



**AUG 15 2003**

**SERIAL: HNP-03-095  
10 CFR 50, Appendix E**

**United States Nuclear Regulatory Commission  
ATTENTION: Document Control Desk  
Washington, DC 20555**

**SHEARON HARRIS NUCLEAR POWER PLANT  
DOCKET NO. 50-400/LICENSE NO. NPF-63  
CHANGE TO EMERGENCY PLAN IMPLEMENTING PROCEDURES**

**Ladies and Gentlemen:**

**In accordance with 10 CFR 50, Appendix E, Progress Energy Carolinas, Inc. is transmitting one copy each of recently revised Harris Nuclear Plant Emergency Plan implementing procedures. The enclosure to this letter identifies the revised emergency plan implementing procedures and the effective date.**

**If you should have any questions regarding this submittal, please do not hesitate to contact me at (919) 362-3137.**

**Sincerely,**

A handwritten signature in cursive script that reads "John R. Caves".

**John R. Caves  
Supervisor, Licensing/Regulatory Programs  
Harris Nuclear Plant**

**MGW**

**Enclosures**

- c: Mr. R. A. Musser (NRC Senior Resident Inspector, HNP)  
Mr. L. A. Reyes (NRC Regional Administrator, Region II) two copies of procedure  
Mr. C. P. Patel (NRC Project Manager, HNP)**

**A045**

**CHANGES TO EMERGENCY PLAN IMPLEMENTING PROCEDURES**

<u>PROCEDURE NUMBER</u>	<u>TITLE</u>	<u>EFFECTIVE DATE</u>
PEP-340 Revision 10	Dose Assessment	07/25/03
PEP-350 Revision 6	Protective Actions	07/29/03

**HARRIS NUCLEAR PLANT  
PLANT OPERATING MANUAL  
VOLUME 2  
PART 5**

**PROCEDURE TYPE:** Plant Emergency Procedure  
**NUMBER:** PEP-340  
**TITLE:** Dose Assessment

Table of Contents

1. 0 PURPOSE .....3

2. 0 INITIATING CONDITIONS .....3

3. 0 PROCEDURE STEPS .....3

    3.1 Start Up.....3

    3.2 ERFIS Data.....3

    3.3 Basic Program Flow Diagram .....4

    3.4 Title Screen.....4

    3.5 Quick Assessment .....5

    3.6 Protective Action Recommendations .....8

    3.7 Full Assessment..... 10

    3.8 Monitored Release..... 16

    3.9 Containment Leakage/Failure ..... 18

    3.10 Field Team Analysis..... 19

    3.11 Release Point Analysis .....21

4. 0 GENERAL.....22

    4.1 Overview .....22

    4.2 DAPAR Program Use.....22

    4.3 Limitations of DAPAR Program Use .....22

    4.4 Pre-Conditions for Use of DAPAR .....22

    4.5 Definitions, Acronyms and Abbreviations.....22

5. 0 REFERENCES .....25

6. 0 DIAGRAMS / ATTACHMENTS.....25

    Attachment 1 - Instructions for Accessing Met Tower via Modem .....26

## 1.0 PURPOSE

The purpose of this procedure is to provide guidance for performing offsite radiological dose assessments during an emergency at HNP. The HNP Dose Assessment and Protective Action Recommendation (DAPAR) program is designed to be used in conjunction with this procedure.

## 2.0 INITIATING CONDITIONS

1. An emergency has been declared.
2. Events require the projection of offsite doses due to an actual or potential release of radioactive materials.

## 3.0 PROCEDURE STEPS

---

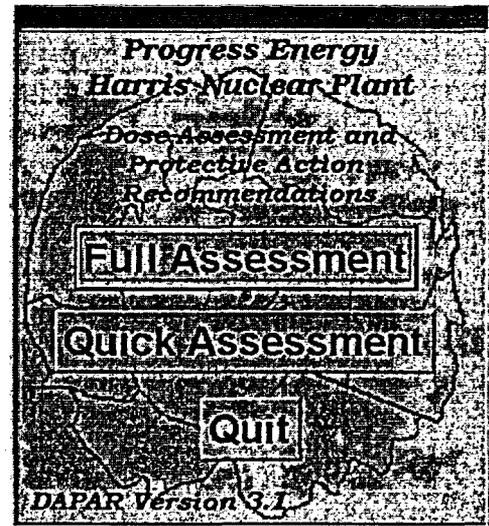
### CAUTION

Use of DAPAR to project doses based on normal plant readings would indicate offsite doses many magnitudes higher than actual offsite doses. Care should be taken in making a Protective Action Recommendation based on program output if there are no indications of Core Damage.

---

### 3.1 Start Up

1. Start the computer.
2. Ensure no other programs are running. Start DAPAR program – A shortcut icon should be located on the desktop; if not locate the program on the Y:\ Access Databases\Shared\Dose Assessment\Dose Assessment.mdb.
3. If the assigned Dose Assessment Computer does not operate or the DAPAR program will not run, use another computer if available or install the program on any computer from CDs or Disks located in Emergency Communicator's Desk in the Control Room or the Dose Projection Cabinet in the EOF.
4. Verify Version 3.1 of the DAPAR program is in use.



### 3.2 ERFIS Data

Obtain monitored release path information by accessing ERFIS Group Display 3DOSE.

### 3.3 Basic Program Flow Diagram

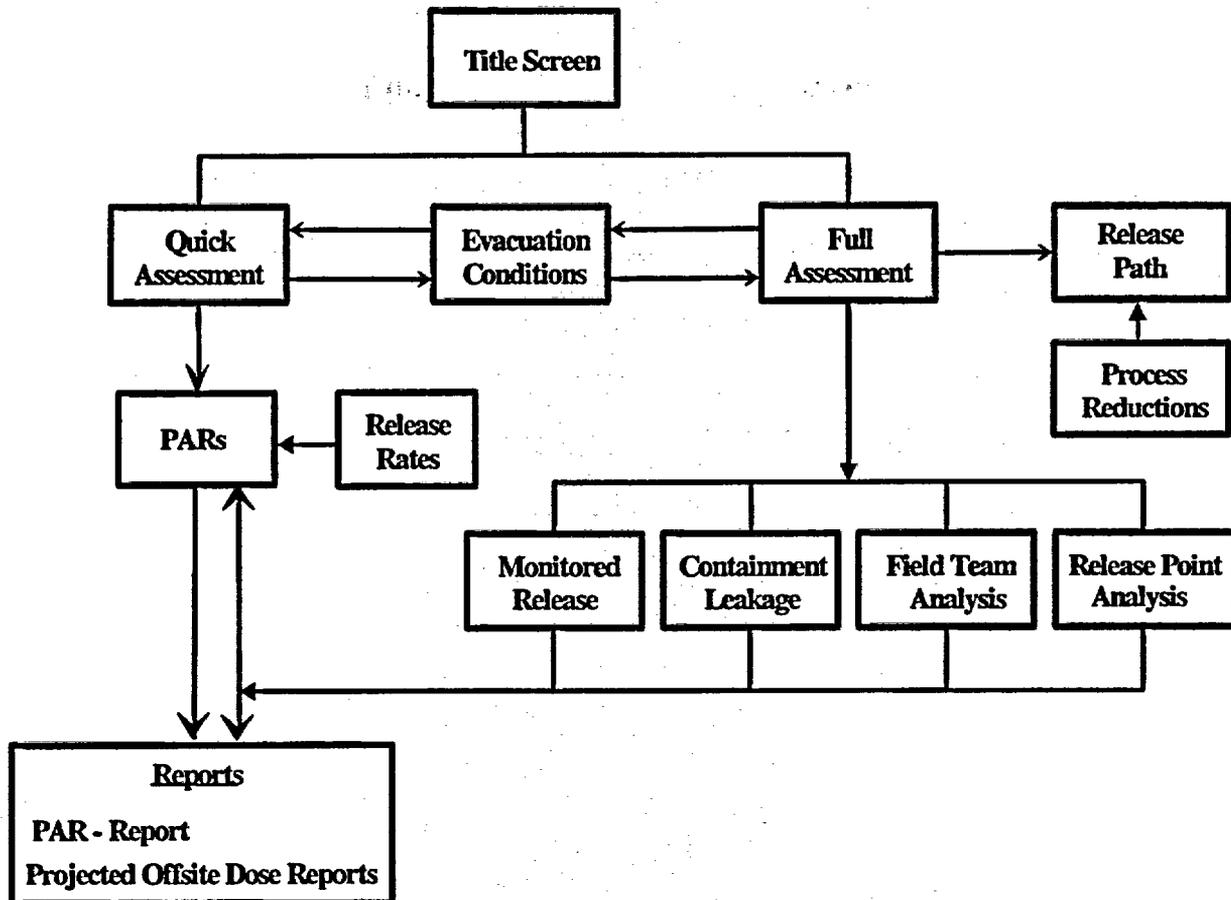


Diagram shows basic tasks which can be performed by the program and how user would maneuver between them.

### 3.4 Title Screen

The title screen shows the application version and offers the user three options to direct program flow:

1. **Quick Assessment**  
This option is designed to be used by the Control Room. It performs assessments based on design basis default source terms.
2. **Full Assessment**  
This option is designed to be used by the Dose Assessment Staff in the EOF. It allows user more options in performing calculations
3. **Quit**  
Exits the Program.

### 3.4 Title Screen

**NOTE:** Once the User selects "Quick Assessment" or "Full Assessment" returning to the Title screen will reset all program values.

4. User should now go to:
  - a. Section 3.5 for Quick Assessment.
  - b. Section 3.7 for Full Assessment.

### 3.5 Quick Assessment

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

The screenshot shows a software interface titled "Quick Assessment" with three main panels:

- Monitor Information:** Contains radio buttons for "Plant Vent", "Turbine Building Vent", "WP Building Stack 5", "WP Building Stack 5a", and "Main Steam Line". The "Main Steam Line" option is selected. Below these is a "Reading (mR/hr)" field displaying "2.00E+02".
- Relief Inputs:** Contains input fields for "S/G Press" (800), "SRVs Open" (0), and "PORVs Open" (checkbox). Below this is a "Time After Rx S/D" section with "(h:mm)" field showing "3:00".
- Meteorological Data:** Contains input fields for "Wind Speed (MPH)" (1.0), "Wind Direction (From)" (002), and "Stability Class (A-G)" (D). Below this is a "Conditions" section with "Max EPE" (3:25) and "Release Duration (h:mm)" (3:25) fields.

At the bottom of the interface are "PAB" and "Back" buttons.

