1, Appendix I)

7. **Call State and provide this information**

	Name	Time State Notified	Date
CECC Director			

8. **Please repeat the information you have received to ensure accuracy.**

9. **Fax this form to the State as soon as possible.**

NOUE

APPENDIX D
(Page 1 of 1)
CECC DIRECTOR RESPONSIBILITIES FOR NOUE
WHEN CECC IS STAFFED

	Check box when action complete	Action
1	Record Time ----------	Verify that the State or local emergency response agencies have been notified of the emergency classification. If not, provide verbal notification to the appropriate State Agency of any emergency classification within 15 minutes of its declaration by the SED. Fax Appendix C to the State as soon as possible.
2	☐	Verify that the time of the State notification has been provided to the to the SED.
3	☐	Approve State Update Form (as prepared by State Communicator).
4	☐	Coordinate with Public Information concerning activities related to the event.
5	☐	Establish staffing requirements for the CECC for response to the NOUE.
6	☐	Refer to termination and recovery checklists (see EPIP-16)

Completed by	Name:	Date:

APPENDIX E
(Page 1 of 1)
CECC DIRECTOR RESPONSIBILITIES FOR ALERT

ALERT

	Check box when action complete	Action
1	☐	Record classification change information on Appendix C, Emergency Classification Upgrade Form if CECC is staffed when the event is declared.
2	Record Time ----------	**Provide verbal notification to the appropriate State Agency of any emergency classification upgrade within 15 minutes of its declaration by the SED** Fax Appendix C to the State as soon as possible.
3	☐	Conduct CECC briefing.
4	☐	Notify the SED of the time that the State or local emergency response agencies was notified of the emergency classification upgrade.
5	☐	Approve State Update Form (as prepared by State Communicator).
6	☐	Coordinate Public Information activities. If activation of JIC is required complete steps 8 and 9 below.
7	☐	Coordinate staffing of the JIC with Public Information and State per EPIP-14.
8	☐	Identify TVA NPG spokesperson and place on standby for JIC activation. Use Appendix M to document FFD.
9	☐	Approve any CECC News Releases.
10	☐	Evaluate assigning TVA Liaison to State EOC (Coordinate with EP Staff).
11	☐	Obtain Site Accountability status: Provide the State Director with planned or actual time of accountability siren sounding. Time Accountability initiated: _____ State Notified _____ Time Accountability completed: _____ All personnel accounted for: ☐ yes ☐ no
12		Provide the State Director with an estimated time for evacuation of non-essential site personnel: Time Evacuation initiated: _____ State Notified _____ Time Evacuation completed: _____ State Notified _____
13	☐	Refer to termination and recovery checklists (see EPIP-16)

Completed by	Name:	Date:

APPENDIX F
(Page 1 of 1)
CECC DIRECTOR RESPONSIBILITIES
FOR SITE AREA EMERGENCY

SITE AREA EMERGENCY

	Check box when action complete	Action
1	☐	Record classification change information on Appendix C, Emergency Classification Upgrade Form if CECC is staffed when the event is declared.
2	Record Time ----------	**Provide verbal notification to the appropriate State Agency of any emergency classification upgrade within 15 minutes of its declaration by the SED** Fax Appendix C to the State as soon as possible.
3	☐	Notify the SED of the time that the State or local emergency response agencies was notified of the emergency classification upgrade.
4	☐	Announce classification to the CECC and inform TVA Spokesperson (if JIC staffed).
5	☐	Coordinate staffing of the JIC with Public Information and State per EPIP-14.
6	☐	Assign TVA Liaison to State EOC (Coordinate with EP Staff).
7	☐	Periodically review PARs with Plant and Rad Assessment Teams in the event of upgrading to a General Emergency (see Appendix H). Discuss any prudent protective action recommendations which may be advantageous at this time and, if deemed appropriate, transmit them to the State and local agencies.
8	☐	Approve any CECC news release.
9	☐	Assign the RAM to coordinate any radiological protective support for any TVA personnel responding to mitigate the event who must remain in the EPZ (beyond the Site Boundary) after State ordered evacuations.
10	☐	Assign TVA NPG spokesperson. Use Appendix M to document FFD.
11	☐	Obtain Site Accountability status: Provide the State Director with planned or actual time of accountability siren sounding. Time Accountability initiated: _____ State Notified _____ Time Accountability completed: _____ All personnel accounted for: ☐ yes ☐ no
12		Provide the State Director with an estimated time for evacuation of non-essential site personnel: Time Evacuation initiated: _____ State Notified _____ Time Evacuation completed: _____ State Notified _____
13	☐	Refer to termination and recovery checklists (see EPIP-16)

Completed by	Name:	Date:

APPENDIX G
(Page 1 of 2)
CECC DIRECTOR RESPONSIBILITIES
FOR GENERAL EMERGENCY

GENERAL EMERGENCY

	Check box when action complete	Action
1	☐	Record classification change information on Appendix C, Emergency Classification Upgrade Form if CECC is staffed when the event is declared.
2	☐	Review PARs with Plant and Rad Assessment teams and complete PAR Appendix I. (Appendix H provides a logic diagram to assist in development of PARs.)
3	Record Time ----------	**Provide verbal notification to the appropriate State Agency of the emergency classification upgrade and PAR within 15 minutes after its declaration by the SED.** Fax Appendixes C and I (PAR) to the State as soon as possible.
4	☐	Notify the SED of the time that the State or local emergency response agencies was notified of the emergency classification upgrade.
5	☐	Announce classification to the CECC and inform TVA Spokesperson (when JIC staffed).
6	☐	Assign the RAM to coordinate any radiological protective support for any TVA personnel responding to mitigate the event who must remain in the EPZ (beyond the Site Boundary) after State ordered evacuations.
7	☐	Approve any CECC news release.
8	☐	Coordinate staffing of the JIC with Public Information and State per EPIP-14.
9	☐	Assign TVA NPG spokesperson. Use Appendix M to document FFD.
10		Coordinate with the JIC Spokesperson times of anticipated JIC briefings and provide status updates prior to the JIC briefings. Record time of updates in log.
11	☐	Assign TVA Liaison to State EOC (Coordinate with EP Staff). Use Appendix M to document FFD.
12		Obtain Site Accountability status: Provide the State Director with planned or actual time of accountability siren sounding. Time Accountability initiated: _____ State Notified _____ Time Accountability completed: _____ All personnel accounted for: ☐ yes ☐ no
13		Provide the State Director with an estimated time for evacuation of non-essential site personnel: Time Evacuation initiated: _____ State Notified _____ Time Evacuation completed: _____ State Notified _____
14	☐	Refer to termination and recovery checklists (see EPIP-16)

Completed by	Name:	Date:

APPENDIX G
(Page 2 of 2)
CECC DIRECTOR RESPONSIBILITIES
FOR GENERAL EMERGENCY

PAR CHANGE

IF PAR IS CHANGED

	Check box when action complete	Action
1	☐	Review PARs with Plant and Rad Assessment teams and complete PAR Appendix I. (Appendix H provides a logic diagram to assist in development of PARs.)
2	Record Time ----------	**Provide verbal notification to the appropriate State Agency of PAR change within 15 minutes.** Fax Appendix I to the State as soon as possible.
3	☐	Confer with SED for site actions.
4	☐	Approve any CECC news release.
5	☐	Assign the RAM to coordinate any radiological protective support for any TVA personnel responding to mitigate the event who must remain in the EPZ (beyond the site boundary) after State ordered evacuations.

Completed by	Name:	Date:

APPENDIX H (Page 1 of 1)

PROTECTIVE ACTION RECOMMENDATIONS

Note 1: If conditions are unknown utilizing the flowchart, then answer is NO.
Note 2: A short term release is defined as "a release that does not exceed a 15 minute duration".

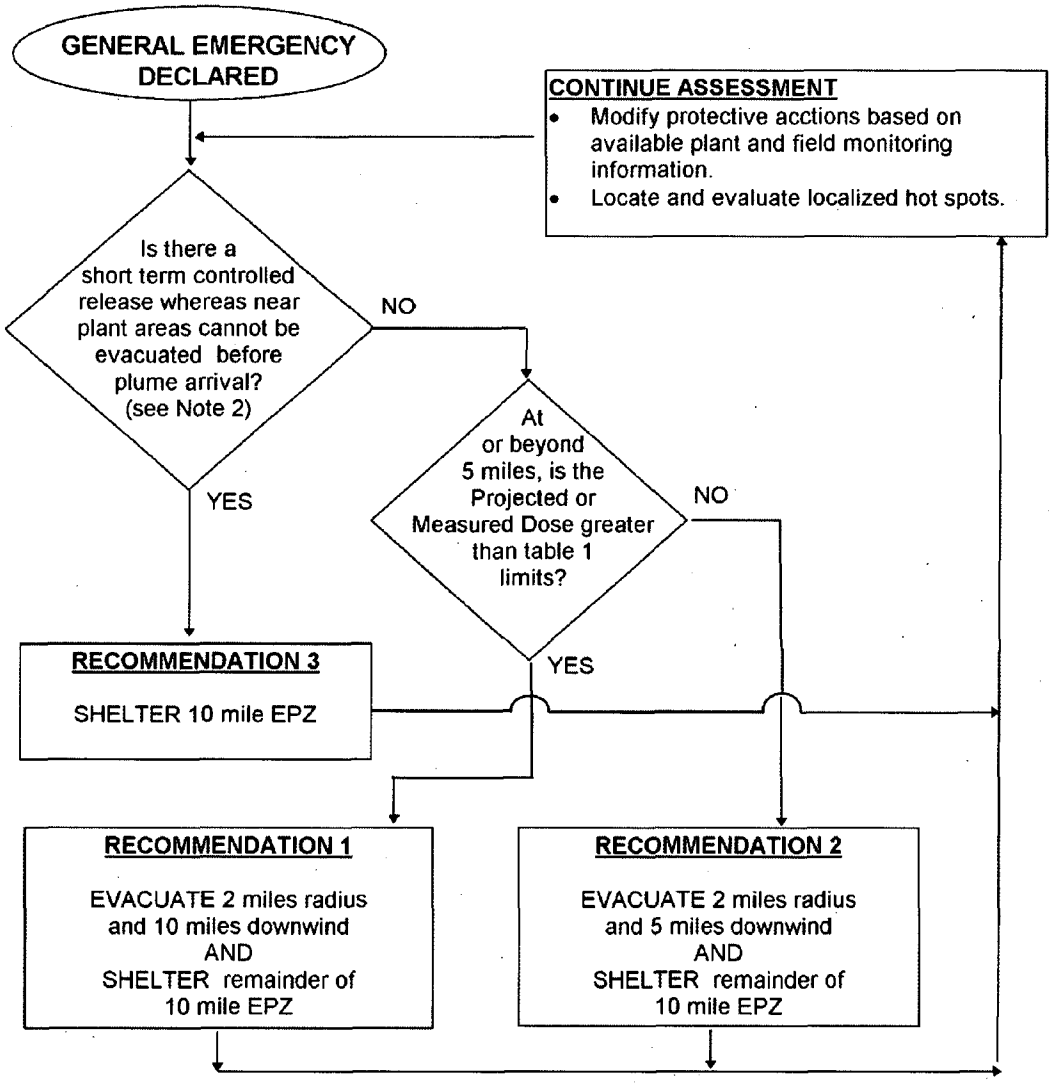

TABLE 1 Protective Action Guides (PAG)

TYPE	LIMIT
Measured	3.9 E-6 micro Ci/cc of Iodine 131 or 1 REM per hour External Dose
Projected	1 REM TEDE or 5 REM Thyroid CDE

U:PAR chart 5/17/05.W95

APPENDIX I
Page (1 of 3)
CECC Director's Protective Action Recommendation

BROWNS FERRY SECTORS

☐ This is a Drill ☐ This is an Actual Event - Repeat - This is an Actual Event

TO: **Alabama:** (Send to both Alabama locations listed below)
Alabama Radiation Control Agency, Montgomery, AL
Alabama Radiation Control Agency, Decatur, AL (Director & TVA Liaison)

Provide Protective Action Recommendation:
[Check either Recommendation 1, 2, or 3 **AND** mark wind direction.] Any sector recommended for evacuation previously shall be included in any new PAR.

Wind Direction From: _____Degrees				
☐ **Recommendation 1** ➢EVACUATE LISTED SECTORS (2 mile Radius & 10 miles downwind) ➢SHELTER all non-listed sectors. ➢Consider issuance of POTASSIUM IODIDE in accordance with State Plan.	REC 1 ↓	**WIND FROM DEGREES [Mark Proper Column and Row(s)]**	REC 2 ↓	☐ **Recommendation 2** ➢EVACUATE LISTED SECTORS (2 mile radius & 5 mile downwind) ➢SHELTER all other non-listed sectors. ➢Consider issuance of POTASSIUM IODIDE in accordance with State Plan.
A-2, B-2, F-2, G-2 **E**-5, -10, **F**-5, -10, **G**-5, -10		4 - 40		A-2, B-2, F-2, G-2 E-5, F-5, G-5
A-2, B-2, F-2, G-2 **F**-5, -10, **G**-5, -10, H-10		41- 73		A-2, B-2, F-2, G-2 F-5, G-5
A-2, B-2, F-2, G-2 **G**-5, -10, H-10, I-10		74 - 92		A-2, B-2, F-2, G-2 G-5
A-2, B-2, F-2, G-2 A-5, G-5, H-10, I-10, J-10, K-10		93 - 137		A-2, B-2, F-2, G-2 A-5, G-5
A-2, B-2, F-2, G-2 **A**-5, -10, I-10, J-10, K-10		138 - 203		A-2, B-2, F-2, G-2 A-5
A-2, B-2, F-2, G-2 **A**-5, -10, **B**-5, -10,		204 - 282		A-2, B-2, F-2, G-2 A-5, B-5
A-2, B-2, F-2, G-2 **B**-5, -10, C-10, D-10, **E**-5, -10		283 - 326		A-2, B-2, F-2, G-2 B-5, E-5
A-2, B-2, F-2, G-2 C-10, D-10, **E**-5,-10, **F**-5,-10		327 - 3		A-2, B-2, F-2, G-2 E-5, F-5

☐ **Recommendation 3**
➢SHELTER all sectors. ➢Consider issuance of POTASSIUM IODIDE in accordance with State Plan.

Other:

	Approval
Dose Assessor	
RAM	

	CECC Director Approval	Time	Date
Notification of State			

SEQUOYAH SECTORS

APPENDIX I
(Page 2 of 3)
CECC Director's Protective Action Recommendation

☐ This is a Drill ☐ This is an Actual Event - Repeat - This is an Actual Event
TO: **Tennessee:** TEMA, Nashville, TN (SEOC Director, TVA Liaison & Radiological Health)

Provide Protective Action Recommendation:
[Check either Recommendation 1, 2, or 3, **AND** mark wind direction.] Any sector recommended for evacuation previously shall be included in any new PAR.

Wind Direction From: _____ Degrees

☐ **Recommendation 1** ➢EVACUATE LISTED SECTORS (2 mile Radius and 10 miles downwind) ➢SHELTER all other non-listed sectors. ➢Consider issuance of POTASSIUM IODIDE in accordance with State Plan.	REC 1 ↓	**WIND FROM DEGREES [Mark Proper Column and Row(s)]**	REC 2 ↓	☐ **Recommendation 2** ➢EVACUATE LISTED SECTORS (2 mile radius and 5 mile downwind) ➢SHELTER all other non-listed sectors. ➢Consider issuance of POTASSIUM IODIDE in accordance with State Plan.
A-1, B-1, C-1, D-1 **C**-2, -6, -7, -8, **D**-2, -3, -5, -6		12 - 49		A-1, B-1, C-1, D-1, C-2, D-2
A-1, B-1, C-1, D-1 **D**-2, -3, -4, -5, -6		50 - 70		A-1, B-1, C-1, D-1 D-2
A-1, B-1, C-1, D-1 **A**-3, -4, **D**-2, -3, -4, -5		71 - 112		A-1, B-1, C-1, D-1 A-3, D-2
A-1, B-1, C-1, D-1 **A**-2, -3, -4, -5, -6, D-4		113 - 146		A-1, B-1, C-1, D-1 A-2, A-3
A-1, B-1, C-1, D-1 **A**-2, -3, -4, -5, -6, B-2		147 - 173		A-1, B-1, C-1, D-1, A-2, A-3, B-2
A-1, B-1, C-1, D-1 **A**-2, -5, -6, **B**-2, -3, -4		174 - 214		A-1, B-1, C-1, D-1 A-2, B-2
A-1, B-1, C-1, D-1 **B**-2, -3, -4, -5, -6, -7, -8		215 - 258		A-1, B-1, C-1, D-1 B-2, B-5
A-1, B-1, C-1, D-1 **B**-2, -3, -5, -6, -7, -8, **C**-2, -3, -4, -5, -6		259 - 331		A-1, B-1, C-1, D-1 B-2, B-5, C-2
A-1, B-1, C-1, D-1 **B**-5, **C**-2, -3, -4, -5, -6, -7, -8		332 - 11		A-1, B-1, C-1, D-1 B-5, C-2

☐ **Recommendation 3**
➢SHELTER all sectors. ➢Consider issuance of POTASSIUM IODIDE in accordance with State Plan.

Other:

	Approval
Dose Assessor	
RAM	

	CECC Director Approval	Time	Date
Notification of State			

APPENDIX I
(Page 3 of 3)
CECC Director's Protective Action Recommendation

WATTS BAR SECTORS

☐ This is a Drill ☐ This is an Actual Event - Repeat - This is an Actual Event
TO: **Tennessee:** TEMA, Nashville, TN (SEOC Director, TVA Liaison & Radiological Health)

Provide Protective Action Recommendation:
[Check either Recommendation 1, 2, or 3, **AND** mark wind direction.] Any sector recommended for evacuation previously shall be included in any new PAR.

Wind Direction From: _____ Degrees

☐ **Recommendation 1** ➢EVACUATE LISTED SECTORS (2 mile Radius and 10 miles downwind) ➢SHELTER all other non-listed sectors. ➢Consider issuance of POTASSIUM IODIDE in accordance with State Plan.	REC 1 ↓	**WIND FROM DEGREES [Mark Proper Column and Row(s)]**	REC 2 ↓	☐ **Recommendation 2** ➢EVACUATE LISTED SECTORS (2 mile radius and 5 mile downwind) ➢SHELTER all other non-listed sectors. ➢Consider issuance of POTASSIUM IODIDE in accordance with State Plan.
A-1, B-1, C-1, D-1 **C**-7, -9, **D**-2, -4, -5, -6, -7, -8, -9		26-68		A-1, B-1, C-1, D-1 C-7, **D**-2, -4, -5
A-1, B-1, C-1, D-1 **A**-3, -4, **D**-2, -3, -4, -5, -6, -7, -8, -9		69-110		A-1, B-1, C-1, D-1 A-3, **D**-2, -4, -5
A-1, B-1, C-1, D-1 **A**-2, -3, -4, -5, -6, -7, **D**-2, -3, -5, -6		111-170		A-1, B-1, C-1, D-1 **A**-2, -3, **D**-2, -5
A-1, B-1, C-1, D-1 **A**-2, -3, -5, -6, -7, **B**-2, -3, -4, -5, C-2		171-230		A-1, B-1, C-1, D-1 **A**-2, -3, **B**-2, -4, C-2
A-1, B-1, C-1, D-1 **B**-2, -3, -4, -5, **C**-2, -3		231-270		A-1, B-1, C-1, D-1 **B**-2, -4, C-2
A-1, B-1, C-1, D-1 **B**-2, -3, **C**-2, -3, -4, -5, -6, -11		271-325		A-1, B-1, C-1, D-1 B-2, **C**-2, -4, -5
A-1, B-1, C-1, D-1 **C**-2, -4, -5, -6, -7, -8, -9, -10, -11, **D**-4, -9		326-25		A-1, B-1, C-1, D-1 **C**-2, -4, -5, -7, -8, D-4

☐ **Recommendation 3**
➢SHELTER all sectors. ➢Consider issuance of POTASSIUM IODIDE in accordance with State Plan.

Other:

	Approval
Dose Assessor	
RAM	

	CECC Director Approval	Time	Date
Notification of State			

APPENDIX J
(Page 1 of 4)
STATE COMMUNICATOR CHECKLIST

CECC ACTIVATION

	Check box when action complete	Action
1	☐	Verify with the CECC Director that initial communication has been established with the appropriate State Agency (SQN & WBN - TEMA; BFN - Alabama Radiation Control, see REND).
2	☐	When CECC becomes operational Coordinate with the Switchboard Operator the completion of the staffing report and send to State.
3	☐	Verify the State is provided with updated information within one hour from the initial event classification.
4	☐	Coordinate with the CECC Director to identify the TVA Liaison to the State.

Completed by	Name:	Date:

NOUE

UNUSUAL EVENT

	Check box when action complete	Action
1	☐	Verify that the State was/is notified by the ODS or CECC Director within 15 minutes of the classification declaration.
2	☐	Refer to duties under "General Operations" (page 4 of 4).

Completed by	Name:	Date:

APPENDIX J
(Page 2 of 4)
STATE COMMUNICATOR CHECKLIST

ALERT

ALERT

	Check box when action complete	Action
1	☐	Verify that the ODS or CECC Director has notified the State within 15 minutes of the classification declaration.
2	☐	Verify Appendix C (Classification Upgrade Form) has been completed by CECC Director and has been faxed to the State.
3	☐	Notify the TVA Liaison of the change in classification and conditions (if staffed).
4	☐	Refer to duties under "General Operations" (page 4 of 4).

Completed by	Name:	Date:

SITE AREA EMERGENCY

SITE AREA EMERGENCY

	Check box when action complete	Action
1	☐	Verify that the CECC Director has notified the State within 15 minutes of the classification declaration.
2	☐	Verify Appendix C (Classification Upgrade Form) has been completed by CECC Director and has been faxed to the State.
3	☐	Notify the TVA Liaison of the change in classification and conditions (if staffed).
4	☐	Refer to duties under "General Operations" (page 4 of 4).

Completed by	Name:	Date:

APPENDIX J
(Page 3 of 4)
STATE COMMUNICATOR CHECKLIST

GENERAL EMERGENCY

GENERAL EMERGENCY

	Check box when action complete	Action
1	☐	Verify that the CECC Director has notified the State within 15 minutes of the classification declaration.
2	☐	Verify Appendix C (Classification Upgrade Form) and Appendix I (Protective Action Recommendation Form) have been completed by CECC Director and have been faxed to the State.
3	☐	Notify the TVA Liaison of the change in classification and conditions (if staffed).
4	☐	Refer to duties under "General Operations" (page 4 of 4).

Completed by	Name:	Date:

UPDATED PAR

UPDATED PAR

	Check box when action complete	Action
1	☐	Verify that the CECC Director has notified the State within 15 minutes of the updated PAR.
2	☐	Verify Appendix I (Protective Action Recommendation form) has been completed by CECC Director and has been faxed to the State.
3	☐	Notify the TVA Liaison of the change in conditions (if staffed).
4	☐	Confirm that CECC status boards accurately display State Protective Actions. Coordinate with the Rad Boardwriter.

Completed by	Name:	Date:

APPENDIX J
(Page 4 of 4)
STATE COMMUNICATOR CHECKLIST

GENERAL OPERATIONS

1. Complete page 1 of CECC-EPIP-1, Appendix K (State Update Form) and send to State at least hourly or sooner as conditions warrent. Note in position log.

   - Lines 1 through 2 can be obtained from the ODS forms for emergencies declared prior to CECC activation or from Appendix C of this EPIP for emergencies declared after the CECC is activated.
   - Line 3 can be obtained from the RAM. Confirm if a puff release has occurred. Confirm that Dose Assessment is sending (via computer or telecopy) information on pages 2 and/or 3 (if liquid release is occurring) of Appendix K to their State counterparts at least hourly and note in position log.
   - Lines 4 and 5 can be obtained from the CECC Director.
   - Line 6 can be obtained from the Plant Assessment Manager.

   Note: Numbering on Appendix K pages 2 and 3 corresponds to numbering on Dose Code printout so numbering on these pages is not sequential from page 1.

2. Acts as contact for the State to clarify any discrepancies between information supplied from the CECC and any other TVA or non-TVA organization as they pertain to TVA-related activities.

3. Responsible for ensuring pertinent information related to emergency classifications, PARs, plant status, onsite responses, and TVA's dose/environs assessment activities are being provided to the State.

4. Assists the State as requested in providing TVA resource assistance to the State.

5. Assists the State Liaison (State government representative) as necessary to keep them briefed on the plan situation and coordinating responses to State inquiries, etc.

6. Maintain an awareness of key State activities and provide report in CECC briefings (until arrival of State Liaison to the CECC).

Message Number
_____

APPENDIX K
(Page 1 of 3)
STATE UPDATE FORM

☐ This is a Drill ☐ This is an Actual Event - Repeat - This is an Actual Event

TO: ☐ **Alabama:** (Send to both locations listed below)
Alabama Radiation Control Agency, Montgomery, AL
Alabama Radiation Control Agency, Decatur, AL (Copies to Director &TVA Liaison)

☐ **Tennessee:**
TEMA, Nashville, TN (Copies to SEOC Director, TVA Liaison & Radiological Health)

FROM: **CECC State Communicator at (423) 751-1613**

1. Affected Units:

BFN U-1 ☐, U-2 ☐, U-3 ☐; **SQN** U-1 ☐, U-2 ☐; **WBN** U-1 ☐

2. Emergency Classification:

☐ NOUE ☐ Alert ☐ Site Area Emergency ☐ General Emergency

3. Radiological Release: ☐ No Abnormal ☐ Actual or Anticipated

Note: If a puff release has occurred then mark the Actual or Anticipated box.

As appropriate, to be provided at least hourly (normally generated and transmitted by computer)

Estimated duration or Impact Times	☐ Airborne (see p. 2 of 3)	☐ Waterborne (see p. 3 of 3)

Estimate of surface spill contamination: _____

4. Emergency Actions underway at plant site:
☐ Site Accountability:
☐ Non-essential personnel released from site:
☐ Other:_____

5. Requested onsite support from State/local organizations
_____
_____
_____

6. Prognosis of Plant conditions: ☐ Stable ☐ Improving ☐ Deteriorating

Approval	Name	Time	Date
CECC Director			

APPENDIX K
(Page 2 of 3)
STATE UPDATE FORM

PROJECTED AIRBORNE RELEASES
RADIOLOGICAL DOSE ASSESSMENT - PERIODIC STATE INFORMATION

Time: _____ (local)

7. The release being assessed began/begins at _____ local time and is estimated to continue for _____ hr.

8. Release Rate:

Noble Gas	_____	µCi/s
Iodine-131	_____	µCi/s
Particulates	_____	µCi/s
Gross Activity	_____	µCi/s

9. Release Path: _____ Effective Release Height _____ m
(O meters = ground level)

10. Meteorological Conditions: Wind Speed: _____ meters/sec
_____ miles/hr

Wind Direction
(From) _____ (degrees/sector)

Stability Class _____
Precipitation _____ mm
Affected Sector _____ degrees/sector

11. Projected Doses (rem) (Does not include previously received dose)

Distance	TEDE	Thyroid CDE	Cow Milk
0.62 mi	_____	_____	_____
2 mi	_____	_____	_____
5 mi	_____	_____	_____
10 mi	_____	_____	_____

12. Comments

_____
_____
_____

APPENDIX K
(Page 3 of 3)
STATE UPDATE FORM

ACTUAL/PROJECTED LIQUID RELEASES
RADIOLOGICAL DOSE ASSESSMENT - PERIODIC STATE INFORMATION

13 Time: _____ (local)

14. The release being assessed began/begins at _____ local time and is estimated to continue for _____ hr.

15. Release:

Nuclide	Concentration
_____	_____ µCi/mL
_____	_____ µCi/mL
_____	_____ µCi/mL
_____	_____ µCi/mL
_____	_____ µCi/mL

16. Release Point: ☐ Shoreline ☐ Diffuser

17. Total Release Volume: _____ ft^3 (1 gallon = 0.134 ft^3)

18. RIVER FLOW at the plant _____ ft^3/s

19. DOWNSTREAM MAXIMUM ORGAN DOSE RATE TO HYPOTHETICAL INDIVIDUAL ON THE SHORELINE DUE TO DRINKING THE WATER

LOCATION (TRM)	ARRIVAL TIME (DAY)	CONCENTRATION (microCi/mL)		DOSE RATE (D) (rem/d)	
		Plant Side	Opposite Side	Plant Side	Opposite Side

20. COMMENTS: _____

_____

_____

APPENDIX L
(Page 1 of 1)
MANAGEMENT SERVICES SUPERVISOR CHECKLIST

	Check box when action complete	Action
1	☐	Contact clerical personnel to staff CECC positions and perform other steps as listed in the Management Services Supervisor position notebook. Use Appendix M to document FFD.
2	☐	Set emergency classification and site inputs on electronic clocks (see workbook for details).
3	☐	If RMCC is being staffed contact clerical support for that location. Use Appendix M to document FFD. List positions.
4	☐	If JIC is being staffed contact clerical support for that location. Use Appendix M to document FFD. List positions.
5	☐	Brief clerical staff on roles and responsibilities.

Completed by	Name:	Date:

GENERAL OPERATIONS

1. Monitor and allocate CECC clerical personnel where needed (avoid fax backlogs, etc.).
2. Obtains needed documents and drawings from DCRM. A key to the DCRM is available in the key box located in the ODS area.
3. Updates Emergency Classification on electronic clocks.
4. Coordinates meals and lodging (Coordinate with EP Staff).
5. Maintains position log.
6. Schedules relief for clerical positions and may also assist with other CECC position relief shift staffing notifications.

