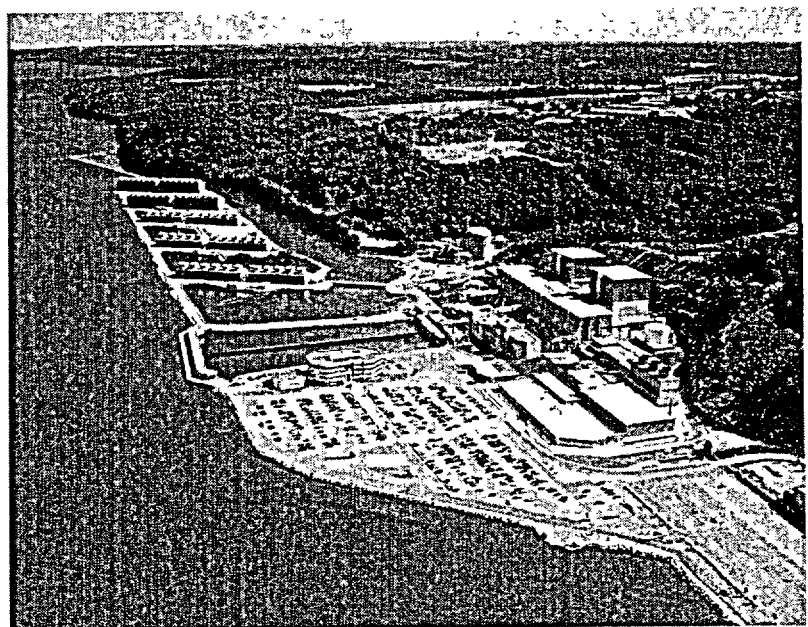
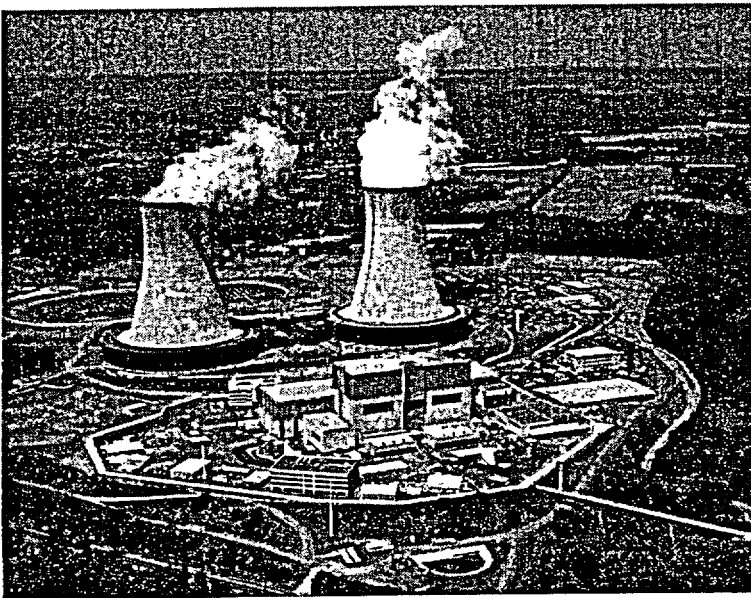


# Standard Emergency Procedures

**Limerick Generating Station, Units 1 & 2**

**Peach Bottom Atomic Power Station, Units 2 & 3**



**Exelon**<sup>SM</sup>  
Nuclear

# Standard Emergency Procedures

**Exelon**<sup>SM</sup>

Nuclear

**ASSESSMENT OF EMERGENCIES**

1. **PURPOSE**

Provide guidance on the tools and processes used to gather and evaluate data and information to effectively assess accident conditions.

2. **TERMS AND DEFINITIONS**

None

3. **RESPONSIBILITIES**

None

4. **MAIN BODY**

4.1 **REFER TO** the following supporting procedures, as applicable:

**Limerick / Peach Bottom**

4.1.1 EP-MA-110-100, "Emergency Response Organization (ERO) Computer Applications," provides guidance on the activation and/or operation of the following applications:

- U.S. NRC Emergency Response Data System (ERDS)
- Emergency Preparedness Data System (EPDS)
- Plant Monitoring System (PMS)
- Projection Screens
- Electronic Status Boards
- News Writer / Chronological Events Description Log
- Potassium Iodide (KI) Spreadsheet
- Offsite Siren Activation

**Mid-West ROG**

- 4.1.2 EP-MW-110-100, "ERO Computer Applications," provides guidance on the activation and/or operation of the following applications:
- Accessing ERO applications from a network computer.
  - ERDS
  - Plant Parameter Display System (PPDS)
  - Significant Events Log (SEL)
  - Station Priorities Log (SPL)
  - KI Spreadsheet
  - News Writer
- 4.1.3 EP-MA-110-200, "Dose Assessment," provides guidance on the activation and/or operation of the following applications:
- Dose Assessment and Protective Action Recommendation (DAPAR)
- 4.1.4 EP-MW-110-200, "Dose Assessment," provides guidance on the activation and/or operation of the following applications:
- DAPAR
  - MESOREM
  - C-Model
- 4.1.5 EP-AA-110-301, "Core Damage Assessment (BWR)"
- 4.1.6 EP-AA-110-302, "Core Damage Assessment (PWR)"

5. **DOCUMENTATION**

None

6. **REFERENCES**

None

7. **ATTACHMENTS**

None

## ERO COMPUTER APPLICATIONS

### 1. PURPOSE

- 1.1 This procedure provides the guidance for gathering information and the operation of equipment associated with various data acquisition and display methods.

### 2. TERMS AND DEFINITIONS

- 2.1 The Chronological Events Log, is an option under the News Writer Program that allows for the electronic documentation of significant event activities for dissemination to the news media.
- 2.2 The Emergency Response Data System (ERDS), is a direct near real-time electronic data link between the onsite computer system and the NRC Headquarters Operations Center that provides for the automated transmission of a limited data set of selected parameters.
- 2.3 The Emergency Preparedness Data System (EPDS), is an emergency facility data system used to aid in assessing plant response and status during emergencies. EPDS is a computer based real-time data acquisition and display system, which acquires, stores and re-packages data from the Plant Monitoring System (PMS) and Radiological Monitoring System (RMS) for display in the Technical Support Center (TSC) at Limerick and Peach Bottom Stations and the common Emergency Operations Facility (EOF) at the Coatesville, Pennsylvania. Service Center.
- 2.4 KI (Potassium Iodide) Spreadsheet, is an EXCEL spreadsheet used to calculate I-131 concentration and thyroid dose based on an air sample analysis. It also provides a recommendation on KI issuance to Exelon emergency workers.
- 2.5 News Writer is an electronic program used by the Emergency Public Information Organization for the generation and review of press releases for distribution to the news media. News Writer is also used to store standard biographies for Exelon Spokespersons.
- 2.6 The Plant Monitoring System (PMS), refers to the station process computer application at Limerick and Peach Bottom Generating Stations. The data feed for EPDS and ERDS data links is feed from the PMS.
- 2.7 The Priority Status Board, is an electronic means of automatically displaying entries made on the TSC board in the Operations Support Center (OSC) and EOF for Limerick and Peach Bottom Stations.

3. **RESPONSIBILITIES**

None

4. **MAIN BODY**

4.1 **Limerick Generating Station (LGS) Instructions:**

- Emergency Preparedness Data System (EPDS) Operation – REFER to Attachment 1
- EPDS Data Reboot Process – REFER to Attachment 2
- Potassium Iodide (KI) Spreadsheet Users Guide – REFER to Attachment 3
- U.S. NRC ERDS Activation – REFER to Attachment 4
- Instructions for Establishing Priority Status (OSC Team) Board – REFER to Attachment 5
- Obtaining Radiological Data from RM-11 – REFER to Attachment 6
- Obtaining MET Data from PMS – REFER to Attachment 7
- Offsite Siren Activation – REFER to Attachment 16
- TSC Overhead Projector Display Instructions – REFER to Attachment 17

4.2 **Peach Bottom Atomic Power Station (PBAPS):**

- Emergency Preparedness Data System (EPDS) Operation – REFER to Attachment 1
- EPDS Data Reboot Process – REFER to Attachment 2
- Potassium Iodide (KI) Spreadsheet Users Guide – REFER to Attachment 3
- Plant Monitoring System (PMS) Log-In Instructions – REFER to Attachment 8
- U.S. NRC ERDS Activation – REFER to Attachment 9
- Basic Instructions for Establishing Priority Status (OSC Team) Board – REFER to Attachment 10
- TSC Electronic Display Board Instructions – REFER to Attachment 11
- TSC Overhead Projector Display Instructions – REFER to Attachment 12
- Offsite Siren Activation – REFER to Attachment 16

4.3 **Coatesville Facility:**

- Operation of EOF Projection Controller – REFER to Attachment 13
- JPIC Outlook Access – REFER to Attachment 14
- News Writer / Chronological Events Description Log User Guide – REFER to Attachment 15

5. **ATTACHMENTS**

- 5.1 Attachment 1, Emergency Preparedness Data System (EPDS) Operation
- 5.2 Attachment 2, EPDS Data Receiver Reboot Process
- 5.3 Attachment 3, Potassium Iodide (KI) Spreadsheet Users Guide
- 5.4 Attachment 4, Emergency Response Data System (ERDS) Activation [**Limerick**]
- 5.5 Attachment 5, Basic Instructions for Establishing Priority Status (OSC Team) Board [**Limerick**]
- 5.6 Attachment 6, Obtaining Radiological Data from RM-11 [**Limerick**]
- 5.7 Attachment 7, Obtaining Meteorological Data from PMS [**Limerick**]
- 5.8 Attachment 8, Plant Monitoring System (PMS) Log-In Instructions [**Peach Bottom**]
- 5.9 Attachment 9, Emergency Response Data System (ERDS) Activation [**Peach Bottom**]
- 5.10 Attachment 10, Basic Instructions for Establishing Priority Status (OSC Team) Board [**Peach Bottom**]
- 5.11 Attachment 11, TSC Electronic Display Board Instructions [**Peach Bottom**]
- 5.12 Attachment 12, TSC Overhead Projector Display Instructions [**Peach Bottom**]
- 5.13 Attachment 13, Operation of the EOF Projection Controller [**Coatesville EOF**]
- 5.14 Attachment 14, JPIC Outlook Access [**Coatesville JPIC**]
- 5.15 Attachment 15, News Writer / Chronological Events Description Log Users Guide [**Coatesville JPIC**]
- 5.16 Attachment 16, Offsite Siren Activation [**Limerick / Peach Bottom**]
- 5.17 Attachment 17, TSC Overhead Projector Display Instructions [**Limerick**]

**ATTACHMENT 1**  
**Emergency Preparedness Data System (EPDS) Activation**  
**Page 1 of 3**

A. **TO OPEN ONE OR SEVERAL DISPLAYS**

**NOTE:** Always use left mouse button

**STEP 1** **TURN ON** power to the computer and printer

**STEP 2** If "Group Main" is **NOT** open then:

- **DOUBLE CLICK** on "Desktop Manager" icon
- **DOUBLE CLICK** on "Main" and follow open steps (4.3)

**STEP 3** If "Group Main" **IS** open then:

- Using the mouse, **MOVE** arrow to top bar (center) of "Group Main"

**STEP 4** **HOLD** the mouse button down and **MOVE** display to the bottom right hand corner of the screen

- **DOUBLE CLICK** on "EPDS" in "Group Main"

**STEP 5** Using the mouse, **MOVE** the arrow to the menu bar

- **CLICK** on station of interest
- **CLICK** on unit of interest

**STEP 6** Using the mouse, **MOVE** the arrow to the "down" scroll bar arrow

- **CLICK** the mouse and **LOCATE** the parameter of interest
- **DOUBLE CLICK** on the parameter of interest



**ATTACHMENT 1**  
**Emergency Preparedness Data System (EPDS) Activation**  
**Page 2 of 3**

**B. TO OPEN MORE DISPLAYS**

- STEP 1**      **CLICK** on "Utilities"
- STEP 2**      **CLICK** on 1/4 up left
- STEP 3**      **LOCATE** "Group Main"
- STEP 4**      **DOUBLE CLICK** on "EPDS"
- STEP 5**      **SELECT** affected Station/Unit
- STEP 6**      **SELECT** Parameter
- STEP 7**      **CLICK** on "Utilities"
- STEP 8**      **CLICK** on 1/4 up right
- STEP 9**      Repeat previous steps for more displays (1/4 down left, then 1/4 down right)

**C. TO SET UP AUTO AUTOMATIC PRINTING**

- STEP 1**      **CLICK** on "Utilities"
- STEP 2**      **CLICK** on "Periodic Report"
- STEP 3**      **CLICK** on Station/Unit of interest box
- STEP 4**      **CLICK** on frequency of interest
- STEP 5**      **CLICK** on parameters of interest
- STEP 6**      **CLICK** on "OK" ("ACTIVE" is displayed)
- STEP 7**      **CLICK** on the "down" arrow in the upper right corner of the display

**NOTE:**    "Restore" can be used to view active selections  
              "Quit" terminates automatic printing

**ATTACHMENT 1**  
**Emergency Preparedness Data System (EPDS) Activation**  
**Page 3 of 3**

**D. TO TREND A PARAMETER**

**Note:** Trending will tie up terminal until trend is complete

**STEP 1** In display of interest, **DOUBLE CLICK** on value to be trended.

**STEP 2** If necessary to adjust the trend ranges, **then:**

- **CLICK** on scale
- Using the mouse, **POSITION** the cursor to the right of the value to be changed
- Click on the mouse button

**STEP 3** **STRIKE** "Back Space" key to delete numbers to be changed

**STEP 4** **TYPE** in the new value and **CLICK** on "OK"

**STEP 5** To cancel trend display, **CLICK** on "Exit"

**E. TO PLAYBACK A PARTICULAR DISPLAY OR TREND VALUE**

**NOTE:** The system will play back condensed 30 second snapshots every few seconds over the time period selected.

**STEP 1** **CLICK** on "Playback" in the display of interest

**STEP 2** **CLICK** on "On"

**STEP 3** **SET** value for the amount of time to be played back

**STEP 4** **CLICK** on "OK"

**STEP 5** To turn off playback:

- **CLICK** on "Playback"
- **CLICK** on "Off"

**F. TO PRINT AN INDIVIDUAL REPORT**

**STEP 1** **CLICK** on "Utilities" in the display of interest

**STEP 2** **CLICK** on "Print Screen"

**ATTACHMENT 2**  
**EPDS Data Reboot Process**  
**Page 1 of 1**

**PREREQUISITE:**

- A. EPDS appears unresponsive with an apparently operable sending modem  
**and/or**
- B. Notification from NISD has been received that the EOF LAN was “down” but has been restored to normal functionality.

**PROCESS:**

Reboot the EOF EPDS data receiver using either of the following methods:

- 1. **If at the EOF, then PERFORM** the following:
  - 1.1 **ENTER** the Telecommunications Room and **LOCATE** the EPDS Data Receiver PC.  
**NOTE:** Several PCs are in the room. The Data Receiver is one of several along the north wall of the room (left wall as you enter the room.) The PC farthest from the door is the EOF LAN server. The Data Receiver is immediately to the left of the server (the side closer to the door.)
  - 1.2 **PERFORM** **either:**
    - 1.2.1 **PRESS** the reboot button; **or**
    - 1.2.2 **TURN OFF** the power switch and **WAIT** about 15 seconds, then **TURN ON** the power switch
  - 1.3 **TEST** EPDS functionality.
    - 1.3.1 **If** EPDS functionality is normal, then **PROCEED** with intended activities.
    - 1.3.2 **If** EPDS is **NOT** normally functional, then **CONTACT** the NISD EP representative or **CALL** the Exelon Help Desk at 803:4357.
    - 1.3.3 **NOTIFY** appropriate concerned parties such as emergency response leadership, lead drill controller, or site EP Coordinators of EPDS status.
- 2. **If NOT at the EOF, then PERFORM** a remote reboot as follows:
  - 2.1 Using a standard touchtone telephone, **DIAL** (610) 380-3906.
  - 2.2 Wait a few seconds, then **ENTER** the security code by “1248” on the telephone keypad. You should hear a tone.  
**NOTE:** The EPDS Data Receiver should reboot in about 20 seconds and will be available normally in a few minutes.
  - 2.3 **TEST** EPDS functionality per Step 1.3.

**ATTACHMENT 3**  
**KI Spreadsheet Users Guide**  
**Page 1 of 3**

KI Spreadsheet Program can be accessed via either:

- Icon on designated DAPAR lap-top computers, or
- Common drive paths:

Limerick Generating Station (LGS): \\PECO\PBS2\_DATA1.PBS\_SRV.S.PBS.PECO\EP\_DAPAR

Peach Bottom Atomic Power Station (PBAPS): \\PECO\PBS2\_DATA1.PBS\_SRV.S.PBS.PECO\EP\_DAPAR

**NOTE:** An EXCEL spreadsheet (Table 3-1) has been provided to calculate I-131 concentration and thyroid dose, as well as generate a recommendation on KI issuance to Exelon emergency workers. The spreadsheet is launched by clicking on the icon labeled "KI Assessment". This opens a shared, locked Microsoft Excel spreadsheet that will perform the assessment per input data that provided.

**NOTE:** The spreadsheet is protected to prevent accidental changes being made to the calculations. The only cells that can be changed are those fields colored purple on the spreadsheet display screen. Cell E4 contains the current date/time for recordkeeping purposes and should not be altered by the user.

1. **ENTER** the following information in text fields for event documentation (none of these cells are required to perform the calculation):

- The station name for which the calculation is being done (cell E5);
- The sample collection point or descriptor (cell E9);
- The sample cartridge type used (zeolite or charcoal) (cell E10);
- The sampler start time, if known (cell E11);
- The sampler ending time, if known (cell E12);
- The sample analysis point or descriptor (cell E16);
- The sample analysis time (cell E17).

2. The following values are required to be entered in order to do the calculation:

- The air sampler running time in minutes (cell E13) ; this value is not calculated automatically from the entered running times;
- The air sampler flow rate over the running time, in cubic feet per minute (cell E14);
- The background count rate, in cpm, on instrument at the location at which the sample was counted (cell E18);
- The pre-filter count rate, in cpm; a gross (background included) measurement is expected (cell E19);
- The sampler cartridge count rate, in cpm; a gross (background included) measurement is expected (cell E20);
- The number of hours remaining in which the persons for whom the calculation is being made may be exposed to iodine (cell O6);

**ATTACHMENT 3**  
**KI Spreadsheet Users Guide**  
**Page 2 of 3**

- The percent of possible exposure time that the persons for whom the calculation is being made are expected to actually be exposed (cell O7); use the default value of 50% unless a better estimate can be made.
3. The following intermediate information is calculated by the spreadsheet, and values displayed for the user:
- The total sample count rate, in cpm (cell E23);
  - The total sample volume, in cubic centimeters (cell E24);
  - The total sample concentration, in  $\mu\text{Ci}/\text{cm}^3$  (cell E26).
4. The estimated thyroid dose value can be read from cell O18 (displayed in green lettering). The percent of the dose as fraction of the 50 rem PAG can be read from cell O19. If the value of P18 does exceed the PAG value, a recommendation to issue KI appears a box immediately below the dose estimate (range M21 to R22). If the value of O18 does not exceed the PAG, the word "NOT" appears in cell O21, changing the recommendation to not issuing KI. The number of hours that emergency workers may be exposed to a plume at the current dose level without exceeding the PAG is given in cell P25.
5. A summary report is printed containing all input data and calculated information when the "print" icon is clicked, located on the Excel button bar.
6. The report contains zones to record the following:
- A) Information relating to contacting the Exelon Occupational Health Services Department (OHSD):
    - The time the call was made;
    - Whether contact was successfully made;
    - The name of the person contacted;
    - Whether concurrence for KI was obtained from OHSD;
    - If concurrence is not obtained from OHSD, the reason given.
  - B) The recommendation of the Radiation Protection Manager whether to issue KI. A recommendation must be circled, then signed and dated.
  - C) The approval or denial of KI by the Station Emergency Director.

**NOTE:** Whether KI issuance is approved or denied must be circled, then signed and dated.

7. Copies of the completed KI report should be made and distributed. The original should be controlled for incident documentation.

ATTACHMENT 3  
KI Spreadsheet Users Guide  
Page 2 of 3

Instead of KI, use the KI values and the KI values entered in the table.

Calculation	Date & Time	Site	Station Name
Exelon Station	5/12/2002 11:00	216	08713
Go To Protective Level of CDE. In row of Use the KI value			
<b>Sample Information</b>			
Sample Collection Point	D-11	Location	
Sample Type	2 vol ts	cartridge	(none or other)
Sampler Start Time	11:00	hr:min	(If known, not needed)
Sampler End Time	11:30	hr:min	(If known, not needed)
Sampler Running Time	30	min	(not needed)
Sampler Flow Rate	3	cm <sup>3</sup> /min	(not needed)
<b>Sample Analysis Point</b>			
Sample Analysis Point	D-1	Location	
Sample Analysis Time	9:30	hr:min	(If known)
Decayed GM Count Rate	290	cpm	
Predictor Count Rate (gross)	3200	cpm	(not needed)
Cartridge Count Rate (gross)	3500	cpm	(not needed)
<b>Detector Information</b>			
Net Sample Count Rate	2.00E+03	cpm	
Sample Volume	2.5E+03	cm <sup>3</sup> (cc)	

Sample Concentration **4.52E-06**  $\mu\text{Ci}/\text{cm}^3$  KI=1

Exelon Occupational Health Services			
DHS contacted	YES	NO	ATTEMPTED
Person Contacted:	_____		
Contact Time:	_____ hr:min		

**Rate Time Assumptions**

Team Hours Left on Shift	1	hrs
WTms Exposed to Plume	24	hr
Reduction or Use of Fall-out (50%)		

**Dose Determination**

do not enter data in the following table

Exposure Time	4	hrs
Dermal Breathing Rate	1.2E+00 cm <sup>3</sup> /hr (adult male)	
Dose Conversion Factor	1.1E	rem per $\mu\text{Ci}$ ingested
% Protective Action Cloze	50	rem CDE

CDE	0.23	rem
Percent of PAG	0.47	percent

**FOR THIS SAMPLE, KI IS NOT RECOMMENDED FOR EXELON EMERGENCY WORKERS.**

FOR THIS SAMPLE, EXELON EMERGENCY WORKERS MAY BE EXPOSED AT THIS RATE FOR **854.22** hours UNTIL THE HI PROTECTIVE ACTION GUIDE IS REACHED.

If Contact Not Made, Give Reason:	_____	
Permission Granted for Thyroid Blocking?	YES	NO
If Permission Not Granted, Give Reason:	_____	

**Review**

I have reviewed this information for accuracy and completeness.  
I (DO) (DO NOT) (Indicate one): **RECOMMEND** issuing thyroid blocking agents to Exelon Emergency Workers.  
\_\_\_\_\_  
Radiation Protection Manager

**Approvals**

I have reviewed the information contained in this report.  
I (DO) (DO NOT) (Indicate one): **APPROVE** issuing thyroid blocking agents to Exelon Emergency Workers

Name: \_\_\_\_\_  
Emergency Director  
Time: \_\_\_\_\_ hr:min Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

**ATTACHMENT 4**  
**U.S. NRC Emergency Response Data System (ERDS) Activation**  
**For Limerick Generating Station (LGS)**  
**Page 1 of 2**

**STEP 1**      **TURN ON** Emergency Preparedness Data System (EPDS) monitor

- EOF "A" primary / EOF "B" backup

**STEP 2**      **DOUBLE CLICK** on "NRC1....COM8" icon.

**STEP 3**      **DOUBLE CLICK** on the letter "M" (in "Manual Session").

**NOTE:**      Session state should say "IN SESSION" when successful connection is established.

**STEP 4**      **DOUBLE CLICK** on "NRC2....COM9" icon.

**STEP 5**      **DOUBLE CLICK** on the letter "M" (in "Manual Session").

**NOTE:**      Session state should say "IN SESSION" when successful connection is established.

<u>COMPUTER POINT</u>	<u>ENGINEERING UNITS</u>	<u>DESCRIPTION</u>
B000/B000	% Power	APRM 1 SIM Thermal Power
B001/B001	% Power	APRM 2 SIM Thermal Power
B002/B002	% Power	APRM 3 SIM Thermal Power
B003/B003	% Power	APRM 4 SIM Thermal Power
E1109/E2109	CPS	A SRM Count Rate
E1133/E2133	CPS	B SRM Count Rate
E1110/E2110	CPS	C SRM Count Rate
E1134/E2134	CPS	D SRM Count Rate
E1114/E2114	IN/NOT IN	A SRM Position
E1138/E2138	IN/NOT IN	B SRM Position
E1115/E2115	IN/NOT IN	C SRM Position
E1139/E2139	IN/NOT IN	D SRM Position
E1240/E2240	Inches Water Level	Shutdown Range Reactor Level
E1239/E2239	Inches Water Level	Upset Range Reactor Level
E1419/E2419	Inches Water Level	Fuel Zone Range Reactor Level B
E1339/E2339	Inches Water Level	Fuel Zone Range Reactor Level A
E1418/E2418	Inches Water Level	Wide Range Reactor Level B
E1338/E2338	Inches Water Level	Wide Range Reactor Level A
E1238/E2238	Inches Water Level	Narrow Range Reactor Level C
E1237/E2237	Inches Water Level	Narrow Range Reactor Level B
E1236/E2236	Inches Water Level	Narrow Range Reactor Level A
E1241/E2241	MLB/HR	Total Feedwater Flow
E1340/E2340	GPM	RCIC System Flow

**ATTACHMENT 4**  
**U.S. NRC Emergency Response Data System (ERDS) Activation**  
**For Limerick Generating Station (LGS)**  
**Page 2 of 2**

<u>COMPUTER POINT</u>	<u>ENGINEERING UNITS</u>	<u>DESCRIPTION</u>
E1234/E2234	PSIG	Narrow Range Reactor Pressure
E1430/E2430	PSIG	Upset Range Reactor Pressure B
E1353/E2353	PSIG	Upset Range Reactor Pressure A
E1420/E2420	KGPM	HPCI System Flow
E1341/E2341	KGPM	A RHR System Flow
E1421/E2421	KGPM	B RHR System Flow
E1466/E2466	KGPM	C RHR System Flow
E1506/E2506	KGPM	D RHR System Flow
E1342/E2342	KGPM	A Core Spray Flow
E1422/E2422	KGPM	B Core Spray Flow
E1192/E2192	GAL	Drywell Floor Drain Sump Level
4TE076	μCi/Sec	North Stack Total Effluent
E1088/E2088	mR/Hr	Steam Jet Air Ejector Rad Mon
1RA191/1RA291	R/Hr	Drywell Area Post LOCA Rad
2RA191/2RA291	R/Hr	Drywell Area Post LOCA Rad
3RA191/3RA291	R/Hr	Drywell Area Post LOCA Rad
4RA191/4RA291	R/Hr	Drywell Area Post LOCA Rad
E1082/E2082	mR/Hr	Main Steam Rad Monitor
E1425/E2425	PSIG	Narrow Range Drywell Pressure
E1423/E2423	PSIG	Wide Range Drywell Press B
E1343/E2343	PSIG	Wide Range Drywell Press A
E1515/E2525	Deg. F	Drywell Atmosphere Temp
E1658/E2658	Deg. F	Drywell Atmosphere Temp
E1424/E2424	Deg. F	Suppression Pool Airspace Temp B
E1344/E2344	Deg. F	Suppression Pool Airspace Temp A
E1680/E2680	FT	Suppression Pool Water Level
E1602/E2602	FT	Suppression Pool Water Level
E1186/E2186	FT	Suppression Pool Level B
E1210/E2210	FT	Suppression Pool Level A
B21V0065/B21V0065	%	Drywell H <sub>2</sub> Concentration
B21V0064/B21V0064	%	Drywell O <sub>2</sub> Concentration
E1083/E2083	FT	Condensate Storage Tank Level
TS.SP.I	MPH	Tower 1 Wind Speed
T2.SP.U	MPH	Tower 2 Wind Speed
T1.DR.I	Degrees	Tower 1 Direction
T2.DR.U	Degrees	Tower 2 Direction
T1.DT.UL	Deg. F	Tower 1 Delta-Temp
T2.DT.UL	Deg. F.	Tower 2 Delta-Temp
T1.ST.I	Degrees	Tower 1 Sigma Theta
T2.STI	Degrees	Tower 2 Sigma Theta



**ATTACHMENT 5**  
**Instructions for Establishing Priority Status (OSC Team) Board [LIMERICK]**  
**Page 1 of 2**

**NOTE:** Upon completion of the following steps, the priority status board terminals at the EOF and OSC will display the same information as the TSC terminal. Any priorities entered prior to the EOF / OSC connections will not be transmitted to their PC.

**STEP 1**      **TURN ON** computer.

**STEP 2**      **SELECT** "CANCEL" at Password and Printer Hardware Windows. (The NetMeeting Program should start-up.)

**STEP 3**      **SELECT** "CALL" on menu.

**STEP 4**      **SELECT** "Host Meeting", and then **SELECT** "OK"

**STEP 5**      On "NetMeeting" Window, **SELECT** TOOLS, and then **SELECT** SHARING

**STEP 6**      On "Sharing" Window, **SELECT** "PRIORITY.WBD – IBID", and then **SELECT** "SHARE"

**STEP 7**      On "NetMeeting" Window, **SELECT** "CALL", and then **SELECT** "NEW CALL"

**STEP 8**      On "Place a call" Window, **HIGHLIGHT** "10.250.254.61" for the EOF, and then **SELECT** "CALL".

**NOTE:**      If connection cannot be made, then **CALL** the EOF and **ASK** someone to reboot priority status board computer. **VERIFY** automatically accept calls feature is "checked on" Call Menu, then **RETRY** previous step.

**STEP 9**      On "NetMeeting" Window, **SELECT** "CALL", and then **SELECT** "New Call"

**STEP 10**     On "Place a call" Window, **SELECT** "10.254.243.194", and then **SELECT** "CALL"

**NOTE:**      If connection cannot be made, then **CALL** the OSC and **ASK** someone to reboot priority status board computer. **VERIFY** automatically accept calls feature is "checked on" Call Menu, then **RETRY** previous step.

**CAUTION**

Failure to perform **STEP 11** will render that section of the screen unusable by the EOF and OSC

**STEP 11**     **MINIMIZE** "NetMeeting" Window.

**ATTACHMENT 5**  
**Instructions for Establishing Priority Status (OSC Team) Board [LIMERICK]**  
**Page 2 of 2**

**STEP 12**    **MAXIMIZE** "Priority.wbd - ibid" Window.

**STEP 13**    **VERIFY** operation of the Priority Status Board by contacting the OSC & EOF  
after recording initial message

At the completion of drill/emergency, **PERFORM** the following:

**STEP 1**    On "NetMeeting" Window, **SELECT** "CALL", and then **SELECT** "HANG UP"

**STEP 2**    From the START Menu, **SELECT** "SHUT DOWN"

**ATTACHMENT 6**  
**Obtaining Radiological Data from RM-11**  
**For Limerick Generating Station (LGS)**  
**Page 1 of 2**

- STEP 1**      **SELECT** Grid 1.
- STEP 2**      **SELECT** the release point of interest. (Example: North Stack Channel RE26076-4.)
- NOTE:**      Pressing the "Esc" button on the keyboard will return the user to the Main Menu from any other screen.
- STEP 3**      **SELECT** the "MONITOR DETAIL" button
- STEP 4**      **RECORD** the current Process Flow value for the selected release point
- STEP 5**      **SELECT** the "PREV" button
- STEP 6**      **SELECT** either the "15 MIN AVG" value or the "60 MIN AVG" value.
- STEP 7**      **VERIFY** the selected value is surrounded by a box.
- STEP 8**      **RECORD** which "AVG" value was chosen in the table on ERP-300, Appendix 6 page 3 for the selected release point.
- STEP 9**      **PRESS** the "right" mouse button.
- STEP 10**     **SELECT** "Time Trend" from the pull down menu.

**NOTE:**      There are two values in the bottom right hand corner of the Channel Detail Screen. For Step 10, the value furthest right is the value where the cursor is placed. The value adjacent is the most recent 15-minute or 60 minute average.

- STEP 11**     **PLACE** the cursor near the line that has the highest value.

Description	RM-11 Channel	Mesorem Jr. Channel
North Stack Total Effluent	RE26076-4	4TE076
Unit 1 South Stack "A" Noble Gas	RE26185A-3	3GE185
Unit 1 South Stack "B Noble Gas	RE26185B-3	6GE185
Unit 2 South Stack "A" Noble Gas	RE26285A-3	3GE285
Unit 2 South Stack "A" Noble Gas	RE26285B-3	6GE285

- STEP 12**     **RECORD** the selected value for the release point in the appropriate table below:

**ATTACHMENT 6**  
**Obtaining Radiological Data from RM-11**  
**For Limerick Generating Station (LGS)**  
**Page 2 of 2**

**STEP 13**    **SELECT** the "GRID 1" button in the top right hand corner to return to the Grid 1 Display.

**NOTE:** N/A should be entered in the tables below for release points that were not selected.

<b>NORTH STACK</b>		
RE26076-4 Value (RM-11) ( $\mu$ Ci/sec)	Selected Value (15 <u>or</u> 60 MIN AVG)	Process Flow Value (scfm)

<b>U/1 SOUTH STACK</b>		
RE26185A-3 Value (RM-11) ( $\mu$ Ci/ml)	Selected Value (15 <u>or</u> 60 MIN AVG)	Process Flow Value (scfm)

<b>U/1 SOUTH STACK</b>		
RE26185B-3 Value (RM-11) ( $\mu$ Ci/ml)	Selected Value (15 <u>or</u> 60 MIN AVG)	Process Flow Value (scfm)

<b>U/2 SOUTH STACK</b>		
RE26285A-3 Value (RM-11) ( $\mu$ Ci/ml)	Selected Value (15 <u>or</u> 60 MIN AVG)	Process Flow Value (scfm)

<b>U/2 SOUTH STACK</b>		
RE26285B-3 Value (RM-11) ( $\mu$ Ci/ml)	Selected Value (15 <u>or</u> 60 MIN AVG)	Process Flow Value (scfm)

**ATTACHMENT 7**  
**Obtaining MET Data From Plant Monitoring System (PMS)**  
**For Limerick Generating Station (LGS)**  
**Page 1 of 1**

- A. **IF IN THE CONTROL ROOM** -- **PERFORM** the following at a unit 1 Plant Monitoring System (PMS) workstation:
- STEP 1**      **SELECT** menu at bottom of CRT screen to bring up the Limerick Unit 1 main menu
- STEP 2**      **SELECT** monitor box on left hand side of the screen to bring up monitor display menu
- STEP 3**      **SELECT** either 15 minute Average or hourly Average meteorological data.
- STEP 4**      **PRESS** F20 to print.
- B. **IF IN THE TSC** -- **PERFORM** the following at the VT terminal:
- STEP 1**      **TURN ON** the VT terminal.
- STEP 2**      At the "Local" prompt, **TYPE** "C(space) LG1pa" or LG1pb.
- STEP 3**      **ENTER** Username "HP1"
- STEP 4**      **ENTER** Password "TSC"
- STEP 5**      **SELECT** either:
- 15 minute Average Met Data or,
  - Hourly Average Met data.
- C. **LOGOFF**
- STEP 1**      **PRESS** F2 to print.