1. **Select Monitor Information** – User chooses the appropriate monitor from the listed Monitors.
  - a. **Plant Vent** – this is stack #1, the value for the reading of this monitor is provided at computer point RAV3509H. It reads out in  $\mu\text{Ci}/\text{sec}$ .
  - b. **Turbine Building Vent** – this is stack #3, the value for the reading of this monitor is provided at computer point RTV3536D. It reads out in  $\mu\text{Ci}/\text{sec}$ .
  - c. **WP Building Stack 5** – the value for the reading of this monitor is provided at computer point RWV3546H. It reads out in  $\mu\text{Ci}/\text{sec}$ .
  - d. **WPB Building Stack 5A** – the value for the reading of this monitor is provided at computer point RWV3547H. It reads out in  $\mu\text{Ci}/\text{sec}$ .

### 3.5 Quick Assessment

- e. **Main Steam Line** – The Main Steam Line radiation monitors are used for this release point. The computer points for these monitors are RMS3591A, RMS3592A, and RMS3593A. Since these monitors read out in mR/hr a flow rate has to be determined to calculate the  $\mu\text{C}/\text{sec}$  release rate. This is accomplished by entering the steam pressure and the number of relief valves that are open in the section labeled "Relief Inputs".
2. **Input Reading Information** – Enter the appropriate monitor reading in  $\mu\text{Ci}/\text{sec}$  or mR/hr.
3. **Input Time After Rx S/D (Shutdown) Information** – Enter the time since the reactor was shutdown in hours and minutes (hh:mm).

**NOTE:** If met tower data is unavailable, another source of meteorological data, such as the National Weather Service or a local TV or Radio broadcast station may be used and the stability class can be estimated.

4. **Input Meteorological Data** – Enter the appropriate data from plant instruments as follows:
  - a. **Wind Speed (MPH)** – Obtain the Lower Wind Speed from the ERFIS computer (Point MMT1008) or the Control Room.
  - b. **Wind Direction (From)** – Obtain the Lower Wind Direction from the ERFIS computer (Point MMT1014) or the Control Room.
  - c. **Stability Class (A-G AND 1-7)** – Obtain the stability class from the ERFIS computer (MMT1017) or the Control Room.

#### Stability Classes:

A	1	Extremely unstable conditions
B	2	Moderately unstable conditions
C	3	Slightly unstable conditions
D	4	Neutral conditions
E	5	Slightly stable conditions
F	6	Moderately stable conditions
G	7	Extremely stable conditions

### 3.5 Quick Assessment

- d. If only one ERFIS  $\Delta T$  channel is available (computer point MMT 1004 or MMT 1005), the following table can be used to determine the stability class.

**Stability Classes**

$\Delta T$ In $^{\circ}\text{C}/100\text{m}$	Class
$\leq -1.9^{\circ}$	A or 1
$> -1.9^{\circ}$ to $\leq -1.7^{\circ}$	B or 2
$> -1.7^{\circ}$ to $\leq -1.5^{\circ}$	C or 3
$> -1.5^{\circ}$ to $\leq -0.5^{\circ}$	D or 4
$> -0.5^{\circ}$ to $\leq +1.5^{\circ}$	E or 5
$> +1.5^{\circ}$ to $\leq +4.0^{\circ}$	F or 6
$> +4.0^{\circ}$	G or 7

- e. If the stability class is not available use the following table to choose the appropriate value:

Surface Wind Speed (mph)	Daytime Solar Radiation (For moderate cloud cover move one column to the right)			Nighttime Conditions		Day or Night
	Summer/ Clear Sky	Spring & Fall Clear Sky	Winter	Thin overcast ( $>1/2$ cloud cover)	$<3/8$ cloud cover	
$<4.5$	A	A-B	B	--	--	D
$\geq 4.5$ to 9.0	A-B	B	C	E	F	D
$> 9.0$ to 13.5	B	B-C	C	D	E	D
$> 13.5$	C	C-D	D	D	D	D

- f. If ERFIS is unavailable, the met tower can be accessed via a modem connection. Refer to Attachment 1 for instructions.

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

#### 5. Set Evacuation Conditions

Click on the "Conditions" button to select the appropriate conditions for the program to calculate the Maximum Evacuation Time Estimate (ETE). Once the user sets the evacuation conditions the program will place the Max ETE value in the "Release Duration" and "Max ETE" text boxes.

### 3.5 Quick Assessment

6. If the Release Duration is known, change the displayed time to the known release duration. If a good estimate of the release duration cannot be determined use the default value entered by the program.
7. Click the PARs button – The program will calculate the downwind doses based on user inputs and display the Protective Action Recommendation form.

### 3.6 Protective Action Recommendations

1. The Protective Action Recommendation (PAR) form displays a summary of the downwind dose projections with a map showing Subzones in which the Protective Action Guidelines (PAGs) are exceeded (grayed areas). Additional evaluation of the affected subzones would be made using PEP-110 Attachment 3. The PAR form is the same for Quick Assessment and Full Assessment.

**Protective Action Recommendation**

<b>Assessment Method:</b> Monitored Release		<b>Subzones to be Evacuated:</b>		
<b>Evacuation Conditions:</b> Good Daytime, Weekday				
Stability Class:	<input type="text" value="D"/>			
Wind Direction (from):	<input type="text" value="090"/>			
Wind Speed (mph):	<input type="text" value="2.0"/>			
Release Duration:	<input type="text" value="3.15"/>			
<b>Assessment Type:</b>				
<input type="button" value="BB"/> <input type="button" value="Print"/> <input type="button" value="Back"/>				
	<b>Affected Subzones</b>	<b>[Dose in rem]</b>	<b>TEDE</b>	<b>CEDE/hy</b>
SB	A	No Protection: 7.61E+00 Sheltered: 6.01E+00	3.51E+00	2.17E+00
2-Miles	K, L	No Protection: 7.16E+01 Sheltered: 6.30E+01	3.30E+01	2.32E+01
5-Miles	J, M	No Protection: 1.94E+01 Sheltered: 1.73E+01	1.93E+02	6.29E+02

2. Explanation of displayed data:
  - a. Assessment Method – Method used to calculate downwind doses.
  - b. Evacuation Conditions – Entered evacuation conditions and meteorological data, along with Release Duration.

3.6 Protective Action Recommendations

- c. **Assessment Type** – A pulldown list which allows the user to select the type of assessment and have it print out on the PAR form. The choices are Hypothetical, Bounding, Actual, and Environmental. **This step is optional.** Selecting or not selecting an assessment type will not affect program output.
- d. Form displays the meteorological data used to determine PAR.
- e. Form displays an EPZ map, Subzones in which the population may receive doses exceeding a PAG will be shaded.
- f. **Affected Subzones** – These are the downwind Subzones which are affected by the release.

**NOTE:** The State/County Notification Form uses the units of mrem for reporting.

- g. **TEDE and CDE Thy (Thyroid)**– Shows the highest doses (no protection and sheltered) in rem for each affected subzone.

3. The RRs button will display the total release rates for isotopic groups in Ci/sec. To return to the PAR Form, press the OK button.

	True (NRC)	Equivalents (State)	
Noble Gases:	4.77E+00	5.32E+01	(Xe-133)
Halogens:	2.47E-01	4.30E-02	(I-131)
Particulates:	1.54E-02	1.98E-02	(Cs-137)
[Units of Ci/sec]			[OK]

4. User can now Print the "Dose Based PARs and Notification Form Input" using the Print button, or

5. Go Back and modify inputs. This will return the user to either Quick Assessment Form or one of the Assessment Method forms available in Full Assessment.

### 3.7 Full Assessment

1. 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.
2. Choosing the Full Assessment option directs the program to a baseline data entry window. The window is divided into four input areas.

The screenshot shows a software interface for a 'Full Assessment'. It is divided into four quadrants:

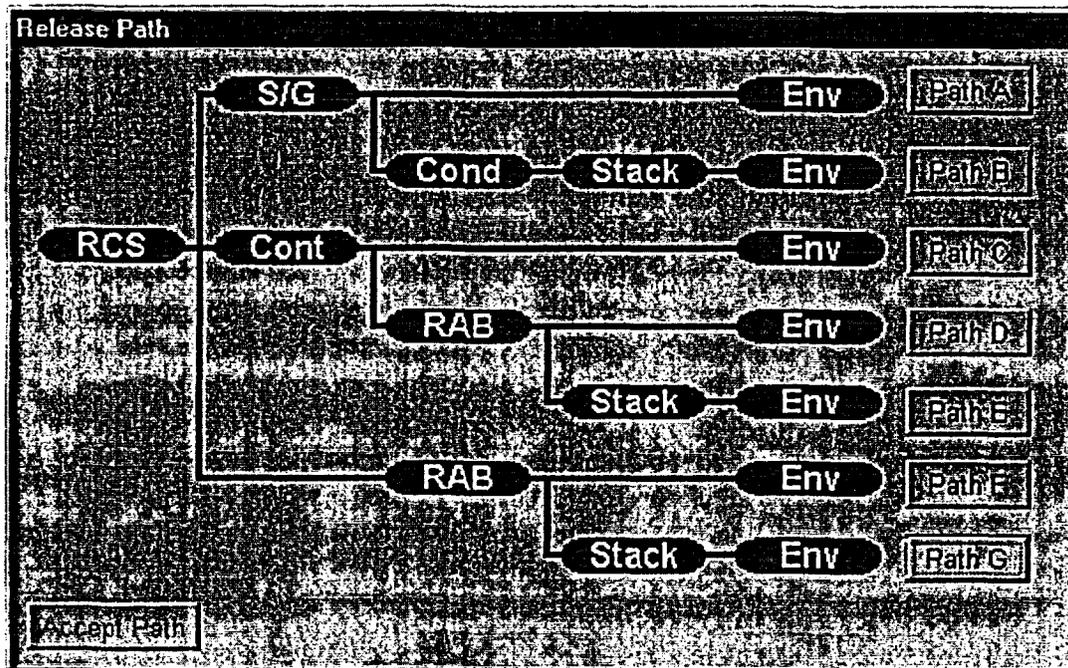
- Source Term:** Contains three main options:  **Reactor Core Accident**,  **Spent Fuel Accident**, and  **Waste Gas Decay Tank Accident**. Under 'Reactor Core Accident', there are radio buttons for 'Type of Damage' (Gap or Melt) and a text box for 'Amount of Damage (%)' with the value '10'. Under 'Spent Fuel Accident', there are radio buttons for 'New' or 'Old'. Under 'Waste Gas Decay Tank Accident', there is a text box for 'Hours After S/D (hrmm)' with the value '0:16'.
- Meteorological Data:** Contains several text input fields: 'Wind Speed (MPH)' (6.5), 'Wind Direction (From)' (258), 'Stability Class (A-G)' (D), 'Conditions' (Max Eff), and 'Release Duration (hrmm)' (1:15).
- Dominant Release Path:** Shows a list of paths: '<RCS><S/G><ENV>'. Below the list is a 'Select Path' button and a 'PRF' field with the value '0.02'.
- Assessment Method:** Contains a dropdown menu set to 'Monitored Release' and two buttons: 'Continue' and 'Back'.

