



Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402-2801

October 5, 2000

10 CFR 50,  
Appendix E  
Section V

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555-0001

Gentlemen:

In the Matter of	)	Docket Nos.	50-259	50-390
Tennessee Valley Authority	)		50-260	50-391
			50-296	50-327
				50-328

TVA CENTRAL EMERGENCY CONTROL CENTER (CECC) - EMERGENCY PLAN  
IMPLEMENTING PROCEDURE (EPIP) REVISIONS

In accordance with the requirements of 10 CFR Part 50, Appendix E, Section V, enclosed are copies of the Effective Page Listing and revisions to CECC EPIPs.

PROCEDURE		EFFECTIVE DATE
EPIP	EPL	10/2/00
EPIP-1	Rev. 31	10/2/00
EPIP-17	Rev. 15	10/2/00

The enclosed information is being sent by certified mail. The signed receipt signifies that you have received this information and will be taken as verification that the NRC copies of the plan have been updated, and the superseded material has been destroyed.

A045

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If you have any questions, please contact Terry Knuettel at  
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Sincerely,



Mark W. Burzynski  
Manager  
Nuclear Licensing

Enclosures

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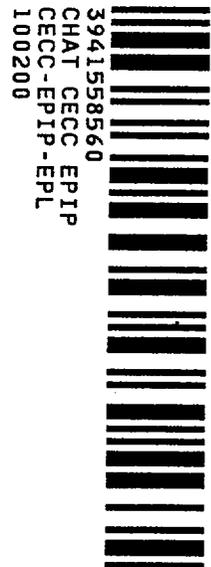
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TENNESSEE VALLEY AUTHORITY  
 CENTRAL EMERGENCY CONTROL CENTER EMERGENCY PLAN  
 IMPLEMENTING PROCEDURES  
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CECC-EPIP-1  
 CENTRAL EMERGENCY CONTROL CENTER  
 ALERT, SITE AREA EMERGENCY, AND GENERAL EMERGENCY

Rev. No.	Date	REVISION LOG	Revised Pages
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.	
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.	

CECC-EPIP-1  
CENTRAL EMERGENCY CONTROL CENTER  
ALERT, SITE AREA EMERGENCY, AND GENERAL EMERGENCY

REVISION LOG (Continued)

Rev. No.	Date	Revised Pages
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.

**CENTRAL EMERGENCY CONTROL CENTER (CECC) ALERT,  
SITE AREA EMERGENCY, AND GENERAL EMERGENCY**

**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 Alert, Site Area Emergency, or General Emergency.

**3.0 REFERENCES**

Radiological Emergency Plan (REP)

**4.0 ABBREVIATIONS AND DEFINITIONS**

AEMA - Alabama Emergency Management Agency  
CECC - Central Emergency Control Center  
EDO - Emergency Duty Officer  
FCC - Field Coordination Center  
JIC - Joint Information Center  
NCO - Nuclear Central Office  
NRC - Nuclear Regulatory Commission  
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  
ITSC - Information Technical Service Center

**5.0 RESPONSIBILITIES**

- 5.1 Upon notification by the TVA ODS that an emergency condition exists, the EDO is responsible for establishing initial operation of the CECC. If the decision is made to activate the JIC, TEMA FCC/RMCC or Alabama R/H SRMAC/AEMA Liaison, the EDO will contact the TVA ITSC using Appendix G as a guide. The ODS is responsible for contacting the CECC staff and having them report to the CECC. The CECC Director has general responsibility for verification of notification and overall accident assessment during an emergency condition.
- 5.2 To assist the CECC Director in carrying out the responsibilities of the Director's position, a CECC staff is available. An assignment of positions and duties of this staff is described in Appendix A.
- 5.3 Appendix D (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 Notifications**

6.1.1 Upon reporting to the CECC, the EDO will take actions prescribed in CECC-EPIP-21.

**6.2 Accident Assessment**

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

6.2.2 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 B). 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.) If the decision is made to activate the TEMA FCC/RMCC or Alabama R/H SRMAC/AEMA Liaison, after the CECC is activated, the CECC State Communicator will contact the TVA ITSC using Appendix G as a guide for phone activations.

6.2.3 The CECC Director is responsible for making appropriate public protective action recommendations to State authorities after the CECC is staffed. Appendix C provides a logic diagram to assist the CECC Director in making protective action recommendations to the State.

6.2.4 The CECC Director conducts periodic briefings (at a minimum, hourly) with the Plant Assessment, Radiological Assessment, and Public Information Managers, and others as necessary to review all appropriate information.

6.2.5 The Radiological Assessment and Plant Assessment Managers shall ensure that the accident information collected is posted appropriately on the status boards. The information on the status boards must be kept current for the benefit of the CECC staff.

6.2.6 The CECC Director shall ensure that any discrepancies between TVA and State information/assessment are resolved and clarified appropriately.

### 6.2.7 Potential Release Evaluation

A potential release evaluation may be performed at any time by the CECC Plant Assessment Team to assess the impact of plant conditions on the environment. This evaluation is based on the present or projected plant conditions.

The Plant Assessment and Radiological Assessment Managers shall determine the need for a potential release and associated dose evaluation based on a potential change in plant conditions. The need for such an evaluation shall be based on the continuing assessments being made by the CECC staff and the information obtained from trending key plant and offsite parameters.

If this evaluation is needed, the CECC Plant Assessment Team will determine postulated plant status to be considered and perform the necessary calculation to predict the potential release.

The Plant Assessment Team will calculate the predicted release and provide it to the radiological assessment staff who will calculate an associated offsite dose. The results of the dose assessment will then be provided to the Radiological Assessment Manager and CECC Director.

### 6.3 General Operation

#### 6.3.1 Physical Security Requirements for CECC

The CECC Director has responsibility for physical security of the CECC. The CECC Director or his representative will inform the Security Officer (stationed at the entryway to the CECC) if visitors requesting admittance to the emergency center should be allowed to enter. CECC staffs will have key card access during CECC activations.

#### 6.3.2 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. 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.

RADCON and/or Plant Operations advisors may also be selected to be sent to the appropriate State Emergency Operations Center.

### 6.3.3 Support From Other TVA Organizations

The CECC Director will discuss the support needed from other TVA organizations necessary to mitigate the consequences of an accident with representatives of those TVA organizations as needed. These representatives may report to the CECC if requested by the CECC Director. Representatives and notification information are provided in the TVA Radiological Emergency Notification Directory (REND).

### 6.3.4 TVA Liaison to the State

For a classification of SITE AREA EMERGENCY OR GENERAL EMERGENCY, the CECC Director will coordinate with the Plant Assessment Manager and 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.

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

- A. Technical explanations and clarification on plant status.
- B. Assist the State by keeping them informed of available TVA resources.
- C. Assist the State in describing/clarifying TVA's response to the emergency, understanding TVA's emergency organization, key TVA staff positions, etc.

### 6.3.5 Relief of Duties

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. However, for short periods of time, persons with limited qualifications may fill the position in temporary relief of the fully qualified staff. The CECC Director gives the Management Services representative a copy of the schedule, and he notifies the individuals of the time they are to report.

### 6.3.6 NRC Support

Provisions have been made to provide workspace for a contingent of NRC staff in the CECC. These provisions include the NRC's FTS 2000 Emergency Telecommunications System. The following dedicated circuits 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.

#### **6.3.7 Termination of the Emergency**

The CECC Director will inform each emergency center when the emergency is terminated and the recovery phase begins.

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.

#### **6.3.8 Coordination of Recovery Efforts**

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-13. As judgment and events determine, additional resources outside of TVA may be required to mitigate the consequences of an emergency.

The Senior Vice President, Nuclear Operations, or his designee, contacts these offsite agencies as needed. Some of the groups from whom support can be obtained include: NRC, DOE (Oak Ridge), DOE (Savannah River), INPO, FRERP, NSSS vendors, and other nuclear utilities.

### **7.0 CHECKLISTS FOR POSITIONS**

CECC Director - Appendix E  
State Communicator - Appendix F

**APPENDIX A Page 1 of 4**

**I. CECC STAFF**

**A. CECC Director - Directs and coordinates overall TVA activities associated with the emergency. Analyzes information relative to action recommendations to the State. Reviews and provides final approval for all TVA news releases (other than initial notification of the event) regarding TVA's response to the emergency prior to their release from the CECC. (See Appendix E for checklist.)**

1. Ensures that appropriate measures have been taken to terminate the condition causing the emergency, protects employees and the public, initiates recovery from the emergency, and ensures information is provided to the news media and public.
2. 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. Notifies Site Emergency Director when State or local agencies have been notified of an emergency classification upgrade.
3. 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.
4. Commits TVA Resources and provides necessary information to assist the State, Federal, and local agencies to the extent possible.
5. Maintains accurate records of decisions made and actions started and completed.
6. Coordinates TVA's efforts with State and Federal agencies involved in the offsite aspects of the emergency. Requests any required federal assistance through the NRC.
7. Makes recommendations to State and local agencies on protective actions (PARs) for the public. Use Appendix H to provide hardcopy of PAR to the State.
8. Verifies the JIC is being staffed and designates the TVA spokesperson.
9. May, at his discretion, request that a second CECC Director report to the CECC to assist the primary Director in overall CECC operations.
- \* 10. Announces to the CECC and informs the TVA spokesperson at the JIC (if staffed) of  
\* any emergency classification changes.

**B. Plant Assessment Manager (PAM) - Directs the CECC plant assessment staff and advises the CECC Director on protective action recommendations based on plant status.**

1. Responsible to the CECC Director to ensure that he is kept periodically briefed (at a minimum, hourly) and provide the information pertaining to plant status and any protective action recommendations in accordance with criteria established in CECC-EPIP 6. This information will be used by the CECC for overall accident assessment (see Appendix C).
2. Maintains contact with the Technical Assessment Manager/SED and ensures that necessary support is provided.

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3. 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.
  4. Requests assistance from other organizations, local agencies, government installations, or vendors, as needed.
  5. Makes appropriate recommendations to the Site Emergency Director and, based on the site's disposition, informs the CECC of the site's actions.
  6. May provide support services to the plant by utilizing all of the necessary manpower and equipment under the control of NP.
  7. 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.
  8. Keeps the site emergency organization informed of personnel ordered to the site and expected time of arrival.
  9. Ensures the accuracy of plant status information and sequence of events on status boards.
- C. Radiological Assessment Manager (RAM) - Directs the CECC radiological assessment staff in assessing the environmental consequences of accidents and, upon special request, provides necessary support regarding inplant radiation protection problems. Advises the CECC Director on protective action recommendations based on offsite radiological conditions.
1. When notified by the ODS that an emergency situation exists, activates the Radiological Assessment Coordinator as appropriate.
  2. Directs the radiological assessment staff in conducting all phases of radiological monitoring in the environment for all areas potentially affected by the emergency.
  3. Provides technical assistance regarding radiation protection in the plant as requested.
  4. Evaluates the information provided to determine if a hazard exists to the public or environment and recommends protective actions to the CECC Director. Utilizes the radiological assessment portion of the logic diagram from CECC-EPIP-7 to formulate these recommendations.
  5. Directs all CECC radiological assessment staff functions and advises the CECC Director of status.
  6. Provides periodic briefing to the CECC staff regarding environmental conditions, the status of protective actions, and required plant health physics support.
  7. Ensures accuracy of radiological data on status boards.