**ATTACHMENT 8**  
**Plant Monitoring System (PMS) Log-In Instructions**  
**For Peach Bottom Atomic Power Station (PBAPS)**  
**Page 1 of 1**

**STEP 1** With the "Microsoft Windows NT Workstation" screen displayed, **PRESS (Cntrl+Alt+Del)** simulataneously to access the login screen display.

**STEP 2** At the "Login Info" screen, **ENTER** the following:

- TSC or OSC workstations  
    **Username: pms**  
    **Password: pbpms**
- SMB (Reactor Engineering Computer Room) workstations  
    **Username: rxeng**  
    **Password: pbpms**
- Control Room – Unit 2 workstations  
    **Username: u2pms**  
    **Password: leave blank (no password)**
- Control Room – Unit 3 workstations  
    **Username: u3pms**  
    **Password: leave blank (no password)**

**PRESS** Enter key or **SELECT OK**

**CAUTION**

**This is a Human Performance Error Likely Situation.** In the following action, you must choose the correct Unit # to recive the data for that unit.

**STEP 3** From the Windows NT Desktop, **SELECT START** menu.

**STEP 4** **SELECT** the appropriate unit data to be transmitted:

- **PB2** for Unit #2 data, or
- **PB3** for Unit #3 data

The PMS screen will now be activated.

**STEP 5** **VERIFY** that the correct Unit is displayed on the PMS screen.

**ATTACHMENT 9**  
**U.S. NRC Emergency Response Data System (ERDS) Activation**  
**For Peach Bottom Atomic Power Station (PBAPS)**  
**Page 1 of 2**

**INITIATE** ERDS link to the NRC via a Plant Monitoring System (PMS) Terminal located in either the Control Room or Technical Support Center (TSC).

With the PMS computer program activated (per Attachment 9), **PERFORM** the following steps to establish ERDS link to the NRC:

- STEP 1**      **SELECT** the EPDS menu or **TYPE** EPD.
- STEP 2**      **SELECT** the NRC Link Activation or **TYPE** the letters NRC.
- STEP 3**      **SELECT** "F1" to activate.
- STEP 4**      **SELECT** either:
- "F1" to activate Unit 2 link, or
  - "F3" to activate Unit 3 link.
- STEP 5**      **ENTER** the password "**USNRC**" and **PRESS** Return key.

<u>COMPUTER POINT</u>	<u>ENGINEERING UNITS</u>	<u>DESCRIPTION</u>
C229 / C529	1E-9 to 100 % power	Average Wide Range Neutron Monitor
D524 / D824	Reset / Trip	A1 Channel Main Steam Line High Radiation
D525 / D825	Reset / Trip	B1 Channel Main Steam Line High Radiation
D526 / D826	Reset / Trip	A2 Channel Main Steam Line High Radiation
D527 / D827	Reset / Trip	B2 Channel Main Steam Line High Radiation
H004 / H304	0 to 1500 psig	A Channel Reactor Pressure
H005 / H305	0 to 1500 psig	B Channel Reactor Pressure
H037 / H337	norm / HiHi	Drywell Floor Drain Sump Level
H050 / H350	0 to 42 feet	Condensate Storage Tank Level
H053 / H353	0 to 6000 gpm	HPSI Flow
H054 / H354	0 to 700 gpm	RCIC Flow
H055 / H355	0 to 8000 gpm	A Loop Core Spray Flow
H056 / H356	0 to 8000 gpm	B Loop Core Spray Flow
J154 / J654	1E-7 to 0.1 uCi/cc	Low Range Main Stack Radiation
J155 / J655	1E-4 to 1E2 uCi/cc	Mid Range Main Stack Radiation
J156 / J656	0.1 to 1E5 uCi/cc	High Range Main Stack Radiation
J158 / J658	1E-7 to 0.1 uCi/cc	Low Range Main Stack Radiation
J159 / J659	1E-4 to 1E2 uCi/cc	Mid Range Main Stack Radiation
J160 / J660	0.1 to 1E5 uCi/cc	High Range Main Stack Radiation
M002 / M302	1 to 1E6 mR/hr	Off-Gas Radiation (SJAЕ Discharge)
M004 / M304	0.1 to 1E6 cps	Radwaste Liquid Effluent Radiation

**ATTACHMENT 9**  
**U.S. NRC Emergency Response Data System (ERDS) Activation**  
**For Peach Bottom Atomic Power Station (PBAPS)**  
**Page 2 of 2**

<u>COMPUTER POINT</u>	<u>ENGINEERING UNITS</u>	<u>DESCRIPTION</u>
R006	0 to 359 degrees	320' Tower 2 Wind Direction
R007	0 to 100 mph	320' Tower 2 Wind Speed
R008	0 to 99 degrees	320' Tower 2 Sigma Theta
SPDS 0030 / 0330	30 to 230 degrees F	Average Torus Temperature
SPDS 0200 / 0500	0 to 125% power	Average Non-Bypassed APRM Power
SPDS 0201 / 0501	-325 to 371 inches	Average Compensated Reactor Level
SPDS 0202 / 0502	-2 to 225 psig	Average Selected Drywell Pressure
SPDS 0222	0.1 to 1E6 cps	Average Inserted SRM Count Rate
SPDS 0223 / 0523	1 to 21 feet	Average Torus Level
SPDS 1274 / 1574	0 to 25,000 gpm	A Loop LPCI Flow
SPDS 1275 / 1575	0 to 25,000 gpm	B Loop LPCI Flow
SPDS 1276 / 1576	0 to 30% H2	Torus Hydrogen
SPDS 1277 / 1577	0 to 30% O2	Torus Oxygen
SPDS 1278 / 1578	0 to 30% H2	Drywell Hydrogen
SPDS 1279 / 1579	0 to 30% O2	Drywell Oxygen
SPDS 1287 / 1587	1E-7 to 1E5 uCi/cc	Average Main Stack Radiation
SPDS 1288 / 1588	1E-7 to 1E5 uCi/cc	Average Vent Stack Radiation
SPDS 1289 / 1589	75 to 55 degrees F	Bulk Average Drywell Temperature
SPDS 1293 / 1593	0 to 21 M#/hr	Total Feedwater Flow
T061 / T361	1 to 1E8 Rem/hr	Channel 2 Drywell High Radiation
T062 / T362	1 to 1E8 Rem/hr	Channel 3 Drywell High Radiation
T063 / T363	1 to 1E8 Rem/hr	Channel 4 Drywell High Radiation
T081 / T381	1 to 1E8 Rem/hr	Channel 1 Drywell High Radiation



**ATTACHMENT 10**  
**Instructions for Establishing Priority Status (OSC Team) Board [PEACH BOTTOM]**  
**Page 1 of 2**

**NOTE:** Upon completion of the following steps, the priority status board terminals at the EOF and OSC will display the same information as the TSC terminal. Any priorities entered prior to the EOF / OSC connections will not be transmitted to their PC.

- STEP 1**      **TURN ON** computer.
- STEP 2**      **SELECT "CANCEL"** at Password and Printer Hardware Windows. (The NetMeeting Program should start-up.)
- STEP 3**      **SELECT "CALL"** on menu.
- STEP 4**      **SELECT "Host Meeting"**, and then **SELECT "OK"**
- STEP 5**      On "NetMeeting" Window, **SELECT TOOLS**, and then **SELECT SHARING**
- STEP 6**      On "Sharing" Window, **SELECT "PRIORITY.WBD – IBID"**, and then **SELECT "SHARE"**
- STEP 7**      On "NetMeeting" Window, **SELECT "CALL"**, and then **SELECT "NEW CALL"**
- STEP 8**      On "Place a call" Window, **SELECT "10.250.254.61"** for the EOF, and then **SELECT "CALL"**.

**NOTE:** If connection cannot be made, then **CALL** the EOF and **ASK** someone to reboot priority status board computer. **VERIFY** automatically accept calls feature is "checked on" Call Menu, then **RETRY** previous step.

- STEP 9**      On "NetMeeting" Window, **SELECT "CALL"**, and then **SELECT "New Call"**
- STEP 10**     On "Place a call" Window, **SELECT "per29281"**, and then **SELECT "CALL"**

**NOTE:** If connection cannot be made, then **CALL** the OSC and **ASK** someone to reboot priority status board computer. **VERIFY** automatically accept calls feature is "checked on" Call Menu, then **RETRY** previous step.

<p><b>CAUTION</b></p> <p>Failure to perform <b>STEP 11</b> will render that section of the screen unusable by the EOF and OSC</p>
---

- STEP 11**     **MINIMIZE** "NetMeeting" Window.
- STEP 12**     **MAXIMIZE** "Priority.wbd - ibid" Window.

**ATTACHMENT 10**

**Instructions for Establishing Priority Status (OSC Team) Board [PEACH BOTTOM]**

**Page 2 of 2**

**STEP 13**    **VERIFY** operation of the Priority Status Board by contacting the OSC & EOF after recording initial message

At the completion of drill/emergency, PERFORM the following:

**STEP 1**    On "NetMeeting" Window, **SELECT "CALL"**, and then **SELECT "HANG UP"**

**STEP 2**    From the START Menu, **SELECT "SHUT DOWN"**

**ATTACHMENT 11**  
**TSC Electronic Display Board Instructions [PEACH BOTTOM]**  
**Page 1 of 2**

**A. TO CREATE A NEW MESSAGE (Not on file):**

- STEP 1**      **SELECT: GEN FILE**
- STEP 2**      **TYPE** file name for file (must be 8 or less characters)
- STEP 3**      **PRESS: <ENTER>**
- STEP 4**      **EDIT** beginning at the character before the message
- STEP 5**      **PRESS: "FUNC"**, then **PRESS "TRAVEL SPEED"**, and **SELECT: 1**
- STEP 6**      **PLACE** desired features before each "MESSAGE/WORDS" by pressing "FUNC" followed by the desired feature
- STEP 7**      **TYPE: MESSAGE** (see attached "MESSAGE FILES")
- STEP 8**      **PRESS: <ENTER>**

**B. TO TRANSMIT MESSAGES (in file):**

- STEP 1**      **SELECT: SEL FILE**
- STEP 2**      **TYPE** desired file name (i.e., WELCOME, DRILLALE, DRILLSIT, etc.)
- STEP 3**      **PRESS: <ENTER>**
- STEP 4**      **PRESS: TRANSMIT**
- STEP 5**      Port? **SELECT: 1**
- STEP 6**      **PRESS: <ENTER>**

**C. IN THE EVENT OF A POWER OUTAGE (No message on screen):**

- STEP 1**      **SELECT: ERASE FILE**
- STEP 2**      **TYPE: ALL**
- STEP 3**      **PRESS: <ENTER>**

**ATTACHMENT 11**  
**TSC Electronic Display Board Instructions [PEACH BOTTOM]**  
**Page 2 of 2**

MESSAGE FILES

<u>File Name</u>	<u>File</u>
WELCOME	
DRILLALE	Roll center, spell, flash, "Welcome", split screen, burst "Technical Support", split screen, roll center, "Center"
DRILLSIT	Roll up, "This is a Drill", split screen, ripple, "Site Area Emergency", split screen, roll down, "This is a Drill", burst, "Site Area Emergency"
DRILLGEN	Roll up, "This is a Drill", split screen, ripple, "General Emergency", split screen, roll down, "This is a Drill", burst, "General Emergency"
ALERT	Spell, "Alert", Roll down, "Alert", split screen, "Emergency Classification is", split screen, burst, flash, "Alert", flash
SITE AREA	Roll center, "Site Area Emergency", scroll center, "Site Area Emergency", split screen, "Emergency Classificationis", split screen, zip, flash, "Site Area Emergency"
GENERAL	Roll center, "General Emergency", scroll center, "General Emergency", split screen, "Emergency Classificationis", split screen, zip, flash, "General Emergency"

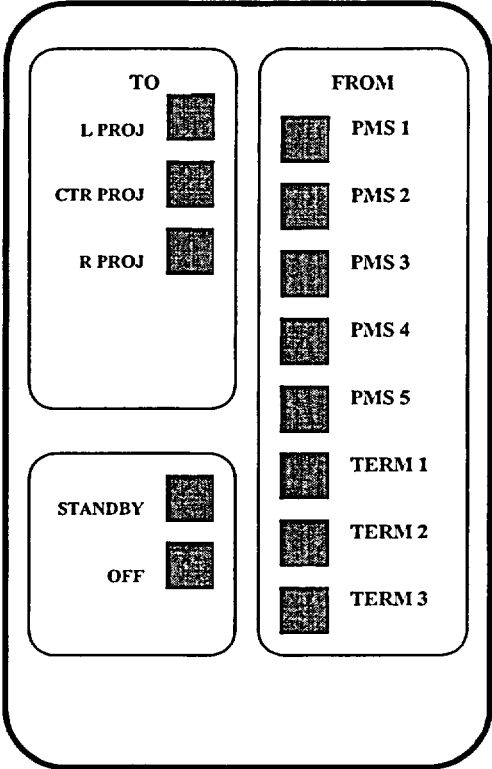
**ATTACHMENT 12**  
**TSC Overhead Projector Remote Control Instructions {PEACH BOTTOM}**  
Page 1 of 1

**TO**  
**L PROJ:** Press to control the left projector  
**CTR PROJ:** Press to control the center projector  
**R PROJ:** Press to control the right projector

**FROM**  
**PMS 1:** Displays PMS 1 on the selected projector  
**PMS 2:** Displays PMS 2 on the selected projector  
**PMS 3:** Displays PMS 3 on the selected projector  
**PMS 4:** Displays PMS 4 on the selected projector  
**PMS 5:** Displays PMS 5 on the selected projector  
**TERM 1:** Displays Terminal 1 on the selected projector  
**TERM 2:** Displays Terminal 2 of the selected projector  
**TERM 3:** Displays Terminal 3 on the selected projector

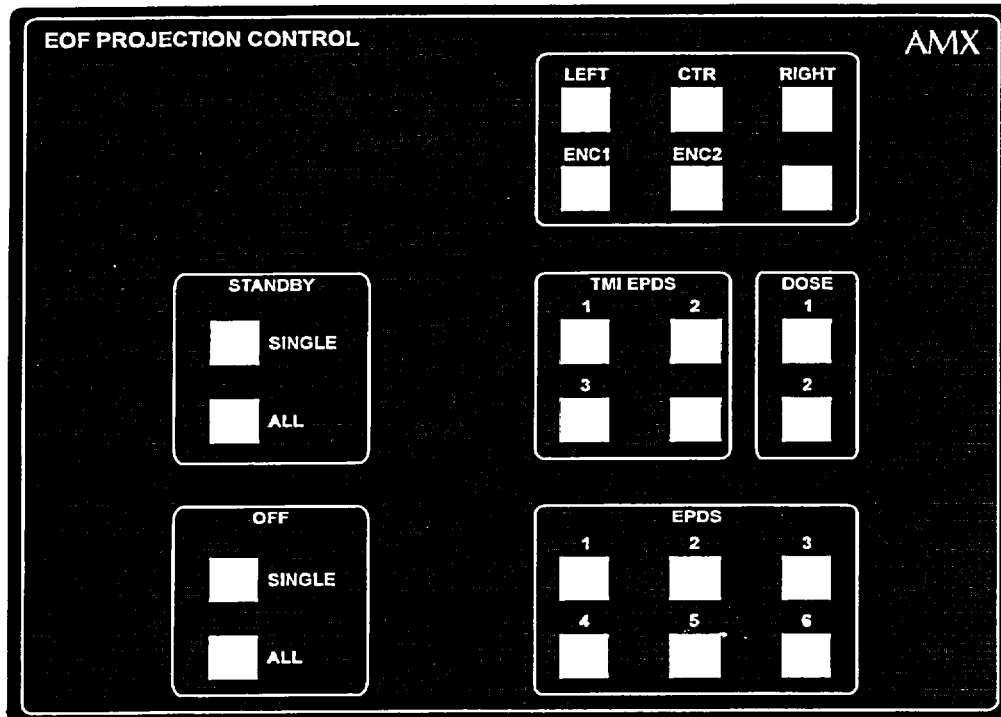
**STANDBY:** Toggles the selected projector into or out of the standby mode. Holding this key down for more than 2 seconds will toggle all the projectors. It is recommended to place the projectors in standby mode rather than turning them off, unless the projectors will not be used for more than 8 hours.

**OFF:** Turns the selected projectors off. If this key is held down for more than 2 seconds, all of the projectors are turned off.



**USER'S REMOTE**

ATTACHMENT 13  
Operation of the EOF Projector Controller  
Page 1 of 1



**Projector Selection and Powerup**

Selection a computer display on one of the following PCs: EPDS1, EPDS2, EPDS3, EPDS4, EPDS5, TMI1, TMI2, DOSE1, or DOSE2.

On the Projection Controller, press the projector button (LEFT, CTR, RIGHT, ENC1, or ENC2) for the projector on which you wish to project a PC display.

DO NOT SELECT PROJECTOR ENC1 or ENC2 WITHOUT CONCURRENCE FROM FACILITY MANAGEMENT.

Then press the source PC button

The screen will come down and the projector will warmup and countdown to "0" at which time the image seen on the PC will appear on the projector screen.

Repeat for up to two other PCs as desired.

At any time a PC display can be projected on one or more screens simply by pressing the projector button and then the source PC.

**To Darken a Screen without Deenergizing the Projector(s)**

To darken on display, press the projector button for the projector you wish to darken and then under the STANDBY group on the Projector Controller, press SINGLE.

To darken all projectors, press ALL under the STANDBY group on the Projector Controller To deenergize a display and raise the screen, press the projector button for the projector you wish to deenergize and then under the OFF group on the Projector Controller, press SINGLE.

To deenergize all projectors and raise all screens, press ALL under the OFF group on the Projector Controller

**To Deenergize a Projector(s)**

Note: Deenergizing a projector should not be done if the projector will be needed shortly (use STANDBY instead ) The unit will go through a timed cycle of several minutes before reenergizing if an attempt is made to turn it on immediately after turning it off.

**ATTACHMENT 14**  
**JPIC OUTLOOK Access**  
**Page 1 of 1**

The JPIC PCs, Writer 1 and writer 2, are equipped for use of Microsoft Outlook e-mail in both send and receive modes.

**A. Instructions for logging on to Outlook are as follows:**

- STEP 1** LOG ON either Writer 1 PC or Writer 2 PC in the normal manner.
- STEP 2** DOUBLE CLICK on the Outlook icon on the desktop. The Choose Profile window will appear.
- STEP 3** CLICK the arrow at the right side of the Profile Name box.
- STEP 4** SELECT your name from the list by clicking on it, and then CLICK on OK. The Enter Password Window will appear.

**NOTE:** If your name is not on this list, you do not have Outlook send/receive access from this location. You should arrange for a person whose name is on this list to log on.

- STEP 1** TYPE your normal LAN user ID in the password space. Example: U000ABC.
- STEP 2** ASSURE that the entry in the Domain Name box is pecouser, and then CLICK on OK.
- STEP 3** DELETE any other entry and type in pecouser as necessary.

**You are now logged onto Microsoft Outlook.**

**You CAN:**

- Send company e-mail
- Receive company e-mail
- Send internet e-mail
- Receive e-mail

**You CANNOT:**

- Save e-mails to the personal folders on your office PC if those folders are located on the hard drive of your office PC.
- Access e-mails in the personal folders on your office PC if those folders are located on your office PC hard drive.

**STEP 1** CLICK on the "Start" button on the task bar.

**ATTACHMENT 15**  
**News Writer / Chronological Events Description Log Users Guide**  
**Page 1 of 2**

**STEP 2**      **CHOOSE** the "Newswriter" icon.

**STEP 3**      After "Newswriter" loads:

- a.      Print out Biographies. After the JPIC has been staffed, biographies for the Spokespersons present need to be obtained.
- Click on "Biography" under the box for "Requested Document".
  - Select the appropriate file under the section marked "Biographies" by either double clicking on the file name or single click on the file and then click on "View".
  - Select "File" from the Toolbar at the top of the page, then select Print from the pulldown menu.
  - Repeat this process to obtain Biographies for all Spokespersons present.
- b.      Print out approved Press Releases. The News Writer prepares the Press Release by revising Boilerplate files in the program.
1. In the Newswriter program, Click on "Press Release" under the "Requested Document" box.
  2. Select the appropriate station by Clicking on the station under the "Station Name" box. Both the Boilerplate files and any unique Press Release files should now be listed under the "Press Release" box.

**NOTE:** If the file you want is not listed, you may need to refresh the Newswriter files by clicking on either Biographies or Chronological Events Description Log and then click back onto Press Release. The saved file should now appear.

3. Double Click on the file name for the Press Release that you want. The word processor should access the file.
4. Select "File" from the Toolbar at the top of the page, then select Print.
5. Exit the word processor to return to the Newswriter program.



**ATTACHMENT 15**  
**News Writer / Chronological Events Description Log Users Guide**  
**Page 2 of 2**

c. Print out approved Chronological Events Description Logs.

1. In the "Newswriter program, Click on "Chronological Events Description Log" under the "Requested Document" box.

**NOTE:** If the file you want is not listed, you may need to refresh the Newswriter files by clicking on either Biographies or Press Releases and then click back onto Chronological Events Description Log. The saved file should now appear.

2. Double click on the file name for the Chronological Events Description Log file that you want. The word processor should access the file.
3. Select "File" from the Toolbar at the top of the page, then select Print.
4. Exit the word processor to return to the Newswriter program.

**ATTACHMENT 16  
Offsite Siren Activation  
Page 1 of 2**

**Limerick / Peach Bottom**

TIME: _____ / DATE: ____/____/____	INITIALS
<b>1. INITIAL SIREN ACTIVATION INFORMATION:</b> a. Requesting Official: _____ (Name) _____ (Phone) b. Selected Sirens (All, County, Municipality, Single Siren(s): c. Date / Time authorization given: ____/____/____ at _____ d. Date / Time to activate: ____/____/____ at _____ e. Siren Mode (Alert or Attack): _____	
<b>2. COMPUTER ACTIVATION</b> (If required, otherwise N/A.) a. If computer is locked up or unresponsive, then <b>REBOOT</b> computer by either: <ul style="list-style-type: none"> <li>• Simultaneously <b>DEPRESS</b> "CRTL", "ALT" and "DELETE" keys; <u>or</u></li> <li>• <b>CYCLE</b> power switch (ON/OFF)</li> </ul>	
<b>3a. ACTIVATION OF ALL SIRENS:</b> (On REAC-3000 front panel) (1) Using "CURSOR" Up/Down Arrow buttons, <b>SELECT</b> appropriate siren mode (Alert or Attack) (2) <b>DEPRESS</b> "ENTER" button <b>twice</b>	
<b>3b. ACTIVATION OF SIRENS FOR A SINGLE COUNTY:</b> (REAC-300 panel) (1) Using "CURSOR" Up/Down Arrow buttons, <b>SELECT</b> appropriate siren mode (Alert or Attack) (2) <b>DEPRESS</b> "ENTER" button <b>once</b> (3) <b>DEPRESS</b> "CURSOR" Down arrow button <b>once</b> (4) <b>DEPRESS</b> "ENTER" button <b>once</b> (5) Using "CURSOR" Up/Down Arrow buttons, <b>SELECT</b> appropriate County and <b>LIST</b> below.  (6) <b>DEPRESS</b> "ENTER" button <b>once</b> (7) <b>DEPRESS</b> <u>red</u> "ACTIVATION" button	
<b>3c. ACTIVATION OF SIRENS FOR A MUNICIPALITY:</b> (REAC-300 panel) (1) Using "CURSOR" Up/Down Arrow buttons, <b>SELECT</b> appropriate siren mode (Alert or Attack) (2) <b>DEPRESS</b> "ENTER" button <b>once</b> (3) <b>DEPRESS</b> "CURSOR" Down arrow button <b>twice</b> (4) <b>DEPRESS</b> "ENTER" button <b>once</b> (5) Using "CURSOR" Up/Down Arrow buttons, <b>SELECT</b> appropriate Municipality and <b>LIST</b> below:  (6) <b>DEPRESS</b> "ENTER" button <b>once</b> (7) <b>DEPRESS</b> <u>red</u> "ACTIVATION" button	

ATTACHMENT 16  
Offsite Siren Activation  
Page 2 of 2

**Limerick / Peach Bottom**

3d. **ACTIVATION OF A SINGLE SIREN:** (REAC-300 panel)

- (1) Using "CURSOR" Up/Down Arrow buttons, **SELECT** appropriate siren mode (Alert or Attack)
- (2) **DEPRESS** "ENTER" button once
- (3) **DEPRESS** "CURSOR" Down arrow button three times
- (4) **DEPRESS** "ENTER" button once
- (5) Using "CURSOR" Up/Down Arrow buttons, **SELECT** the desired siren(s) and **LIST** below:  
  
- (6) **DEPRESS** "ENTER" button once
- (7) **DEPRESS** red "ACTIVATION" button

4. **REPORT** results of siren activation(s) to requesting authority.

**ATTACHMENT 17**  
**TSC Overhead Projector Display Instructions [LIMERICK]**  
**Page 1 of 2**

**LGS STATUS BOARD/DATA SYSTEM OPERATION**

**Goal:**

1. Provide good information flow.
2. Get data systems up and running.

**Terminals:** (Start-up as appropriate)

1. PMS - 2(two) terminals next to drafting table.
2. Simulated PMS - behind security table. - used in drills if simulator is playing.
3. EPDS - 3(three) terminals in cubicles. Subset of PMS has RAD & MET data also. Transmits data to NRC.

**Lights:**

1. Dim lighting so that screens are easier to read.
2. Main switches are by the entrance and the door to the engineering room.

**Hand Held Control Box:**

1. Activates one-gun and pull down screens.
2. Located near the EP Director on desk.
3. To activate hit any one of the purple buttons to get box to light up in order to see the Touch Menu.
4. Select the "Emergency Management" button on the touch menu.
5. First, select a screen ( left, center, right ) and then second, select computer terminal data (PMS1, PMS2, SimPMS, EPDS1, EPDS2, EPDS3) you want displayed on that screen.
6. Typical setup is to use EPDS1(right screen), EPDS2(center screen), & EPDS3(left screen).
7. To turn off select the "Exit" button and then the "All Off" button.

**ATTACHMENT 17**  
**TSC Overhead Projector Display Instructions [LIMERICK]**  
**Page 2 of 2**

EPDS Terminals:

1. When you turn them on they will automatically come on with EPDS running.
2. Numbers on the terminal correspond to with the Hand Held Control Box touch pad menu.
3. Maximize screen.
4. Select Plant Unit / Simulator(drill only) from the pull down menu at the top.
5. Technical support group lead will provide info on what unit/data to display in a real emergency.
6. Typical Setup:
  - EPDS1 - Accident Unit – 12 DAS Display (right screen)
  - EPDS2 - Accident Unit – 0 Plant Overview (center screen)
  - EPDS3 - Accident Unit – 1 Summary Display (left screen)
7. Be familiar with the screens and what data is available on each.
8. The Plant Overview screen has a trending option. Double-click on any parameter and it will give you a 30 min. trend of that parameter. The "Scale" option from the pull down menu allows you to change the scale setup.
9. The "Playback" option from the pull down menu gives a Trend Playback.

Priority Status Board:

1. Information written on board displays at the EOF and OSC, the computer terminal next to the board displays what they see.
2. Board is pressure sensitive.
3. Follow the instructions on the card. The card has two sides - one with detailed instructions and one with simplified instructions.
4. To write on board select a pen - (as a rule use black) and write with the black marker.
5. To erase select Erase (broad or narrow) then erase.

*Helpful Hint:* When the director changes priorities press the erase button and quickly mark the new priorities in small numbers next to the old priorities. (Since the erase button was pressed the small new priority numbers will not show at the other sites.) Then press erase and erase the old priority numbers, press the black pen and write the new priorities in large numbers. This saves time and allows you concentrate on what the director is communicating.

6. The "Snapshot" button allows you to take a snapshot of the board to be stored in the computer.

## DOSE ASSESSMENT

### 1. PURPOSE

- 1.1. This procedure provides guidance for performing offsite radiological dose assessments during an emergency using Dose Assessment and Protective Action Recommendation (DAPAR) Program for Limerick Generating Station (LGS) and Peach Bottom Atomic Power Station (PBAPS).
- 1.1.1. As a Windows-based application designed in Microsoft ACCESS, DAPAR uses many standard user interfaces. Instructions are not provided in basic computer operations in the Windows® environment. The user must be familiar with these to efficiently operate the program. It is also assumed user is familiar with health physics fundamentals. Emergency Response Organization (ERO) training will provide an overview of dose assessment methodologies.

### 2. TERMS AND DEFINITIONS

- 2.1. Centerline (plume): An imaginary line drawn in the middle of the plume along its downwind travel direction. The plume concentrations and deposition are assumed to be the highest along the centerline.
- 2.2. Cloud Shine: Gamma radiation from radioactive materials in the air (plume).
- 2.3. Committed Dose Equivalent (CDE): Committed dose equivalent means the dose equivalent to organs or tissues of reference (T) that will be received from an intake of radioactive material by an individual during the 50-year period following the intake.
- 2.4. 2.4 Committed Effective Dose Equivalent (CEDE): Committed effective dose equivalent is the sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent (CDE) to these organs or tissues. Thyroid values are taken from EPA-400, Table 5-4 to be consistent with the NRC RASCAL dose assessment program used by the Pennsylvania Emergency Management Agency (PEMA) / Bureau of Radiation Protection (BRP). Actual meteorology is used, since it gives the most accurate dose projection.
- 2.5. Core Damage: Damage to the components that comprise the reactor core. Core damage typically refers to the failure of fuel cladding and/or fuel melting as a result of overheating.

- 2.6. Curie (Ci): A unit of radioactivity equal to  $3.7E+10$  disintegrations per second.
- 2.7. DAPAR: Dose Assessment and Protective Action Recommendation (DAPAR) software provides two major functions (Quick Assessment and Full Assessment) in order to perform dose assessment. (Refer to Attachment 1 for a Basis System Flow Diagram.)
- A. **Quick Assessment** is used by the Shift Dose Assessor to arrive at offsite dose projections and PARs, or to verify classifications in as prompt a time as possible during fast breaking events without taking too much time away from their event mitigating actions. A monitored release is the only method used in the quick assessment. Some assumptions and standard numbers are used to limit the amount of data Control Room personnel must enter prior to calculating a PAR.
- B. **Full Assessment** is used by the called-in ERO Staff in the TSC/EOF and allows for more detailed assessment of a release. The following methods may be used to project offsite doses:
- **Monitored Release**: Offsite radiological assessment related to a monitored value taken at one of several release locations (Plant Vent Stack, Waste Processing Vent Stacks and Turbine Building Vent Stack) within the plant.
  - **Containment Leakage / Failure**: Offsite radiological assessment related to a default, known, or predicted level of containment leakage or failure.
  - **Field Team Survey and Sample Analysis**: Offsite radiological assessment related to comparisons of field team radiological survey and isotopic sample concentrations with predicted plume dispersion.
  - **Release Point Sample Analysis**: Offsite radiological assessment related to a measured isotopic concentration taken at the point of release to the environment.
- 2.8. Delta T: The difference in temperature from the lower temperature sensor and the upper temperature sensor on the Exelon meteorological tower. Delta T is used to calculate stability class.
- 2.9. Deposition: The contamination found on the surface of the ground.
- 2.10. Dose Commitment: The dose that will be accumulated by a specific organ over a specified period following uptake.
- 2.11. Dose Conversion Factor (DCF): The dose equivalent per unit intake of a radionuclide (mrem/uCi) or the effects of exposure to a given concentration of an isotope in a plume. R/hr per uCi/cc.

- 2.12. Dose Projection: The calculation of individual radiation exposure at a given location at some time in the future. Dose projections are performed in response to an actual or anticipated release of radioactive material to the environment.
- 2.13. Emergency Planning Zone (EPZ): An area around a nuclear power plant in which plans are in place for an emergency at the plant. Plans are in place to take immediate protective actions for individuals located within 10 miles of the Nuclear Plants. This area is called the Plume Exposure Emergency Planning Zone. In addition, longer-term plans are in place for the Ingestion Pathway Emergency Planning Zone which is within 50 miles of the plant.
- 2.14. Evacuation Exposure Period: The period during which those being evacuated are exposed to the radioactive plume.
- 2.15. Millirem (mR): One one-thousandth of a Rem. The Rem is a unit of measure that defines the extent of biological injury that results to the body when it is exposed to radiation.
- 2.16. Emergency Preparedness Data System (EPDS): Electronic graphical display of plant, meteorological and radiological data needed for accident and dose assessment.
- 2.17. Protective Action Guidelines (PAGs): Radiation exposure guidelines established by the Environmental Protection Agency which are used to determine the appropriate protective actions to be taken on the part of emergency workers and the general public. These actions include sheltering and evacuation.
- 2.18. Protective Action Recommendations (PARs): A recommendation made by Exelon personnel to the offsite authorities on the appropriate protective actions to be taken on the part of the general public. The PARs are based on plant conditions or dose projections using the PAGs for guidance.
- 2.19. Release in Progress: Defined as ANY radioactive release that is a result of, or associated with, the emergency event.