3. Choose **Source Term** – This allows user to choose the appropriate source term depending on plant conditions and the type of accident that has occurred.
  - a. Select **Reactor Core Accident** if the source of the release is from the reactor core. Select **Gap** or **Melt** and the % **Damage** based on core damage estimates or known conditions in the plant.
  - b. Select **Spent Fuel** if the release is caused by damage to the spent fuel. User chooses between **New Fuel** or **Old Fuel** based on the type of fuel that has been damaged. Program uses a gap release scenario and defaults to a reactor **Hours After S/D (Time After Shutdown)** based on this choice.
  - c. Select **Waste Gas Decay Tank Accident** if the release is caused by damage/failure of a waste gas decay tank. Program sets source to one failed **Waste Gas Decay Tank** inventory.
  - d. Enter **Hours After S/D** in hours and minutes.

### 3.7 Full Assessment

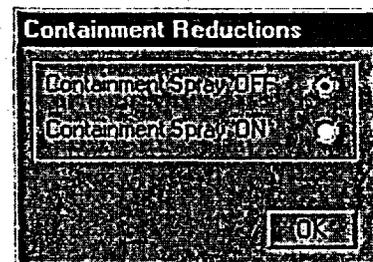
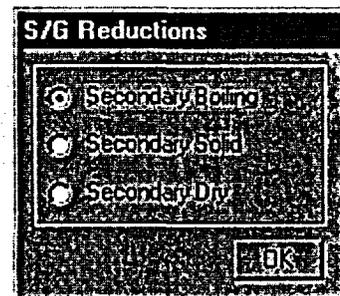
NOTE: Steps 4 and 5 apply only to Reactor Core Accident Types.

4. Select the **Dominant Release Path** – choose the most appropriate release path:



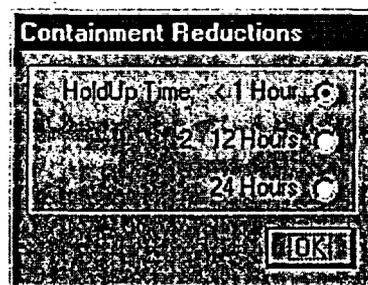
5. Depending on the path chosen the user will be presented with more choices to pick the appropriate Process Reductions for the release. The choices made determine which Process Reduction Factors are used in the calculations.

- a. If a release through the Steam Generators is chosen, determine the status of the secondary side of the steam generator and select the appropriate condition.
- b. If a release through containment is chosen:
  - First determine if containment sprays are on or off.

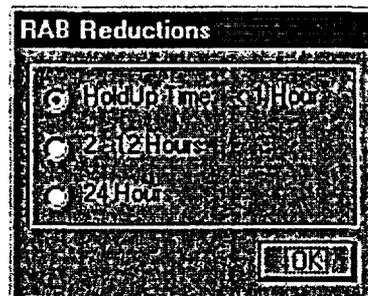


### 3.7 Full Assessment

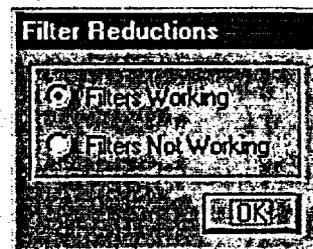
- Then determine containment holdup time.



- c. If a release through the RAB is chosen, determine the RAB holdup time.



- d. If a release through a filtered vent is chosen, select if the filters are working or not. If the release has been ongoing for a long time or contains a large amount of liquids, filters may not be working.



#### Process Reduction Factors

Removal Mechanism	PRF
Maximum (all systems)	0.001
S/G Tube Rupture Secondary Boiling	0.02
S/G Tube Rupture Secondary (Solid) No Boiling	0.50
S/G Tube Rupture Secondary Dry S/G	1.00
Bypass (failure into low-pressure system)	0.40
0.5 Hr Hold-Up Containment Spray	0.03
2-12 Hr Hold-Up Containment Spray	0.02
24 Hr Hold-Up Containment Spray	0.002
0.5 Hr Hold-Up No Containment Spray	0.4
2-12 Hr Hold-Up No Containment Spray	0.04
24 Hr Hold-Up No Containment Spray	0.01
Condenser Releases (no non-noble releases)	0.00
Building Holdup 0.5 Hr	0.40
Building Holdup 2-12 Hr	0.04
Building Holdup 24 Hr	0.01
Small Releases through Bldg Filters	0.01

### 3.7 Full Assessment

**NOTE:** If met tower data is unavailable, another source of meteorological data, such as the National Weather Service or a local TV or radio broadcast station, may be used and the stability class can be estimated.

6. **Input Meteorological Data** – Enter the appropriate data from plant instruments as follows:
  - a. **Wind Speed (MPH)** – Obtain the Lower Wind Speed from the ERFIS computer (Point MMT1008) or the Control Room.
  - b. **Wind Direction (From)** – Obtain the Lower Wind Direction from the ERFIS computer (Point MMT 1014) or the Control Room.
  - c. **Stability Class (A-G)** – Obtain the stability class from the ERFIS computer (Point MMT 1017) or the Control Room.

#### Stability Classes:

- |   |   |                                |
|---|---|--------------------------------|
| A | 1 | Extremely unstable conditions  |
| B | 2 | Moderately unstable conditions |
| C | 3 | Slightly unstable conditions   |
| D | 4 | Neutral conditions             |
| E | 5 | Slightly stable conditions     |
| F | 6 | Moderately stable conditions   |
| G | 7 | Extremely stable conditions    |

- d. If only one ERFIS  $\Delta T$  channel is available (computer point MMT 1004 or MMT 1005), the following table can be used to determine the stability class.

#### Stability Classes

$\Delta T$ in $^{\circ}\text{C}/100\text{m}$	Class
$\leq -1.9^{\circ}$	A or 1
$> -1.9^{\circ}$ to $\leq -1.7^{\circ}$	B or 2
$> -1.7^{\circ}$ to $\leq -1.5^{\circ}$	C or 3
$> -1.5^{\circ}$ to $\leq -0.5^{\circ}$	D or 4
$> -0.5^{\circ}$ to $\leq +1.5^{\circ}$	E or 5
$> +1.5^{\circ}$ to $\leq +4.0^{\circ}$	F or 6
$> +4.0^{\circ}$	G or 7

### 3.7 Full Assessment

- e. If the stability class is not available use the following table to choose appropriate value:

Surface Wind Speed (mph)	Daytime Solar Radiation (For moderate cloud cover move one column to the right)			Nighttime Conditions		Day or Night
	Summer/ Clear Sky	Spring & Fall Clear Sky	Winter	Thin overcast (>1/2 cloud cover)	<3/8 cloud cover	
<4.5	A	A-B	B	--	--	D
≥ 4.5 to 9.0	A-B	B	C	E	F	D
> 9.0 to 13.5	B	B-C	C	D	E	D
> 13.5	C	C-D	D	D	D	D

- f. If ERFIS is unavailable, the met tower can be accessed via a modem connection. Refer to Attachment 1 for instructions.

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

#### 7. Set Evacuation Conditions

Click on the "Conditions" button to select the appropriate conditions for the program to calculate the Maximum Evacuation Time Estimate (ETE). Once the user sets the evacuation conditions the program will place the Max ETE value in the "Release Duration" and "Max ETE" text boxes.

8. If the Release Duration is known, change the displayed times to the known release duration. If a good estimate of the release duration can not be determined use the default value entered by the program.

### 3.7 Full Assessment

**NOTE:** User may switch back and forth between assessment methods as more information becomes available or conditions change. With the exception of the Hours After Shutdown, which updates each time user returns to the main form, the data on the Full Assessment form will not change unless user changes it.

9. **Choose the Assessment Method – Choose the appropriate assessment method based on available inputs. Assessment methods:**
  - a. **Monitored Release – Choose this method for a release through a plant vent or through the Main Steam Relief Valves/PORV. Go to Section 3.8.**
  - b. **Containment Leakage/Failure – Choose this method for containment failure scenarios. Go to Section 3.9.**
  - c. **Field Team Analysis – Choose this method if field team survey or sample data is available. Go to Section 3.10.**
  - d. **Release Point Analysis – Choose this method if a sample from a release point has been obtained and a release flow rate can be estimated. Go to Section 3.11.**

### 3.8 Monitored Release

**Monitored Release**

**Monitor**

- Plant Vent
- Turbine Building Vent
- WP Building Stack 5
- WP Building Stack 5A
- Main Steam

Reading is from Low Range Detector (NA for Main Steam)

**Relief Inputs**

PORV Open  
 PORV Open  
 PORV Open

**PAGE Exceeded (miles)**

TEDE (Rem) [ 1.5 ]  
 CDE (Rem) [ 1.5 ]

Reading (µCi/sec) **5.00E+06**

Distance (miles)	External (Rem)	Inhalation (Rem)	Deposition (Rem)	TEDE (Rem)	CDE (Rem)
S.B.	3.53E+03	7.39E+00	1.55E+01	8.06E+02	7.63E+00
0.5	3.22E+03	6.74E+00	1.42E+01	7.34E+02	6.95E+00
1.0	1.00E+03	2.10E+00	4.41E+02	2.29E+02	2.16E+00
1.5	5.18E+02	1.09E+00	2.28E+02	1.18E+02	1.12E+00
2.0	3.32E+02	6.95E-01	1.46E+02	7.57E-03	7.17E-01
2.5	2.38E+02	4.98E-01	1.05E+02	5.43E-03	5.14E-01
3.0	1.83E+02	3.83E-01	8.07E-03	4.18E-03	3.96E-01
3.5	1.47E+02	3.09E-01	6.50E-03	3.37E-03	3.19E-01
4.0	1.23E+02	2.57E-01	5.40E-03	2.80E-03	2.65E-01

1. Choose the appropriate monitor:
  - a. Plant Vent – this is stack #1, the monitor reading from computer point RAV3509H is used for this release point. It reads out in  $\mu\text{Ci}/\text{sec}$  for this monitor.
  - b. Turbine Building Vent – this is stack #3, the monitor reading from computer point RTV3536D is used for this release point. It reads out in  $\mu\text{Ci}/\text{sec}$  for this monitor.
  - c. WP Building Stack 5 – computer point RWV3546H is used for this release point. It reads out in  $\mu\text{Ci}/\text{sec}$  for this monitor.
  - d. WP Building Stack 5A – computer point RWV3547H is used for this release point. It reads out in  $\mu\text{Ci}/\text{sec}$  for this monitor.
  - e. Main Steam Line – The Main Steam Line radiation monitors are used for this release point. The computer points for these monitors are RMS3591A, RMS3592A, and RMS3593A. Since these monitors read out in mR/hr a flow rate has to be determined to calculate the  $\mu\text{Ci}/\text{sec}$  release rate. This is accomplished by entering the steam pressure and the number of relief valves, or PORV, that are/is open.

3.8 Monitored Release

2. This step is only required if the readings are coming from one of the stack/vent monitors (Plant Vent, Turbine Building Vent, WP Building Stack 5, WP Building Stack 5A).

