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March 27, 2000

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555-0001

Subject: Duke Energy Corporation  
Catawba Nuclear Station Units 1 and 2  
Docket Nos. 50-413 and 50-414  
Emergency Plan Implementing Procedures

Please find enclosed for NRC Staff use and review the following  
Emergency Plan Implementing Procedure:

SH/0/B/2005/001, Emergency Response Offsite Dose Projections  
(Rev. 001)

This revision is being submitted in accordance with 10CFR 50.54(q)  
and does not decrease the effectiveness of the Emergency Plan  
Implementing Procedures or the Emergency Plan.

By copy of this letter, two copies of the above documents are  
being provided to the NRC, Region II.

If there are any questions, please call Tom Beadle at 803-831-  
4027.

Very truly yours,

Gary R. Peterson

Attachments

A045

U.S. Nuclear Regulatory Commission  
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xc (w/attachments):

L. A. Reyes  
U.S. Nuclear Regulatory Commission  
Regional Administrator, Region II  
Atlanta Federal Center  
61 Forsyth St., SW, Suite 23T85  
Atlanta, GA 30303

(w/o attachments):

C. P. Patel  
NRC Senior Project Manager (CNS)  
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Catawba Nuclear Site

DUKE POWER COMPANY  
CATAWBA NUCLEAR STATION  
EMERGENCY PLAN IMPLEMENTING PROCEDURES INDEX

## VOLUME I

PROCEDURE	TITLE
RP/0/A/5000/001	Classification of Emergency (Rev. 012)
RP/0/A/5000/002	Notification of Unusual Event (Rev. 033)
RP/0/A/5000/003	Alert (Rev. 035)
RP/0/A/5000/004	Site Area Emergency (Rev. 037)
RP/0/A/5000/005	General Emergency (Rev. 037)
RP/0/A/5000/06	Deleted
RP/0/A/5000/006 A	Notifications to States and Counties from the Control Room (Rev. 010)
RP/0/A/5000/006 B	Notifications to States and Counties from the Technical Support Center (Rev. 010)
RP/0/A/5000/006 C	Notifications to States and Counties from the Emergency Operations Facility (Rev. 010)
RP/0/A/5000/007	Natural Disaster and Earthquake (Rev. 017)
RP/0/A/5000/08	Deleted
RP/0/B/5000/008	Spill Response (Rev. 016)
RP/0/A/5000/009	Collision/Explosion (Rev. 005)
RP/0/A/5000/010	Conducting A Site Assembly or Preparing the Site for an Evacuation (Rev. 013)
RP/0/A/5000/11	Deleted
RP/0/B/5000/12	Deleted
RP/0/B/5000/013	NRC Notification Requirements (Rev. 023)
RP/0/B/5000/14	Deleted
RP/0/A/5000/015	Core Damage Assessment (Rev. 004)
RP/0/B/5000/016	Deleted
RP/0/B/5000/17	Deleted

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## VOLUME I

PROCEDURE	TITLE
RP/0/A/5000/018	Emergency Worker Dose Extension (1/15/96)
RP/0/B/5000/019	Deleted
RP/0/A/5000/020	Technical Support Center (TSC) Activation Procedure (Rev. 012)
RP/0/A/5000/021	Deleted
RP/0/B/5000/022	Evacuation Coordinator Procedure (Rev. 003)
RP/0/B/5000/023	Deleted
RP/0/A/5000/024	OSC Activation Procedure (Rev. 006)
RP/0/B/5000/025	Recovery and Reentry Procedure (Rev. 002)
RP/0/B/5000/026	Response to Bomb Threat (5/30/96)
RP/0/B/5000/028	Communications and Community Relations EnergyQuest Emergency Response Plan (Rev. 000)

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## VOLUME II

PROCEDURE	TITLE
HP/0/B/1000/006	Emergency Equipment Functional Check and Inventory (Rev. 053)
HP/0/B/1009/001	Radiation Protection Recovery Plan (Rev. 007)
HP/0/B/1009/003	Radiation Protection Response Following a Primary to Secondary Leak (Rev. 008)
HP/0/B/1009/004	Environmental Monitoring for Emergency Conditions Within the Ten-Mile Radius of CNS (Rev. 027)
HP/0/B/1009/005	Personnel/Vehicle Monitoring for Emergency Conditions (Rev. 016)
HP/0/B/1009/006	Alternative Method for Determining Dose Rate Within the Reactor Building (Rev. 008)
HP/0/B/1009/007	In-Plant Particulate and Iodine Monitoring Under Accident Conditions (Rev. 018)
HP/0/B/1009/008	Contamination Control During Transportation of Contaminated Injured Individuals (Rev. 014)
HP/0/B/1009/009	Guidelines for Accident and Emergency Response (Rev. 038)
HP/0/B/1009/014	Radiation Protection Actions Following an Uncontrolled Release of Radioactive Material (Rev. 008)
HP/0/B/1009/016	Distribution of Potassium Iodide Tablets in the Event of a Radioiodine Release (Rev. 010)
HP/0/B/1009/017	Deleted
HP/1/B/1009/017	Post-Accident Containment Air Sampling System (Rev. 001)
HP/2/B/1009/017	Post-Accident Containment Air Sampling System (Rev. 000)
HP/0/B/1009/018	Deleted
HP/0/B/1009/019	Emergency Radio System Operation, Maintenance and Communication (Rev. 010)
HP/0/B/1009/024	Implementing Procedure for Estimating Food Chain Doses Under Post-Accident Conditions (Rev. 002)

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CATAWBA NUCLEAR STATION  
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## VOLUME II

PROCEDURE	TITLE
HP/0/B/1009/025	Deleted
HP/0/B/1009/026	On-Shift Offsite Dose Projections (Rev. 002)
SH/0/B/2005/001	Emergency Response Offsite Dose Projections (Rev. 001)
SH/0/B/2005/002	Protocol for the Field Monitoring Coordinator During Emergency Conditions (Rev. 000)
OP/0/A/6200/021	Operating Procedure for Post Accident Liquid Sampling System II+ (Rev. 031)
SR/0/B/2000/001	Standard Procedure for Public Affairs Response to the Emergency Response Facility (Rev. 001)
SR/0/B/2000/002	Standard Procedure for EOF Commodities and Facilities (Rev. 001)
SR/0/B/2000/003	Activation of the Emergency Operations Facility (Rev. 003)