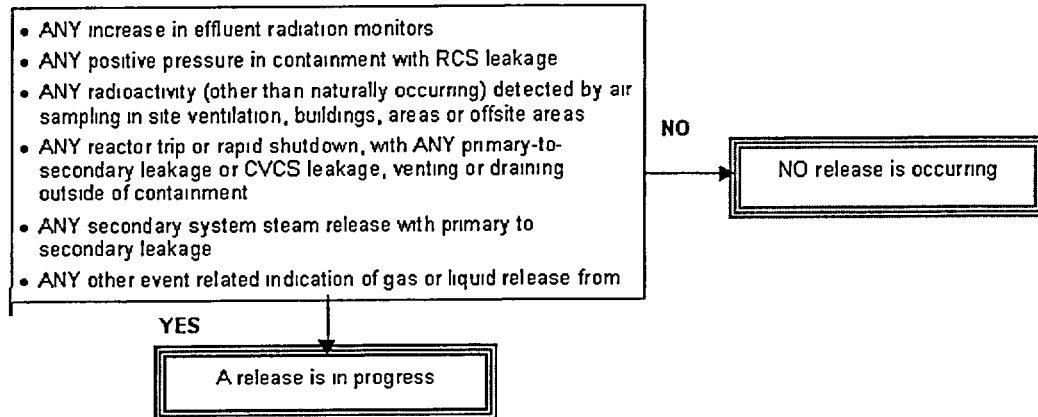
The definition requires the assessment of both plant conditions and effluent monitors to fully evaluate the situation.

- If effluent monitors show an obvious increase, there is a release.
- If effluent monitors show a minor increase, a pathway from RCS to Containment to Environment must be evaluated.
- If effluent monitors are by-passed, a pathway from RCS to Containment to Environment must be evaluated.



An illustration is as follows (Note that these MUST be associated with the particular event):

**Have ANY of the following occurred?**



- 2.20. Safety Relief Valve: A valve that serves to reduce excessive pressure in the Reactor Coolant System (RCS) to protect them from being damaged by excessive pressure.
- 2.21. Site Boundary: For classification and dose projection purposes, the Site Boundary is the Exclusion Area Boundary, a 2500-foot (LGS) / 2700-foot (PBAPS) radius around the plant. The actual boundary is specified in the ODCM.
- 2.22. Station Vent: That part of the plant's ventilation system through which the containment building and auxiliary building air may be processed to the outside atmosphere. The discharge of the station vent is continuously monitored for abnormal amounts of radiation and would be isolated long before radiation levels approach federal limits.
- 2.23. Sectors: Pre-designated areas offsite in which Protective Actions such as evacuation will be recommended.
- 2.24. Total Effective Dose Equivalent (TEDE): Total Effective Dose Equivalent (TEDE) means the sum of the deep-dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures). For the purpose of this procedure TEDE also includes 4 days of deposition exposure.

3. **RESPONSIBILITIES**

- 3.1. An on-shift Radiation Protection Technician (RPT) at the unaffected station shall serve as the **Shift Dose Assessor** and perform required dose assessments prior to responsibility being transferred to either the Technical Support Center (TSC) or Emergency Operations Facility (EOF).
- 3.2. The **TSC Radiological Controls Coordinator** shall relieve the Shift Dose Assessor and perform required assessments if the transfer of PAR / dose assessment responsibilities to the EOF is delayed.
- 3.3. The **EOF Dose Assessor** shall relieve the TSC Radiological Controls Coordinator when directed by the EOF Dose Assessment Coordinator, and perform required dose assessments. Responsibility for dose assessments can be assumed directly from the Shift Dose Assessor.

4. **MAIN BODY**

4.1. **Initiating Conditions:**

- 4.1.1. An emergency has been declared; **AND**
- 4.1.2. Events require the calculation of radiological effects due to an actual or potential release of radioactive materials near or beyond the site boundary.

**CAUTION**

Use of the program to project doses based on normal plant readings would indicate offsite doses many magnitudes higher than actual offsite doses. The program should not be used to calculate the actual dose received by populations. As part of the post accident investigations, a more in depth analysis is needed to actually assign doses received to members of the public.

4.2. Start Up

4.2.1. If the main computer screen has DAPAR icons, **then USE** left mouse click on the icon to start the program.

**NOTE:** Backups to the hard drive DAPAR software are a common network drive on the LAN and CD-ROM disk with each dose assessment computer.

The common drive paths are:

- Limerick Generating Station (LGS):  
\\PECO\.PBS2\_DATA1.PBS\_SRVS.PBS.PECO\EP\_DAPAR
- Peach Bottom Atomic Power Station (PBAPS):  
\\PECO\.PBS2\_DATA1.PBS\_SRVS.PBS.PECO\EP\_DAPAR

1. If the assigned Dose Assessment Computer cannot access the program over the Exelon LAN or the DAPAR program will not run, **then INSTALL** the program on any computer from backup CDs or Disks located in the OSC, TSC or the EOF.

4.2.2. **VERIFY** that the correct station version of the DAPAR program is being used.

**NOTE:** There is a different version of DAPAR for each Station. Refer to Figures 1-1 & 1-2. Each version takes into account different release points and gaseous effluent radiation monitor conversion factors.

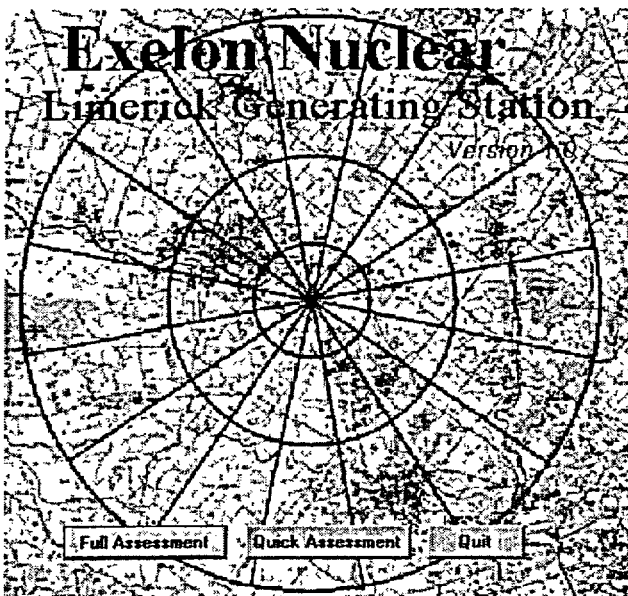


Figure 1-1

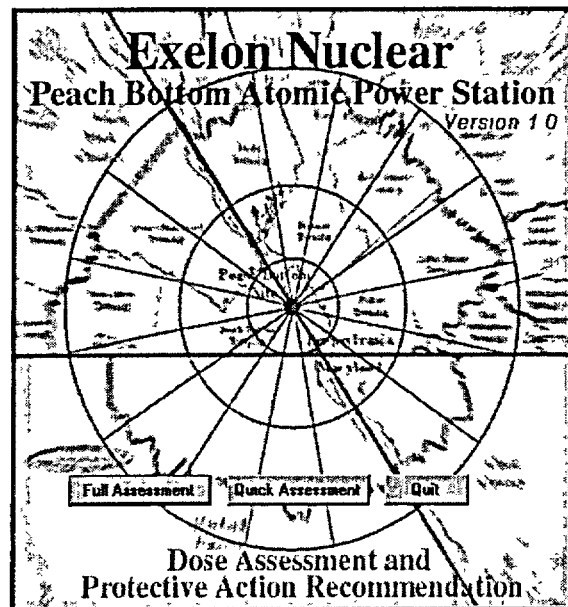


Figure 1-2

**CAUTION**

Once the User selects "Quick Assessment" or "Full Assessment," returning to the title screen will reset all program values.

- 4.2.3. From the Title Screen, **SELECT** either "Full Assessment" or "Quick Assessment" and then **GO TO** either:
1. QUICK ASSESSMENT – Section 4.3
  2. FULL ASSESSMENT – Section 4.4
- 4.2.4. **PROVIDE** the DAPAR Input Sheet (Attachment 7) to the following individual, based on facility, for system / event status information:
- Control Room → STA/Independent Assessor (or Shift Manager)
  - TSC → Operations Communicator (or Operations Manager)
  - EOF → Operations Advisor (or Technical Support Manager)

4.3. Quick Assessment: (Figures 2-1 & 2-2)

NOTE: The Quick Assessment operations and calculations are identical to the Full Assessment method for a monitored release, but uses a default release path and core damage assumptions for the determination of offsite doses. This allows for a rapid assessment from the Main Control Room.

Figure 2-1: LIMERICK

Figure 2-2: PEACH BOTTOM

4.3.1. *Monitor Information* – User chooses the appropriate monitor from the listed effluent monitors.

1. **SELECT** the applicable release point:

STATION	MONITOR	READOUT
Limerick	North Stack	$\mu\text{Ci}/\text{sec}$
	South Stack	$\mu\text{Ci}/\text{cc}$
Peach Bottom	Main Stack	$\mu\text{Ci}/\text{sec}$
	Vent (Rx Bldg) Stack	$\mu\text{Ci}/\text{sec}$
	Torus Vent	cpm

- REFER to Attachment 5 to obtain data from Emergency Preparedness Data System (EPDS) to input into DAPAR.

- 4.3.2. **ENTER** *Reading* Information – Enter the appropriate monitor reading.
- 4.3.3. **ENTER** *Time After Shutdown* Information – Enter the time since the reactor was shutdown in hours and minutes (hh:mm).
- 4.3.4. **ENTER** *Meteorological Data* – Enter the appropriate data from plant instruments as follows:
1. If meteorological data (wind speed / direction and stability class) are **NOT** available via EPDS or locally in Control Room, **then GO TO** Attachment 2.

**NOTE:** The conditions Good or Adverse in the following step are in relation to the weather. Adverse is heavy rain or any other condition that would hinder the flow of traffic.

- 4.3.5. **CLICK ON** the *Conditions* button to open the Weather Conditions Window (Figure 3).

Figure 3

1. **SELECT** the appropriate conditions for the program to calculate the Maximum Evacuation Time Estimate (ETE).
- NOTE:** Once the user sets the evacuation conditions, the program will place the Max ETE value in the *Release Duration* and *Max ETE* text boxes.
- 4.3.6. Under *Release Duration*, **CHANGE** the displayed time to the known release duration.
1. If a good estimate of the release duration cannot be determined, **then USE** the default ETE value entered by the program.
- 4.3.7. **SELECT** the *PARs* button – The program will calculate the downwind doses based on user inputs and display Protective Action Recommendation Window. **GO TO** Section 4.9.

4.4. Full Assessment

The Full Assessment operations and calculations are identical to the Quick Assessment method for a monitored release, but it allows the user to make more choices in performing dose projection calculations.

Choosing the Full Assessment option directs the program to a baseline data entry window (Figure 4). The window is divided into four input areas.

Figure 4

4.4.1. **Source Term** – This allows user to choose the appropriate source term depending on plant conditions and the type of accident that has occurred:

1. **SELECT** *Reactor Core Accident* if the source of the release is from the reactor core.
  - A. Under “Type of Damage”, **SELECT** *Gap* or *Melt*.
  - B. **ENTER** the % *Damage* based on core damage estimates or known conditions in the plant.

2. **SELECT *Spent Fuel Accident*** if the release is caused by damage to the spent fuel.

A. Under "Fuel Type", **CHOOSE** between *New Fuel* or *Old Fuel*.

B. Under "Fuel Status", **CHOOSE** between *Under Water* or *Dry*.

**NOTE:** The program uses a gap release scenario and defaults to a reactor Time After Shutdown based on this choice.

**Limerick only**

3. **SELECT *Backwash Demin Spectrum*** if the release results from a backwash operation.



4.4.2. **Dominant Release Path** – This allows user to choose the most appropriate release path: (Figures 5-1 & 5-2)

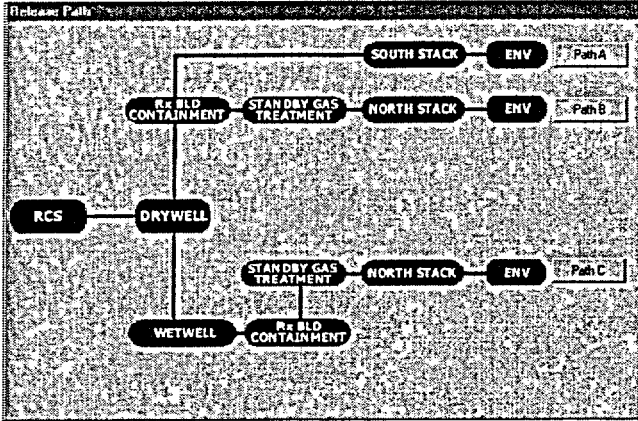


Figure 5-1: LIMERICK

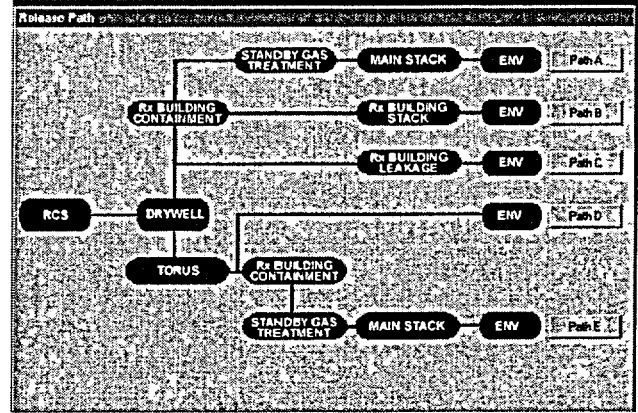


Figure 5-2: PEACH BOTTOM

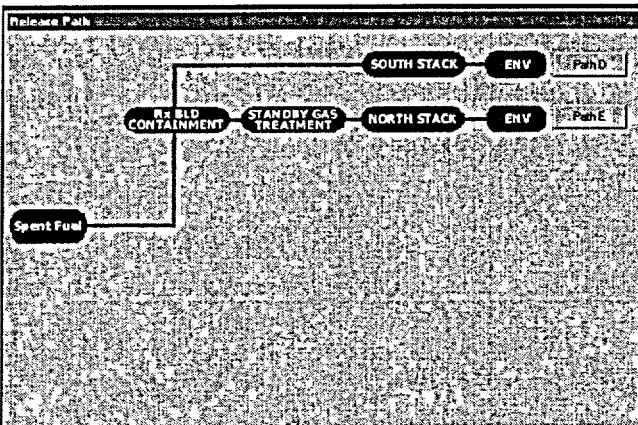


Figure 5-1: LIMERICK (Cont'd)

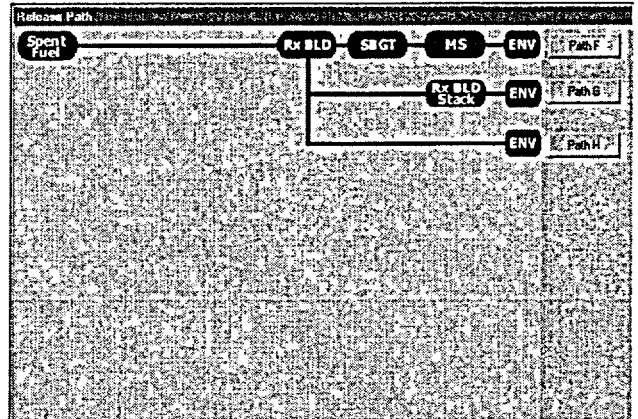
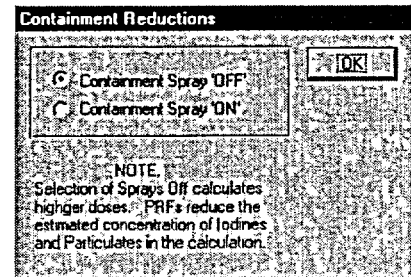


Figure 5-2: PEACH BOTTOM (Cont'd)

1. If a release through containment or drywell is chosen, then **DETERMINE** if containment sprays are 'ON' or 'OFF'. (Figure 6)



2. DETERMINE Containment / Drywell holdup time, and SELECT the appropriate condition. (Figure 7)

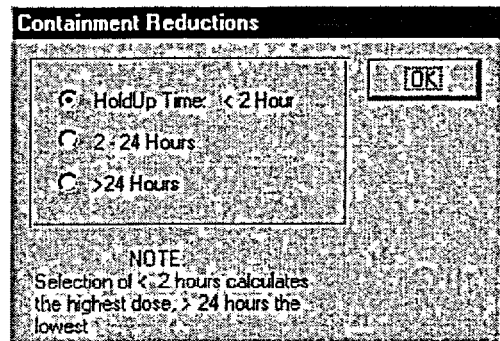


Figure 7

3. If a release through the Aux Bldg or Rx Bldg., then DETERMINE the building holdup time. (Figure 8)

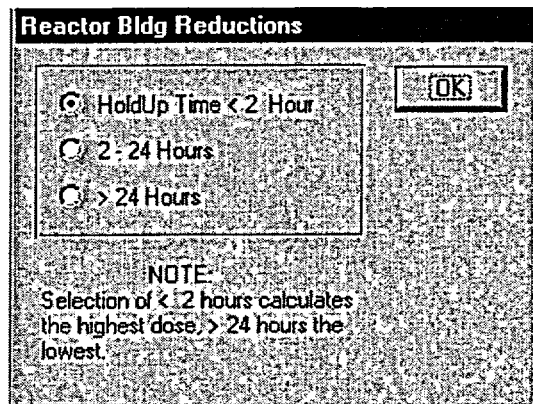


Figure 8

4. SELECT Torus - PBAPS (Figure 9a) or Wetwell - LGS (Figure 9b):

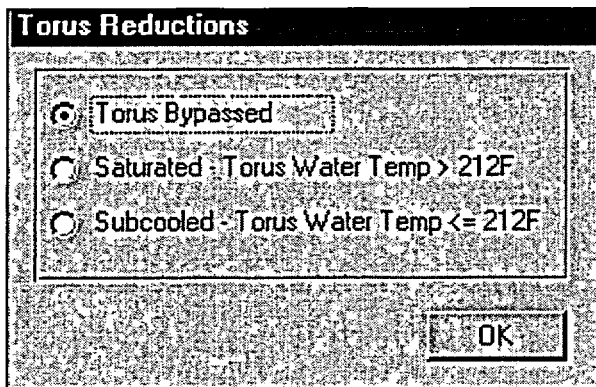


Figure 9a

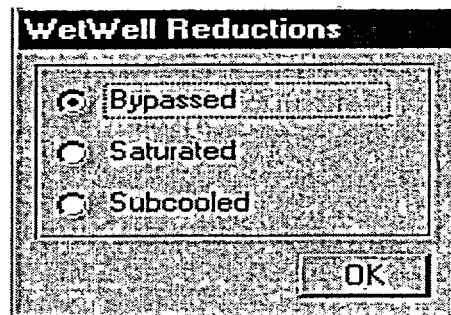


Figure 9b

5. If a release through a filtered Vent or SBT, then **CHOOSE** if the filters are working or not. (LGS: Figure 10a & b / LGS: Figure 10c)

**NOTE:** If the release has been ongoing for a long time or contains a large amount of liquids filters may not be working.

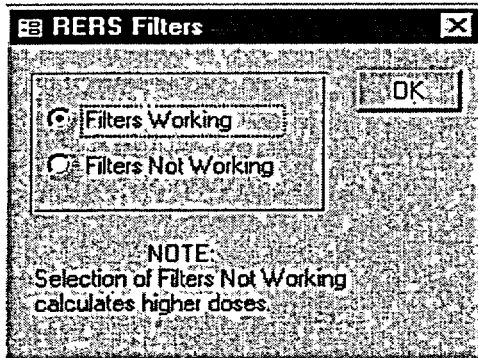


Figure 10a (LGS)

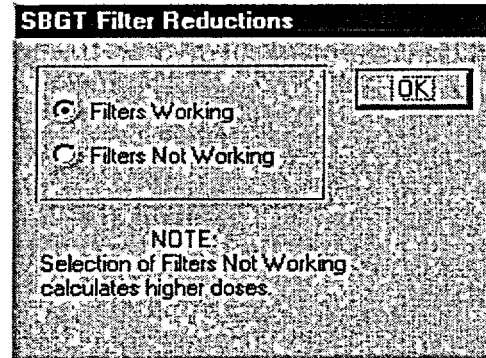


Figure 10b (LGS)

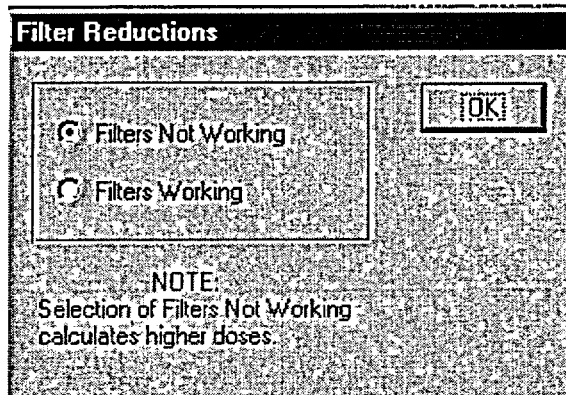


Figure 10c (PBAPS)

- 4.4.3. **ENTER Meteorological Data** – Enter the appropriate data from plant instruments.
- 4.4.4. **Assessment Methods** – **CHOOSE** the appropriate assessment method based on available inputs. Assessment methods:
1. **Monitored Release** – **SELECT** this method for a release through a monitored release point such as the main stack or Rx Bld vent stacks or through the Main Steam Relief Valves. **GO TO** Section 4.5.
  2. **Containment Leakage** – **SELECT** this method for containment failure scenarios. **GO TO** Section 4.6.
  3. **Field Team Data** – **SELECT** this method if field team survey or sample data is available. **GO TO** Section 4.7.
  4. **Release Path** – **SELECT** this method if a sample of a release has been obtained and a release flow rate can be estimated. **GO TO** Section 4.8.

4.5. Monitored Release (Figure 11)

Distance (miles)	External DDE (mRem)	External DDE (mRem)	Inhalation CEDE (mRem)	4 Day Deposition DDE (mRem)	4 Day TEDE Dose (mRem)	Thyroid CEDE (mRem)
0.5	<1	<1	<1	<1	<1	2.95E-01
1.0	9.98E+00	2.56E+01	4.43E+00	2.86E+00	3.29E+01	2.00E+02
1.5	1.87E+01	4.80E+01	8.30E+00	5.37E+00	6.17E+01	3.74E+02
2.0	1.92E+01	4.93E+01	8.51E+00	5.51E+00	6.33E+01	3.84E+02
2.5	1.55E+01	3.98E+01	6.87E+00	4.44E+00	5.11E+01	3.10E+02
3.0	1.34E+01	3.43E+01	5.92E+00	3.83E+00	4.40E+01	2.67E+02
3.5	1.10E+01	2.83E+01	4.89E+00	3.16E+00	3.64E+01	2.21E+02
4.0	9.29E+00	2.38E+01	4.12E+00	2.66E+00	3.06E+01	1.86E+02
4.5	7.79E+00	2.00E+01	3.46E+00	2.23E+00	2.57E+01	1.56E+02
5.0	5.78E+00	1.48E+01	2.56E+00	1.66E+00	1.91E+01	1.16E+02

Figure 11

4.5.1. SELECT the applicable release point:

STATION	MONITOR	READOUT
Limerick	North Stack	µCi/sec
	South Stack	µCi/cc
Peach Bottom	Main Stack	µCi/sec
	Vent (Rx Bldg) Stack	µCi/sec
	Torus Vent	cpm

4.5.2. ENTER Reading Information – Enter the appropriate monitor reading.

4.5.3. SELECT the *Print* button to print a report of offsite dose projections based on the monitored release.

- REFER to Attachment 3, Dose Assessment Report (Printout).
- REFER to Attachment 6 to save report(s) as ADOBE Acrobat file.

1. SELECT a different monitor and/or change readings to recalculate doses.
2. SELECT the *Back* button to change input data on Full Assessment Form.

4.5.4. SELECT the *PAR* button to view PAR form – GO TO section 4.9.

4.6. Containment Leakage/Failure (Figure 12)

Distance (miles)	External DDE (mRem)	Inhalation CEDE (mRem)	4 Day Deposition DDE (mRem)	4 Day TEDE Dose (mRem)	Thyroid CEDE (mRem)
0.5					
1.0					
1.5					
2.0					
2.5					
3.0					
3.5					

Figure 12

4.6.1. **SELECT** the appropriate containment release mode:

1. *Leakage* – Program defaults to the Design Leakage rate per the station UFSAR. If a different percentage of leak rate has been calculated by TSC engineers enter that value in the % per day text box.
2. *Failure to Isolate* – Assumes 100% of the isotopes available for release are released in a 24 hour time period.
3. *Catastrophic Failure* -- Assumes 100% of the isotopes available for release are released in a 1 hour time period.

4.6.2. [After User enters data the program calculates offsite doses] **PERFORM** one of the following:

1. **SELECT** the *Print* button to print offsite dose projections based on containment failure.
  - REFER to Attachment 3, Dose Assessment Report (Printout).
  - REFER to Attachment 6 to save report(s) as an ADOBE Acrobat file.
2. **SELECT** the *Back* button to change input data on Full Assessment Form.
3. **SELECT** the *PAR* button to view PAR form – GO TO section 4.9.

4.7. Field Team Analysis (Figure 13)

The program calculates the plume Travel Time and Release Time to allow Dose Assessment personnel to compare previous dose assessment reports with data measured in the field.

4.7.1. *Dose Rate Survey* – **SELECT** this method if Field Team Survey Data is available.

4.7.2. *Air Sample Results* – **SELECT** this method if Field Team Air Sample Data is available.

**Field Team Analysis**

**Analysis Basic**

Survey  Sample

Downwind (miles):

Crosswind (miles):

Level (mR/hr):

Survey Time: 0 00

Print F4: FAS Back

**PAG Exceeded At (miles)**

Travel Time:

Release Time:

Field X/Q:

Release Dur: 4:00

Isotope	Concentration (uCi/cc)
Kr-85	
Kr-85m	
Kr-87	
Kr-88	
Xe-131m	
Xe-133	
Xe-133m	
Xe-135	
Xe-138	
I-131	

**NOTE:**  
Field team dose and dose rate values based on rad level surveys only include the external exposure component.  
Values should be used for comparison purposes, not as the basis for making Protective Action Recommendations.

Distance (miles)	Centerline X/Qs	Dose Rate (mR/Hr)	Dose (mRem)
0.5	1.06E-03		
0.5	8.75E-04		
1.0	2.78E-04		
1.5	1.45E-04		
2.0	9.33E-05		
2.5	6.74E-05		
3.0	5.23E-05		

Figure 13

4.7.3. **ENTER** the Field Team information as follows:

**NOTE:** The program will not allow "mr/hr" readings for sample data or isotopic results for survey data.

1. **ENTER** *Downwind (miles)* – straight-line distance from release point to sample location.
2. **ENTER** *Crosswind (miles)* – the distance the team was away from the centerline when the sample was taken. The program will warn user if reported sample location is wider than expected plume width
3. **IF** the analysis basis is *Dose Rate Survey*– **ENTER** the Field Team Survey reading in "mR/hr" into the box labeled *Level*.
4. **IF** Analysis basis is *Air Sample Results* – **ENTER** the uCi/cc values for each known isotope in the table at the upper right section of the form.

**NOTE:** Prior to obtaining analysis results from field air sample, the I-131 concentration, in uCi/cm<sup>3</sup>, calculated using the KI Spreadsheet Program per EP-MW(MA)-110-100 shall be used.

5. **ENTER** *Survey Time* – Enter the time the survey or sample was taken.

4.7.4. [After User enters data the program calculates offsite doses] **PERFORM** one of the following:

1. **SELECT** the *Print* button to print offsite dose projection reports based on Field Team Analysis.
  - **REFER** to Attachment 3, Dose Assessment Report (Printout).
    - A. **REFER** to Attachment 6 to save report(s) as an ADOBE Acrobat file.
2. **SELECT** the *Back* button to change input data on Full Assessment Form.
3. **IF** Field Team samples were the selected basis, **SELECT** the *PAR* button to view PAR form – **GO TO** section 4.9.

4.8. Release Point Analysis (Figure 14)

Isotope	Concentration (uCi/cc)
Kr-85	
Kr-85m	
Kr-87	
Kr-88	
Xe-131m	
Xe-133	
Xe-133m	
Xe-135	

Vent Flow Rate (SCFM):

Release Duration (hh:mm):

Release Height:

PAG Exceeded At (miles):

Buttons: PARs, Print, Back

Distance (miles)	External Dose (mRem)	External DDE (mRem)	Inhalation CEDE (mRem)	4 Day Deposition DDE (mRem)	4 Day TEDE Dose (mRem)	Thyroid LDE (mRem)
0.5						
1.0						
1.5						
2.0						
2.5						
3.0						
3.5						

Figure 14

- 4.8.1. **ENTER** the known *Isotopic Concentration* for each isotope (if unknown leave blank).
- 4.8.2. **ENTER** *Vent Flow Rate* (or estimate flow rate for other releases) in SCFM.
- 4.8.3. [After User enters data the program calculates offsite doses] **PERFORM** one of the following:
  1. **SELECT** the *Print* button to print offsite dose projections based on Release Point Analysis.
    - REFER to Attachment 3, Dose Assessment Report (Printout).
    - REFER to Attachment 6 to save report(s) as an ADOBE Acrobat file.
  2. **SELECT** the *Back* button to change input data on Full Assessment Form.
  3. **SELECT** the *PAR* button to view PAR form – **GO TO** section 4.9.



4.9. Protective Action Recommendations (Figure 15)

The Protective Action Recommendation (PAR) form displays a summary of the downwind dose projections with a map showing which Sectors (colored areas) where Protective Actions Recommendations should be made.

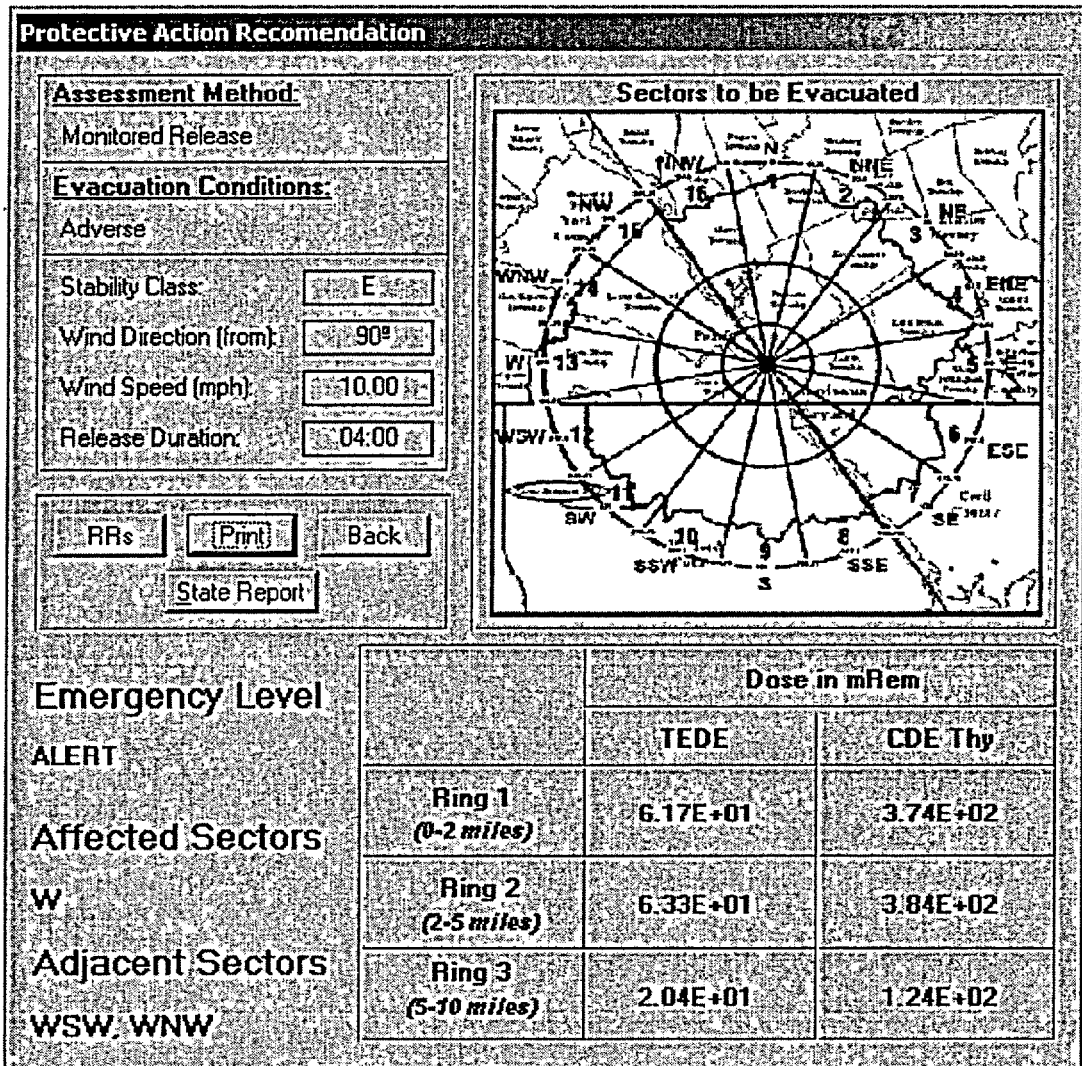


Figure 15

- 4.9.1. The *RR* button will display the total release rates for isotopic groups in Ci/sec. (Figure 16)

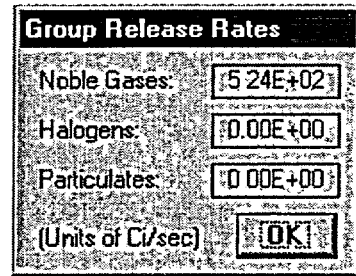


Figure 16

- 4.9.2. **SELECT** the *Go Back* button and modify inputs. This will return user to either Quick Assessment Form or one of the Assessment Method forms available in the Full Assessment mode.
- 4.9.3. **SELECT** *Print* to print the PAR report.
- **REFER** to Attachment 4, PAR Report (Printout).
  - **REFER** to Attachment 6 to save report(s) as an ADOBE Acrobat file.
- 4.9.4. **SELECT** the STATE REPORT button to display DAPAR BRP PARAMETER REPORT and **PRINT** copy of form.
- 4.9.5. After each dose calculation is performed, **FAX STATE REPORT** and copies of associated Dose Assessment and PAR Reports to the Pennsylvania Emergency Operations Center (EOC) – Attention “BRP”.