APPENDIX M
Page 1 of 1

FITNESS FOR DUTY
PROGRAM ADMINISTRATION

TVA NUCLEAR POWER GROUP
CALL-IN SHEET

Person Calling: _____ Date: _____

Name	Time Called	Time Needed to Report	Alcohol 5 Hrs. Prior to Report (Y/N)	Fit for Duty (Y/N)	Duty Official Comments

Attachment 13.03-26A

(48 pages including cover sheet)

CECC-EPIP-9

Emergency Environmental Radiological Monitoring

Tennessee Valley Authority CENTRAL EMERGENCY CONTROL CENTER EMERGENCY PLAN IMPLEMENTING PROCEDURES	Title EMERGENCY ENVIRONMENTAL RADIOLOGICAL MONITORING PROCEDURES	CECC EPIP-9 REV. 35 Page 1 of 47 Effective Date: 06-30-2008

QUALITY RELATED

WRITTEN BY: John Parshall (*Signature*) REVIEWED BY: Thomas E. Adkins (*Signature*) 6-25-08 (*Date*)

PLAN EFFECTIVENESS DETERMINATION: PERFORMED BY John Parshall (*Signature*) 6-25-08 (*Date*)

CONCURRENCES

Concurrence Signature	Date
☒ **Manager, EP Program Planning and Implementation** John Parshall	6-26-08
☒ **Manager, Emergency Preparedness** J. Parshall for BKM	6-26-08

APPROVAL

APPROVED BY: Heyward R. Rogers (*Signature*) VP Nuclear Support (*Title* *Organization*) 6/29/08 (*Date*)

REVISION LOG

Rev. No.	Pages	Description of Revision
35	All	Changed header format, display of content of rev log, Deleted section 5.4 since addition of cell phones and completion of the narrow banding project made phone patch inoperable, , Replaced Radcon with RP, Clarified two members per van, updated App C table 1 (Barium Source Activity Chart), added statement to App A note 3" RP personnel dispatched to WBN should be trained in tritium monitoring", Added statement to App B about unlocking cabinets. Added phone number for WBN Van #1, Deleted Screening Van inventory Checklist and other references to Screening Van

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1.0 PURPOSE

This procedure describes environmental radiological monitoring during or after an emergency at a TVA nuclear facility.

2.0 SCOPE

This procedure provides instruction for environmental monitoring under the direction of the plant Radiation Protection staff, the Central Emergency Control Center (CECC) or the Radiological Monitoring Control Center (RMCC).

The location term SRMAC (State Radiological Monitoring Assessment Center) is referenced in the Alabama Radiological Emergency Response Plans for Nuclear Plants. For the purpose of this procedure, it is considered synonymous with the term RMCC.

Checklists and instructions for the inspection, inventory and use of field equipment are also included within this procedure. Several sequences or options may be used to obtain the same results with equipment operation or sampling techniques. Only one method will be discussed in this procedure.

3.0 ACTIVATION

OPTIONAL:	At an Alert or Unusual Event classification.
MANDATORY:	At a Site Area Emergency or General Emergency unless directed otherwise by the Site Emergency Director.
CAUTION:	If Alert or higher is being declared due to hostile action on site, do not move personnel to REP vans until conditions allow.

3.1 Command and Control

As emergency response facilities become operational, command and control shall progress from the Site Radiation Protection staff to the CECC and RMCC. The CECC Environs Assessor has responsibility for control of environmental monitoring efforts.

Since the time of operational status of facilities may vary, instructions may generically refer to "Field Control".

3.2 Site Radiation Protection Staff (Field Control)

- Shift Supervisor to dispatch Environs Monitoring Teams using **Appendix A.**
- Record field data on **Appendix G.**

A quick reference Table of Contents is provided at the front of this procedure for detailed instruction on emergency authorizations, dose control and field monitoring strategies and priorities.

Ensure that any DOSE RATE or AIR ACTIVITY survey results are PROMPTLY reported to assist in determining emergency classification levels by the Site Emergency Director. Report survey locations as a **distance and direction**.

Anticipate contact by the CECC Environs Assessor to coordinate a turnover of field control. The transfer of control should be announced on the radio. Thereafter, contact with all field team personnel should be routed through Field Control to avoid conflict of assignments.

3.3 Environs Assessor (EA) & Field Coordinator (FC)

- Activate per CECC EPIP-7 if not already done.
- Record field data on **Appendix G.**

A quick reference Table of Contents is provided at the front of this procedure for detailed instruction on emergency authorizations, dose control and field monitoring strategy and priorities.

Ensure that any DOSE RATE or AIR ACTIVITY survey results are PROMPTLY reported for considerations on declaration of emergency classification levels by the Site Emergency Director. Report survey locations as a **distance and direction**.

If reporting to a RMCC obtain a FC kit from the CECC or BFN Training Center. Ask CECC Emergency Preparedness staff if other equipment needs to be taken to the RMCC.

- BFN RMCC — Morgan County Courthouse basement, Decatur, AL
- SQN RMCC — Air National Guard Armory, Lovell Field, Chatt., TN
- WBN RMCC — TEMA Operations Center, Knoxville, TN

Coordinate the deployment of the Scintrex (Sartrex) Tritium 309A instruments to State field teams. Upon arrival at the RMCC, establish TVA phone, radio and fax machine communication. Ensure other field monitoring support staff are adequately briefed on their expected roles (Courier, Fixed Monitor Retrievers, Field Support).

Direction and control of all field operations shall be limited to one individual on the radio.

3.4 Environs Monitoring Teams

- Activate per **Appendix B.**
- Record field data on **Appendix F** (dose rates, air, and terrestrial).

Use column heading numbers for communication of data. Report survey locations as a **distance and direction**, and if applicable, the sample point. Command centers need distance and direction for decision logic.

A quick reference Table of Contents is provided at the front of this procedure for detailed instruction on radiological protection, equipment operation and sampling techniques.

3.5 Courier

Couriers transport radioactive samples or deliver personnel, supplies and equipment. Courier personnel shall be familiar with concepts for basic radiation protection. The Courier should avoid plumes or radioactivity contaminated areas due to interface requirements outside the affected area, but may do so at the discretion of Field Control.

Obtain a radio equipped vehicle. If needed, a Courier Kit and sample transport containers can be provided by Corporate Emergency Preparedness.

Obtain briefing from the Environs Assessor or Field Coordinator.

Prior to deployment into the EPZ or receiving samples, don dosimeters (TLD and 200 mrem self-reading dosimeter). Re-zero as necessary.

A quick reference Table of Contents is provided at the front of this procedure for detailed instructions (emergency phone numbers, inventory lists and operation of equipment).

Upon arrival at the vehicle, establish radio contact with the CECC Environs Assessor or RMCC Field Coordinator.

Obtain the appropriate maps and sample point description book from the Courier Kit for ready reference.

3.6 Fixed Monitor Retrievers

Fixed Monitor Retrievers collect specific samples and environmental TLDs as requested by Field Control. Their duties are similar to non-emergency responsibilities.

Obtain job-specific supplies and equipment and establish communication with the Environs Assessor/Field Coordinator.

Refer to Table of Contents (front of procedure) for detailed instruction on emergency authorizations, dose control and field monitoring techniques and equipment operation.

4.0 FIELD OPERATIONS

4.1 Priorities

During the early phases of a radiological emergency when protective actions must be initiated quickly to be effective, environmental measurements used to calculate the inhalation dose commitment rate to the thyroid and the total body external gamma dose rates to the general public are the most important.

Knowledge of radiological conditions at the site boundary and at a distance of 5 miles out from the plant are critical for decisions on emergency classifications and for Protective Action Recommendations to the State.

Environs Monitoring Teams shall perform their tasks according to the following priorities unless directed otherwise by Field Control:

1. The first team to activate shall promptly obtain dose rate measurements along the designated site boundary at the down wind areas (see 2 mile map) to obtain site boundary survey prior to scaler set-up.

2. Upon detection of plume immersion, collect and analyze an air sample for radioiodine and particulates at estimated plume centerline.

3. Upon detection of plume immersion, collect and analyze an air sample for tritium at estimated plume centerline. **[ONLY PLANTS THAT CURRENTLY CONTAIN IRRADIATED TPBARS ONSITE]**

4. The second team to activate shall focus on locating the (offsite) touchdown point of the plume and collect air samples for analyses.

5. As additional teams become available, dispatch to the opposite side of the river should be considered for the contingency of (near plant) wind shifts and the travel time required.

6. Send air filter media to WARL for further analyses as directed by Field Control.

4.2 Plume Tracking and Survey

When directed by Field Control, Environs Monitoring Teams shall traverse along the assigned route to locate the plume. Travel at approximately 20 mph (during drills, simulate reduced speed as necessary to avoid traffic hazards). Practice safe vehicle operation with attention to height limitations, safe roadside pull-offs and parking, accessing private property and use of the warning strobe lights. Secure cabinets, lead shields, and personnel seat belts prior to vehicle movement.

Sample Points (clarification for PER CRP 01-000161-000)

The intent and use of sample points has evolved in consideration of REP van upgrades and dose assessment methods. Prior to the installation of onboard gas generators in the vans, sample points with sirens were of greater value as a source of AC power. With improvements of equipment and dose assessment capability, field data is now used for comparisons with computer dose assessments, with the desired data being the actual plume centerline location, which may or may not be at a sample point. Therefore, although sample locations are described as a particular point, sample points should be used as a reference to a vicinity where plume search and traverse is begun (pin-point accuracy is not essential). This is why our ability to communicate survey locations using distance and direction is more important. Global Positioning Satellite (GPS) units are an available tool to supplement our field navigation using the sampling point maps. GPS instructions are provided in Appendix K. Column 2 on Appendices F and G may be N/A'd when sampling is performed at a sample location that does not have a specific sample point address.

In regard to timeliness during plume monitoring the expectation is for monitoring without delay when requested. However, the need to backtrack your travel path to confirm a location is not considered a delay. Examples include backtracking to confirm a peak radiation (centerline) level, or to continue down the road to locate a crossroad or reference point. And as always, road safety should never be compromised.

Monitor the survey meters (open and closed beta shields) to determine plume immersion versus shine.

- Record and report data per **Appendix F.**

Report "Plume Traverse" readings at the estimated PLUME CENTERLINE. If instructed to survey plume edge, report EDGE. If the centerline cannot be determined (i.e., if required to turn back with rates still increasing), report plume location as UNKNOWN.

Note:

If less than 2 mrem/hr, report Geiger-Mueller Survey Meter (GMSM) measurements. If greater than or equal to 2 mrem/hr, use measurements from the Ion Chamber Survey Meters (ISM).

If plume immersion is suspected, the following ALARA practices are recommended when surveys are requested:

1. consider the use of the air sampling portal to obtain 1-meter ISM measurements.

2. use of the rear air lock exit to obtain "Near Ground" surveys.

Assessment of ground deposition could be requested in support of public dose assessment.

4.3 Sample Point Maps (latest revision levels)

Map	Rev.	Date
BFN 2-mile	3	February 2002
BFN 10-mile	3	February 2002
BFN 50-mile	2	1 July 1994
SQN 2-mile	2	February 2002
SQN 10-mile	2	February 2002
SQN 50-mile	1	30 June 1991
WBN 2-mile	3	February 2002
WBN 10-mile	2	February 2002
WBN 50-mile	2	30 August 1993

4.4 Radio Protocol

Note:

During drills or exercises, all personnel should state "THIS IS A DRILL" when transmitting simulated radiological or plant accident conditions, or other information which may cause public concern if it were monitored. Use of "repeat-back's" and phonetic is the expectation.

Maintain communication with field team control according to the following sequence. Use the vehicle's external speaker during exits.

1. Motorola mobile radio (with repeater activated frequencies)
2. Cellular phone
3. Leave area of hazard and contact by public phone

The following call signs are designated for field operations:

Base Stations	Mobile Units
CECC	Truck # (monitoring vehicle)
Site TSC	Courier
Site Plant Lab	Portable # (misc.)
RMCC	

4.5 Routine Dose Control

CAUTION:

Personnel should be aware of potential rapidly changing conditions.

The dose of personnel during emergency operations shall be maintained As Low As Reasonably Achievable (ALARA).

For purposes of this implementing procedure, radiation exposure as expressed in units of R and subunits, thereof, is equivalent to dose (rad) and dose equivalent (rem) based on ANSI N 13.11 development and terminology. Any acute dose greater than 10 rem is generally denoted in units of rad, since that level is considered as the accident range of personnel exposure. Any dose less than that level is considered the protective range of personnel exposure. For purposes of this procedure the assumption of 1 rad = 1 rem is assumed for all levels of exposure.

Field personnel shall report their self-reading dosimeter readings to Field Control at approximately every 100 mrem increment and record doses on **Appendix D**.

Until isotopic assessments of airborne radioactivity are available, the CECC Environs Assessor shall apply an administrative correction factor of 2 to estimate TEDE doses in airborne radioactivity areas:

Estimated TEDE = dosimeter reading x 2

When accident specific radionuclide assessments are available, dose assessment activities should be performed to adjust the correction factors.

Personnel shall advise Field Control when TEDE doses (including pre-emergency doses) approach their individual dose limits. Limits used for declared REP emergency events are based on 10 CFR 20, versus TVA administrative levels. Perform this notification early enough to allow exit from the area prior to exceeding any limits, if higher doses are not authorized.

- List dose limits on **Appendix D**.

- Take protective actions listed in **Appendix D**

The Environs Assessor shall coordinate appropriate post exposure dose assessments for field personnel.

4.6 Emergency Dose Limits

The dose of personnel during emergency operations shall be maintained As Low As Reasonably Achievable (ALARA). If circumstances require field personnel to remain in a radiologically hazardous area, higher whole body dose limits may be authorized. Any decisions to embark on emergency operations which would result in doses in excess of 10 CFR 20 limits should be done in consultation with the most senior member of Radiation Protection who is available on a timely basis.

Emergency Dose Authorizations

- The SED authorizes if field teams are under control of the site.
- The CECC RAM authorizes if teams are under the control of the CECC (The RAM shall inform the CECC Director and TSC Radiation Protection Manager)
- Document authorization and acceptance of emergency dose on **Appendix E**.

Receipt of emergency dose above normal limits shall be on a voluntary basis. Other factors being equal, older volunteers should be selected first. In addition, selection of female volunteers capable of reproduction should be avoided if other volunteers are available.

The use of respiratory protection equipment and protective clothing should be considered to minimize personnel contamination. Personnel shall not enter any area where dose rates are unmeasureable with instruments and dosimetry (i.e., offscale high reading).

Personnel receiving emergency doses shall be informed of the risks involved, including the numerical levels of dose at which acute effects of radiation will be incurred, and numerical estimates of the risk of delayed effects. Recipients shall acknowledge review of this information (located on Appendix E, page 2 of 2) by signature on **Appendix E**. Dose under these conditions shall be limited to once in a lifetime.

For Lifesaving or Protection of Large Populations the limit is 25 rad TEDE, (when lower dose is not practicable). In this situation, the limit for lens of eye is 75 rad, or three (3) times the TEDE value. The limit for any other organ (including skin and body extremities) is 250 rad, or ten (10) times the TEDE value.

Note:

Situations may occur in which a dose in excess of 25 rad would be required for lifesaving operations. It is not possible to prejudge the risk that one person should be allowed to take to save the life of another. However, persons undertaking an emergency mission in which the dose would exceed 25 rad to the whole body should do so only on a voluntary basis and with full awareness of the risks involved.

For Protection of Valuable Property the limit is 10 rem TEDE (when lower dose is not practicable). In this situation the limit for lens of eye is 30 rad, or three (3) times the TEDE value. The limit for any other organ (including skin and body extremities) is 100 rad, or ten (10) times the TEDE value.

4.7 Potassium Iodide (KI)

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 Potassium Iodide (KI) should be considered. Since Environs Monitoring teams have the greatest potential need for thyroid blocking, KI should be administered at the time of initial dispatch. This action would allow absorption of the KI prior to the exposure. Authorization shall be provided by the most senior member of Radiation Protection who is available on a timely basis. Otherwise, teams are granted authorization by this procedure to self-administer KI in accordance with the TVA Protective Action Levels on **Appendix D**. Field Control is to be immediately informed of such action.

The decision of KI for field team members other than Environs Monitoring Teams shall be based upon their needs. The CECC Environs Assessor has the responsibility to authorize the administration of KI for field staff under CECC control. The Environs Assessor shall inform the CECC RAM of that action. The person authorizing the issuance of KI shall be familiar with the Food and Drug Administration's approved package insert and ensure each recipient is similarly informed.

- Document the authorization and acceptance of KI on **Appendix E.**

4.8 Contamination Control

Minimize opening and exiting of the van in plume conditions. Use equipment and materials to identify contamination and minimize its spread to personnel and the vehicle interior. Interior air-lock door should remain closed. Exercise precautions with use of personal protective equipment, such as respirators against adverse impacts to safe vehicle operation. Place contaminated clothing and waste in plastic bags and store in the van until arrangements can be made for final disposal. Contact Field Control for arrangements with personnel and vehicle decontamination.

5.0 COMMUNICATIONS

5.1 Primary Motorola Radio

To Turn On the Radio: Press the **PWR** button once (located on the left-upper corner of the driver's control head). Radio needs to be powered on after each time the van battery switch has placed in the Off and returned to the On position.

To Set Volume: Hold the **VOL** rocker switch down to increase or decrease volume as desired, then release. The display shows volume levels from 0 - 15.

To Change Modes: Press the **Mode** rocker switch to select the desired mode (repeater channel).

Modes are programmed into the radio so that mobile coverage is available for areas surrounding Browns Ferry, Bellefonte, Sequoyah, and Watts Bar Nuclear Plants. The modes programmed are:

MODE DISPLAY	REPEATER LOCATION	SITE COVERAGE
WLON BFN	WILSON HYDRO	BFN
BRLY BFN	BRINLEY MOUNTAIN	BFN
MSAN BFN	MONTE SANO	BFN
LCHAP BLN	LAMBERT CHAPEL	BLN
FABS BLN	FABIUS	BLN
SGMT SQN	SIGNAL MOUNTAIN	SQN
MLKE SQN	MONTLAKE	SQN
OWLD WBN	OSWALD DOME	WBN
RVLT WBN	ROOSEVELT MOUNTAIN	WBN
MS NWS*	NATIONAL WEATHER SERVICE MUSCLE SHOALS	BFN
HUNT NWS*	NATIONAL WEATHER SERVICE HUNTSVILLE	BFN
CHAT NWS*	NATIONAL WEATHER SERVICE CHATTANOOGA	SQN/WBN
KNOX NWS*	NATIONAL WEATHER SERVICE KNOXVILLE	WBN

* - RECEIVE ONLY, no transmit capability

To Change Control to Rear/Front Head: Press the **F/R** button once. Active control head will display current Mode, inactive control head will display "Remote". Depressing the F/R button repeatedly alternates the front and rear control function.

Use Microphone keypad for entry of radio-phone patch numbers.

5.2 Cellular Telephones

To Turn On the Cellular Telephone:

- Ensure the Master Battery switch is in the "**ON**" position
- Open the flip cover on the telephone
- Press the "**Pwr END**" pushbutton for a few seconds until the red lamp flashes

To Answer a Call: Open the cell case or if the cell case is open, press any key EXCEPT the "**Pwr END**", or keys on the side of the cell phone case.

To Make a Call:

- Make sure phone is on
- Enter the phone number, with area code if needed
- Press the "**SEND**" key

To End a Call:

- Press the "**Pwr END**" key **To End a Call:**

5.3 Important Phone Numbers

Location	Phone	Phone	Fax Machine
CECC Environs Assessor	423-751-1623	423-751-1624	423-751-1681
BFN RMCC	423-751-1672	256-351-0441	256-355-1680
SQN RMCC	423-899-9858	423-751-1676	423-855-0190
WBN RMCC	865-594-6245		865-594-6330
BFN TSC RP	256-729-3767	256-729-3763	256-729-3742
SQN TSC RP	423-843-6472		423-843-6461
WBN TSC RP	423-365-8606	423-365-8608	423-365-8365
CECC Operations Duty Specialist (24 hr)	423-751-1700	800-237-2322	
TVA Police (to report accidents)		800-824-3861	

Vehicle Cellular Phones		
WBN Truck 1	TV-44084	423-240-1868
SQN Truck 2	TV-44112	423-202-4187
SQN Truck 3	TV-44114	423-667-4921
WBN Truck 4	TV-44115	423-667-4918
BFN Truck 5	TV-44110	256-200-4197
BFN Truck 6	TV-44113	256-656-9623

6.0 ELECTRICAL POWER SUPPLIES

CAUTION!: Avoid contact with unshielded energized components.

Circuit breakers for the vehicle's electrical system are located in a gray breaker box inside the cabinet 8. Additional circuit breakers for the onboard generator are located on the rear facing side of the generator housing.

6.1 Vehicle-Installed Generator

Place **GENERATOR-SHORE POWER** switch to the ***neutral*** position to avoid attempted starts under load.

Depress generator **START/STOP** button, and hold until the engine is running.

Place **GENERATOR-SHORE POWER** switch to the **GENERATOR** position.
Primary vehicle outlets are now supplied power.

The onboard generator may be run continuously during vehicle operation, using the vehicle tank for fuel. If the generator is no longer needed, depress the **START/STOP** button and **HOLD** until the engine stops completely. For vehicles equipped with dual fuel tanks, generator is fueled from front tank; therefore, utilize the rear fuel tank as the primary fuel source for vehicle operation.

6.2 DC to AC Power Inverter (back up use only)

Ensure vehicle engine is running and **MASTER** switch on the front console is ON.

Place the **INVERTER** switch, located on the cabinet door panel, to the ON position.

If power to the wall outlets is not available, ensure the **DC Input Circuit Breaker** switch on the inverter panel face is in the ***ON*** position and ensure the **ON/OFF switch** is in the ***OFF*** position (units run on remote hookup setting).

6.3 TVA Siren

CAUTION:

Beware of wasps in the power outlet boxes and potential electrical hazards such as wet ground!

Unlock outlet box using key # 0896. Check Ground Fault Interrupter breaker status.

6.4 Honda Generator

Remove generator from vehicle, add fuel as necessary and attach **Ground Fault Interrupter** (GFI) cord to generator socket.

Ensure Reset button on GFI is depressed.

Slide **ENGINE** switch, on front of unit, upward to ***ON.***

Push **CHOKE** lever in direction of arrow to ***CLOSED***.

Pull start cord and prevent it from snapping back against unit.

Turn the **CHOKE** lever to ***OPEN*** as the engine warms up.

If power to the outlets is not available, ensure the **AC Circuit** is in the CLOSED position (ON).

7.0 AIR SAMPLING

7.1 Preparation for Plume Air Sample

CAUTION:

Silver Zeolite has a heat-up/explosive potential and may require disposal as a mixed waste.

Load head with a Silver Zeolite cartridge, marked to indicate direction of the air flow.

Install a prefilter (rough side out).

Position the vehicle so that the air sample port is toward the plant or upwind direction.

Record 1-meter dose rates for the area on Appendix F. Use ISM if above 2 mrem/hr. Do not obtain near ground dose rates unless instructed.

Note 1:

Onboard generator power fluctuations affecting flow rate may occur during simultaneous use of the roof top air conditioner unit. It may be necessary to turn the air conditioner off during sampling; or to use the AC/DC inverter as the power source. If power is interrupted during a sample collection, the unit will display the collected sample data upon restoration of power.

Note 2:

When using the vehicle inverter or portable generator as a power source for air samplers, the air sampler volume must be set to a low volume and slowly increased to the appropriate sampling volume setting. When an air sampler is started at a high volume the inverter or portable generator may trip.

7.2 Radeco H810 Air Sampler - GRAB SAMPLE

Grab Sample: 5 minute run at 60 LPM (2 CFM) flow rate

Turn power ON using rocker switch on side of unit.

After display stops scrolling, depress the **CLEAR** key to reset the unit. Display should now read *"TARGET VOLUME: 300 LITERS".*

Depress green **START** key to begin sample collection, then following the message *"WARM UP DELAY IN PROGRESS",* observe the display to confirm the desired flow rate of 60 LPM. Adjust as necessary using the recessed slotted screw head above the on-off switch. To perform adjustments, turn the slotted screw head clockwise to increase flow rate and counter-clockwise to decrease flow rate. Since the digital display is very accurate, a flow rate ± 6 LPM (10%) is satisfactory. Close cabinet door during sampling.

Sampler will automatically shut off upon collection of pre-set volume (300 Liters).

7.3 Radeco H810 Air Sampler - CONTINUOUS RUN

Continuous Run: 30 LPM (1 CFM) flow rate

Turn power ON using rocker switch on side of unit.

After display stops scrolling, depress the **CLEAR** key to reset the unit. Display should now read *"TARGET TIME XXXX" or "TARGET VOLUME XXXX".*

Depress green **START** key to begin sample collection, then following the message *"WARM UP DELAY IN PROGRESS",* observe the display to confirm the desired flow rate of 30 LPM. Adjust as necessary using the recessed slotted screw head above the on-off switch. To perform adjustments, turn the slotted screw head clockwise to increase flow rate and counter-clockwise to decrease flow rate. Since the digital display is very accurate, a flow rate ± 3 LPM (10%) is satisfactory.

Depress STOP key to end sample.

7.4 Analysis of Air Sample

Close sampling portal and cabinet door at end of sampling. If using a power inverter, turn it OFF when not in use.

Relocate as necessary for ALARA purposes prior to continuing.

Remove the cartridge and seal it in plastic wrap. Be cautious of cartridge heat up and the effect on the plastic wrapping. Survey the cartridge with a GMSM (beta shield closed).

If ≤1 mrem/hr, analyze with the NaI detector, record data on **Appendix F column 16**.

If >1 mrem/hr, do **NOT** analyze with the NaI detector. Advise Field Control and approximate iodine concentration using the formula below:

$$\mu \text{ Ci/cc} = \frac{\text{Average Front \& Back } \textbf{CLOSED WINDOW} \text{ contact rate (mrem/hr)} \times 5.1 \times 10^{-3}}{\text{Sample Volume in Liters}}$$

Note: Formula referenced in RIMS L91 880217 801 **DO NOT DELETE !**

Remove the prefilter with tweezers, and survey using the Bicron Surveyor 50.

If ≤50,000 CPM, analyze in GM detector, record data on **Appendix F, column 17.**

If >50,000 CPM, do **NOT** analyze in the GM detector. Record frisker reading minus background on Appendix F (net CPM or if "offscale"). Contact Field Control for instructions.

Place the prefilter in a petri dish. Label and package all for transfer to the Courier. (Refer to section 8.5).

Report data per **Appendix F**. Report results as "Less than MDA" if below values and background rates listed on **Appendix F**.

Note: Minimum Detectable Activities for Bicron Analysts per memorandum to C. D. Pond from J. L Lobdell, dated March 28, 1995 (RIMS L91 950328 800). **Do not delete!**

7.5 Scintrex (Sartrex), Model 309A Tritium-in-Air Monitor

Precautions and Limitations

Note: This instrument should only be used if GM instruments indicate background levels. Otherwise, the Tritium results will be invalid due to interference from noble gas.

The electrometer in the Scintrex (Sartrex) Model 309A requires a warm-up period of 15 to 30 minutes when all power is lost (i.e., dead batteries). For continuous monitoring or long-duration jobs, consideration should be given to the use of the AC adapter for an uninterrupted power supply.

The Scintrex (Sartrex) monitor takes 2 to 5 minutes to settle when turned on. Accommodations for the settling time must be considered by the user when the sampling time is short or quick measurements are required.

PERFORM battery check of the instrument.

Turn function switch to the BAT. /ALARM CHECK position to activate the pump. The alarm will sound once and the alarm light will be activated. Read the battery voltage on the display.

In consideration of continuos power drain by the unit, the Scintrex (Sartrex) 309A instruments will be stored at SQN and WBN Instrumentation labs with batteries installed and with the AC power adapter plugged in. When deployed to the REP Van, the AC power adapter should be taken with the instrument. The unit should also be connected to the AC adapter during van operations using the inverter or generator power sources. The AC power supply must be connected during any necessary battery replacement to avoid a reset of the instrument warm up period.

PERFORM zero set adjustment of the instrument.

Place the instrument in a low-gamma location (<0.1 mR/hr.).

Turn the function switch to DISPLAY ON and press the ZERO SET push-button. A numerical value followed by the function description will be displayed (i.e., 2 ZERO-SET).

If the ZERO reading is outside the -5 to 5 range, then unlock the external lock-ring, and adjust the ZERO ADJUST potentiometer so the display reads "O" ZERO SET".

Wait at least five seconds and then press the ZERO SET button to return to the display reading. Allow two to five minuets for the reading to stabilize. The display reading should stabilize between –10 to 10 $\mu Ci/m^3$ with minor excursions of up to plus or minus 2 uCi/m^3. If the instrument fails to stabilize, obtain a replacement unit.

PREPARE the instrument for sampling and OBTAIN measurements.

Connect air line tubing (no greater than 3 ft) **WITHOUT A MOLECULAR SIEVE** to the instrument inlet. Route the tubing to the exterior of the vehicle.

Note:

Identify the instrument reading before the pump is turned ON. The reading can be considered as background and subtracted from the sample measurement [i.e., settled reading -6 $\mu Ci/m^3$, measured reading 10 $\mu Ci/m^3$, actual measurement is 10 - (-6) = 16 $\mu Ci/m^3$]. {1 $\mu Ci/m^3$ is equal to $1x10^{-6}$ $\mu Ci/cc$}

Turn the function switch to PUMP ON. The message "LOW FLOW" will be displayed and the alarm will sound. The alarm will reset after the necessary flow is achieved. The reading on the display may show fluctuations of a few increments for a few seconds after you turn the pump ON or OFF.

Perform the survey. Read the instrument display and report results in correct range and units.

Gamma dose rates cause fluctuations in the instrument readings. Collect samples only in an area with background gamma dose rates.

7.6 MSA Escort ELF Pump

Grab Sample: 5 minute run at 2 LPM flow rate

CAUTION

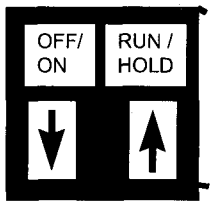
- **DO NOT** charge the battery pack in areas that may contain a flammable mixture of combustible gases, vapors, or dust and air; otherwise, an explosion may occur because a source of ignition exists during charging.
- **DO NOT** operate the pump in oxygen-enriched atmospheres (more than 21% oxygen) containing combustible gases, vapors, or other materials. Fire or explosion can result from operating in these atmospheres.