March 27, 2000

Duke Power Company  
PROCEDURE PROCESS RECORD  
FOR STANDARD PROCEDURES

PREPARATION

( ) Procedure Title: Emergency Response Offsite Dose Projections

(3) Prepared By Duane T Johnson Date 2-1-00

(4) Applicable To:	<input type="checkbox"/> ONS	<input checked="" type="checkbox"/> MNS	<input checked="" type="checkbox"/> CNS
(5) Technical Advisor		<u>Gary J. Terrell</u>	<u>W. Baysinger</u>
(6) Requires 10CFR50.59 Evaluation?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	YES = New procedure or revision with major changes at applicable site		NO = Revision with minor changes NO = To incorporate previously approved changes
(7) Review (QR)	By _____ Date _____	By <u>Joy C. Terrell</u> Date <u>2/23/00</u>	By <u>W. J. Falan</u> Date <u>2/28/2000</u>
Cross-Disciplinary Review (QR)	By _____ NA _____ Date _____	By _____ NA <u>gr</u> Date <u>3/1/00</u>	By <u>GAM L Mitchell</u> NA _____ Date <u>2/21/2000</u>
Reactivity Mgmt. Review (QR)	By _____ NA _____ Date _____	By _____ NA <u>gr</u> Date <u>3/1/00</u>	By _____ NA <u>ELM</u> Date <u>2/21/2000</u>
(8) Additional Reviews	By _____ Date _____	By <u>K.L. Murray</u> Date <u>3-1-00</u>	By _____ Date _____
	By _____ Date _____	By <u>J. M. Weigher</u> Date <u>3/8/2000</u>	By _____ Date _____
(9) Approved	By _____ Date _____	By <u>William T. Byrum</u> Date <u>3/8/2000</u>	By <u>Michael B. J.</u> Date <u>2/29/00</u>
(10) Use Level	Reference Use		

PERFORMANCE (Compare with Control Copy every 14 calendar days while work is being performed.)

(11) Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_  
 Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_  
 Compared with Control Copy \_\_\_\_\_  
 (12) Date(s) Performed \_\_\_\_\_  
 Work Order Number (WO#) \_\_\_\_\_

COMPLETION

(13) Procedure Completion Verification  
 Yes  NA Check lists and/or blanks initialed, signed, dated, or filled in NA, as appropriate?  
 Yes  NA Listed enclosures attached?  
 Yes  NA Data sheets attached, completed, dated, and signed?  
 Yes  NA Charts, graphs, etc. attached, dated, identified, and marked?  
 Yes  NA Procedure requirements met?  
 Verified By \_\_\_\_\_ Date \_\_\_\_\_

(14) Procedure Completion Approved \_\_\_\_\_ Date \_\_\_\_\_

(15) Remarks (Attach additional pages, if necessary.)

Duke Power Company  
Catawba and McGuire Nuclear Stations

**Emergency Response Offsite Dose Projections**

**Reference Use**

Procedure No.

SH/0/B/2005/001

Revision No.

001

Electronic Reference No.

MP0070PF

## Emergency Response Offsite Dose Projections

### 1. Purpose

To provide instruction to Emergency Response Organization (ERO) dose assessors for determining source term and calculating the projected offsite dose to the public using Raddose 5 (Earth Tech <sup>TM</sup> Windows© based computer program); and to provide dose assessment guidance for completion of Emergency Notification form.

**NOTE:** This procedure is an Emergency Plan Implementing Procedure (EPIP) to be used for Catawba and McGuire Nuclear Stations. Emergency Planning must be notified of any changes to this procedure.

### 2. References

- 2.1 Earth Tech Raddose 5 Operator's Manual, Detailed Design Manual, System Design Specification, Verification and Validation Report Vol 1 and 2
- 2.2 Station specific procedures for alternate method of determining Reactor Building dose rate:
- |                       |  |
|-----------------------|--|
| CNS - HP/0/B/1009/006 | Alternative Method for Determining Dose Rate Within the Reactor Building |
| MNS - HP/0/B/1009/002 | Alternative Method for Determining Dose Rate Within the Reactor Building |
- 2.3 Station specific procedures for post accident gas sampling:
- |                                   |   |
|-----------------------------------|---|
| CNS - HP/0/B/1009/017             | Post Accident Containment Air Sampling System                             |
| MNS - HP/1/B/1009/015<br>(Unit 1) | Nuclear Post-Accident Containment Air Sampling System Operating Procedure |
| MNS - HP/2/B/1009/015<br>(Unit 2) | Nuclear-Post Accident Containment Air Sampling System                     |
- 2.4 Station specific procedure for abnormal unit vent sampling:
- |                       |  |
|-----------------------|--|
| CNS - HP/0/B/1009/021 | Abnormal Unit Vent Sampling  |
| MNS - HP/0/B/1009/006 | Procedure for Quantifying High Level Radioactivity Releases During Accident Conditions |

- 2.5 EPA 400-R-92-001 Manual of Protective Action Guides and Protective Actions for Nuclear Incidents
- 2.6 Letter from F.G. Hudson, September 20, 1985, Re: Release Rate Information for McGuire and Catawba Nuclear Stations (File: GS-750.25, NUC-0306)
- 2.7 Letter from H.B. Tucker, November 30, 1989, Re: Follow-up on McGuire Alert (March 7 - 8, 1989) Critique Action Items
- 2.8 U.S. Nuclear Regulatory Commission Response Technical Manual (RTM-93)
- 2.9 Station specific procedures for classification of emergencies:
  - CNS - RP/0/A/5000/001 Classification of Emergency
  - MNS - RP/0/A/5700/000 Classification of Emergency

### 3. Limits and Precautions

- 3.1 Use this procedure during abnormal or emergency conditions (including exercises and drills).
- 3.2 This procedure may be performed in sections or parts, using steps in any sequential order, to evaluate and/or assess offsite radiological conditions.
- 3.3 Verify all data, both automatic and manual, prior to using in dose assessments.

### 4. Procedure

- 4.1 Use Raddose 5 program to calculate Total Effective Dose Equivalent (TEDE) exposure, Committed Dose Equivalent (CDE) Thyroid exposure, and Effective Dose Equivalent (EDE) exposure in ten mile Emergency Planning Zone (EPZ).
  - Provide information for offsite dose exposure and projected offsite dose rate results, from any radioactive material(s) released offsite, to ERO Management.
- 4.2 Access the Raddose 5 software.
  - 4.2.1 Click on the Raddose 5 icon.
  - 4.2.2 A dialog box will appear stating the "DAS Workstation configuration" (EOF or TSC). Click on "OK" to access the DAS (Dose Assessment Software) Desktop.