5. **DOCUMENTATION:**

None

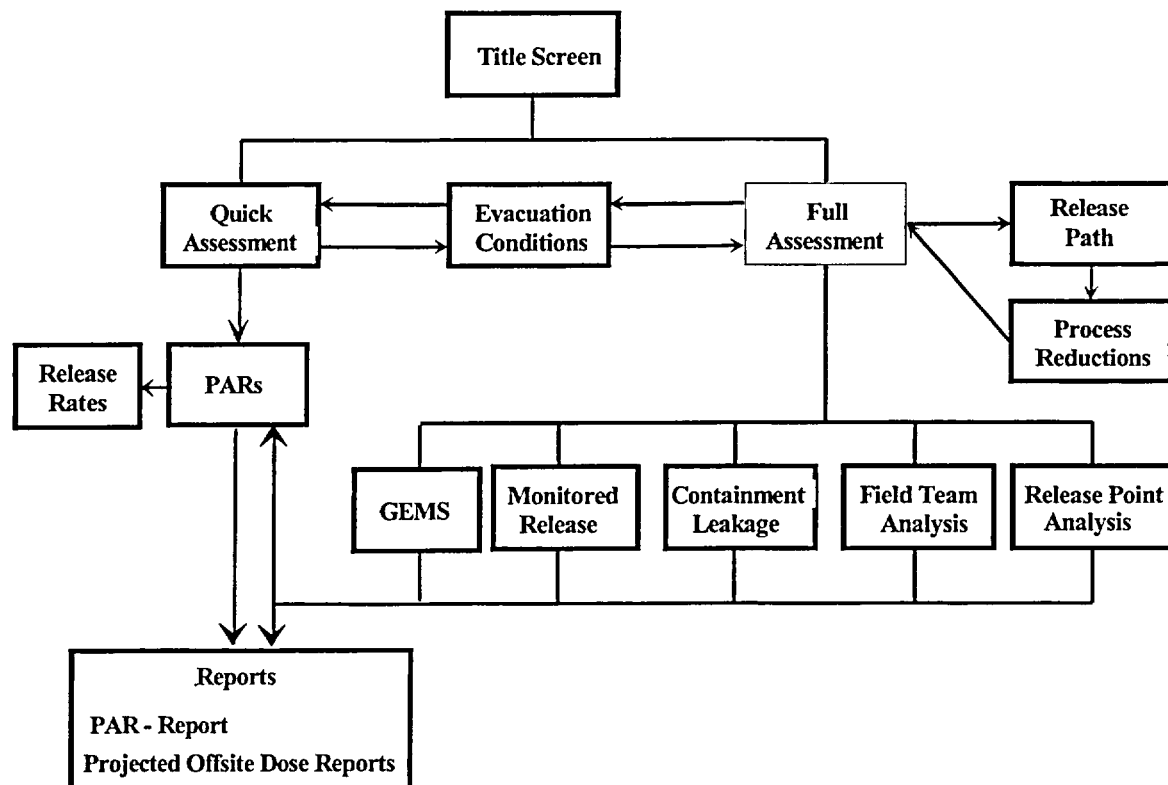
6. **REFERENCES**

- 6.1. Exelon DAPAR Program Software Requirements Specification
- 6.2. Commitments - None

7. **ATTACHMENTS**

- 7.1. Attachment 1, Basic Program Flow Diagram
- 7.2. Attachment 2, Determination of Stability Class
- 7.3. Attachment 3, Sample Dose Assessment Report
- 7.4. Attachment 4, Sample Protective Action Recommendation (PAR) Report
- 7.5. Attachment 5, EPDS Radiological and Meteorological data
- 7.6. Attachment 6, ADOBE Acrobat File Saving
- 7.7. Attachment 7, DAPAR Input Sheet
- 7.8. Attachment 8, DAPAR BRP Report – Full Assessment (EXAMPLE)

**ATTACHMENT 1**  
**BASIS PROGRAM FLOW DIAGRAM**



The above diagram shows basic tasks that can be performed by the DAPAR program and how a user would navigate between them.

There are two methods available to perform calculations:

1. **Quick Assessment** - Normally used by the Control Room and TSC Dose Assessors to quickly determine the appropriate Protective Action Recommendation for a gaseous effluent monitored release point. Program automatically picks conservative choices, limiting the number of user inputs needed to get results.
2. **Full Assessment** - Normally used by EOF Dose Assessor, and TSC Dose Assessor if EOF activation is delayed. Program allows for more choices and user inputs to provide analysis of different releases and/or field monitoring data.

**ATTACHMENT 2**  
**DETERMINATION OF STABILITY CLASS**  
Page 1 of 2

1. If Met Tower data is unavailable from ERO Applications' programs or via local indications in the Control Room, another source of meteorological data may be used such as the Meteorological Vendor, National Weather Service or a local TV or Radio broadcast stations.
  - a. Wind Speed (MPH) – Obtain and enter wind speed in Miles per Hour (MPH)
  - b. Wind Direction (From) – Obtain and enter the direction the wind is coming FROM in degrees. (0°-360°)
  - c. Stability Class (A-G) – Obtain and enter the stability class.

<b><u>Stability Class Categories</u></b>	
<b>A</b>	Extremely unstable conditions
<b>B</b>	Moderately unstable conditions
<b>C</b>	Slightly unstable conditions
<b>D</b>	Neutral conditions
<b>E</b>	Slightly stable conditions
<b>F</b>	Moderately stable conditions
<b>G</b>	Extremely stable conditions

2. If the stability class is not available or provided, use the following tables to choose appropriated value:

**NOTE:** Meteorological Vendor normally provides  $\Delta T/\Delta z$  or  $\sigma_{\theta}$ .

- a. **If Surface Wind Speed (in mph) is available, then USE Table 1-1.**
- b. **If delta temperature ( $\Delta T$ ) or sigma theta ( $\sigma_{\theta}$ ), then USE station-specific table (if provided).**

**NOTE:** The conditions Good or Adverse in the following step are in relation to the weather. Adverse is any weather condition, which would hinder the flow of traffic.

**ATTACHMENT 2**  
**DETERMINATION OF STABILITY CLASS**  
Page 2 of 2

Table 1-1

Surface Wind Speed (mph)	Daytime Conditions				Nighttime Conditions		
	Summer Clear Sky	Spring & Fall Clear Sky	Winter	Heavy Overcast or Rain	Thin overcast (>1/2 cloud cover)	< 3/8 cloud cover	Heavy Overcast or Rain
< 9	A	A-B	B	D	F	G	D
To 9.0	A-B	B	C	D	E	F	D
To 13.5	B	B-C	C	D	D	E	D
> 13.5	C	C-D	D	D	D	D	D

Table 1-2  
Limerick (Tower 1)

Class	$\Delta T_i$ (°F)	$\sigma_{\theta}$ (degrees)
A	< -2.5	25
B	-2.5 to -2.3	20
C	-2.2 to -2.0	15
D	-1.9 to -0.7	10
E	-0.6 to +1.9	5
F	+2.0 to +5.2	2.5
G	> +5.2	1.7

Table 1-3  
Peach Bottom (Tower 2)

Class	$\Delta T_i$ (°F)	$\sigma_{\theta}$ (degrees)
A	< -2.9	25
B	-2.9 to -2.7	20
C	-2.6 to -2.4	15
D	-2.3 to -0.8	10
E	-0.7 to +2.3	5
F	+2.4 to +6.2	2.5
G	> +6.2	1.7



**ATTACHMENT 3  
SAMPLE DOSE ASSESSMENT REPORT  
Page 2 of 2**

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**Peach Bottom Dose Assessment**

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Method: Monitored Release Time: 18:52 Date: 08/09/2002

Release Path : <RCS>-<DryWell>-<Torus>-<RBCont>- PRF: 0.16  
<SBGT>-<MnStack>-<ENV>

Core Damage : 10% Gap Time After S/D (hours): 0.30

Wind Direction (from) : 1° Release Duration (hours): 4:00

Monitor : Main Stack WRGM Release Height : Elevated

Reading (uCi/sec) : 1.00E+06

Monitor Reading for GE : 3.32E+05

Distance (miles)	External DDE (mR/hr)	External DDE (mRem)	Inhalation CEDE (mRem)	4 Day Deposition DDE (mRem)	4 Day TEDE Dose (mRem)	Thyroid CDE (mRem)
7.5	3.64E+00	7.95E+00	5.31E+01	3.78E+01	9.89E+01	2.41E+03
8.0	3.47E+00	7.56E+00	5.05E+01	3.60E+01	9.40E+01	2.29E+03
8.5	2.93E+00	6.39E+00	4.27E+01	3.04E+01	7.95E+01	1.94E+03
9.0	2.55E+00	5.55E+00	3.71E+01	2.64E+01	6.91E+01	1.68E+03
9.5	2.40E+00	5.24E+00	3.50E+01	2.50E+01	6.52E+01	1.59E+03
10.0	2.52E+00	5.51E+00	3.88E+01	2.62E+01	6.85E+01	1.67E+03

PAG Exceeded At (Miles): TEDE: None	CDE (thyroid) : 4.5 miles
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**ATTACHMENT 4**  
**SAMPLE PROTECTIVE ACTION RECOMMENDATION (PAR) REPORT**  
 Page 1 of 1

**Peach Bottom Dose Based Protective Action Recommendations**

Time: 12:41 Date: 07/18/2002

Sectors to be Evacuated

Assessment Method:

Monitored Release

Evacuation Conditions:

Adverse

Stability Class: 

D
---

  
 Wind Direction (from): 

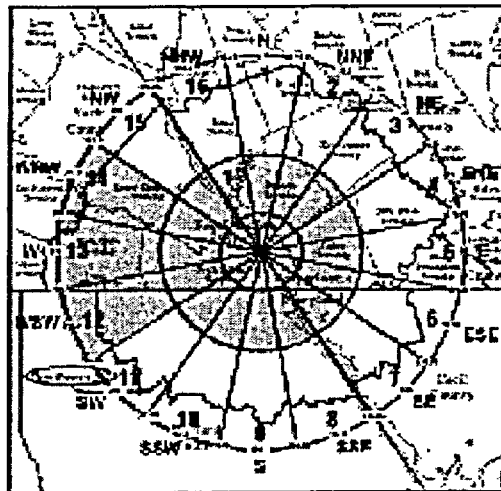
90°
-----

  
 Wind Speed (mph): 

1.00
------

  
 Release Duration (hrs): 

03:40
-------



Generalized Guidance

Evacuate when dose is:

- 1)  $\geq 1000$  mRem TEDE
- 2)  $\geq 5000$  mRem Thyroid

Shelter when evacuation is not possible.

**Evacuate:** All sectors between 0 to 5 miles, and sectors WSW, W, WNW between 5 to 10 miles

**Affected Area Dose Tables**

Emergency Level	Dose in mRem		
	TEDE	CDE Thy	
GENERAL EMERGENCY			
Affected Sectors			
W	<b>Ring 1</b> (0-2 miles)	1.15E+05	3.54E+05
Adjacent Sectors	<b>Ring 2</b> (2-5 miles)	8.97E+04	2.77E+05
WSW, WNW	<b>Ring 3</b> (5-10 miles)	2.50E+04	7.72E+04

**Group Release Rates (uCi/sec)**

	<u>Noble Gases</u>	<u>Halogens</u>	<u>Particulates</u>
True (NRC):	5.00E+09	1.40E+07	3.83E+05

**ATTACHMENT 5**  
**EPDS RADIOLOGICAL AND METEOROLOGICAL DATA**  
**Page 1 of 1**

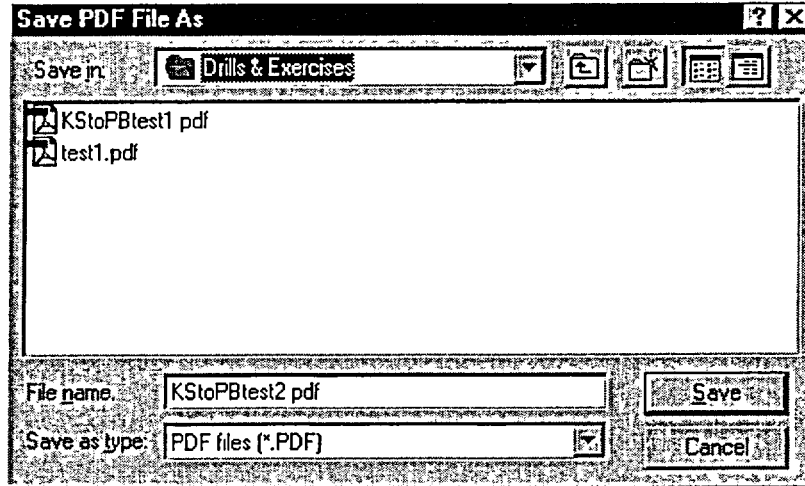
DAPAR input data is obtained through EPDS. Instructions for use of the EPDS system use procedure EP-MA-110-100, "ERO Computer Applications".

The EPDS menu contains a DAPAR screen selection:

- STEP 1:** Using the mouse, **MOVE** the arrow to the menu bar
- STEP 2:** **CLICK** on station of interest
- STEP 3:** **CLICK** on unit of interest
- STEP 4:** **SCROLL** down to "DAPAR".
- STEP 5:** **CLICK** on "DAPAR"

**ATTACHMENT 6**  
**ADOBE ACROBAT FILE SAVING**  
Page 1 of 2

**STEP 1:** From the DAPAR PAR report tool bar left mouse click on “File”, scroll down left mouse click on print. The following text box appears:



**STEP 2:** **SAVE** report in appropriate file:

- If this is a drill, then **SAVE** the dose projection in the “Drills and Exercises” folder in the site common drive.
- If this is a real event, then **SAVE** the dose projection in the “Real Event” folder in the site common drive.

The common drive paths are:

- Limerick Generating Station (LGS):  
\\PECO\.PBS2\_DATA1.PBS\_SRVS.PBS.PECO\EP\_DAPAR
- Peach Bottom Atomic Power Station (PBAPS):  
\\PECO\.PBS2\_DATA1.PBS\_SRVS.PBS.PECO\EP\_DAPAR

**STEP 3:** If the assigned Dose Assessment Computer cannot access the program, then **PERFORM** the following:

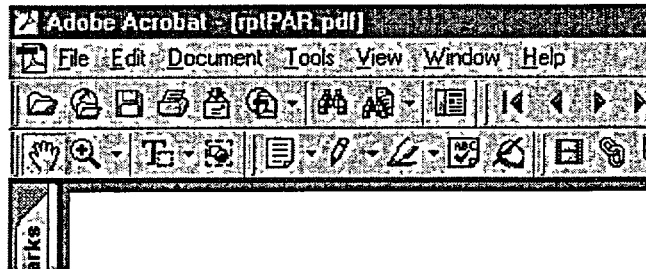
1. **TYPE** in a file name
2. **SAVE** file type as PDF
3. Left mouse **CLICK** on the “Save” command button

**NOTE:** The dose projection should appear as an Adobe PDF file.

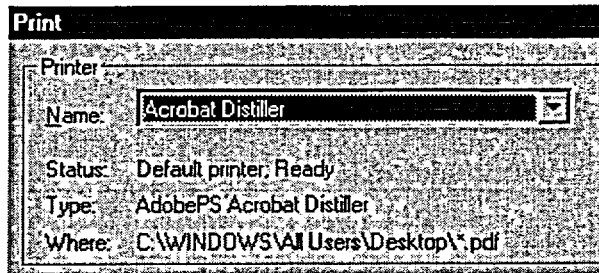
**ATTACHMENT 6**  
**ADOBE ADOBE FILE SAVING**  
**Page 2 of 2**

**STEP 4:** If the Adobe PDF does not appear, then left mouse **CLICK** on the Adobe icon on the bottom of the screen.

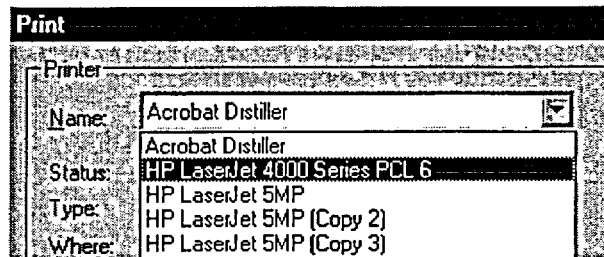
1. Left mouse **CLICK** on the Adobe print button from the tool bar



2. When the adobe 'Print' box appears, left mouse **CLICK** on the printer "Name" drop down menu arrow.



3. Scroll down and **HIGHLIGHT** the desired printer



4. When the desired printer appears in the "Name" field, left mouse **CLICK** "OK" command button to print.

**STEP 5:** Left mouse **CLICK** the X in the upper right hand corner to return to the DAPAR PAR report.

**ATTACHMENT 7  
DAPAR INPUT SHEET  
Page 1 of 1**

Date: \_\_\_/\_\_\_/\_\_\_ Time: \_\_\_\_\_ Station / Unit: \_\_\_\_\_

<b>OBTAIN FROM: CR (STA/IA) / TSC (Ops. Communicator) / EOF (Operations Advisor)</b>	
<b>MONITOR INFORMATION</b>	
RELEASE POINT #1: <u>LIMERICK:</u> <input type="checkbox"/> North Stack <input type="checkbox"/> South Stack <input type="checkbox"/> UNMONITORED	<u>PEACH BOTTOM:</u> <input type="checkbox"/> Main Stack <input type="checkbox"/> Vent Stack <input type="checkbox"/> Torus Hard Pipe Vent <input type="checkbox"/> UNMONITORED
DESCRIBE FROM RPV TO RELEASE POINT:	
RELEASE DURATION: <input type="checkbox"/> No Release In Progress    START TIME: _____ / STOP TIME: _____    Total Duration: ___ hrs	
<b>RELIEF INPUTS (PWR ONLY)</b>	S/G PRESSURE: _____ psig / NO. SRVs OPEN: _____ / PORV OPEN: <input type="checkbox"/> YES / <input type="checkbox"/> NO
<b>TIME AFTER RX SHUTDOWN</b>	RX POWER: _____ % / RX TRIP at: _____ hrs. / ATWAS: <input type="checkbox"/> YES / <input type="checkbox"/> NO
<b>CNTMT VENTING EXPECTED</b>	<input type="checkbox"/> NO / <input type="checkbox"/> YES - REASON: _____
<b>CONTAINMENT REDUCTIONS</b>	SPRAYS: <input type="checkbox"/> ON / <input type="checkbox"/> OFF    HOLD UP TIME: <input type="checkbox"/> < 1 HR / <input type="checkbox"/> 2-24 HRS / <input type="checkbox"/> > 24 HRS
<b>AUX./RX BLD REDUCTIONS</b>	HOLD UP TIME: <input type="checkbox"/> < 1 HR / <input type="checkbox"/> 2-24 HRS / <input type="checkbox"/> > 24 HRS / <input type="checkbox"/> NOT APPLICABLE
<b>TORUS/WETWELL REDUCTIONS</b>	<input type="checkbox"/> BYPASSED / <input type="checkbox"/> SATURATED / <input type="checkbox"/> SUBCOOLED
<b>SBGT FILTER REDUCTIONS</b>	<input type="checkbox"/> FILTERS WORKING / <input type="checkbox"/> FILTERS NOT WORKING
<b>S/G REDUCTIONS (PWR ONLY)</b>	<input type="checkbox"/> SECONDARY BOILING / <input type="checkbox"/> SECONDARY SOLID / <input type="checkbox"/> SECONDARY DRY

<b>OBTAIN FROM: CR (STA/IA) / TSC (Core/Hydraulic Engr.) / EOF (Techncial Advisor)</b>	
<b>SOURCE TERM</b>	
REACTOR CORE ACCIDENT TYPE OF DAMAGE:   GAP /   MELT AMOUNT OF DAMAGE: _____%	SPENT FUEL ACCIDENT FUEL TYPE:   NEW /   OLD FUEL STATUS:   UNDER WATER /   DRY
OTHER:	

**ATTACHMENT 8**  
**DAPAR BRP PARAMETER REPORT – FULL ASSESSMENT (EXAMPLE)**  
Page 1 of 2

NOTE: "QUICK ASSESSMENT" Report also provided.

**DAPAR BRP PARAMETER REPORT - FULL ASSESSMENT**

SITE	LIMERICK STATION	Date	Aug 09, 2002	Time	05:19:41 PM
Release Pathway	<RCS><DWB><WetWell><RBCent.><SBGT><NorthSact><ENV>				
Plume Height	37.8 meters	Time After S/D	0.00 hours		

SOURCE TERM	MET DATA
<input checked="" type="checkbox"/> Reactor Core Accident Type of Damage <input checked="" type="radio"/> Gap <input type="radio"/> Mel Amount of Damage                    10%	Wind Speed            1 miles/hr Wind Direction       1 degrees Delta T                1 Stability Class       E Release Duration      4.00 hours Release Flow Rate    1.89E+08 cm <sup>3</sup> sec <sup>-1</sup> Weather Conditions   Adverse
<input type="checkbox"/> Spent Fuel Accident Fuel Type <input type="radio"/> New <input type="radio"/> Old Fuel Status <input type="radio"/> Under Water <input type="radio"/> Dry	
<input type="checkbox"/> Backwash Domin Spectrum	

RELEASE CONCENTRATIONS (uCi/cc)		
Noble Gases	Halogens	Particulates
5.88E-03	1.19E-05	2.90E-07

RELEASE %	
Noble Gases	Halogens
99.7922 %	0.2028 %

**Reduction Factors**

<b>Drywell Containment</b> <input checked="" type="checkbox"/> Containment Spray 'OFF' <input type="checkbox"/> Containment Spray 'ON' <input checked="" type="checkbox"/> Holdup Time: < 2 Hour <input type="checkbox"/> 2 - 24 Hours <input type="checkbox"/> >24 Hours	<b>WetWell Reductions</b> <input checked="" type="checkbox"/> Bypassed <input type="checkbox"/> Saturated <input type="checkbox"/> Subcooled	<b>Rx Bldg</b> <input checked="" type="checkbox"/> Holdup Time < 2 Hour <input type="checkbox"/> 2 - 24 Hours <input type="checkbox"/> > 24 Hours
	<b>SBGT Filter Reductions</b> <input type="checkbox"/> Filters Not Working <input type="checkbox"/> Filters Working	<b>RERS Filter Reductions</b> <input type="checkbox"/> Filters Not Working <input type="checkbox"/> Filters Working
<b>TOTAL PRF</b> <span style="border: 1px solid black; padding: 2px;">0.0312</span>		



## CORE DAMAGE ASSESSMENT (BWR)

### 1. PURPOSE

- 1.1. The purpose of this attachment is to provide emergency response personnel with the methodology to estimate the degree of possible core damage at Exelon Nuclear's Boiling Water Reactor (BWR) stations. REFER to EP-AA-110-302 for methodology to estimate potential core damage for a Pressurized Water Reactor (PWR).
- 1.2. Core damage may be assessed by:
- Evaluating the drywell radiation levels (and confirmed by evaluating the extent of time the core was uncovered),
  - Concentration of certain isotopes in a reactor coolant analysis, or
  - Concentration of hydrogen in the primary containment.

This procedure is intended to provide an acceptable alternative to existing station core damage assessment models and methods utilized by Reactor Engineering.

### 2. TERMS AND DEFINITIONS

- 2.1. BWR – Boiling Water Reactor
- 2.2. Cladding – The outer coating (usually zirconium alloy, aluminum or stainless steel), which covers the nuclear fuel elements to prevent corrosion of the fuel and the release of fission products into the coolant.
- 2.3. Containment Type –
- Clinton (Mark III)
  - Dresden (Mark I)
  - LaSalle (Mark II)
  - Limerick (Mark II): 764 assemblies  
Containment Volume (384,570 ft<sup>3</sup>) = Suppression Pool (149,380 ft<sup>3</sup>) + Drywell (235, 190 ft<sup>3</sup>)
  - Peach Bottom (Mark I): 764 assemblies  
Containment Volume (303,600 ft<sup>3</sup>) = Suppression Pool (127,800 ft<sup>3</sup>) + Drywell (175, 800 ft<sup>3</sup>)
  - Quad Cities (Mark I)



- 2.4. Core Release Fraction – The fraction of each isotope in the core inventory that is assumed to be released from the core under given core conditions.
- 2.5. Fission Products – The nuclei (fission fragments) formed by the fission of heavy elements or by subsequent radioactive decay of the fission fragments.
- 2.6. Gap – The space inside a reactor fuel rod that exists between the fuel pellet and the fuel rod cladding.
- 2.7. Gap Release – The release into containment of fission products in the fuel pin gap.
- 2.8. In-Vessel Core Melt – A condition during a reactor accident in which some of the cladding or reactor fuel melts as a result of overheating the fuel and remains inside the reactor vessel.
- 2.9. In-Vessel Core Melt Release – A release into containment from the reactor vessel, which assumes the entire core has melted, releasing a representative mixture of radioisotopes.
- 2.10. Shutdown -- As defined by station emergency operating procedures, normally assumed to be less than 4% for a BWR.
- 2.11. Slump – Relocation of molten reactor core during an accident.
- 2.12. Source Term – The amount and isotopic composition of material released or the release rate, used in modeling releases of material to the environment.
- 2.13. Spiked Coolant – Reactor coolant containing increased concentrations of non-noble isotopes, sometimes seen with rapid shutdown or depressurization of primary system.
- 2.14. Spiked Coolant Release – The release into containment of 100 times the non-noble gas fission products found in the coolant.
- 2.15. Subcritical – The reactor condition when the number of neutrons released by the fission is not sufficient to achieve a self-sustaining nuclear chain reaction. Defined under station emergency operating procedures.
- 2.16. TID – Total Isotopic Distribution

3. **RESPONSIBILITIES**

- 3.1. The *TSC Core/Thermal Hydraulic Engineer* shall serve as the Core Damage Assessment Methodology (CDAM) Evaluator.
- 3.2. The *TSC Radiation Controls Engineer* shall coordinate radiological and chemistry information with the Core/Thermal Hydraulic Engineer in support of core damage assessment.
- 3.3. The *TSC Manager* shall coordinate core damage assessment activities.

4. **MAIN BODY**

- 4.1. **ASSESS** the status of critical BWR safety functions and **MONITOR** for indications that the core may already be uncovered or may soon become uncovered.
  1. **PROJECT** core damage if uncovered using the following methods, as applicable:
    - Attachment 3, "Core Uncovery Time Method"
    - Attachment 4, "Containment Hydrogen Concentration Method"
- 4.2. **MONITOR** radiation levels in containment to confirm and assess core damage.
  1. **PROJECT** core damage using Containment Radiation Level Method (Attachment 1).
- 4.3. **CONTINUE** to assess core damage a reactor coolant sample to confirm extent of core damage using the Attachment 2 (Reactor Coolant Sampling Method).
- 4.4. **CONTINUE** to assess core damage and **INFORM** those assessing consequences, classification and protective actions.

5. **DOCUMENTATION**

- 5.1. Reactor core damage assessment methods derived from U.S. NRC RTM-96, Chapter A (Reactor Core Damage Assessment). Figures included in RTM-96, Chapter A were generated using CONDOS II (NUREG/CR-2068).

**6.        REFERENCES**

- 6.1.        U.S. Nuclear Regulatory Commission (NRC) Response Technical Manual (RTM) 96, March 1996
- 6.2.        Exelon Nuclear Radiological Emergency Plan Annex for Clinton Generating Station
- 6.3.        Exelon Nuclear Radiological Emergency Plan Annex for Dresden Generating Station
- 6.4.        Exelon Nuclear Radiological Emergency Plan Annex for LaSalle County Generating Station
- 6.5.        Exelon Nuclear Radiological Emergency Plan Annex for Limerick Generating Station
- 6.6.        Exelon Nuclear Radiological Emergency Plan Annex for Peach Bottom Atomic Power Station
- 6.7.        Exelon Nuclear Radiological Emergency Plan Annex for Quad Cities Generating Station

**7.        ATTACHMENTS**

- 7.1.        Attachment 1, Containment Radiation Level Method
- 7.2.        Attachment 2, Reactor Coolant Sampling Method
- 7.3.        Attachment 3, Core Uncovery Time Method
- 7.4.        Attachment 4, Containment Hydrogen Concentration Method

**ATTACHMENT 1**  
**CONTAINMENT RADIATION LEVEL METHOD**  
**Page 1 of 18**

Per RTM-96, Chapter A (Method A.4), these calculations should provide the maximum reading expected under the conditions stated. The calculations assume: (1) a prompt release to containment of all fission products in the coolant, spike, gap or from in-vessel core melt; (2) uniform mixing in the containment; and (3) an unshielded monitor that can see most of the containment volume (minus torus / suppression pool volume). Because the mix is most likely different from that assumed in the calibration of the monitor, the actual reading at the upper end of the scale could differ by a factor of 10-100 if a shielded detector is used for higher radiation measurements.

The levels of damage indicated should be considered minimum levels unless there are inconsistent monitor readings. Inconsistent readings may be caused by the uneven mixing in containment (e.g., steam rising to top of dome, not enough time for uniform mixing to occur).

Figures have been prepared for each station, which represent plots of percent core damage versus containment radiation readings and percent clad damage versus containment radiation readings. Uncorrected containment radiation readings shall be used to provide a preliminary estimate of percent core and clad damage during the first ten (10) hours following a reactor shutdown.

**CAUTION**

Containment radiation levels cannot be used to assess core damage in all cases. The release may bypass the containment, be retained in the coolant, be released over a long period of time, or not be uniformly mixed. Therefore, a low containment radiation level reading does not guarantee a lack of core damage.

**This method should not be used if containment radiation monitors do not "see" more than 50% of Drywell volume.**

1. **MONITOR** containment radiation levels to assess the degree of clad and/or core damage.

NOTE: The readings taken following a Loss of Coolant Accident (LOCA) into the primary containment will be most accurate using the containment radiation monitors.

**Mid-West ROG**

**REFER** to EP-MW-110-1001 for a listing of appropriate plant parameter points to be used following a LOCA.

**ATTACHMENT 1**  
**CONTAINMENT RADIATION LEVEL METHOD**  
**Page 2 of 18**

2. **DETERMINE** the time following the event and the uncorrected containment radiation reading and compare to the following figures for assessing the degree of core or clad damage.