If the reading is from the low range detector, check the "Reading is from Low Range Detector" box. Otherwise, leave it blank.

The detector providing the reading can be determined from RMS or ERFIS data. The following table provides ERFIS and RMS item numbers that can be used to determine which detector is providing the reading.

<b>WRGM Detector</b>	<b>ERFIS Point ID #</b>	<b>RMS ID #</b>
<i>Stack 5 Low</i>	RWV3546E	4NX833
<i>Stack 5 Mid</i>	RWV3546F	4MX834
<i>Stack 5 Hi</i>	RWV3546G	4HX835
<i>Stack 5A Low</i>	RWV3547E	4NX843
<i>Stack 5A Mid</i>	RWV3547F	4MX844
<i>Stack 5A Hi</i>	RWV3547G	4HX845
<i>Plant Vent Low</i>	RAV3509A	1NX813
<i>Plant Vent Mid</i>	RAV3509B	1MX814
<i>Plant Vent Hi</i>	RAV3509C	1HX815
<i>Turbine WRGM Low</i>	RTV3536A	2NX823
<i>Turbine WRGM Mid</i>	RTV3536B	2MX824
<i>Turbine WRGM Hi</i>	RTV3536C	2HX825

3. Input Reading Information – User enters the appropriate monitor reading in  $\mu\text{Ci}/\text{sec}$  or  $\text{mR}/\text{hr}$ .

### 3.8 Monitored Release

4. After user enters data the program calculates offsite doses. The user can now perform one of the following items:
  - a. Press Print button– Prints offsite dose projections based on monitor release.
  - b. Press Back button to Change input data on the Full Assessment Form.
  - c. Press PARs button to view PAR form or to obtain a printout of information in support of preparation of a State/County Emergency Notification Form – Go to section 3.6.
  - d. Select a different monitor and/or change readings to recalculate doses and update PAR.

### 3.9 Containment Leakage/Failure

**Containment Leakage/Failure**

Leakage  % per Day  
 Failure to Isolate (100% per Day)  
 Catastrophic Failure (100% in 1 hour)

PAGEs Exceeded (miles)

TEDE to:

CDE (thyroid) to:

Release Duration (hr:min)

PAR:

Distance (miles)	External (mRem/hr)	External (Rem)	Inhalation (Rem)	Deposition (Rem)	TEDE (Rem)	CDE Thyroid (Rem)
0.5	1.20E+03	2.69E+00	1.79E+01	8.92E+00	2.95E+01	4.14E+02
1.0	1.10E+03	2.45E+00	1.63E+01	8.13E+00	2.69E+01	3.78E+02
1.5	3.41E+02	7.64E-01	5.08E+00	2.53E+00	8.87E+00	1.18E+02
2.0	1.77E+02	3.96E-01	2.63E+00	1.31E+00	4.33E+00	6.09E+01
2.5	1.13E+02	2.53E-01	1.68E+00	8.39E-01	2.77E+00	3.89E+01
3.0	8.11E+01	1.82E-01	1.21E+00	6.02E-01	1.99E+00	2.79E+01
3.5	6.24E+01	1.40E-01	9.28E-01	4.63E-01	1.53E+00	2.15E+01
4.0	5.03E+01	1.13E-01	7.48E-01	3.73E-01	1.23E+00	1.73E+01
4.5	4.18E+01	9.36E-02	6.22E-01	3.10E-01	1.03E+00	1.44E+01

1. Select the appropriate containment release mode:
  - a. Leakage – Program defaults to 0.1% per day which is the design leakage rate per the FSAR. If a different percentage of leak rate has been calculated (typically by TSC engineers) enter that value in the % per day text box.
  - b. Failure to Isolate – Assumes 100% of the isotopes available for release are released in a 24 hour time period.
  - c. Catastrophic Failure – Assumes 100% of the isotopes available for release are released in a 1 hour time period.

### 3.9 Containment Leakage/Failure

2. After user enters data the program calculates offsite doses. The user can now have the program perform the following items:
  - a. Press Print button to print offsite dose projections based on containment failure.
  - b. Press Back button to change input data on the Full Assessment Form.
  - c. Change containment failure mode – either by selecting different type of containment failure or % of daily leakage.
  - d. Press PARs button to view PAR form or to obtain a printout of information in support of preparation of a State/County Emergency Notification Form – Go to section 3.6.

### 3.10 Field Team Analysis

**NOTE:** 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.

1. Analysis Basis - Survey - Select this method if Field Team Dose Rate Survey Data is available.

Field Team Analysis																																			
<b>Analysis Basis</b> <input checked="" type="radio"/> Survey <input type="radio"/> Sample		<b>PAGE Exceeded (miles)</b>  																																	
Downwind (miles)	4.00	Travel Time	4:00																																
Crosswind (miles)	0.10	Release Time	19:55																																
Level (mB/m)	12.0	Field X/Q	6.07E-05																																
Survey Time	19:55	Release Dur	3:35																																
<input type="button" value="Print"/> <input type="button" value="PARs"/> <input type="button" value="Back"/>																																			
<b>NOTE:</b> Field team dose and dose rate values based on field surveys only include the external exposure component.  Values are to be used for comparison purposes only. They are NOT to be used as the basis for making Protective Action Recommendations or for TEDE/CDE values on Emergency Notification Forms.		<table border="1"> <thead> <tr> <th>Distance (miles)</th> <th>Centerline X/Qs</th> <th colspan="2">Dose (Rem)</th> </tr> </thead> <tbody> <tr> <td>0.5</td> <td>2.97E-03</td> <td>4.14E-02</td> <td>1.48E-00</td> </tr> <tr> <td>1.0</td> <td>2.17E-03</td> <td>3.79E-02</td> <td>1.36E-00</td> </tr> <tr> <td>1.5</td> <td>7.97E-04</td> <td>1.29E-02</td> <td>4.61E-01</td> </tr> <tr> <td>2.0</td> <td>4.02E-04</td> <td>7.03E-03</td> <td>2.52E-01</td> </tr> <tr> <td>2.5</td> <td>2.65E-04</td> <td>4.63E-03</td> <td>1.66E-01</td> </tr> <tr> <td>3.0</td> <td>1.93E-04</td> <td>3.37E-03</td> <td>1.21E-01</td> </tr> <tr> <td></td> <td>1.49E-04</td> <td>2.61E-03</td> <td>9.34E-02</td> </tr> </tbody> </table>		Distance (miles)	Centerline X/Qs	Dose (Rem)		0.5	2.97E-03	4.14E-02	1.48E-00	1.0	2.17E-03	3.79E-02	1.36E-00	1.5	7.97E-04	1.29E-02	4.61E-01	2.0	4.02E-04	7.03E-03	2.52E-01	2.5	2.65E-04	4.63E-03	1.66E-01	3.0	1.93E-04	3.37E-03	1.21E-01		1.49E-04	2.61E-03	9.34E-02
Distance (miles)	Centerline X/Qs	Dose (Rem)																																	
0.5	2.97E-03	4.14E-02	1.48E-00																																
1.0	2.17E-03	3.79E-02	1.36E-00																																
1.5	7.97E-04	1.29E-02	4.61E-01																																
2.0	4.02E-04	7.03E-03	2.52E-01																																
2.5	2.65E-04	4.63E-03	1.66E-01																																
3.0	1.93E-04	3.37E-03	1.21E-01																																
	1.49E-04	2.61E-03	9.34E-02																																
		<table border="1"> <thead> <tr> <th>Isotope</th> <th>Concentration (uCi/cc)</th> </tr> </thead> <tbody> <tr><td>Kr-85</td><td></td></tr> <tr><td>Kr-85m</td><td></td></tr> <tr><td>Kr-87</td><td></td></tr> <tr><td>Kr-88</td><td></td></tr> <tr><td>Xe-131m</td><td></td></tr> <tr><td>Xe-133</td><td></td></tr> <tr><td>Xe-133m</td><td></td></tr> <tr><td>Xe-135</td><td></td></tr> <tr><td>Xe-135m</td><td></td></tr> <tr><td>Xe-138</td><td></td></tr> </tbody> </table>	Isotope	Concentration (uCi/cc)	Kr-85		Kr-85m		Kr-87		Kr-88		Xe-131m		Xe-133		Xe-133m		Xe-135		Xe-135m		Xe-138												
Isotope	Concentration (uCi/cc)																																		
Kr-85																																			
Kr-85m																																			
Kr-87																																			
Kr-88																																			
Xe-131m																																			
Xe-133																																			
Xe-133m																																			
Xe-135																																			
Xe-135m																																			
Xe-138																																			

### 3.10 Field Team Analysis

2. Analysis Basis - Sample - Select this method if Field Team Air Sample Data is available.

**Field Team Analysis**

**Analysis Basis**  
 Survey  Sample

Downwind (miles): 9.00  
 Crosswind (miles): 0.20  
 Level (mR/hr):  
 Survey Time: 12:00

**PAGs Exceeded (miles)**  
 TEDE To: 10.0  
 CDE (Thyroid) To: 10.0

Travel Time: 1:30  
 Release Time: 7:30  
 Wind Speed: 2.16E+06  
 Release Duration: 9:25

Isotope	Concentration (µCi/cc)
Kr-85	
Kr-85m	
Kr-87	1.00E+00
Kr-88	
Xe-131m	1.11E+02
Xe-133	
Xe-133m	2.20E+01
Xe-135	
Xe-135m	
Xe-138	

[PAR] [Print] [Back]

Distance (miles)	External (mR/hr)	External (Rem)	Inhalation (Rem)	Deposition (Rem)	TEDE (Rem)	CDE Thyroid (Rem)
0.5	2.09E+09	2.71E+06	2.29E+05	1.86E+06	4.80E+06	1.86E+06
1.0	1.91E+09	2.47E+06	2.08E+05	1.69E+06	4.38E+06	1.69E+06
1.5	5.94E+08	7.70E+05	6.48E+04	5.27E+05	1.36E+06	5.27E+05
2.0	3.08E+08	3.99E+05	3.36E+04	2.73E+05	7.05E+05	2.73E+05
2.5	1.97E+08	2.55E+05	2.15E+04	1.75E+05	4.51E+05	1.75E+05
3.0	1.41E+08	1.83E+05	1.54E+04	1.25E+05	3.24E+05	1.25E+05
3.5	1.09E+08	1.41E+05	1.19E+04	9.63E+04	2.49E+05	9.63E+04

3. Enter location of field team sample, reading(s) and time sample was taken. Program will not allow mR/hr readings for sample data or isotopic results for survey data.
  - a. Downwind (miles) – straight line distance from release point to sample location.
  - b. 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. The maximum width of any plume for the most unstable stability class is 2.96 miles, 10 miles downwind.
  - c. If Analysis Basis is Dose Rate Survey – Enter the Field Team Survey reading in the box labeled "Level".
  - d. If Analysis Basis is Air Sample Results enter the µCi/cc values for each known isotope in the table at the upper right section of the form.
  - e. Survey Time – Enter the time the survey or sample was taken.