4.2.3 Change the DAS configuration if needed as follows:

- At the DAS Desktop, click on **FILE**.
- Click on **DAS Configuration**.
- Click on appropriate Work Station Type (EOF or TSC) and Mode (Production or Training).
- Restart Raddose 5 for changes to take affect.

4.2.4 Select the appropriate Station and Unit from the DAS Desktop.

4.2.5 Select **Accident mode** or **Drill mode** appropriate to ERO response.

- Select **Automatic** mode for program query or fifteen minute average data from Operator Aided Computer (OAC).
- Select **Manual** for keyboard entry of data.

**NOTE:** Use option **Begin New Incident** for initial program operation; or the option **Continue Previous Incident** may be selected for continuation of a program using previously entered data with previous dose assessment calculations.

4.2.6 Select **Begin New Incident** and enter information (e.g., reactor trip date, reactor trip time, release date and release time); or proceed to Step 4.2.7 if previous dose assessment files are to be used.

- **IF** the reactor did not trip, and shutdown is in progress, **THEN** use current time in the blank for reactor trip time.
- Release time (estimated or known).
- Enter operator initials and use the mouse to accept and/or cancel.

**NOTE:** Option **Continue Previous Incident** may be selected where previously calculated data files from local computer hard drive and a local server are used; or the option **Network Data** may be selected to continue using network files from either Technical Support Center (TSC) or Emergency Operations Facility (EOF) server.

4.2.7 Select **Continue Previous Incident** if previous TSC or EOF files are valid.

- Select **Local Data** to access and write results to local hard drive and server.
- Select **Network Data** which provides pop up message and overwrites local drive with dose assessment files transferred from TSC or EOF.
- Use single mouse click for **OK** or **Cancel**.

4.3 Select **Enter/Edit Meteorological Data** from program selection and input data for current meteorological conditions.

**NOTE:** Use actual site meteorology for assessment of a release, until it is appropriate to use forecasted data provided by a meteorologist. **IF** site meteorology cannot be obtained from meteorological tower systems, refer to Enclosure 5.1 (Meteorology).

4.3.1 Enter meteorological data, or **Requery** for automatic meteorological input.

4.3.1.1 If manual meteorological data entries are required use Enclosure 5.1 (Meteorology) as necessary.

- Enter wind speed in miles per hour (mph).
- Enter wind direction; where wind direction is from **North** ( $N=0^{\circ}$ ).
- Enter Delta temperature gradient ( $\Delta T$ ) in degrees centigrade ( $\Delta T = C^{\circ}$ ).
- Enter air temperature in degrees centigrade (Temperature in  $C^{\circ}$ ).
- Enter precipitation occurring (inches per fifteen minute period).
- Mean mixing height (in meters) is computer calculated using  $\Delta T$  and air temperature.
- Manually overwrite meteorological data or **Requery** for data that is acceptable.

- Refer to Enclosure 5.2 (Protective Action Zones Determination Table) for determination of affected downwind Protective Action Zones (PAZs).
- 4.3.2 Follow menu options; **Accept** data, by single mouse click for computer calculations of meteorological data; or **Requery** for automatic OAC data; or **Add Time Step** for additional time of release; or **Cancel** entry.
- 4.4 Select **Enter/Edit Source Term Data** for accident type selection and input of source term data for a time step and release path(s).
- 4.4.1 Select accident type and corresponding noble gas monitor (NG method) for each selected path in a time step.

**NOTE:** Consult with ERO personnel (e.g., TSC Operations Engineering and/or EOF Accident Assessment) prior to using "gap release" or "core melt" accident types.

- LOCA - Loss of coolant (normal coolant) - leaks released into containment with those fission products normally found in coolant.
- LOCAG - Loss of coolant gap release - coolant leaks into containment of fission products in the fuel pin gap after fuel cladding has failed (e.g., core being uncovered, fuel pin heat up, and/or if mechanical fuel pin damage has occurred).
- LOCAM - Loss of coolant core melt - coolant leaks released into containment of fission products expected to be released from a core that is partially melted after being uncovered for some period of time.
- SGTR - Steam generator tube rupture (normal coolant) - steam generator release accidents with those fission products normally found in coolant.
- SGTRG - Steam generator tube rupture gap release - steam generator tube release accidents that release fission products in the fuel pin gap after fuel cladding has failed (e.g., core uncover or fuel pin heat up and/or after mechanical fuel pin damage has occurred).
- SGTRM - Steam generator tube rupture core melt - steam generator tube release accidents that release fission products expected to be released from a core that is partially melted after being uncovered for some period of time.

- LOCO - LOCA outside containment (normal coolant) - leaks released directly from containment to outside environment (e.g., Annulus or Auxiliary Building) with fission products normally found in reactor coolant.
- LOCOG - LOCA outside containment gap release - leaks released directly from containment to outside environment (e.g., Annulus or Auxiliary Building) with fission products in the fuel pin gap after fuel cladding has failed (e.g., core uncover or fuel pin heat up and/or after mechanical fuel pin damage has occurred).
- LOCOM - LOCA outside containment core melt - leaks released directly from containment to outside environment (e.g., Annulus or Auxiliary Building) with fission products expected to be released from a core that is partially melted after being uncovered for some period of time.
- FUEL - Fuel handling gap release - fuel pin fission products released from fuel during refueling, or Spent Fuel Pool accident.

**NOTE:** Use consistent **Accident Type** and identify release path(s) for each fifteen minute time step; changing **Accident Type** only when reactor and/or plant status indicate conditions degrading to a different accident.

- 4.4.2 Use Enclosure 5.3 (Steam Source Term Release) and Raddose 5 for assessment of steamline power operated relief valve release, or steam line break accident.
- 4.4.3 Use Enclosure 5.4 (Containment Source Term Release) and Raddose 5 for assessment of a containment accident release.
- 4.4.4 Use Enclosure 5.5 (Unit Vent Source Term Release) and Raddose 5 for assessment of a unit vent release.
- 4.4.5 Enter **Monitor Reading**, re-query OAC data, or manually edit EMF monitor values, used for source term calculations in each identified accident release pathway.
  - Normally OAC fifteen minute average readings are used for source term calculations; however, live time monitor readings are acceptable whenever queried data is suspect or user is manually entering data.
- 4.4.6 Follow menu options to **Accept** data, by single mouse click for computer calculations of source term data; or **Requery** for automatic OAC data; or **Add Time Step** for additional time of release; or **Cancel** entry.

4.5 **Select Emergency Classification** from the Raddose 5 main menu.