**Dresden**

REFER to Figure 1-1 for PERCENT CORE DAMAGE VERSUS CONTAINMENT and Figure 1-2 for CLAD DAMAGE ASSESSMENT

**LaSalle**

REFER to Figure 1-3 for PERCENT CORE DAMAGE VERSUS CONTAINMENT and Figure 1-4 for CLAD DAMAGE ASSESSMENT

**Quad Cities**

REFER to Figure 1-5 for PERCENT CORE DAMAGE VERSUS CONTAINMENT and Figure 1-6 for CLAD DAMAGE ASSESSMENT

**Clinton**

REFER to Figure 1-7 and 1-8 for PERCENT CORE DAMAGE VERSUS CONTAINMENT and Figure 1-9 and 1-10 for CLAD DAMAGE ASSESSMENT

**Limerick**

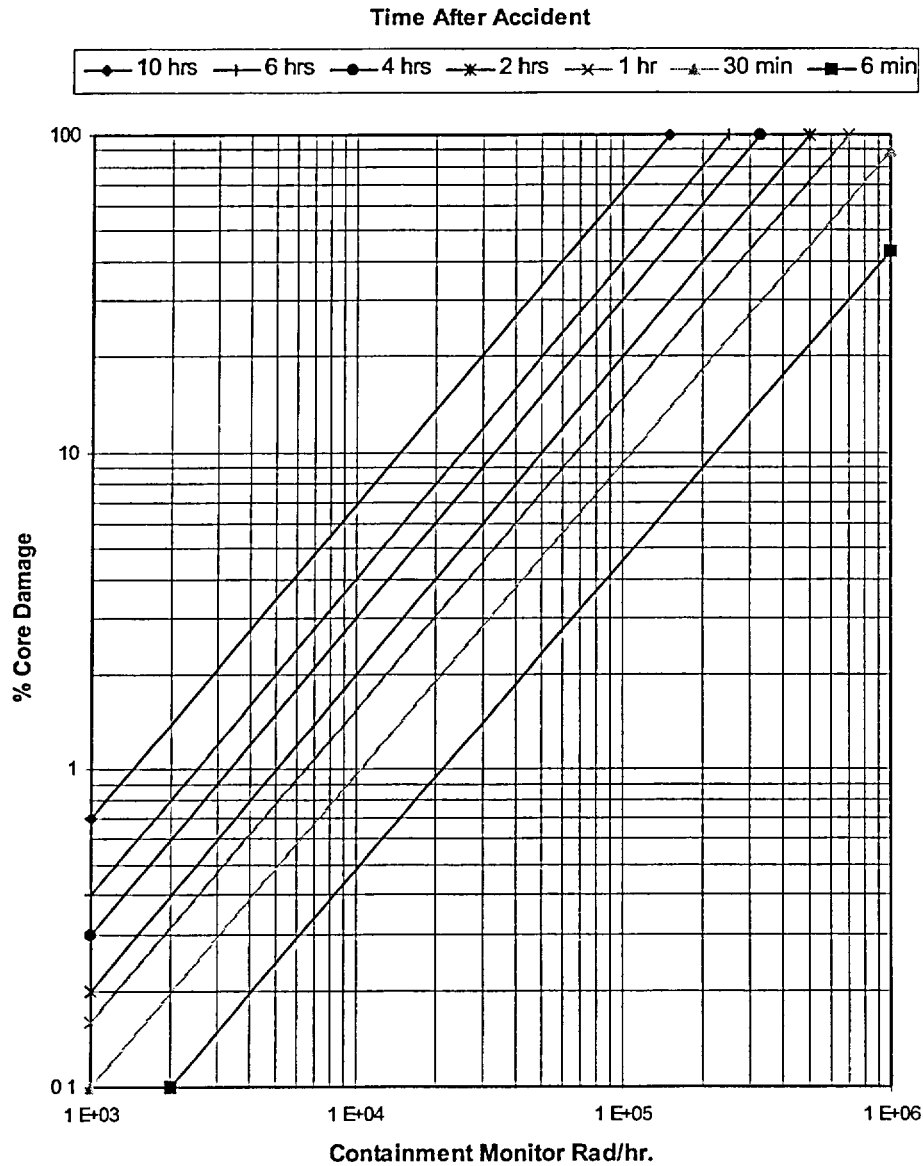
REFER to Figure 1-11 for PERCENT OF FUEL INVENTORY AIRBORNE IN THE CONTAINMENT VERSUS APPROXIMATE SOURCE AND DAMAGE ESTIMATE

**Peach Bottom**

REFER to Figure 1-12 for PERCENT OF FUEL INVENTORY AIRBORNE IN THE CONTAINMENT VERSUS APPROXIMATE SOURCE AND DAMAGE ESTIMATE

ATTACHMENT 1  
CONTAINMENT RADIATION LEVEL METHOD  
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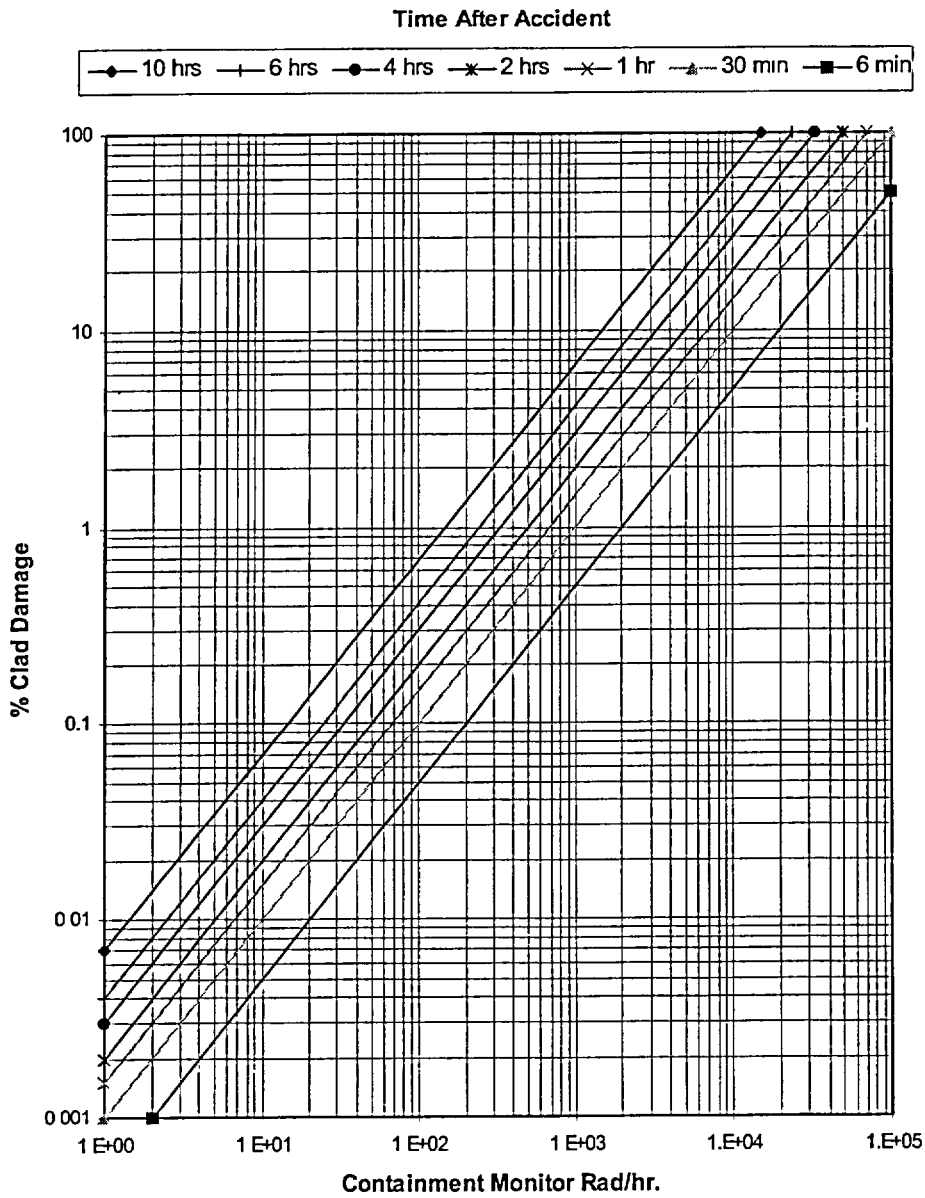
FIGURE 1-1  
Dresden Station: Core Melt Assessment  
Percent Damage Versus Containment radiation Readings (Uncorrected)  
Page 1 of 1



DRESDEN STATION

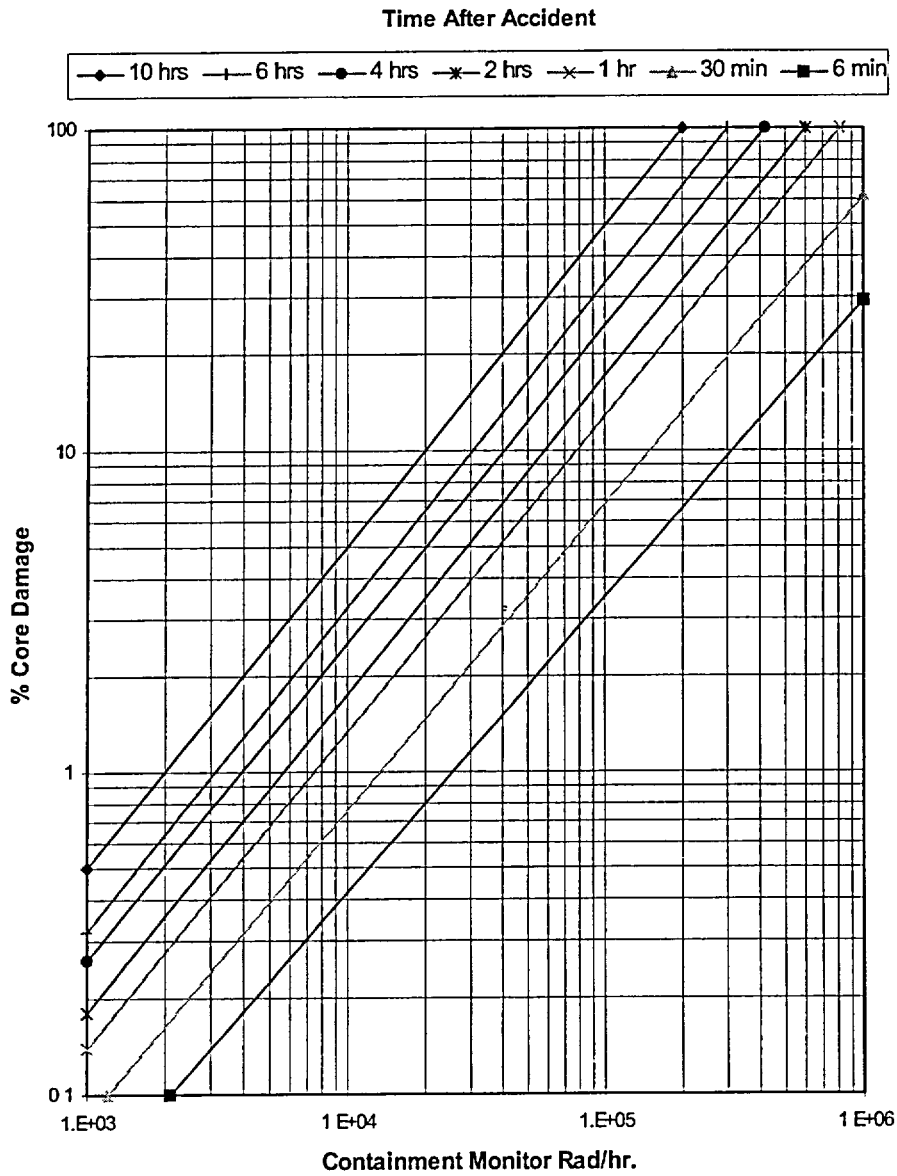
ATTACHMENT 1  
CONTAINMENT RADIATION LEVEL METHOD  
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FIGURE 1-2  
Dresden Station: Clad Damage Assessment  
LOCA with Noble Gas Release Only  
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ATTACHMENT 1  
CONTAINMENT RADIATION LEVEL METHOD  
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FIGURE 1-3  
LaSalle Station: Core Melt Assessment  
Percent Damage Versus Containment radiation Readings (Uncorrected)  
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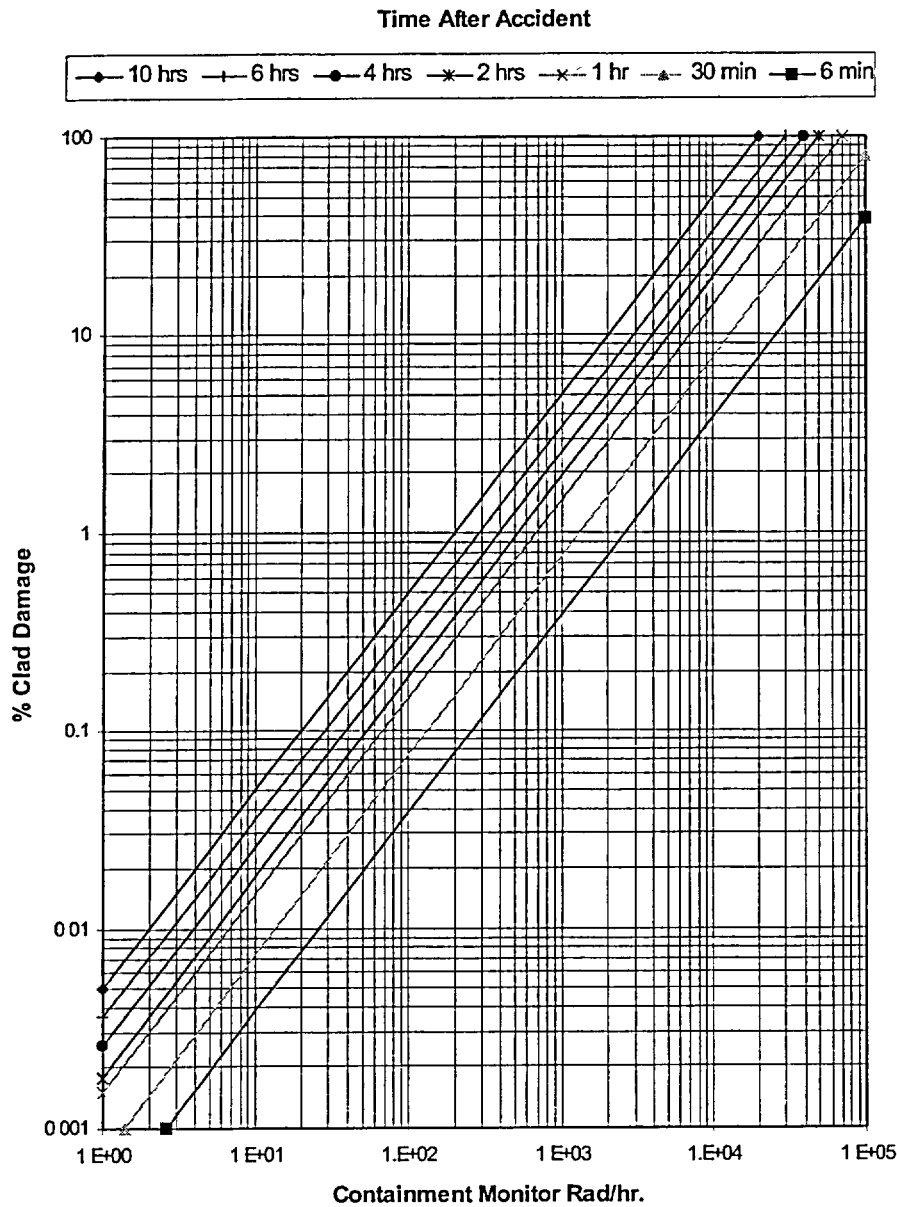


LaSALLE STATION



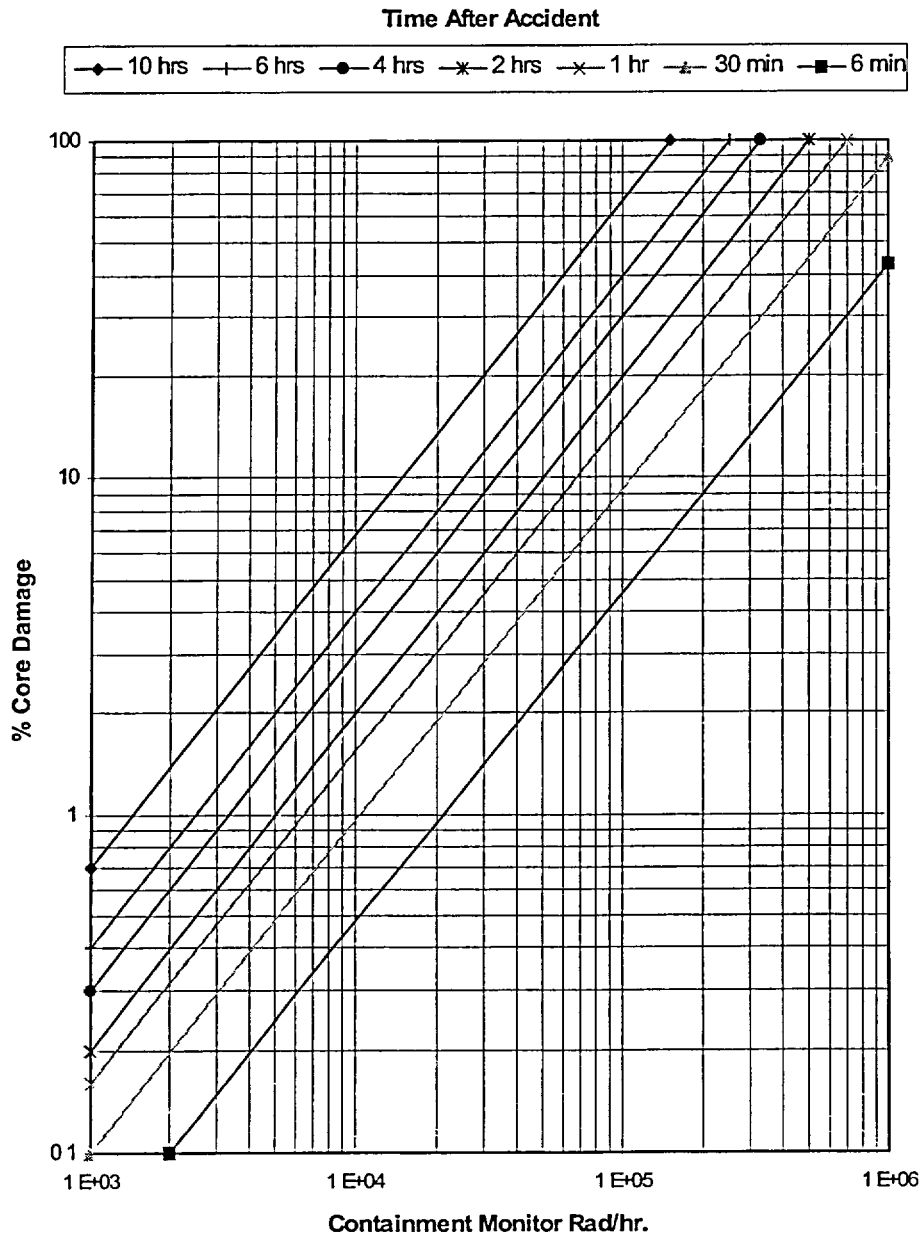
ATTACHMENT 1  
CONTAINMENT RADIATION LEVEL METHOD  
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FIGURE 1-4  
LaSalle Station: Clad Damage Assessment  
LOCA with Noble Gas Release Only  
Page 1 of 1



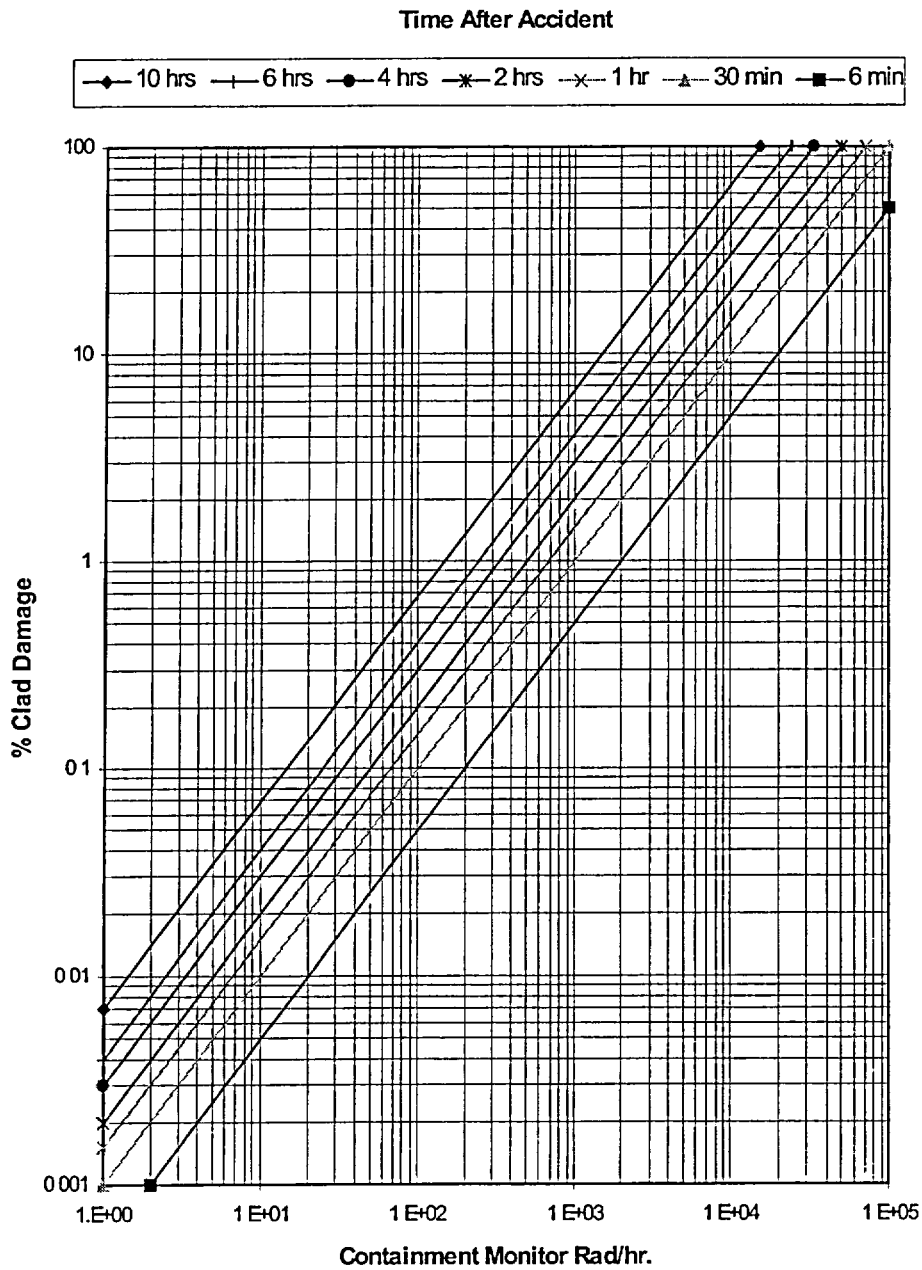
ATTACHMENT 1  
CONTAINMENT RADIATION LEVEL METHOD  
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FIGURE 1-5  
Quad Cities Station: Core Melt Assessment  
Percent Damage Versus Containment radiation Readings (Uncorrected)  
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CONTAINMENT RADIATION LEVEL METHOD  
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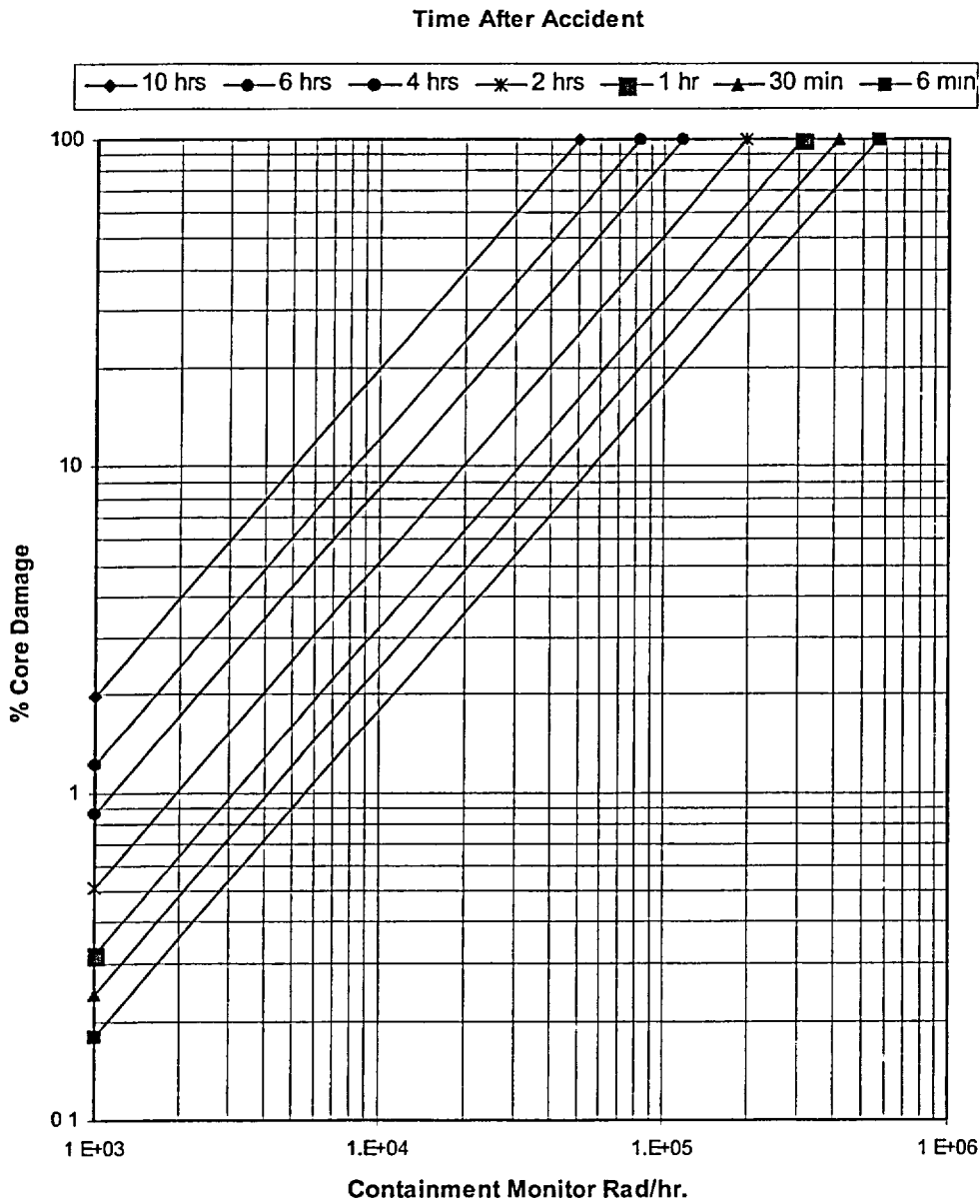
FIGURE 1-6  
Quad Cities Station: Clad Damage Assessment  
LOCA with Noble Gas Release Only  
Page 1 of 1



QUAD CITIES STATION

ATTACHMENT 1  
CONTAINMENT RADIATION LEVEL METHOD  
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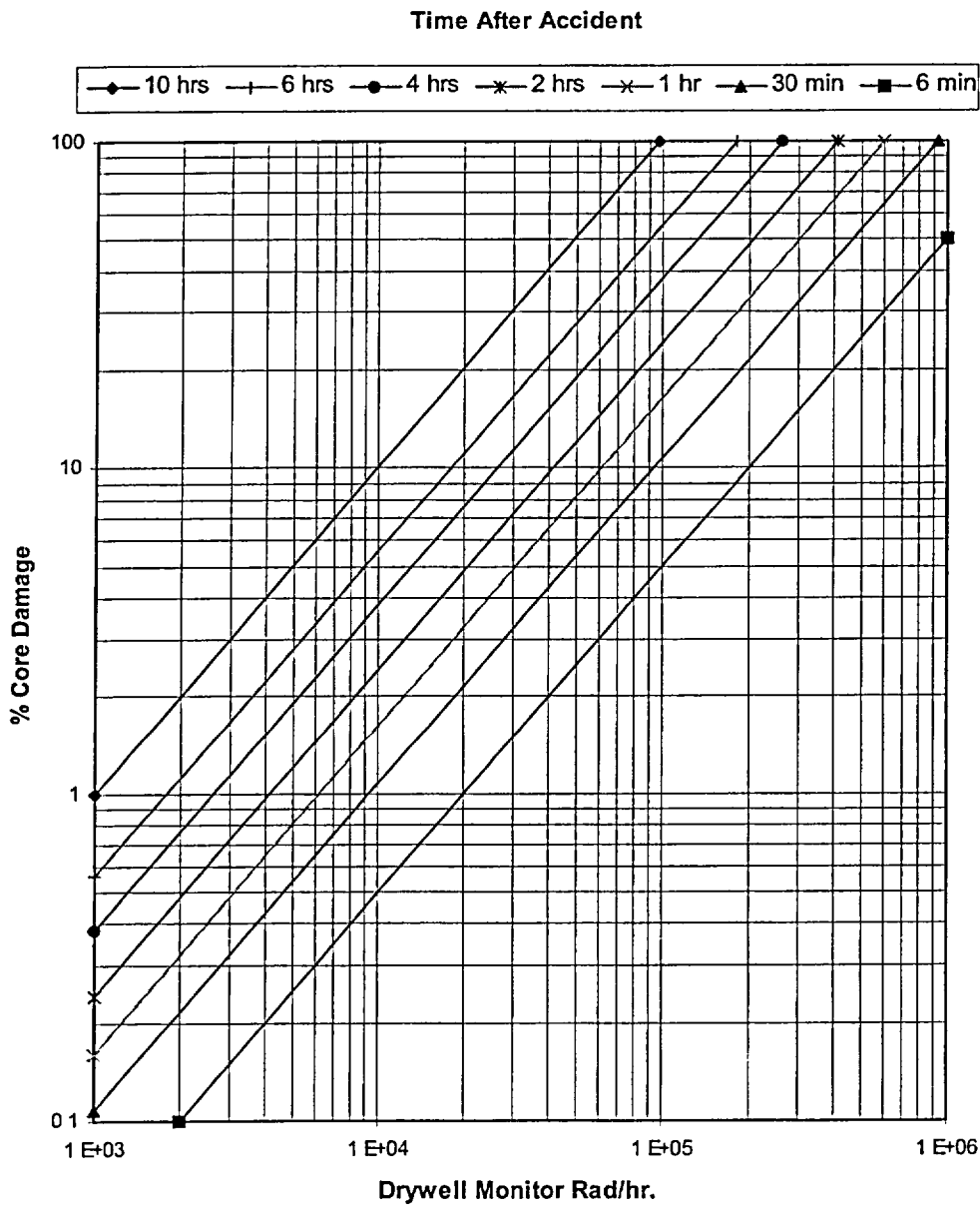
FIGURE 1-7  
Clinton Station Core Damage Assessment  
LOCA with Noble Gas Release Only In Containment  
Page 1 of 1



CLINTON STATION

ATTACHMENT 1  
CONTAINMENT RADIATION LEVEL METHOD  
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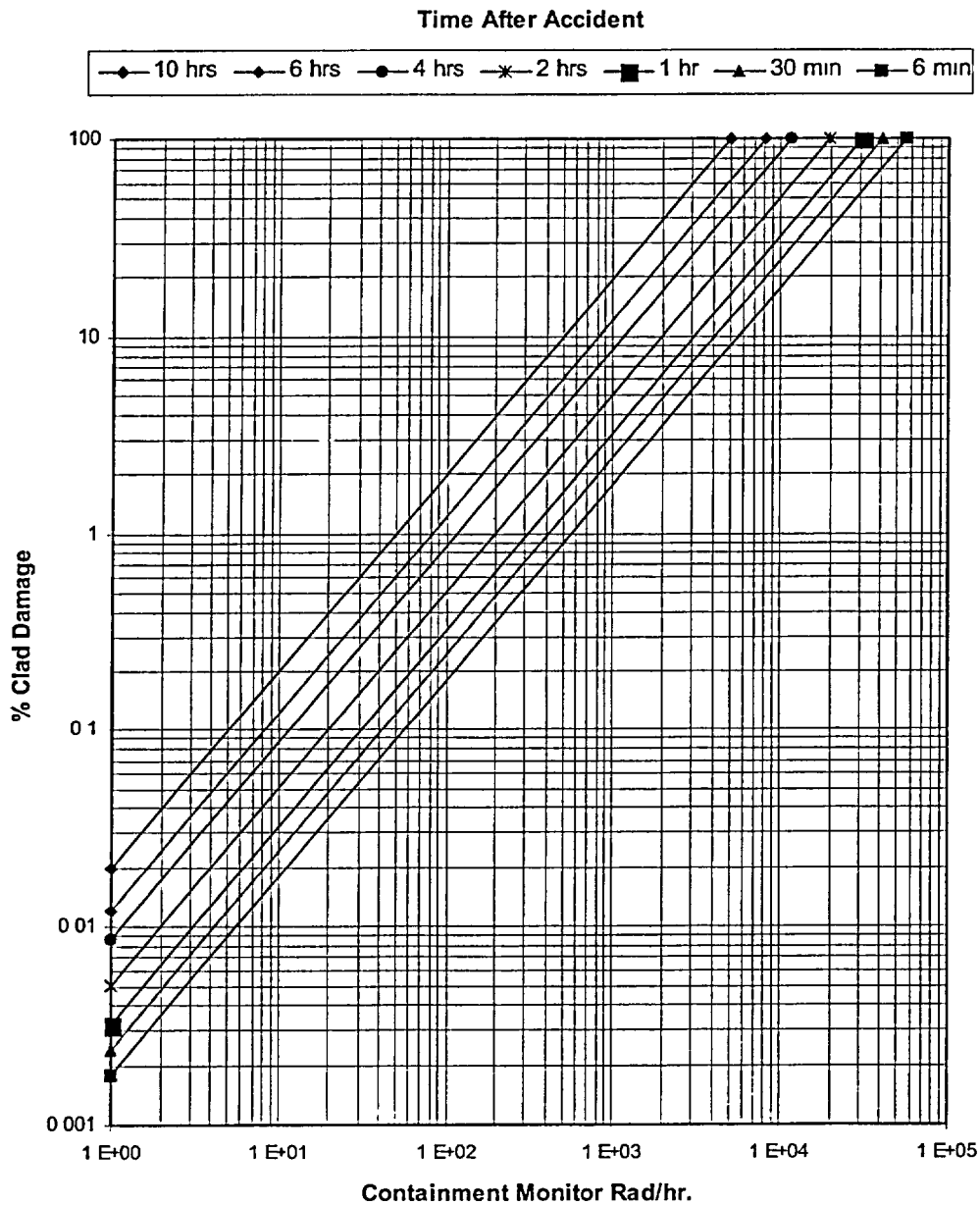
FIGURE 1-8  
Clinton Station Core Damage Assessment  
LOCA with Noble Gas Release Only In Drywell  
Page 1 of 1



CLINTON STATION

ATTACHMENT 1  
CONTAINMENT RADIATION LEVEL METHOD  
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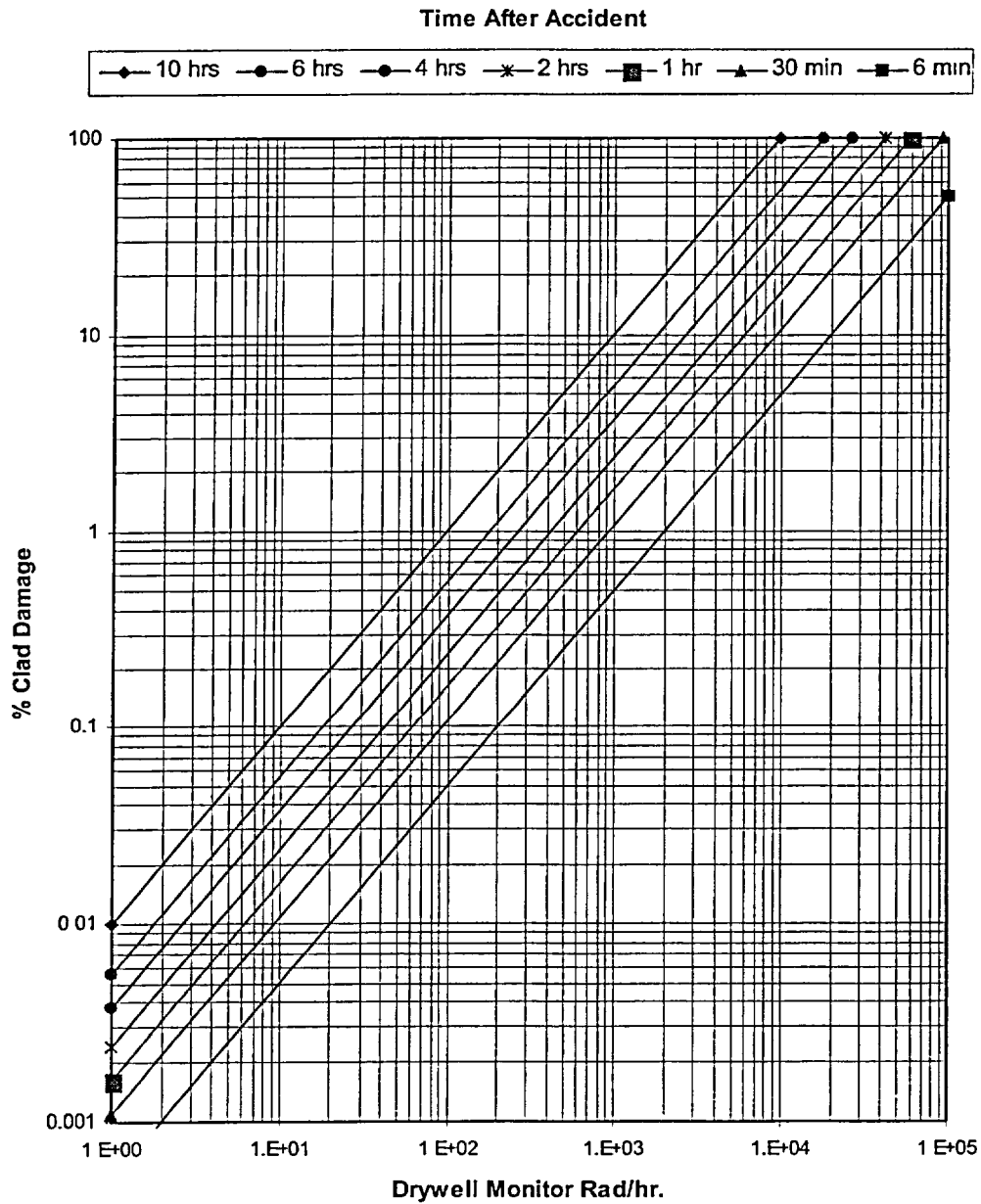
FIGURE 1-9  
Clinton Station Clad Damage Assessment  
LOCA with Noble Gas Release Only In Containment  
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CLINTON STATION

ATTACHMENT 1  
CONTAINMENT RADIATION LEVEL METHOD  
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FIGURE 1-10  
Clinton Station Clad Damage Assessment  
CLINTON STATION LOCA with Noble Gas Release Only In Drywell  
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**ATTACHMENT 1  
CONTAINMENT RADIATION LEVEL METHOD  
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**FIGURE 1-11  
LIMERICK GENERATING STATION  
Percent of Fuel Inventory Airborne in the Containment  
vs. Approximate Source and Damage Estimate  
Page 1 of 3**

<u>Curve No.</u>	<u>% Fuel Inventory Released</u>	<u>Approximate Source and Damage Estimate</u>
1	100.	100% TID-14844, 100% fuel damage, potential core melt.
	50.	50% TID noble gases, TMI source.
2	10.	10% TID, 100% NRC gap activity, total clad failure, partial core uncovered.
	3.	3% TID, 100% WASH-1400 gap activity, major clad failure.
3	1.	1% TID, 10% NRC gap, Max. 10% clad failure.
4	.1	.1% TID, 10% NRC gap, 1% clad failure, local heating of 5-10 fuel assemblies.
5	.01	.01% TID, .1% NRC gap, clad failure of 3/4 of a fuel assembly (36 rods).
6	10 <sup>-3</sup>	.01% NRC gap, clad failure of a few rods
	10 <sup>-4</sup>	100% coolant release with spiking.
7	5X10 <sup>-6</sup>	100% coolant inventory release.
	10 <sup>-6</sup>	Upper range of normal airborne noble gas activity in containment.