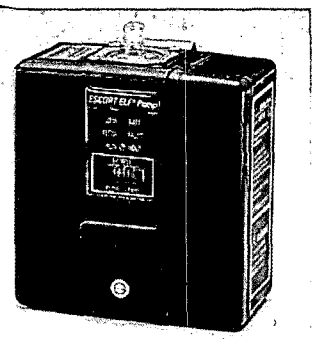
PREPARE the instrument for sampling and OBTAIN measurements.

Connect tubing to the **red plug port** of the molecular sieve using a male leur adapter. Remove the blue plug (labeled 'inlet') from the opposite port during sampling. After sampling is complete, replace both plugs to cap the molecular sieve.

Connect the tubing and molecular sieve to the inlet fitting.

If installed, loosen front cover screw and rotate cover to expose OFF/ON and RUN/HOLD pushbuttons.





Press ON/OFF button until the RUN/HOLD L.E.D. illuminates.

- The Flow Fault and Low Bat L.E.D.'s will then illuminate. During the time these L.E.D.'s are being lighted, a number from 0 to 999 will be displayed. This is the total of the pump's operating hours since its last calibration.
- When all three L.E.D.'s are illuminated, the display changes to **8.88 LPM/MINS**, to indicate they are functional.
- The pump will then begin operation. The LOW BAT L.E.D. will be dark if the battery voltage is above 4.1 volts. The FLOW FAULT L.E.D. will be dark if the rate is within 0.1 LPM of the setpoint.

The RUN/HOLD button may be pressed to interrupt sampling without causing the timer to reset to zero.

Press the ON/OFF button at the end of sampling.

- Total sample minutes will be on the display and will remain until the pump is turned ON again.

Label and package the sample media (zip lock bag) for transfer to the Courier. (Refer to section 8.5).

8.0 TERRESTRIAL SAMPLES

8.1 Vegetation Sample

If possible, avoid sampling an area sheltered by trees and obtain samples which are representative of the pasturage where the grass depth is as close to uniform as practical.

RECORD a one-meter GMSM window-closed measurement on a sample label.

Using grass cutters, cut grass near the ground. Avoid pulling up grass since roots are not desired. Pack a marinelli beaker to obtain as large a mass as practical. The sample parameter is activity per kilogram.

Seal the beaker cover with electrical tape, keeping the tape slightly stretched while wrapping.

Affix a sample label with the date, time, location, sample type, exposure rate at one meter above ground and the initials of the collector.

Repeat the sampling process, placing the second sample in a zip-lock plastic bag instead of a beaker. Label in the same manner, using a separate sample number.

8.2 Soil Sample

Soil samples should be collected from areas that are relatively free of vegetation, rocks and roots. If vegetation cover can not be avoided, it should be sampled with the soil and the analytical results combined to measure the total deposition per surface area.

RECORD a one-meter GMSM window-closed measurement on a sample label.

Prepare the hole cutting tool (approx. 4.25 inches in diameter) to obtain the soil sample by adjusting the collar above the cutting tube for a 2 or more inch cutting depth.

Collect **5** core samples from a square meter area (4 corners and 1 center). The desired sample parameter is square meters, do not obtain more or less core samples.

Note:

5 core diameters equals 0.046 square meters. Fixed lab may multiply activity/sample results by 22 to obtain activity/square meter).

The correct sample depth is obtained by pushing the core tool fully into the ground, and removing the top one centimeter (about one-half inch) from the top of the core (using the putty knife) as the sample retained.

If the soil is too dry or sandy to allow coring, use the shovel or putty knife to collect material about one centimeter deep (approx. 1/2 inch) in the pattern described above.

Place the sample in a marinelli beaker and seal with electrical tape. Affix a sample label with the date, time, location, sample type, sample area, dose rate at one meter above ground and the initials of the collector.

Repeat the sampling process, placing the second soil sample in a large zip-lock plastic bag instead of a beaker. Label in the same manner, using a separate sample number.

8.3 Snow/Ice Sample

RECORD a one-meter GMSM window-closed measurement on a sample label.

Set the core tool for a 4 inch depth. Collect **5** core samples from a square meter area (4 corners and 1 center). The sample parameter is surface area, do not obtain more or less core samples. Ascertain the desired sampling depth from the Environs Assessor, based upon meteorological history.

Note:

5 core diameters equals 0.046 square meters. Fixed lab may multiply activity/sample results by 22 to obtain activity/square meter).

Place the snow/ice in double plastic bags. Check bags for leakage.

Take a second sample (new sample number) approximately 3 meters from the first by repeating the above steps.

Affix a sample label to both samples.

After the snow/ice melts, pour each sample into separate sample jugs and transfer the sample labels to the jug(s). The funnel in cabinet 10 may be useful for filling the jug.

Note:

Instructions for sampling of snow and ice are required per INPO SOER 83-002, "Steam Generator Tube Ruptures", recommendation 11. WBN TROI ID: INPO SOER 83-002, August 22, 1994. . **Do not delete this reference!**

8.4 Other Samples

RECORD a one-meter GMSM window-closed measurement on a sample label.

Any liquid sample container shall be placed in double poly bags with absorbent material.

Outside bags/container of samples should be dry, non-contaminated, labeled and if necessary display a caution radioactive material tag.

Certain types of environmental samples (i.e., rainwater, milk, food crop, fodder and feed, well water) may be requested by Field Control to assist State activities. The minimum sample quantity, type of container and any special controls will be defined dependent on the needs of the situation.

8.5 Sample Identification and Labeling

Each sample shall be tagged with an identification label containing the following appropriate data:

Sample Number
Time taken
Date taken
Location sampled
Name of the Collector
1-meter dose rate
Sample Type
Sampling Flow Rate
Sample Area (if applicable)

The sample number is composed of the abbreviation of the Truck number (T2-xx), assigned to the vehicle followed by a dash and the consecutive number of the sample and type of sample (i.e., T2-1I, T2-1P).

8.6 Isotopic Analysis of Samples

Isotopic analysis of samples may be provided by WARL. Analysis results are to be reported to the Environs Assessor and Field Coordinator.

9.0 OPERATIONAL READINESS - (Equipment and vehicles)

As a minimum, inspections/inventory checks shall be completed each calendar quarter. Additional inspection guidelines may be contained in location-specific procedures.

9.1 Monitoring Team Vehicles

- Inventories and inspections shall be in accordance with **Appendix H**
- Inspection checklists shall be forwarded to the applicable site Emergency Preparedness (EP) Manager prior to the end of the calendar quarter.

A site-specific method of providing accountability control of equipment and materials between inspections shall be practiced. Inventories shall be completed after drills, training, or emergency use. The training instructor is responsible for inventories following training activities and the RP organization is responsible for inventories following drills or emergency response. In either case, a signed inventory form with comment confirming the vehicle was returned in the "as found" condition is sufficient. These inventories shall be forwarded to the Site EP Manager prior to the end of the calendar quarter.

9.2 Field Coordinator Equipment

A Field Coordinator Kit is available at BFN and the CECC. Inventories and inspections shall be performed in accordance with **Appendix I**.

9.3 Courier Equipment

A Courier Kit is available at BFN and the PSC. Inventories and inspections shall be performed in accordance with **Appendix J.**

10.0 REFERENCES

10.1 Radiological Emergency Plan.

10.2 Collection of Environmental Monitoring Samples, SC-01, Radiological Laboratory Procedures Manual.

10.3 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," NUREG-0654 FEMA-REP-1, Rev. 1 (1980).

10.4 "Emergency Dose Assessment Procedures for Atmospheric Releases of Radioactivity from TVA Nuclear Plants," TVA Publication RH-82-1-RA1 (1984).

10.5 "Evaluation of Radiation Emergencies and Accidents Selected Criteria and Data," International Atomic Energy Agency, Vienna (1974).

10.6 "Manual of Protective Action Guide and Protective Actions for Nuclear Accidents", EPA-400, October 15, 1991.

10.7 "Domestic Licensing of Production and Utilization Facilities," 10 CFR 50.

10.8 TVA CECC EPIP-7, CECC RADIOLOGICAL ASSESSMENT STAFF PROCEDURE FOR ALERT, SITE AREA EMERGENCY, AND GENERAL EMERGENCY

10.9 INPO SOER 83-002, "Steam Generator Tube Ruptures", recommendation WBN TROI ID: INPO SOER 83-002, August 22, 1994.

10.10 "Standards for Protection Against Radiation", 10 CFR 20.

11.0 RECORDS

11.1 QA Records

None

11.2 Non-QA Records

Inventory records are retained by Emergency Preparedness in the respective Emergency Preparedness office for a period of three years.

Appendix A
Plant Lab Dispatch

1. Select two qualified persons per team and instruct them to complete Appendix B.

Qualifications

Environs Monitoring Van training	Radiation Worker Training (or equivalent)
Use of full face respiratory protection	Valid Driver's License

NOTE: Environs Monitoring Van training is not required if person is limited to vehicle driver duty under direct supervision of a fully qualified team leader.

2. Contact Site Security and advise that a REP Van is being deployed for site boundary surveys (for expediting access into areas controlled for security reasons). BFN 2219 or 3150; SQN 6144 or 6184; or WBN 8544.

3. For WBN emergencies immediately request a second team from SQN. Instruct SQN staff to establish radio contact with WBN upon arrival at the van (attempt both WBN repeaters, use cell phone for back up), for instructions related to the recommended travel approach to the WBN EPZ and for a recommendation on the need of KI. RP personnel dispatched to WBN should be trained in tritium monitoring

4. If the response is for a plant release with known or potential radioiodine exposure, request authorization for teams to take KI prior to leaving the building (refer to section 4.7) Simulate for drills and do not take if known allergy exists.

5. **Complete the following on field personnel: (Provide to CECC for transfer of control.)**

	Team Member	TVA ID Number	Y.T.D. Dose mrem	10CFR20 Limit	KI Taken Yes/No	Time of KI
Team #1						
Team #1						
Team #2						
Team #2						

6. Obtain the following from the Control Room or ICS and advise teams for deployment:

Suspected Release in progress? Yes / No		Time:
Wind Direction (from)	(degrees)	(compass direction)
Wind Speed	(m.p.h)	(Note: meters/sec. x 2.2 = m.p.h)
Stability Class		

7. As teams establish radio contact, test available transmitters to determine the best reception and advise teams of same. If a Zetron console is installed (BFN and WBN) and reception is poor, depress "MUTE" for transmitters not selected.

8. Report field team data to the TSC per **Appendix F.**
9. Update wind direction periodically to adjust field team deployments.

Appendix B
Monitoring Team Activation / Shift Turnover

*Complete **PROMPTLY!** Emergency classifications may depend on field data.*

INITIAL DEPLOYMENT ACTIONS

- ☐ Identify which radio transmitter to use for initial contact.
- ☐ Collect keys, instruments, sources, KI and any personal respirator spider glasses.
- ☐ Request/administer KI if authorized. *Simulate for drills and do not take if known allergy exists.*
- ☐ Monitor dose rates with GMSM while enroute to truck

UPON ARRIVAL AT TRUCK

- ☐ Don TLD, 200 mrem and 5 rem DRD, note initial reading. (complete Appendix D later).
- ☐ Wrap one GM probe in plastic and secure outside window with beta window open & facing up.
- ☐ Unlock all exterior/interior cabinet doors
- ☐ Place second GM and ISM (window closed) inside vehicle.
- ☐ Establish contact with Field Control and synchronize watches.
- ☐ Prepare GPS unit for operations in accordance with Appendix L.

IF YOU ARE THE FIRST TEAM TO ACTIVATE

- ☐ **DELAY** scaler set-up. Obtain updated wind direction and plant release status.
- ☐ Unless directed otherwise, immediately obtain dose rates at the down wind site boundary route. **NOTE:** Wind direction may fluctuate from the reported direction, therefore, actively search for the plume and report survey results per **Appendix F**
- ☐ Upon arrival at downwind area, **COLLECT** a **GRAB** air sample, (I & P) even if survey meters indicate background levels. If responding to an emergency at a plant with TPBARS, pull a Tritium air sample as well. If necessary, go to a low background area to complete the items below and report air sample results per **Appendix F**

COMPLETE FULL OPERATIONAL READINESS ACTIONS (or if second team to activate)

- ☐ Complete scaler set up per **Appendix C.**
- ☐ Complete **Appendix D.** Complete **Appendix E** if KI was authorized and administered.
- ☐ Confirm the truck has at least three-quarters capacity of gas. If equipped, operate on rear tank first (generator runs off front tank).
- ☐ Contact field team control to report/confirm dose and limits, report operational status and request assignment. Note key events in logbook. If you are a van responding to another site, contact that site for instructions on the recommended travel approach and if KI is recommended.

Unless directed otherwise, the second team to activate should obtain surveys at **5 miles downwind to support SED decisions.** Refer to the table below for BFN releases.

Estimated plume maximum for BFN Stack release						
Stability Class	A	B	C	D	E	F - G
Downwind (miles)	0.62	0.62	0.62	2.0	2.0	5.0

Coordinate inventory requirements per section 9.1 at the end of shift or event termination.

Appendix C
Page 1 of 2
Scaler Set-Up

Scaler Set-Up : Bicron Analyst/NaI Detector	
Name:	Analyst Serial #:
Date:	Calibration due date:

1. Perform battery check and position NaI detector in shielded pig.

2. Install cables; Set unit to: Range x 1000 Channel: 1 Response: S Audio: OFF

NOTE: To achieve listed MDA, background must be < 255 counts per minute

3. Enter a 1 minute background count: _____ counts

Note: If count time is not 1 minute, set the .1/1/10 selector inside the instrument cabinet to 1. See illustration on instrument.

4. Enter a 1 minute Ba^{133} contact count: _____ counts

5. Enter net counts: (Step 4 minus Step 3) _____ counts

6. Enter Ba^{133} activity from Table 1 below: _____ μCi

7. Enter Step 5 divided by Step 6: _____ $\frac{\text{counts}}{\mu\text{Ci}}$

8. Enter acceptance range from instr. label: _____ to _____

If Step 7 result is within the acceptance range, instrument is ready for use.
Record NaI correction factor from label to Appendix F.

9. If unit fails, check source position. NaI probe, cable, and Bicron Analyst are paired, **DO NOT SWITCH.** Contact Field Control if replacement scalers are necessary.

Table 1
Barium Source Activity Chart

Half-life 10.5 yr	2008				2009		
Source ID	May-Jun	Jul-Aug	Sep-Oct	Nov-Dec	Jan-Feb	Mar-Apr	May-Jun
Ba133-01-Pt84	0.041	0.041	0.040	0.040	0.039	0.039	0.039
Ba133-02-Pt84	0.040	0.040	0.040	0.039	0.039	0.038	0.038
Ba133-04-Pt84	0.042	0.041	0.041	0.040	0.040	0.039	0.039
Ba133-07-Pt84	0.041	0.040	0.040	0.039	0.039	0.038	0.038
Ba133-08-Pt84	0.041	0.041	0.040	0.040	0.039	0.039	0.039
Ba133-10-Pt84	0.040	0.040	0.039	0.039	0.038	0.038	0.037
Ba133-11-Pt84	0.041	0.041	0.041	0.040	0.040	0.039	0.039
Ba133-12-Pt84	0.041	0.041	0.040	0.040	0.039	0.039	0.038

Appendix C
Page 2 of 2
Scaler Set-Up

Scaler Set-Up : Bicron Analyst/GM Detector	
Name:	Analyst Serial #:
Date:	Calibration due date:

1. Connect cable to shielded detector and perform a battery check.

2. Set unit range to: Range X 1000 Channel: OUT Response: to S Audio: OFF

NOTE: To achieve listed MDA, background must be < 276 counts per minute

3. Enter a 1 minute background count: _____ counts

Note: If count time is not 1 minute, set the .1/1/10 selector inside the instrument cabinet to 1. See illustration on instrument.

4. Place Tc^{99} source on planchet shelf closest to GM tube.

5. Enter a 1 minute Tc^{99} count: _____ counts

6. Enter net counts: (Step 5 minus Step 3) _____ counts

7. Enter Tc^{99} activity from source box label: _____ dpm

8. Enter Step 6 divided by Step 7: (efficiency) _____ $\frac{\text{counts}}{\text{dpm}}$

If Step 8 result is within the acceptance range of 0.06 to 0.10, instrument is ready for use.
Record GM efficiency onto Appendix F.

9. If unit fails, check source position. If necessary, the GM tube height can be adjusted slightly. Contact Field Control if replacement scalers are necessary.

Appendix D
PAGE 1 OF 2
SHIFT INFORMATION SHEET AND TEAM DOSE TRACKING LOG

Date: _____ **Truck No.:** _____ **Time:** _____

Team Members: **10 CFR 20 Limit = 5000 mrem**

	Name	TVA ID	TLD #	YTD Dose mrem (prior to incident)
A.				
B.				

Instrument Data:		
GMSM#	ISM#	Surveyor 50#
GMSM#	ISM#	Surveyor 50#
Scintrex (Sartrex) 309A Tritium Instrument #		
MSA ELF Pump Instrument #		
Grab Air Sampler #		Continuous Run Sampler #

PROTECTIVE ACTIONS

	CONDITION		ACTION
1A	Any exposure rate> 25 mrem/hr. And radioiodine (I-131) air activity is not known	1A	Potassium Iodide (KI) recommended, notify Field Control
1B	Any measured dose rate >200 mrem/hr.	1B	Evacuation recommended, notify Field Control
1C	Any measured dose rate >10 rem/hr.	1C	Evacuation mandatory, notify Field Control
2A	TEDE dose of 5 rem.	2A	Evacuate unless higher dose is authorized, notify Field Control
2B	TEDE dose of 25 rad.	2B	Evacuation mandatory, notify Field Control
3A	Radioiodine (I131) air activity> 8.0 E-7μCi/cc (40 DAC).	3A	Potassium Iodide (KI) recommended, notify Field Control
4A	Particulate air activity > 1.2 E-7 μCi/cc (40 DAC).	4A	Respiratory protection recommended, notify Field Control
4B	Particulate air activity > 6.0 E-7 μCi/cc (200 DAC).	4B	Respiratory protection mandatory, notify Field Control
4C	Particulate air activity > 6.0 E-6 μCi/cc (2000 DAC).	4C	Evacuation mandatory, notify Field Control

- ***One radioiodine DAC = 2.0 E-8 μCi/cc***
- ***One particulate DAC = 3.0 E-9 μCi/cc***

1 DAC = 2.5 millirem
H3 DAC = 21.6 μCi/m^3 = 2.16 E-5 μ Ci/cc

Appendix D
PAGE 2 OF 2
SHIFT INFORMATION SHEET AND TEAM DOSE TRACKING LOG

ESTIMATED TEDE = DOSIMETER READING x 2 (Section 4.5)
FOR H3-ONLY EXPOSURES, DETERMINE DOSE BASED ON DAC HOURS

Dose Tracking Log:					
21	22	22	24		25
Team Mem.	Time	PC "As Read" (mrem)	Total "As Read" Incident Dose (mrem)	TEDE Estimate "As Corrected" per Field Control (mrem)	KI Taken Yes/No
A.					
A.					
A.					
A.					
A.					

Dose Tracking Log:					
21	22	23	24		25
Team Mem.	Time	PC "As Read" (mrem)	Total "As Read" Incident Dose (mrem)	TEDE Estimate "As Corrected" per Field Control (mrem)	KI Taken Yes/No
B.					
B.					
B.					
B.					
B.					

BE ATTENTIVE TO PROTECTIVE ACTION LEVELS ON PAGE 1 OF 2

Appendix E
Page 1 of 2
Emergency Authorizations

1. Emergency Dose Limits

The persons listed below acknowledge they have volunteered to receive an emergency dose, have been briefed on the emergency situation, and are aware of possible consequences of being exposed to a radiation dose up to the authorized limits (see page 2 of 2).

Signature	TVA ID #	Limit	Date

Authorized by: _____ _____ _____
Name & Title Date Time

2. Issuance of Potassium Iodide (KI)

CAUTION

DO NOT TAKE POTASSIUM IODIDE IF KNOWN ALLERGY EXISTS

The persons listed below acknowledge they have been authorized to take KI on a voluntary basis and have read and understand the information provided on the Food and Drug Administration approved package insert.

Approved Dose: 1 tablet (130 mg) per day

Signature	TVA ID #	Time Taken	Date

Authorized by: _____ _____ _____
Name & Title Date Time

Appendix E
Page 2 of 2
Emergency Authorizations

EPA EMERGENCY DOSE RISK INFORMATION

I.

Health Effects Associated with Whole Body Absorbed Doses Received Within a Few Hours[1].				
Whole Body Absorbed Dose (rad)	Early Fatalities[2] (percent)		Whole Body Absorbed Dose (rad)	Prodromal Effects[3] (percent)
140	5		50	2
200	15		100	15
300	50		150	50
400	85		200	85
460	95		250	98

1 Risks will be lower for protracted exposure periods.
2 Supportive medical treatment may increase the dose at which these frequencies occur by approximately 50 percent.
3 Forewarning symptoms of more serious health effects associated with large doses of radiation.

II.

Approximate Cancer Risk to Average Individuals from 25 rem Effective Dose Equivalent Delivered Promptly.		
Age at Dose (years)	Risk of Premature Death (deaths per 1,000 persons exposed)	Average years of life lost if premature death occurs (years)
20 to 30	9.1	24
30 to 40	7.2	19
40 to 50	5.3	15
50 to 60	3.5	11

Note: Tables referenced from the Environmental Protection Agency's "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents", (EPA-400), May 1992, tables 2-3 and 2-4, page 2-12.

Appendix F
FIELD TEAM MEASUREMENT LOG

NA I Correction Factor:	GM Efficiency:
^{131}Iodine MDA = 2.0 E-9 (if BKG < 255)	Particulate MDA = 2.0 E-9 (if BKG < 276)
^{131}Iodine µCi/cc = (CPM) (Correction Factor) / Volume in Liters	Particulate µCi/cc = (CPM) (4.505 E-10) / (Efficiency) (Volume in Liters)
Tritium µCi/cc = (NET Scintrex [Sartrex] Tritium monitor reading µCi/m^3) (1 E -6)	

REPORT BY COLUMN NUMBER ONLY

	LOCATION				
1	2	3	4	5	6
TRUCK #	SAMPLE POINT	DISTANCE (Miles)	DIRECTION FROM PLANT (Degrees)	TIME TAKEN	RELATIVE PLUME POSITION
					(CIRCLE) C E U

EXPOSURE RATE DATA					
Report Columns 1-9 for Plume Traverse			Report Columns 1-13 for Stationary Survey		
7	8	9	11	12	13
INST. TYPE	1 Meter W/C mR/hr	1 Meter W/O mR/hr	INST. TYPE	NEAR CONTACT W/C mR/hr	NEAR CONTACT W/O mR/hr

AIR SAMPLE DATA						
Report Columns 1-6, 8, AND 15-20						
		15		Count Rates		
	Run Time	Flow LPM	SAMPLE VOL. (L)	BKG	GROSS	NET
I-131						
Part.						
H3						

AIR SAMPLE DATA		
Report Columns 1-6, 8, AND 15-20		
16	17	19
I-131 µCi/cc	PART. µCi/cc	Tritium µCi/cc

TERRESTRIAL/FIXED MONITOR
Report Columns 1-5, 8, AND 20
20
SAMPLE TYPE & NUMBER

Legend

Column 6
C - Center
E - Edge
U - Unknown
Column 7
GMSM or ISM

Column 20		
HP - Heavy Particulate	P - Particulate Filter	T - Tritium
ICE - Ice	RW - Rain water	TLD - Environ. TLD
I - Iodine Filter	SDW- Surface Drink Water	VG - Vegetation
MK - Milk	SL - Soil	WW - Well water
OTH - Other	SN - Snow	

BE ATTENTIVE TO PROTECTIVE ACTION LEVELS IN APPENDIX D, PAGE 1 OF 2

Appendix G
TVA FIELD CONTROL MONITORING RECORD

☐ CECC
☐ RMCC
☐ SITE

_____ Recorded by _____ Date _____ Time

☐ BFN
☐ SQN
☐ WBN

RAC Review:

Distribute Promptly!

	LOCATION				
1	2	3	4	5	6
TRUCK #	SAMPLE POINT	DISTANCE (Miles)	DIRECTION FROM PLANT (Degrees)	TIME TAKEN	RELATIVE PLUME POSITION
					(CIRCLE) C E U

EXPOSURE RATE DATA					
Record Columns 1-9 for Plume Traverse				Record Columns 1-13 for Stationary Survey	
7	8	9	11	12	13
INST. TYPE	1Meter W/C mR/hr	1Meter W/O mR/hr	INST. TYPE	NEAR CONTACT W/C mR/hr	NEAR CONTACT W/O mR/hr

AIR SAMPLE DATA			
Record Columns 1-6, 8, AND 15-20			
15	16	17	19
Flow LPM	I-131 µCi/cc	PART. µCi/cc	Tritium µCi/cc

TERRESTRIAL/FIXED MONITOR Report Columns 1-5, 8 AND 20
20
SAMPLE TYPE & NUMBER

BE ATTENTIVE TO PROTECTIVE ACTION LEVELS ON APPENDIX D, PAGE 1 of 1

ENSURE DATA SHARING WITH THE SITE TSC AND RMCC

Legend

Column 6
C - Center
E - Edge
U - Unknown
Column 7
GMSM or ISM

Column 20		
HP - Heavy Particulate	P - Particulate Filter	T - Tritium
ICE - Ice	RW - Rain water	TLD - Environ. TLD
I - Iodine Filter	SDW- Surface Drink Water	VG - Vegetation
MK - Milk	SL - Soil	WW - Well water
OTH - Other	SN - Snow	

Appendix H
Page 1 of 4
Monitoring Team Vehicle Inventory

Note: During quarterly checks, perform Operability Checks (OC) and check battery status with meter. Change out tape as needed.

1.0 The following items may need to be taken to the vehicle upon activation.

Qty	Item	"Sat"	Remarks
1	Bicron Analyst with NaI detector and cable		OC
1	Bicron Analyst for GM use with cable		OC
2	Ion Survey Meters (range to 10 R/hour)		OC
2	Geiger Mueller Survey Meters (14C or E-530)		OC
2	Bicron Surveyor 50s		OC
1*	MSA ELF Pumps		OC
1*	Scintrex (Sartrex) 309A Tritium-in-Air Monitor and AC charger		OC
1	Package of Potassium Iodide		Expiration:
1	Ba^{133} check source		ID #
1	Tc^{99} check source		ID #

***- Applicable to Sequoyah and Watts Bar Monitoring Team Vehicles ONLY**

2.0 The following are minimum quantities stored in the vehicle.

Environs Monitoring Vehicle Booklet

1	CECC EPIP-9 (controlled copy)		Rev.
4	Appendix B, CECC EPIP-9 (photocopies)		Rev.
4	Appendix C, CECC EPIP-9 (photocopies)		Rev.
4	Appendix D, CECC EPIP-9 (photocopies)		Rev.
4	Appendix E, CECC EPIP-9 (photocopies)		Rev.
50	Appendix F, CECC EPIP-9 (photocopies)		Rev.
4	Appendix H, CECC EPIP-9 (photocopies)		Rev.
1	CECC EPIP-23 (controlled copy)		Rev.
5	Attachment G, CECC EPIP-23 (photocopies)		Rev.
1	Site-specific EPIP-10 (controlled copy)		Rev.
1	Laminated GPS conversion tables		

Miscellaneous Locations

1	GM detector in lead shield		OC
1	Fire extinguisher (check pressure within green band) **Note**: Replace extinguisher 5-years from manufacture date.		Mfg. Date:
1	Primary Motorola radio		OC
1	Cell Phone		OC
1	Hand held spotlight		OC
1	First-aid kit		
1	GPS unit with 12 volt power cord and windshield bracket		OC

Appendix H
Page 2 of 4
Monitoring Team Vehicle Inventory

Work Desk

Qty	Item	"Sat"	Remarks
1	Battery level tester		OC
2	Flashlights (check battery status)		OC
2	Spare batteries size 9 volt		
4	Spare batteries, size D cell		
2	Spare batteries, size AA		
1	Scientific calculator		OC
2	200 mrem Direct Reading Dosimeters		re-zero
2	5 rem Direct Reading Dosimeters		re-zero
2	TLDs (list expiration date)		Date:
1	Scissors		
1	Allen wrench to fit lead shield top cap bolts		
1	Tweezers		
2	Pens or pencils		
6	Planchets		
20	Radioactive Material tags		
40	Sample labels		

Cabinet 1

4	Full-face respirators w/cartridges		
8	Spare respirator cartridges (hepa)		
1	Spray cleaner for decontamination		
15	Massilin cloths		
15	Paper towels		
1	Water-less hand cleaner		

Cabinet 2

	Air Sampling Portal vents and electrical outlets		OC
1	MSA ELF Pump Battery Charger		

Cabinet 3

14	Marinelli beakers (500 ml)		
10	Liquid Sample containers)		
1	Sample Transport bag		

Cabinet 4

1	DC to AC Power Inverter		OC

Cabinet 5

	(Space reserved for air samplers)		

Cabinet 6

20	Large plastic radwaste bags		
20	Medium plastic radwaste bags		

Appendix H
Page 3 of 4
Monitoring Team Vehicle Inventory

Cabinet 7

Qty	Item	"Sat"	Remarks
5	Screw on air sampler heads		
1	Box 2 inch prefilters (minimum of 30 each)		
30	Silver Zeolite air sampler cartridges (list expiration date) NOTE: 10 year shelf life if packaging is unopened.		Date:
30	Molecular sieves		
2	Lengths of sampling tubing and male leur connectors		
30	Petri dishes		
30	Small zip-lock bags		
30	Large zip-lock bags		
1	Roll of plastic wrap (Saran type)		
1	Box gloves - sample handling (min. 20 pair)		
1	Box smears (minimum of approx. 200)		
1	Roll 2 inch duct tape		
1	Roll Radiation Warning Symbol tape		
1	Roll electrical tape		
1	Dosimeter charger		OC

Cabinet 8

	Electrical switch panel		OC
	Onboard generator (record run time displayed)		OC hrs.