**NOTE:** This menu item is used to select the **Current** Emergency Classification in a drill or accident. DO NOT select a classification based on radiological conditions only.

4.5.1 Select the current Emergency Classification (Unusual Event, Alert, site Area Emergency, General Emergency) from the menu.

4.6 Select **Perform Calculations** to calculate **Real Time Mode** dose results displayed on ten mile map with Maximum Dose Rates and selectable receptor point display

4.6.1 Select **Continue** from map display to return to **Real Time Mode Output Menu**.

4.6.2 Select **Continue Calculations** if forecasted doses and an Emergency Notification Form is needed at this time. Other menu items may be selected as follows:

- **Display Grid Receptor Doses** is used to go to the *real-time* Grid Point Receptor Menu.
- **Display Plume Arrival Times** is used to display *real-time* plume arrival times.
- **Display 2-Mile Map** is used to see *real-time* Plume EDE and Adult Thyroid dose rates within two miles of the site.
- **Display 10-Mile Map** is used to see *real-time* Plume EDE and Adult Thyroid dose rates within ten miles of the site.
- **Display Survey Point Receptors** is used to see *real-time* dose rates and accumulated doses for predetermined sample points.
- **Display Point-of-Interest Doses** is used to see *real-time* dose rates at any point of interest. This choice may be used to display dose rates beyond the 10-mile radius of the site.
- **Display 50-Mile Deposition Data** is used to go to the *real-time* 50-mile deposition menu.
- **Go To Report Menu** is used if output of *real-time* is desired.

- 4.7 Select **Perform Forecast** to calculate TEDE and CDE dose rates (mrem/hr), and accumulated dose (mrem), for the release duration in **Forecast Mode**; based on predicted accident stop time or release termination.
- 4.7.1 Select the appropriate Emergency Release Status (e.g., None, Potential, Is Occurring, Has Occurred).
- 4.7.2 Select the appropriate Status of Projected Offsite Dose (e.g., New or Unchanged).
- 4.7.3 Enter a Forecast Period (in hours).
- 0.5 hours is the lower limit allowed as a forecast period.
- 4.7.4 **Forecast mode** doses are calculated using the most current time step and are displayed on ten mile EPZ map.
- 4.7.5 Select **GE PARs** to display the General Emergency Protective Action Recommendations. This option is only available if a General Emergency is selected.
- 4.7.6 Select **Continue** from map display with pop up menu item for selection **Yes** or **No**, to save Forecasted dose in PAZs for determining evacuation.
- 4.7.7 Select **Go To Report Menu** to go to the Forecast Mode Report Options Menu and access the Raddose 5 Emergency Notification Form.

**NOTE:** Refer to Step 4.5.2 for a description of the other choices on this menu. However, in forecast mode, the choices will display *forecasted* results instead of *real-time* results.

- 4.7.8 Select **Print Emerg Notification, Summary Report** to print the Emergency Notification Form (green sheet) and the Summary Report. Other menu items may be selected as follows:
- **Display/Edit Green Form** is used to display the Emergency Notification Form and to make changes as needed.
  - **Save Green Form Data to Ini File** is used to automatically transfer the Raddose 5 data to a storage file that can be accessed by the Electronic Notification Form.
  - **Return to Output Menu** is used when done with Forecast Mode reports.

- 4.7.9 Select **Return to Output Menu** and then select **Continue Calculations** to return to the main menu in *real-time* mode.
- 4.8 Compare forecasted doses on the Emergency Notification Form to the Protective Action Guide (PAG) limits as follows:
- 4.8.1 The affected Protective Action Zones (PAZs) are determined by the wind speed and wind direction.

**NOTE:** The projected TEDE and Thyroid CDE on the Emergency Notification form is calculated by adding the forecasted dose to the accumulated real-time dose.

- 4.8.2 Recommend **no protective action** if EPZ projected dose for PAZs is < 1 rem TEDE or < 5 rem Adult Thyroid CDE.
- 4.8.3 Recommend **evacuation** of the affected PAZs if the projected dose is  $\geq 1$  rem TEDE or  $\geq 5$  rem Adult Thyroid CDE; and recommend **shelter in place** for all other PAZs.

**CAUTION:** Whenever a PAZ has been added to a list of affected zones, the PAZ should not be removed except under direction of Radiological Assessment Manager.

- Recheck meteorological and radiological conditions, as practical to further include any affected sectors or PAZs that may be added.

- 4.9 Refer to Enclosure 5.6 (Radiological Emergency Action Levels) and evaluate the Emergency Action Levels (EALs) based on radiological conditions.
- 4.9.1 Provide EAL radiological assessment classifications to ERO Management in the TSC and/or EOF.
- 4.10 Raddose 5 calculates Effective Dose Equivalent (EDE) exposure and provides Self Reading Dosimeter (SRD) correction factor ( $SRD_{CF}$ ), that can be obtained by printing **Summary Report** after **Perform Calculations** in **Real-Time** mode.

$$SRD_{CF} = \frac{TEDE}{EDE}$$

$SRD_{CF}$  = SRD correction factor

TEDE = Total Effective Dose Equivalent

EDE = Effective Dose Equivalent

**NOTE:** The  $SRD_{CF}$  value is based on accident specific source term nuclide(s) and is a calculation of TEDE to EDE ratio at site boundary.

- $SRD_{CF}$  is provided to offsite Emergency Workers during an accident, after a declared General Emergency, and when a release is occurring.
- $SRD_{CF}$  is used as a multiplier of Emergency Worker SRD readings for EPA 400 Manual Of Protective Action Guides And Protective Actions For Nuclear Incidents, "Early Phase" Emergency Worker TEDE estimate.

4.11 Provide Radiological Assessment Manager (RAM), Lead TSC Dose Assessor and/or ERO personnel completing Emergency Notification form the following information for each of the following Emergency Notification line items:

4.11.1 Line # 1- Events status indicating status of notification

4.11.2 Line # 2- Site and Unit

4.11.3 Line # 7 - Emergency Description remarks applicable to radiological conditions

4.11.4 Line # 9 - Reactor Status (Reactor status used for computer entries)

4.11.5 Line # 10 - Emergency Release(s); use the following guidelines:

4.11.5.1 None - no release of radioactivity generated by the event and no release expected.

4.11.5.2 Potential Release - radioactivity generated during an event that has potential to be released but is not currently being released.

- Discretionary option for the Emergency Coordinator or the EOF Director.