**LIMERICK STATION**

\* 100% Fuel Inventory = 100% Noble Gases +25% Iodine + 1% particulates.

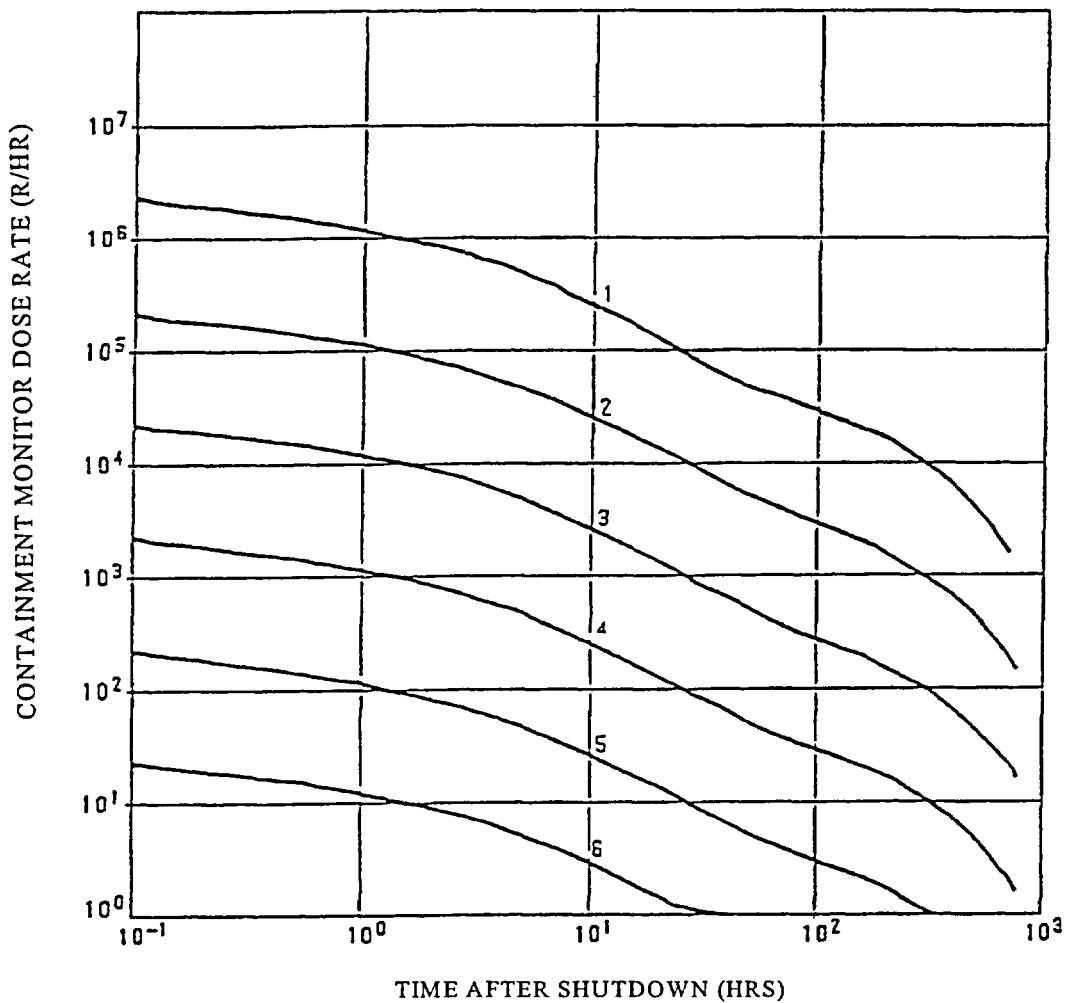
- NOTES (1) These curves account for the finite containment volume and shield wall seen by the detector but do not account for any monitor physical or shielding characteristics or calibration uncertainties.  
 (2) The curves assume that both airborne noble gases and iodines are significant. Sprays (if used) would make the iodine and particulate contribution (presently about 50%) insignificant. However, particulate plateout on the monitor casing and direct shine doses from components may make the readings unreliable.  
 (3) Curve uncertainties are on the order of a factor of 5 to 10.



ATTACHMENT 1  
CONTAINMENT RADIATION LEVEL METHOD  
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FIGURE 1-11  
LIMERICK GENERATING STATION  
Percent of Fuel Inventory Airborne in the Containment  
vs. Approximate Source and Damage Estimate  
Page 2 of 3

LGS CONTAINMENT RADIATION MONITOR CURVES



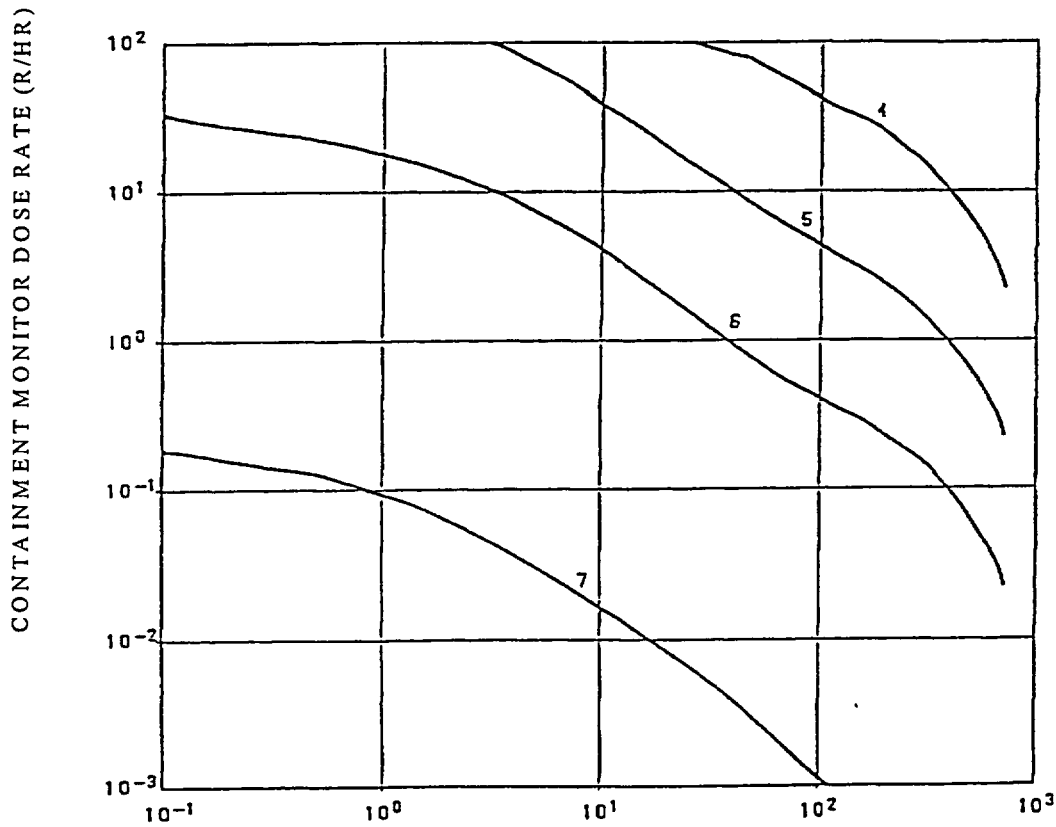
- 1 - 100% TID
- 2 - 10% TID
- 3 - 1% TID
- 4 - 0.1% TID
- 5 - 0.01% TID
- 6 - 0.001% TID

LIMERICK STATION

ATTACHMENT 1  
CONTAINMENT RADIATION LEVEL METHOD  
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FIGURE 1-11  
LIMERICK GENERATING STATION  
Percent of Fuel Inventory Airborne in the Containment  
vs. Approximate Source and Damage Estimate  
Page 3 of 3

LGS CONTAINMENT RADIATION MONITOR CURVES



TIME AFTER SHUTDOWN (HRS)

- 4 - 0.1% TID
- 5 - 0.01% TID
- 6 - 0.001% TID
- 7 - 100% REACTOR COOLANT

LIMERICK STATION

ATTACHMENT 1  
 CONTAINMENT RADIATION LEVEL METHOD  
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FIGURE 1-12  
 PEACH BOTTOM ATOMIC POWER STATION  
 Percent of Fuel Inventory Airborne in the Containment  
 vs. Approximate Source and Damage Estimate  
 Page 1 of 3

Curve No.	% Fuel Inventory Released	Approximate Source and Damage Estimate
1	100.	100% TID-14844, 100% fuel damage, potential core melt.
	50.	50% TID noble gases, TMI source.
2	10.	10% TID, 100% NRC gap activity, total clad failure, partial core uncovered.
	3.	3% TID, 100% WASH-1400 gap activity, major clad failure.
3	1.	1% TID, 10% NRC gap, Max. 10% clad failure.
4	.1	.1% TID, 10% NRC gap, 1% clad failure, local heating of 5-10 fuel assemblies.
5	.01	.01% TID, .1% NRC gap, clad failure of 3/4 of a fuel assembly (36 rods).
6	$10^{-3}$	.01% NRC gap, clad failure of a few rods
	$10^{-4}$	100% coolant release with spiking.
7	$5 \times 10^{-6}$	100% coolant inventory release.
	$10^{-6}$	Upper range of normal airborne noble gas activity in containment.

PEACH BOTTOM STATION

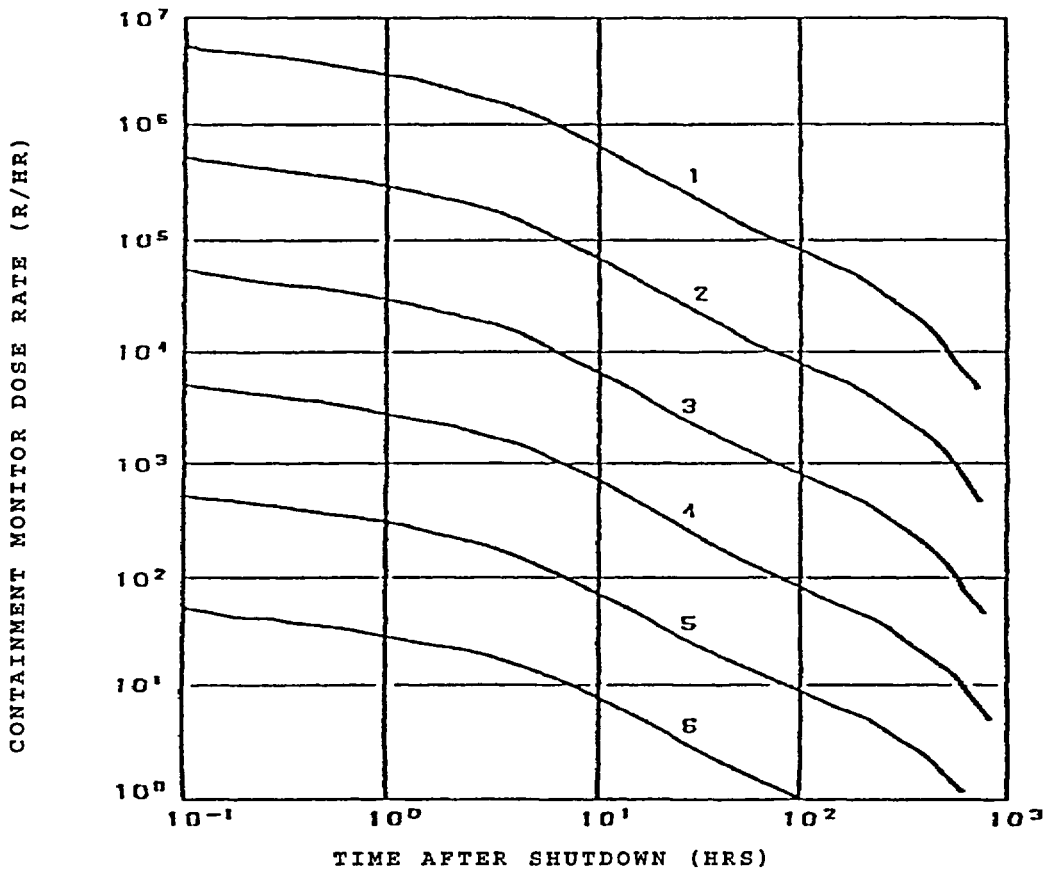
\* 100% Fuel Inventory = 100% Noble Gases +25% Iodine + 1% particulates.

- NOTES (1) These curves account for the finite containment volume and shield wall seen by the detector but do not account for any monitor physical or shielding characteristics or calibration uncertainties.  
 (2) The curves assume that both airborne noble gases and iodines are significant. Sprays (if used) would make the iodine and particulate contribution (presently about 50%) insignificant. However, particulate plateout on the monitor casing and direct shine doses from components may make the readings unreliable.  
 (3) Curve uncertainties are on the order of a factor of 5 to 10.

ATTACHMENT 1  
 CONTAINMENT RADIATION LEVEL METHOD  
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FIGURE 1-12  
 PEACH BOTTOM ATOMIC POWER STATION  
 Percent of Fuel Inventory Airborne in the Containment  
 vs. Approximate Source and Damage Estimate  
 Page 2 of 3

PEACH BOTTOM CONTAINMENT RADIATION MONITOR CURVES



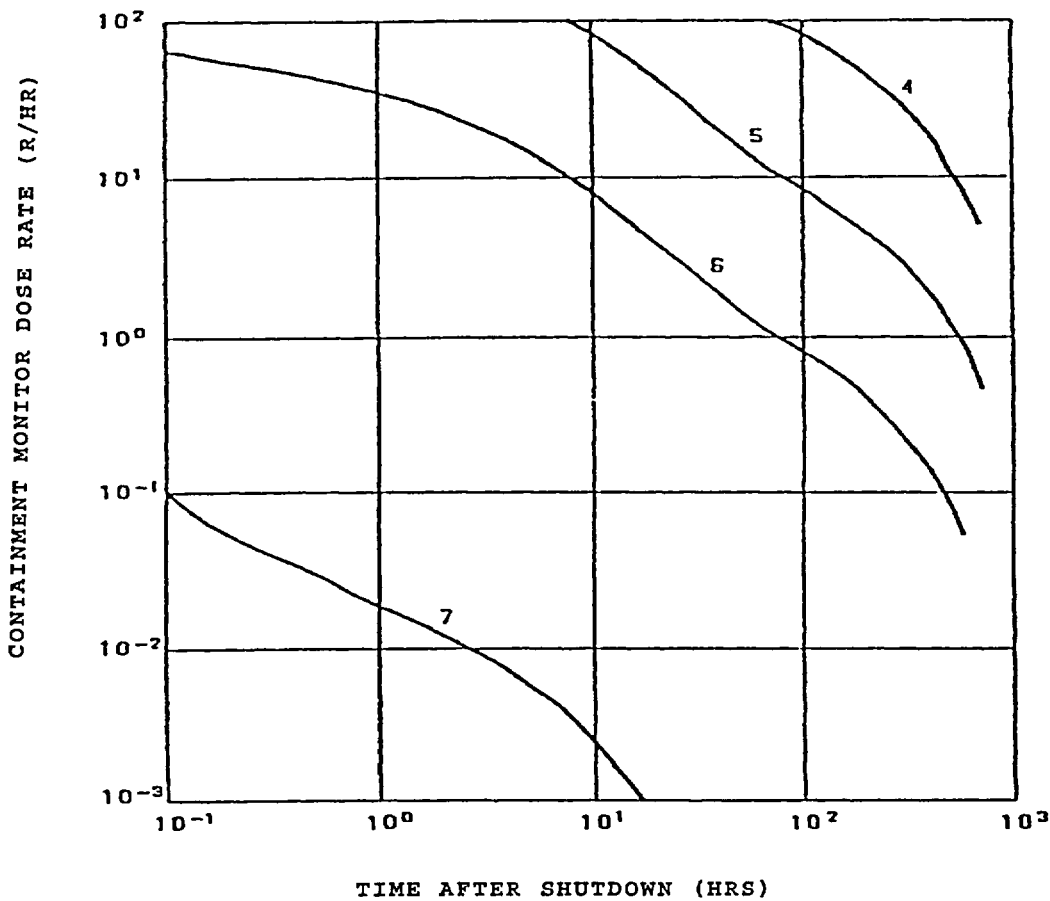
PEACH BOTTOM STATION

PEACH BOTTOM MONITOR RESPONSE CURVES FOR PRIMARY CONTAINMENT LOW RANGE MONITORS		
CURVE INDEX		
1.	100%	FUEL INVENTORY (100% TID-14844)
2.	10%	FUEL INVENTORY (100% GAP ACTIVITY/R.G. 1.25)
3.	1%	FUEL INVENTORY (10% NRC GAP-CLAD FAILURE)
4.	0.1%	FUEL INVENTORY
5.	0.01%	FUEL INVENTORY
6.	0.001%	FUEL INVENTORY

ATTACHMENT 1  
 CONTAINMENT RADIATION LEVEL METHOD  
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FIGURE 1-12  
 PEACH BOTTOM ATOMIC POWER STATION  
 Percent of Fuel Inventory Airborne in the Containment  
 vs. Approximate Source and Damage Estimate  
 Page 3 of 3

PEACH BOTTOM CONTAINMENT RADIATION MONITOR CURVES



PEACH BOTTOM STATION

PEACH BOTTOM MONITOR RESPONSE CURVES FOR PRIMARY CONTAINMENT LOW RANGE MONITORS	
<u>CURVE INDEX</u>	
4 -	0.1% FUEL INVENTORY
5 -	.01% FUEL INVENTORY
6 -	.001% FUEL INVENTORY
7 -	100% COOLANT ACTIVITY

**ATTACHMENT 2  
REACTOR COOLANT SAMPLING METHOD**

Page 1 of 1

Per RTM-96, Chapter A (Method A.5), for BWR this method of confirming core damage assumes that releases from the core are uniformly mixed in the coolant and torus / suppression pool with there is no dilution from injection. If most of the core release is confined to the reactor coolant system, the concentrations in the coolant could be up to 10 times higher. The baseline coolant concentrations are for 0.5 hours after shutdown of a core that has been through at least one refueling cycle. The half-life of the fission products should be considered in analyzing samples. The plant-specific coolant system volume does not have a major influence on coolant concentrations (< 20%).

**CAUTION**

Since samples may require hours to collect and analyze, and may not be representative of primary system concentrations (e.g., no flow through sample line), coolant concentrations should NOT be required to confirm core damage.

1. **COMPARE** coolant isotopic concentrations with the concentrations listed in Table 2-1 to estimate core damage for gap releases or in-vessel melting.

**Table 2-1  
BASELINE BWR COOLANT CONCENTRATION<sup>1</sup>**

Nuclide	Normal Concentration <sup>2</sup> (uCi/g)	Concentration after gap release <sup>3</sup> (uCi/g)	Concentration after in-vessel melt <sup>3</sup> (uCi/g)
<sup>131</sup> I	$2 \times 10^{-3}$	$1 \times 10^3$	$1 \times 10^4$
<sup>133</sup> I	$1 \times 10^{-2}$	$3 \times 10^3$	$2 \times 10^4$
<sup>135</sup> I	$2 \times 10^{-2}$	$2 \times 10^3$	$2 \times 10^4$
<sup>134</sup> Cs	$3 \times 10^{-5}$	$1 \times 10^2$	$6 \times 10^2$
<sup>137</sup> Cs	$8 \times 10^{-5}$	$8 \times 10^1$	$4 \times 10^2$
<sup>140</sup> Ba	NC	NC	$2 \times 10^3$
<sup>90</sup> Sr	$7 \times 10^{-6}$	NC	$1 \times 10^3$

NC – Not Calculated

<sup>1</sup> Table 2-1 is consistent with Table A-4 (BWR Baseline Coolant Concentration) from U.S. NRC Response Technical Manual (RTM) 96, March 1996

<sup>2</sup> Source for "normal coolant" is ANSI/ANS 18.1, 1984 (confirmed by NUREG/CR-4245, Table 3.2)

<sup>3</sup> Concentration in the reactor coolant system and torus / suppression pool

**ATTACHMENT 3  
CORE UNCOVERY TIME METHOD**

**Page 1 of 1**

Per RTM-96, Chapter A (Method A.3), it can be assumed that the fuel in the core will heat up at 1-2°F per second within 5-10 minutes after the top of an active core is uncovered. These heatup estimates are reasonable within a factor of two if the core is uncovered within a few hours of shutdown (including failure to scram) for a boil-down case (without injection). If there is injection, core heatup may be stopped or slowed because of steam cooling. However, steam cooling may not prevent core damage under accident conditions.

1. **DETERMINE** the time that the core was or is projected to be uncovered.
2. **ESTIMATE** the possible core damage by comparing the time of core uncovery to the values in Table 3-1.

**Table 3-1  
CORE DAMAGE VS. TIME THAT REACTOR CORE IS UNCOVERED<sup>4</sup>**

Time 20% of the core is uncovered (minutes)	Core Temperature (°F)	Core Temperature (°C)	Possible Core Damage
0	>600	>315	<b>None</b>
30-45	1800-2400	980-1300	<p align="center"><b>GAP Release</b></p> <ul style="list-style-type: none"> <li>- Local fuel melting</li> <li>- Burning of cladding with steam production (exothermic Zr-H<sub>2</sub>O reaction with rapid H<sub>2</sub> generation)</li> <li>- Rapid fuel cladding failure (gap release core)</li> </ul>
30-90	2400-4200	1300-2300	<p align="center"><b>In-Vessel Melt</b></p> <ul style="list-style-type: none"> <li>- Rapid release of volatile fission products (in-vessel severe damage release from the core)</li> <li>- Possible relocation (slump) of molten core</li> <li>- Possible uncoolable core</li> </ul>
120-180+	>4200	>2300	<p align="center"><b>Vessel Melt-Through</b></p> <p>Melt-through of vessel with possible containment failure and release of additional less-volatile fission products</p>

<sup>4</sup> Table 3-1 is consistent with Table A-2 (Core Damage vs. Time That Reactor Core Is Covered) from U.S. NRC Response Technical Manual (RTM) 96, March 1996

**ATTACHMENT 4  
CONTAINMENT HYDROGEN CONCENTRATION METHOD**

Page 1 of 1

This method may be used to assess the core damage based on the hydrogen concentration in samples of the containment atmosphere.

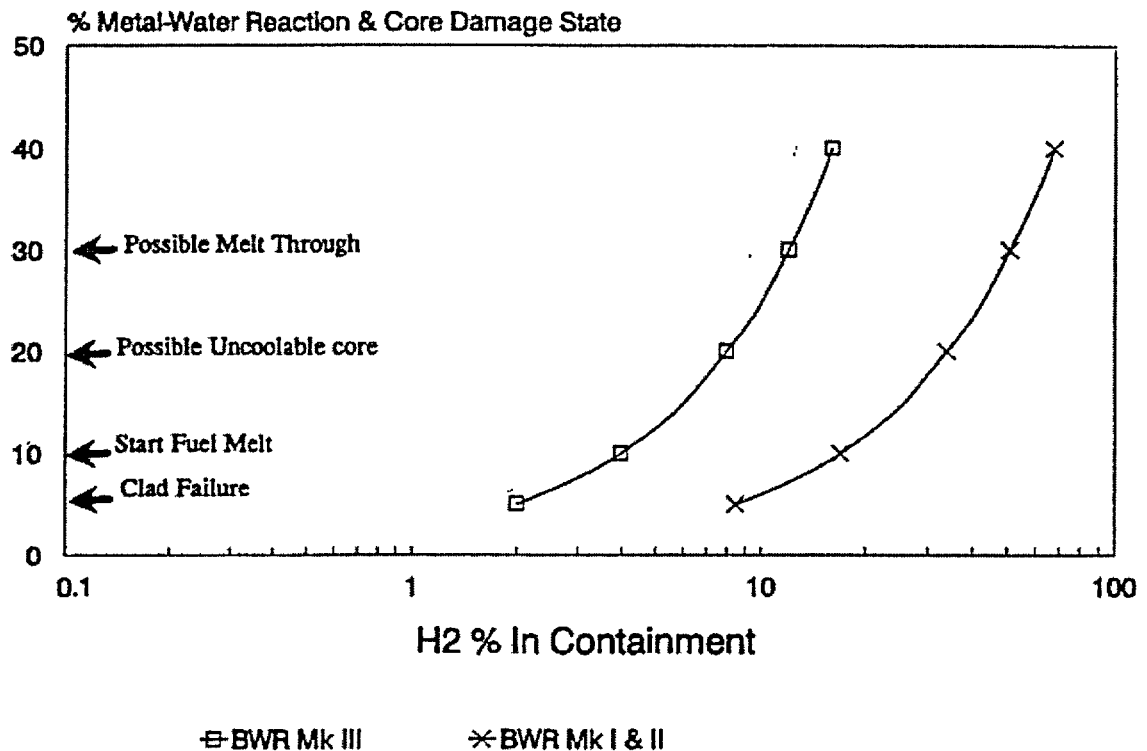
Per RTM-96, Chapter A (Method A.6), the hydrogen concentrations using this method are for wet samples; however, most hydrogen samples are dry (steam removed). If a dry sample concentration is used, one may overestimate considerably the level of core damage. This method assumes that all hydrogen is released to the containment and is completely mixed in the containment atmosphere.

**CAUTION**

Since containment samples may require hours to collect and analyze, and may not be representative of actual concentrations, hydrogen should NOT be relied upon to confirm core damage in all cases.

1. **COMPARE** the hydrogen percentage obtained to the graph in Figure 3 to estimate percentage of metal-water reaction and possible levels of core damage.

Figure 4-1<sup>5</sup>



<sup>5</sup> Figure 4-1 is consistent with Figure A-13 (Percentage of Hydrogen in Containment Relative to Core Damage) from U.S. NRC Response Technical Manual (RTM) 96, March 1996



**EMERGENCY CLASSIFICATION AND  
PROTECTIVE ACTION RECOMMENDATIONS**

1. **PURPOSE**

- 1.1 This procedure provides guidance for the classification of an emergency condition.
- 1.2 This procedure provides guidelines for determining Protective Action Recommendations (PARs) to be made to offsite authorities during a General Emergency.
- 1.3 This procedure provides guidance for event termination and entry into Recovery.

---

Emergency Classification .....	REFER to Section 4.1
Downgrading an Emergency Classification .....	REFER to Section 4.2
Transition to Recovery/Termination.....	REFER to Section 4.3
Plant Based PARs .....	REFER to Section 4.4
Dose Based PARs.....	REFER to Section 4.5
Overall PAR Determination .....	REFER to Section 4.6

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2. **TERMS AND DEFINITIONS**

- 2.1 **Classification** – Emergency classifications are divided into FIVE (5) categories or conditions, covering the postulated spectrum of emergency situations. The first four (4) emergency classifications are characterized by Emergency Action Levels (EALs) associated with Initiating Conditions and address emergencies of increasing severity. The fifth, the Recovery classification, is unique in that it may be viewed as a phase of the emergency, requiring specific criteria to be met and/or considered prior to its declaration. The classifications are as follows:
  - 2.1.1 **Unusual Event** - Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety occurs.
  - 2.1.2 **Alert** - events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant. Any releases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) Protective Action Guideline exposure levels.

- 2.1.3 Site Area Emergency - Events are in progress or have occurred that involve actual or likely major failures of plant functions needed for protection of the public. Any releases are not expected to exceed EPA Protective Action Guideline exposure levels except near the site boundary.
- 2.1.4 General Emergency - Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.
- 2.1.5 Recovery - That period when the emergency phase is over and activities are being taken to return the situation to a normal state (acceptable condition). The plant is under control and no potential for further degradation to the plant or the environment is believed to exist.
- 2.2 Emergency Action Levels (EALs) - a Pre-determined, Site-specific, observable threshold for a plant Initiating Condition that places the plant in a given emergency class. An EAL can be: an instrument reading; an equipment status indicator; a measurable parameter; a discrete, observable event; or another phenomenon which, if it occurs, indicates entry into a particular emergency class.
- 2.3 Emergency Director (ED) - the Director of the facility in Command and Control. One of the following: the Shift Emergency Director (CR), Station Emergency Director (TSC) or the Corporate Emergency Director (EOF).
- 2.4 EPA Protective Action Guideline - exposure levels determined by the Environmental Protection Agency for the evacuation of the offsite public following a release of radioactive materials. These levels have been established at one (1) Rem TEDE or five (5) Rem CDE Thyroid.
- 2.5 Imminent - mitigation actions have been ineffective and trended information indicates that the event or condition will occur within 2 hours.
- 2.6 Initiating Condition (IC) - one of a predetermined subset of nuclear power plant conditions where either the potential exists for a radiological emergency, or such an emergency has occurred.
- 2.7 Potential - mitigation actions are not effective and trended information indicates that the parameters are outside desirable bands and not stable or improving.
- 2.8 Protective Action Recommendations (PARs) - PARs are made by Exelon personnel whenever a General Emergency is declared. Additionally, if in the opinion of the Emergency Director, conditions warrant the issuance of PARs, a General Emergency will be declared (Exelon will not issue PARs for any accident classified below a General Emergency).

- 2.8.1 Offsite protective actions provided in response to a radioactive release include evacuation and taking shelter.
1. Evacuation is the preferred action unless external conditions impose a greater risk from the evacuation than from the dose received.
  2. Exelon personnel do not have the necessary information to determine whether offsite conditions would require sheltering instead of an evacuation. Therefore, an effort to base PARs on external factors (such as road conditions, traffic/traffic control, weather or offsite emergency worker response) should not be attempted.
- 2.8.2 At a minimum, a plant-based PAR to evacuate a 2 mile radius and 5 miles downwind, is issued at the declaration of a General Emergency based on NUREG-0654, Rev.1 Supplement 3. Depending on plant conditions (e.g., a **LOSS** of all three fission product barriers per the EALs), a PAR to evacuate a 5-mile radius and 10 miles downwind may be issued instead of the minimum PAR.
1. The PAR must be provided to the State, and designated local agencies as applicable, within 15 minutes of (1) the classification of the General Emergency or (2) any change in recommended actions.
  2. The PAR must be provided to the NRC as soon as possible and within 60 minutes of (1) the classification of the General Emergency or (2) any change in recommended actions.
- 2.8.3 The Emergency Director may elect to specify PARs for any combinations of [MWROG] Subareas / [MAROG] Sectors or the entire EPZ (or beyond) regardless of plant and dose based guidance.
- 2.8.4 PARs should not be extended based on the results of dose projections unless the postulated release is likely to occur within a short period of time. Plant based PARs are inherently conservative such that expanding the evacuation zone as an added precaution would result in a greater risk from the evacuation than from the radiological consequences of a release. It also would dilute the effectiveness of the offsite resources used to accommodate the evacuation.
- 2.8.5 Protective actions taken in areas affected by plume deposition following the release are determined and controlled by offsite governmental agencies.
1. Exelon is not expected to develop offsite recommendations involving ingestion or relocation issues following plume passage.
  2. Exelon may be requested to provide resources to support the determination of post plume protective actions.

### 3. RESPONSIBILITIES

- 3.1 The **Shift Emergency Director (Shift Manager)**, when in Command and Control (C&C), has the non-delegable responsibility for classification of emergencies and final determination of PARs.
- 3.2 The **Station Emergency Director**, when in Command and Control, has the non-delegable responsibility for classification of emergencies and final determination of PARs.
- 3.3 The **Corporate Emergency Director**, when in Command and Control, has the non-delegable responsibility for final determination of PARs. Classification remains with the Station Emergency Director.
- 3.4 The **TSC groups** (e.g., Technical Support, Operations, Facility Support, RP/Chemistry) are responsible for monitoring and assessing conditions within their areas in support of classification.
- 3.5 The **Shift Emergency Director (CR) / Technical Manager (TSC) or Technical Support Manager (EOF)**, in the facility with the Emergency Director having Command and Control, is responsible for evaluating the plant-based PARs from the PAR flowcharts.
- 3.6 The **designated Shift Dose Assessor (CR) / Radiation Protection Manager (TSC) / Radiation Protection Manager (EOF)**, in the facility with the Emergency Director having Command and Control, is responsible for evaluating the dose-based PARs from the results of the dose assessment analyses and field team surveys/samples.

### 4. MAIN BODY

#### 4.1 Emergency Classification

**NOTE:** Once indication of an abnormal condition is available, classification declaration must be made within 15 minutes. This time is available to ensure that the classification and subsequent actions associated with the classification, if warranted, are appropriate. It **does not** allow a delay of 15 minutes if the classification is recognized to be necessary. It is meant to provide sufficient time to accurately assess the emergency conditions and then evaluate the need for an emergency classification based on the assessment performed.