Cabinet 9

1	Logbook		
1	DOT Emergency Response Guidebook		Year:
1	TN, AL and GA State road maps		
1	Sample Point Description book for BFN, SQN, WBN		
6	Area posting signs (Radiation and Contamination Area insert)		
6	Radioactive placards		
1	Trash can		
2	Rain Suits		
2	Insulated coveralls		
Sample Point Maps, latest revision per EPIP-9 section 4.3			
2	BFN 2-, 10-, 50- mile sampling point maps		
2	SQN 2-, 10-, 50- mile sampling point maps		
2	WBN 2-, 10-, 50- mile sampling point maps		

Cabinet 10

1	Set Jumper cables		
1	Funnel		
1	Siphon pump/hose		
1	Set of wrenches		
1	Set of screwdrivers		
1	Pair of Pliers		
1	Hammer		
1	Box of 3 reflective triangles		

Appendix H
Page 4 of 4
Monitoring Team Vehicle Inventory

Cabinet 11

Qty	Item	"Sat"	Remarks
12	Full dressout sets		
12	Pair booties		
1	Roll dress-out tape		

Cabinet 12

Qty	Item	"Sat"	Remarks
2	Air samplers for Grab Samples (H810)		OC
2	Air samplers for Continuous Run (H810)		OC

Outside Compartments

1 ea.	110 volt extension cord (25-, 50-, 100 ft)		
1	External vehicle power supply cord (shore power)		
8	Wooden stakes		
1	Soil sampling tool		
1	Shovel		
400	Feet of radiological warning barrier rope/ribbon		
1	Box plastic sheeting		
1	Putty knife (4 inch)		
1	Grass cutters		
6	Traffic cones		
1	Can of spray paint for marking of areas (i.e., roadway)		
6	Pair of work gloves		
1	Fire extinguisher (check pressure within green band) **Note**: Replace extinguisher 5-years from manufacture date.		Mfg. Date:
1	Ground Fault Interrupter		OC
1	Honda gas generator		OC

Vehicle Location: _____ Vehicle tag #: _____

Forward for signatures below. EP Manager to receive by end of calendar quarter.

Purpose of Inspection: ☐ Monthly ☐ Quarterly ☐ Post training/drill/response

Additional Comments: _____

Inspected by:		Date:	
Supervisory Review:		Date:	
EP Manager:		Date:	

Appendix I
Field Coordinator Kit Inventory

Emergency Preparedness Implementing Procedures

Qty	Item	"Sat"	Remarks
1	CECC EPIP-7 (controlled copy)		Rev.
1	CECC EPIP-9 (controlled copy)		Rev.
1	CECC EPIP-15 (controlled copy)		Rev.
1	CECC EPIP-23 (controlled copy)		Rev.
1	REND (controlled copy)		Rev.

Miscellaneous Items [1]

Qty	Item	"Sat"	Remarks
1	Radiological Health Handbook		
12	TLDs (list expiration date)		Date
1	Scientific calculator		
50	Copies of Environs Monitoring forms (TV 7918A)		Date
10	Copies of Clerical Logsheets		
1	Logbook		
1	Package of Potassium Iodide (list expiration)		Date
1	Flashlight & batteries		
1	DOT Emergency Response Guidebook		Year
1	Tennessee Highway road map		
1	Alabama Highway road map		
1	Georgia Highway road map		
1	Sample Point Description booklet for BFN		
1	Sample Point Description booklet for SQN		
1	Sample Point Description booklet for WBN		

Sample Point Maps, latest revision per EPIP-9 section 4.3			
2	BFN 2-, 10-, 50- mile sampling point maps		
2	SQN 2-, 10-, 50- mile sampling point maps		
2	WBN 2-, 10-, 50- mile sampling point maps		

[1] Miscellaneous office supplies may also be contained in the kit for convenience purposes.

Kit Location: ☐ CECC ☐ BFN

Purpose of Inspection: ☐ Quarterly ☐ Post Training ☐ Post Drill / Response

Additional Comments: _____

Inspected by:		Date:	
Manager Review:		Date:	

Appendix J
Courier Kit Inventory

Qty	Item[1]	"Sat"	Remarks
1	CECC EPIP-9 (controlled copy)		Rev.
1	200 mrem Direct Reading Dosimeter		
1	TLD (list expiration date)		Date
1	Dosimeter charger with battery		
1	Flashlight & batteries		
1	First-aid kit		
1	Scientific calculator		
1	Pair Disposable coveralls		
4	Pair booties		
10	Pair sample handling gloves and cotton liners		
1	Pair work gloves		
1	Package of Potassium Iodide (list expiration)		Date
12	Radioactive Material tags		
12	Sample labels		
12	Yellow "radioactive material" bags		
1	Roll of duct tape		
1	Roll of electrical tape		
1	Rain coat		
1	Logbook		
3	Pens		
1	Sample transport container		
1	DOT Emergency Response Guidebook		Year
1	Highway road map including TN, AL and GA.		
1	Sample Point Description booklet for BFN		
1	Sample Point Description booklet for SQN		
1	Sample Point Description booklet for WBN		

Sample Point Maps, latest revision per EPIP-9 section 4.3			
1	BFN 2-, 10-, 50- mile sampling point maps		
1	SQN 2-, 10-, 50- mile sampling point maps		
1	WBN 2-, 10-, 50- mile sampling point maps		

[1] Miscellaneous office supplies may also be contained in the kit for convenience purposes.

Kit Location: ☐ PSC ☐ BFN

Purpose of Inspection: ☐ Quarterly ☐ Post Training ☐ Post Drill / Response

Additional Comments: _____

Inspected by:		Date:	
Manager Review:		Date:	

Appendix K
Page 1 of 4
Global Positioning Satellite Unit Operation

- **Keep unit mounted on windshield bracket with power plug installed.**
- **Remember to turn the unit off by the PWR button when leaving the vehicle.**
- **DO NOT ATTEMPT TO ALTER MENU. Depressing the QUIT button is acceptable to "step back" or to start over on the sequence below.**

1. Depress the **PWR** button.on the top of unit to turn unit on
2. Depress the **ENTER** button.
3. Depress the **NAV** button **2 TIMES** to bring up the screen with DST and BRG displayed.
4. Depress the **GOTO** button.
5. Use the 4 arrow button and depress the down arrow to highlight **USER**, then depress the **ENTER** button.
6. Use the 4 arrow round button to highlight the desired plant.
   BFN 01 SQN 02 WBN 03
7. Once the desired plant is highlighted, depress **ENTER**.
8. The unit should now display the Bearing in degrees (BRG) and Distance (DST) in miles from the selected nuclear site.
9. No further actions are needed. Simply drive and view the screen for continuous updates of your bearing and distance from the selected nuclear site.
10. To turn the unit off when leaving the vehicle, depress the **PWR** button to turn the unit off. Remove bracket from windshield, store GPS screen out of direct sunlight.

Note:
Bearing (**BRG**) indicates the compass direction back TO the nuclear site. The Bearing (BRG) value is 180 degrees off from our method of communication to dose assessors and decision makers. Therefore, when reporting data locations, field team members should report the **DISTANCE** and **DIRECTION**. Field teams will determine the adjusted value using the conversion tables such as pages 2 through 4 of this appendix. An example radio report for the above illustration would be a "**Distance of 17.7** miles, **Direction 224 degrees**".

Appendix K
Page 2 of 4
Global Positioning Satellite Unit Operation

BRG displayed	FROM adjusted	BRG displayed	FROM adjusted	BRG displayed	FROM adjusted	BRG displayed	FROM adjusted
1	181	31	211	61	241	91	271
2	182	32	212	62	242	92	272
3	183	33	213	63	243	93	273
4	184	34	214	64	244	94	274
5	185	35	215	65	245	95	275
6	186	36	216	66	246	96	276
7	187	37	217	67	247	97	277
8	188	38	218	68	248	98	278
9	189	39	219	69	249	99	279
10	190	40	220	70	250	100	280
11	191	41	221	71	251	101	281
12	192	42	222	72	252	102	282
13	193	43	223	73	253	103	283
14	194	44	224	74	254	104	284
15	195	45	225	75	255	105	285
16	196	46	226	76	256	106	286
17	197	47	227	77	257	107	287
18	198	48	228	78	258	108	288
19	199	49	229	79	250	109	289
20	200	50	230	80	260	110	290
21	201	51	231	81	261	111	291
22	202	52	232	82	262	112	292
23	203	53	233	83	263	113	293
24	204	54	234	84	264	114	294
25	205	55	235	85	265	115	295
26	206	56	236	86	266	116	296
27	207	57	237	87	267	117	297
28	208	58	238	88	268	118	298
29	209	59	239	89	269	119	299
30	210	60	240	90	270	120	300

Appendix K
Page 3 of 4
Global Positioning Satellite Unit Operation

BRG displayed	FROM adjusted	BRG displayed	FROM adjusted	BRG displayed	FROM adjusted	BRG displayed	FROM adjusted
121	301	151	331	181	1	211	31
122	302	152	332	182	2	212	32
123	303	153	333	183	3	213	33
124	304	154	334	184	4	214	34
125	305	155	335	185	5	215	35
126	306	156	336	186	6	216	36
127	307	157	337	187	7	217	37
128	308	158	338	188	8	218	38
129	309	159	339	189	9	219	39
130	310	160	340	190	10	220	40
131	311	161	341	191	11	221	41
132	312	162	342	192	12	222	42
133	313	163	343	193	13	223	43
134	314	164	344	194	14	224	44
135	315	165	345	195	15	225	45
136	316	166	346	196	16	226	46
137	317	167	347	197	17	227	47
138	318	168	348	198	18	228	48
139	319	169	349	199	19	229	49
140	320	170	350	200	20	230	50
141	321	171	351	201	21	231	51
142	322	172	352	202	22	232	52
143	323	173	353	203	23	233	53
144	324	174	354	204	24	234	54
145	325	175	355	205	25	235	55
146	326	176	356	206	26	236	56
147	327	177	357	207	27	237	57
148	328	178	358	208	28	238	58
149	329	179	359	209	29	239	59
150	330	180	0	210	30	240	60

Appendix K
Page 4 of 4
Global Positioning Satellite Unit Operation

BRG displayed	FROM adjusted	BRG displayed	FROM adjusted	BRG displayed	FROM adjusted	BRG displayed	FROM adjusted
241	61	271	91	301	121	331	151
242	62	272	92	302	122	332	152
243	63	273	93	303	123	333	153
244	64	274	94	304	124	334	154
245	65	275	95	305	125	335	155
246	66	276	96	306	126	336	156
247	67	277	97	307	127	337	157
248	68	278	98	308	128	338	158
249	69	279	99	309	129	339	159
250	70	280	100	310	130	340	160
251	71	281	101	311	131	341	161
252	72	282	102	312	132	342	162
253	73	283	103	313	133	343	163
254	74	284	104	314	134	344	164
255	75	285	105	315	135	345	165
256	76	286	106	316	136	346	166
257	77	287	107	317	137	347	167
258	78	288	108	318	138	348	168
259	79	289	109	319	139	349	169
260	80	290	110	320	140	350	170
261	81	291	111	321	141	351	171
262	82	292	112	322	142	352	172
263	83	293	113	323	143	353	173
264	84	294	114	324	144	354	174
265	85	295	115	325	145	355	175
266	86	296	116	326	146	356	176
267	87	297	117	327	147	357	177
268	88	298	118	328	148	358	178
269	89	299	119	329	149	359	179
270	90	300	120	330	150	0	180

Attachment 13.03-26B

(24 Pages including cover sheet)

CECC-EPIP-6

CECC PLANT ASSESSMENT STAFF PROCEDURE FOR ALERT, SITE AREA EMERGENCY, AND GENERAL EMERGENCY

Tennessee Valley Authority CENTRAL EMERGENCY CONTROL CENTER EMERGENCY PLAN IMPLEMENTING PROCEDURES	Title CECC PLANT ASSESSMENT STAFF PROCEDURE FOR ALERT, SITE AREA EMERGENCY, AND GENERAL EMERGENCY	CECC EPIP-6 REV. 30 PAGE 1 OF 23 Effective Date: 06-30-2008

QUALITY RELATED

WRITTEN BY: Thomas E. Adkins (*Signature*) REVIEWED BY: John Parshall (*Signature*) 6-25-08 (*Date*)

PLAN EFFECTIVENESS DETERMINATION PERFORMED BY: Thomas E. Adkins (*Signature*) 6-25-08 (*Date*)

CONCURRENCES

Concurrence Signature	Date
☒ **Manager, EP Program Planning and Implementation** J. Parshall	6-26-08
☒ **Manager, Emergency Preparedness** J. Parshall for BKM	6-26-08

APPROVAL

APPROVED BY: *Heyward R. Rogers* (*Signature*) Vice President, Nuclear Support (*Title* *Organization*) 6/29/08 (*Date*)

REVISION LOG

Rev. No.	Date	Description of Revision
30	06/30/08	Page 7, revised RSC to match REP and added responsibility to call Engineering Representative (Eng. Rep.). Page 9, corrected title of Eng. Rep. and added Eng. Rep. to job of contacting designated individuals. Updated Appendix D to include EDMG and MA procedures. Add instructions for use of Safeguards Information in the CECC.

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1.0 PURPOSE

This procedure is designed to direct the Plant Assessment Manager and staff to ensure a consistent, accurate, and timely response in the event of an accident. This procedure further serves to identify the necessary information which is provided to the CECC Director to ensure that prompt, accurate, public protective action recommendations can be made by the CECC to appropriate State authorities.

2.0 SCOPE

This procedure covers the actions of the Plant Assessment Manager and staff during an Alert, Site Area Emergency, or General Emergency.

3.0 REFERENCES

Radiological Emergency Plan.

4.0 ABBREVIATIONS AND DEFINITIONS

CECC - Central Emergency Control Center
EDO - Emergency Duty Officer
FSAR - Final Safety Analysis Report
NCO - Nuclear Central Office
NE - Nuclear Engineering
NP - Nuclear Power
NPG - Nuclear Power Group
ODS - Operations Duty Specialist
SM - Shift Manager
SPDS - Safety Parameter Display System
STC - Sequoyah Training Center
SRO - Senior Reactor Operator
REND - Radiological Emergency Notification Directory
TAT - Technical Assessment Team (onsite)
TSC - Technical Support Center

5.0 RESPONSIBILITIES

5.1 The ODS is responsible for contacting the CECC Plant Assessment staff and having them report to the CECC.

The Plant Assessment Manager is responsible for ensuring that the CECC Director is provided with periodic summaries of information needed for overall accident assessment.

5.2 CECC Plant Assessment Staff

The CECC Plant Assessment staff is responsible for assisting the Plant Assessment Manager in carrying out his responsibilities in providing NCO technical support to the affected plant and to the CECC Director. An assignment of positions and duties of the Plant Assessment staff as well as a description of augmenting support groups is described in Appendix A.

5.3 Attachment K or a similar form will be used to document Fitness for Duty when an individual is called and requested to respond to an emergency.

6.0 PROCEDURE REQUIREMENTS

6.1 Initial Actions (Plant Assessment Manager)

6.1.1 Notify the Technical Assessment Manager that the CECC Plant Assessment staff is activated. Obtain a current status report.

6.1.2 Review the emergency condition with the CECC Director.

6.1.3 Ensure that the Plant Assessment Team and Boardwriter have established communication with the site control room communication bridge.

6.1.4 Determine if other technical support personnel are required and notify accordingly. (See REND.)

6.2 Accident Assessment

6.2.1 Verify that the ICS/PEDS is functional.

6.2.2 The Plant Assessment Team shall evaluate site's conditions and develop assessments in terms of current and long-range plant conditions and apply their evaluation to making appropriate public protective action recommendations.

6.2.3 The Plant Assessment Manager shall ensure that accident assessment information is provided to the CECC Director on a frequent basis (at a minimum, hourly). These assessments shall provide summary information (appendix B) as well as appropriate recommended public protective actions in accordance with accident assessment logic specified in Appendix C. The Plant Assessment Manager will ensure the plant information on the status display is correct and current. (See Appendix G for checklist.)

6.2.4 Potential Release Evaluation

If after consultation with the Plant Assessment and Radiological Assessment Managers, the CECC Director requests that a predictive release evaluation be performed based on the potential for significant changes in plant conditions, the Plant Assessment Team shall determine the appropriate assumptions to be made and perform the necessary calculations. The areas to be considered are as follows:

a. Increased fuel failure (changes in primary coolant activity levels).

b. Anticipated changes in primary coolant leakage rates or break sizes.

c. Anticipated changes in containment leakage rates (i.e., changes in containment pressure and/or changes in size of containment ruptures or holes).

6.3 **General Operation**

6.3.1 During the course of an emergency, should the accident upgrade, or terminate, the Plant Assessment Manager shall notify the CECC Director immediately.

6.3.2 If available personnel and equipment of NP are not enough to cope with the emergency, contact the designated representative of other TVA organizations, as necessary, to supply adequate resources to recover from the accident. Log the organizations called for assistance. A description of services available and emergency contacts are available in the TVA Radiological Emergency Notification Directory (REND).

6.3.3 For a Site Area Emergency or General Emergency, the site should be reminded that additional technical personnel are available from the CECC to assist the technical support staff at the TSC. The Plant Assessment Manager should discuss the need for this upgraded capability with the Technical Assessment Manager. Based upon this discussion, selected technical support personnel may be dispatched by ground or air transportation.

6.3.4 The Plant Assessment Manager will coordinate with the CECC Director the selection of staff to serve as Technical Advisor(s) to the TVA spokesperson at the JIC; the Public Information Manager and the State Communicator in the CECC; and the TVA liaison at the State EOC. This position will be responsible for providing a nontechnical interpretation of the events.

Should the accident be expected to last for an extended period, the Plant Assessment Manager originates a schedule for relief. The duties of Plant Assessment Manager should only be passed on to qualified individuals for the Plant Assessment Manager's position. He also directs his staff to prepare a schedule for their relief to ensure that necessary Plant Assessment staff is available for the duration of the emergency.

6.3.5 The Plant Assessment Manager will ensure that Plant Assessment Team use and discussion of Safeguards Information is restricted to the small CECC Conference Room unless directed otherwise by the CECC Director and that only authorized personnel has access to Safeguards Information.

6.3.6 The Plant Assessment Manager and staff will support the CECC Director as required for carrying out recovery efforts from the accident.

6.3.7 Upon termination of the emergency, the Plant Assessment Manager and staff shall make themselves available for review of the accident.

7.0 RECORD

7.1 **QA Records**

None

7.2 **Non-QA Records**

Drill and Exercise (See CECC EPIP-3)
Emergency Records (See CECC EPIP-3)

APPENDIX A
Page 1 of 3
CECC PLANT ASSESSMENT STAFF POSITIONS/SUPPORT FUNCTIONS

1. PLANT ASSESSMENT STAFF

A. Plant Assessment Manager - Directs the CECC Plant Assessment staff and advises the CECC Director on protective action recommendations based on plant status. (See CECC-EPIP-6, Appendix G, for specific duties).

B. Plant Assessment Coordinator - Responsible for managing the overall activities of the CECC Plant Assessment Team and keeping the Plant Assessment Manager and CECC Director informed of plant status. (See Appendix H for checklist.)

1. Ensures that overall plant assessments are being periodically provided to the Plant Assessment Manager. This assessment (Appendix B) shall be based on an evaluation of plant conditions and its application to the protective action logic diagram (Appendix C). The Plant Assessment Manager will use the assessments and recommendations to brief the CECC Director.

2. Responsible for coordinating (through the Resource Support Coordination) other support activities as required.

C. Resource Support Coordinator - Will maintain communications with other NP technical personnel to coordinate support as necessary. Will coordinate support from other TVA organizations such as legal, medical, finance, and procurement, and will coordinate requests for support from other organizations outside TVA such as equipment vendors and INPO. Will coordinate arrangements for special equipment and supplies. Notifies Engineering Representative. (See Appendix I for checklist.)

1. Provides logistics support as required to the CECC.

2. Maintains communications with other NP technical staff representatives to keep them briefed on the emergency conditions and coordinates obtaining support from them as necessary.

3. Assists the Plant Assessment Coordinator in other communications needs as necessary.

4. The Resource Support Coordinator provides initial notification to the liability insurance carrier (ANI).

5 The Resource Support Coordinator notifies the Engineering Representative.

APPENDIX A
Page 2 of 3
CECC PLANT ASSESSMENT STAFF POSITIONS/SUPPORT FUNCTIONS

D. Plant Assessment Team - Provides periodic evaluation of plant status information and protective action recommendations (when applicable) to the Plant Assessment Manager. Serves as a technical reference. (See Appendix J for checklist.)

The assessment team shall be made up of the following: team leader, engineers, SROs, STAs, core damage assessors, etc. Exact makeup of the team will be determined by the team leader.

Duties

1. The Plant Assessment Team Leader will be activated by the ODS. The Plant Assessment Team Leader is responsible for activating the remainder of the required team members.

2. The assessment team shall provide a periodic evaluation of the situation and input back to the site and the CECC as appropriate via the Plant Assessment Coordinator.

3. The assessment team shall evaluate all current ICS/PEDS data and previous telecopied information and discuss the key plant events with the Plant Assessment Manager or Plant Assessment Coordinator to ensure they have received all the information necessary to begin an evaluation of plant conditions. Appendix C provides a methodology to be used as guidance in providing a recommended protective action for the public to the CECC Director.

4. The assessment team will draw on their knowledge of SPDS data, FSAR, Emergency Operating Instructions, owners' group work, analytical basis for accident analyses, and communications with the TSC in generating plant assessments (appendix B) in terms of current and long-range plant conditions, and in applying their evaluation to the protective action logic diagram (Appendix C). Appendix D provides a list of reference material which is maintained in the Plant Assessment Team area. Appendix E provides a list of the critical drawings which are controlled in the CECC. The overall accident assessment serves to inform the Plant Assessment Manager of the general plant status. It also enables the Plant Assessment Manager to communicate with the CECC Director in planning offsite protective actions with the intent of informing the State through the CECC of the status of the plant and the implications of that status. These assessments shall be updated hourly (minimum).

5. If requested, the assessment team may serve as an engineering/operations reference for the plant. They will reply to plant inquiries to the best of their ability based on the available information. (See Appendix F for recommendation form). Gross predictive actions may be required for offsite emergency planning. If possible, the change in plant status will be addressed (e.g., the plant's status is improving or the plant's status is degrading).

APPENDIX A
Page 3 of 3
CECC PLANT ASSESSMENT STAFF POSITIONS/SUPPORT FUNCTIONS

6. The assessment team, based on the particular accident, will select appropriate safety parameters for trending.

7. For BFN events, the duty WBN and SQN PAT Leaders report to the CECC to assist the BWR Team Leader/PAC with general duties, such as Boardwriter or Communicator. This role does not require detailed knowledge of BWR structures, systems, components and procedures.

E. Engineering Representative - Will provide a point of contact in the CECC for onsite and offsite Engineering. Will provide necessary engineering support as needed from the Engineering organization.

II. SUPPORTING NP STAFFS

Certain organizations may be activated along with the CECC Staff. If requested to staff by the CECC Director, they will report to the assigned location and coordinate support within their areas of expertise.

III. TECHNICAL SUPPORT

Certain NP staffs provide expertise in reactor systems and core engineering, electrical engineering, mechanical engineering, chemical engineering, chemistry, shielding, transient analysis, fire protection, electrical distribution (inplant), security, metallurgy, radwaste, and instrumentation. The Plant Assessment Manager delegates to the Resource Support Coordinator or Engineering Representative the job of contacting these designated individuals by phone or through their respective organizational contacts as needed. If necessary, technical support personnel may be sent to the plant.

IV. ALL PLANT ASSESSMENT STAFF MEMBERS

All Plant Assessment Staff Members are responsible for proper control of Safeguards Information. All use and discussion of Safeguards Information is restricted to the small CECC Conference Room unless otherwise directed by the CECC Director.

APPENDIX B
PLANT SYSTEMS ASSESSMENT

TO: PLANT ASSESSMENT MANAGER

TIME OF ASSESSMENT _____

FROM: PLANT ASSESSMENT TEAM

PAGE: _____

UNIT: _____

PLANT SYSTEMS ASSESSMENT

I. HEAT REMOVAL CAPABILITY
☐ Stable ☐ Improving ☐ Deteriorating
Basis:

II. FUEL INTEGRITY AND Rx STATUS
☐ Stable ☐ Improving ☐ Deteriorating
Basis:

III. RADIOACTIVITY IN CONTAINMENT
☐ Stable ☐ Improving ☐ Deteriorating
Basis:

IV. CONTAINMENT INTEGRITY AND STATUS
☐ Stable ☐ Improving ☐ Deteriorating
Basis:

V. OVERALL ASSESSMENT (Including status of other units)
☐ Stable ☐ Improving ☐ Deteriorating
Basis:

_____ Assessment Team Leader _____ Time

_____ Plant Assessment Coordinator _____ Time

APPENDIX C
PROTECTIVE ACTION RECOMMENDATIONS

Note 1: If conditions are unknown utilizing the flowchart, then answer is NO.
Note 2: A short term release is defined as "a release that does not exceed a 15 minute duration".

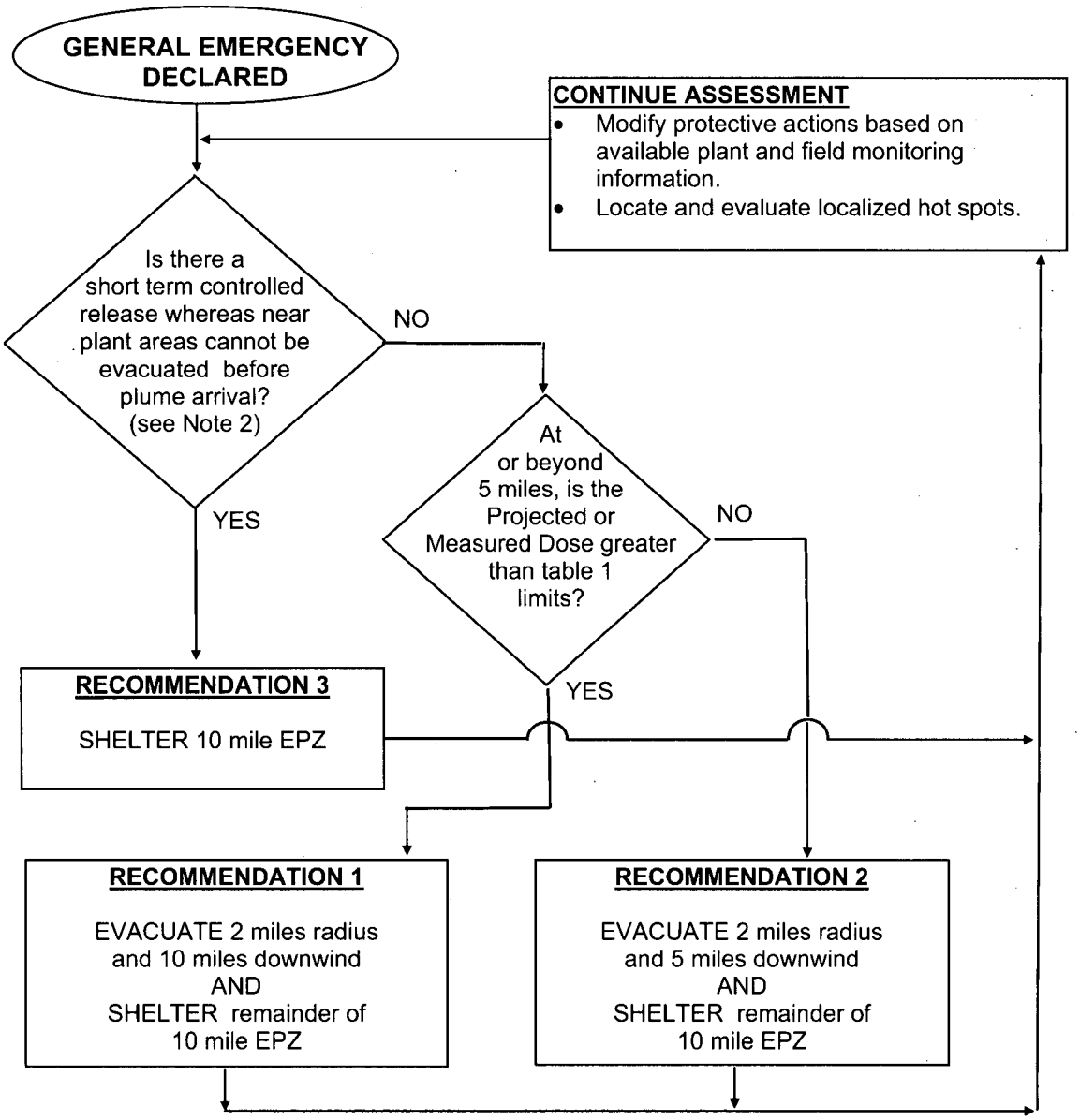

TABLE 1 Protective Action Guides (PAG)

TYPE	LIMIT
Measured	3.9 E-6 micro Ci/cc of Iodine 131 or 1 REM per hour External Dose
Projected	1 REM TEDE or 5 REM Thyroid CDE

U:PAR chart
5/17/05.W95

APPENDIX D
Page 1 of 2
PLANT ASSESSMENT TEAM REFERENCE MATERIAL/EQUIPMENT

Sequoyah

- Final Safety Analysis Report (FSAR)
- Technical Specifications
- Emergency Abnormal Procedures (EAP)
- Emergency Contingency Action (ECA)
- Emergency Plan Implementing Procedures (EPIP)
- Emergency Operating Instructions Program Manual (EPM)
- Emergency Instructions (ES)
- Functional Restoration Guidelines (FR)
- Abnormal Operating Procedures (AOP)
- PWR Systems Manuals (NRC Training Manual)
- Controlled Drawings - Mechanical, Electrical, Logic, Piping Layout
- Offsite Dose Calculation Manual (ODCM)
- Integrated Computer System (ICS)
- Plant Engineering Duty System (PEDS)
- Technical Instructions (TI-18 and TI-28)
- Severe Accident Management Guidelines (SAMGs)
- Terrorist Event Mitigation (EPSIL-1)
- Mitigating Actions (MA)
- Extensive Damage Mitigating Guidelines (EDMGs)

Browns Ferry

- Final Safety Analysis Report (FSAR)
- Technical Specifications
- Emergency Plan Implementing Procedures (EPIP)
- Emergency Operating Instructions (EOI, EOI-PM)
- Abnormal Operating Instructions (AOI)
- BWR Systems Manuals (NRC Training Manual)
- Controlled Drawings - Mechanical, Electrical, Logic, Piping Layout
- Technical Instruction - (TI-15, TI-45, TI-88)
- Offsite Dose Calculation Manual (ODCM)
- Integrated Computer System (ICS)
- Plant Engineering Data System (PEDS)
- Severe Accident Management Guidelines (SAMGs)
- Extensive Damage Mitigating Guidelines (EDMGs)

Watts Bar

- Final Safety Analysis Report (FSAR)
- Technical Specifications (Tech Specs)
- Technical Instructions (TI-4 and TI-18)
- Abnormal Operating Instructions (AOI)
- PWR Systems Manuals (NRC Training Manual)
- Offsite Dose Calculation Manual (ODCM)
- Emergency Contingency Actions (ECA)
- Emergency Operating Instructions (EI)
- Emergency Plan Implementing Procedures (EPIP)
- Functional Restoration Guidelines (FR)
- Emergency Response Facility Data System (ERFDS)
- Integrated Computer System (ICS)
- Plant Engineering Data System (PEDS)
- Severe Accident Management Guidelines (SAMGs)
- Serious Event Mitigation (EPSIL-1)
- Mitigating Actions (MA)
- Extensive Damage Mitigating Guidelines (EDMGs)

APPENDIX D
Page 2 of 2
PLANT ASSESSMENT TEAM REFERENCE MATERIAL/EQUIPMENT

Corporate

- Radiological Emergency Plan (REP)
- CECC EPIPs
- Radiological Emergency Notification Directory (REND)
- INPO Emergency Resources Manual (ERM)
- Westinghouse Owner's Group Emergency Response Guidelines (WOGERG)

APPENDIX E
Page 1 of 3
BROWNS FERRY NUCLEAR PLANT CRITICAL DRAWING LIST

These drawings are maintained in the CECC as critical drawings. Example of numbering system (47W800 = 1-47W800 = 1-47E800). All issued sheets, excluding connectivity (A) and insulation (E) sheets, of a listed drawing will be included unless otherwise noted. Other drawings may be kept in the CECC besides these critical drawings.