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- D. State Communicator (TVA employee) - Serves as a TVA contact with the State, providing periodic reports on plant systems and radiological assessment. (See Appendix F for checklist.)
1. Acts as a communicator and source of information to the State.
  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 that any technical clarifications required by the State related to TVA's dose assessment activities are being provided.
  4. Responsible for ensuring pertinent information related to plant status, onsite responses, and TVA's dose/environs assessment activities is being provided to the State (see Appendix B). This information shall be provided, at a minimum, hourly or when significant changes occur.
  5. Assists the State as requested in providing TVA resource assistance to the State.
  6. Assists the State liaison (State government representative) as necessary to keep him briefed on the plant situation and coordinating responses to State inquiries, etc.
  7. If the decision is made to activate the JIC, TEMA's SQN FCC/RMCC, or Alabama SRMAC/AEMA, will ensure appropriate phone lines are removed from suspended rates using Appendix G as a guide.
- E. 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.
- F. NRC - The NRC role in the CECC is to observe and advise as appropriate with licensee decisions and actions.
- G. Public Information Staff - Performs public information functions and media relations during an emergency. Co-operates the Joint Information Center (JIC).
1. Responsible for monitoring information and rumors concerning the emergency, drafting and coordinating written TVA news releases, and securing approval of the draft from the CECC Director.
  2. Responsible for assisting the media in covering the activities of the emergency.

**APPENDIX A Page 4 of 4**

3. Responsible for periodically briefing the CECC Director on specific media concerns and actions.
  4. Responsible for activating and coordinating TVA activities of the JIC.
- H. ODS - Maintains a 24 hour contact for emergency reporting and notification.
1. Provides for initial notification of all offsite emergency organizations upon declaration of an emergency classification.
  2. Notifies key CECC staff members which are required to report to the CECC.
  3. Performs notifications to other organizations or personnel as requested by the CECC Director.
- I. EP Staff Representative(s) - Advises the CECC Director regarding all aspects of the REP and operation of the CECC. 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. This position(s) may be filled by the EDO or other EP staff members if necessary.
- J. Clerical Staff - Provides clerical support to the CECC staff.
1. Operates CRT terminals of the CECC emergency computer system.
  2. Answers telephones.
  3. Maintains CECC organization board.
  4. Operates telephone console.
  5. Operates facsimile machine.
  6. Other duties as assigned by CECC staff.
  7. Distributes forms, data sheets, logs, etc..
- K. Supporting Organizations

If necessary, the CECC Director may obtain assistance from other organizations within TVA.



**APPENDIX B Page 2 of 3  
PROJECTED AIRBORNE RELEASES  
RADIOLOGICAL DOSE ASSESSMENT - PERIODIC STATE INFORMATION**

PART NO. 2 OF \_\_\_\_\_

Time: \_\_\_\_\_ (local)

15. The release being assessed began/begins at \_\_\_\_\_ local time and is estimated to continue for \_\_\_\_\_ hr.

16. Release Rate: Noble Gas \_\_\_\_\_  $\mu\text{Ci/s}$   
 Iodine \_\_\_\_\_  $\mu\text{Ci/s}$   
 Particulates \_\_\_\_\_  $\mu\text{Ci/s}$   
 Gross Activity \_\_\_\_\_  $\mu\text{Ci/s}$

17. Release Point: \_\_\_\_\_ Effective Release Height \_\_\_\_\_ m  
 (0 meters = ground level)

18. Meteorological Conditions: Wind Speed: \_\_\_\_\_ meters/sec  
 Wind Direction \_\_\_\_\_ miles/hr  
 (From) \_\_\_\_\_ (degrees/sector)  
 Stability Class \_\_\_\_\_  
 Precipitation \_\_\_\_\_ mm  
 Affected Sector \_\_\_\_\_ degrees/sector

19. Projected Doses (rem)

<u>Distance</u>	<u>TEDE</u>	<u>Thyroid CDE</u>	<u>Cow Milk</u>
Exclusion Area Boundary	_____	_____	_____
2 mi	_____	_____	_____
5 mi	_____	_____	_____
10 mi	_____	_____	_____

20. Comments

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**APPENDIX B Page 3 of 3**  
**ACTUAL/PROJECTED LIQUID RELEASES**  
**RADIOLOGICAL DOSE ASSESSMENT - PERIODIC STATE INFORMATION**

PART NO. 3 OF \_\_\_\_\_

Time: \_\_\_\_\_ (local)

21. The release being assessed began/begins at \_\_\_\_\_ local time and is estimated to continue for \_\_\_\_\_ hr.

22. Release:	<u>Nuclide</u>	<u>Concentration</u>	
	_____	_____	μCi/mL

23. Release Point: \_\_\_\_\_ Shoreline \_\_\_\_\_ Diffuser \_\_\_\_\_

24. Total Release Volume: \_\_\_\_\_ ft<sup>3</sup> (1 gallon = 0.134 ft<sup>3</sup>)

25. RIVER FLOW at the plant \_\_\_\_\_ ft<sup>3</sup>/s  
 TRM: WBN-528.0, SQN-484.7, BFN-294.0

26. DOWNSTREAM DOSE RATE TO HYPOTHETICAL INDIVIDUAL

<u>LOCATION</u>	<u>ARRIVAL TIME</u>	<u>CONCENTRATION (mCi/mL)</u>		<u>DOSE RATE (D) (rem/d)</u>	
Water Supply					
		Plant Side	Opposite Side	Plant Side	Opposite Site
_____ TRM	_____	_____	_____	_____	_____
_____ TRM	_____	_____	_____	_____	_____
_____ TRM	_____	_____	_____	_____	_____

27. COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_

**APPENDIX C Page 1 of 1  
INPUT FOR CECC ACCIDENT ASSESSMENT  
(Full size copies are available in the CECC.)**

**NOTES**

(1) IF Conditions Are not known, Then Answer No.

(2) **CONTINUE ASSESSMENT**  
Modify protective actions based on available plant and field monitoring information. Locate and evacuate additional localized hot spots.

**BFN ONLY**

(1) When Dose Assessment Projections OR Actual Measured Exposures are not known, a stack release rate of  $\geq 1.3 \text{ E}+11 \text{ } \mu\text{Ci/sec}$  noble gas can be utilized to meet the condition of 1 REM/hr External Dose at the site boundary.

**TABLE 1  
RADIOACTIVITY RELEASE DOSE**

TYPE	LIMIT
Measured	$3.9 \text{ E}-6 \text{ } \mu\text{Ci/cc}$ of Iodine-131
	1 REM/hr External Dose
Projected	1 REM TEDE
	5 REM Thyroid CDE

**WBN TABLE 2 - Severe Core Damage INDICATIONS**

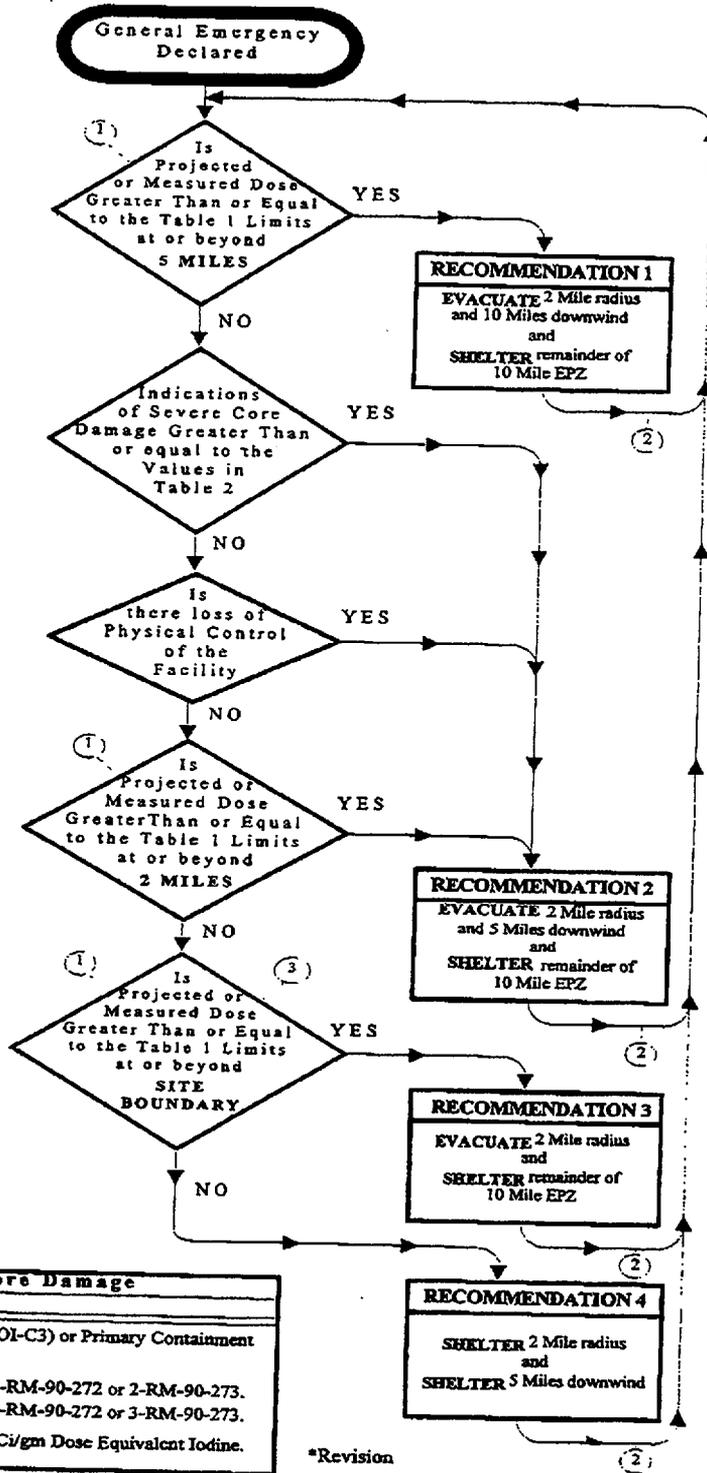
1. Containment radiation monitor reading on 1-RE-90-271 and 272 equal to or "greater than  $7.4 \text{ E}+1 \text{ R/hr}$  (74 R/hr).  
or  
Containment radiation monitor reading on 1-RE-90-273 and 274 equal to or "greater than  $5.9 \text{ E}+1 \text{ R/hr}$  (59 R/hr).
2. Reactor Coolant Activity of  $\geq 300 \text{ } \mu\text{Ci/gm}$  Dose Equivalent Iodine-131.
3. Inadequate core cooling as indicated by "red" path from core cooling status tree.
4. Core exit TCs greater than 1200 F

**SNQ TABLE 2- Severe Core Damage INDICATIONS**

1. Containment radiation monitor reading on RM-90-271 and 272 equal to or greater than  $2.8 \text{ E}+1 \text{ REM/hr}$  (28 REM/hr).  
or  
Containment radiation monitor reading on RM-90-273 and 274 equal to or greater than  $2.9 \text{ E}+1 \text{ REM/hr}$  (29 REM/hr).
2. Reactor Coolant Activity of  $\geq 300 \text{ } \mu\text{Ci/gm}$  Dose Equivalent Iodine-131.
3. Inadequate core cooling as indicated by "red" or "orange" path from core cooling status tree.

**BFN TABLE 2 - Severe Core Damage INDICATIONS**

1. Fuel Not Covered And Steam Cooling Entered (EOI-C3) or Primary Containment Flooding Entered (EOI-C6).
2. Unit 2 - Drywell Radiation Exceeds 270 R/hr on 2-RM-90-272 or 2-RM-90-273.  
\*Unit 3 - Drywell Radiation Exceeds 76 R/hr on 3-RM-90-272 or 3-RM-90-273.
3. Equilibrium Reactor Coolant Activity of  $\geq 300 \text{ } \mu\text{Ci/gm}$  Dose Equivalent Iodine.