4.11.5.3 Is Occurring - radioactivity generated during an event that is currently being released through any defined accident pathway, using any of the following indicators:

- Either containment particulate, gaseous, iodine monitor readings indicate an increase in activity,

**OR**

Containment monitor readings indicate greater than 1.5 R/hr,

**AND**

Either containment pressure is greater than 0.3 psig,

**OR**

An actual containment breach is known to exist.

- Unit vent particulate, gaseous, iodine monitor readings indicate an increase in activity.
- Condenser air ejector exhaust monitor or other alternate means indicate Steam Generator tube leakage.
- Confirmed activity in the environment reported by Field Monitoring Team(s).
- Knowledge of the event and the impact on systems operation and resultant release paths.

4.11.5.4 Has Occurred - any radioactivity generated during an event that has been released previous to ERO activation that may require offsite agency notification.

4.11.6 Line # 11 - Type of Release; check Ground Level release and record Airborne or Liquid release with start time and stop time; if known.

4.11.7 Line # 12 - Release Magnitude in Ci/Sec released.

4.11.7.1 Indicate **Normal Operating Limits** above or below site boundary limits where **Technical Specification site boundary** dose rate limit is;  $<5.0E-2$  mrem/hr and/or Child Thyroid Dose limit is;  $<1.711E-1$  mrem/hr, using the following guidelines.

- Release Below Normal Operating Limits is radioactivity released at any time during an event and/or radioactivity that may have been previously released that is not above site boundary normal operating limits.
- Release Above Normal Operating Limits is any radioactivity released during the event and/or any radioactivity previously released that is above normal site boundary operating limits.

4.11.7.2 Indicate each form of radioactive material released offsite.

- Noble gases
- Iodines
- Particulates
- Other

4.11.8 Line # 13 - Record Estimate of Projected Offsite Dose as New or Unchanged, and record projection time of Forecast.

- Include estimated duration of release (PRD<sub>t</sub>) in hours, if release stop time or termination of release is determined.
- Record integrated TEDE and CDE mrem dose at Site Boundary, 2 miles, 5 miles and at 10 miles.

**NOTE:** IF the release is below normal operating limits, enter "Not Required" in the TEDE and CDE fields on the Emergency Notification Form.

4.11.9 Line #14 - Record meteorological data.

4.11.9.1 Wind Direction **from North** where N=0<sup>0</sup>

4.11.9.2 Wind Speed (miles per hour)

4.11.9.3 Stability Class

4.11.9.4 Precipitation (type)

4.11.10 Line #15 - Recommended PAZ protective actions are based on radiological Protective Action Guide (PAG) dose limits compared to projected dose calculations integrated with real time accumulated dose in affected PAZs.

- Provide recommendations as determined in Step 4.8.

4.12 ERO Emergency Action Level Classification.

4.12.1 Recommend Emergency Action Level (EAL) classification as determined in Step 4.9.

- 4.13 Provide Raddose 5 printouts and summary reports to Federal, State and County agencies supporting ERO activation, with approval by lead TSC dose Assessor or EOF RAM.
- 4.14 Retain logs, computer printouts and computer generated dose assessment files, whenever ERO is activated.
  - Exercise and Drill records are retained for Emergency Planning disposition.

## **5. Enclosure**

- 5.1 Meteorology
- 5.2 Protective Action Zones Determination Table
- 5.3 Steam Source Term Release
- 5.4 Containment Source Term Release
- 5.5 Unit Vent Source Term Release
- 5.6 Radiological Emergency Action Levels
- 5.7 Raddose 5 Green Form

5.1.1 Meteorological Tower OAC data is normally provided as 15 min. average.

- Use lower tower wind speed (WS) in miles per hour
- Use upper tower wind speed (WS) if lower tower wind speed is not available
- Use upper tower wind direction; in degrees from North (N) = 0°
- Use lower tower wind direction if upper tower wind direction is not available: in degrees from North (N) = 0°

5.1.2 **IF** Meteorological Tower is not available, obtain meteorological information from:

- Duke meteorologist at 594-0341/0289
- Unaffected plants control room:  
CNS - 831-2338/2337  
MNS - 875 4262/4263
- National Weather Service (NWS) at 1-800-268-7785
- Gastonia Automated Surface Observation System (ASOS) at 704-868-9034

5.1.3 If meteorological tower temperature gradient ( $\Delta T^\circ$ ) is unknown, use the following default values:

	CNS		MNS	
	$\Delta t$	Stability Class	$\Delta t$	Stability Class
Between 1000-1600 hours:	-0.3	D	-0.3	D
Between 1600-1000 hours:	+1.3	F	+1.3	F

5.1.4 Use the following tables to determine stability class when  $\Delta T$  data is available:

Stability Class	<u>CNS</u>	<u>MNS</u>
	( $\Delta T$ in $^{\circ}\text{C}$ )	( $\Delta T$ in $^{\circ}\text{C}$ )
A - Extremely Unstable	$\Delta T \leq -0.97$	$\Delta T \leq -0.95$
B - Moderately Unstable	$-0.97 < \Delta T \leq -0.87$	$-0.95 < \Delta T \leq -0.86$
C - Slightly Unstable	$-0.87 < \Delta T \leq -0.76$	$-0.85 < \Delta T \leq -0.76$
D - Neutral	$-0.76 < \Delta T \leq -0.25$	$-0.75 < \Delta T \leq -0.26$
E - Slightly Stable	$-0.25 < \Delta T \leq +0.76$	$-0.25 < \Delta T \leq +0.74$
F - Moderately Stable	$+0.76 < \Delta T \leq +2.04$	$+0.75 < \Delta T \leq +2.00$
G - Extremely Stable	$+2.04 < \Delta T$	$+2.00 < \Delta T$

## Protective Action Zones Determination Table

5.2.1 For **Catawba**, determine affected Emergency Planning Zone (EPZ) Protective Action Zones (PAZs) based on direction wind is blowing from (degrees from North (N) = 0°) and wind speed.