The decision to downgrade or terminate the event and enter Recovery is NOT time dependent.

**NOTE:** If the event escalates to a higher classification before the notification can be made for an initial (or previous) declaration, the time requirements in the previous note restart and notification for the first classification is not made.

4.1.1 When an abnormal condition is being evaluated, **REFER** to the appropriate Station EAL Matrix and **PERFORM** the following:

1. **IDENTIFY** the Unit Mode for the state of the plant prior to the abnormal condition.

Plant Modes	
BWRs	PWRs
1 Power Operations	1 Power Operations
2 Startup	2 Startup
3 Hot Shutdown	3 Hot Standby
4 Cold Shutdown	4 Hot Shutdown
5 Refueling	5 Cold Shutdown
D Defueled	6 Refueling

2. **REVIEW** the Initiating Conditions (ICs) applicable to the operating mode as follows.

A. Starting with the highest (General Emergency) classification level on the left side of the matrix and continue to the lowest (Unusual Event) classification level on the right side of the matrix.

B. **IF** more than one IC applies to the event, **SELECT** the highest IC that may be applicable (from all of the ICs that were determined to have been met).

**NOTE:** Classification is made on a Unit basis. For events affecting both Units, the highest classification on either Unit is used for notification.

3. **REVIEW** the EAL Threshold Values for the IC.

A. **IF** the EAL Threshold Values have been met or exceeded, **THEN:**

- **NOTE** the EAL number associated with the IC.
- **DECLARE** the event.
- **RETURN** to the appropriate EP-AA-112 ERO position checklist. And immediately begin notifications.

B. **IF** the EAL Threshold Values have not been met or exceeded, **THEN** return to the appropriate EP-AA-112 ERO position checklist.

#### 4.2 Downgrading an Emergency Classification

4.2.1 An Alert Classification may be downgraded to an Unusual Event if conditions warrant.

4.2.2 A Site Area Emergency or General Emergency **shall not** be downgraded to a lower classification.

1. A Site Area Emergency Classification, once declared, shall remain in effect until a General Emergency Classification is warranted or until such time as conditions warrant exiting to Recovery.

2. A General Emergency Classification, once declared, shall remain in effect until such time as conditions warrant exiting to Recovery.

#### 4.3 Transition to Recovery/Termination

4.3.1 Complete the Termination/Recovery Checklist (Attachment 1).

1. If conditions will allow for the termination of the emergency and entry into Recovery, exit this procedure and enter EP-AA-115, Recovery.

2. If conditions do not support termination of the emergency and entry into Recovery, continue following the guidance provided in Section 4.1.2.

#### 4.4 Plant Based Protective Action Recommendations (PARs)

4.4.1 Upon declaration of a General Emergency, **EVALUATE** the results of the plant-based PARs using the following attachments:

- Attachment 2, Braidwood Plant Based PAR Flowchart
- Attachment 3, Byron Station Plant Based PAR Flowchart
- Attachment 4, Dresden Station Plant Based PAR Flowchart
- Attachment 5, LaSalle Station Plant Based PAR Flowchart
- Attachment 6, Quad Cities Station Plant Based PAR Flowchart
- Attachment 7, Clinton Station Plant Based PAR Flowchart
- Attachment 8, Limerick/Peach Bottom Plant Based PAR Flowchart

4.4.2 Continue to **EVALUATE** plant based PARs as Fission Product Barrier status or wind direction changes.

4.5 Dose Assessment Based Protective Action Recommendations (PARs)

**NOTE:** If radiation monitor readings provide sufficient data for assessment, it is NOT appropriate to wait for field monitoring data to become available to confirm or expand a PAR within the 10-mile EPZ.

**NOTE:** Many assumptions exist in dose assessment calculations, involving both source term and meteorological factors, which make computer predictions over long distances highly questionable.

4.5.1 Dose projections are NOT required to support the decision process in the plant-based PAR Flowcharts. However, it is expected that a dose projections be performed as soon as possible by the facility in Command and Control at a General Emergency with a release in progress per EP-MW(MA)-110-200.

4.5.2 From the Control Room:

1. If a release is in progress at a General Emergency classification, and time permits, **then PERFORM** an offsite dose assessment using the "Quick Assessment" dose model option.

4.5.3 From the TSC or EOF:

1. **PERFORM** dose projections, using the Full Assessment" dose model option, to determine whether the plant-based protective actions are adequate using the following methods as applicable:
2. Monitored Release:

**NOTE:** If dose assessment results indicate the need to recommend actions beyond 10 miles, then DISPATCH Field Monitoring Teams to downwind areas to verify the calculated exposure rates prior to issuing PARs outside the 10 mile EPZ.

- A. If a release is in progress, **then ASSESS** the calculated impact to determine whether the plant based PARs are adequate.
- B. If a release is not in progress, **then USE** current meteorological and core damage data to project effluent monitor threshold values that would require 2, 5, and 10 mile evacuations.
  - **RE-ESTABLISH** threshold values whenever meteorological conditions or core damage assessment values change.

3. Containment Leakage/Failure:

- A. If a release is in progress, THEN assess the calculated impact to determine whether the plant based PARs are adequate.
- B. If a release is not in progress, then **USE** current meteorological and core damage data on various scenarios (design leakage, failure to isolate, catastrophic failure) to project the dose consequences and determine whether the plant based PARs are adequate.

4. Field Survey Analysis: Actual field readings from Field Teams should be compared to dose assessment results and used as a dose projection method to validate calculated PARs and to determine whether the plant or release based protective actions are adequate.

5. Release Point Analysis: Actual sample data from monitored or unmonitored release points should be utilized in conjunction with other dose assessment and projection methods to validate calculated PARs and to determine whether the plant based protective actions are adequate.

4.6 Overall Protective Action Recommendations (PARs)

4.6.1 **EVALUATE** the results of the plant based PARs and determine which Subareas/Sectors are to be evacuated.

4.6.2 **IF** a release is in progress, **THEN:**

1. **EVALUATE** the results of the dose based PARs and determine if EPA Protective Action Guides (EPA PAGs) of 1 Rem TEDE or 5 Rem CDE Thyroid are exceeded and if additional Subareas/Sectors require evacuation.
2. **ADD** any Subarea/Sector requiring evacuation as determined by dose assessment to the plant based PARs.

4.6.3 **IF** no release is in progress, **THEN:**

1. **PERFORM** dose projections on possible conditions as time permits to determine if PAGs could be exceeded.
2. **CONSIDER** adding any Subareas/Sectors requiring evacuation as determined by dose projection to the plant based PARs.

4.6.4 **COMBINE** the results of the plant based and appropriate dose based PARs onto the State/Local notification form.

4.6.5 **RETAIN** any copies of plant and/or dose based PAR reports (Attachments 1-8 or dose code printouts).



5. **DOCUMENTATION** – NONE.

6. **REFERENCES** - NONE

7. **ATTACHMENTS**

Attachment 1, Termination/Recovery Checklist

Attachment 2, Braidwood Plant-Based PAR Flowchart

Attachment 3, Byron Plant-Based PAR Flowchart

Attachment 4, Dresden Plant-Based PAR Flowchart

Attachment 5, LaSalle Plant-Based PAR Flowchart

Attachment 6, Quad Cities Plant-Based PAR Flowchart

Attachment 7, Clinton Plant-Based PAR Flowchart

Attachment 8, Limerick/Peach Bottom Plant-Based PAR Flowchart

**ATTACHMENT 1**  
**TERMINATION/RECOVERY CHECKLIST**

Page 1 of 2

- |  | <u>True</u>              | <u>False</u>             |
|--|--------------------------|--------------------------|
| 1. Conditions no longer meet an Emergency Action Level and it appears unlikely that conditions will deteriorate. | <input type="checkbox"/> | <input type="checkbox"/> |

List any EAL(s) which is/are still exceeded and a justification as to why a state of emergency is no longer applicable:

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- |   |                          |                          |
|---|--------------------------|--------------------------|
| 2. All required notifications for entry into the Recovery Phase have been prepared. | <input type="checkbox"/> | <input type="checkbox"/> |
|---|--------------------------|--------------------------|

**STOP** for Unusual Event.

**CONTINUE** for Alert, Site Area and General Emergency classifications

- |   |                          |                          |
|---|--------------------------|--------------------------|
| 3. Plant releases of radioactive materials to the environment are under control (within Tech Specs) or have ceased and the potential for a uncontrolled radioactive release is acceptably low.  | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. The radioactive plume has dissipated and plume tracking is no longer required. The only environmental assessment activities in progress are those necessary to determine the extent of deposition resulting from passage of the plume. | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. In-plant radiation levels are stable or decreasing, and acceptable given the plant conditions.   | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. The reactor is in a stable shutdown condition and long-term core cooling is available.   | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. The integrity of the Reactor Containment Building is within Technical Specification limits.  | <input type="checkbox"/> | <input type="checkbox"/> |

**ATTACHMENT 1**  
**TERMINATION/RECOVERY CHECKLIST**

Page 2 of 2

- |   | <u>True</u>              | <u>False</u>             |
|---|--------------------------|--------------------------|
| 8. The operability and integrity of radioactive waste systems, decontamination facilities, power supplies, electrical equipment and plant instrumentation including radiation monitoring equipment is acceptable. | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Any fire, flood, earthquake or similar emergency condition or threat to security no longer exists.   | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Any contaminated injured person has been treated and/or transported to a medical care facility.   | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Offsite conditions do not unreasonably limit access of outside support to the station and qualified personnel and support services are available.   | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. Discussions have been held with Federal, State and County agencies and agreement has been reached and coordination established to terminate the emergency.  | <input type="checkbox"/> | <input type="checkbox"/> |

It is not necessary that all responses listed above be 'TRUE'; however, all items must be considered prior to event termination or entry into Recovery. For example, it is possible that some conditions remain which exceed an Emergency Action Level following a severe accident but entry into Recovery is appropriate. Additionally, other significant items not included on this list may warrant consideration such as severe weather.

Comments:

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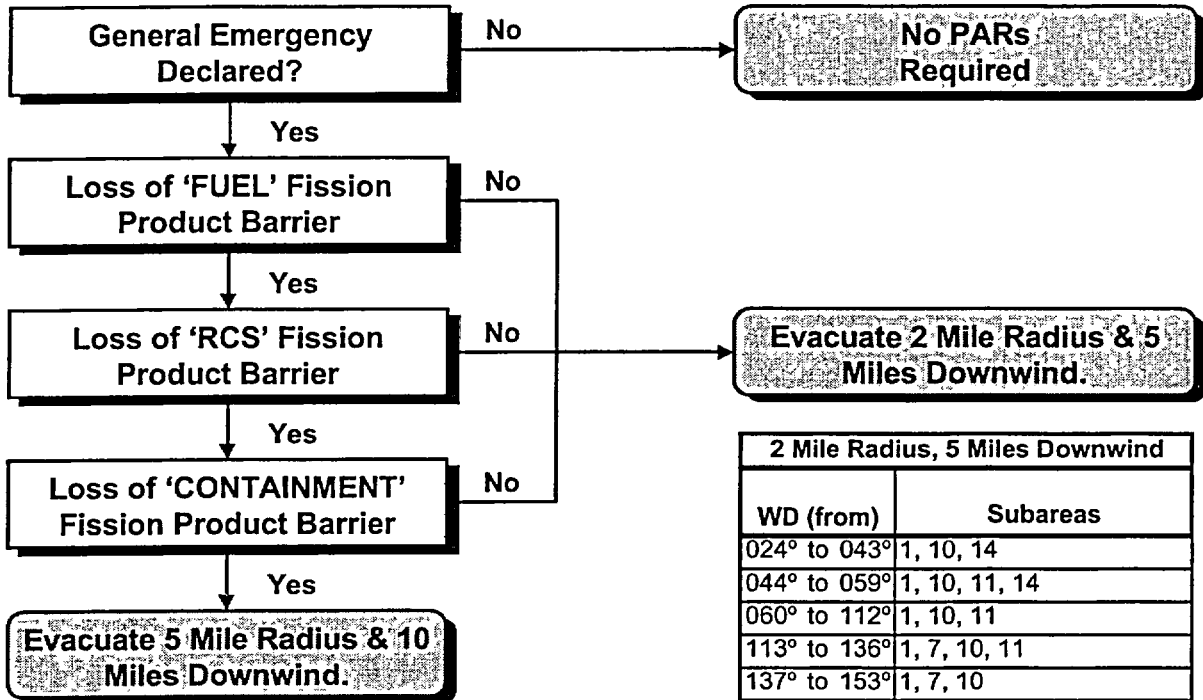
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Approved: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
Emergency Director (in C&C of event classification)

**ATTACHMENT 2**  
**BRAIDWOOD PLANT-BASED PAR FLOWCHART**

Page 1 of 1



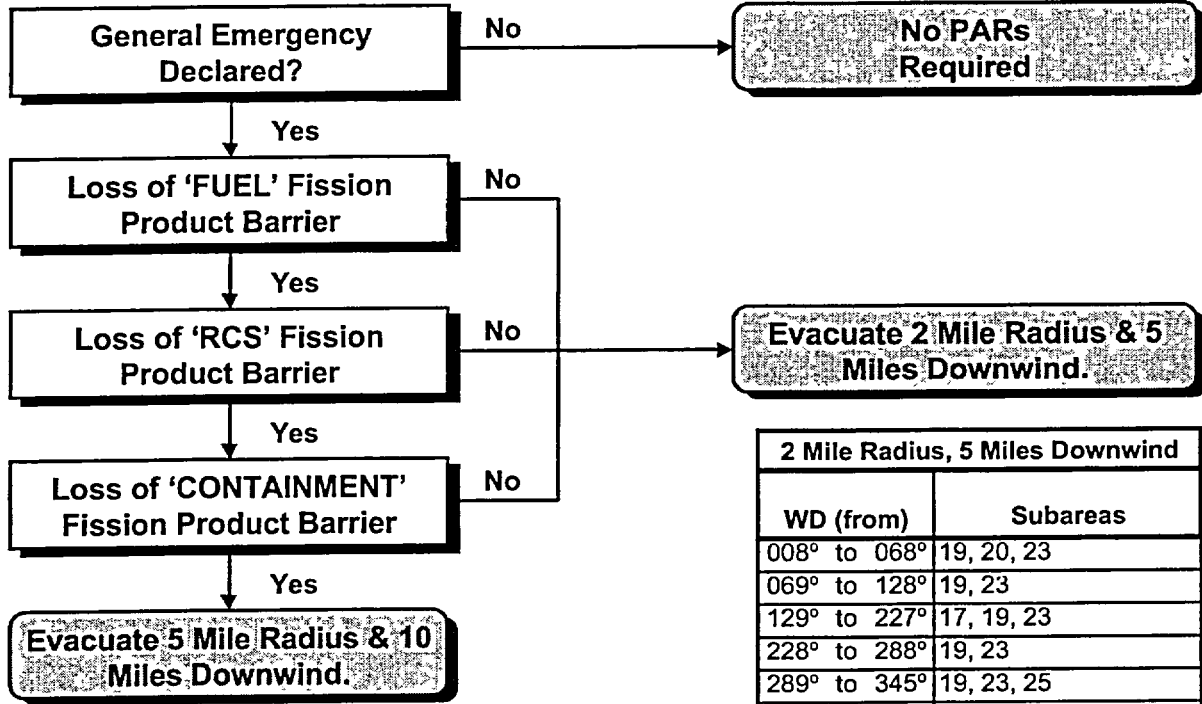
2 Mile Radius, 5 Miles Downwind	
WD (from)	Subareas
024° to 043°	1, 10, 14
044° to 059°	1, 10, 11, 14
060° to 112°	1, 10, 11
113° to 136°	1, 7, 10, 11
137° to 153°	1, 7, 10
154° to 179°	1, 2, 7, 10
180° to 204°	1, 2, 10
205° to 236°	1, 2, 3, 10
237° to 289°	1, 3, 10
290° to 329°	1, 3, 6, 10
330° to 354°	1, 6, 10
355° to 023°	1, 6, 10, 14

5 Mile Radius, 10 Miles Downwind	
WD (from)	Subareas
014° to 027°	1, 2, 3, 6, 7, 10, 11, 14, 15
028° to 056°	1, 2, 3, 6, 7, 10, 11, 14, 15, 16
057° to 073°	1, 2, 3, 6, 7, 10, 11, 12, 14, 15, 16
074° to 083°	1, 2, 3, 6, 7, 10, 11, 12, 14, 16
084° to 093°	1, 2, 3, 6, 7, 10, 11, 12, 14
094° to 104°	1, 2, 3, 6, 7, 8, 10, 11, 12, 14
105° to 121°	1, 2, 3, 4, 6, 7, 8, 10, 11, 12, 14
122° to 149°	1, 2, 3, 4, 6, 7, 8, 10, 11, 14
150° to 163°	1, 2, 3, 4, 6, 7, 10, 11, 14
164° to 181°	1, 2, 3, 4, 5, 6, 7, 10, 11, 14
182° to 210°	1, 2, 3, 5, 6, 7, 10, 11, 14
211° to 242°	1, 2, 3, 5, 6, 7, 10, 11, 13, 14
243° to 274°	1, 2, 3, 6, 7, 10, 11, 13, 14
275° to 307°	1, 2, 3, 6, 7, 9, 10, 11, 13, 14
308° to 013°	1, 2, 3, 6, 7, 9, 10, 11, 14

**NOTE:** Ensure dose based PARs are evaluated when a release is in progress.

**ATTACHMENT 3**  
**BYRON PLANT-BASED PAR FLOWCHART**

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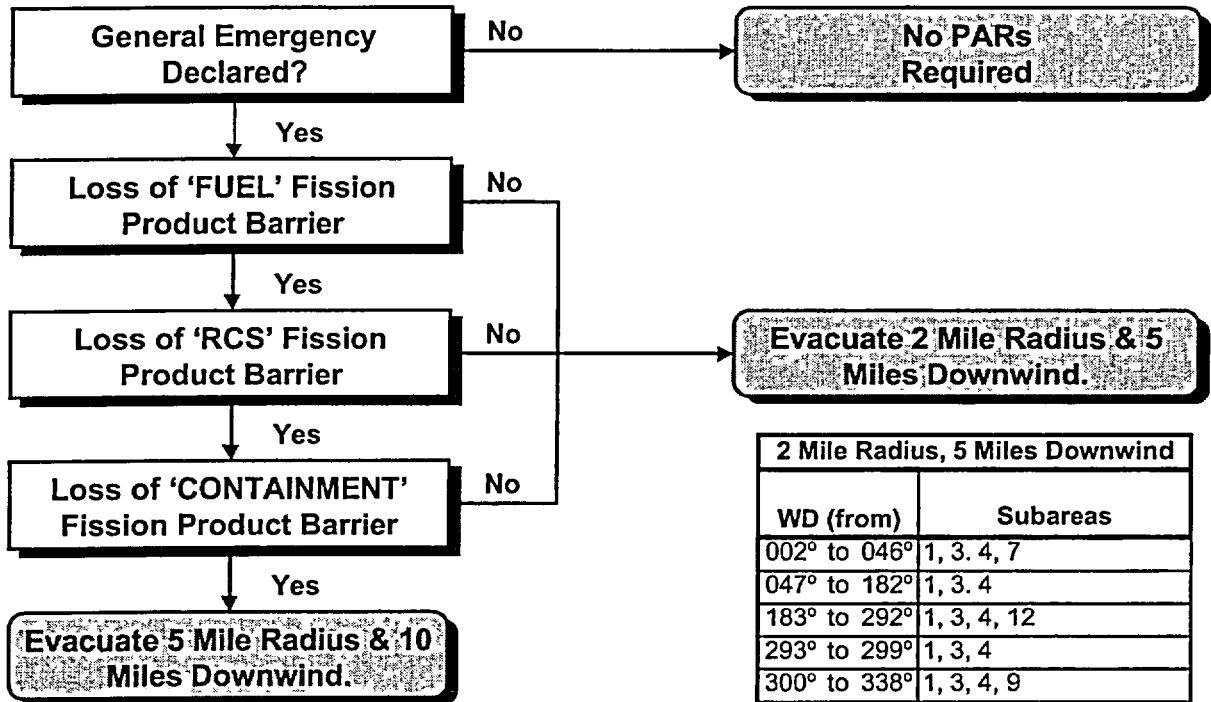
2 Mile Radius, 5 Miles Downwind	
WD (from)	Subareas
008° to 068°	19, 20, 23
069° to 128°	19, 23
129° to 227°	17, 19, 23
228° to 288°	19, 23
289° to 345°	19, 23, 25
346° to 007°	19, 20, 23, 25

5 Mile Radius, 10 Miles Downwind	
WD (from)	Subareas
022° to 051°	14, 17, 19, 20, 23, 25
052° to 082°	12, 14, 17, 19, 20, 23, 25
083° to 100°	12, 17, 19, 20, 23, 25
101° to 125°	10, 12, 17, 19, 20, 23, 25
126° to 139°	10, 17, 19, 20, 23, 25
140° to 171°	10, 17, 19, 20, 23, 25, 40
172° to 209°	17, 19, 20, 23, 25, 40
210° to 220°	17, 19, 20, 23, 25, 39, 40
221° to 252°	17, 19, 20, 23, 25, 27, 39
253° to 264°	17, 19, 20, 23, 25, 27
265° to 285°	17, 19, 20, 23, 25, 27, 28
286° to 326°	17, 19, 20, 23, 25, 28
327° to 021°	17, 19, 20, 23, 25

**NOTE:** Ensure dose based PARs are evaluated when a release is in progress

**ATTACHMENT 4**  
**DRESDEN PLANT-BASED PAR FLOWCHART**

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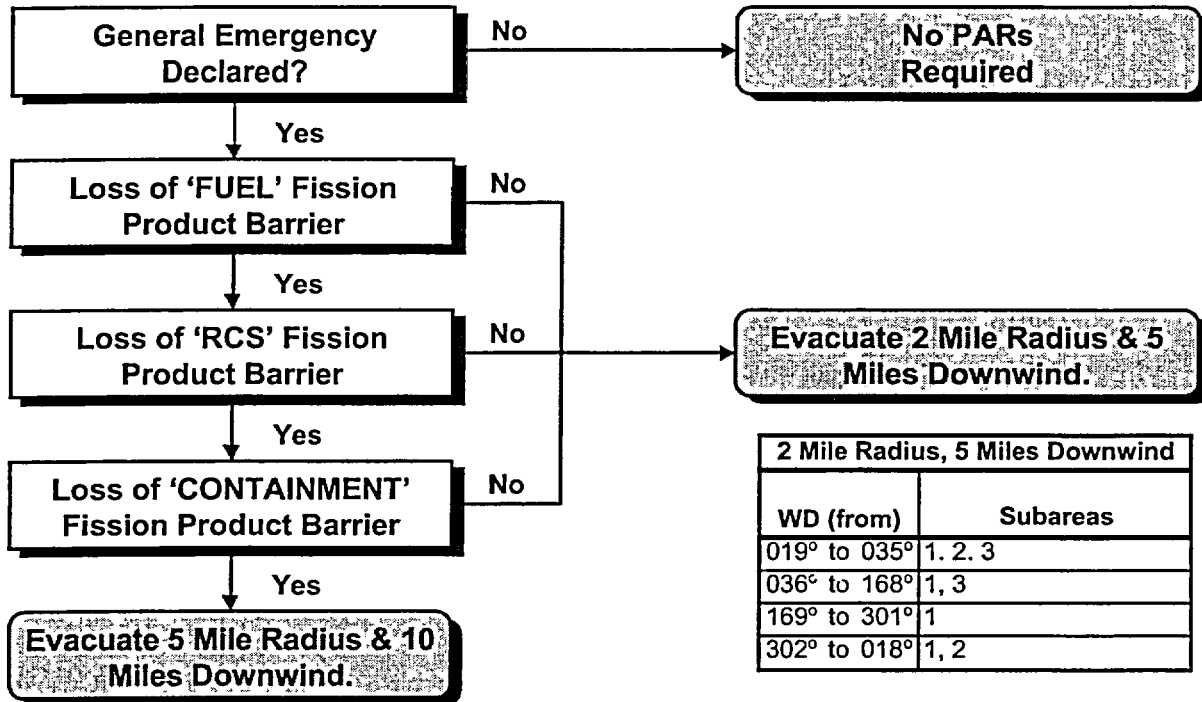
2 Mile Radius, 5 Miles Downwind	
WD (from)	Subareas
002° to 046°	1, 3, 4, 7
047° to 182°	1, 3, 4
183° to 292°	1, 3, 4, 12
293° to 299°	1, 3, 4
300° to 338°	1, 3, 4, 9
339° to 001°	1, 3, 4, 7, 9

5 Mile Radius, 10 Miles Downwind	
WD (from)	Subareas
002° to 026°	1, 3, 4, 7, 9, 10, 11, 12
027° to 044°	1, 3, 4, 7, 8, 9, 11, 12
045° to 068°	1, 3, 4, 7, 8, 9, 12
069° to 083°	1, 2, 3, 4, 5, 7, 8, 9, 12
084° to 092°	1, 2, 3, 4, 5, 7, 9, 12
093° to 112°	1, 2, 3, 4, 7, 9, 12
113° to 143°	1, 2, 3, 4, 6, 7, 9, 12
144° to 177°	1, 3, 4, 6, 7, 9, 12
178° to 199°	1, 3, 4, 6, 7, 9, 12, 13
200° to 225°	1, 3, 4, 7, 9, 12, 13
226° to 249°	1, 3, 4, 7, 9, 12, 13, 14
250° to 266°	1, 3, 4, 7, 9, 12, 14
267° to 286°	1, 3, 4, 7, 9, 12, 14, 15
287° to 321°	1, 3, 4, 7, 9, 12, 15
322° to 344°	1, 3, 4, 7, 9, 12, 15, 16
345° to 353°	1, 3, 4, 7, 9, 10, 12, 15, 16
354° to 001°	1, 3, 4, 7, 9, 10, 12, 16

**NOTE:** Ensure dose based PARs are evaluated when a release is in progress.

**ATTACHMENT 5**  
**LASALLE PLANT-BASED PAR FLOWCHART**

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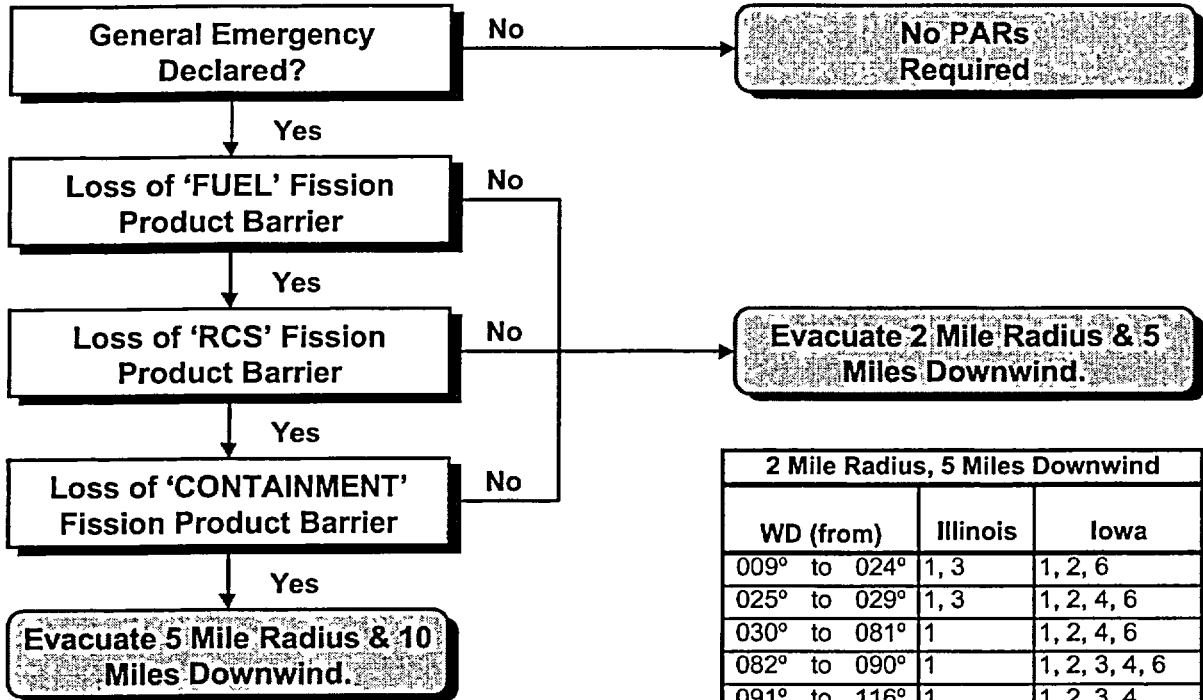
2 Mile Radius, 5 Miles Downwind	
WD (from)	Subareas
019° to 035°	1, 2, 3
036° to 168°	1, 3
169° to 301°	1
302° to 018°	1, 2

5 Mile Radius, 10 Miles Downwind	
WD (from)	Subareas
002° to 026°	1, 2, 3, 4, 5
027° to 056°	1, 2, 3, 4
057° to 076°	1, 2, 3, 4, 7
077° to 096°	1, 2, 3, 7
097° to 116°	1, 2, 3, 7, 8
117° to 121°	1, 2, 3, 8
122° to 149°	1, 2, 3, 8, 11
150° to 178°	1, 2, 3, 10, 11
179° to 197°	1, 2, 3, 10
198° to 218°	1, 2, 3, 6, 10
219° to 233°	1, 2, 3, 6, 9, 10
234° to 242°	1, 2, 3, 6, 9, 13
243° to 265°	1, 2, 3, 9, 13
266° to 281°	1, 2, 3, 13
282° to 316°	1, 2, 3, 13, 17
317° to 342°	1, 2, 3, 5, 17
343° to 001°	1, 2, 3, 5

**NOTE:** Ensure dose based PARs are evaluated when a release is in progress.

**ATTACHMENT 6**  
**QUAD CITIES PLANT-BASED PAR FLOWCHART**

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2 Mile Radius, 5 Miles Downwind		
WD (from)	Illinois	Iowa
009° to 024°	1, 3	1, 2, 6
025° to 029°	1, 3	1, 2, 4, 6
030° to 081°	1	1, 2, 4, 6
082° to 090°	1	1, 2, 3, 4, 6
091° to 116°	1	1, 2, 3, 4
117° to 165°	1	1, 2, 3
166° to 186°	1	1, 2, 3, 5
187° to 215°	1	1, 2, 5
216° to 240°	1, 2	1, 2, 5
241° to 289°	1, 2	1, 2
290° to 318°	1, 2, 3	1, 2
319° to 008°	1, 3	1, 2

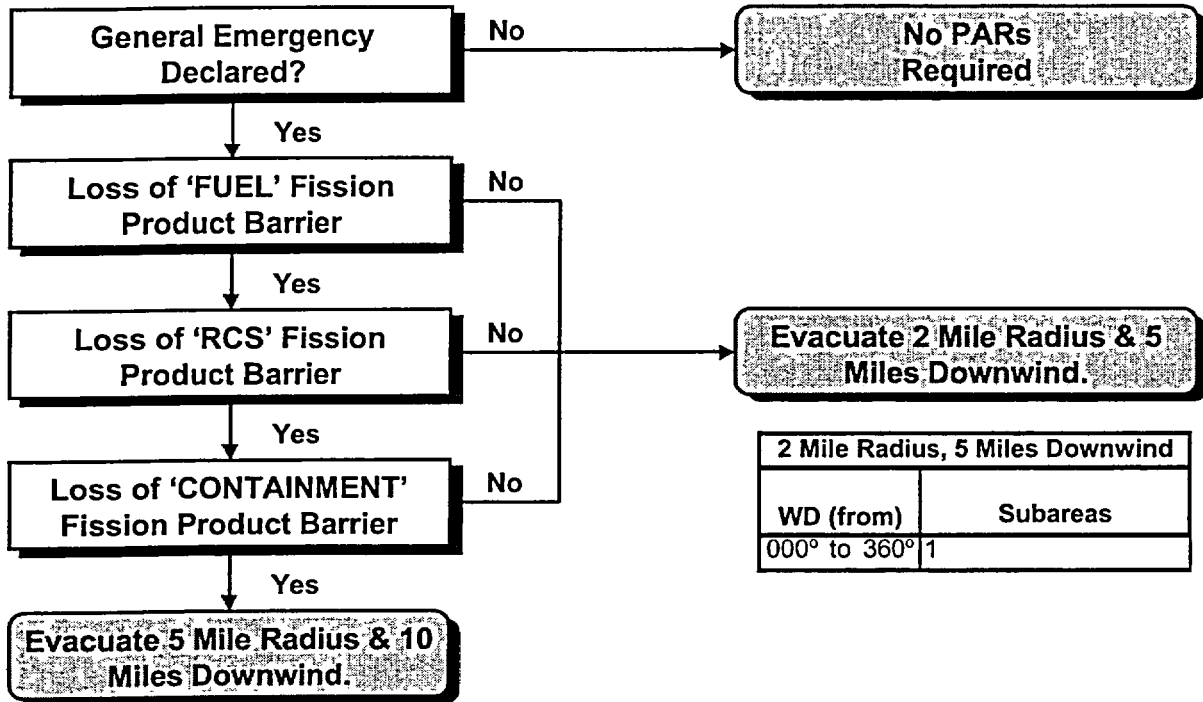
5 Mile Radius, 10 Miles Downwind		
WD (from)	Illinois	Iowa
002° to 025°	1, 2, 3, 6	1, 2, 3, 4, 5, 6, 12
026° to 031°	1, 2, 3	1, 2, 3, 4, 5, 6, 12
032° to 049°	1, 2, 3	1, 2, 3, 4, 5, 6, 10, 12
050° to 058°	1, 2, 3	1, 2, 3, 4, 5, 6, 8, 10, 12
059° to 075°	1, 2, 3	1, 2, 3, 4, 5, 6, 8, 10
076° to 087°	1, 2, 3	1, 2, 3, 4, 5, 6, 8
088° to 106°	1, 2, 3	1, 2, 3, 4, 5, 6, 7, 8
107° to 116°	1, 2, 3	1, 2, 3, 4, 5, 6, 7
117° to 146°	1, 2, 3	1, 2, 3, 4, 5, 6, 7, 9
147° to 169°	1, 2, 3	1, 2, 3, 4, 5, 6, 9
170° to 186°	1, 2, 3	1, 2, 3, 4, 5, 6, 9, 11
187° to 215°	1, 2, 3	1, 2, 3, 4, 5, 6, 11
216° to 229°	1, 2, 3, 4	1, 2, 3, 4, 5, 6, 11
230° to 239°	1, 2, 3, 4	1, 2, 3, 4, 5, 6
240° to 267°	1, 2, 3, 4, 5	1, 2, 3, 4, 5, 6
268° to 296°	1, 2, 3, 5	1, 2, 3, 4, 5, 6
297° to 318°	1, 2, 3, 5, 6	1, 2, 3, 4, 5, 6
319° to 001°	1, 2, 3, 6	1, 2, 3, 4, 5, 6