### 3.10 Field Team Analysis

4. After user enters data, the program calculates offsite doses. The user can now have the program perform the following items:
  - a. Press Print button to print offsite dose projections based on Field Team Survey/Sample data.
  - b. Press Back button to change input data on the Full Assessment Form.
  - c. Press PARs button to view PAR form or to obtain a printout of information in support of preparation of a State/County Emergency Notification Form – Go to section 3.6.

### 3.11 Release Point Analysis

Isotope	Concentration (uCi/cc)
Kr-85	
Kr-85m	
Kr-87	2.22E+02
Kr-88	
Xe-131m	
Xe-133	
Xe-133m	
Xe-135	

Vent Flow Rate (SCFM)

PAE's Exceeded (miles)

Buttons: PARs, Print, Back

Distance (miles)	External (mR/hr)	External (Rem)	Inhalation (Rem)	Deposition (Rem)	TEDE (Rem)	COE Thyroid (Rem)
0.5	7.24E+04	1.12E+02	0.00E+00	0.00E+00	1.12E+02	0.00E+00
1.0	2.05E+04	3.18E+01	0.00E+00	0.00E+00	3.18E+01	0.00E+00
1.5	1.06E+04	1.65E+01	0.00E+00	0.00E+00	1.65E+01	0.00E+00
2.0	6.81E+03	1.05E+01	0.00E+00	0.00E+00	1.05E+01	0.00E+00
2.5	4.88E+03	7.55E+00	0.00E+00	0.00E+00	7.55E+00	0.00E+00
3.0	3.76E+03	5.81E+00	0.00E+00	0.00E+00	5.81E+00	0.00E+00
3.5	3.03E+03	4.68E+00	0.00E+00	0.00E+00	4.68E+00	0.00E+00

1. Enter the isotopic known concentration for each isotope (if unknown leave blank).
2. Enter vent flow rate (or estimate flow rate for other releases) in SCFM.
3. After user enters data the program calculates offsite doses. The user can now have the program perform the following items:
  - a. Press Print button to print offsite dose projections based on release point data.
  - b. Press Back button to Change input data on the Full Assessment Form.
  - c. Press PARs button to view PAR form or to obtain a printout of information in support of preparation of a State/County Emergency Notification Form – Go to section 3.6

## 4.0 GENERAL

### 4.1 Overview

1. As a Microsoft Windows based application designed in MS 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.
2. It is also assumed the user is somewhat familiar with health physics fundamentals. Emergency Response Organization training provides an overview of dose assessment methodologies.

### 4.2 DAPAR Program Use

The program is to be used to estimate the offsite consequences of a release or potential release of radioactive materials from the HNP during an emergency. The primary purpose of these dose projections is to arrive at a Protective Action Recommendation given by HNP management to offsite authorities. These PARs will be used by those authorities in their decision making process to take actions to protect the general public.

### 4.3 Limitations of DAPAR Program Use

The program should not be used to calculate the actual dose received by populations exposed to radioactive materials from HNP. Results from it may be used as part of the post accident investigations but a much more in-depth analysis is needed to actually assign doses to members of the public.

### 4.4 Pre-Conditions for Use of DAPAR

An Emergency has been declared at the HNP. The program makes many conservative assumptions to ensure proper actions are taken offsite prior to exposing the general public to any release of radioactive materials. Use of the program to project doses based on normal plant readings would indicate offsite doses many magnitudes higher than actual offsite doses.

### 4.5 Definitions, Acronyms and Abbreviations

The following is a list of the Definitions, Acronyms and Abbreviations which a user of the HNP Dose Assessment and Protective Action Recommendations (DAPAR) computer program should be familiar with:

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. **Cloud Shine** Gamma radiation from radioactive materials in the air (plume).

#### 4.5 Definitions, Acronyms and Abbreviations

3. **Committed Dose Equivalent (CDE)** 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.
4. **Committed Effective Dose Equivalent (CEDE)** 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 to these organs or tissues.
5. **Core Damage** Damage to the components which comprise the reactor core. Core damage typically refers to the failure of fuel cladding and/or fuel melting as a result of overheating.
6. **Curie (Ci)** A unit of radioactivity equal to  $3.7E+10$  disintegrations per second.
7. **Delta T** As used in dose projections it is the difference in temperature from the 11 meter temperature sensor and the 59.9 meter temperature sensor on the HNP meteorological tower.
8. **Deposition** The contamination found on the surface of the ground.
9. **Dose Commitment** The dose that will be accumulated by a specific organ over a specified period following uptake.
10. **Dose Conversion Factor (DCF)** The dose equivalent per unit intake of a radionuclide (mrem/ $\mu$ Ci) or the effects of exposure to a given concentration of an isotope in a plume. R/hr per  $\mu$ Ci/cc.
11. **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.
12. **Effective Dose Equivalent (EDE)** The sum of the dose equivalent from external exposure to each organ multiplied by a weighting factor. EDE is used to estimate the risk of delayed health effects.
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 Harris Nuclear Plant. 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.
14. **Evacuation Exposure Period** The period during which those being evacuated are exposed to the radioactive plume.

#### 4.5 Definitions, Acronyms and Abbreviations

15. **Millirem (mR or mrem)** One one-thousandth of a rem. The rem is a unit of measure which defines the extent of biological injury that results to the body when it is exposed to radiation.
16. **Offsite** The area approximately 2500 feet from the center of Containment.
17. **Power Operated Relief Valve (PORV)** A valve which serves to reduce pressure in the reactor coolant system or main steam system by allowing steam to escape from the pressurizer or the steam generators. The PORVs can be operated remotely by Plant Operators or automatically by high pressure.
18. **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.
19. **Protective Action Recommendations (PARs)** A recommendation made by HNP 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. These actions include sheltering and evacuation.
20. **Safety Relief Valve** A valve which serves to reduce pressure in a fluid system if the pressure becomes too high. Both the reactor coolant system (located on the pressurizer) and the main steam system (located on the steam generators) have safety and relief valves to protect them from being damaged by excessive pressure.
21. **Site Boundary** HNP Site Boundary is 2500 feet from the containment building. This is the location where actions would begin to protect the public in the event of a release from the plant.
22. **Plant 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 Plant Vent is continuously monitored for abnormal amounts of radiation. This vent stack is referred to as Plant Vent Stack #1.
23. **Subzones** Pre-designated areas offsite in which Protective Actions such as evacuation or sheltering may be performed.

#### 4.5 Definitions, Acronyms and Abbreviations

24. **Total Effective Dose Equivalent (TEDE)** the sum of the deep-dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures). Factored into the TEDE for the purpose of implementing PAGs is a four-day gamma exposure to deposited particulate radionuclides.
25. **Turbine Bldg Vent Stack** That part of the ventilation system through which the condenser and gland seal air may be processed to the outside atmosphere. The discharge of this stack is continuously monitored for abnormal amounts of radiation. This vent stack is referred to as Turbine Bldg. Stack #3.
26. **Waste Processing Building Vent Stack** Those parts of the plant's ventilation system through which the Waste Processing Building (WPB) air may be processed to the outside atmosphere. The discharge of these stacks is continuously monitored for abnormal amounts of radiation. These vent stacks are referred to as WPB Stack #5 and Stack #5A.

#### 5.0 REFERENCES

1. EPM-600, Dose Assessment Technical Basis
2. Calculation HNP-M/MECH-1078
3. Calculation 3-B-12-023
4. Response Technical Manual 96 (RTM-96)

#### 6.0 DIAGRAMS / ATTACHMENTS

Attachment 1 - Instructions for Accessing Met Tower via Modem

Instructions for Accessing Met Tower via Modem

**CAUTION: FOR SECURITY REASONS THE PHONE LINE CONNECTION AT THE MODEM MUST ONLY BE CONNECTED WHILE THE EOF IS ACTIVATED.**

1. Connect phone line to the modem.
2. From the Windows Start Bar select mettower.
3. Wait for Windows to display the CONNECT TO box.
4. Select OK.
5. Wait for Windows to display the CONNECT box.
6. Select the DIAL.
7. Wait for the HyperTerminal screen to be displayed. The display will have a clear screen.
8. Make sure Caps Lock is off.
9. Type in "u" then the Enter key. You will not see the "u" but the following display will appear.

**USER MENU**

- |                                  |                              |
|----------------------------------|------------------------------|
| <b>(C)</b> Communications Menu   | <b>(T)</b> Test Menu         |
| <b>(F)</b> System Functions Menu | <b>(Z)</b> Zeno Program Menu |
| <b>(S)</b> Sample Period Menu    | <b>(Q)</b> Quit              |
| <b>(D)</b> Data Retrieval Menu   | <b>(H)</b> Help              |

10. Type in "d" then the Enter key. The following display will appear.

**DATA RETRIEVAL MENU**

- |  |                                     |
|--|-------------------------------------|
| <b>(A)</b> Show Records AFTER Specified Time | <b>(F)</b> Flash Memory Information |
| <b>(B)</b> Show Records BETWEEN Timespan     | <b>(D)</b> Delete All Data Records  |
| <b>(Ln)</b> Show LAST n Records              | <b>(N)</b> Number Of Records Logged |
| <b>(*)</b> Show ALL Data Records             | <b>(U)</b> User Menu                |
| <b>(@n)</b> Show n Unmarked Records          | <b>(Q)</b> Quit                     |
| <b>(M)</b> Mark Recently Shown Data          | <b>(H)</b> Help                     |
| <b>(C)</b> Compute Data Logging Capacity     |                                     |

Precede Any "Show Data" Command With An 'X' For X-Modem Transfer  
(e.g. Enter 'X\*' To Send All Data Sets Via X-Modem)

Instructions for Accessing Met Tower via Modem

11. Type in I1 (NOTE: this is a small "I" and a "1") then the Enter key. The following display of the last 15-minute average Met data will appear. Sample display:

```
Line 1      Hit The Space Bar To Halt The Log Data Output.
Line 2      DATE  TIME  AT_11_1_av WSPD_61_av WVAR_61_av WDIR_61_av WDIR_12_av WVAR_12
Line 3      _av WSPD_12_av AT_60_1_av RH_11_av DT_1_av DT_2_av  RAIN  BP_av SOLAR_av DP_av
Line 4      02/04/10 08:30:01 63.57  6.30  15.78 359.25  3.30  15.34  4.14  62.7
Line 5      3  93.88  -0.96  -0.85  0.00  30.00  0.21  61.81
```

**DATA RETRIEVAL MENU**

- |  |                                     |
|--|-------------------------------------|
| <b>(A)</b> Show Records AFTER Specified Time | <b>(F)</b> Flash Memory Information |
| <b>(B)</b> Show Records BETWEEN Timespan     | <b>(D)</b> Delete All Data Records  |
| <b>(Ln)</b> Show LAST n Records              | <b>(N)</b> Number Of Records Logged |
| <b>(*)</b> Show ALL Data Records             | <b>(U)</b> User Menu                |
| <b>(@n)</b> Show n Unmarked Records          | <b>(Q)</b> Quit                     |
| <b>(M)</b> Mark Recently Shown Data          | <b>(H)</b> Help                     |
| <b>(C)</b> Compute Data Logging Capacity     |                                     |

Precede Any "Show Data" Command With An 'X' For X-Modem Transfer  
(e.g. Enter 'X\*' To Send All Data Sets Via X-Modem)

12. Lines 2 and 3 of the above printout provide the key to the values printed in lines 4 and 5.
13. Type in "q" then the Enter key to quit the Met menu.
14. On the HyperTerminal Command Bar at the top select the CALL dropdown and then the DISCONNECT option to terminate the modem connection to the Met Tower.
15. If there is an extended period of inactivity the Met Tower processor will automatically terminate the User interface menu. At this point data may be retrieved again by going to step 6.
16. When EOF is deactivated make sure that step 13 is done and that the phone line is disconnected at the modem.