- For wind speed ≤ 5 mph, affected PAZs include all PAZs out to five miles; **A0,A1,B1,C1,D1,E1,F1**, and affected PAZs five to ten miles are shown in table below:
- For wind speed > 5 mph, use table below to determine downwind affected PAZs

CATAWBA PAZS

Wind direction (Degrees From North) North (N) = 0°	Wind speed ≥ 5 mph (PAZs) 2 miles around and 5 miles downwind	Downwind Protective Action Zones (PAZs) distances 5 miles to 10 miles
348.75 - 11.25	A0, B1, C1, D1	B2, C2, D2
11.26 - 33.75	A0, C1, D1	C2, D2
33.76 - 56.25	A0, C1, D1, E1	C2, D2, E2
56.26 - 78.75	A0, C1, D1, E1, F1	C2, D2, E2, F2
78.76 - 101.25	A0, C1, D1, E1, F1	D2, E2, F2
101.26 - 123.75	A0, D1, E1, F1	D2, E2, F2, F3
123.76 - 146.25	A0, E1, F1	E2, F2, F3
146.26 - 168.75	A0, A1, E1, F1	A2, E2, F2, F3
168.76 - 191.25	A0, A1, E1, F1	A2, F2, F3
191.26 - 213.75	A0, A1, B1, E1, F1	A2, B2, F2, A3, F3
213.76 - 236.25	A0, A1, B1, F1	A2, B2, F2, A3, F3
236.26 - 258.75	A0, A1, B1, F1	A2, B2, A3, F3
258.76 - 281.25	A0, A1, B1, C1	A2.B2, C2, A3
281.26 - 303.75	A0, A1, B1, C1	A2, B2, C2, A3
303.76 - 326.25	A0, B1, C1	B2, C2, A3
326.26 - 348.74	A0, B1, C1, D1	B2, C2, D2

## Protective Action Zones Determination Table

5.2.2 For McGuire, determine affected Emergency Planning Zone (EPZ) Protective Action Zones (PAZs) based on direction wind is blowing from (degrees from North (N) = 0°) and wind speed.

- For wind speed ≤ 5 mph, affected PAZs include all PAZs out to five miles:  
**L,B,M,C,N,A,D,O,R.**
- For wind speed > 5 mph, use table below to determine downwind affected PAZs:

MCGUIRE PAZS

Wind direction (Degrees From North) North (N) = 0°	Wind speed ≥ 5 mph (PAZs) 2 miles around and 5 miles downwind	Downwind Protective Action Zones (PAZs) distances 5 miles to 10 miles
0 - 22.5	L,B,M,C,D,O,R	E,S,F
22.6 - 45.0	L,B,M,C,D,O,R	E,Q,S
45.1 - 67.5	L,B,M,C,D,O,R	E,Q,S
67.6 - 90.0	L,B,M,C,D,O,R,N	P,Q,S
90.1 - 112.5	L,B,M,C,O,R,N	K,P,Q,S
112.6 - 135.0	L,B,M,C,O,N,R,A	I,K,P,Q,S
135.1 - 157.5	L,B,M,C,O,A,N	I,K,P,Q
157.6 - 180.0	L,B,M,C,A,N	I,J,K,P
180.1 - 202.5	L,B,M,C,A,N	G,H,I,J,K,P
202.6 - 225.0	L,B,M,C,A,N,D	G,H,I,J,K,P
225.1 - 247.5	L,B,M,C,A,D	F,G,H,I,J
247.6 - 270.0	L,B,M,C,A,D	F,G,H,I,J
270.1 - 292.5	L,B,M,C,A,D	E,F,G,H,J
292.6 - 315.0	L,B,M,C,A,D	E,F,G
315.1 - 337.5	L,B,M,C,D,R	E,F,G
337.6 - 359.9	L,B,M,C,D,R	E,F,S

**Enclosure 5.3**  
**Steam Source Term Release**

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- 5.3.1 Determine type of accident, source term release path and EMF monitor method.
- 5.3.2 Select an Accident Type for an affected release pathway:
- SGTR - steam generator tube rupture (normal coolant)
  - SGTRG - steam generator tube rupture gap release
  - SGTRM - steam generator tube rupture core melt
- 5.3.3 Select affected steamline EMF Noble Gas Method and corresponding monitor reading:
- As necessary query OAC data or manually enter steamline EMF reading.
- 5.3.4 Select Steam Generator (SG) reduction factors; **Partitioned** (e.g., tube break below secondary side water level and SG is not overfilled) or **Not Partitioned** (e.g., break above secondary side water level or SG overfilled).
- 5.3.5 Use Raddose 5 to calculate source term assessment - steam release in Ci/sec.
- Ci/sec is distributed by isotope spectrum based on accident type and time after reactor shutdown
  - Raddose 5 calculates the steam source term as follows:  
$$RR = EMF \times CF \times AJ \times LR \times (0.41 \text{ ft}^3/\text{lbm} \times 28320 \text{ ml}/\text{ft}^3 \times 1\text{E-}6 \text{ Ci}/\mu\text{Ci} \times 1/3600/\text{hr}/\text{s})$$

Where:

RR = release rate activity in Ci/sec

CF = steam line radiation monitor Correlation Factor

EMF = radiation monitor reading in mR/hr (normally a 15 minute average reading)

AJ = Adjustment Factor (unit-less) based on accident types (SGTR, SGTRG, SGTRM)

LR = Steam release rate from safety valve in pounds mass of steam released through each valve during valve open period (lbm/hr), where; default release rate = 2.094E5 lbm/hr

**Enclosure 5.3**  
**Steam Source Term Release**

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5.3.6 If desired, use Raddose 5 to calculate source term - steam release using isotopic grab sample (GRABSL).

$$RR = SL_g \times LR \times (0.41 \text{ ft}^3/\text{lbm} \times 28320 \text{ ml}/\text{ft}^3 \times 1\text{E-}6 \text{ Ci}/\mu\text{Ci} \times 1/3600/\text{hr}/\text{s})$$

Where:

RR = release rate activity in Ci/sec

SL<sub>g</sub> = secondary grab sample (μCi/ml)

LR = steam release rate from safety valves pounds mass of steam released through the respective valves during the valve open period (lbm/hr) default release rate = 2.094E5 lbm/hr

5.3.7 If desired, use Raddose 5 to calculate source term - steam release using back calculate method (BACKSL).

$$RR = \text{Field Measurement Device Reading (mR/hr)} \times \text{FM Device Correlation} \\ (\mu\text{Ci}/\text{cc})/(\text{mR}/\text{hr})/X/Q(\text{sec}/\text{m}^3) \times (1\text{E-}6 \text{ Ci}/\mu\text{Ci} \times 1\text{E+}6 \text{ cc}/\text{m}^3=1)$$

5.3.8 **For Catawba only**, use Step 5.3.9 source term assessment worksheet steam generator tube rupture coincident with loss of offsite power; when appropriate and due to the following:

- Loss of offsite power and steamline radiation monitor is unavailable
- Primary to secondary coolant leakage is occurring
- Steam source term release is occurring
- Steam generator sample cannot be obtained
- Computer program for calculating steam release is not available

**Enclosure 5.3**  
**Steam Source Term Release**

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5.3.9 (Catawba Only) Source term assessment worksheet with steam generator tube rupture coincident with loss of offsite power for unavailable Steam Line Monitor EMF \_\_\_\_\_.