APPENDIX E Page 1 of 4  
CECC DIRECTOR CHECKLIST

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

TIME/INITIAL

ALERT

\_\_\_\_\_/\_\_\_\_\_  
Review initial conditions from Operation Duty Specialist (ODS) incident form.

**Assume responsibility for primary contact with the site and state and notify the following of this action:**

\_\_\_\_\_/\_\_\_\_\_  
ODS  
\_\_\_\_\_/\_\_\_\_\_  
Site Emergency Director (SED)  
\_\_\_\_\_/\_\_\_\_\_  
State  
\_\_\_\_\_/\_\_\_\_\_  
CECC Staff

\_\_\_\_\_/\_\_\_\_\_  
Notify Senior Nuclear Executive.

\_\_\_\_\_/\_\_\_\_\_  
Establish target time for CECC to be operational (not to exceed 1 hour from declaration of emergency.)

\_\_\_\_\_/\_\_\_\_\_  
When the following positions are staffed, inform the SED and announce to the CECC that you are **assuming responsibilities for making PARs** to state.

\_\_\_\_\_  
CECC Director  
\_\_\_\_\_  
Plant Assessment Manager or Plant Assessment Coordinator  
or Plant Assessment Team Member  
\_\_\_\_\_  
Rad Assessment Manager or Rad Assessment Coordinator  
\_\_\_\_\_  
Dose Assessor

\_\_\_\_\_/\_\_\_\_\_  
Verify security is established.

\_\_\_\_\_/\_\_\_\_\_  
**Declare the CECC operational** and inform the SED and state and announce to the CECC when the following positions are staffed (minimal staffing):

\_\_\_\_\_  
CECC Director  
\_\_\_\_\_  
Plant Assessment Manager or Plant Assessment Coordinator  
\_\_\_\_\_  
Plant Assessment Team Member  
\_\_\_\_\_  
Rad Assessment Manager or Rad Assessment Coordinator  
\_\_\_\_\_  
Dose Assessor  
\_\_\_\_\_  
Public Information Manager or Information Supervisor  
\_\_\_\_\_  
State Communicator

\_\_\_\_\_/\_\_\_\_\_  
Verify Plant Assessment Team is fully staffed.

\_\_\_\_\_/\_\_\_\_\_  
Verify Rad Assessment Team is fully staffed.

\_\_\_\_\_/\_\_\_\_\_  
Verify PIO Team is fully staffed.

**APPENDIX E Page 2 of 4**

- /       Confer with PAM and RAM.
- /       Conduct CECC briefing.
- /       Contact State EOC Director.
- /       Approve news release.

**SITE AREA EMERGENCY**

- /       **Inform State EOC Director of the emergency classification within 15 minutes.**
- /       Notify the SED that the State or local emergency response agencies have been notified of the emergency classification upgrade and provide time of notification.
- /       Complete action items under Alert.
- /       Discuss staffing of the JIC with PIO and State per EPIP-14.
- /       Identify TVAN spokesperson (CECC Director, Site Vice President, or Site Emergency Director).
- /       Assign TVA Liaison to State EOC.
- /       Periodically review PARs with Plant and Rad Assessment Teams in the event of upgrading to a General Emergency.
- /       Approve news release.
- \*/       Announce classification to the CECC and inform TVA Spokesperson (if JIC staffed).

**GENERAL EMERGENCY**

- /       **Inform State EOC Director of the emergency classification within 15 minutes and make PAR. Use Appendix H to provide a hardcopy of the PAR to the State.**
- /       Notify the SED that the State or local emergency response agencies have been notified of the emergency classification upgrade and provide time of notification.
- /       Complete actions under Alert and Site Area Emergency.
- /       Review PARs with Plant and Rad Assessment teams.
- /       Approve news release.
- \*/       Announce classification to the CECC and inform TVA Spokesperson (if JIC staffed).

**IF PAR IS MADE OR CHANGED**

- /       Inform State EOC Director. Use Appendix H to provide a hardcopy of any PAR to the State.
- /       Confer with SED for site actions.
- /       Approve news release.

\*Revision

APPENDIX E Page 3 of 4

PERIODICALLY

- /       Brief CECC Staff at least hourly or as conditions change.
- /       Review EALs with PAM and RAM.
- /       Review PARs with PAM and RAM.
- /       Consult with SED on EALs.
- /       Approve news releases.
- /       Review anticipate state actions and discuss with State.
- /       Coordinate efforts if other federal agencies are involved.
- /       Initiate shift change schedule, if needed.

IF EVENT TERMINATES

- /       Confer with SED.
- /       Coordinate with State EOC Director.
- /       Brief CECC staff.
- /       Approve news releases.
- /       Refer to Recovery checklist (see EPIP-13).

GENERAL OPERATIONS

**NOTE:** The CECC Director may, at his discretion, request the assistance of another individual qualified to fill this position.

1. Log key events and major actions taken.
2. Ensures that appropriate measures have been taken to terminate the condition causing the emergency, protects employees and the public, initiates recovery from the emergency, and informs the news media and public.
3. 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.
4. 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.
5. The CECC Director is authorized to request Federal assistance (FREP) via the NRC.

**APPENDIX E Page 4 of 4**

GENERAL OPERATIONS (Continued)

6. Commits TVA resources and provides necessary information to assist the State, Federal, and local agencies to the extent possible.
7. Maintains accurate records of decisions made and actions started and completed.
8. Coordinates TVA's efforts with State and Federal agencies involved in the offsite aspects of the emergency.
9. Makes recommendations to State and local agencies on protective actions (PARs) for the public.

**APPENDIX F Page 1 of 2  
STATE COMMUNICATOR CHECKLIST**

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

TIME/INITIAL

- \_\_\_\_\_/\_\_\_\_ Establish communications with the State.
- \_\_\_\_\_/\_\_\_\_ Complete staffing report and send to State when CECC becomes operational.
- \_\_\_\_\_/\_\_\_\_ Complete actions outlined in Appendix G if suspended rate telephones are activated.

Complete page 1 of CECC-EPIP-1, Appendix B, and send to State at least hourly. Initial form completed.

Verify that Dose Assessment is sending pages 2 and 3 of CECC-EPIP-1, Appendix B, to their counterparts at least hourly. Note times verified below.

_____/_____	_____/_____
_____/_____	_____/_____
_____/_____	_____/_____
_____/_____	_____/_____
_____/_____	_____/_____
_____/_____	_____/_____

If the emergency classification changes, verify that the State is notified within 15 minutes of the classification declaration. Follow up with a telecopy of Appendix B of this procedure with a minimum of the first four items completed.

**APPENDIX F Page 2 of 2**

GENERAL OPERATIONS

1. Log key events and major actions taken.
2. Acts as a communicator and confirms the State is receiving needed information.
3. 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.
4. Responsible for ensuring pertinent information related to plant status, onsite responses, and TVA's dose/environs assessment activities are being provided to the State (see CECC-EPIP-1, Appendix B).
5. Assists the State as requested in providing TVA resource assistance to the State.
6. Assists the State Liaison (State government representative) as necessary to keep him briefed on the plan situation and coordinating responses to State inquiries, etc.
7. Confirms the State is notified within 15 minutes of any emergency classification change.

<b>CENTRAL EMERGENCY CONTROL CENTER (CECC) ALERT, SITE AREA EMERGENCY, AND GENERAL EMERGENCY</b>	<b>CECC EPIP-1</b>	<b>Page 21 of 29 Revision 31</b>
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**APPENDIX G Page 1 of 5**  
**ACTIVATION AND DEACTIVATION OF SUSPENDED RATE TELEPHONE LINES**  
**IN TVA AND STATE EMERGENCY FACILITIES**

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

TIME/INITIAL

\_\_\_\_\_ / \_\_\_\_\_

Notify TVA Information Technical Service Center (ITSC) at (423) 751-4357 and request suspended rate lines in the facilities identified for activation be removed from suspended rate status. Refer to attachment for identified facility to be activated.

**Browns Ferry JIC - Refer to Section 1.0 of this Appendix.**

**Browns Ferry SRMAC/AEMA Liaison - Refer to Section 2.0 of this Appendix.**

**Sequoyah/Watts Bar JIC - Refer to Section 3.0 of this Appendix.**

**Sequoyah FCC/RMCC - Refer to Section 4.0 of this Appendix.**

Follow instructions in the applicable attachment to return lines to suspended rate status.

\_\_\_\_\_ / \_\_\_\_\_

TVA ITSC confirmed action has been completed to remove lines from suspended rate status.

\_\_\_\_\_ / \_\_\_\_\_

ITSC and Telecommunications Support Services contacted at (423) 751-2228 to request the telephone lines be placed back in suspended rate status.

\_\_\_\_\_ / \_\_\_\_\_

Notify Manager, Emergency Preparedness, State and Local Programs to follow up on request to return lines to suspended rate status.

**APPENDIX G Page 2 of 5**

**1.0 ACTIVATION/DEACTIVATION REQUIREMENTS FOR BROWNS FERRY JIC**

- a. All telephones in the assigned rooms of the Fine Arts Building of John C. Calhoun State Community College must be removed from suspended rate status when the decision is made to staff the JIC.
- b. To activate the telephone lines on suspended rates, the EDO/State Communicator will contact the TVA Information Technical Service Center (ITSC) at (751-4357) and request the following lines be activated by using the lead telephone numbers to activate the blocks of lines.

**BFN LEAD TELEPHONE NUMBERS (EARNING NUMBERS): 256-340-0092 & 256-355-4823**

After the above is requested, the following lines will be activated:

LEAD NUMBER FOR THE SEVEN AREAS OF JIC IMMEDIATELY FOLLOWING: 256-340-0092.  
This lead number activates these 54 phones.

TVA Staff Room (19 phones)	256-350-0092	256-350-5942	256-355-7643	256-355-2783
	256-350-5943	256-355-2782	256-350-5956	256-350-5957
	256-355-8073	256-340-0096	256-350-5953	256-355-8041
	256-355-8055	256-350-6089	256-350-5952	256-350-3895
	256-353-8347	256-340-0093	256-340-0094	

NRC/FEMA Staff Room (4 phones)	256-355-8002	256-353-1033
	256-350-3893	256-353-1049

AEMA Workroom (21 phones)	256-355-8036	256-350-5958	256-355-0730	256-355-8012
	256-350-6128	256-350-6129	256-355-0713	256-355-0714
	256-355-0705	256-353-6124	256-353-1059	256-350-6126
	256-350-6127	256-350-6120	256-350-6125	256-350-6122
	256-350-6123	256-350-6121	256-350-5944	256-350-3894
	256-350-5951			

Media Monitoring Broadcast Space (3 phones)	256-355-7644	256-350-6481	256-355-8043 (Trouble Shooting)
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Media Work Space First Floor (5 phones)	256-355-4858	256-355-7916	256-355-4824	256-355-4828
	256-355-7915			

JIC Security (1 phone)	256-350-5941
Update Desk (1 phone)	256-355-2712

LEAD NUMBER FOR THE AREA OF JIC IMMEDIATELY FOLLOWING: 256-355-4823.  
This lead number activates these 15 phones.