15W500
17W200
17W201
45W1504
45W1505
45W1506

47W610 Series
47W611 Series (CCDs only)
47W800 Series

APPENDIX E
Page 2 of 3
SEQUOYAH NUCLEAR PLANT CRITICAL DRAWING LIST

These drawings are maintained in the CECC as critical drawings. Example of numbering system (47W800 = 1-47W800 = 1-47E800). All issued sheets, excluding connectivity (A) and insulation (E) sheets, of a listed drawing will be included unless otherwise noted. Other drawings may be kept in the CECC besides these critical drawings.

15E500	47W610-70	47W611-63	47W800	47W856
47W610-1	-72	47W611-99	801	857
-2	-74		802	858
-3	-77		803	859
-5	-78		804	860
-6	-81		805	862
-7	-82		807	865
-12	-85		809	866
-14	-87		810	867
-15	-90		811	868
-18	-92		812	
-20	-94		813	871
-24	-99		814	872
-25			815	881
-26			816	
-27			819	
-28			830	
-30			831	
-31			832	
-31C			834	
-32			835	
-34				
-35			838	
-36			839	
-39			840	
-40			841	
-41			842	
-43			843	
-46			844	
-47			845	
-54			846	
-58			848	
-59			849	
-61			850	
-62			851	
-63			852	
-65			853	
-67			854	
-68			855	

APPENDIX E
Page 3 of 3
WATTS BAR NUCLEAR PLANT CRITICAL DRAWING LIST

These drawings are maintained in the CECC as critical drawings. Example of numbering system (47W800 = 1-47W800 = 1-47E800). All issued sheets, excluding connectivity (A) and insulation (E) sheets, of a listed drawing will be included unless otherwise noted. Other drawings may be kept in the CECC besides these critical drawings.

15E500	47W610-70	47W611-00	47W801	47W856
47W610-1	-72	47W611-01	803	857
-2	-74	47W611-03	804	859
-3	-77	47W611-63	805	860
-5	-78	47W611-99	807	862
-6	-81		809	865
-7	-82		810	866
-12	-87		811	868
-14	-90		812	
-15	-94		813	
-18			814	
-20			815	
-24			816	
-26			819	
-27			830	
-28			831	
-30			832	
-32			834	
-35			835	
-36			838	
-39			839	
-40			840	
-41			841	
-43			842	
-46			843	
-47			844	
-54			845	
-58			846	
-59			848	
-61			849	
-62			850	
-63			851	
-65			852	
-67			853	
-68			854	
			855	

APPENDIX F
CECC PLANT ASSESSMENT TEAM RECOMMENDATION TO THE TSC

Recommendation:

Approval _____
Plant Assessment Coordinator

Approval _____
Plant Assessment Manager

APPENDIX G
Page 1 of 2
PLANT ASSESSMENT MANAGER CHECKLIST

Date:_____

TIME/INITIAL

_____/____ Designate Systems Technical Advisor to the CECC.

_____/____ Designate Systems Technical Advisors to JIC when activated.

_____/____ Designate Systems Technical Advisor to State EOC.

_____/____ If emergency was declared at BFN, verify that notification of Plant Assessment Staff has been initiated.

_____/____ Establish communications with Site Technical Assessment Manager.

_____/____ Notify the Site Technical Assessment Manager when the PAT is staffed.

_____/____ Prepare shift staffing plan, if necessary. (Direct Plant Assessment Coordinator to prepare plan.)

GENERAL OPERATIONS

1. Log key events and major actions taken.
2. Responsible to the CECC Director to ensure that he is kept periodically briefed on plant status.
3. Maintains contact with the site Technical Assessment Manager and ensures that necessary support is provided, makes appropriate recommendations to the Technical Assessment Manager and based on the site's disposition, informs the CECC of the site's actions.
4. Ensures that periodic status reports are received from the site and provided to the CECC Director, other support organizations as needed, and within the CECC.
5. Requests assistance from other organizations, local agencies, government installations, or vendors, as needed.
6. Ensures that a sequence of events is being maintained on the status display.
7. Verify that ICS/PEDS is functional.
8. Ensures proper control of Safeguards Information by the Plant Assessment Team.

APPENDIX G
Page 2 of 2
PLANT ASSESSMENT MANAGER CHECKLIST

9. May provide support services to the plant by utilizing all of the necessary manpower and equipment under the control of TVA NPG. (Direct the Plant Assessment Coordinator to arrange these through the Resource Support Coordinator.)

10. Ensures that employees who may be required to go to the affected plant are fully briefed prior to leaving and know to whom they are to report. Coordinate with the RAM and State Communicator for radiological and travel conditions enroute to the site. (Delegated to the Plant Assessment Coordinator.)

11. Keeps the site emergency organization informed of personnel ordered to the site and expected time of arrival. (May be handled by the Plant Assessment Coordinator and site counterpart or directly through the Technical Assessment Manager.)

APPENDIX H
PLANT ASSESSMENT COORDINATOR CHECKLIST

Date:_____

TIME/INITIAL

_____/____ Ensure ICS/PEDS is functional.

_____/____ Verify that the Plant Assessment Team and Board Writer have established communication with the Control Room bridge and are receiving sufficient information

_____/____ Verify that Plant Assessment Team has established communication with the site Technical Assessment Team and that proper coordination is taking place. Ensure that Accident Assessment forms are being generated and provided to Plant Assessment Manager (Appendix B).

_____/____ Verify Core Damage has established communications with Site Rad Protection/Chem.

Ensures that Core Damage Team has established communications with the site Technical Assessment Team and is receiving sufficient plant information (primary coolant characteristics, core history and conditions, etc.) to conduct their analyses. Reconciles any discrepancies between Core Damage and Dose Assessment staffs. (Contacts via Rad. Assessment Coordinator or Dose Assessor.)

_____/____ Initiate potential release evaluations as requested by Plant and Radiological Assessment Managers.

_____/____ Verify that the Resource Support Coordinator has made notifications per App I

GENERAL OPERATIONS

1. Log key events and major actions taken.

2. Ensures that overall plant assessments are being periodically provided to the Plant Assessment Manager. This assessment shall be based on plant system evaluation (CECC EPIP 6, Appendix B) and its application to the protective action logic diagram (CECC EPIP 6, Appendix C). The Plant Assessment Manager will use the assessments and recommendations to brief the CECC Director.

3. Coordinates (through the Resource Support Coordination) other support activities as required.

4. Notify Plant Assessment Manager immediately of any change in accident classification or significant plant condition developments.

5 Identify, notify, and brief support personnel being dispatched to the site.

6 Prepare long-term staffing plan and schedule when requested by the Plant Assessment Manager.

7. Ensures that the Plant Assessment Team is receiving sufficient plant systems information from their site counterpart.

8. Ensures continual staffing for the plant assessment function.

9. Provides assistance in evaluation of protective action diagram.

APPENDIX I
RESOURCES SUPPORT COORDINATOR CHECKLIST

Date:_____

TIME/INITIAL

_____/____ Notify Engineering Representative in accordance with area(s) of expertise needed, if known. If uncertain, do not delay calling someone from the list (see REND for list of qualified personnel).

_____/____ Notify NSSS Vendor (REND - Industry Support)

_____/____ Notify INPO (REND - Industry Support)

_____/____ Notify DOE (REND - Federal Support)

_____/____ Notify Insurance Carrier (REND - Insurance Carrier - Liability Insurance, ANI).

Note: The liability insurance carrier should also be notified of any nuclear plant emergency drill or exercise in which the CECC is activated.

_____/____ Notify TVA's Nuclear Insurance Support (name and telephone number in REND.

_____/____ Upon termination of the REP event, notify those listed above of the termination.

GENERAL OPERATIONS

NOTE: Contact information for other TVA organizations is located in the REND, Section G, "Other TVA Support."

1. Log key events and major actions taken.

2. Provides logistics support to the CECC as required. Notifies the State Communicator whenever offsite (non-TVA) resources are needed and/or requested.

3. Maintains communications with other TVA NPG technical staff representatives who have been called on to provide Technical Support to the CECC keep them briefed on the emergency conditions, coordinates obtaining support from them as necessary, and notifies them when the event is terminated.

4. Makes certain initial notifications to industry support and insurance carriers (ANI) and updates them routinely on changing plant and offsite radiological conditions.

5. Assists the Plant Assessment Coordinator in other communications needs as necessary.

6. Provides logistics support to the plant for food, transportation and lodging.

APPENDIX J
CECC PLANT ASSESSMENT TEAM LEADER OPERATIONAL CHECKLIST

Date: _____

TIME/INITIAL

_____/____ Ensure full staffing of the CECC Plant Assessment Team: Assessment Team Leader, team members, Plant Systems Boardwriter, and CECC Technical Advisor.

_____/____ Assemble all available plant data (ODS initial report, site plant parameter data sheets, SPDS outputs, etc.) and provide a briefing to Plant Assessment Coordinator and assessment team members.

_____/____ Establish contact with the site - Technical Assessment Team's, Reactor Engineer. Avoid contacting the site Technical Assessment Manager directly; his CECC contact is the Plant Assessment Manager.

General Operations

1. Ensure that the Plant Assessment Coordinator and other team members are kept informed of plant conditions and significant changes.
2. Initiate Plant Systems Summary Sheet (Appendix B) at least hourly or upon significant change in conditions.
3. As requested by the site, serve as an engineering/operations reference for the plant.
4. Based on the particular plant conditions, select and trend appropriate safety parameters on the trending boards provided.

APPENDIX K

FITNESS FOR DUTY PROGRAM ADMINISTRATION

TVA NPG
CALL-IN SHEET

Person Calling: _____ Date: _____

Name	Time Called	Time Needed to Report	Alcohol 5 Hrs. Prior to Report (Y/N)	Fit for Duty (Y/N)	Duty Official Comments

Attachment 13.03-26C

(19 Pages including cover sheet)

CECC-EPIP-7

CECC RADIOLOGICAL ASSESSMENT STAFF PROCEDURE FOR ALERT, SITE AREA EMERGENCY, AND GENERAL EMERGENCY

CECC EPIP Coversheet

Tennessee Valley Authority CENTRAL EMERGENCY CONTROL CENTER EMERGENCY PLAN IMPLEMENTING PROCEDURES	Title CECC RADIOLOGICAL ASSESSMENT STAFF PROCEDURE FOR ALERT, SITE AREA EMERGENCY, AND GENERAL EMERGENCY	CECC EPIP-7 REV. 30 Effective Date: 6/10/05

QUALITY RELATED

WRITTEN BY: Thomas E. Adkins (*Signature*) REVIEWED BY: David Pond (*Signature*) 6/3/05 (*Date*)

PLAN EFFECTIVENESS DETERMINATION: Thomas E. Adkins (*Signature*) 6/2/05 (*Date*)

CONCURRENCES

Concurrence Signature	Date
☒ **Manager, EP Program Planning and Implementation** David Pond	6/3/05
☒ **Manager, Emergency Services** David Pond for BKM	6/6/05
☐	
☐	

APPROVAL

APPROVED BY: R. J. Beecken (*Signature*) Vice President, Nuclear Support (*Title* *Organization*) 6-6-05 (*Date*)

CECC-EPIP-7
CECC RADIOLOGICAL ASSESSMENT STAFF
PROCEDURE FOR ALERT, SITE AREA EMERGENCY, AND GENERAL EMERGENCY
REVISION LOG

Rev. No.	Date	Revised Pages
0	3/22/88	All (Changed from IPD to EPIP)
1	7/8/88	Page 1, Apps. F & H
2	11/18/88	1,2,5,6,8, App. E p. 2
3	4/26/89	All
4	9/19/89	All
5	10/26/89	2-3, App. D, App. F
6	7/2/90	2, 4, 6-8, App. A (pg. 1), App. C (1 pg.), App. E (pg. 1), App. J (added)
7	9/14/90	Pg. 6; App. D, Pg. 1
8	5/21/91	Page 7 of 8, App. A, Pg. 1, App. C, Pg. 1, App. D, Pg. 1, App. E, Pg. 2, App. G, Pg. 1, App. I, Pg. 1 (Appendix H deleted)
9	10/17/91	Pg. 7; App. A, pg. 1; App. F, Pg. 1
10	12/23/92	Coversheet and Rev. Log; App. E, pg. 1
11	05/13/93	2, 4-8; App. D, pg. 1; App. E, pg. 1; App. G, pg. 1. All pages issued to maintain rev. level.
12	11/30/93	Page 8; App. A, pgs. 1-2; App. F, pgs. 1 & 2; App. I deleted by this revision.
13	04/19/94	Pgs. 4 & 5; App. A; App. D; App. G; and App. I
14	6/26/95	Pgs. 7; App. C, p. 1; App. D, p.1; App. F, p.2
15	11/01/95	Revise PAR Diagram. All pages issued.
16	5/30/96	Reformat procedure; editorial changes; remove Form from Appendix F; revise PAR Form in Appendix I; add TSC Information Form to Appendix J; add Appendix K for Fitness-For-Duty Form (old Appendix J); all pages issued.
17	10/30/96	Revise PAR Diagram; redesignate Appendixes F through K to F through I; add reference to Appendixes F & G of CECC-EPIP-9. All pages issued.
18	4/7/97	Annual review, editorial changes, change data services reference to field staff, remove reference to quarterly dose limits. All pages issued.
19	6/9/98 ~~6/4/98~~ *RR*	Annual review, editorial changes, organization title changes. All pages issued.
20	10/6/98	Update position titles to reflect current organizations. All pages issued.

CECC-EPIP-7
CECC RADIOLOGICAL ASSESSMENT STAFF
PROCEDURE FOR ALERT, SITE AREA EMERGENCY, AND GENERAL EMERGENCY
REVISION LOG (Continued)

Rev. No.	Date	Revised Pages
21	2-22-99	PAR diagram revised. All pages issued.
22	5/1/99	PAR diagram revised. All pages issued.
23	7/16/99	Page 15, PAR form revised to remove hypothetical bounding option as it was redundant. All pages issued.
24	7/10/00	Annual review and self-assessment items. All pages issued.
25	8/17/00	PAR diagram revised. All pages issued.
26	2/5/01	Correct PAR diagram. All pages issued.
27	3/30/01	Annual review. Provide new PAR diagram, revise App. F to match PARs. All pages issued.
28	6/13/02	Annual review. Delete PAR Form which was combined with CECC Dir. PAR Form in CECC-EPIP-1, re-label Appendixes and references to them, editorial changes. All pages issued.
29	10/09/03	Annual review. Add instruction for RAM support of TVAN personnel responding to mitigate an emergency who will be located in the 10-mile EPZ. Editorial changes. All pages issued.
30	6/10/05	Revised PAR Diagram to include specific sheltering recommendation for short term release.

CECC RADIOLOGICAL ASSESSMENT STAFF PROCEDURE FOR ALERT, SITE AREA EMERGENCY, AND GENERAL EMERGENCY

1.0 PURPOSE

This procedure provides instructions for a consistent, accurate, and timely response by the Radiological Assessment Manager (RAM) and staff in the event of an accident. This procedure identifies the necessary information which is provided to the CECC Director to ensure that prompt, accurate, protective action recommendations for the public can be made by the CECC to appropriate State authorities.

2.0 SCOPE

This procedure covers the actions of the RAM and staff during an Alert, Site Area Emergency, and General Emergency.

3.0 REFERENCES

3.1 Radiological Emergency Plan

4.0 ABBREVIATIONS AND DEFINITIONS

CECC	- Central Emergency Control Center
DA	- Dose Assessment
EA	- Environs Assessment
EDS	- Environmental Data Station
ODS	- Operations Duty Specialist
RAC	- Radiological Assessment Coordinator
RAM	- Radiological Assessment Manager
REND	- Radiological Emergency Notification Directory
RMCC	- Radiological Monitoring Control Center
FSAR	- Final Safety Analysis Report
TLD	- Thermoluminescent dosimeter
TSC	- Technical Support Center
TVAN	- Tennessee Valley Authority Nuclear

5.0 RESPONSIBILITIES

NOTE: Appendix F will be used to document fitness for duty when an individual is called and requested to respond to an emergency outside of normal work hours and from a non-duty status.

5.1 Radiological Assessment Manager

The RAM is notified of Alert or higher classification emergencies through the automated paging system which is activated by the ODS. If this system is not operable, the ODS will call the RAM. The RAM reports to the CECC. The RAM is responsible for notifying the members of the CECC Radiological Assessment Staff (i.e., Boardwriter, Rad Assessment Coordinator) that are not activated via the paging system.

The RAM is responsible for committing the support efforts of TVAN to the affected plant to deal with radiological aspects of the emergency. If TVAN cannot fulfill the needs of the affected plant, the RAM has the authority to seek help from other organizations within TVA. The RAM shall provide the CECC Director with periodic summaries of information needed for overall radiological accident assessment. He shall also provide the State with periodic updates of radiological information. The RAM shall coordinate any radiological protective support for any TVA personnel responding to mitigate the event who must remain in the EPZ (beyond the Site Boundary) after State ordered evacuations. Contact via the ODS (ODS refer to Agency Command Center Duty Roster). Coordinate with the Environs Assessor.

5.2 Radiological Assessment Coordinator

The RAC is responsible for supervising and coordinating the activities of the Radiological Assessment Staff, serves as the interface between the RAM and the staff, and for providing protective action recommendations to the RAM (see Appendix A). He is the primary contact between the Radiological Assessment Staff and the TSC for exchange of technical information (See Appendix E). He is the primary contact/interface between the TSC and the CECC for coordinating the emergency in-plant RADCON response. He obtains additional RADCON resources which may be required. This position is not activated via the automated paging system. The RAM will fulfill the duties of the RAC until the position is staffed.

5.3 Dose Assessment

Dose Assessment (DA) is responsible for the dose assessment activities of the CECC and for providing protective action recommendations to the RAM (see Appendix A) in the absence of the RAC. DA should activate additional staff members to fill the dose assessment positions in a timely manner, if warranted. DA shall ensure that communication occurs between the State staff and the DA staff for the exchange of technical information.

DA is responsible for providing a preliminary assessment concerning any new releases as soon as possible to the RAM. As necessary, DA shall ensure that all appropriate notifications are made of event termination.

5.4 Environs Assessment

Environs Assessment (EA) supports the CECC by assessing offsite radiological conditions in close coordination with the State (through the Field Coordinator) and providing environmental monitoring results to the RAM for use in formulating protective action recommendations. EA draws upon available technical expertise to approximate the location, dimensions, and radiological characteristics of the plume. EA directs the efforts of TVA's emergency radiological monitoring personnel in the collection of field data in a safe and expeditious manner and coordinates analysis of environmental samples with laboratory supervision. EA coordinates the results of environmental assessments with DA. All other TVA radiological monitoring personnel are subordinate to EA and are responsible for following and implementing EA's directives. EA assists the State as requested to clarify technical assessments of offsite radiological conditions. EA provides technical support as requested for planning and reentry/recovery operations.

5.5 Field Coordinator

The TVA Field Coordinator is responsible for directing TVA emergency radiological monitoring personnel in the field in accordance with the instructions of EA. He coordinates the activities of TVA field personnel with the State in an effort to optimize the collection, analyses, and transfer of field data to State officials and the CECC. He maintains dose records and provides protective action direction for field personnel. He will provide Radiological Control (RADCON) support to field operations utilizing the sampling van teams and their equipment. The duties of the Field Coordinator may be assumed by EA.

6.0 PROCEDURES/REQUIREMENTS

6.1 Radiological Assessment Manager

NOTE: A checklist is provided in Appendix B.

6.1.1 Initial Actions

6.1.1.1 Review the emergency condition with the CECC Director and make a determination as to proper staffing of the Radiological Assessment staff, taking into consideration,

(1) Potential or actual need for offsite dose or environmental assessment, and

(2) Potential or actual need for inplant RADCON support.

6.1.1.2 Activate a RAC to coordinate radiological assessment activities, if sufficient personnel are available.

6.1.1.3 Ensure that the DA and EA have established appropriate staffing levels to perform radiological monitoring and dose assessment.

6.1.1.4 Ensure that communications have been established with the TSC RADCON Manager or Radiochemistry Supervisor.

6.1.1.5 Determine if technical support personnel are required and, if so, notify the appropriate personnel.

6.1.1.6 Verify that radiological information is being transmitted to the CECC.

6.1.1.7 Verify that the RAC is receiving timely accident assessment reports and this information is promptly distributed.

6.1.2 General Operations

6.1.2.1 The RAM and the Plant Assessment Manager shall discuss all protective action recommendations to ensure that radiological and plant conditions are properly coordinated. (Appendix A of CECC EPIP-7 and Appendix I of CECC EPIP-1).

6.1.2.2 Ensure that accident assessment information is provided to the CECC Director on a frequent basis. These assessments shall provide summary information as well as appropriate recommended protective actions for the public.

6.1.2.3 Ensure that radiological information is provided hourly to the State radiological health authority.

6.1.2.4 Assess actual and projected releases to determine if doses result that would exceed any Emergency Action Level (EAL) limits. If EAL limits are exceeded report to the CECC Director for transmittal of the information to the SED.

6.1.2.5 If available NP personnel and equipment are not enough to cope with the emergency, contact the designated representative of other TVA organizations, as necessary, to supply adequate resources to recover from radiological aspects of the accident. Log the organizations called for assistance. Descriptions of emergency services and contacts are available in the REND.

6.1.2.6 Provide technical assistance to discuss the radiological aspects of protective action recommendations with appropriate State contacts as directed by the CECC Director.

6.1.2.7 Should the accident be expected to last for an extended period, the RAM originates a schedule for relief. He also directs his staff to prepare a schedule for their relief to ensure that necessary Radiological Assessment staff is available for the duration of the emergency.

6.1.2.8 Authorize emergency dose limits for offsite personnel.

6.1.2.9 The RAM and staff support the CECC Director as required for carrying out recovery efforts from the accident.

6.1.2.10 Upon termination of the emergency, the RAM and staff shall make themselves available for review of the accident.

6.1.2.11 The RAM checklist is provided in Appendix B for quick reference by the RAM.

6.2 Radiological Assessment Coordinator

NOTE: A checklist is provided in Appendix C.

6.2.1 Initial Actions

6.2.1.1 Upon arrival at the CECC, become familiar with plant conditions and radiological assessment activities.

6.2.1.2 Brief the RAM when prepared to assume responsibility for coordinating radiological assessment activities.

6.2.1.3 Brief the RAM on the status of dose assessment staffing preparations.

6.2.1.4 Contact the TSC of the affected plant and coordinate receipt of data from the TSC and transmission of CECC data to the TSC.

6.2.2 General Operations

6.2.2.1 Supervise and coordinate the activities of the staff and keep the RAM informed on staff activities.

6.2.2.2 Provide protective action recommendations to the RAM (Appendix I of CECC-EPIP-1) based on dose assessments or field measurements.

6.2.2.3 Ensure that data generated by the Radiological Assessment Staff (Appendix E and the affected sectors portion of Appendix I in CECC-EPIP-1) are transmitted to the TSC routinely.

6.2.2.4 Assist, as needed, the staff and the TSC in obtaining special or nonroutine data.

6.2.2.5 Assist in obtaining additional RADCON resources (manpower, equipment, supplies, and vendor services) which may be required.

6.2.2.6 Serve as the primary contact/interface between the TSC and the CECC for coordinating the emergency in-plant RADCON response.

6.2.2.7 Provide or assist in obtaining such support as needed for continuing operations of the staff.

6.2.2.8 Provide other assistance as directed by the RAM.

6.3 Dose Assessment

NOTE: Checklists are provided in CECC EPIP-8.

Dose assessors provide draft protective action recommendations for protection of the public.

6.3.1 Initial Actions

6.3.1.1 When warranted, activate or place on standby additional Dose Assessment staff.

6.3.1.2 Upon arrival at the CECC, initial notifications and assessments shall be recorded as described in CECC EPIP-8.

6.3.1.3 Brief the RAC (or RAM, as appropriate) on the status of dose assessment staffing preparations.

6.3.2 General Operations

6.3.2.1 Perform functions as described in CECC EPIP-8.

6.3.2.2 Ensure that shift changes occur as described in CECC EPIP-8.

6.3.2.3 Provide other assistance as requested by the RAC.

6.4 Environs Assessment

6.4.1 Initial Actions

NOTE: A checklist, which includes turnover from TSC, is provided in Appendix D.

6.4.1.1 When conditions warrant, activate the Field Coordinators, and activate or direct a Field Coordinator to activate field monitoring personnel using the REND. The screening van is activated by notifying the laboratory supervisor to dispatch the screening van.

6.4.1.2 Activate the EP Field Support Staff.

6.4.1.3 Establish and maintain an environs assessment log. Record key events, notifications, etc. Field data need not be recorded in the log.

6.4.1.4 Obtain and record the field data collected by the plant team from the TSC and assume coordination of field operations if appropriate per Appendix D.

6.4.1.5 Brief the RAC (or RAM, as appropriate) on the status of environs assessment staffing preparations.

6.4.1.6 Ensure that field data are transferred to the State until the Field Coordinator is operating at the RMCC.

6.4.2 General Operations

6.4.2.1 If a senior instrument mechanic is requested for the EDS, notify the TSC that the request has been made.

6.4.2.2 Provide instructions to the Field Coordinator as necessary to maintain field operations. If conditions warrant, EA may assume the responsibilities of the Field Coordinator. If appropriate for the emergency situation, request permission from the RAM for field team personnel to exceed annual dose limits. Keep the Field Coordinator advised on matters related to radioiodine offsite and any need for potassium iodide to be administered to field personnel. Authorization for emergency doses and KI use should be indicated on the authorization form contained in EPIP-9, Appendix E. The RAM should advise the CECC Director of any dose extension or KI administration and recommend that the SED be informed.

6.4.2.3 Provide emergency classification, plant status, release data, projected doses, and protective actions for the public (recommended or implemented) to the Field Coordinator for transfer to the field teams. This action should not interfere with the flow of operational information.

6.4.2.4 Coordinate the transportation of teams as needed. Resources are listed in the REND.

6.4.2.5 Receives field data from Field Coordinator via facsimile or by transcribing from radio transmissions. The data are recorded on a form similar to CECC-EPIP-9, Appendix I. An effort shall be made to keep I-131 concentrations associated with general exposure rate measurements for a given place and time.

6.4.2.6 As necessary, EA shall ensure special local monitoring of groundwater is conducted in the event of a liquid radioactive release (BFN Final Safety Analysis Report requirement).

6.4.2.7 EA shall arrange for relief for EA personnel and the Field Coordinator. Shift turnovers are to be performed.

6.4.2.8 Provide technical assistance and field monitoring as requested by the State during the recovery phase for planning and operations.

6.4.2.9 Provide other assistance as requested by the RAC.

6.5 Field Coordinator Activities

6.5.1 Initial Actions

6.5.1.1 Refer to CECC-EPIP-9 for additional instructions.

6.5.1.2 Upon arrival at the RMCC, establish radio and telephone communications with the CECC. Establish and maintain a Field Coordinator's log, including such information as key events and requests.