Unit \_\_\_\_\_ Dose Projection based on: \_\_\_\_/\_\_\_\_/\_\_\_\_ : \_\_\_\_ Time since trip: \_\_\_\_ hours  
mm dd yy hh mm

EMF53 reading\* Correction Factor\*\* LRps dT Lbsmr\*\*\* 1/VOPEN  
\_\_\_\_ R/hr x \_\_\_\_\_  $\frac{\mu\text{Ci/ml}}{\text{R/hr}}$  x \_\_\_\_\_  $\frac{\text{gal}}{\text{min}}$  x \_\_\_\_\_ min x \_\_\_\_\_  $\frac{\text{lbmr}}{2400 \text{ lbm}}$  x  $\frac{1}{\text{sec}}$

\*Note: If EMF53 < 5 R/hr, use 5 R/hr.

x  $3.785\text{E-}3 \frac{\text{Ci ml}}{\mu\text{Ci gal}}$  x =  $\frac{\text{Activity noble Gas}}{\text{sec}}$  Ci

Activity noble Gas x Iodine Ratio LOCA = Activity LOCA Iodine 131 Equivalent Ci/sec

Activity noble Gas x Iodine Ratio core melt = Activity Lcore Melt Iodine 131 Equivalent Ci/sec

Where:

LRps = Primary to secondary leak rate in gal/min.

dT = Time that primary to secondary leakage has lasted from the start of the leak to the time of date that the projection is based on, in minutes.

Lbsmr = Mass of steam released from the PORV and/or code safety valves, in lbm.

VOPEN = Time the valve(s) are open in hours.

3.785E-3 =  $1\text{E-}6 \text{ Ci}/\mu\text{Ci} \times 3.785\text{E}3 \text{ ml/gal}$

2400 = Mass of steam in the faulted steam generator; conservative valve is 2400 lbm (mass of steam from S/G nozzle to MSIV)\*\*\* If Lbsmr > 2400 lbm; use 2400 lbm.

Time since Rx Trip (hours)	EMF 53 Correction Factor ** (CF)	Iodine Ratio LOCA	Iodine Ratio Core Melt
≥ 0	7.74 E+3	1.52 E-3	4.23 E-3
≥ 2	9.82 E+3	1.95 E-3	1.46 E-3
≥ 4	9.96 E+3	2.24 E-3	2.21 E-2
≥ 8	1.28 E+4	2.63 E-3	4.09 E-2
≥ 24	2.15 E+4	3.00 E-3	1.14 E-1
≥ 48	3.69 E+4	3.05 E-3	1.78 E-1

Emergency  or Drill  Prepared by: \_\_\_\_\_

**Enclosure 5.4**  
**Containment Source Term Release**

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- 5.4.1 Determine type of accident source term release path and EMF monitor method.
- 5.4.2 Select an Accident Type for an affected release pathway:
- LOCA-Loss of Coolant Accident (normal coolant)
  - LOCAG-Loss of Coolant Accident gap release
  - LOCAM-Loss of Coolant Accident core melt
- 5.4.3 Select affected containment EMF Noble gas method and corresponding monitor reading:
- As necessary, query OAC data or manually enter containment EMF reading
  - CONL-EMF39L
  - CONH-EMF39H
  - CONHH-EMF53A/B or 51A/B
- 5.4.4 Select containment reduction factors for Ice Condenser pass through; Containment Hold Up Time, and Containment Spray status (on or off).
- 5.4.5 Use Raddose 5 to calculate source term assessment - containment release in Ci/sec.
- Ci/sec is distributed by isotope spectrum based on accident type and time after reactor shutdown

<p><b>NOTE:</b> Containment source term can be calculated using containment EMF readings, containment samples, or field team data. Reference 2.2 can be used if no other data is available.</p>
---

- Raddose 5 calculates the containment source term as follows:

$$RR = EMF \times CF \times AJ \times BY \times Ci/\mu Ci \times 1/3600 \text{ hr/sec}$$

Where:

$$RR = \text{release rate activity in Ci/sec}$$

$$EMF = \text{EMF39(L) count per minute (cpm) and } EMF39(L) \leq 1E+7 \text{ cpm; and containment sample line is not isolated and/or containment EMF sample pump is not tripped (CONL Method)}$$

- EMF = EMF39(H) cpm whenever EMF39(L) reading is  $> 1E+7$  cpm (offscale) and EMF39(H) cpm  $\leq 1E+6$  cpm and/or sample line is not isolated and sample pump is not tripped (CON-H Method)
- EMF = EMF53A/B - CNS or EMF51A/B - MNS R/hr reading whenever EMF39(H) is  $> 1E+6$  cpm (offscale) or EMF39 sample line is isolated, or EMF containment sample pump is tripped (CONHH Method)
- CF = Containment Noble Gas monitor Correlation Factor
- AJ = Adjustment Factors for Noble Gas; Iodine's and Particulates
- BY = Containment Bypass Fraction - Fraction of containment leakage of gases from inside containment which bypasses the annulus and auxiliary building and passes directly to the environment where, (default value = 0.07)
- LR = Leak Rate of containment air to the annulus or environment (ml/hr) based on one of the following methods:
- (a) Based on containment pressure and hole size corresponding to:
    1. Normal Leakage - 0.3% per day at design pressure (15 psig)
    2. Small Hole - 100% per day at design pressure (15 psig)
  - (b) Pre-defined Leak Rate corresponding to:
    1. Normal Leakage (0.3% per day)
    2. Small Hole (100% per day)
    3. Large Hole (100% per hour)

5.4.6 If desired, use Raddose 5 to calculate source term - containment release using isotopic grab sample (GRABC), and Post Accident Containment Air Sampling System, Reference 2.3.

$$RR = CON_g \times BY \times LR \times (1E-6 \text{ Ci}/\mu\text{Ci} \times 1/3600/\text{hr}/\text{sec})$$

Where:

$$CON_g = \text{Containment grab sample } (\mu\text{Ci}/\text{ml})$$

- All other parameters as defined in previous Step 5.4.4



5.5.5 Evaluate vent release selecting monitoring for each of the affected unit vents.

5.5.6 Use Raddose 5 to calculate source term assessment - vent release in Ci/sec.

- Ci/sec is distributed by isotope spectrum based on accident type and time after reactor shutdown.
- Raddose 5 calculates unit vent source term as follows:

$$RR = EMF \times CF \times AJ \times FR \times 1E-6 \text{ Ci}/\mu\text{Ci} \times 1/60 \text{ min}/\text{sec} \times 28320 \text{ ml}/\text{ft}^3$$