Media Work Space Second Floor (15 phones)	256-355-4823	256-355-4829	256-355-4941	256-355-4942
	256-355-4943	256-355-4944	256-355-4951	256-355-4952
	256-355-4953	256-355-4954	256-355-4998	256-355-7701
	256-355-7702	256-355-7913	256-355-7914	

**APPENDIX G Page 3 of 5**

**2.0 ACTIVATION/DEACTIVATION REQUIREMENTS FOR STATE SRMAC FOR  
BROWNS FERRY**

- c. The ITSC will contact the EDO/State Communicator and confirm action has been completed to remove lines from suspended rate status.
- d. When the JIC is deactivated, the EDO/State Communicator will contact ITSC and Telecommunications Support Services at 751-2228 and request the above listed numbers be placed back in suspended rate status. The EDO/State Communicator will then request that the Manager, Emergency Preparedness, State and Local Programs follow up this request within 5 days and confirm this action has been completed.
- a. There are a limited number of suspended rate telephone lines in the State RMCC for Browns Ferry. These lines are located in the basement of the SRMAC/FCC portion of the Morgan County Emergency Operations Center in the basement of the Morgan County Courthouse. These lines must be removed from suspended rate status when the Director of the State Radiation Control Agency determines the RMCC is to be staffed in order to direct the activities of the field monitoring teams.
- b. To activate the telephone lines on suspended rates, the EDO/State Communicator will contact the TVA Information Technical Service Center (ITSC) at 751-4357 and request the following lines be activated using the lead telephone number.

**LEAD TELEPHONE NUMBER (EARNING NUMBER): 256-350-9362**

After the above is requested, the following lines will be activated:

Rm. B-31      256-350-9362

Rm. B-33      256-355-9520    256-355-9076    256-350-6580    256-351-6024  
                  256-355-9158    256-351-0441

- c. The ITSC Center will contact the EDO/State Communicator and confirm action has been completed to remove lines from suspended rate status.
- d. When the SRMAC is deactivated, the EDO/State Communicator will contact ITSC and Telecommunications Support Services at 751-2228 and request the above listed numbers be placed back in suspended rate status. The EDO/State Communicator will then request that the Manager, Emergency Preparedness, State and Local Programs follow up this request within 5 days and confirm this action has been completed.

**APPENDIX G Page 4 of 5**  
**ACTIVATION/DEACTIVATION REQUIREMENTS FOR**  
**SEQUOYAH/WATTS BAR JIC**

**3.0**

- a. There are 20 telephone lines in the Sequoyah/Watts Bar JIC that are on suspended rate status. These lines are assigned to the Media Work area which is located in the hallway outside of the basement auditorium in Missionary Ridge Place in the Chattanooga Office Complex. These lines must be removed from suspended rate status when the decision is made to staff the JIC.
- b. To activate telephone lines on suspended rates, the EDO/State Communicator will contact the TVA Information Technical Service Center (ITSC) at 751-4357 and request the following lines be activated using the lead telephone numbers.

**LEAD TELEPHONE NUMBERS (EARNING NUMBERS): 423-265-0300 & 423-265-0333**

After the above is requested the following lines will be activated:

Media Work Area:	423-265-0300	423-265-0312	423-265-0314	423-265-0319
Lead Number (Basic 5)	423-265-0325			
Lead Number (Additional 15)	423-265-0333	423-265-0336	423-265-0345	423-265-0350
	423-265-0370	423-265-0333	423-265-0336	423-265-0345
	423-265-0350	423-265-0370	423-265-0400	423-265-0401
	423-265-0418	423-265-0611	423-265-0613	423-265-0642
	423-265-0645	423-265-0650	423-265-0652	423-265-0655

- c. The ITSC will contact the EDO/State Communicator and confirm action has been completed to remove lines from suspended rate status.
- d. When the JIC is deactivated, the EDO/State Communicator will contact the ITSC and Telecommunications Support Services at 751-2228 and request the above listed numbers be placed back in suspended rate status. The EDO/State Communicator will then request that the Manager, Emergency Preparedness, State and Local Programs follow up this request within 5 days and confirm this action has been completed.

**APPENDIX G Page 5 of 5**

**4.0**

**ACTIVATION/DEACTIVATION REQUIREMENTS FOR  
STATE FCC/RMCC FOR SEQUOYAH/WATTS BAR**

- a. All telephone lines in the State FCC/RMCC located in the Air National Guard Armory at Lovell Field in Chattanooga must be removed from suspended rate status when the Tennessee Emergency Management Agency makes the decision to staff that facility.
- b. To activate the telephone lines on suspended rates, the EDO/State Communicator will contact the Information Technical Service Center (ITSC) at 751-4357 and request the following lines be activated using the lead telephone numbers to activate the blocks of lines.

**LEAD TELEPHONE NUMBER (EARNING NUMBER): 423-899-9858**

After the above is requested, the following lines will be activated:

RMCC	423-899-9858	423-894-6843	423-855-0190	423-899-7086
FCC	423-899-9433	423-894-6799	423-899-6795	423-899-9374
	423-899-9623	423-899-9621	423-899-9023	423-899-9129
	423-899-0826	423-899-9709	423-899-9389	423-899-9279
	423-899-6595	423-899-9599	423-899-9071	423-899-9771
	423-899-6980	423-899-6982	423-899-9025	423-899-9597

- c. The ITSC will contact the EDO/State Communicator and confirm that action has been completed to remove the lines from suspended rate status.
- d. When the FCC/RMCC is deactivated, the EDO/State Communicator will contact the ITSC and Telecommunications Support Services at 751-2228 and request the above listed numbers be placed back in suspended rate status. The EDO/State Communicator will then request that the Manager, Emergency Preparedness, State and Local Programs follow up this request within 5 days and confirm this action has been completed.

**\*APPENDIX H  
CECC Director's Protective Action Recommendation**

- TO:  AEMA, Clanton, AL  
 Alabama Radiation Control Agency, Montgomery, AL  
 Alabama Radiation Control Agency, Decatur, AL (Director, TVA Liaison & AEMA Rep)  
 TEMA, Nashville, TN (SEOC Director, TVA Liaison & Radiological Health)

Plant:  Browns Ferry  Sequoyah  Watts Bar

**Recommendation: (Completed by CECC Director)**

√	PAR #	Action
	1	Evacuate 2 mile radius and 10 miles downwind and Shelter remainder of 10 mile EPZ
	2	Evacuate 2 mile radius and 5 miles downwind and Shelter remainder of 10 mile EPZ
	3	Evacuate 2 mile radius and Shelter remainder of 10 mile EPZ
	4	Shelter 2 mile radius and Shelter 5 miles downwind
	Other	

**Basis:**

<input type="checkbox"/>	Actual or measured radiation readings
<input type="checkbox"/>	Dose projection
<input type="checkbox"/>	Severe core damage
<input type="checkbox"/>	Loss of physical control of the facility

	Approval (Plant Assessment Manager)	Time/Date
PAM		

**Affected Sectors: (Completed by Radiological Assessment Staff)**

- \* Sectors identified as affected include the sectors in their entirety.  
 \* Attach appropriate page of this Appendix for the affected plant.

	Approval	Time/Date
RAM		
CECC Director		

Time State Notified: \_\_\_\_\_ Notified by: \_\_\_\_\_  
 (Transmit this form to State as soon as possible after providing verbal recommendation)

\* Page \_\_\_\_\_ of \_\_\_\_\_

\*Revision

**APPENDIX H  
CECC Director's Protective Action Recommendation**

**BROWNS FERRY  
Affected Sectors (Completed by Radiological Assessment Staff)**

**2-Mile Sectors**

<b>A-2</b>	<b>B-2</b>	<b>F-2</b>	<b>G-2</b>
<input type="checkbox"/> Shelter	<input type="checkbox"/> Shelter	<input type="checkbox"/> Shelter	<input type="checkbox"/> Shelter
<input type="checkbox"/> Evacuate	<input type="checkbox"/> Evacuate	<input type="checkbox"/> Evacuate	<input type="checkbox"/> Evacuate

**5-Mile Sectors**

<b>A-5</b>	<b>B-5</b>	<b>E-5</b>	<b>F-5</b>	<b>G-5</b>
<input type="checkbox"/> Shelter				
<input type="checkbox"/> Evacuate				
<input type="checkbox"/> None				

**10-Mile Sectors**

<b>A-10</b>	<b>B-10</b>	<b>C-10</b>	<b>D-10</b>	<b>E-10</b>	<b>F-10</b>
<input type="checkbox"/> Shelter					
<input type="checkbox"/> Evacuate					
<input type="checkbox"/> None					
<b>G-10</b>	<b>H-10</b>	<b>I-10</b>	<b>J-10</b>	<b>K-10</b>	
<input type="checkbox"/> Shelter					
<input type="checkbox"/> Evacuate					
<input type="checkbox"/> None					

RAM Approval: \_\_\_\_\_

Time/Date: \_\_\_\_\_

Page \_\_\_ of \_\_\_

New Page

**APPENDIX H  
CECC Director's Protective Action Recommendation**

**SEQUOYAH  
Affected Sectors (Completed by Radiological Assessment Staff)**

**2-Mile Sectors**

<b>A-1</b>	<b>B-1</b>	<b>C-1</b>	<b>D-1</b>
<input type="checkbox"/> Shelter	<input type="checkbox"/> Shelter	<input type="checkbox"/> Shelter	<input type="checkbox"/> Shelter
<input type="checkbox"/> Evacuate	<input type="checkbox"/> Evacuate	<input type="checkbox"/> Evacuate	<input type="checkbox"/> Evacuate

**5-Mile Sectors**

<b>A-2</b>	<b>A-3</b>	<b>B-2</b>	<b>B-5</b>	<b>C-2</b>	<b>D-2</b>
<input type="checkbox"/> Shelter					
<input type="checkbox"/> Evacuate					
<input type="checkbox"/> None					

**10-Mile Sectors**

<b>A-4</b>	<b>A-5</b>	<b>A-6</b>	<b>B-3</b>	<b>B-4</b>	<b>B-6</b>
<input type="checkbox"/> Shelter					
<input type="checkbox"/> Evacuate					
<input type="checkbox"/> None					
<b>B-7</b>	<b>B-8</b>	<b>C-3</b>	<b>C-4</b>	<b>C-5</b>	<b>C-6</b>
<input type="checkbox"/> Shelter					
<input type="checkbox"/> Evacuate					
<input type="checkbox"/> None					
<b>C-7</b>	<b>C-8</b>	<b>D-3</b>	<b>D-4</b>	<b>D-5</b>	<b>D-6</b>
<input type="checkbox"/> Shelter					
<input type="checkbox"/> Evacuate					
<input type="checkbox"/> None					

RAM Approval: \_\_\_\_\_

Time/Date: \_\_\_\_\_

Page \_\_\_ of \_\_\_

New Page

**APPENDIX H  
CECC Director's Protective Action Recommendation**

**WATTS BAR  
Affected Sectors (Completed by Radiological Assessment Staff)**

**2-Mile Sectors**

<b>A-1</b>	<b>B-1</b>	<b>C-1</b>	<b>D-1</b>
<input type="checkbox"/> Shelter	<input type="checkbox"/> Shelter	<input type="checkbox"/> Shelter	<input type="checkbox"/> Shelter
<input type="checkbox"/> Evacuate	<input type="checkbox"/> Evacuate	<input type="checkbox"/> Evacuate	<input type="checkbox"/> Evacuate

**5-Mile Sectors**

<b>A-2</b>	<b>A-3</b>	<b>B-2</b>	<b>B-4</b>	<b>C-2</b>	<b>C-4</b>
<input type="checkbox"/> Shelter					
<input type="checkbox"/> Evacuate					
<input type="checkbox"/> None					
<b>C-5</b>	<b>C-7</b>	<b>C-8</b>	<b>D-2</b>	<b>D-4</b>	<b>D-5</b>
<input type="checkbox"/> Shelter					
<input type="checkbox"/> Evacuate					
<input type="checkbox"/> None					