**NOTE:** Ensure dose based PARs are evaluated when a release is in progress.



**ATTACHMENT 7**  
**CLINTON PLANT-BASED PAR FLOWCHART**

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2 Mile Radius, 5 Miles Downwind	
WD (from)	Subareas
000° to 360°	1

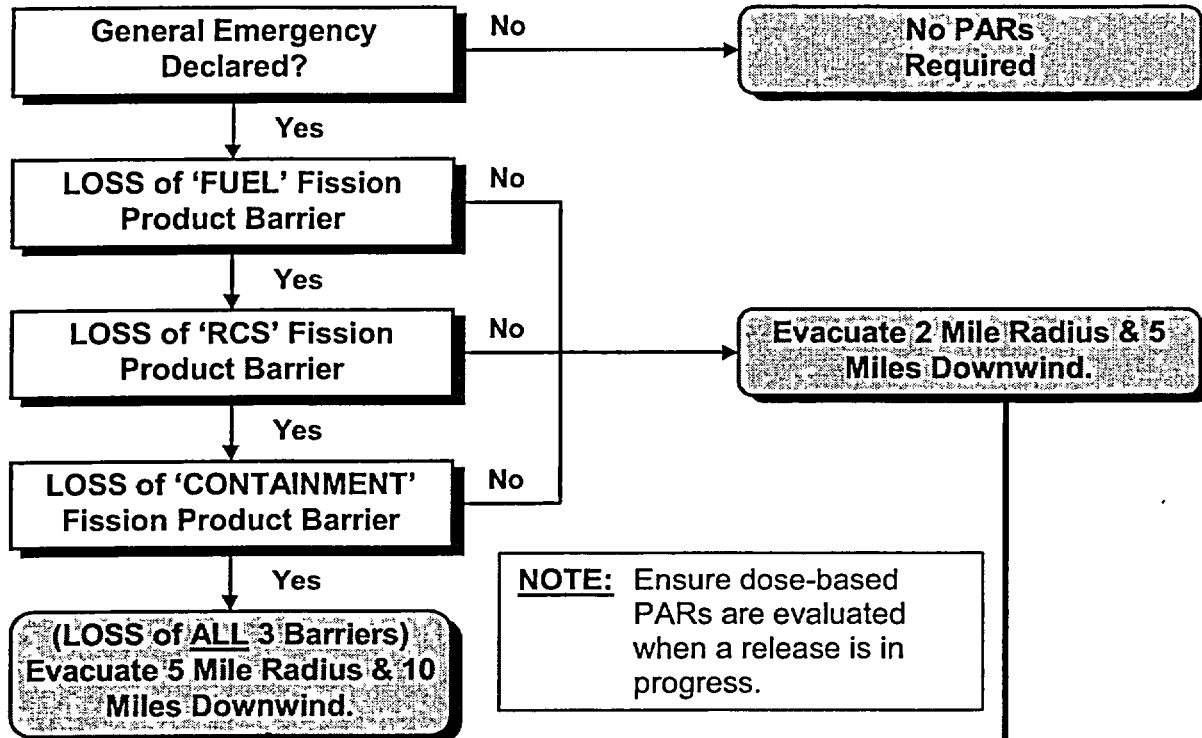
5 Mile Radius, 10 Miles Downwind	
WD (from)	Subareas
021° to 048°	1, 5, 6
049° to 066°	1, 6
067° to 090°	1, 6, 7
091° to 094°	1, 7
095° to 132°	1, 7, 8
133° to 157°	1, 2, 8
158° to 196°	1, 2
197° to 228°	1, 2, 3
229° to 251°	1, 3
252° to 281°	1, 3, 4
282° to 308°	1, 4
309° to 338°	1, 4, 5
339° to 020°	1, 5

**NOTE:** Ensure dose based PARs are evaluated when a release is in progress.

**ATTACHMENT 8**

**LIMERICK/PEACH BOTTOM PLANT-BASED PAR FLOWCHART**

Page 1 of 1



WIND DIRECTION (FROM)	DOWNWIND SECTOR(S)*	WIND DIRECTION (FROM)	DOWNWIND SECTOR(S)*
355 to 005	SSE / S / SSW	175 to 185	NNW / N / NNE
006 to 017	SSE / S / SSW / SW	186 to 197	NNW / N / NNE / NE
018 to 027	S / SSW / SW	198 to 207	N / NNE / NE
028 to 039	S / SSW / SW / WSW	208 to 219	N / NNE / NE / ENE
040 to 050	SSW / SW / WSW	220 to 230	NNE / NE / ENE
051 to 062	SSW / SW / WSW / W	231 to 242	NNE / NE / ENE / E
063 to 072	SW / WSW / W	243 to 252	NE / ENE / E
073 to 084	SW / WSW / W / WNW	253 to 264	NE / ENE / E / ESE
085 to 095	WSW / W / WNW	265 to 275	ENE / E / ESE
096 to 107	WSW / W / WNW / NW	276 to 287	ENE / E / ESE / SE
108 to 117	W / WNW / NW	288 to 297	E / ESE / SE
118 to 129	W / WNW / NW / NNW	298 to 309	E / ESE / SE / SSE
130 to 140	WNW / NW / NNW	310 to 320	ESE / SE / SSE
141 to 152	WNW / NW / NNW / N	321 to 332	ESE / SE / SSE / S
153 to 162	NW / NNW / N	333 to 342	SE / SSE / S
163 to 174	NW / NNW / N / NNE	343 to 354	SE / SSE / S / SSW

\* **BOLD** refers to affected Sector(s). These sectors are based on dose model stability class "D", and in some cases, an extra sector was included for conservatism.

**EMERGENCY RESPONSE ORGANIZATION (ERO) / EMERGENCY RESPONSE FACILITY (ERF) ACTIVATION AND OPERATION**

1. **PURPOSE**

- 1.1 This procedure describes the activation and operation of the ERO and ERF and outlines their responsibilities.

2. **TERMS AND DEFINITIONS**

- 2.1 **Command and Control:** When in Command and Control, the designated Emergency Response Facility (ERF) has overall responsibility for Exelon Nuclear's emergency response efforts:

- Shift Emergency Director (Control Room),
- Station Emergency Director (TSC), or
- Corporate Emergency Director (EOF)

Transfer of Command and Control may occur prior to declaring facility activated, if in the Emergency Director's judgment, the following criteria are met:

1. Adequate staff levels are present in support of the non-delegable responsibilities being transferred;
  2. The staff has been fully briefed as to the status of the event and currently proposed plan of action; and
  3. A turnover between the Emergency Director relinquishing Command and Control and the Emergency Director assuming Command and Control has been completed. The Command and Control Turnover Briefing Form (Attachment 1) should be used to coordinate the transfer of non-delegable responsibilities between facility Emergency Director positions.
- 2.2 **Emergency Personnel:** Those organizational groups that perform a functional role during an emergency condition. Within Exelon Nuclear, emergency personnel include the Managers and Directors of the Emergency Response Organization, accident assessment personnel, radiological monitoring teams, fire brigades, first aid teams, and security personnel.
- 2.3 **ERO Activation:** The process used with the intention of fully staffing the facility to assume the positional responsibilities described in the Emergency Plan. ERO activation time is measured from the time when the event was classified until the responders have reported into the facility.

- 2.4 **Facility Activation:** It is the goal of the organization to be capable of activating the applicable Emergency Response Facility within 15 minutes of achieving minimum staffing. The facility can be declared activated when the following conditions are met:
1. Minimum staffing has been achieved.
  2. Personnel have been briefed on the situation.
  3. The facility is functionally capable of performing the appropriate activity.

Although the response time will vary due to factors such as weather and traffic conditions, a goal of 60 minutes for minimum staffing, following the classification of an Alert or higher emergency classification, has been established for the ERO personnel responding to the station emergency facilities and the EOF.

While the minimum staffing criteria applies to the JPIC, the 60-minute response and 75-minute activation times are not applicable. Public Information personnel must first coordinate the decision to activate the JPIC with the appropriate offsite authorities.

### 3. **RESPONSIBILITIES**

#### 3.1 **Non-Delegable Responsibilities**

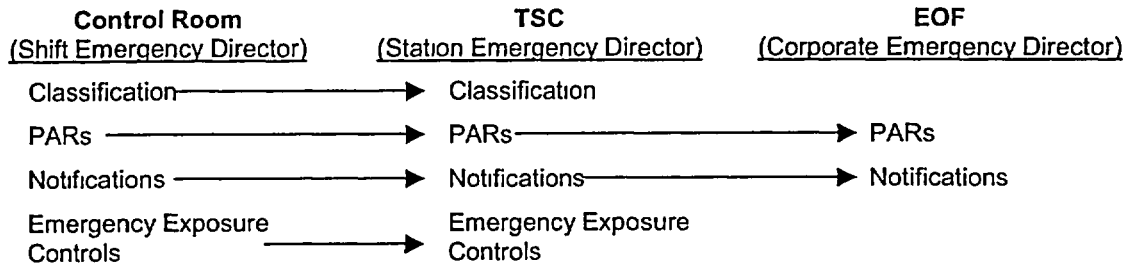
- 3.1.1 The following responsibilities will be transferred from the Shift Emergency Director to the Station Emergency Director and ultimately the Corporate Emergency Director, but **cannot** be delegated to other ERO personnel by the Emergency Director in Command and Control:

1. **Final decision to notify offsite authorities** - Although the notification approval responsibility may not be delegated, actual notification communication may be delegated.
2. **Final decision to recommend protective actions to offsite authorities** - Although the PAR determination responsibility may not be delegated, actual recommendation communications may be delegated.

- 3.1.2 The following responsibilities will be transferred from the Shift Emergency Director to the Station Emergency Director, but **cannot** be delegated to other ERO personnel.

1. **Final decision to declare the emergency classification.**
2. **Final decision for issuance of thyroid blocking agents to Exelon Nuclear emergency workers and/or onsite personnel.**
3. **Authorization of personnel exposure per EPA-400 limits.**

3.1.3 The above non-delegable responsibilities will move with the transfer of Command and Control as indicated:



1. If the TSC is not functional and the EOF is adequately staffed and briefed, Command and Control of overall emergency response and the non-delegable responsibility for PAR determination and the notification of offsite authorities can be transferred directly from the Shift Emergency Director to the Corporate Emergency Director. The Control Room will retain responsibility for event classification and emergency exposure controls until the Station Emergency Director is ready to accept.
2. If the Emergency Director is incapacitated, then Command and Control can either be moved back through the Emergency Director chain or given to facility subordinates based on the following line of succession:
  - Control Room (CR) - A licensed Senior Reactor Operator
  - Technical Support Center (TSC) - Operations Manager
  - Emergency Operations Facility (EOF) – EOF Director

3.1.4 Responsibility for performing offsite dose assessments and coordination of field monitoring teams may be transferred to the EOF, prior to the formal transfer of Command and Control for PAR decision-making. This transfer may be initiated once the EOF Protective Measures Group is adequately staff and concurrence is obtained from the TSC and EOF Radiation Protection Managers.

4. MAIN BODY

4.1 Control Room

4.1.1 The Shift Manager in the Control Room has the responsibility to initially recognize that an event at the station has occurred, which requires classification and subsequent activation of the Emergency Plan.

4.1.2 The Shift Manager shall assume the responsibilities of the Shift Emergency Director following event classification and implement the emergency response activities identified in EP-AA-112-100, Attachment 1, Shift Emergency Director Checklist.

4.1.3 At the Alert or higher Classification, the Control Room shall **ACTIVATE** the Technical Support Center (TSC), Operational Support Center (OSC), Emergency Operations Facility (EOF), and Joint Public Information Center (JPIC). Mobilization of ERO personnel is optional at the Unusual Event classification with the exception of an Unusual Event due to a credible security threat (HU1), which requires the staffing of emergency facilities.

4.2 Technical Support Center / Operational Support Center

4.2.1 The TSC and OSC shall achieve Minimum Staffing within 60 minutes of an Alert declaration, with facility activation occurring within 15 minutes of achieving minimum staffing.

4.2.2 Position specific responsibility checklists for the TSC and OSC are found in EP-AA-112-200 and EP-AA-112-300 respectively.

4.2.3 The TSC supports the Control Room, performs non-delegable duties when in Command and Control, assesses plant status and potential off-site impact, and coordinates on-site emergency response efforts.

4.2.4 The OSC **SHALL** be activated whenever the TSC is activated, but may be subsequently de-activated if deemed unnecessary by the Station Emergency Director when at the classification of Alert or Unusual Event.

1. The purpose of the OSC is to provide a location where on-site operations support personnel will report during an emergency and from which they will be dispatched in support of emergency operations.
2. The OSC serves as a central location for coordination of team activities, a staffing pool for performance of in-plant activities, an assembly area for accountability of select station personnel and as a storage area for emergency supplies.

4.2.5 OSC Teams shall be requested by the TSC using the guidance found in EP-AA-112-200, Attachment 1, OSC Emergency Team Dispatch Guidance.

1. TSC Managers/Coordinators shall complete EP-AA-112-200, Attachment 2, OSC Team Request Form and forward to the Maintenance Manager for transmittal to the OSC.
2. OSC shall form and brief the team using EP-AA-112-300, Attachment 5, Team Briefing Form.
3. Returning teams will be debriefed using EP-AA-112-300, Attachment 6, OSC Team Debriefing Form.

#### 4.3 Emergency Operations Facility (EOF)

- 4.3.1 The EOF shall achieve Minimum Staffing within 60 minutes of an Alert declaration, with facility activation occurring within 15 minutes of achieving minimum staffing.
- 4.3.2 If the EOF is activated at a classification level of Unusual Event, then the EOF may be subsequently de-activated if its continued operation is agreed to be unnecessary by the Station Emergency Director and the Corporate Emergency Director.
- 4.3.3 Position specific responsibility checklists for the EOF are found in EP-AA-112-400.
- 4.3.4 The EOF supports the TSC and provides long-term support to the affected station.
  1. The EOF Organization is responsible for evaluating, coordinating and directing the overall company activities involved in the emergency response.
  2. The EOF will assume Command and Control of overall emergency response efforts to allow the station to focus attention on station activities. The non-delegable responsibilities for PAR decision-making and the notification of offsite authorities will also transfer to the EOF, but responsibility for event classification and emergency exposure controls will remain with the Station Emergency Director.
- 4.3.5 If the EOF is, or becomes uninhabitable, the Corporate Emergency Director will transfer responsibility for dose assessment and coordination of field survey teams back to the TSC. Available Exelon facilities or a TSC at an unaffected station should be considered as an alternate location.

**Mid-West ROG**

4.3.6 The Emergency News Center (ENC) function is co-located in the Cantera EOF and serves to gather factual information concerning the emergency event, write press releases and event chronologies, and interface with Exelon Nuclear spokespersons at the JPIC that are participating in news conferences. The ENC shall be activated with the EOF.

4.4 Joint Public Information Center (JPIC)

4.4.1 The JPIC shall be activated with the EOF at the Alert declaration level. While minimum staffing positions have been identified, no formal response times associated with this facility have been established. Activation of the JPIC should occur as soon as possible following achieving minimum staffing, based on event conditions and media interest.

4.4.2 Position specific responsibility checklists for the Emergency Public Information Organization are found in EP-AA-112-600.

4.4.3 The JPIC is designed to bring Exelon Nuclear spokespersons together with Federal, State, and Local governmental agencies so the coordination and dissemination of information to the public can be carried out quickly and accurately via the media.

4.4.4 The Joint Public Information Centers (JPIC) are located in near-site facilities.

1. Mazon JPIC (IL) - Near-site to Dresden, Braidwood and LaSalle
2. Morrison JPIC (IL) - Near-site to Quad Cities and Byron
3. Bloomington JPIC (IL) - Near-site to Clinton Station
4. Coatesville EOF (PA) – Limerick and Peach Bottom

4.5 Field Monitoring Teams

4.5.1 The position specific checklist for Field Monitoring Team personnel and guidelines for radiological plume monitoring and environmental sample collection, records and communications are located in EP-AA-112-500.

5. DOCUMENTATION

None

6. REFERENCES

None



7. **ATTACHMENTS**

- 7.1 Attachment 1, Command and Control Turnover Briefing Form
- 7.2 Attachment 2, Shift Turnover
- 7.3 Attachment 3, FFD Call-Out Record
- 7.4 Attachment 4, FFD Verification Form
- 7.5 Attachment 5, Dose Assessment Turnover Form
- 7.6 Attachment 6, Pre-scripted PA System Announcements for Event Classification
- 7.7 Attachment 7, Information Request / Message Sheet

**ATTACHMENT 1**

**COMMAND & CONTROL TURNOVER BRIEFING FORM**

Page 1 of 2

1. Affected Station: \_\_\_\_\_ Unit(s): \_\_\_\_\_
2. **Classification Level:**  Gen Emergency  Site Area Emergency  Alert  UE  
EAL #: \_\_\_\_\_ Classified at (Time): \_\_\_\_\_
3. **Offsite Notification Status**
  - a. Latest State/Local: \_\_\_\_\_ No: \_\_\_\_\_ Time: \_\_\_\_\_
  - a. Latest NRC: \_\_\_\_\_ No: \_\_\_\_\_ Time: \_\_\_\_\_
4. **Pertinent Information / Status**
  - a. ERDS Activated? At: \_\_\_\_\_  YES  NO
  - b. Accountability initiated? At: \_\_\_\_\_  YES  NO
  - c. Site Evacuation Initiated? At: \_\_\_\_\_  YES  NO
  - d. Release Occurring? Stack/Vent: \_\_\_\_\_  YES  NO
  - e. In-Plant / Site Radiological Concerns? \_\_\_\_\_  YES  NO
  - f. Offsite Assistant Requested? \_\_\_\_\_  YES  NO
  - g. Station Priorities Reviewed? \_\_\_\_\_  YES  NO

\_\_\_\_\_

\_\_\_\_\_
5. **Upon the transfer of Command and Control, the following will be performed by:**
  - a. Event Classification.....  CR  TSC
  - b. PAR Decision-Making .....  CR  TSC  EOF
  - c. State/Local Notifications.....  CR  TSC  EOF
  - d. NRC Notifications.....  CR  TSC  EOF
  - e. Emergency Exposure Controls .....  CR  TSC
6. **Command and Control**
  - a. Adequately staffed to support non-delegable duties?.....  YES  NO
  - b. Briefed on event status/currently proposed plan of action? .....  YES  NO
  - c. Transferred to the  TSC  EOF at: \_\_\_\_\_ (time)

**Station Emergency Director:** Notify CR, TSC and OSC personnel of the transfer and responsibilities assumed.  YES  NO

**Corporate Emergency Director:** Notify EOF, JPIC, State and NRC personnel of the transfer and responsibilities assumed.  YES  NO

Use of Page 2 of this form (Key System Status) is optional and intended to be used as a user aid for MAROG. Designated data displays (i.e., PPDS), if available, may serve this purpose.

**ATTACHMENT 1**  
**COMMAND & CONTROL TURNOVER BRIEFING FORM**  
Page 2 of 2

<b>AFFECTED UNIT(S) ONLY: KEY SYSTEM STATUS</b>			
UNIT # ___ at _____		UNIT # ___ at _____	
<b>Plant Conditions</b>		<b>Plant Conditions</b>	
<input type="checkbox"/> On-Line <input type="checkbox"/> At Power: _____% <input type="checkbox"/> Off-Line: <input type="checkbox"/> Cooling Down / <input type="checkbox"/> Cold Shutdown Time of Rx Shutdown: _____ am/pm <input type="checkbox"/> Stable <input type="checkbox"/> Improving <input type="checkbox"/> Unstable <input type="checkbox"/> Deteriorating		<input type="checkbox"/> On-Line <input type="checkbox"/> At Power: _____% <input type="checkbox"/> Off-Line: <input type="checkbox"/> Cooling Down / <input type="checkbox"/> Cold Shutdown Time of Rx Shutdown: _____ am/pm <input type="checkbox"/> Stable <input type="checkbox"/> Improving <input type="checkbox"/> Unstable <input type="checkbox"/> Deteriorating	
<b>Fission Product Barrier Status</b>		<b>Fission Product Barrier Status</b>	
	<b>Fuel</b>	<b>RCS</b>	<b>Cntmt</b>
Intact:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Potential LOSS:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LOSS:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>System Availability</b>		<b>System Availability</b>	
<b>COMMON</b>	MAIN TURBINE <input type="checkbox"/> ON-LINE <input type="checkbox"/> TRIPPED _____		
	ESW / SX <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	SW <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	CONDENSATE/FEED <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	RHR LOOP A <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	RHR LOOP B <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	RHR LOOP ___ <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	RHR LOOP ___ <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	C/S LOOP A <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	C/S LOOP B <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> NA: _____		
	OFFSITE POWER <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	DIESEL ___ <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	DIESEL ___ <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
<b>BWR</b>	HPCI/S <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	RCIC <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	ADS <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	CRD A <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	CRD B <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	SBLC A <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	SBLC B <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	SBGTS A <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
<b>PWR</b>	RCP A <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	RCP B <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	RCP C <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	RCP D <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	CV A <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	CV A <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	SI A <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	SI B <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	CC A <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
	CC B <input type="checkbox"/> YES <input type="checkbox"/> NO _____		
		MAIN TURBINE <input type="checkbox"/> ON-LINE <input type="checkbox"/> TRIPPED _____ ESW / SX <input type="checkbox"/> YES <input type="checkbox"/> NO _____ SW <input type="checkbox"/> YES <input type="checkbox"/> NO _____ CONDENSATE/FEED <input type="checkbox"/> YES <input type="checkbox"/> NO _____ RHR LOOP A <input type="checkbox"/> YES <input type="checkbox"/> NO _____ RHR LOOP B <input type="checkbox"/> YES <input type="checkbox"/> NO _____ RHR LOOP ___ <input type="checkbox"/> YES <input type="checkbox"/> NO _____ RHR LOOP ___ <input type="checkbox"/> YES <input type="checkbox"/> NO _____ C/S LOOP A <input type="checkbox"/> YES <input type="checkbox"/> NO _____ C/S LOOP B <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> NA: _____ OFFSITE POWER <input type="checkbox"/> YES <input type="checkbox"/> NO _____ DIESEL ___ <input type="checkbox"/> YES <input type="checkbox"/> NO _____ DIESEL ___ <input type="checkbox"/> YES <input type="checkbox"/> NO _____ DIESEL ___ <input type="checkbox"/> YES <input type="checkbox"/> NO _____ DIESEL ___ <input type="checkbox"/> YES <input type="checkbox"/> NO _____ HPCI/S <input type="checkbox"/> YES <input type="checkbox"/> NO _____ RCIC <input type="checkbox"/> YES <input type="checkbox"/> NO _____ ADS <input type="checkbox"/> YES <input type="checkbox"/> NO _____ CRD A <input type="checkbox"/> YES <input type="checkbox"/> NO _____ CRD B <input type="checkbox"/> YES <input type="checkbox"/> NO _____ SBLC A <input type="checkbox"/> YES <input type="checkbox"/> NO _____ SBLC B <input type="checkbox"/> YES <input type="checkbox"/> NO _____ SBGTS A <input type="checkbox"/> YES <input type="checkbox"/> NO _____ SBGTS B <input type="checkbox"/> YES <input type="checkbox"/> NO _____ RCP A <input type="checkbox"/> YES <input type="checkbox"/> NO _____ RCP B <input type="checkbox"/> YES <input type="checkbox"/> NO _____ RCP C <input type="checkbox"/> YES <input type="checkbox"/> NO _____ RCP D <input type="checkbox"/> YES <input type="checkbox"/> NO _____ CV A <input type="checkbox"/> YES <input type="checkbox"/> NO _____ CV A <input type="checkbox"/> YES <input type="checkbox"/> NO _____ SI A <input type="checkbox"/> YES <input type="checkbox"/> NO _____ SI B <input type="checkbox"/> YES <input type="checkbox"/> NO _____ CC A <input type="checkbox"/> YES <input type="checkbox"/> NO _____ CC B <input type="checkbox"/> YES <input type="checkbox"/> NO _____	

**ATTACHMENT 2**  
**SHIFT TURNOVER**

Page 1 of 1

This attachment describes the process and information exchange, which should occur during a shift turnover of personnel.

1. **PROVIDE** a briefing of events to your relief person including the following, as applicable:
  - Basis for the current emergency classification and applicable EALs.
  - Position log and other documents generated during the shift.
  - State/Local and NRC notification forms issued.
  - Activities scheduled to occur during the next shift.
  - Plant and radiological data that are significant and are relevant to activities and responsibilities of your EP position.
  - Contacts established within the Exelon Nuclear organization and with outside organizations. In particular, review contacts that need to be made on a periodic basis and the type of information that should be exchanged.
  - Significant events that could occur during the next shift that will impact activities and actions that are the responsibility of your position.
2. **INFORM** key personnel in your Emergency Response Facility and key contacts at other facilities of the shift change of the position and **PROVIDE** the name of your replacement.
3. **REVIEW** logs and other records to verify significant information has been recorded and is legible.
4. **FILE** copies of all documents generated with the Administrative/Logistics Coordinator. This should include logs, message forms, and checklists.
5. **OBTAIN** a copy of your shift schedule from the TSC Logistics Coordinator / EOF Administrative Coordinator.
6. **VERIFY** with the TSC Security Coordinator of the arrangements for access when returning on the next shift.



**ATTACHMENT 4**  
**FFD VERIFICATION FORM**

Page 1 of 1

Arrival time : \_\_\_\_\_ Name: \_\_\_\_\_

Emergency Response Position: \_\_\_\_\_

Questions for individual Called Out:

1. "Have you consumed alcohol within five hours prior to your  
Emergency Response Facility arrival time?" .....  YES  NO
2. "Are you Fit for Duty?" .....  YES  NO

If **YES** for Question 1, **PROCEED** with "Request for Behavioral Observation" below.

If **NO** for question 2, **EXCLUDE** the individual from participation.

**REQUEST FOR BEHAVIORAL OBSERVATION**

\_\_\_\_\_, will require behavioral observation prior to assuming emergency  
response duties.

**NOTE:** Personnel will have any required behavioral observation completed prior to  
assuming their duties.

**RESULTS:** (Choose one)

- A. Behavioral observation has been conducted and determined that this individual is Fit  
For Duty.
- B. Behavioral observation has been conducted and determined that this individual  
should not be assigned emergency response duties. The following actions are  
recommended:

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

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ / / \_\_\_\_\_  
(Signed, Observer) (Title) (Time) (Date)

**ATTACHMENT 5**  
**DOSE ASSESSMENT TURNOVER SHEET**

STATION:		UNIT:
<b>MONITOR INFORMATION</b>		
RELEASE POINT #1:	READING (RANGE):	EXHAUST FLOW:
RELEASE POINT #2:	READING (RANGE):	EXHAUST FLOW:
RELEASE DURATION:	START TIME:	STOP TIME:
<b>RELIEF INPUTS (PWR ONLY)</b>	S/G PRESSURE: ___ psig / NO. SRVs OPEN: ___ / PORV OPEN: <input type="checkbox"/> YES / <input type="checkbox"/> NO	
<b>TIME AFTER RX SHUTDOWN</b>	RX POWER: ___ % / RX TRIP at: ___ hrs. / ATWAS: <input type="checkbox"/> YES / <input type="checkbox"/> NO	
<b>SOURCE TERM</b>		
<input type="checkbox"/> REACTOR CORE ACCIDENT <input type="checkbox"/> SPENT FUEL ACCIDENT <input type="checkbox"/> WASTE GAS DECAY TANK ACCIDENT (PWR ONLY) TYPE OF DAMAGE: <input type="checkbox"/> GAP / <input type="checkbox"/> MELT      FUEL TYPE: <input type="checkbox"/> NEW / <input type="checkbox"/> OLD <input type="checkbox"/> BACKWASH DEMIN SCENARIO (LIMERICK ONLY) AMOUNT OF DAMAGE: ___ %      FUEL STATUS: <input type="checkbox"/> UNDER WATER / <input type="checkbox"/> DRY		
<b>DOMINANT RELEASE PATH</b>	ENTERED:	
<b>METEOROLOGICAL DATA</b>	WIND SPEED (MPH):	WIND DIRECTION (FROM):
	DELTA TEMP (°F):	STABILITY CLASS (A-G):
<b>ASSESSMENT METHOD</b>	SELECTED:	
<b>CONTAINMENT REDUCTIONS</b>	SPRAYS: <input type="checkbox"/> ON / <input type="checkbox"/> OFF	HOLD UP TIME: <input type="checkbox"/> < 1 HR / <input type="checkbox"/> 2-24 HRS / <input type="checkbox"/> > 24 HRS
<b>AUX. / RX BLD REDUCTIONS</b>	HOLD UP TIME: <input type="checkbox"/> < 1 HR / <input type="checkbox"/> 2-24 HRS / <input type="checkbox"/> > 24 HRS / <input type="checkbox"/> NOT APPLICABLE	
<b>TORUS/WETWELL REDUCTIONS</b>	<input type="checkbox"/> BYPASSED / <input type="checkbox"/> SATURATED / <input type="checkbox"/> SUBCOOLED	
<b>SBGT FILTER REDUCTIONS</b>	<input type="checkbox"/> FILTERS WORKING / <input type="checkbox"/> FILTERS NOT WORKING	
<b>S/G REDUCTIONS (PWR ONLY)</b>	<input type="checkbox"/> SECONDARY BOILING / <input type="checkbox"/> SECONDARY SOLID / <input type="checkbox"/> SECONDARY DRY	
RESULTS OF DOSE CALCULATIONS: (Attach copy of generated DAPAR reports, if applicable)		
TEDE: SB ___ mRem/hr / 2 MILES ___ mRem/hr / 5 MILES ___ mRem/hr / 10 MILES ___ mRem/hr		
CDE <sub>THYROID</sub> : SB ___ mRem/hr / 2 MILES ___ mRem/hr / 5 MILES ___ mRem/hr / 10 MILES ___ mRem/hr		
FIELD SURVEY RESULTS OF DOSE CALCULATIONS: (Attach copy of generated DAPAR reports, if applicable)		
TEDE: ___ MILES ___ mRem/hr / ___ MILES ___ mRem/hr / ___ MILES ___ mRem/hr		
CDE <sub>THYROID</sub> : ___ MILES ___ mRem/hr / ___ MILES ___ mRem/hr / ___ MILES ___ mRem/hr		
RECOMMENDED PROTECTIVE ACTIONS OFFSITE:		
OTHER INFORMATION:		
COMPLETED BY:	DATE / TIME: _____ at _____ hrs.	

**ATTACHMENT 6**

**PRE-SCRIPTED PA SYSTEM ANNOUNCEMENTS FOR EVENT CLASSIFICATION**

**Page 1 of 1**

The following pre-scripted messages are for guidance only and should be modified based on the Shift Manager's judgment to account for event-specific contingencies.

1. Unusual Event Classification (Repeat twice)

"Attention Station personnel. An Unusual Event has been declared due to (brief description of cause). ERO members should standby for further instructions."

**OPTIONAL FACILITY STAFFING:** "Attention Station personnel. An Unusual Event has been declared due to (brief description of cause). ERO members report to your respective emergency response facilities. Non-ERO personnel, contractors and visitors should standby for further instructions."

2. Alert Classification (Repeat twice)

"Attention Station personnel. An Alert has been declared due to (brief description of cause). ERO members report to your respective emergency response facilities. Non-ERO personnel, contractors and visitors should standby for further instructions."

3. Site Area Emergency Classification (Repeat twice)

"Attention Station personnel. A Site Area Emergency has been declared due to (brief description of cause). ERO members report to your respective emergency response facilities. Non-ERO personnel, contractors and visitors should standby to implement personnel accountability actions."

4. General Emergency Classification (Repeat twice)

"Attention Station personnel. A General Emergency has been declared due to (brief description of cause)."

– **If accountability has not yet been initiated, include the following:**

"ERO members report to your respective emergency response facilities. Non-ERO personnel, contractors and visitors should standby to implement personnel accountability actions."



**ATTACHMENT 7**  
**INFORMATION REQUEST / MESSAGE SHEET**

Page 1 of 1

<b>INFORMATION REQUEST / MESSAGE</b>	RECEIVED AT: Date ___/___/___ Time _____ am./p.m.. by _____
	FROM: _____ / _____ (Name) (Position Title)
	@ <input type="checkbox"/> Control Room <input type="checkbox"/> TSC <input type="checkbox"/> OSC <input type="checkbox"/> EOF <input type="checkbox"/> JPIC <input type="checkbox"/> NRC <input type="checkbox"/> STATE (_____)
	TO: _____ / _____ (Name) (Position Title)
	@ <input type="checkbox"/> Control Room <input type="checkbox"/> TSC <input type="checkbox"/> OSC <input type="checkbox"/> EOF <input type="checkbox"/> JPIC <input type="checkbox"/> NRC <input type="checkbox"/> STATE (_____)
REQUEST: _____ _____ _____ _____ _____ _____	
COMMITMENT: _____ _____	
<b>COPY AND POST COMMITMENTS</b>	
<b>RESPONSE</b>	ANSWER: _____ _____ _____ _____ _____ _____ _____
	TO: _____ / _____ (Name) (Position Title)
	@ <input type="checkbox"/> Control Room <input type="checkbox"/> TSC <input type="checkbox"/> OSC <input type="checkbox"/> EOF <input type="checkbox"/> JPIC <input type="checkbox"/> NRC <input type="checkbox"/> STATE (_____)
	FROM: _____ / _____ (Name) (Position Title)
	@ <input type="checkbox"/> Control Room <input type="checkbox"/> TSC <input type="checkbox"/> OSC <input type="checkbox"/> EOF <input type="checkbox"/> JPIC <input type="checkbox"/> NRC <input type="checkbox"/> STATE (_____)
COMMUNICATED AT: Date ___/___/___ Time _____ a.m./p.m. by _____ (Position Title)	