Where:

RR = release rate activity in Ci/sec

EMF = Use EMF36L counts per minute (cpm), if reading  $\leq 1E+7$  cpm and vent EMF sample pump is not tripped (UV1L, UV2L)

EMF = Use EMF36H cpm reading if EMF36L is offscale and  $EMF36H \leq 1E+6$  cpm and sample pump is not tripped (UV1H, UV2H)

EMF = Use EMF54 - CNS, EMF36HH - MNS (R/hr) reading if EMF36L and EMF36H are offscale, and/or vent EMF sample pump is tripped (UV1HH, UV2HH)

CF = Unit Vent radiation monitor Noble Gas Correlation Factor

AJ = Adjustment Factors for Noble Gas, Iodines and Particulates for accident types

FR = Unit vent flow rate in  $\text{ft}^3$  per minute, (No default rate); vent flow rate is a manual Raddose 5 input if query data is unavailable

5.5.7 If desired, use Raddose 5 to calculate source term - unit vent release using isotopic grab sample (GRABV1, GRABV2); obtain sample per Reference 2.4.

$$RR = UV_g \times FR \times 1E-6 \text{ Ci}/\mu\text{Ci} \times 1/60 \text{ min}/\text{sec} \times 28320 \text{ ml}/\text{ft}^3$$

Where:

RR = release rate activity in Ci/sec.

$UV_g$  = unit vent grab sample ( $\mu\text{Ci}/\text{ml}$ )

FR = Unit vent flow rate in  $\text{ft}^3$  per minute; (No default rate); vent flow rate is a manual Raddose 5 input if queried data is unavailable.

## Unit Vent Source Term Release

5.5.8 If desired, use Raddose 5 to calculate source term - unit vent release using back calculate method (UV1-BACK, UV2-BACK).

$$RR = \text{Field Measurement Device Reading (mR/hr)} \times \text{FM Device Correlation} \\ (\mu\text{Ci/cc}) / (\text{mR/hr}) / X / Q(\text{sec/m}^3) \times (1\text{E-}6 \text{ Ci}/\mu\text{Ci} \times 1\text{E+}6 \text{ cc/m}^3 = 1)$$

5.5.9 If desired, use Raddose 5 to calculate source term - vent release using release (Ci/sec) direct entry (UV1-DRCT, UV2-DRCT):

- Enter NG Release Rate(Ci/sec)
- Enter Iodine Release Rate (Ci/sec)
- Enter Particulate Release Rate(Ci/sec)

**Enclosure 5.6**  
**Radiological Emergency Action Levels**

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5.6.1 Evaluate the Emergency Action Levels (EALs) based on radiological conditions in the affected site's EAL procedure:

CNS - RP/0/A/5000/001 - Classification of Emergency

MNS - RP/0/A/5700/000 - Classification of Emergency

Enclosure 5.7  
Raddose 5 Green Form

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EMERGENCY NOTIFICATION

1.  THIS IS A DRILL  ACTUAL EMERGENCY  INITIAL  FOLLOW-UP MESSAGE NUMBER \_\_\_\_\_

2. SITE: Catawba UNIT:     REPORTED BY: \_\_\_\_\_

3. TRANSMITTAL TIME/DATE:     /     /     CONFIRMATION PHONE NUMBER: \_\_\_\_\_  
(Eastern) mm/dd/yy

4. AUTHENTICATION (If Required): \_\_\_\_\_  
(Number) (Codeword)

5. EMERGENCY CLASSIFICATION:  
 NOTIFICATION OF UNUSUAL EVENT  ALERT  SITE AREA EMERGENCY  GENERAL EMERGENCY

6.  Emergency Declaration At:  Termination At: TIME/DATE:     :     /     /     (If B, go to item 16)  
(Eastern) mm dd yy

7. EMERGENCY DESCRIPTIONS/REMARKS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

8. PLANT CONDITION:  IMPROVING  STABLE  DEGRADING

9. REACTOR STATUS:  SHUTDOWN: TIME/DATE:     :     /     /      \_\_\_\_\_ % POWER  
(Eastern) mm dd yy

10. EMERGENCY RELEASE(S):  
 NONE (Go to Item 14)  POTENTIAL (Go to Item 14)  IS OCCURRING  HAS OCCURRED

\*\*11. TYPE OF RELEASE:  ELEVATED  GROUND LEVEL

AIRBORNE: STARTED: 00:00 STOPPED:     :     /     /      
Time (Eastern) Date Time (Eastern) Date

LIQUID: STARTED:     :     /     /     STOPPED:     :     /     /      
Time (Eastern) Date Time (Eastern) Date

\*\*12. RELEASE MAGNITUDE:  Curies Per Sec  Curies NORMAL OPERATING LIMITS:  BELOW  ABOVE

NOBLE GASES 0.00E+00  IODINES 0.00E+00  
 PARTICULATES 0.00E+00  OTHER \_\_\_\_\_

\*\*13. ESTIMATE OF PROJECTED OFFSITE DOSE:  NEW  UNCHANGED PROJECTION TIME: \_\_\_\_\_  
(Eastern)

	TEDE mrem	Thyroid CDE mrem	ESTIMATED DURATION: <u>1</u> HRS.
SITE BOUNDARY	<u>0.00E+00</u>	<u>0.00E+00</u>	
2 MILES	<u>0.00E+00</u>	<u>0.00E+00</u>	
5 MILES	<u>0.00E+00</u>	<u>0.00E+00</u>	
10 MILES	<u>0.00E+00</u>	<u>0.00E+00</u>	

\*\*14. METEOROLOGICAL DATA:  WIND DIRECTION (from)     deg  SPEED (mph)      
 STABILITY CLASS      PRECIPITATION (type)     in/15 min

15. RECOMMENDED PROTECTIVE ACTIONS:  
 NO RECOMMENDED PROTECTIVE ACTIONS  
 EVACUATE  
 SHELTER IN-PLACE  
 OTHER \_\_\_\_\_

16. APPROVED BY: \_\_\_\_\_ TIME/DATE: \_\_\_\_\_  
(Name) (Title) (Eastern) mm dd yy

\* If items 8-14 have not changed, only items 1-7 and 15-16 are required to be completed  
\*\* Information may not be available on initial notification