**10-Mile Sectors**

<b>A-4</b>	<b>A-5</b>	<b>A-6</b>	<b>A-7</b>	<b>B-3</b>	<b>B-5</b>
<input type="checkbox"/> Shelter					
<input type="checkbox"/> Evacuate					
<input type="checkbox"/> None					
<b>C-3</b>	<b>C-6</b>	<b>C-9</b>	<b>C-10</b>	<b>C-11</b>	<b>D-3</b>
<input type="checkbox"/> Shelter					
<input type="checkbox"/> Evacuate					
<input type="checkbox"/> None					
	<b>D-6</b>	<b>D-7</b>	<b>D-8</b>	<b>D-9</b>	
	<input type="checkbox"/> Shelter	<input type="checkbox"/> Shelter	<input type="checkbox"/> Shelter	<input type="checkbox"/> Shelter	
	<input type="checkbox"/> Evacuate	<input type="checkbox"/> Evacuate	<input type="checkbox"/> Evacuate	<input type="checkbox"/> Evacuate	
	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	

RAM Approval: \_\_\_\_\_

Time/Date: \_\_\_\_\_

Page \_\_\_\_ of \_\_\_\_

New Page

CECC EPIP Coversheet

Tennessee Valley Authority CENTRAL EMERGENCY CONTROL CENTER EMERGENCY PLAN IMPLEMENTING PROCEDURES	Title CENTRAL EMERGENCY CONTROL CENTER METEOROLOGIST PROCEDURES	CECC EPIP-17 REV. 15
		Effective Date: 10-2-00



3941668785  
 CHAT CECC EPIP  
 CECC-EPIP-17  
 100200 15

WRITTEN BY: Thomas E. Collins Signature      REVIEWED BY: Doyle E. Pittman Signature      9/25/00 Date

PLAN EFFECTIVENESS DETERMINATION: Thomas E. Collins Signature      9/22/00 Date

CONCURRENCES

Concurrence Signature	Date
<input type="checkbox"/> Manager, EP Program Planning and Implementation <u>BKM</u>	<u>9/25/00</u>
<input type="checkbox"/> Manager, Emergency Preparedness <u>[Signature]</u>	<u>9/27/00</u>
<input type="checkbox"/> Manager, Radiological and Chemistry Services <u>[Signature]</u>	<u>09/27/2000</u>
<input type="checkbox"/>	_____

APPROVAL

APPROVED BY: <u>[Signature]</u> Signature	Vice President, E&TS Title	Organization	<u>9/25/00</u> Date
---	-------------------------------	--------------	------------------------

CECC-EPIP-17  
CENTRAL EMERGENCY CONTROL CENTER  
METEOROLOGIST PROCEDURES

REVISION LOG

Rev. No.	Date	Revised Pages
0	3/22/88	All (Formerly IP-14. Changed from IPD to EPIP)
1	7/8/88	Page 1
2	11/18/88	1, 2, App. C P. 1, App. E pp. 1-2
3	7/02/90	All (Formerly EPIP-11)
4	5/21/91	Pages 1-5, App. G, Pg. 1, App. H, Pg. 4, App. J, Pg. 1, App. L, Pg. 1
5	5/15/92	1, 2, 4; App. A, pg. 1; App. B, Pg. 1, App. G, Pg. 1 revised; new coversheet and rev. log added; all pages issued.
6	05/17/93	Pgs. 2, 4, 5; App. C, pg. 1; App. F deleted; App. G, pg.1; App. H, pg. 4; App. M, pg. 1. All pages issued to maintain revision level.
7	06/22/94	Pgs. 4-5; App. E; App. G; App. H, pgs. 1, 2, 4; App. J; App. K; and App. L. All pages issued.
8	6/27/95	Pgs. 4-6; App. C, pgs. 2-3; App. D; App. G, pgs. 1, 3-5; App. H; App. I; App. J; App. K; and App. L
9	5/30/96	All pages revised; annual review; minor editorial changes, App. K made more detailed; all pages issued.
10	4/7/97	Annual review, editorial changes, remove distribution requirements for forms. All pages issued.
11	6/9/98 6/4/98 RR	Annual review, add SIM control responsibilities, editorial changes, update, add Internet source of met. data. All pages issued.
12	10/6/98	Update references for SIMS meteorological activities. All pages issued.
13	5/20/99	Annual review, editorial changes. Delete App. N because it contains duplicated information. All pages issued.
14	9/8/00	Annual review. Editorial changes. All pages issued.
15	10/2/00	Editorial changes and corrections. All pages issued.

**CENTRAL EMERGENCY CONTROL CENTER METEOROLOGIST PROCEDURES**

**1.0 PURPOSE**

These procedures are designed to direct the activities of the Meteorologist during a radiological emergency to provide a timely response, consistent and accurate meteorological information, and atmospheric transport and dispersion advice.

**2.0 SCOPE**

These procedures cover anticipated requirements for meteorological support during emergency conditions. Additional actions to be taken prior and subsequent to an emergency or drill or to routinely maintain response capabilities are not covered.

**3.0 REFERENCES**

- 3.1 User's Manual for the Meteorological Data Display Programs.
- 3.2 User's Manual for the Historical Meteorological Data Base Program.
- 3.3 User's Manual for the Meteorological Information Form Program.
- 3.4 User's Manual for the Meteorological Data Print Program.
- 3.5 Browns Ferry Nuclear Plant Nowcast Manual, June 1990.
- 3.6 Sequoyah Nuclear Plant Nowcast Manual, August 1989.
- 3.7 Watts Bar Nuclear Plant Nowcast Manual, October 1991.
- 3.8 Weather Information Service User Manual (if supplied by current service).

**4.0 ABBREVIATIONS AND DEFINITIONS**

- CECC - Central Emergency Control Center
- BRED - Back-calculation RED
- DA - Dose Assessment
- EDS - Environmental Data Station (at each nuclear plant site)
- FRED - Forecast RED
- FSC - Field Support Coordinator
- ICS - Integrated Computer System
- IS - Information System
- NWS - National Weather Service
- RAC - Radiological Assessment Coordinator
- RED - Radiological Emergency Dose Code
- REND - Radiological Emergency Notification Directory
- RMCC - Radiological Monitoring Control Center
- SIM - Senior Instrument Mechanic (at the EDS)
- TSC - Technical Support Center (at each nuclear plant site)
- WIS - Weather Information Service--a service to provide access to NWS information.

**5.0 RESPONSIBILITIES**

- 5.1 The Meteorologist is responsible for receiving and reviewing EDS real-time meteorological data, for preparing forecast information, for disseminating the appropriate meteorological information to the CECC, TSC, and the State staff, and for providing atmospheric dispersion and transport advice to the CECC staff. He is also responsible for application of backup procedures for replacement of unavailable or invalid meteorological data.

**6.0 PROCEDURE REQUIREMENTS**

**6.1 Notification**

- 6.1.1 The Meteorologist is notified by the automated paging system or by DA or the DA's designee. The Meteorologist follows procedures 6.1.2 through 6.1.5.
- 6.1.2 Report to the CECC and obtain a briefing from the RAC. If notified in Muscle Shoals, support may be provided remotely to the CECC until another Meteorologist reports to the CECC.
- 6.1.3 Document the notification time, time of arrival at the CECC, and the current emergency situation in the Meteorologist notebook.
- 6.1.4 Upon notification of an Alert or higher, notify a backup Meteorologist of CECC activation, the nature of the emergency, and whether additional support is needed.
- 6.1.5 Ensure that the SIMs for the affected plant (Appendix M) have been contacted.

**6.2 Forecast Support**

- 6.2.1 The NWS may be contacted for input on forecast conditions (see section L.1 of the REND for phone numbers).
- 6.2.2 An example of the forecast information format prepared by the Meteorologist is provided in appendix A.
- 6.2.3 Persistence (assuming future conditions will be the same as the current conditions) is the basis for forecasts. The Meteorologist modifies the persistence values when site and synoptic factors dictate a change is more reliable than persistence.
- 6.2.4 The Meteorologist provides an initial forecast for one and two hours in the future within 30 minutes of time of arrival at the CECC. The initial forecast will usually be included on the second 15-minute meteorological forecast form.
- 6.2.5 Hourly thereafter, the Meteorologist provides an updated and expanded forecast for 1, 2, 4, 6, and 8 hours in the future and an outlook for 9 to 24 hours in the future.

**6.3 Meteorologist Actions**

- 6.3.1 Assess the situation and respond as required. Unusual circumstances may dictate deviation from the prescribed procedures. Make all data and notebook entries in black ink. Enter all times as plant local time (i.e., Central for Browns Ferry and Eastern for Sequoyah and Watts Bar).

- 6.3.2 Log on to the CECC IS terminal (see the User's Manuals for References 3.1, 3.2, or 3.4). Obtain enough meteorological data to familiarize yourself with current conditions and trends. Log off the program. See section 6.4 in the event of equipment problems.
- 6.3.3 Log on to the CECC IS to access the latest meteorological information needed and to generate the Meteorological Information form (see Reference 3.3). Remain logged on to this program. See section 6.4 in the event of equipment problems.
- 6.3.4 Review the data for accuracy (see Reference 3.1 for a description of the data validation criteria). If a data problem is detected, ask Environs Assessment to inform the SIM so that corrective actions can be initiated.
- 6.3.5 Inform DA that the meteorological data are acceptable for use in RED/FRED/BRED (if being used) or estimate values from the nowcast manual, as appropriate (see sections 6.4.3 and 6.4.4).
- 6.3.6 For BFN, obtain the release point flow rate, as appropriate, from the ICS, the TSC, or DA, for input to the Meteorological Information Form program.
- 6.3.7 For BFN, provide the correct exit velocity to DA if different from the assumed exit velocity.
- 6.3.8 Print the Meteorological Information form (Appendix B) at the appropriate sites (typically the State, TSC, and the CECC-Radiological Assessment-MET Printer.)
- 6.3.9 Enter the most recent 15-minute data on the meteorological data update board in the Radiological Assessment area of the CECC (generate the first 15-minute data as soon as possible).
- 6.3.10 Remove the form from the CECC-Radiological Assessment Area-MET Printer, and provide it to the clerical staff for CECC distribution. Clerical staff also fax the form to the RMCC. Appendix J of CECC-EPIP-8 may be used to transmit meteorological information to the CECC Radiological Board Writer.
- 6.3.11 Provide transport and dispersion advice and assistance, as appropriate. Advise the Radiological Assessment area of any significant changes in meteorological conditions. Significant changes are defined as two or more wind direction sectors, a factor of two or more for wind speeds, or two or more stability classes.
  - 6.3.11.1 Compare information from the Meteorological Information Form program with dose assessment model output (e.g., state update forms and plume plots) for consistency. Inform DA if any inconsistency is identified.
  - 6.3.11.2 If a manual dose assessment method is being used, provide DA with the written release mode, plume rise, and observation time every 15 minutes, as appropriate.
  - 6.3.11.3 Advise the appropriate CECC staff of any unusual meteorological uncertainties or conditions, or of significant changes that could affect transport and dispersion (e.g., if RED/FRED/BRED is being used and mixing heights differ significantly from the 600 m assumed by RED/FRED/BRED, as determined using the procedure in Appendix C).