6.5.1.3 Assume coordination of field staff as directed by EA.

6.5.2 General Operations

6.5.2.1 Coordinate TVA's field operations with State field operations management in an effort to minimize duplication of effort and optimize efficiency in field monitoring. The Field Coordinator will follow the directives of EA, who is responsible for TVA's overall monitoring effort.

6.5.2.2 Define individual team priorities as needed to acquire field data requested by Environs Assessor. The Field Coordinator may alter field team practices and procedures provided that the changes do not alter protective action requirements, or techniques and methods of sampling, sample analysis, or direct surveys.

6.5.2.3 Monitor and maintain individual exposures and provide instructions as necessary to keep below 10 CFR 20 limits. No team member is permitted to exceed 5 rem TEDE without emergency dose authorization of the RAM. Exceeding 10 rem TEDE, and greater than 25 rem TEDE, both require additional authorizations at each level by the RAM. Refer to CECC EPIP-9 for additional instructions on implementation of emergency dose levels.

6.5.2.4 Record all field data per CECC-EPIP-9. Provide the appropriate copy to the State and the other to the facsimile operator for transmission.

6.5.2.5 Arrange for maintenance of field operations as needed, including resupply of vans, relief personnel, replacement vehicles and equipment, food for teams, etc. Brief the relief teams at the RMCC and provide them with TLDs and KI. Coordinate these activities with EA.

6.5.2.6 Respond to other requests from EA and coordinate with EA TVA's response to requests received from the State.

APPENDIX A
PROTECTIVE ACTION RECOMMENDATIONS

Note 1: If conditions are unknown utilizing the flowchart, then answer is NO.
Note 2: A short term release is defined as "a release that does not exceed a 15 minute duration".

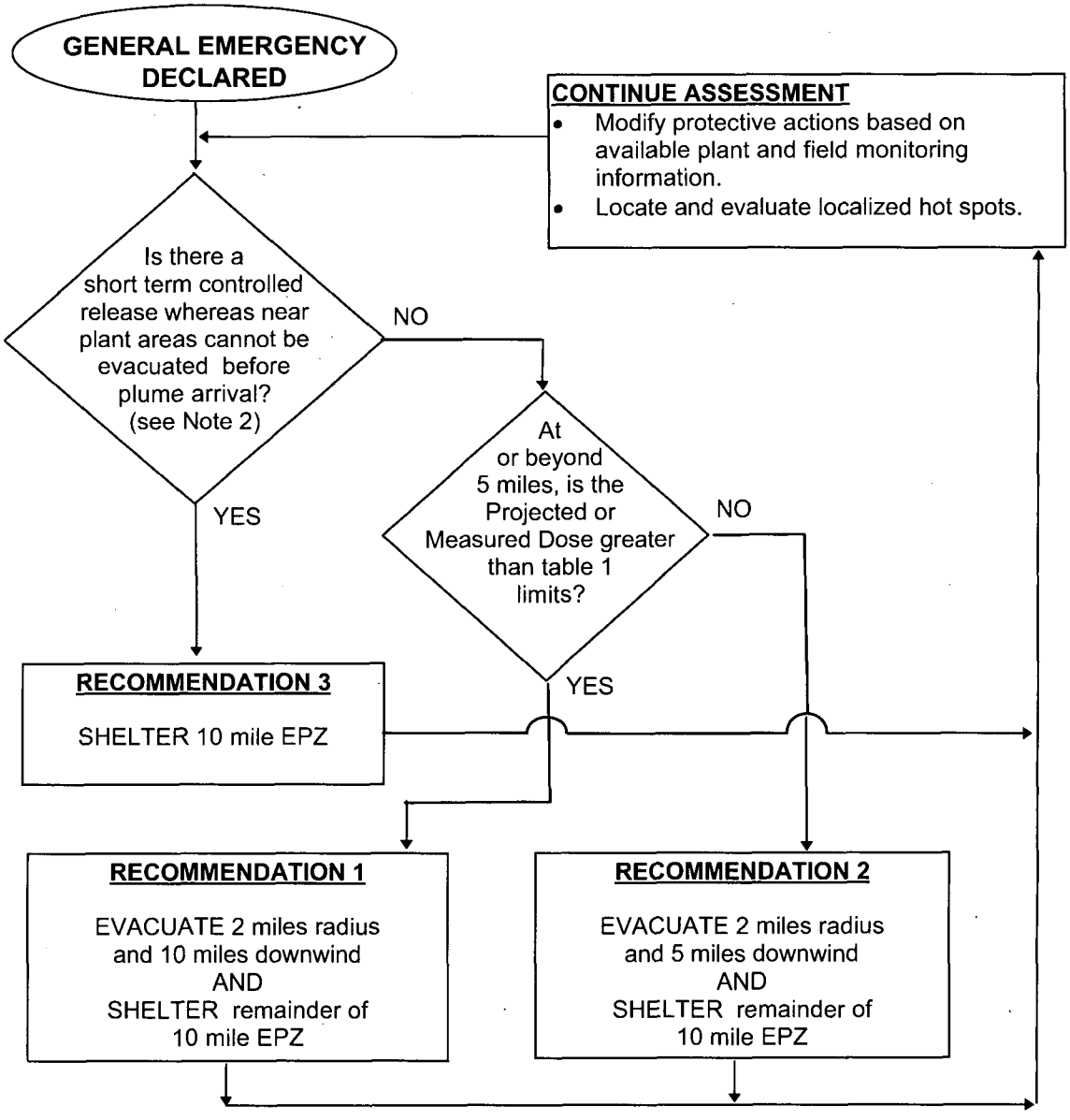

TABLE 1 Protective Action Guides (PAG)

TYPE	LIMIT
Measured	3.9 E-6 micro Ci/cc of Iodine 131 or 1 REM per hour External Dose
Projected	1 REM TEDE or 5 REM Thyroid CDE

APPENDIX B Page 1 of 1

RADIOLOGICAL ASSESSMENT MANAGER'S CHECKLIST

INITIAL ACTIONS Date: _____

Time/Initials

_____/_____ Notify the CECC Director of Radiological Assessment Staff activation status. Activate a RAC and a Boardwriter.

_____/_____ Assess the need for additional technical support and take appropriate actions.

_____/_____ Establish communications with the TSC RADCON Supervisor or Radiochemistry Supervisor to determine radiological status of the plant and to determine if any releases are ongoing or have occurred.

_____/_____ Establish contact with the state.

_____/_____ Verify that radiological data are being transmitted to the CECC.

_____/_____ Verify that the Radiological Assessment Coordinator is receiving accident assessment reports and that the information is being distributed.

_____/_____ Obtain RADCON Technical Advisors as necessary.

_____/_____ Evaluate preparations for collection of environmental TLD's.

GENERAL OPERATIONS

1. Log key events and major actions taken.

2. Coordinate protective action recommendations with the Plant Assessment Manager.

3. Monitor actual or projected doses for EAL trigger points and notify the CECC Director if a EAL condition is met.

4. Provide accident assessment information to the CECC Director and the State Communicator at least hourly.

5. Arrange for additional RADCON support resources with other TVA organizations. Log all contacts.

6. Periodically provide for technical discussions with the State as needed.

7. Remind the site that additional technical support may be available through the CECC. Coordinate with the Plant Assessment Manager and the Site Emergency Director.

8. Ensure that Radiological Assessment Staff relief personnel are scheduled and notified. Coordinate transportation arrangements as needed.

9. Ensure that radiological data posted on CECC Radiological status boards is accurate and up-to-date.

10. Coordinate any radiological protective support for any TVA personnel responding to mitigate the event who must remain in the EPZ (beyond the Site Boundary) after State ordered evacuations. Contact via the ODS (ODS refer to the Agency Command Center Duty Roster). Coordinate with the Environs Assessor.

APPENDIX C Page 1 of 1

RADIOLOGICAL ASSESSMENT COORDINATOR'S CHECKLIST

INITIAL ACTIONS Date: _____

Time/Initials

_____/____ On arrival, become familiar with emergency status, plant conditions, and CECC activities.

_____/____ Inform the Radiological Assessment Manager when prepared to assume responsibility for coordinating staff operations.

_____/____ Contact the TSC and coordinate receipt of data from the plant and transmissions to the plant from the CECC (Appendix E).

GENERAL OPERATIONS

1. Log key events and major actions taken.
2. Supervise and coordinate the activities of the Radiological Assessment Staff.
3. Provide protective action recommendations to the RAM based on dose assessments or field measurements.
4. Periodically advise the Radiological Assessment Manager of staff activities.
5. Ensure that data generated by the Radiological Assessment Staff are transmitted to the TSC routinely.
6. If needed, assist the staff and/or TSC in obtaining special or nonroutine data.
7. As directed, assist in obtaining additional resources (manpower, equipment, supplies, vendor services).

APPENDIX D Page 1 of 2

ENVIRONS ASSESSMENT INITIAL CHECKLIST

INITIAL ACTIONS Date: _____

Time/Initials

____/____ If warranted, activate the Field Coordinator, and activate or direct the Field Coordinator to activate offsite field monitoring personnel or screening van using the REND (teams must be dispatched for Site Area Emergency or higher).

____/____ Activate the EP Field Support Staff (see REND, under the tab, Field Staff).

____/____ Establish contact with the TSC and notify if a Senior Instrument Mechanic (SIM) has been activated for EDS from the EP Field Support Staff.

____/____ Brief the Radiological Assessment Coordinator and Radiological Assessment Manager on the status as activities.

____/____ Test radio communications to determine the repeater to be used and set correct time on radio console.

FIELD TEAM TURNOVER FROM SITE

____/____ Determine location and status of all field teams from the site.

____/____ Identify all field team members.

____/____ Request the site to notify the teams when command and control has been assumed by the CECC.

____/____ Assume control of all Field Staff.

____/____ Verify that field data are being transmitted to the State until RMCC is staffed and operating.

____/____ As appropriate, transfer coordination of field activities to the Field Coordinator at the RMCC. Notify all field teams of any transfer of command and control.

APPENDIX D Page 2 of 2
ENVIRONS ASSESSMENT INITIAL CHECKLIST

GENERAL OPERATIONS

1. Log notifications, instructions received and given, emergency classifications, and key events in an environs assessment log.

2. Remain aware of offsite conditions in order to provide decisions regarding KI for teams.

3. Request permission for individual field team members to exceed annual dose limits, if warranted for continued operations.

4. Periodically provide field teams with emergency classification, plant status, release data, projected doses, meteorological data, and/or protective action recommendations for the public, provided this does not interfere with field operations or communications.

5. Ensure CECC is informed of data received from RMCC or transcribed from radio on Appendix G of CECC-EPIP-9. Keep related exposure rates and airborne concentrations together on the form.

6. As necessary, ensure that in the event of any unusual release of radioactive liquid which could contaminate groundwater at the site, special local monitoring is conducted to ensure that the use of local groundwater will not result in undue hazards to any person (BFN FSAR requirement).

7. When directed by the Radiological Assessment Manager, arrange for relief personnel for Environs Assessment, and the Field Coordinator.

8. Coordinate any radiological protective support for any TVA personnel responding to mitigate the event who must remain in the EPZ (beyond the Site Boundary) after State ordered evacuations. Contact via the ODS (ODS refer to the Agency Command Center Duty Roster).

APPENDIX E Page 1 of 1
TSC INFORMATION FORM

Approved:

Date/Time: _____

I. DOSE ASSESSMENT INFORMATION
As dose assessments are performed, they are automatically transmitted to TSC. At least hourly, verify last dose assessment was received.

Time of Last Dose Code Run: Date: _____ Time _____

II. PLUME PLOTS
Whenever a dose assessment is performed, the plume position plot is also transmitted to site by telecopy. This is not automatically performed. At least hourly, verify last plot was received.

Time of Last Plume Plot: Date: _____ Time _____

III. FIELD DATA
As Field Data is received, transmit hard copy to TSC. At least hourly, verify data is being received.

Time of Last Field Data: Date: _____ Time _____

IV. METEOROLOGICAL DATA (Including Met Forecasts)
Met Data is automatically transmitted to the TSC. At least hourly, verify data is being received.

Time of last Met Data: Date: _____ Time _____
Time of last Met Forecast: Date: _____ Time _____

V. TVA RECOMMENDED PROTECTIVE ACTIONS
When TVA makes a recommendation, transmit to the TSC. At least hourly, verify TSC is knowledgeable of last recommended protective actions.

Protective Action Recommendation of: Date: _____ Time _____
Description:

VI. PROTECTIVE ACTIONS TAKEN BY STATE
When State takes a protective action, transmit to the TSC. At least hourly, verify TSC is knowledgeable of last protective actions taken.

Protective Actions Taken as of: Date: _____ Time _____
Description:

APPENDIX F Page 1 of 1

FITNESS FOR DUTY PROGRAM ADMINISTRATION

TVA NUCLEAR
CALL-IN SHEET

Person Calling: _____ Date: _____

Name	Time Called	Time Needed to Report	Alcohol 5 Hrs. Prior to Report (Y/N)	Fit for Duty (Y/N)	Duty Official Comments

Attachment 13.03-26D

(39 pages including cover sheet)

CECC-EPIP-8

Dose Assessment Staff Activities During Nuclear Plant Radiological Emergencies

CECC EPIP Coversheet

Tennessee Valley Authority CENTRAL EMERGENCY CONTROL CENTER EMERGENCY PLAN IMPLEMENTING PROCEDURES	Title DOSE ASSESSMENT STAFF ACTIVITIES DURING NUCLEAR PLANT RADIOLOGICAL EMERGENCIES	CECC EPIP-8 REV. 31 Effective Date: 06-30-2008

Quality Related

WRITTEN BY: Thomas E. Adkins (*Signature*) Kenneth John Parshall (*Signature*) 6-25-08 (*Date*)

PLAN EFFECTIVENESS DETERMINATION: Thomas E. Adkins (*Signature*) 6-25-08 (*Date*)

CONCURRENCES

Concurrence Signature	Date
☒ **Manager, EP Program Planning and Implementation** John Parshall	6-26-08
☒ **Manager, Emergency Services** J. Parshall for BKM	6-26-08

APPROVAL

APPROVED BY: Heyward R. Rogers (*Signature*) VP, Nuclear Support (*Title Organization*) 6/29/08 (*Date*)

CECC-EPIP-8
DOSE ASSESSMENT STAFF ACTIVITIES
DURING NUCLEAR PLANT RADIOLOGICAL EMERGENCIES
REVISION LOG

Rev. No.	Date	Revised Pages
0	3/22/88	All (Changed from IPD to EPIP)
1	11/18/88	2-7, Apps. A, B, C, & D
2	12/12/88	Appendix A
3	4/26/89	All
4	9/19/89	App. C
5	10/26/89	All
6	5/21/91	App. B, pgs. 1-4; Appendix C, pgs. 1-2; App. D, pg. 1
7	10/17/91	App. B, pgs. 2-4; App. C, pg. 1.
8	05/13/93	1-4; App. A; App. B, pg. 1, 3, & 4; and App. G; App. C deleted. All pages issued.
9	11/22/93	Pg. 4; App. B, pgs. 1&4; App. D changed to App. C; App. E changed to App. D; App. F changed to App. E; and App. G changed to App. F.
10	11/30/93	1, 3, 4; App. A, pg. 1; App. B, pgs. 1-2; App. C, pg. 1-5; App. D, pg. 1; App. E, pg. 1; App. F, pg. 1; App. G, pgs. 1-6.
11	06/24/94	App. B, pg. 1; App. D, pgs. 2-5; App. F; App. J added. All pages issued.
12	6/27/95	Pg. 1; App. A; App. B, p.3; App. C, p. 5; App. D, p. 2; App. G, pgs. 4 and 6
13	1/17/96	App. B, pg. 2, editorial changes, add table for BFN stack release; App. C, pgs. 1 & 3, Add new criteria for Type I and Type II releases; App. D, pgs. 2-5, add nonogram alignment checks
14	5/30/96	Pg. 3, App. A, App. B, App. C, App. D, App. F, App. G; annual review; ground level release tables and nomograms made generic to all three sites; all pages issued.
15	10/30/96	Pg. 3, App. B, and App. D; Add reference to App. I of CECC EPIP-7, remove deleted pages, make correction to Nomogram Alignment Check Table.
16	5/30/97	Editorial changes, update manual dose assessment methodology, update preliminary assessment table, revise river miles on tables in Appendix G, annual review. All pages issued.
17	8/8/97	Revise default river flow rate for BFN, revise responsibilities of Norris Lab, add water intake tables. All pages issued.

CECC-EPIP-8
DOSE ASSESSMENT STAFF ACTIVITIES
DURING NUCLEAR PLANT RADIOLOGICAL EMERGENCIES

REVISION LOG (Continued)

Rev. No.	Date	Revised Pages
18	6/9/98 ~~6/4/98~~ *RR*	Annual review. Organization title changes. In Appendix D clarify Type I and Type II formulas. Remove Tennessee River miles from tables. All pages issued.
19	10/27/98	Correct reference to CECC EPIP-1 Appendix on Appendix J.
20	5/20/99	Annual review. Editorial and clarification changes, revise public water use tables. All pages issued.
21	9/8/00	Annual review. Editorial changes. All pages issued.
22	3/30/01	Revised to incorporate the new source term methodology in the RED suite of codes revision
23	11/22/02	Revised all pages to reflect human factor improvements in REP codes and manual Included changes due to code revision necessary for H-3 project.
24	3/31/03	Added sections to Appendix F to provide instructions for manual method of calculating TEDE and thyroid CDE doses at Site Boundary (0.62 miles). All pages issued.
25	6/16/03	Make corrections to Appendix F. All pages issued.
26	07/01/03	Revision consistency in accordance with CHPER 03-000257-000. Revise location indicator in step C.4 on page 18. Correct the location indicator, in step 2.b on page 19. Correct spelling of Circle on page 22. Minor format alignment changes. All pages issued.
27	10/09/03	Add clarification note for PAG values for low wind speed or low release rates, current WBN default river flow value. All pages issued.
28	04/18/05	Annual review. Add "Quality Related" to coversheet. Minor editorial and clarification changes. All pages issued.
29	6/29/06	Annual review. Added and corrected letters in manual calculation forms. Added instructions for use of NARAC web access in a transportation accident. Changed initial Met support to remote link. Added NWS, deleted River Ops, and corrected other acronyms. All pages issued.
30	10/02/06	Changes made to facilitate Dose Assessor's use of most current release information available and minor changes to format.
31	06/30/08	Change ICS to ICS/PEDS; add Plant Engineering Data System (PEDS).

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DOSE ASSESSMENT STAFF ACTIVITIES DURING NUCLEAR PLANT RADIOLOGICAL EMERGENCIES

1.0 PURPOSE

To guide Dose Assessment in obtaining necessary information, calculating dose rates and doses, and communicating assessment results used in responding to radiological emergencies at nuclear power plants.

2.0 SCOPE

This procedure applies to activities of Dose Assessment in actual and hypothetical radiological emergency situations. While the activities of the Dose Assessment staff are expected to follow this procedure, it is expected that circumstances may arise during an event which will void portions of this procedure. Therefore, this procedure is a guide for the operation of the Dose Assessment staff under the ideal conditions.

3.0 STAFFING

3.1 Activation and Notification

The Initial notification of an event comes from the Operations Duty Specialist via the Emergency Paging System (EPS) or manual callout. Additional Dose Assessor support is contacted in accordance with Appendix A. The Dose Assessor is a position required for the CECC to make Protective Action Recommendations and to meet minimum staffing levels.

Upon reporting to the CECC, perform initial activities in accordance with the checklist provided as **Appendix A.**

3.2 Shift Change

Shift change notification and transition and transfer of responsibilities should be conducted in accordance with the Dose Assessment Shift Change and Termination Checklist (Appendix B).

3.3 Termination

Termination of an event should include the following actions and follow the Dose Assessment Shift Change and Event Termination Checklist (Appendix B).

4.0 DOSE ASSESSOR INTERFACES

4.1 Radiological Assessment Manager / Coordinator (RAM/RAC)

The Dose Assessor should interface directly with the Radiological Assessment Coordinator (RAC). In the absence of the RAC, communication is provided directly to the RAM. Requests for any special-case assessments should come to Dose Assessment through the RAC/RAM or be cleared by the RAC/RAM prior to their performance.

Dose Assessment is responsible for performing the offsite dose assessment activities of the CECC in order to determine Protective Action Recommendations using the appropriate appendix in CECC EPIP-1. Dose assessment results are also evaluated against criteria for declaration of Emergency Classification levels, and evaluations are communicated to the RAM/RAC.

Dose Assessment should provide results of all dose assessments and plume plots from FRED to the RAC/RAM, who will approve them and distribute them to CECC staffs. Initial dose assessments (those made at the start of an event or when the conditions have changed significantly as defined in this procedure) will receive the approval of the RAC/RAM and then are transmitted to the TSC and the State. Under most other conditions, the results are directly transmitted to the TSC and the State on the State Update form via computer spooling. However, if the computer spooling is unavailable, then the Dose Assessor shall prepare a State Update form manually as defined in EPIP-1. CECC Clerical staff have instructions for distribution.

Dose Assessment should provide to the RAC/RAM copies of plume plots from RED for ongoing releases or plots of estimated centerline location (if there is not a known release but potential exists for one to occur). This information should be transmitted by the RAC/RAM to the CECC, TSC, and State. Dose assessment will also support post event recovery efforts.

4.2 Meteorologist (MET)

The CECC Meteorologist is responsible for providing to Dose Assessment the real time and forecast meteorological data and associated advice on atmospheric dispersion and transport. If a meteorologist is not initially available for response to the CECC, support can be obtained using a remote link. Telephone and pager numbers for the Muscle Shoals response personnel are available in the REND.

Meteorological data is provided to the CECC by computer inputs and by the CECC Meteorologist. In the event of a monitored airborne release, the 15-minute meteorological data is automatically accessed by the RED and FRED codes. This data should be verified against the distributed meteorological data or by the meteorologist. The meteorologist is also available to convert flow rates to exit velocities for use in the codes. The meteorologists will also provide forecast information for use in the FRED code.

4.3 Environs Assessor/Field Coordinator

Dose Assessors provide plume plots to the CECC Environs Assessor and to the Field Coordinator at the Radiological Monitoring Control Center (RMCC) via the RAC. These plume plots are used to assist with decisions on field team deployments. Real time plume plots from the RED code are to be distributed to the EA/FC and the State for that purpose.

Field data is also shared to assist with comparison of dose projections with field measurements. This comparison can assist with evaluations if field teams are at maximum centerline locations, or if reported plant release rates coincide with actual field measurements.

In the event of an unmonitored release from a site, field team data can be used in the BRED code to assist with determination of a release rate.

4.4 Core Damage Assessors

The CECC Core Damage group (in Plant Assessment) is responsible for supplying Dose Assessment with projections of potential, anticipated, and/or worst-case release rates and pathways.

4.5 Technical Support Center (TSC)

The TSC is a source of information for radioactivity release rates, pathways, flow rates, and information on plant status and prognosis and should be checked periodically. The primary point of contact is TSC Chemistry. Release information is also available via the Integrated Computer *System (ISC)/Plant Engineering Data System (PEDS) using the CECC computers.

4.6 River Operations

River Operations may assist in providing Dose Assessment information on water dispersion characteristics for releases to the river. This information may be used in running the WATERDOSE code, or for use of the manual methodology if the dose code is unavailable.

4.7 State (Radiological)

Dose Assessment shall ensure that communication with the State Dose Assessment Team is established and maintained. The State should be given hourly updates, as a minimum. These updates should include discussions of all technical information relative to dose assessments being made (incoming release rates, assumptions used, problems with information flow). The State should also be contacted if the conditions have changed significantly as defined in this procedure. DO NOT discuss protective action recommendations with the State.

5.0 PERFORMING DOSE ASSESSMENTS

5.1 Data Verification

All dose assessment results (computer generated or hand calculated) involving data input will be verified by a second party verifier. The verifier may be a Dose Assessor or the RAM/RAC. The verifier will verify the accuracy and appropriateness of data input and reasonableness of the results. Both preparer and verifier will initial and date the results page of the assessment (e.g., State Update Form for FRED assessments).

5.2 Preliminary Assessments

Dose Assessors should provide results of all preliminary assessments to the RAC/RAM. Preliminary Assessments are provided as part of a FRED run. Preliminary assessments will be performed at the start of an event or when the conditions have changed significantly as defined in this procedure.

* Revision

5.3 Criteria for a Significant Change in Conditions

Criteria for a significant change which will require a new dose assessment run are:

- the release type / path has changed,
- the release rates have changed by a factor of 10
- the stability class has changed by 2 classes,
- or the wind speed has changed by a factor of 2.

5.4 FRED or RED Assessments - Collection of Data

Gather information as provided on Appendix C. Sources of information may include the * Technical Support Center (Chemistry), ICS/PEDS, CECC Meteorologist or CECC Core Damage Assessors. Refer to Appendix C for instructions on running the dose codes. If the FRED or RED computer codes are unavailable, a manual methodology is provided as Appendix F. A quality assured version of Appendix F is also available as an EXCEL spreadsheet on the CECC computers.

5.5 Preparing a Protective Action Recommendation (PAR)

TVA must satisfy regulatory requirements to provide State Authorities a PAR within 15 minutes of the declaration of a General Emergency. Therefore, Dose Assessors should anticipate and initiate development of a PAR to allow ample time for review, approval and transmittal to State Authorities.

A Protective Action Recommendation for airborne releases is determined based upon results of a FRED run. If the FRED program is unavailable, then the manual methodology should be utilized as provided in this procedure. A PAR form contained in CECC EPIP-1 should be completed, with attention to identification of affected sectors as page 2 of that document..

Dose Assessment should provide technical guidance to the RAC/RAM in the preparation of protective action recommendations based on dose assessments. The RAC is responsible for written preparation of recommendations to the RAM.

5.6 Changes in Conditions for a PAR

Changes to a PAR must be communicated to the State by the CECC Director within 15 minutes of determination. Criteria which require evaluation for a new PAR are:

- the release type / path has changed,
- the release rates have changed by a factor of 10
- the stability class has changed by 2 classes,
- the wind speed has changed by a factor of 2,
- or a wind direction change resulting in a change of an affected sector. If other sectors were evacuated previously they shall also be included in the new PAR.

5.7 BRED Assessment - Back Calculation of Release Rate from Measured Field Data

Measured field data (consisting of dose rates in mrem/hr and I-131/H-3 concentrations in μCi/cc) are assessed in several ways. If there is a monitored release ongoing, the field data are compared to the results of the most applicable data produced by the RED or FRED computer models.

However, in cases where the release is unknown or questionable, the field data are then input into the BRED computer model to determine the applicable release rates. These calculated release rates are then input into the RED/FRED codes, as applicable, which, according to Appendix E, can be used to perform dose assessments and any applicable Protective Action Recommendation (PAR).

* Revision

5.8 Comparison of Measured Field Data to Dose Projections

Field data is compared with dose projections to assist with evaluations if field teams are at maximum centerline locations, or if reported plant release rates coincide with actual field measurements. Appendix G is provided as a reference to perform comparisons.

5.9 WATERDOSE Assessments

Liquid releases to the River are assessed using the WATER DOSE code as provided on Appendix H. If the WATER DOSE code is unavailable, a manual methodology is provided as Appendix I.

5.10 Manual Methodologies for Dose Assessments

In the event that the FRED, RED or WATERDOSE computer codes are unavailable, instructions are provided in the Appendixes of this procedure for manual calculation methods. In consideration that the computer programs also normally spool data outputs directly to the State, the Dose Assessor will need to ensure that the applicable pages of the State Update Form, contained in CECC EPIP-1, are also manually completed and transmitted accordingly.

5.11 Transportation Accidents or External Toxic Gas Release

In the event of a transportation accident, or a release of a toxic gas or agent from an external source that can affect the plant, the dose assessment model of choice is the NARAC Web Access model. Appendix K provides instructions on the use of this model.

6.0 REFERENCES

FRED User's Manual
RED/FRED/BRED Documentation
WATERDOSE User's Manual
BRED User's Manual
Model Comparison
REP CODE Revision 2, Specifications and Documentation, August 2002, L61 020814 800
NARAC Web User's Guide

7.0 ABBREVIATIONS AND DEFINITIONS

BRED - Back-calculation Radiological Emergency Dose Code
CECC - Central Emergency Control Center
CTM - Containment building
EPS - Emergency Paging System
FRED - Forecast Radiological Emergency Dose Code
ICS - Integrated Computer System
* PEDS - Plant Engineering Data System
MSLB - Main Steam Line Break
NARAC - National Atmospheric Release Advisory Center
NWS - National Weather Service
RAM/RAC -Radiological Assessment Manager or Radiological Assessment Coordinator
RED - Radiological Emergency Dose Code
SB - Site Boundary
SGTR (above) - Steam Generator Tube Rupture above the steam generator water level
SGTR (below) - Steam Generator Tube Rupture below the steam generator water level
TSC - Technical Support Center
TRM - Tennessee River Mile
WGDT - Waste Gas Decay Tank (as in rupture event)

*Revision

APPENDIX A

Dose Assessor Initial Reporting Checklist

(steps do not need to be performed in sequential order)

1. **SIGN IN** on the CECC staffing board and don your CECC position tag.

2. **START** logkeeping of key activities and notifications in the position logbook.

3. **ENSURE** that the following support staffs are notified and/or staffed. Refer to the REND call out list for contact information.
   - Second Dose Assessor, if needed.
   - Muscle Shoals Meteorologist (if serving as CECC pager duty person).

4. **CONFIRM** position notebook procedures match revision levels in controlled copies.

5. **ESTABLISH** contact with the TSC Chemistry (programmed on phone and in REND section B). Ascertain if a release has been, or is occurring. Also check with TSC Chemistry to determine the release path and type.

   If A RELEASE IS OCCURING, INITIATE a dose assessment per the **NOTE** below.