## Revision Summary for PEP-340 Rev. 10

Revision 10 to PEP-340 implements revision 3.1 of the DAPAR software.

<u>Section</u>	<u>Changes</u>
All	Changed pictures, diagrams and references from version 3.0 to version 3.1. Converted to Windows XP/2000 format. Corrected typos and grammatical errors throughout.
3.3	Corrected flow arrows on flowchart.
3.5.4.d	Added this step for determining stability class with only one ERFIS $\Delta T$ channel available.
3.5.4.e	Updated the stability class determination table to reflect corrected surface wind speed.
3.5.4.f	Added statement to refer to attachment 1 for instructions on accessing the met tower via modem.
3.6.1	Added last sentence stating that the PAR form is the same for both the Quick Assessment and Full Assessment.
3.6.2.c	Added section "c" to provide the option for selecting the assessment type to be printed.
3.6.2.f	Changed "Ring" to "affected subzone"
3.7.5	Added second sentence to clarify what the choices are doing. Moved PRF table to end of the step.
3.7.6.d	Added this step for determining stability class with only one ERFIS $\Delta T$ channel available.
3.7.6.e	Updated the stability class determination table to reflect corrected surface wind speed.
3.7.6.f	Added statement to refer to attachment 1 for instructions on accessing the met tower via modem.
3.8.2	Added this step to select which detector the reading is coming from. Added table to provide ERFIS and RMS item numbers for the low, mid and high range detectors.
4.5	Revised definitions for consistency.
5.4	Added reference for RTM-96
Attachment 1	Added attachment for accessing met tower via modem

**HARRIS NUCLEAR PLANT  
PLANT OPERATING MANUAL  
VOLUME 2  
PART 5**

**PROCEDURE TYPE:** Plant Emergency Procedure  
**NUMBER:** PEP-350  
**TITLE:** Protective Actions

**TABLE OF CONTENTS**

1.0 PURPOSE .....3

2.0 INITIATING CONDITIONS .....3

3.0 PROCEDURE STEPS .....3

    3.1 Accountability .....3

    3.2 Site Evacuation .....5

    3.3 Exclusion Area Evacuation .....6

    3.4 Search and Rescue .....6

    3.5 First Aid and Decontamination .....11

    3.6 Transporting Injured Personnel - Ambulance .....13

    3.7 Transporting Injured Personnel - Helicopter .....15

    3.8 Initial Actions at the Hospital .....16

    3.9 Hospital Decontamination .....17

    3.10 Transport of Radioactive Material .....18

4.0 GENERAL .....18

5.0 REFERENCES .....19

    5.1 Emergency Plan References .....19

    5.2 Referenced Plant Emergency Procedures .....19

6.0 DIAGRAMS/ATTACHMENTS .....19

    Attachment 1 - Manual Personnel Accountability Form .....20

    Attachment 2 - Use of Bar Code Reader for Accountability .....21

    Attachment 3 - Site and Exclusion Area Boundaries .....23

    Attachment 4 - Search and Rescue Team Briefing Form .....24

    Attachment 5 - Diagram of Rex Hospital Facilities .....25

    Attachment 6 - Diagram of Wake Medical Center Facilities .....26

    Attachment 7 - Diagram of Western Wake Medical Center Facilities .....27

    Attachment 8 - Contaminated Injured Personnel Log .....28

    Attachment 9 - Helicopter Landing Zone .....29

## 1.0 PURPOSE

1. The purpose of this procedure is to partially implement Section 2.4 and Section 4.6 of the Emergency Plan, PLP-201, which is a regulatory commitment.
2. This procedure provides instructions for implementing Personnel Accountability; a Site and/or the Exclusion Area Evacuation; Search and Rescue; and First Aid and Medical Care.
3. This procedure is primarily directed at situations initiated by an emergency declaration. The basic actions contained in this PEP also apply, where appropriate, to situations related to contaminated injuries or habitability hazards, such as toxic gases, fire, or natural phenomena when no emergency has been declared. When this is the case normal supervision replaces the emergency titles.

## 2.0 INITIATING CONDITIONS

One or both of the following conditions has occurred:

1. An Alert, Site Area Emergency or General Emergency has been declared.
2. A contaminated injury or habitability hazard has occurred at the site.

## 3.0 PROCEDURE STEPS

### 3.1 Accountability

**NOTE:** Hazardous conditions (such as radiological releases, severe weather, toxic gas) may preclude immediate implementation of a site assembly. In such cases, nonessential personnel should be moved to better locations if the movement can be performed safely to reduce the hazardous exposure.

1. Upon notification of the declaration of an Alert, Site Area Emergency, or General Emergency, personnel who are members of the ERO should report to their designated emergency response facility. All other personnel exit the Protected Area and report to the Admin Building 2nd floor Conference Room 228, and await instructions. All visitors, nonessential contract personnel, declared pregnant females and handicapped personnel please leave the site.
2. Personnel on site shall place their work area in a safe condition and report as instructed when instructions to assemble are announced.

### 3.1 Accountability

3. Personnel escorting visitor(s) shall report to the Security turnstiles and ensure that the visitors leave the Protected Area.

---

#### CAUTION

Any personnel who must exit the Radiation Control Area, or enter or exit security areas to get to their designated Assembly Area or emergency facility, shall do so in accordance with normal security and/or health physics procedures.

---

4. Upon arrival at their Assembly Area, personnel shall report to the Administration Building Assembly Area Leader.

NOTE: If the bar code reader is not working, request an Assembly Area Log Printout from Security by calling extension 3114 or 2980 and follow the directions on Attachment 1 to perform a manual accountability for the Assembly Area.

5. When directed by the Site Emergency Coordinator (SEC), the Plant Operations Director (POD) in the Main Control Room (MCR), the Emergency Repair Director (ERD) in the OSC, the Security Director (SD) in the TSC and the senior on-site member of the Security organization (or other persons designated to perform accountability) shall perform accountability in accordance with Attachment 2.

NOTE: Accountability may be delayed during a security event if the SEC (in consultation with Security) determines that performing accountability could be detrimental to the safety of plant personnel. If accountability is delayed, then accountability should be performed immediately when conditions warrant.

6. The senior on-site member of the Security organization shall report all personnel accounted for or the names of any visitors and the names and possible locations of missing personnel, if any, to the SD via telephone at extension 3037. This report shall be made within 25 minutes or sooner after the announcement to perform accountability has been given.
7. The SD shall report the results of personnel accountability to the SEC within 30 minutes of the start of a Site Area Emergency or a General Emergency.
8. The SEC-TSC shall direct the POD to implement Section 3.4, "Search and Rescue," if any personnel are missing. If the TSC is not yet activated the SEC-MCR shall direct the First Aid Team to perform this step.

### 3.1 Accountability

9. Accountability shall be maintained by each assembly area at all times when a Site Area or General Emergency is in effect.
10. A sector report may be requested from the SD to assist each assembly area. Accountability is to be verified after each shift change.
11. Based on recommendations from the Radiological Control Director (RCD), the SEC decides what protective actions (if any) to implement for personnel in the Administrative Building Assembly Area. If on-site sheltering is implemented, personnel shall remain in the Assembly Areas. If no protective actions are necessary and conditions in their work area permit, personnel may be allowed to return to work.
12. Directors/Coordinators/Team Leaders are responsible to maintain accountability of personnel assigned to them.
13. Missing personnel shall be reported to the SD.

### 3.2 Site Evacuation

---

#### CAUTION

Evacuations should be accomplished either before or after the passage of a release, and the evacuation route should be chosen that leads personnel away from the path of the plume. Direction from the Dose Projection Team or the Radiological Control Director is needed to obtain this information.

---

1. The Site Evacuation Alarm shall be sounded and PA announcements to evacuate shall be made, when a Site Area or General Emergency is declared.
2. All individuals in the Protected Area, who are not ERO personnel, shall expeditiously exit through the Security Building and leave site.
3. An RC Team member is dispatched to monitor radiological controls at the Security Building during evacuation, if necessary.

**NOTE:** If Wake County is establishing (or has established) traffic control measures, personnel will be directed by local law enforcement agencies to follow established evacuation routes.

4. Personnel shall evacuate the site with transportation that was used to arrive at the site.
5. Personnel without transportation shall arrange for a ride with other evacuating personnel.

### **3.3 Exclusion Area Evacuation**

Whenever the State of North Carolina or Wake County has initiated the evacuation of Emergency Planning Subzone A, the SD shall assist in warning members of the general public within the Exclusion Area.

### **3.4 Search and Rescue**

1. A First Aid Team is established on all shifts. The First Aid Team performs/coordinates emergency first aid and search and rescue activities. The First Aid Team reports to the Site Emergency Coordinator-MCR or to the Plant Operations Director after activation of the Technical Support Center.
2. The Search and Rescue Team should normally be composed of:
  - a) First Aid Team member who is trained to perform the following procedures should be the Search and Rescue Team Leader:
    - (1) Search for unaccounted personnel.
    - (2) Rescue injured and/or trapped personnel.
  - b) A member of the Security force (if available).
  - c) A Radiological Control Team member.
3. Upon discovery of an individual needing rescue and/or medical assistance, the discoverer should:
  - a) Initiate rescue and/or provide medical assistance if qualified to do so.
  - b) Report the discovery of the victim to the MCR (X5555) and provide what is known of the following:
    - (1) Number of injured personnel and cause.
    - (2) Location of the injured personnel.
    - (3) Nature and severity of injuries.
    - (4) Whether life sustaining actions are needed, whether they are being performed, and/or whether the caller is capable of performing them.
    - (5) Approximate radiological conditions where the injured are located.
    - (6) Any complications affecting rescue and/or first aid efforts.
    - (7) Name of caller and name(s) of injured (if known).