- 6.3.11.4 Provide any input to the appropriate CECC staff that would be useful in protective action decisions (e.g., terrain effects), in monitoring team placement (e.g., plume position), or severe weather.
- 6.3.12 If manual plume plots are needed, plot 15-minute vector sequence trajectories on the appropriate site map according to the procedures in Appendix D. Provide the site map to DA hourly. Appendix E can be used if desired to document up to four hours of trajectory information.
- 6.3.13 Follow steps 6.3.4 through 6.3.12 for every ensuing 15-minute period.
- 6.3.14 Prepare forecast information using the meteorological information form program, and include it on the form. Prepare a 1- and 2-hour forecast within 30 minutes of reporting to the CECC and a, 1-, 2-, 4-, 6-, and 8-hour forecast and a 9 to 24 hour outlook, once an hour thereafter.
- 6.3.15 If time permits, extract raw data and transport and dispersion information from the Meteorological Information Form program output and fill out Appendix F. Review the completed Appendix F for synoptic and diurnal reasonableness and consistency between 15-minute and hourly observations.
- 6.3.16 Access NWS information periodically from the WIS or Internet and review it to keep abreast of the synoptic situation. Determine the synoptic category using the plant nowcast manual (reference 3.5, 3.6, 3.7) and document in the notebook.
- 6.3.17 Respond to State and TVA staff questions concerning meteorological information, as soon as time permits. Verify State and TSC receipt of meteorological information forms hourly.
- 6.3.18 Document all decisions, recommendations, pertinent communications and significant emergency status changes in the Meteorologist notebook.
- 6.3.19 Appendix G contains a set of information and conversion sheets for reference by the Meteorologist. The release mode and sensor height selection methodologies are summarized in tables 1 and 2 of Appendix H. All release points at SQN and WBN are treated as ground level.

#### 6.4 Backup Procedures

- 6.4.1 The CECC IS is the primary source for meteorological data and for completion of the Meteorological Information Form. If the IS is malfunctioning, alternative procedures should be followed to obtain the necessary information. These steps are discussed in the following.

If the computer or terminal is not working, notify the CECC computer support personnel (see Section J of the REND for phone or pager numbers).

- 6.4.2 Some of the backup sources may require more than fifteen minutes to complete. If so, nowcast the data, as described in step 6.4.3, while steps are initiated to obtain data from the backup sources.

Backup sources of real-time meteorological data are shown in the following list in order of preference.

\*Revision

1. **RED/FRED** automatically accesses the meteorological data, if available. Obtain data from DA.
  2. Use the **ICS** to obtain the meteorological data. Enter the data on Appendix I. Make necessary unit conversion.
  3. Use the personal computer to access the **Chattanooga Remote Access** computer to obtain the meteorological data. Enter the data on Appendix I. Make necessary unit and time conversions.
  4. Request the **SIM**, who is on standby to report to the **EDS**, if habitable (use Appendix O Call-In Sheet). Obtain the data directly from the **SIM**. Enter the data on Appendix I. Make necessary unit and time conversions.
  5. Request the **RAC** call the **TSC Communicator** and arrange to have data read to you from a **TSC** or control room display. Enter the data on Appendix I. Make any necessary unit conversion.
- 6.4.3 If meteorological data are not available from the **CECC IS** or the backup sources listed in section 6.4.2, or if the data are determined to be invalid, use the appropriate procedures in the nowcast manual (see references 3.5-3.7) to estimate the needed values. Use Appendix J when nowcasting.
- 6.4.4 If nowcasting data, inform **DA** that the data are nowcasts and give the associated confidence levels.
- 6.4.5 If the Meteorological Information Form program is not available, complete Appendix F and the Meteorological Information form (Appendix B) manually using the information and conversion sheets in Appendix G.
- 6.5 **Shift Relief**
- The shift change checklist (Appendix K) will be completed by the Meteorologist reporting for relief. Additional Meteorologists are called in as needed.
- 6.6 **Emergency Termination**
- 6.6.1 Check that the Meteorologist's notebook entries are complete.
  - \* 6.6.2 Notify any backup Meteorologists that are on standby.
  - 6.6.3 Notify all **SIMs** that are on duty or standby.
  - 6.6.4 Log off the **CECC IS** terminals.
- 7.0 METEOROLOGIST CHECKLIST**
- 7.1 A task checklist is provided in Appendix L for reference by the Meteorologist.

\*Revision

APPENDIX A Page 1 of 1

TIME: 17-OCT-91 13:12 (EASTERN)

FORECAST DATA FOR METEOROLOGICAL INFORMATION PROGRAM

FORECAST METEOROLOGICAL DATA

TIME	WIND DIRECTION AND SPEED (M/S)			STABILITY	PRECIPITATION (RATE CATEGORY)
	U	I	L	CLASS U-I/I-L	
1300	187./ 3.3	192./ 3.3	186./ 3.0	D / C	NONE
1400	187./ 3.3	192./ 3.3	186./ 3.0	D / C	NONE
1500	187./ 3.3	192./ 3.3	186./ 3.0	D / C	NONE
1700	187./ 3.3	192./ 3.3	186./ 3.0	D / C	NONE
1900	187./ 3.3	192./ 3.3	186./ 3.0	D / C	NONE
2100	187./ 3.3	192./ 3.3	186./ 3.0	E / D	NONE

**APPENDIX B Page 1 of 1  
Meteorological Information**

A. Date: \_\_\_\_\_ Person transmitting data: \_\_\_\_\_

Release Mode: \_\_\_\_\_

B. Observed Data<sup>a</sup> (15-minute average):

<u>Time</u>	<u>Wind Direction (Deg./Sector)</u>	<u>Plume Direction (Deg./Sector)</u>	<u>Wind Speed (mi/h)(m/s)</u>	<u>Stability Class</u>	<u>Precip. (mm)</u>
_____	_____	_____	_____	_____	_____

C. Observed Data<sup>a</sup> (1-hour average):

<u>Time</u>	<u>Wind Direction (Deg./Sector)</u>	<u>Plume Direction (Deg./Sector)</u>	<u>Wind Speed (mi/h)(m/s)</u>	<u>Stability Class</u>	<u>Precip. (mm)</u>
_____	_____	_____	_____	_____	_____

D. Forecast Data:

<u>Valid Time</u>	<u>Wind Direction (Deg./Sector)</u>	<u>Plume Direction (Deg./Sector)</u>	<u>Wind Speed (mi/h)(m/s)</u>	<u>Stability Class</u>	<u>Precip.</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Outlook (9-24 hours):

E. Comments:

<sup>a</sup> Conditions for period ending at indicated time (plant local time).

<sup>b</sup> Time for which forecast is made (plant local time).

<sup>c</sup> Light rain (LR), moderate rain (MR), and heavy rain (HR): hourly value for LR,  $0.3 \text{ mm} \leq \text{LR} \leq 2.5 \text{ mm}$ ; for MR,  $2.8 \text{ mm} \leq \text{MR} \leq 7.6 \text{ mm}$ ; and for HR,  $\text{HR} > 7.6 \text{ mm}$ .

APPENDIX C Page 1 of 3  
PROCEDURE FOR INTERPRETING RED/FRED RESULTS FOR MIXING  
HEIGHTS SIGNIFICANTLY DIFFERENT FROM 600 m

This procedure details identification of lofting, trapping, and high mixing height meteorological conditions during which the actual mixing height is significantly different from the 600 m assumed by RED/FRED. It also gives guidance for advice to be provided to DA during such conditions if RED/FRED is being used.

I. Identification

Examine the I-L, U-I, and U-L stability classes to determine if one of the following three conditions is occurring:

A. Lofting is defined in this procedure to occur when the following are satisfied:

1. Elevated (ST or EV) release
2.  $I-L > 0.5 \text{ }^{\circ}\text{C}/100 \text{ m}$
3. U-I is at least one stability class less stable than the concurrent I-L (e.g., U-I = E and I-L = F)

If these are met, go to II.A for action instructions.

B. Trapping is defined in this procedure to occur when the following are satisfied:

1. Either an elevated or ground-level release
2. I-L is A, B, or C
3. U-I is E, F, or G
4. For an elevated release, either (1) U-L = E, F, or G and the effective stack height is <70 m or (2) U-L = A, B, C, or D and the effective stack height is <100 m.

If these are met, go to II.B for action instructions.

C. High mixing height is defined in this procedure to occur when the following are satisfied:

1. Either an elevated (ST or EV) or ground-level release
2. In March through August
3. For an elevated release, U-I is A or B

APPENDIX C Page 2 of 3

4. For a ground-level release, I-L is A or B and the concurrent U-I is A, B, C, or D  
If these are met, go to II.C for action instructions.

II. Actions

A. Lofting

While this condition persists, do the following:

1. Substitute the I-L stability class for U-I in RED/FRED.
2. Advise Dose Assessment that lofting is occurring and that a different, more stable stability class is being used in RED/FRED to better estimate the dispersion.

B. Trapping

While this condition persists, ground-level concentration adjustment factors (AF) will be identified. These factors will apply to the distance traveled (DT) by the portion of the plume emitted since onset of trapping. The mixing height is determined to be nearer 50m or 100m depending on whether U-L is E, F, or G or A, B, C, or D, respectively.

1. Use the following decision table to obtain the AF and DT:

<u>U-L</u>	<u>I-L</u>	<u>DT (mi)</u>	<u>AF</u>
E, F, or G	A or B	1-10	12
E, F, or G	C	<4	5
E, F, or G	C	>4	12
A, B, C, or D	A or B	1-10	6
D	C	<4	3
D	C	>4	6

2. Advise DA that trapping is occurring and that the ground-level concentrations from RED/FRED would be underestimated by a factor of AF for the applicable DT range.

APPENDIX C Page 3 of 3

C. High mixing height

While this condition persists, ground-level concentration adjustment factors (AF) will be identified. These factors will apply to the distance traveled (DT) by the portion of the plume emitted since onset of this condition.

1. Use the following decision table to obtain the AF and DT:

<u>U-I or I-L</u>	<u>DT (mi)</u>	<u>AF</u>
A	1-10	3
B	>6	3
C	<6	1 (no adjustment)

2. Advise DA that a high mixing height is present and that the ground concentrations from RED/FRED would be overestimated by a factor of AF for the applicable DT range.

APPENDIX D Page 1 of 1

PROCEDURE FOR MANUALLY PERFORMING PLUME CENTERLINE POSITION ANALYSIS

This procedure details steps to be followed in performing plume centerline position analyses. The method used involves adding each succeeding plume transport vector to the tail of the previous one. This method provides a reasonable means of locating the current plume centerline position for both continuous and puff releases. A light table is stored in the CECC.

Plume centerline position analyses should be carried out, using 15-minute meteorological data (beginning with the observation that most closely represents the time of release), on either the 10-mile or 50-mile site map. For ease in plotting plume centerline positions, a large acetate sheet should be taped to the light box.

1. Ensure that the correct observations and the correct scales are used.
2. About 5-6 inches from the corner or edge of the light box toward which the wind is blowing, draw a small N-S/E-W cross on the acetate. Lay the protractor over the cross and mark the plume direction. Draw the plume transport vector to the proper length, with its base at the cross. Label the vector with the time of observation and the plume direction (degrees).
3. Trace the plume centerline position onto the site map. Label with the plume direction (degrees) and observation time.
4. For the next observation, lay the protractor over the most recent cross and mark the wind direction.
5. Draw the vector to the appropriate length with the head at the tail of the previous vector (the cross). Draw a new cross at the tail of the new vector. Label the vector with the plume direction (degrees) and the observation time.
6. Repeat steps 3 through 5.
7. When the vectors reach the edge of the acetate sheet, trace the last few vectors onto a new acetate sheet. Replace the original sheet with the new one and proceed as before.