   IF NO RELEASE IS OCCURING, PERFORM preliminary assessment by using FRED or Sections A and B of Appendix F when FRED is unavailable to determine PAG release rates based on actual meteorological conditions and release type and path. A most likely release path and type and a postulated release rate may be used to perform the PAG.

6. **ESTABLISH** initial contact with the State Radiological Dose Assessment staff (programmed on phone and in REND section B).

7. **OBTAIN** a briefing from the RAC/RAM and **INFORM** the RAC/RAM when the activities above are completed. Report/request if a radiological release has been, or is occurring.

NOTES: **COMPARE** dose assessment results against the levels for the declared REP class and advise the RAC/RAM to advise the TSC if an upgrade is indicated.

For Preliminary Assessments and Dose Projections use the **FRED** Code (Appendix C and D).

For Plume Plots to track actual releases in current time, use the **RED** Code (Appendix C and D).

When the plant release rate is unmonitored or questionable, use the **BRED** code to arrive at a plant release rate based upon Field Team data. (Appendix E).

For releases to the River, use the **WATERDOSE** Code (Appendix H)

If computer problems are encountered, immediately contact Computer Support.

If the FRED computer code is inoperative, use the **MANUAL METHODOLOGY** to assess airborne radioactivity releases (Appendix F).

If the WATERDOSE computer code is inoperative, use the **MANUAL METHODOLOGY** to assess liquid releases to the river (Appendix I and J).

APPENDIX B
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Dose Assessor Shift Change and Termination Checklist

1. **The following should be discussed between staff for Shift Turnover.**

Check box when action is complete:

- ☐ Current release data and projections.
- ☐ Current met data and projections.
- ☐ Current plant status and projections.
- ☐ Current environs data and projections.
- ☐ Pertinent historical data/plant conditions.
- ☐ Status of any Protective Action Recommendations made and the rationale for these.
- ☐ Status of any (incoming or outgoing) unfulfilled requests for information.
- ☐ Dose methodologies being used.
- ☐ Identification of problems in response capability.
- ☐ Identification of contacts at the TSC, State, Core Damage staff and RO
- ☐ Time for next periodic update to the State
- ☐ Time for next periodic update of the RED plume plot
- ☐ Identify individuals external to CECC who were activated or placed on standby

Completed by (name):_____ Date:_____

2. **Transfer of Shift Change Responsibility**

- ☐ Obtain approval from the RAC for the transfer of responsibility.
- ☐ The on duty Dose Assessment Staff should remain available 30 minutes or at least respond in case transfer problems are identified.

Completed by (name):_____ Date:_____

APPENDIX B
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Dose Assessor Shift Change and Termination Checklist

3. Termination

☐ Log off CECC computer system/turn off plotters.

☐ Notify all on-call staff of event termination, such as:
- Meteorologist (if staffed in Muscle Shoals)
- Additional Dose Assessment staff on standby
- River Operations

☐ Collect and turn in all records to the EP staff.

☐ Ensure at least one clean copy of the latest workbook items are in the workbook.

Completed by (name):_____ Date:_____

Appendix C
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FRED / RED Data Inputs

FRED
RED
Data Inputs

***NOTE**: The source for this information may be the site Technical Support Center or from ICS/PEDS.

1. **Plant**: ☐ BFN ☐ SQN ☐ WBN

2. **Meteorological data** will be: ☐ **ACTUAL** or ☐ **EXERCISE** (confirm with drill controller).

3. **Release start time**: _____ ☐ Eastern ☐ Central

4. **Elapsed Time from reactor shutdown to start of release**: _____ (hours) (enter 0 if Rx under power)

5. **Release Vent Type** (this is used by the code to calculate effective plume height):

SQN/WBN	***BFN***
☐ Shield Bldg	☐ Stack
☐ Near ground	☐ Radwaste Zone (of Rx Bldg)
	☐ Refueling Bldg Zone (of Rx Bldg)
	☐ Reactor Bldg Zone (of Rx Bldg)
	☐ Turbine Bldg Zone (of Rx Bldg)
	☐ Near ground

6. **Effluent flow rate (exit speed)** (if measured and available): _____ cfm.

NOTE: Consult with the meteorologist as to whether the default Exit Velocity based on this flow rate should be over-ridden. Code defaults can be used for conservatism or if flow data is unavailable.

7. **Release Type:**

☐RCS	☐Core Damage	☐User Specified (for noble gas and Tritium only)
☐Gap	☐Fuel Melt	

NOTE: Determine the release type by conferring with the CECC Core Damage staff or TSC Chemistry. If no determination is available use GAP until known. Alternately, particulate-to-I^{131} field team air concentration data can be used as follows:

$$\frac{\text{Field Team Data Particulate microCi/cc}}{\text{Field Team Data Iodine}^{131}\text{ microCi/cc}} = \text{Ratio}$$

Ratio = Release Type:	*Gap*	*Core Damage*	*Fuel Melt*
	≥ 0.18	≥ 2.0	≥ 3.5

* Revision

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FRED
RED
Data Inputs

FRED / RED Data Inputs

8. **Release Path:**

SQN/WBN
- ☐ **Filtered** via containment (CTM)
- ☐ **Unfiltered** via containment (CTM)
- ☐ SGTR with rupture located **BELOW** water level
- ☐ Steam Generator Tube Rupture with rupture located **ABOVE** water level
- ☐ Turbine Bldg
- ☐ Reactor Bldg
- ☐ Auxiliary Bldg

BFN
- ☐ Stack (filtered)
- ☐ Stack (unfiltered)
- ☐ Turbine Bldg, Reactor Bldg
- ☐ Main Steam Line Break (MSLB)

9. **Release rates:**

Basis for rates: ☐ Monitor reading ☐ Plant personnel ☐ BRED estimate

_____ μCi/s Noble Gas

_____ μCi/s I-131 (pre-treatment value only, if available)

_____ μCi/s Total Particulate (pre-treatment value only, if available)

_____ μCi/s H-3 (if applicable see note below)

NOTE:
- For a TPBAR handling accident, the H-3 release can be estimated as:

H-3 Release Rate _____ = $\frac{\text{_____ μCi/cc H-3} \times \text{_____ cfm} \times 28320 \text{ cc/cf}}{60 \text{ min/sec}}$

{ H-3 release (μCi/s) = #μCi/cc H-3 x building exhaust flow rate (cfm) x 28320 cc/cf x 1/60 min/s }

- For a WGDT Rupture accident, the default H-3 release is 2500 Ci over one hr or 6.94E+05 μCi/s for 1 hr

Appendix D
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FRED
RED
Code Runs

FRED or RED Assessment of Airborne Releases

1. **DOUBLE CLICK** on the "CECC VAX" icon if the VAX User Window is not displayed on computer screen. Depress **[RETURN]** until prompted for the user name.

2. **ENTER** user name and password: ☐ **RED** and CECC or ☐ **FRED** and CECC

3 **FOLLOW** computer prompts to begin or exit program.

NOTE: TYPE CTRL Z any time to exit or re-start program.

When executing the RED code you will be asked whether this is a "new run." **ANSWER** "Y" and **ENTER** "NEW RUN," unless you desire to modify or append to a current run.

4. **INPUT** data as collected on Appendix C.

For a user-specified release (for noble gas and/or tritium releases only), **ENTER** the nuclide number below (as applicable) and the associated nuclide-specific release rates.

Nuclide #	Nuclide	Nuclide #	Nuclide
1	H-3	28	XE-131M
6	KR-85	29	XE-133
7	KR-85M	30	XE-133M
8	KR-87	31	XE-135
9	KR-88	32	XE-138

5. **CONFIRM** whether the release rate data is correct, (Y/N). Edit as necessary.

6 **CONFIRM** whether the calculated release rate data is correct, (Y/N). Edit as necessary.

7. **RUN the code** for the expected event duration:

- For FRED Preliminary Assessments use 1 hour;
- For FRED Dose Projections use a 4-hour duration unless known otherwise.
- For RED assessments run once per 15-min during ongoing releases.

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FRED
RED
Code Runs

FRED or RED Assessment of Airborne Releases

8. **OBTAIN** code outputs by as follows:

   a. **ANSWER** "Y" to the prompt to "Print dose charts or plume plots."
   b. **SELECT** State Update Form (SUF) and plume plot as minimum outputs
   c. **SELECT** scale to be used:
      [1] for 10 mile, **[2]** for 50 mile, **[3]** to exit code or go to next time segment
   d. For plume plot, **CLICK** print button at bottom of screen to perform a screen print of plot. Be sure that the pop-up dialog box has the Graphic Image set to "Swap Black/White."
   e. For Preliminary Assessments, **OBTAIN** the Protective Action Guide (PAG) release rates from the FRED output and the actual/projected release rates from the State Update Form.

NOTE	If the PAG values calculated by FRED are zero (due to either low wind speed or negligible release rate) perform the PAG release rate calculations manually using Appendix F sections A and B.

   f. The Preparer and Verifier shall **INITIAL and DATE** the results.

9. **COMPARE** the declared REP class with that indicated in the FRED output. Notify the RAC/RAM (to advise the TSC) of the need for REP class changes based on radiological conditions.

10. **GIVE** PAG and actual/projected release rates to the Board Writer.

11. **GIVE** the FRED results (SUF, PAG Release Rates, plume plot, and REP class information) to the RAC for distribution. (The SUF may be sent directly through the computer to the State and the TSC.)

12. At the request of the RAC/RAM, **PREPARE** a PAR using the CECC Protective Action Logic Diagram and the PAR form found in EPIP-1 and give to the RAM with the results of the FRED run.

13. **REQUEST** that the RAC distribute the SUF, and any plume plots to all standard distribution locations, via CECC Clerical instructions.

14. Preferably once every 15-min (at least once per hour) during an actual release,

    a. **ENTER** the release data into the RED code for use in tracking the plume.
    b. **COMPARE** the estimated impacts to measured field data.
    c. **GIVE** the results (plume plot only) to the RAC for distribution to the CECC, the State, and the TSC.

15. **TYPE** CTRL Z any time to exit or re-start program.

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BRED Evaluation of Airborne Field Data

BRED
Code Run

1. Log on to BRED. **DOUBLE CLICK** on the "CECC VAX" icon. PRESS return until prompted for username. **ENTER** username (BRED) and password (CECC).

2. **OBTAIN** the following field data from Environs Assessment.

   NOTE: As a minimum, only need one of the following measurements:
   Dose Rate **OR** Iodine-131 **OR** Tritium (H-3)

Distance (miles)	Direction (sector)	Time Taken	Dose Rate mrem/hr (1 meter w/c)

Iodine-131 μCi/cc	^{3}H Concentration μCi/cc

3. **Elapsed Time from reactor shutdown to time of field measurement**: _____ (hours) (enter 0 if Rx under power)

4. **DETERMINE the Release Path:**

   SQN/WBN
   - ☐ **Filtered** via containment (CTM)
   - ☐ **Unfiltered** via containment (CTM)
   - ☐ SGTR with rupture located **BELOW** water level
   - ☐ Steam Generator Tube Rupture with rupture located **ABOVE** water level
   - ☐ Turbine Bldg
   - ☐ Reactor Bldg
   - ☐ Auxiliary Bldg

   BFN
   - ☐ Stack (filtered)
   - ☐ Stack (unfiltered)
   - ☐ Turbine Bldg, Reactor Bldg
   - ☐ Main Steam Line Break (MSLB)

5. **DETERMINE the Release Type:** ☐RCS ☐Gap ☐Core Damage ☐Fuel Melt

NOTE: Determine the release type by conferring with the CECC Core Damage staff or TSC Chemistry. If no determination is available use Gap until known. Alternately, particulate-to-I^{131} field team air concentration data can be used as follows:

$$\frac{\text{Field Team Data Particulate microCi/cc}}{\text{Field Team Data Iodine}^{131}\text{ microCi/cc}} = \text{Ratio}$$

Ratio = Release Type:	*Gap*	*Core Damage*	*Fuel Melt*
	≥ 0.18	≥ 2.0	≥ 3.5

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BRED
Code Run

BRED Evaluation of Airborne Field Data

6. **RUN** the BRED computer model and follow prompts using the information from sections 2-5. **TYPE** CTRL Z any time to exit or re-start program.

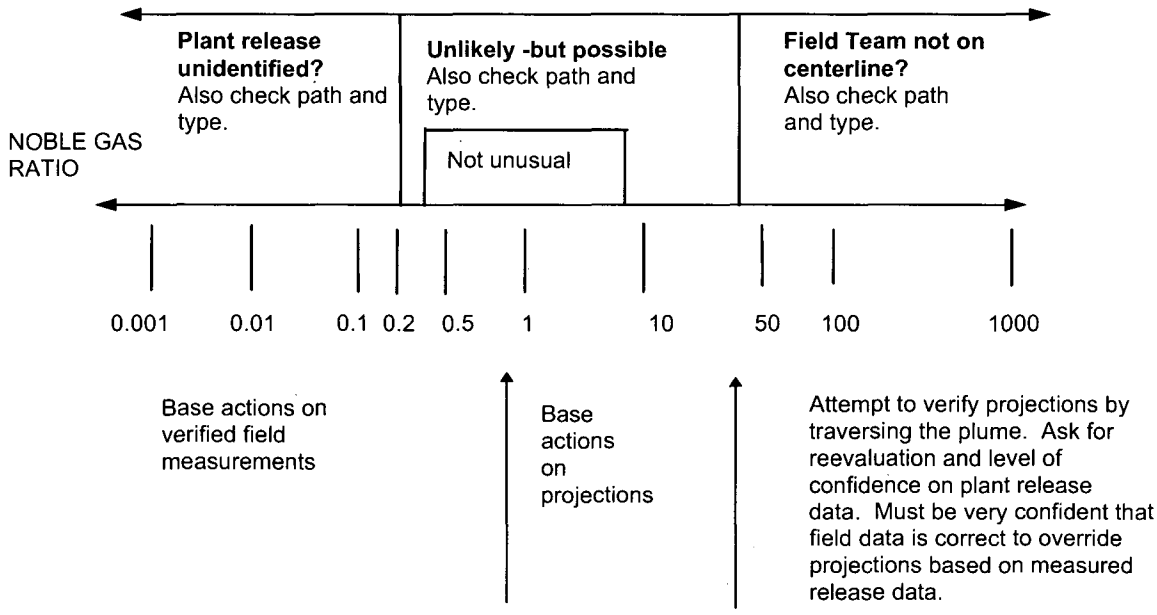
7. **RECORD** the printed Release Rate output (as applicable) and **INPUT into the FRED code**.

Noble Gas (μCi/s)	Iodine 131 (pre-treatment) μCi/s	Tritium (^3H) μCi/s

8. **COMPARE** the new FRED run dose rate output to the previous RED/FRED computer model by **CALCULATING** a data ratio as follows:

FRED or RED Centerline Dose Rate ***divided by*** the FIELD DATA Centerline Dose Rate

_____ divided by _____ = _____ RATIO



9. **PROVIDE** feedback to the Environs Assessor and RAC/RAM. **UPDATE** dose projections as necessary and give the results to the RAC for use in preparing Protective Action Recommendations (PAR), or prepare a PAR in accordance with CECC EPIP-1.

MANUAL AIR
SB TEDE PAG

Appendix F
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Manual Method for Assessing Airborne Releases

A. Calculating TEDE PAG Release Rate at SITE BOUNDARY (0.62 miles)

1. **DETERMINE**: **Plant**: ☐ BFN ☐ SQN ☐ WBN

Wind Speed: _____ (m/s)

Stability Class: (circle) A B C D E F G

Release Type: ☐RCS ☐Gap ☐Core Damage ☐Fuel Melt ☐User Specified (for noble gas and Tritium only)

Release Path: **SQN/WBN**
- ☐ **Filtered** via CTM
- ☐ **Unfiltered** via CTM
- ☐ SGTR with rupture **BELOW** water
- ☐ SGTR with rupture **ABOVE** water
- ☐ Turbine, Reactor, Auxiliary Building

BFN
- ☐ filtered via stack
- ☐ unfiltered via stack
- ☐ Turbine, Reactor Bldg
- ☐ Main Steam Line Break

2. **CIRCLE** the **TEDE PAG FACTOR** (μCi/m) below, based on the stability class and release level.

NOTE: USE ground level for all cases except for BFN stack.

	A	B	C	D	E	F	G
Ground	1.7E+09	4.8E+08	2.2E+08	1.1E+08	7.4E+07	4.9E+07	2.9E+07
Stack	1.8E+09	9.1E+08	9.1E+08	8.3E+08	8.3E+08	8.0E+08	9.1E+08

3. **CIRCLE** the appropriate **TEDE Ratio** below, based on release type/path:

TEDE Ratio (for 0.62 mi)	**BWR RCS**	**PWR RCS**	**Gap**	**Core Damage**	**Fuel Melt**	**User Spec**
Stack (unfiltered)	2.0	N/A	1.8	1.3	2.0	1.0
Stack (filtered)	1.9	N/A	1.0	1.0	1.0	1.0
CTM (unfiltered) or SGTR (below)	N/A	7.4	9.0	5.3	11	1.0
CTM (filtered)	N/A	3.7	1.0	0.9	1.0	1.0
SGTR (above water)	N/A	95	221	111	263	1.0
MSLB (BFN)	7.4	N/A	84	44	100	1.0
Turbine, Reactor or Aux Bldg	4.4	17	32	16	37	1.0

4. **CALCULATE** the **TEDE PAG Release Rate** (0.62 mi) as follows:

_____	X	_____	/	_____	=	_____
TEDE PAG FACTOR (μCi/m, item A.2)		wind speed (m/s, item A.1)		TEDE Ratio (item A.3)		TEDE NGPAG Release Rate SB 0.62 mi (μCi/s)

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Manual Method for Assessing Airborne Releases

MANUAL AIR
SB TEDE PAG

5. **OBTAIN** the actual/projected Noble Gas Release Rate _____ μCi/s.

6. **IF** noble gas release rate (item A.5) ≥ TEDE PAG Release Rate (item A.4), **THEN** radiological conditions indicate a **General Emergency**.

For Tritium Accidents (e.g., TPBAR handling or WGDT rupture),

7. **CIRCLE** the **Tritium PAG FACTOR** (μCi/m) below, based on the stability class.

A	B	C	D	E	F	G
4.0E+09	8.7E+08	2.9E+08	1.0E+08	5.9E+07	3.1E+07	1.4E+07

8. **CALCULATE** the **Tritium PAG Release Rate** as follows:

_____	X	_____	=	_____
Tritium PAG FACTOR (μCi/m, item A.7)		wind speed (m/s item A.1)		TEDE Tritium PAG Release Rate SB 0.62 MI (μCi/s)

9. **OBTAIN** the actual/projected Tritium Release Rate (see below) _____ μCi/s.

NOTE:
- For a TPBAR handling accident, the H-3 release can be estimated as:

H-3 Release Rate _____ = _____ μCi/cc H-3 **x** _____ cfm x 28320 cc/cf / 60 min/sec

{ H-3 release (μCi/s) = #μCi/cc H-3 x building exhaust flow rate (cfm) x 28320 cc/cf x 1/60 min/s }

- For a WGDT Rupture accident, the default H-3 release is 2500 Ci over one hr or 6.94E+05 μCi/s for 1 hr

10. **IF** tritium release rate (item A.9) ≥ TEDE PAG Release Rate (item A.8), **THEN** radiological conditions indicate a **General Emergency**.

11. **IF tritium accident also involves noble gases, THEN perform the following calculation:**

$$\frac{\text{NG Release Rate}}{\text{TEDE NG PAG Release Rate}} + \frac{\text{Tritium Release Rate}}{\text{TEDE Tritium PAG Release Rate}}$$

$$\frac{\text{(item A.5)}}{\text{(item A.4)}} + \frac{\text{(item A.9)}}{\text{(item A.8)}} = \frac{\quad}{\text{Ratio}}$$

12. **IF the value in item A.11** ≥ 1.0, **THEN** radiological conditions indicate a **General Emergency**.

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Manual Method for Assessing Airborne Releases

MANUAL AIR
SB THYROID
CDE PAG

B. Calculating THYROID CDE PAG Release Rate at SITE BOUNDARY (0.62 MILES)

1. **USE** the data from section A.1

2. **CIRCLE** the **CDE PAG FACTOR** (μCi/m), based on the stability class and release level.

   NOTE: USE ground level for all cases except for BFN stack.

	A	B	C	D	E	F	G
Ground	4.1E+05	8.6E+04	3.0E+04	1.0E+04	6.0E+03	3.1E+03	1.4E+03
Stack	4.1E+05	2.3E+05	3.7E+05	6.5E+05	1.4E+06	2.1E+07	4.9E+11

3. **CALCULATE** the CDE PAG Release Rate as follows:

   _____ X _____ =

   CDE PAG FACTOR (μCi/m, item B.2) — wind speed (m/s, item A.1)

   _____
   CDE PAG Release Rate
   SB 0.62 mi (μCi/s)

4. a. If known, **RECORD** the actual/projected I-131 release rate _____ μCi/s and **go to Step 5**.

   If unknown, **CIRCLE** the I-131 to NG ratio below, based on release type and path and continue with step 4.b.

I-131 to Noble Gas Ratio

	RCS	Gap	Core Damage	Fuel Melt
CTM filtered	1.7E-06	3.0E-05	1.2E-05	2.2E-05
Stack filtered	4.6E-07	3.0E-05	1.2E-05	2.2E-05
CTM (unfiltered) or SGTR (below)	1.7E-04	3.0E-03	1.2E-03	2.2E-03
Stack (unfiltered)	4.6E-05	3.0E-03	1.2E-03	2.2E-03
TB, AuxB, RxB	5.8E-04	1.0E-02	4.1E-03	7.7E-03
SGTR (above)	4.2E-03	8.0E-02	3.0E-02	5.5E-02
MSLB (BFN)	4.6E-04	3.0E-02	1.2E-02	2.2E-02

4.b. **CALCULATE** actual/projected iodine-131 release rate as follows:

   _____ X _____ = _____

   Actual/Projected NG release rate (item A.5) — I-131 to NG ratio (item B.4a) — Actual/proj. I-131 release rate (μCi/s)

5. **IF** I-131 release rate (item B.4a or b) ≥ CDE PAG Release Rate (item B.3), **THEN** radiological conditions indicate a **General Emergency**.

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Manual Method for Assessing Airborne Releases

MANUAL AIR
SB TEDE RATE

C. Calculating TEDE Dose Rate at SITE BOUNDARY (0.62 miles)

USE the data from section A.1, **THEN**

1. **CIRCLE** the **TEDE FACTOR** (rem/h per μCi/m) below, based on the stability class and release level.

   NOTE: USE ground level for all cases except for BFN stack.

	A	B	C	D	E	F	G
Ground	6.0E-10	2.1E-09	4.6E-09	9.5E-09	1.4E-08	2.1E-08	3.5E-08
Stack	5.5E-10	1.1E-09	1.1E-09	1.2E-09	1.2E-09	1.3E-09	1.1E-09

2. **CIRCLE** the appropriate TEDE Ratio below, based on release type/path:

TEDE Ratio (at 0.62 mi)

	BWR RCS	PWR RCS	GAP	Core Damage	Fuel Melt	User Spec
Stack (unfiltered)	2.0	N/A	1.8	1.3	2.0	1.0
Stack (filtered)	1.9	N/A	1.0	1.0	1.0	1.0
CTM (unfiltered) or SGTR (below)	N/A	7.4	9	5.3	11	1.0
CTM (filtered)	N/A	3.7	**1.0**	0.9	1.0	1.0
SGTR (above water)	N/A	95	221	111	263	1.0
MSLB (BFN)	7.4	N/A	84	44	100	1.0
TB, RxB, AB	4.4	17	32	16	37	1.0

3. **CALCULATE** the **TEDE Dose rate** as follows:

_____ X	_____ X	_____ /	_____ =	_____
NG release rate (μCi/s) (item A.5)	TEDE FACTOR (item C.1)	TEDE Ratio (item C.2)	wind sp. (m/s) (item A.1)	**TEDE (rem/h) 0.62 mile**

For Tritium Accidents (e.g., TPBAR handling or WGDT rupture),

4. **CIRCLE** the **Tritium TEDE FACTOR** (rem/h per μCi/m) below, based on the stability class.

A	B	C	D	E	F	G
2.5E-10	1.2E-09	3.5E-09	1.0E-08	1.7E-08	3.3E-08	7.0E-08

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Manual Method for Assessing Airborne Releases

MANUAL AIR
SB 5 mi TEDE RATE
SB 5 mi THY CDE RATE

5. **CALCULATE** the **Tritium TEDE dose rate** as follows:

_____	X	_____	/	_____	=	_____
Tritium Release Rate† (μCi/s)		Tritium TEDE FACTOR (item C.4)		wind speed (m/s) (item A.1)		Tritium TEDE (rem/h)

†NOTE:
- For a TPBAR handling accident, the H-3 release can be estimated as:

H-3 Release Rate _____ = _____ μCi/cc H-3 **x** _____ cfm x 28320 cc/cf / 60 min/sec

{ H-3 release (μCi/s) = #μCi/cc H-3 x building exhaust flow rate (cfm) x 28320 cc/cf x 1/60 min/s }

- For a WGDT Rupture accident, the default H-3 release is 2500 Ci over one hr or 6.94E+05 μCi/s for 1 hr

6. **CALCULATE Total TEDE dose rate as follows:**

_____	+	_____	=	_____
TEDE (rem/h) (item C.3)		Tritium TEDE (rem/h) (item C.5)		**Total TEDE (rem/h) 0.62 mile**

D. Calculating SB THYROID CDE Dose Rate

1. **CIRCLE** the Thyroid **CDE FACTOR** (rem/h per μCi/m), based on the stability class and release level.

NOTE: USE ground level for all cases except for BFN stack.

	A	B	C	D	E	F	G
Ground	1.2E-05	5.8E-05	1.7E-04	4.8E-04	8.3E-04	1.6E-03	3.5E-03
Stack	1.2E-05	2.2E-05	1.4E-05	7.7E-06	3.5E-06	2.3E-07	1.0E-11

2 a. If known, **RECORD** the I-131 release rate _____ μCi/s and **go to Step 3**.

If unknown, **CIRCLE** the I-131 to NG ratio below, based on release type and path and continue with step 2b.

I-131 to Noble Gas Ratio

	RCS	Gap	Core Damage	Fuel Melt
CTM filtered	1.7E-06	3.0E-05	1.2E-05	2.2E-05
Stack filtered	4.6E-07	3.0E-05	1.2E-05	2.2E-05
CTM (unfiltered) or SGTR (below)	1.7E-04	3.0E-03	1.2E-03	2.2E-03
Stack (unfiltered)	4.6E-05	3.0E-03	1.2E-03	2.2E-03
TB, AuxB, RxB	5.8E-04	1.0E-02	4.1E-03	7.7E-03
SGTR (above)	4.2E-03	8.0E-02	3.0E-02	5.5E-02
MSLB (BFN)	4.6E-04	3.0E-02	1.2E-02	2.2E-02

2b. **CALCULATE** actual/projected iodine-131 release rate as follows:

_____	X	_____	=	_____
NG release rate (item A.5)		I-131 to NG ratio (item D.2a)		I-131 release rate (μCi/s)

Appendix F
Page 6 of 8
Manual Method for Assessing Airborne Releases

MANUAL AIR
5 mi TEDE DOSE

3. **CALCULATE** Thyroid CDE Dose Rate as follows:

_____ X _____ / _____ = _____

I-131 release rate (μCi/s) (item D.2b) | Thyroid CDE FACTOR (item D.1) | wind speed (m/s, item A.1) | **Thyroid CDE (rem/h) 0.62 mile**

E. Calculating 5 mile TEDE

USE the data from section A.1, **THEN**

1. **OBTAIN** an estimate of the release duration (t) _____ hours. Use 4 (four) hours unless known otherwise.

2. **CIRCLE** the **TEDE FACTOR** (rem/h per μCi/m) below, based on the stability class and release level.

NOTE: USE ground level for all cases except for BFN stack.

	A	B	C	D	E	F	G
Ground	9.5E-11	1.5E-10	2.8E-10	9.5E-10	1.8E-09	3.5E-09	6.5E-09
Stack	9.0E-11	1.5E-10	2.6E-10	7.5E-10	1.1E-09	1.3E-09	1.1E-09

3. **CIRCLE** the appropriate TEDE Ratio below, based on release type/path:

TEDE Ratio (at 5 mi)

	BWR RCS	PWR RCS	GAP	Core Damage	Fuel Melt	User Spec
Stack (unfiltered)	2.1	N/A	2.8	1.9	3.1	1.0
Stack (filtered)	2.1	N/A	1.0	0.9	1.0	1.0
CTM (unfiltered) or SGTR (below)	N/A	3.5	4.9	2.9	5.8	1.0
CTM (filtered)	N/A	1.8	**1.0**	1.0	1.0	1.0
SGTR (above water)	N/A	43	100	51	116	1.0
MSLB (BFN)	4.5	N/A	40	21	47	1.0
TB, RxB, AB	3.1	7.4	15	7.9	17	1.0

4. **CALCULATE** the **TEDE Dose** as follows:

_____ X _____ X _____ X _____ / _____ = _____

NG release rate (μCi/s) (item A.5) | TEDE FACTOR (item E.2) | TEDE Ratio (item E.3) | Duration (hrs) (item E.1) | wind sp. (m/s) (item A.1) | **TEDE (rem) 5 mile**

For Tritium Accidents (e.g., TPBAR handling or WGDT rupture),

5. **CIRCLE** the **Tritium TEDE FACTOR** (rem/h per μCi/m) below, based on the stability class.