### 3.4 Search and Rescue

4. The Security Director (SD) shall attempt to determine the possible location of the missing individuals. If the individual(s) remains unaccounted for, the SEC shall be notified and the following information provided:
  - a) Name(s) and badge numbers of individual(s) missing
  - b) Summary of efforts performed to locate the individual(s)
  - c) Last known location(s) of the individual(s)
5. The SEC contacts the POD in the Main Control Room to activate the Search and Rescue Team.

---

#### CAUTION

Premature or unnecessary movement of the injured could increase the severity of an injury. If an injury is severe, radiological conditions are considered secondary to immediate medical treatment unless acute radiation hazard for the injured exceeds the injury hazard.

---

6. Upon receipt of a report that an individual is missing or requires rescue, the POD/MCR shall direct the search and rescue effort as follows:

- a) Direct an announcement over the PA system:

\*\*\* EXAMPLE MESSAGE \*\*\*

ATTENTION ALL PLANT PERSONNEL. THE FOLLOWING INDIVIDUAL(S) IS/ARE MISSING WITHIN THE PLANT (Name Individual(s)). PERSONNEL KNOWING HIS/HER/THEIR WHEREABOUTS PLEASE CONTACT THE CONTROL ROOM AT EXTENSION 5555.

or

ATTENTION ALL PLANT PERSONNEL. AN INDIVIDUAL(S) (NAME) IS/ARE MISSING/TRAPPED/DISABLED WITHIN (specify location).

and

SEARCH AND RESCUE PERSONNEL ASSEMBLE AT THE MAIN CONTROL ROOM (or other specified location).

- b) Have the announcement repeated at least once.

### 3.4 Search and Rescue

7. The POD/MCR shall determine from the Search and Rescue Team Leader what personnel are available and shall select the team.
8. The POD/MCR shall consult with the Radiological Control Director (RCD) or Radiological Control Coordinator (RCC) to determine whether an Emergency Radiation Work Permit (ERWP) is required.
9. The POD/MCR shall provide available information to the Search and Rescue Team Leader. Attachment 4, "Search and Rescue Team Briefing Form", may be used as guidance. Some of the things that are discussed if known and if appropriate are:
  - a) Muster location for the Search and Rescue Team (preferably in the MCR unless a more suitable location is specified).
  - b) Whether or not an ERWP will be required.
  - c) Data on the individual:
    - (1) Name and badge number.
    - (2) Probable location or last known location.
    - (3) Physical description of individual.
  - d) Any known complications that might affect the search such as:
    - (1) Fire, smoke, or toxic chemicals.
    - (2) Gas, steam, water, or other fluid releases.
    - (3) Wreckage.
    - (4) Equipment damage.
    - (5) Radiological conditions.
  - e) Search areas or routes.
  - f) Rescue equipment.

### **3.4 Search and Rescue**

**NOTE:** If potassium iodide is administered to team members or the injured it should be in accordance with PEP-330.

10. The Search and Rescue Team Leader shall:
  - a) Assemble the team.
  - b) Brief the team. Attachment 4, "Search and Rescue Team Briefing Form", may be used as guidance.
  - c) Identify protective equipment, rescue equipment, and first aid supplies to be taken.
11. If a search pattern has not been given to the Search and Rescue Team Leader, he shall determine a pattern. If the team has to deviate from a predetermined pattern the team leader and the POD, or MCR shall be notified so that the team can be advised if there may be any problems as a result of the change of pattern.
12. If the missing individual is located and is trapped or injured, go to Step 3.4.13. If he is not trapped or injured, proceed as follows:
  - a) Based upon the radiological conditions of the area(s) where the individual has been, and other appropriate circumstances, he is escorted (or directed) to the proper location (such as, Radiation Control access control point, OSC, Security Building) for dosimetry checks, debriefing, and so forth.
  - b) The Search and Rescue Team Leader notifies the POD/MCR and the SD of:
    - (1) The name and badge number of the individual and where he was found.
    - (2) The location where he is being escorted or directed to report.
    - (3) Whether the team is returning to the MCR (or other location).
    - (4) Whether the team is continuing to search and the locations that will be searched.

### **3.4 Search and Rescue**

- c) If the search is discontinued, the team:
    - (1) Returns to the MCR or other area as directed by the POD/MCR.
    - (2) Completes dose information and turns in the briefing form, if used, to the POD.
    - (3) Discontinues the use of this Section.
  - d) If the search is continued, return to Step 3.4.12.
13. The Team Leader, (or medically trained individual) evaluates:
- a) The injuries and physical condition of each person found.
  - b) The radiological hazards affecting each person and the rescuers (based on information provided by the RC team member).
  - c) Other conditions affecting the rescue (fire, smoke or wreckage).

---

#### **CAUTION**

If an injury is severe, radiological conditions are considered secondary to immediate medical treatment unless acute radiation hazard exceeds the injury hazard. For life saving purposes, the maximum planned exposure allowed to the rescuers shall not exceed 75 rem TEDE. The casualty should also be limited to 75 rem TEDE if possible.

---

- 14. The Search and Rescue Team Leader specifies the course of action to be taken and directs the team or requests additional support from the POD/MCR.
- 15. Life sustaining first aid is given to the individual in the affected area, if necessary, as per Section 3.5, "First Aid and Decontamination".
- 16. The Team Leader notifies the POD/MCR, and provides the following information:
  - a) Name(s) and badge number(s) of trapped or injured personnel.
  - b) Location of trapped or injured personnel.
  - c) Extent of injuries and potential cause.
  - d) Radiological conditions.

### **3.4 Search and Rescue**

- e) Whether additional support (doctor's assistance, an ambulance or helicopter) is needed.
- 17. Remove the injured person to the closest safe area (or first aid room if conditions permit) and perform first aid or medical treatment. If the person is likely to be contaminated, decontaminate if appropriate, prior to the injured leaving the site.
- 18. If there are other missing personnel, the team leader may assign team members to care for the injured or turn the injured over to other medically qualified personnel and continue the search.
- 19. The Team Leader shall close out the incident by:
  - a) Reporting events after the victim leaves the site (if he is accompanied to a hospital for treatment).
  - b) Assisting Regulatory Compliance in the description of events for report to NRC, if required.

### **3.5 First Aid and Decontamination**

#### **NOTE:**

- Not all of the following steps need to be performed and some may be performed out of order if it appears to be in the best interest of the injured person.
  - If the degree of contamination of the patient is unknown or cannot be definitively determined assume the injured is contaminated.
1. The MCR dispatches a First Aid Team to the scene of the injury.
  2. The First Aid Team:
    - a) Assesses the injury(ies).
    - b) Requests additional assistance and equipment if needed.
    - c) Requests the RC Team member to perform radiological monitoring if the injured is in the Radiation Controlled Area.

### 3.5 First Aid and Decontamination

#### NOTE:

- The First Aid Team normally performs any immediate first aid. If the injured is located in an area that is life threatening due to fire, toxic gas, water, steam or high radiation level, first aid personnel may move him prior to performing immediate first aid.
  - If the injured is in a contaminated area, and if conditions permit, First Aid Team or RC Team personnel remove the contaminated protective clothing and wrap the injured in a clean sheet (or blanket).
    - d) Determines if the injured should be sent directly to the hospital without checking for contamination and/or decontaminating.
    - e) Determines if site personnel can perform any additional first aid and decontamination likely to be needed.
    - f) Determines if consultation with, or on-site assistance from, the agreement physician is needed for treatment.
3. The First Aid Team notifies the MCR of the initial evaluation.
  4. The First Aid Team performs first aid consistent with their training.
  5. The First Aid Team/RC Team Member prepares the injured for transportation as follows:
    - a) Spread an open blanket or sheet over the stretcher.

#### NOTE:

Plastic sheets or tarps should not be used since this could overheat the injured person.

- b) Place the injured on top of the blanket or sheet and wrap the injured.
- c) Transport the injured to:
  - (1) The First Aid Room located on the ground level of the Waste Processing Building;
  - (2) The Decontamination Room if the injured is contaminated and the injuries are not life threatening;
  - (3) Directly to the ambulance pickup point or helicopter landing zone (if there is no contamination or the injuries are life threatening).

### **3.5 First Aid and Decontamination**

**NOTE:** If the injured will receive no other treatment at the plant, go to Section 3.6 or 3.7; otherwise, continue with Step 6.

6. The First Aid Team notifies the MCR of the disposition of the injured.

**NOTE:** In most cases the individual should be taken in an ambulance or a Progress Energy vehicle for diagnosis by a medical professional prior to being released to minimize health and liability problems.

7. Depending upon the injured's condition, as determined by the First Aid Team (or the agreement physician), the injured's supervisor is notified by the MCR and the injured is:

- a) Taken to the hospital for diagnosis or treatment.
- b) Taken to see their own physician or specialist for diagnosis and treatment.
- c) Given other instructions as may be appropriate.

8. If an ambulance or helicopter is to be used, continue with Section 3.6 or 3.7.

### **3.6 Transporting Injured Personnel - Ambulance**

**NOTE:**

- In the event of an airborne radioactive release, the following steps may be performed at any Protected Area gate.
- The Main Control Room approves requests for ambulance transport and makes the call or has any available personnel make the call requesting ambulance transport.

1. If the injured meets the criteria for a contaminated or potentially contaminated patient, the MCR requests that the Security Director (SD) notify the senior member of the security force (or Central Alarm Station operator) at the Security Building.
2. Security personnel perform the following:
  - a) The CAS Operator or Security Shift Supervisor notify the MCR of the ambulance arrival.
  - b) The Security Officer at the entry gate conducts a pat down search of ambulance crew for prohibited items.

### **3.6 Transporting Injured Personnel - Ambulance**

- c) **Ensure that each individual is provided an Escort Required (Visitor) Badge and dosimetry devices if the crew need to enter the Radiation Control Area. The Radiological Control Coordinator (RCC) or HP Supervisor should provide a person (if one is available) to assist with dosimetry issuance at the Security Building.**
- d) **Provide the ambulance kit (if directed by the MCR).**
- e) **Provide an armed escort while onsite.**

**NOTE:** **If the contamination on the injured is covered, the RC Team may decide Step 3 is not necessary.**

- 3. **If the injured is contaminated, the ambulance crew and/or the RC Team may install the precut material from the ambulance kit to protect the ambulance.**
- 4. **The First Aid Team reports to the ambulance crew:**
  - a) **The extent of the injuries;**
  - b) **First aid measures taken;**
  - c) **Whether the person was contaminated, is potentially contaminated or is still contaminated; and**
  - d) **The injured's current medical status.**

**NOTE:** **If the ambulance crew determines that the injured requires transport by helicopter, see Section 3.7.**

- 5. **The First Aid Team shall inquire to which agreement hospital the injured is being transported. This information will then be relayed to the MCR.**
- 6. **The injured is transferred to the ambulance.**
- 7. **The MCR should designate a person to accompany the injured to the hospital either in the ambulance or in a separate vehicle, if the injured is not contaminated.**
- 8. **An RC Team member accompanies the contaminated injured in the ambulance bringing any radiological records on the injured along with the appropriate radiological instrumentation.**

### **3.6 Transporting Injured Personnel - Ambulance**

**NOTE:** Additional personnel may be sent separately to the medical facility to assist with contamination control and liaison with medical personnel.