**APPENDIX F Page 1 of 1**

**REPORT OF RAW METEOROLOGICAL DATA AND CONVERSIONS FOR RADIOLOGICAL EMERGENCY**

Date \_\_\_\_\_ Nuclear Plant \_\_\_\_\_ Preparer \_\_\_\_\_

RAW DATA 15-Minute Observation								TRANSPORTATION AND DISPERSION INFORMATION			
Time <sup>a</sup>	Level <sup>b</sup>	dd (deg)	ff (m/s) (Arth)	ff (m/s) (vect)	TT (°C)	$\Delta T/\Delta Z^b$ (°C/100m)	Stab	Release Mode <sup>c</sup>	Plume Rise(m)	Plume dir (deg/sect)	Travel 15 min <sup>d</sup> (mi)
14	U	_____	_____	_____	_____	U-L _____	_____	_____	_____	_____	_____
	I	_____	_____	_____	_____	U-I _____	_____				
	L	_____	_____	_____	_____	I-L _____	_____				
29	U	_____	_____	_____	_____	U-L _____	_____	_____	_____	_____	_____
	I	_____	_____	_____	_____	U-I _____	_____				
	L	_____	_____	_____	_____	I-L _____	_____				
44	U	_____	_____	_____	_____	U-L _____	_____	_____	_____	_____	_____
	I	_____	_____	_____	_____	U-I _____	_____				
	L	_____	_____	_____	_____	I-L _____	_____				
59	U	_____	_____	_____	_____	U-L _____	_____	_____	_____	_____	_____
	I	_____	_____	_____	_____	U-I _____	_____				
	L	_____	_____	_____	_____	I-L _____	_____				
Hourly Observation											
Time <sup>e</sup>	Level <sup>b</sup>	dd (deg)	ff (m/s) (Arth)	ff (m/s) (vect)	TT (°C)	$\Delta T/\Delta Z^b$ (°C/100m)	Stab			Plume dir (deg/sect)	1 hr <sup>f</sup> (mi)
00	U	_____	_____	_____	_____	U-L _____	_____			_____	_____
	I	_____	_____	_____	_____	U-I _____	_____				
	L	_____	_____	_____	_____	I-L _____	_____				

Sol Rad \_\_\_\_\_ Rnf (mm) \_\_\_\_\_

<sup>a</sup>Observed data are 15-minute averages ending at the time indicated.

<sup>b</sup>Circle the appropriate level and layer for the release mode for each 15 minutes.

<sup>c</sup>Ground Vent (GV), Elevated Vent (EV), or Stack (ST).

<sup>d</sup>Equals vector wind speed (m/s) x 0.559 mi-s/m.

<sup>e</sup>Observed data are 1-hour averages ending at the time indicated.

<sup>f</sup>Equals vector wind speed (m/s) x 2.236 mi-s/m.

**APPENDIX G                      Page 1 of 5**  
**INFORMATION AND CONVERSION SHEETS**  
**INSTRUCTION SHEET FOR DETERMINING**  
**RELEASE MODE AND MEASUREMENT**  
**LEVELS AND LAYERS**

<u>Plant</u>	<u>Release Point</u>	<u>ff level for pr</u>	<u>Critical ff</u>	<u>Stability Layer for pr</u>	<u>Release Mode</u>	<u>ff and dd Levels</u>	<u>Stability Layer</u>
BFN	Stack	U	N.A.	U-I	ST	U	U-I
BFN	Reactor Bldg. Vents	I	≤2.5 m/s >2.5 m/s	U-I N.A.	EV GV	U or I I	U-I I-L
BFN	All Other Vents	N.A.	N.A.	N.A.	GV	I	I-L
SQN	All Vents	N.A.	N.A.	N.A.	GV	I	I-L
WBN	All Vents	N.A.	N.A.	N.A.	GV	I	I-L

ff denotes wind speed  
dd denotes wind direction  
pr denotes plume rise

ST denotes Stack  
EV denotes Elevated Vent  
GV denotes Ground Vent

**APPENDIX G Page 2 of 5  
PLUME RISE CALCULATIONS FOR RADIOLOGICAL EMERGENCY PLAN SUPPORT**

Plant	Vent Hgt. (m)	Flow Rate (cfm)	Exit Vel. (m/s)	Stab. Class	Wind Speed (m/s)											
					0.4	0.6	0.8	1.0	1.2	1.5	2.0	2.5	3.0	5.0	7.0	10.0
Plume Rise (m)																
BFN (Stack)	180	24,600	17.7	ABCD	119	80	60	48	40	32	24	19	16	10	7	5
(Cross-sect. Area=7.1 ft2)				E	26	23	21	19	18	17	15	14	13	10	7	5
(Vent diam.=0.9m)				F	23	20	19	17	16	15	14	13	12	10	7	5
				G	22	19	18	16	15	14	13	12	11	10	7	5
BFN (Reactor Bldg - Radwaste Zone)	40	30,000	12.1	*ABCD	109	73	54	44	36	29	22	17	-	-	-	-
				E	25	22	20	18	17	16	14	13	(Cross-sect. Area=12.6 ft2)			
				F	22	19	17	16	15	14	13	12	(Vent diam. =1.2 m)			
				G	21	18	17	15	14	13	12	11	-	-	-	-
BFN (Reactor Bldg - Refuel Zone)	41	50,000	12.9	ABCD	136	97	73	58	48	39	29	23	-	-	-	-
				E	30	26	24	22	21	19	18	16	-	-	-	-
				F	27	23	21	20	18	17	16	14	(Cross-sect. Area=19.6 ft2)			
				G	25	22	20	19	17	16	15	14	(Vent diam.=1.5m)			
BFN (Reactor Bldg - Reactor Zone)	42	95,000	12.5	ABCD	167	131	98	79	66	53	39	32	-	-	-	-
				E	37	32	29	27	25	24	21	20	-	-	-	-
				F	33	29	26	24	23	21	19	18	(Cross-sect. area=38.5 ft2)			
				G	31	27	24	23	21	20	18	17	(Vent diam. =2.1 m)			
BFN (Reactor Bldg.- Turbine Zone)	43	125,000	12.6	ABCD	183	151	113	91	76	60	45	36	-	-	-	-
				E	40	35	32	30	28	26	24	22	-	-	-	-
				F	36	31	28	26	25	23	21	19	(Cross-sect. area=50.3 ft2)			
				G	34	30	27	25	24	22	20	18	(Vent diam. =2.4 m)			

Plume rise is from Briggs momentum equations for the release characteristics stated. If the wind speed falls between indicated values, use the small plume rise value. Do not interpolate. For plume rise values above the dashed lines, the upper level wind speed and direction should be used in dispersion and transport estimations. For plume rise values below the dashed lines, the intermediate level wind speed and direction should be used.

Exit Vel (m/s) = Flow rate (CFM) / Cross-sect. area (ft2) X 0.00508

\*Revision

APPENDIX G Page 3 of 5  
WIND SECTOR AND PLUME SECTOR VERSUS WIND DIRECTION

<u>Wind Direction (degrees)</u>	<u>Wind Direction (Sector)</u>	<u>Plume Sector</u>
349 to 11	N	S
12 to 33	NNE	SSW
34 to 56	NE	SW
57 to 78	ENE	WSW
79 to 101	E	W
102 to 123	ESE	WNW
124 to 146	SE	NW
147 to 168	SSE	NNW
169 to 191	S	N
192 to 213	SSW	NNE
214 to 236	SW	NE
237 to 258	WSW	ENE
259 to 281	W	E
282 to 303	WNW	ESE
304 to 326	NW	SE
327 to 348	NNW	SSE

**APPENDIX G Page 4 of 5**  
**INSTRUCTION SHEET FOR SPECIAL RADIOLOGICAL EMERGENCY**  
**METEOROLOGICAL FORECAST**

Pasquill Stability Index

<u>Pasquill Categories</u>	<u>Temperature Change with Height (C/100m)</u>
A	$\Delta T/\Delta Z \leq -1.9$
B	$-1.9 < \Delta T/\Delta Z \leq -1.7$
C	$-1.7 < \Delta T/\Delta Z \leq -1.5$
D	$-1.5 < \Delta T/\Delta Z \leq -0.5$
E	$-0.5 < \Delta T/\Delta Z \leq 1.5$
F	$1.5 < \Delta T/\Delta Z \leq 4.0$
G	$4.0 < \Delta T/\Delta Z$

Sensor Heights (Meters)

	<u>Browns Ferry</u>			<u>Sequoyah</u>			<u>Watts Bar</u>		
	<u>U</u>	<u>I</u>	<u>L</u>	<u>U</u>	<u>I</u>	<u>L</u>	<u>U</u>	<u>I</u>	<u>L</u>
Wind Direction and Speed	92.6	45.7	10.4	91.4	46.6	9.7	91.5	46.4	9.7
Temperature	89.6	45.3	10.0	90.8	46.0	9.3	91.2	45.6	9.5

Class Limits

Precipitation      None, LR (0.3 - 2.5 mm/hr),  
                              MR (2.8 - 7.6 mm/hr),  
                              HR (>7.6 mm/hr)

Comments

Used to qualify precipitation as follows: Continuous (Intensity changes gradually, if at all); Intermittent (Intensity changes gradually, if at all, but precipitation stops and starts at least once per hour); Showery (Precipitation changes intensity or starts and stops abruptly). Other comments and qualifiers may be added as necessary.

Comments pertaining to wind direction variability and assessments of forecast confidence will be especially valuable.

APPENDIX G Page 5 of 5

<u>To Obtain</u>	<u>Multiply</u>	<u>By</u>
meters/sec	miles/hr	0.447
miles/hr	meters/sec	2.237
miles/hr	knots	1.151
knots	miles/hr	0.869
meters	feet	0.3048
feet	meters	3.2808
hours	years	8,760
seconds	hours	3,600
seconds	day	86,400
seconds	year	31,536,000
kilometers	miles	1.61
miles	kilometers	0.62
inches	millimeters	0.039
millimeters	inches	25.4

APPENDIX H Page 1 of 1

TABLE 1

RELEASE MODE CLASSIFICATION METHODOLOGY

<u>Height of release point (H)</u>	<u>Degree of entrainment</u>	<u>Release Mode</u>
$H > 2 \text{ MBH}^a$	Not applicable	Elevated (Stack)
$\text{MBH} \leq H \leq 2 \text{ MBH}$	$w/u^b \geq 5.0$	Elevated (Vent)
$\text{MBH} \leq H \leq 2 \text{ MBH}$	$w/u < 5.0$	Ground level
$H < 2 \text{ MBH}$	Not applicable	Ground level

<sup>a</sup>MBH is the maximum adjacent building height.

<sup>b</sup>w is the effluent exit velocity and u is the ambient arithmetic wind speed.

TABLE 2

SENSOR HEIGHT SELECTION METHODOLOGY

<u>Release Mode</u>	<u>Vector Wind Direction<sup>b</sup></u>	<u>Vector Wind Speed</u>	<u>Arithmetic Wind Speed</u>	<u>Stability Layer</u>
Ground	I	I	I	I-L
Elevated <sup>a</sup>	U or I	U or I	U or I	U-I

<sup>a</sup>When an elevated release is assumed, the tower wind level nearest the effective plume height (including nonbuoyant plume rise) will be used.

<sup>b</sup>U, I, and L represent the upper, intermediate, and lower tower measurement levels, respectively.