A	B	C	D	E	F	G
4.0E-11	5.0E-11	1.1E-10	4.4E-10	9.5E-10	2.4E-09	5.5E-09

Appendix F
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Manual Method for Assessing Airborne Releases

MANUAL AIR
5 mi TEDE DOSE
5 mi THY CDE DOSE

6. **CALCULATE** the **Tritium TEDE** as follows:

_____	X	_____	X	_____	/	_____	=	_____
Tritium Release Rate (μCi/s)		Tritium TEDE FACTOR (item E.5)		Duration (hrs) (item E.1)		wind speed (m/s) (item A.1)		**Tritium TEDE (rem) 5 mile**

NOTE:
- For a TPBAR handling accident, the H-3 release can be estimated as:

H-3 Release Rate _____ = _____ μCi/cc H-3 **x** _____ cfm x 28320 cc/cf / 60 min/sec

{ H-3 release (μCi/s) = #μCi/cc H-3 x building exhaust flow rate (cfm) x 28320 cc/cf x 1/60 min/s }

- For a WGDT Rupture accident, the default H-3 release is 2500 Ci over one hr or 6.94E+05 μCi/s for 1 hr

7. **IF tritium accident also involves noble gases, THEN CALCULATE Total TEDE as follows:**

_____	+	_____	=	_____
TEDE (rem) (item E.4)		Tritium TEDE (rem) (item E.6)		**Total TEDE (rem) 5 mile**

F. Calculating 5 mi THYROID CDE Doses

1. **CIRCLE** the Thyroid **CDE FACTOR** (rem/h per μCi/m), based on the stability class and release level.

NOTE: USE ground level for all cases except for BFN stack.

	A	B	C	D	E	F	G
Ground	2.0E-06	2.5E-06	5.0E-06	2.2E-05	4.7E-05	1.2E-04	2.7E-04
Stack	2.0E-06	2.5E-06	4.5E-06	7.7E-06	3.5E-06	2.3E-07	1.0E-11

2. **OBTAIN** the I-131 release rate from B.4 _____ (μCi/s).

3. **CALCULATE** Thyroid CDE Dose as follows:

_____	X	_____	X	_____	/	_____	=	_____
I-131 release rate (μCi/s) (item F.2)		Thyroid CDE FACTOR (item F.1)		duration (hrs) (item E.1)		wind speed (m/s) (item A.1)		**Thyroid CDE (rem) 5 mile**

Appendix F
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Manual Method for Assessing Airborne Releases

Summary

G. Summary of Results

Site Boundary TEDE Dose for EAL Classification

1. Total TEDE Rate (item C.6) _____ rem/h x 1.0 hour = _____ rem TEDE

2. Circle REP Emergency class based on TEDE dose above:

For 0.62 mi TEDE dose rate ≥	REP Emergency Class
1E-04 rem	NOUE
1E-02 rem	ALERT
1E-01 rem	SAE
1E+00 rem	GE

Site Boundary Thyroid CDE Dose for EAL Classification

3. CDE Dose Rate (section D.3) _____ rem/h x 1.0 hour = _____ rem Thyroid CDE

4. Circle REP Emergency class based on thyroid CDE dose above:

For 0.62 mi Thyroid CDE dose ≥	REP Emergency Class
NA	---
NA	---
0.5 rem	SAE
5 rem	GE

5 Mile TEDE for PAR Determination

5. TEDE without Tritium (section E.4) _____ rem.

6. Total TEDE with Tritium (section E.7) _____ rem.

5 Mile Thyroid CDE for PAR Determination

7. Thyroid CDE (section F.3) _____ rem.

Emergency Class

8. Circle the most restrictive REP classification from items 2 and 4: NOUE Alert SAE GE

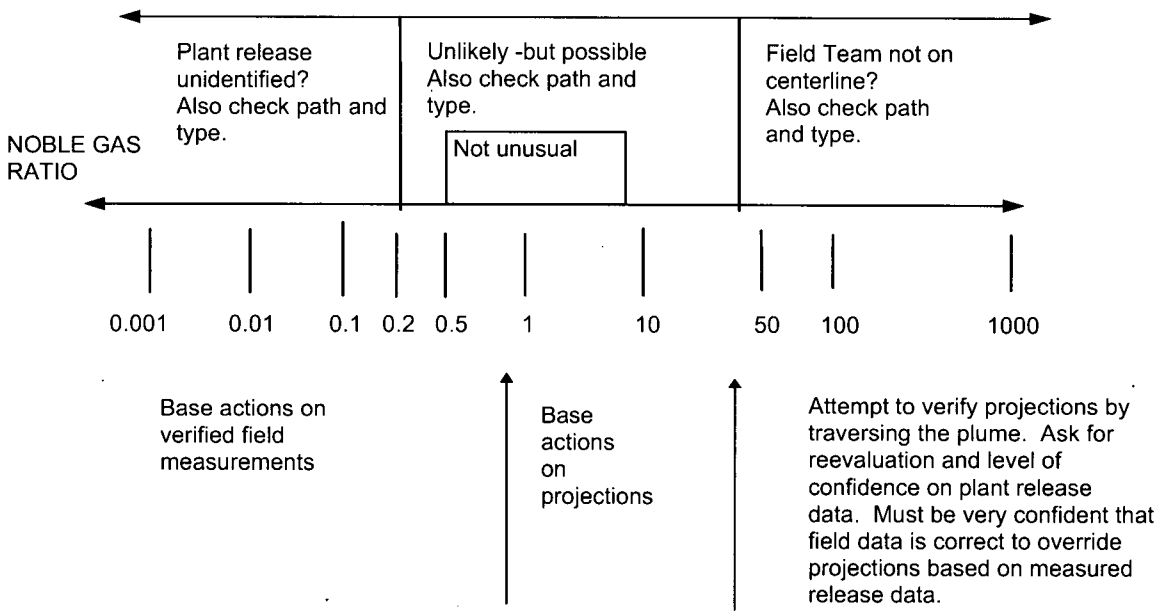
END OF MANUAL ASSESSMENT DATA VERIFICATION

Calculated by: (initial / date) _____/_____

Verified by: (initial / date) _____/_____

APPENDIX G
Page 1 of 1
COMPARISON OF MEASURED FIELD DATA TO DOSE PROJECTION MODELS

$$\text{Ratio} = \frac{\text{PROJECTED centerline dose rate}}{\text{MEASURED centerline dose rate}}$$



APPENDIX H
Page 1 of 1
WATERDOSE Evaluation of Liquid Release to the River

WATERDOSE
Code Run

1. Log on to **WATERDOSE**. **DOUBLE CLICK** on the "CECC VAX" icon. PRESS return until prompted for username. **ENTER** username (WATERDOSE) and password (CECC).

2. **OBTAIN** the following information for input to WATERDOSE and **FOLLOW** code prompts.

NOTE: **TYPE** CTRL Z any time to exit or re-start program.

Plant: ☐ BFN ☐ SQN ☐ WBN

a. **Determine Release Point**:: ☐ Diffuser ☐ Shoreline

b. **Length of release**: _____ Hours

c. **Volume of release**: _____ (ft^3) 1 gallon = 0.134 ft^3

d. **Release Mix (nuclides and concentrations)**

Nuclide	Concentration (μCi/ml)

3. **RUN** the WATERDOSE code using the available (or default below) information to obtain an estimate of the dose impact. (If the computer code is not operational, the dose calculation methodology contained in Appendix I can be used.)

BFN-33000 cfs **SQN - 29000 cfs** **WBN - 27000 cfs**

NOTE: **TYPE** CTRL Z any time to exit or re-start program.

4. **OBTAIN** the State Update Form (SUF). The Preparer and Verifier shall **initial and date** the results.

5. **TRANSMIT** (by spooling through the computer) the SUF to the TSC and State if approval to do so has been given by the RAC/RAM.

6. **TYPE** CTRL Z any time to exit or re-start program.

APPENDIX I
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Manual Evaluation of Liquid Releases to the River

MANUAL
RIVER

1. **Plant:** ☐ BFN ☐ SQN ☐ WBN

2. **Release Point:** ☐Diffuser ☐Shoreline

3. **Release Time:** Start _____ End _____ ☐Eastern ☐Central

4. **Release Volume (V)** _____ ft^3 (1 gal = 0.134 ft^3)

5. **Calculation of Hazard Index (HI):**

Nuclide	Concentration (μCi/ml)	Dose (rem/day per μCi/ml)	Hazard Index (rem/day)
	C	**DF- Table 3**	**HI=C DF**
		Total Hazard Index	

6. ***Riverflow at the plant** _____ft^3/s (cfs). This can be obtained from the ICS/PEDS (for SQN and WBN) or River Operations. If flow data is not available use the following default values:
BFN-33000 cfs **SQN - 29000 cfs** **WBN - 27000 cfs**

7. **Calculate** the downstream dose rate to hypothetical individual **at first downstream** Public Water Supply and then other locations of interest. Refer to Appendix J. A more detailed TRM location listing is located in BSL under Nuc Corp; COC; Procedures; document type "REMIC" listed as TRM.

Location TRM	Arrival Time Hours (table 2)	Dilution Factor ($1/ft^3$) **D** (table 1)	Hazard Index (rem/day) **HI** (item 5)	Release Volume (ft^3) **V** (item 4)	Dose Rate (rem/day) **DHV**

8. **Record** the applicable data on the State Update Form in CECC EPIP-1 and distribute.

Comments: _____

END OF MANUAL ASSESSMENT	Calculated by: (initial / date)	_____/_____
DATA VERIFICATION	Calculated by: (initial / date)	_____/_____

*Revision

TABLE 1
DILUTION FACTOR
(D)

APPENDIX I
Page 2 of 5
Manual Evaluation of Liquid Releases to the River

RELATIVE CONCENTRATION FACTORS-PER CUBIC FOOT RELEASED

BROWNS FERRY NUCLEAR PLANT

	SHORELINE RELEASE		DIFFUSER PIPE RELEASE	
Tennessee River Mile (TRM)	Plant Side Shoreline D	Opposite Shoreline D	Centerline D	Shoreline D
294.00 Plant				
293.00	2.8E-08	.00E+00	1.4E-08	.00E+00
292.00	1.4E-08	.00E+00	6.9E-09	.00E+00
291.00	9.2E-09	.00E+00	4.6E-09	1.2E-36
290.00	6.9E-09	.00E+00	3.4E-09	8.2E-30
289.00	5.5E-09	.00E+00	2.8E-09	1.0E-25
288.00	4.6E-09	.00E+00	2.3E-09	5.1E-23
287.00	3.9E-09	.00E+00	2.0E-09	4.3E-21
286.00	3.4E-09	.00E+00	1.7E-09	1.2E-19
285.00	3.1E-09	.00E+00	1.5E-09	1.5E-18
284.00	2.8E-09	1.8E-42	1.4E-09	1.2E-17
283.00	2.5E-09	1.8E-39	1.3E-09	6.2E-17
282.00	2.3E-09	5.8E-37	1.1E-09	2.4E-16
281.00	2.1E-09	7.4E-35	1.1E-09	7.7E-16
280.00	2.0E-09	4.8E-33	9.8E-10	2.1E-15
279.00	1.8E-09	1.8E-31	9.2E-10	4.8E-15
278.00	1.7E-09	4.1E-30	8.6E-10	1.0E-14
274.90 Downstream Dam				

SEQUOYAH NUCLEAR PLANT

	SHORELINE RELEASE		DIFFUSER PIPE RELEASE	
TRM	Plant Side Shoreline D	Opposite Shoreline D	Centerline D	Shoreline D
484.50 Plant				
484.00	3.5E-08	5.9E-34	1.8E-08	1.1E-14
483.00	1.4E-08	5.3E-19	7.2E-09	3.0E-11
482.00	9.1E-09	3.2E-15	4.6E-09	1.9E-10
481.00	6.6E-09	1.5E-13	3.3E-09	3.9E-10
480.00	5.2E-09	1.4E-12	2.6E-09	5.6E-10
479.00	4.3E-09	5.4E-12	2.2E-09	6.8E-10
478.00	3.7E-09	1.4E-11	1.8E-09	7.6E-10
477.00	3.2E-09	2.7E-11	1.6E-09	8.2E-10
476.00	2.8E-09	4.5E-11	1.4E-09	8.4E-10
475.00	2.5E-09	6.6E-11	1.3E-09	8.6E-10
474.00	2.3E-09	9.0E-11	1.2E-09	8.6E-10
473.00	2.1E-09	1.2E-10	1.1E-09	8.6E-10
472.00	1.9E-09	1.4E-10	1.0E-09	8.5E-10
471.00	1.8E-09	1.7E-10	9.8E-10	8.3E-10
471.00 Downstream Dam				

TABLE 1
DILUTION FACTOR
(D)

APPENDIX I
Page 3 of 5
Manual Evaluation of Liquid Releases to the River

RELATIVE CONCENTRATION FACTORS-PER CUBIC FOOT RELEASED

WATTS BAR NUCLEAR PLANT

	SHORELINE RELEASE		DIFFUSER PIPE RELEASE	
TRM	Plant Side Shoreline D	Opposite Shoreline D	Centerline D	Shoreline D
528.00 Plant				
527.00	3.7E-08	1.2E-20	1.8E-08	2.3E-11
526.00	1.8E-08	1.5E-14	9.1E-09	4.1E-09
525.00	1.2E-08	1.3E-12	6.1E-09	1.0E-09
524.00	9.1E-09	1.2E-11	4.6E-09	1.4E-09
523.00	7.3E-09	4.0E-11	3.7E-09	1.7E-09
522.00	6.1E-09	9.0E-11	3.1E-09	1.8E-09
521.00	5.2E-09	1.6E-10	2.7E-09	1.8E-09
520.00	4.6E-09	2.3E-10	2.4E-09	1.8E-09
519.00	4.1E-09	3.1E-10	2.2E-09	1.8E-09
518.00	3.7E-09	3.8E-10	2.0E-09	1.8E-09
517.00	3.3E-09	4.6E-10	1.9E-09	1.7E-09
516.00	3.0E-09	5.2E-10	1.8E-09	1.7E-09
515.00	2.8E-09	5.8E-10	1.7E-09	1.6E-09
514.00	2.6E-09	6.4E-10	1.6E-09	1.6E-09
513.00	2.4E-09	6.8E-10	1.6E-09	1.5E-09
512.00	2.3E-09	7.2E-10	1.5E-09	1.5E-09
511.00	2.2E-09	7.6E-10	1.5E-09	1.4E-09
510.00	2.0E-09	7.9E-10	1.4E-09	1.4E-09
510.00	1.9E-09	8.2E-10	1.4E-09	1.4E-09
508.00	1.8E-09	8.4E-10	1.3E-09	1.3E-09
507.00	1.8E-09	8.6E-10	1.3E-09	1.3E-09
506.00	1.7E-09	8.7E-10	1.3E-09	1.3E-09
505.00	1.6E-09	8.8E-10	1.2E-09	1.2E-09
504.00	1.5E-09	8.9E-10	1.2E-09	1.2E-09
503.00	1.5E-09	9.0E-10	1.2E-09	1.2E-09
502.00	1.4E-09	9.1E-10	1.2E-09	1.2E-09
501.00	1.4E-09	9.1E-10	1.1E-09	1.1E-09
500.00	1.3E-09	9.1E-10	1.1E-09	1.1E-09
471.00 Downstream Dam				

APPENDIX I
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Manual Evaluation of Liquid Releases to the River

APPROXIMATE TRAVEL TIME TO MAXIMUM CONCENTRATION - HOURS

TABLE 2
ARRIVAL TIME
(HRS)

BROWNS FERRY NUCLEAR PLANT

TRM	RIVER FLOW IN CUBIC FEET/SECOND					
	25000	30000	33000	35000	37000	39000
294.00 Plant						
292.00	25	21	19	18	17	16
290.00	49	41	37	35	33	31
288.00	74	62	56	53	50	47
286.00	99	82	75	71	67	63
284.00	124	103	92	88	84	80
282.00	148	124	112	106	100	94
280.00	173	144	131	124	117	110
278.00	198	165	150	141	134	128
276.00	222	185	169	159	150	142
274.90 Downstream Dam						

SEQUOYAH NUCLEAR PLANT

	21000	25000	29000	30000	33000
484.50 Plant					
483.00	5	4	4	3	3
481.00	12	10	8	8	7
479.00	18	15	13	13	12
477.00	25	21	18	17	16
475.00	32	26	23	22	20
473.00	38	32	28	27	24
471.00	45	38	32	31	28
471.00 Downstream Dam					

WATTS BAR NUCLEAR PLANT

	19000	20000	25000	30000	35000
528.00 Plant					
526.00	5	4	3	3	3
524.00	10	9	7	6	6
522.00	15	14	11	9	9
520.00	20	19	15	12	12
518.00	25	24	19	16	15
516.00	30	29	23	19	18
514.00	35	33	27	22	21
512.00	40	38	30	25	24
510.00	45	43	34	29	28
508.00	50	48	38	32	31
506.00	56	53	42	35	34
504.00	61	58	46	38	37
502.00	66	62	50	41	40
500.00	71	67	54	45	43
471.00 Downstream Dam					

TABLE 3
DOSE FACTORS
(DF)

APPENDIX I
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Manual Evaluation of Liquid Releases to the River

Critical Ingestion Dose Rate Factors
(Derived from Regulatory Guide 1.109)
Rem/day per μCi/ml

Nuclide	Dose Factor	Organ[1]	Age[2]	Nuclide	Dose Factor	Organ[1]	Age[2]
H-3	0.28	TB	C	Ru-103	43.2	GIT	A
C-14	16.9	B	C	Ru-105	58.9	GIT	C
Na-24	8.12	TB	C	Ru-106	356	GIT	A
P-32	1155	B	C	Ag-110m	121	GIT	A
Cr-51	1.34	GIT	A	Te-125m	21.8	K	A
Mn-54	28	GIT	A	Te-127m	55	K	A
Mn-56	67.8	GIT	C	Te-127	25.8	GIT	C
Fe-55	16.1	B	C	Te-129m	96	K	C
Fe-59	68	GIT	A	Te-129	20.4	GIT	I
Co-58	30	GIT	A	Te-131	168	GIT	A
Co-60	80.4	GIT	A	Te-131	6.4	GIT	I
Ni-63	753	B	C	Te-132	154	GIT	A
Ni-65	35.8	GIT	C	I-130	1332	THY	I
Cu-64	14.2	GIT	A	I-131	12500	THY	I
Zn-65	51.1	L	C	I-132	142	THY	I
Zn-69	12.33	GIT	I	I-133	2980	THY	I
Br-83	0.24	TB	C	I-134	37.4	THY	I
Br-84	0.28	TB	C	I-135	584	THY	I
Br-85	0.013	TB	C	Cs-134	538	L	C
Rb-86	153	L	I	Cs-136	90.4	L	C
Rb-88	0.45	L	I	Cs-137	438	B	I
Rb-89	0.26	L	I	Cs-138	1.13	GIT	I
Sr-89	1850	B	C	Ba-139	50.2	GIT	I
Sr-90	23800	B	C	Ba-140	116	B	C
Sr-91	74.2	GIT	C	Ba-141	7.27	GIT	I
Sr-92	239	GIT	C	Ba-142	1.06	GIT	I
Y-90	204	GIT	A	La-140	185	GIT	A
Y-91m	2.43	GIT	I	La-142	46.3	GIT	C
Y-91	155	GIT	A	Ce-141	48.4	GIT	A
Y-92	146	GIT	C	Ce-143	91.2	GIT	A
Y-93	238	GIT	C	Ce-144	330	GIT	A
Zr-95	61.8	GIT	A	Pr-143	80.6	GIT	A
Zr-97	210	GIT	A	Pr-144	4.44	GIT	I
Nb-95	42	GIT	A	Nd-147	69.8	GIT	A
Mo-99	39.8	K	C	W-187	56.4	GIT	A
Tc-99m	1.44	GIT	C	Np-239	48	GIT	A

1. THY = thyroid, GIT = Gastrointestinal Tract, K = Kidney, L = Liver, TB = Total Body, B = Bone

2. A = Adult, C = Child, I = Infant

APPENDIX J
Page 1 of 3

BFN - PUBLIC AND INDUSTRIAL SURFACE WATER SUPPLIES

County-State	Plant Name	Water Source	Type of Water Supply	Notification Advise State or Local Authorities listed in the REND
10-Mile Radius				
Limestone-Alabama	Browns Ferry Nuclear Plant	Tennessee River	Industrial	
Lawrence-Alabama	W. Morgan, E. Lawrence	Tennessee River	Municipal	
Lawrence-Alabama	Water Authority			
	Champion International	Tennessee River	Industrial &	
25-Mile Radius	(Courtland Plant)		Potable	
State of Alabama	Joe Wheeler State Park	Tennessee River	Municipal	
Lawrence-Alabama	TVA-Wheeler Dam[1]	Tennessee River	Industrial	
50-Mile Radius				
Lauderdale-Alabama	Florence City-Wilson Plant	Tennessee River	Municipal	
Colbert-Alabama	Reynolds Metals Company	Tennessee River	Industrial	
Colbert-Alabama	Muscle Shoals	Tennessee River	Municipal	
		Fleet Hollow Embayment		
Colbert-Alabama	TVA ERL	Fleet Hollow Embayment	Industrial & Potable	
Colbert-Alabama	TVA-Wilson Dam	Tennessee River	Industrial	
Colbert-Alabama	Occidental Chemical Company	Tennessee River	Industrial	
Colbert-Alabama	Sheffield	Tennessee River	Municipal	
Colbert-Alabama	Sheffield Police			
Colbert-Alabama	TVA Colbert Fossil Plant	Tennessee River	Industrial	
Colbert-Alabama	Cherokee Water Works & Gas	Tennessee River	Municipal	
Colbert-Alabama	Cherokee Police (Day)			
Colbert-Alabama	Cherokee Police (Night)			
Colbert-Alabama	Laroche Industries	Tennessee River	Industrial	

[1]Potable water obtained from East Lauderdale County Water District.

APPENDIX J
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SQN - PUBLIC AND INDUSTRIAL SURFACE WATER SUPPLIES

County-State	Plant Name	Water Source	Type of Water Supply	Notification Advise State or Local Authorities listed in the REND
10-Mile Radius				
Hamilton-Tennessee	Sequoyah Nuclear Plant	Tennessee River	Industrial	
	Gold Point Marina	Tennessee River		
	East Side Utility	Tennessee River	Industrial	
		Tennessee River	Industrial	
	Chickamauga Dam (Power Service Center)	Tennessee River	Industrial	
	Chickamauga Dam	Tennessee River		
25-Mile Radius				
	E. I. Dupont Co.	Tennessee River	Industrial and Potable	
	Tennessee American Water Co.	Tennessee River	Municipal	
	Rock-Tennessee Mill[1]	Tennessee River	Industrial	
	Vulcan Sand & Gravel[1]	Tennessee River	Industrial	
	Signal Mountain Cement[1]	Tennessee River	Industrial	
	Medusa Cement Co.	Tennessee River	Industrial	
50-Mile Radius	Signal Mountain Cement (Plant)	Tennessee River	Industrial	
Marion-Tennessee	Signal Mountain Cement (Quarry)	Tennessee River	Industrial	
	South Pittsburgh	Tennessee River	Municipal	
	Nickajack Dam	Tennessee River	Industrial	
Jackson-Alabama	Bridgeport	Tennessee River and Spring	Municipal	
Jackson-Alabama	Bridgeport Police	Tennessee River and Spring		
	Widows Creek Fossil Plant[2]	Tennessee River	Industrial	
	Mead Corporation	Tennessee River	Industrial	

[1]Obtains potable water from Tennessee-American Water Company.
[2]Obtains potable water supply from Bridgeport - physically removed potable water intake in November 1986.

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WBN - PUBLIC AND INDUSTRIAL SURFACE WATER SUPPLIES ON THE TENNESSEE RIVER

County-State	Plant Name	Water Source	Type of Water Supply	Notification Advise State or Local Authorities listed in the REND
10-Mile Radius				
Rhea-Tennessee	Watts Bar Fossil & Hydro Plant[1]	Tennessee River	Industrial[2,3]	
	Watts Bar Nuclear Plant	Tennessee River	Industrial[3,4]	
25-Mile Radius				
Rhea-Tennessee	City of Dayton	Tennessee River	Municipal	
	Dayton Police			
50-Mile Radius				
Hamilton-Tennessee	TVA Sequoyah Nuclear Plant	Tennessee River	Industrial	
	East Side Utility	Tennessee River	Industrial	
	E. I. Dupont	Tennessee River	Industrial and Potable	
	Chickamauga Dam	Tennessee River	Industrial	
	Tennessee American Water Co.	Tennessee River	Municipal	
	Rock-Tennessee Mill[5]	Tennessee River	Industrial	
	Vulcan Sand and Gravel[5]	Tennessee River	Industrial	
	Signal Mountain Cement[5]	Tennessee River	Industrial	

[1]On layby status - water use when activated is about 445 MGD.
[2]Cooling water.
[3]Potable water to nuclear plant, steam plant, hydro plant, and resort area, provided through Watts Bar Reservation System (wells).
[4]Cooling water and cooling tower makeup.
[5]Obtains potable water supply from Tennessee-American Water Company.

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NARAC Web Access Instructions

NARAC (National Atmospheric Release Advisory Center) provides real time dose assessment assistance to agencies of the Federal Government. NARAC has on-call duty officers who can assist in performing detailed dose assessments. NARAC web access permits a user to run a limited dose assessment model for several different types of accidents: radiological, chemical, and biological. While these instructions are written assuming a radiation release, the model can also be used to predict the effects of a chemical or biological release which can affect the site. Chemical/biological releases may be due to an on- or off-site chemical release or due to an accident or a chemical or biological terrorist attack on the site.

NOTE: Detailed instructions are available online on the NARAC web site and are provided in hard copy in the dose assessor's notebook.

INSTRUCTIONS:

1. Notify another CECC staff member to contact the NARAC duty officer at 925-424-6465 and request their assistance. Have the additional staff member provide all relevant information from the ODS on the incident (from the shipping papers and the initial report) to the NARAC duty officer.
2. Log in to the following web site: https://naracwebx2.llnl.gov/NaracWeb/jsp/naracsession.jsp (bookmarked on Internet Explorer and also on desktop of RED and FRED computer).
3. Log in using the user id and password posted on the dose assessor RED or FRED computer.
4. Click on "New Run" on the header.

NOTE: The pre-defined scenarios at the top of the "new run" screen may be useful for chemical or biological releases. The Radiological Dispersion Device (RDD) is useful only if a "dirty bomb" has been detonated in or near the plant.

5. Select "point release" unless another one of the categories is more applicable.
6. Put in a run name (include date in YYDDMM format so run will have a unique name).
7. Select "test/drill" for training (or "exercise" if part of **pre-arranged** drill with NARAC or "emergency" if actual emergency).

NOTE: The following latitude/longitudes for TVAN sites are listed with the cities and are a useful starting point to zero in the interactive map if a release or accident occurs at or near a TVAN plant site.

BFN:	34.707012N	87.120552W
SQN:	35.227833N	85.091429W
WBN:	35.602508N	84.789538W

8. Select a city or plant site as a starting point (if the incident occurred near a listed city or plant site) or input latitude and longitude of the incident and click on "map" to bring up the interactive map.

NOTE: Zoom and map movement arrows are located at the top left of the interactive map and should be used to adjust the map display so the affected location appears clearly on the map.

9. Use the interactive map and zoom in and relocate the map as necessary until the incident location is clearly visible on the screen.
10. On the drop-down field choose "select location" and click on the map at the exact location of the incident.
11. Click on the "set location" button to choose the current "target" (blue circle) location as the location of the incident and to bring you back to the main input screen.
12. Input the data and time of the release and the duration of the release (if known, default = 1 hour).
13. Set "downwind distance" to 100km unless manual meteorological data will be input (this will help ensure that NWS weather data is available for the calculation). Manual input allows site met data to be used instead of local NWS readings.

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NARAC Web Access Instructions

14. Set release height to the height of the release (if known, defaults to ground level).
15. Under "materials list" choose "all materials" (gives you bigger list).

NOTE: The "RADIOLOGICAL-HYBRID" category currently is useful only if the release involves nuclear fuel or a "dirty bomb".

16. Select "RADIOLOGICAL" if the release is a radiological one or use another category (BIOLOGICAL, CHEMICAL-INDUSTRIAL, etc.) if better suited to describe the release.

NOTE: The NARAC web access system does NOT currently allow a user to choose multiple isotopes nor are all isotopes listed. For a transportation accident involving radioactive materials, choose a representative isotope from those listed on the shipping papers held by the ODS (the highest curie content isotope or Cs-137 is often a good choice [if present in significant quantity in the shipment]). Since not all of the radioactive material is typically released in a transportation accident and the total strength of ALL isotopes will be used in the calculation, the results should be conservative. The dose assessment is performed strictly to give a VERY rough estimate to assist field teams and local officials to gauge the magnitude and possible location of a release plume. The NARAC staff are provided in step 1 with the complete information regarding the incident and have the capability to run a multiple isotope release calculation.

17. Under "material name" select the isotope (or chemical) of interest.
18. Under "strength type" select "radioactivity" for transport accidents involving radioactive materials (mass can be used for other releases).
19. Under "strength" select the appropriate unit (Ci or mCi quantities are usually listed on radioactive transport shipping papers held by the ODS) and quantity of radioactive (or other) material in the entire shipment for conservatism.
20. Use the "NARAC (3D)" model (default) unless a quicker run is needed in which case a 2-D model can be selected instead.
21. If the incident occurred near a TVAN plant where local met data is available select "yes" for "enter met *data manually?" and input the met data (from ICS/PEDS) at the time of the release. Leaving the "no" box checked will use the closest NWS data available for the accident site for the calculation.
22. Click "validate" when data input is complete.
23. If the information displayed is correct click on "submit" to start the calculation (or click on "back to scenario creation" to change any data).
24. When the next screen comes up click on "execution log" to track the progress of the calculation.
25. Periodically click on the browser "refresh" button to track the calculation progress.
26. When the message "Execution complete" is displayed, click on the release name (after "run:" towards the top of the screen) to display the calculation results.
27. Click on "Consequences Report" (shows multiple plots) or other report as desired.
28. Select printer friendly view or save in acrobat format if hard copy or electronic transmittal is needed (see left side of screen in consequences report).

*Revision