**APPENDIX I Page 1 of 1**  
**RAW METEOROLOGICAL DATA FROM A BACKUP SOURCE**

Date \_\_\_\_\_ Source of Data \_\_\_\_\_ Preparer \_\_\_\_\_

Raw Data 15-Minute Observation					Converted Data		
Time <sup>a</sup>	Level	Wind Direction (deg)	Wind Speed (mph)	Temperature (°F)	Wind Direction (deg)	Wind <sup>c</sup> Speed (m/s)	$\Delta T/\Delta Z^d$ (°c/100m)
_____	Upper	_____	_____	_____	_____	_____	U-L _____
	Mid	_____	_____	_____	_____	_____	U-I _____
	Lower	_____	_____	_____	_____	_____	I-L _____
_____	Upper	_____	_____	_____	_____	_____	U-L _____
	Mid	_____	_____	_____	_____	_____	U-I _____
	Lower	_____	_____	_____	_____	_____	I-L _____
_____	Upper	_____	_____	_____	_____	_____	U-L _____
	Mid	_____	_____	_____	_____	_____	U-I _____
	Lower	_____	_____	_____	_____	_____	I-L _____
_____	Upper	_____	_____	_____	_____	_____	U-L _____
	Mid	_____	_____	_____	_____	_____	U-I _____
	Lower	_____	_____	_____	_____	_____	I-L _____
Hourly Observation							
Time <sup>b</sup>	Level	Wind Direction (deg)	Wind Speed (mph)	Temperature (°F)	Wind Direction (deg)	Wind <sup>c</sup> Speed (m/s)	$\Delta T/\Delta Z^d$ (°c/100m)
_____	Upper	_____	_____	_____	_____	_____	U-L _____
	Mid	_____	_____	_____	_____	_____	U-I _____
	Lower	_____	_____	_____	_____	_____	I-L _____
Rainfall (in) _____					Rainfall (mm) <sup>e</sup> _____		

<sup>a</sup> Observed data are 15-minute averages ending at the time indicated.  
<sup>b</sup> Observed data are 1-hour averages ending at the time indicated.  
<sup>c</sup> Equals wind speed (mph) x 0.4470.  
<sup>d</sup> Equals temperature difference (higher-lower in °F) x 55.5556 ÷ sensor height difference (higher-lower in m).  
<sup>e</sup> Equals rainfall (in.) x 25.40.

**APPENDIX J Page 1 of 1**  
**WORKSHEET FOR NOWCASTING OF METEOROLOGICAL DATA**

Date \_\_\_\_\_ Nuclear Plant \_\_\_\_\_ Initials \_\_\_\_\_

Parameters and Measurement Levels or Layers Needed<sup>a</sup>:

1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_ 4. \_\_\_\_\_

Observation Time \_\_\_\_\_

Nowcast Information

Work Space

1. Missing Parameter<sup>a</sup>  
Table/Column No. Used:  
Nowcast Value:  
Confidence Level:
  
2. Missing Parameter<sup>a</sup>  
Table/Column No. Used:  
Nowcast Value:  
Confidence Level:
  
3. Missing Parameter<sup>a</sup>  
Table/Column No. Used:  
Nowcast Value:  
Confidence Level:
  
4. Missing Parameter<sup>a</sup>  
Table/Column No. Used:  
Nowcast Value:  
Confidence Level:

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

<sup>a</sup>Use ΔT for stability layer, ff for wind speed, dd for wind direction, and U, I, and L for upper, intermediate, and lower, respectively.

**APPENDIX K Page 1 of 1**  
**SHIFT CHANGE CHECKLIST - METEOROLOGIST**

Use checklist for:   1) Changing shifts within the CECC.  
                          2) Transferring meteorological support from Muscle Shoals.

Outgoing staff: \_\_\_\_\_ Incoming staff: \_\_\_\_\_

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

	<b>Completed (Initials)</b>
INCOMING: Record arrival time and initials in Meteorologist log .....	_____
Receive briefing from Meteorologist:	
- Dose assessment method(s) in use. (FRED, BRED, etc.).....	_____
- Exit velocity (Current value? Is ICS being used?).....	_____
- Mixing height conditions (lofting, trapping, high mixing ht.).....	_____
- Transport/dispersion (plume rise, plume position, etc.).....	_____
- Trajectory support (Are manual plume plots being used?) .....	_____
- Data/Equipment problems (Are Nowcasts being used?) .....	_____
- Data dissemination (fax, METINF, etc.).....	_____
- Field support status (field teams, EDS support).....	_____
- Other items .....	_____
Receive briefing from Radiological Assessment Coordinator .....	_____
Review Meteorologist log (If transferring support from Muscle Shoals have Muscle Shoals Meteorologist summarize log items).....	_____
Review latest forms: - EPIP-17, Appendix B (METINF form) .....	_____
- EPIP-17, Appendix F (Raw Data form).....	_____
- EPIP-17, Appendix J (NOWCAST form) .....	_____
- Dose assessment model outputs .....	_____
- Environs data forms .....	_____
Review synoptic situation and latest forecasts:	
- Last 12 hours of meteorological data (ARP, HMD, etc.).....	_____
- Latest weather information service (WIS) and Internet data..... (if older than 1 hour, call WIS and Internet)	_____
- Forecasts issued by CECC Meteorologist (METINF printout).....	_____
Review special contacts (State, TSC, etc.) .....	_____
Notify special contacts of telephone number changes (if necessary).....	_____
Enter name on CECC staff status board (erase prior name) .....	_____
Notify Radiological Assessment Coordinator of staff change .....	_____
OUTGOING: Record departure time and initials in Meteorologist log.....	_____
TIME CHANGE/TRANSFER COMPLETED: _____ INITIALS: _____ / _____	_____

APPENDIX L Page 1 of 1  
METEOROLOGIST CHECKLIST

Date \_\_\_\_\_

Completed (Initials)

1. \_\_\_\_\_ Notify supervisor or backup Meteorologist.
2. \_\_\_\_\_ Pick up identification badge and calculator.
3. \_\_\_\_\_ Enter name on CECC staff status board.
4. \_\_\_\_\_ Obtain briefing.
5. \_\_\_\_\_ Ascertain what dose assessment method(s) is (are) being used.
6. \_\_\_\_\_ Complete initial notebook entry.
7. \_\_\_\_\_ Provide most recent 15-minute data.
8. \_\_\_\_\_ Confirm SIM activation. (If required)
  
9. \_\_\_\_\_ Prepare plume centerline plot (if needed).
10. \_\_\_\_\_ Prepare forecast information.
11. \_\_\_\_\_ Access WIS/review synoptic situation.
12. \_\_\_\_\_ If elevated release, check exit velocity.
13. \_\_\_\_\_ Review mixing height conditions.
14. \_\_\_\_\_ Advise on transport/dispersion considerations.
15. \_\_\_\_\_ Review model output and plume plots.
16. \_\_\_\_\_ Verify state receipt of meteorological forms.
17. \_\_\_\_\_ Verify TSC receipt of meteorological forms.
18. \_\_\_\_\_ Determine synoptic category from nowcast manual.
19. \_\_\_\_\_ Advise CECC staff on severe or unusual weather conditions.

**APPENDIX M Page 1 of 3**  
**SENIOR INSTRUMENT MECHANIC (SIM) ACTIVITIES**

**1.0 PURPOSE**

This Appendix is designed to direct the SIMs in support of the CECC by providing meteorological data for use in protecting the public health.

**2.0 SCOPE**

This Appendix covers anticipated requirements of the SIMs in support of the CECC during a radiological emergency at TVA nuclear plants. This Appendix also covers actions that may be taken subsequent to an emergency.

**3.0 REFERENCES**

- 3.1 EPFS-2 Control Room Notification
- 3.2 EPFS-3 Servicing of Meteorological Equipment at Environmental Data Stations
- 3.3 EPFS-4 Environmental Data Station Meteorological Sensor Exchange
- 3.4 EPFS-5 Calibration of Wind Direction Sensor
- 3.5 EPFS-6 Calibration of Environmental Data Station Data Logger Channels

**4.0 ABBREVIATIONS AND DEFINITIONS**

EA	-	Environs Assessment
Field Coordinator	-	The member of the CECC staff responsible for directing the near site emergency radiological monitoring personnel in accordance with the directions issued by EA. (TVAN personnel)
REND	-	Radiological Emergency Notification Directory
EDS	-	Environmental Data Station
TVAN	-	TVA Nuclear

**5.0 RESPONSIBILITIES**

5.1 The Meteorologist is responsible for the following:

- 5.1.1 Providing technical advice to EA on matters related to the operation and maintenance of the EDS and associated meteorological monitoring systems.

APPENDIX M Page 2 of 3  
SENIOR INSTRUMENT MECHANIC (SIM) ACTIVITIES

- 5.1.2 Activating maintenance personnel for the EDS or placing them on standby in accordance with TVAN's Fitness For Duty Program (Fitness for Duty form provided in Appendix O). Personnel shall be contacted from those listed in the REND.
- 5.1.3 Directing the activities of the SIM at the EDS. (The SIM will initially be placed on standby. If an equipment or data communication problem is detected, the SIM will be directed to report to the appropriate SIM Field Office and then to the EDS, if the EDS is habitable.)
- 5.2 Upon notification that an emergency condition exists, the SIM foreman or SIM contacted is responsible for the following:
  - 5.2.1 Unless directed to report, remaining on standby until further notice by the Meteorologist.
  - 5.2.2 If notified to report to the EDS, returning the EDS to an operational mode and maintaining it as such.
  - 5.2.3 Making the Meteorologist aware of support personnel or equipment needed to keep the EDS operational.
  - 5.2.4 Maintaining special equipment (list provided in CECC EPIP-12, Appendix B).

**6.0 PROCEDURAL REQUIREMENTS**

**6.1 Initial Notification**

- 6.1.1 Activation of a SIM for the EDS at Browns Ferry, Sequoyah, or Watts Bar Nuclear Plants shall be accomplished by calling the number of the personnel listed in the REND.

**6.2 Implementation Procedures**

- 6.2.1 After completion of the initial notification procedures specified in 6.1, the Meteorologist:

- 6.2.1.1 Records pertinent information in the Meteorologist notebook.

- 6.2.1.2 Schedules and notifies emergency personnel required on a 24-hour basis for support as needed.

- 6.2.1.3 Keeps fully informed of the events related to the emergency and relays pertinent information to the SIMs.

**APPENDIX M Page 3 of 3  
SENIOR INSTRUMENT MECHANIC (SIM) ACTIVITIES**

- 6.2.2 Upon being notified that an emergency condition exists and being directed to report for duty, the SIM reports to appropriate SIM Field Office to obtain TLDs, dosimeters and other required equipment.
- 6.2.2.1 Establishes communication with the EA for instruction for entry into the EDS.
- 6.2.2.2 Upon arrival at the EDS, notifies the Meteorologist that he is in position.
- 6.2.2.3 Maintains the data collection system at the EDS in an operable status.
- 6.2.2.4 If directed by the Meteorologist, reports meteorological data using the "Raw Data" portion of Appendix F to the Meteorologist at the CECC as often as needed.
- 6.2.2.5 If unable to maintain telephone contact with the Meteorologist or EA, the SIM shall immediately leave the area and go to a location where either radio or telephone contact can again be made in order to receive further instructions.
- 6.2.2.6 If the EDS is evacuated, reports to a location determined by the EA.
- 6.2.2.7 If there is uncertainty about the habitability of the EDS, EA will arrange for RADCON to check out the site.

**7.0 SAFETY**

Safety is the most important consideration in emergency response. Personnel are cautioned to exercise great care in approaching and working near any areas which are suspected of having been (or could become) exposed to radiological contamination or radiation.

- 7.1 The Meteorologist, in consultation with EA, will ensure that SIMs are briefed on the following:
- 7.1.1 The potential radiation hazards involved before they are asked to enter a potentially contaminated area.
- 7.1.2 The possible need for decontamination following completion of sampling in a potentially contaminated area. Decontamination will be performed, as necessary, by qualified RADCON personnel.
- 7.2 The type of release(s) which occur during a radiological emergency (i.e., water, air, water and air) will determine what type of protective equipment is required by field personnel. The Meteorologist will consult with EA to obtain the needed determinations. In all cases if there is the possibility of radioactive exposure to personnel, RADCON will be assigned to accompany personnel.

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**THIS APPENDIX DELETED IN REVISION 13.**