9. The First Aid Team reports to the MCR the name of the person who is to accompany the injured and their estimated time of arrival at the hospital.
10. If the injured meets the criteria for a contaminated patient, the MCR notifies the SEC. The Emergency Communicator - Control Room (EC-CR) is then instructed to notify the hospital per PEP-310 and request them to initiate the hospital plan for handling contaminated patients.

### **3.7 Transporting Injured Personnel – Helicopter**

**NOTE:**

- Duke Life Flight will not transport chemically or radioactively contaminated patients.
  - The S-SO or SEC-Control Room approves requests for helicopter transport, prior to facility activation and makes the call or has any available personnel make the call requesting helicopter transport.
1. If the First Aid Team or ambulance crew determines that the injured requires transport by helicopter, the First Aid Team shall contact the MCR and request helicopter transport.
  2. MCR personnel inform the POD, who authorizes the request for helicopter transport.
  3. The POD requests the SD to provide security support for the transport of the injured to the Helicopter Landing Zone (HLZ) (see Attachment 9) and for the arriving helicopter.
  4. The SD ensures that the route to the HLZ is clear to allow rapid transport of the injured.
  5. The SD also ensures that the HLZ is clear of obstructions and provides personnel to guide the helicopter into the HLZ.

### **3.8 Initial Actions at the Hospital**

**NOTE:**

- The following sections only apply for contaminated or potentially contaminated individuals.
  - If the TSC and OSC are not yet activated, the following sections are implemented as necessary by on-duty HP and Operations personnel.
1. The RC Team member, that accompanies the injured to the hospital, performs the following actions upon arrival:

**NOTE:**

If there is a change in the condition of the injured which requires switching to another agreement hospital while en route, upon arrival at the hospital the RC Team Member will notify the RCC or HP Supervisor of the change.

- a) Ensures that the ambulance personnel go to the proper unloading point for access to the Radiological Emergency Area at the appropriate hospital. (See Attachment 5 for Rex Hospital, Attachment 6 for Wake Medical Center and Attachment 7 for Western Wake Medical Center).
- b) Complete the Contaminated Injured Personnel Log (Attachment 8). Return this form to the RCC or HP Supervisor.
- c) Informs the attending physician of the patient's initial radiological status and any radiological hazards that may be encountered. Use the units counts per minute (cpm) to convey contamination levels.
- d) Requests that the ambulance or helicopter personnel return to their vehicle and remain with it until cleared by the RC Team Member or other RC personnel.
- e) Verifies with the attending physician, hospital Radiation Safety Officer or Emergency Room nurse that the hospital plan to handle contaminated patients is being implemented and provides any requested assistance.
- f) Notifies the RCC or HP Supervisor of arrival at destination and of any additional requirements (that is, monitoring and decontamination for ambulance or helicopter personnel).

### **3.8 Initial Actions at the Hospital**

**NOTE:** The use of saran wrap or surgeons gloves covering of an instrument is an acceptable practice for the control of contamination.

- g) Provides ongoing recommendations and assistance to the attending physician, upon request, with regard to the contamination of the patient and other radiological hazards.**
  - h) Monitors ambulance or helicopter personnel for contamination and, as time permits, monitors and arranges for decontamination of the ambulance, helicopter and/or personnel, if necessary. Radioactive material generated during this process, if any, shall be bagged, surveyed and tagged for return to HNP.**
  - i) Remove and record ambulance crew's dosimetry prior to release from the site. Leave dosimetry with security for retrieval by HP.**
  - j) When approval from the RCC or HP Supervisor is received, notify the hospital Radiation Safety Officer or his designee prior to releasing the ambulance or helicopter.**
- 2. Any additional RC Team Members shall identify themselves clearly to hospital security personnel by:**
- a) Displaying their HNP Security Badges.**
  - b) Stating that they are from HNP Health Physics and are available to provide assistance.**
- 3. RC Team members should provide radiological assistance to the hospital staff as requested.**

### **3.9 Hospital Decontamination**

**When the contaminated patient(s) has been adequately decontaminated and removed from the hospital's Radiological Emergency Area, the RC Team member(s) shall perform the following accountability and decontamination actions:**

- 1. Collect applicable records and Progress Energy dosimetry which was used.**
- 2. Perform radiological surveys of hospital areas and equipment, in coordination with the hospital staff. Arrange for the control and decontamination of areas/equipment, in coordination with the hospital staff.**

### **3.9 Hospital Decontamination**

- 3. Collect the contaminated materials, then arrange for packaging and return to the Harris Nuclear Plant (see Section 3.10).**
- 4. Notify the RCC or HP Supervisor when the Radiological Emergency Room is decontaminated and ready to be reopened, or if the hospital decides to secure the room and delay decontamination.**
- 5. Return dosimetry devices and applicable records concerning injuries, contamination and exposures to the RCC or HP Supervisor, as appropriate.**

### **3.10 Transport of Radioactive Material**

- 1. After the hospital facility has been decontaminated the RC Team member(s) shall:**
  - a) Survey the radioactive material and attach a completed radioactive material tag to each bag or container.**
  - b) Determine the physical volume of the material.**
  - c) Contact the RCC with the volume of the material and the survey results.**
  - d) Place the radioactive material under the hospital's control in an appropriate storage area.**
- 2. The RCC shall arrange for appropriate personnel to assess, characterize, and classify the radiological and biohazard aspects of the material, and transport any HNP radioactive material being stored at the hospital.**

### **4.0 GENERAL**

- 1. In cases of severe injury, life-saving first aid or medical treatment shall take precedence over personnel decontamination. The order of medical treatment will be:**
  - a) Care of severe physical injuries.**
  - b) Personnel decontamination.**
  - c) First aid to other injuries.**
  - d) Definitive medical treatment and subsequent therapy as required.**

#### 4.0 GENERAL

2. Any injury of contaminated personnel which would not normally require hospitalization would be treated at the plant site. Medical treatment of contaminated personnel should normally be performed at the plant First Aid Room by medical personnel called to the site.
3. If emergency medical treatment cannot be handled adequately at the plant site by medical personnel called to the site, or if it appears that the patient's life may be endangered, move the patient to the agreement hospital or other facility advised by competent medical authority.
4. Since Search and Rescue personnel may receive increased exposure, they should do so only on a voluntary basis and with full awareness of the risks involved, including the numerical levels of dose at which acute effects of radiation will be incurred and numerical estimates of the risk of delayed effects (PEP-330).
5. Team personnel should establish and maintain constant communications with the team leader.

#### 5.0 REFERENCES

##### 5.1 Emergency Plan References

Section 2.4, "Assignment of Responsibilities"

Section 4.6, "Protective Actions for On-Site Personnel"

##### 5.2 Referenced Plant Emergency Procedures

PEP-330, "Radiological Consequences"

PEP-310, "Notifications and Communications"

#### 6.0 DIAGRAMS/ATTACHMENTS

See Table of Contents

Manual Personnel Accountability Form

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

Announcement Time: \_\_\_\_\_ Completion Time: \_\_\_\_\_

1. All personnel on-site will be accounted for within 30 minutes of the declaration of a Site Area Emergency or General Emergency.
2. All personnel listed on printout but not actually present in Assembly Area shall be listed under Personnel Missing. If all personnel are accounted for in accordance with the printout, check the block designated All Personnel Accounted For. All persons actually located in the Assembly Area but not shown on printout shall be listed as Visitor(s) Present.
3. As soon as the Personnel Accountability Form is completed, notify the Security Director of the results by calling extension 3037. Following this, obtain permission from the Radiological Control Coordinator at extension 3023 or 3024, then dispatch someone to deliver the Assembly Area Log Printout and this form to the Security Director in the Technical Support Center.

ALL PERSONNEL ACCOUNTED FOR

PERSONNEL MISSING

<u>Name</u>	<u>Badge #</u>	<u>Name</u>	<u>Badge #</u>

VISITOR(S) PRESENT

<u>Name</u>	<u>Badge #</u>	<u>Name</u>	<u>Badge #</u>

**Use of Bar Code Reader for Accountability**

**TO SCAN BADGES USING THE HAND HELD BAR CODE READER:**

1. Remove the hand held unit from the docking station.
2. Press the on-off button to turn the hand held scanner on.

**NOTE:** Edit an incorrect entry using [bksp] key, clear scanner using F4.

3. If the utility menu is not displayed, press the F4 button until - **UTILITY MENU** - is shown in the display.

**NOTE:** Enter **ASAP** (using Capital letters) as the password any time if it is requested and press enter.

4. Press F1 until **CP&L EVAC MGMT** appears in the display.
5. Press F1 again.
6. Press enter if the current date is correct or enter the correct date in the format, as follows:  
( mm/dd/yy - press and release the alt button and press S for the / )
7. Press enter if the current time is correct or enter the correct time in the format, as follows:  
( hh:mm:ss - press and release the alt button and press X for the : ).
8. When **SCAN BADGE** appears in the display hold the scanner, point the trigger away from your eyes and scan the bar code on your security badge, you will hear a beep when it has accepted the badge. This will enter you as the operator. If scanner is not working, manually enter your social security number on the keypad, SSN is displayed briefly, and press enter. This will enter you as the operator.
9. When **LOCATION/AREA** appears in the display enter the code for the Assembly area (1, 2, and so forth) from the list below and press enter.

ASSEMBLY AREA	BLDG.- ELEV.	AREA	PERSONNEL
1	Security - 261'	Admin. Area	Security Personnel
2	WPB - 261'	OSC	OSC ERO Personnel
3	RAB - 305'	MCR/AO Corral	Operations Personnel
4	"K" BLDG. - 324'	TSC	TSC ERO Personnel
5	Admin. Bldg. CR 228		Non-ERO

10. Scan your badge again and each individuals badge in the Assembly Area for which you are responsible. A colored label (or other available "mark") may be attached to the individual's badge to show that they have been accounted for. If an individual is not in the facility, manually enter the social security number and press enter after establishing voice contact.

**Use of Bar Code Reader for Accountability (continued)**

11. When the badges have been scanned or social security numbers entered press **F4** 3 times until **CP&L EVAC MGMT** appears in the display.
12. Insert the hand held scanner into the docking station attached to the computer. The Ready light on the docking station will come on.

***TO SEND SCANNED INFORMATION TO SECURITY IN THE CENTRAL ALARM STATION (CAS) USING A COMPUTER:***

**NOTE:** In order to send the scanned information to Security for processing, ensure the computer is linked to the LAN and at the Windows desktop with all applications closed.

---

**CAUTION**

If the LAN is not operating carry the hand held scanner to the Central Alarm Station in the Security Building. The hand held scanners can be individually down loaded in the security computer docking station.

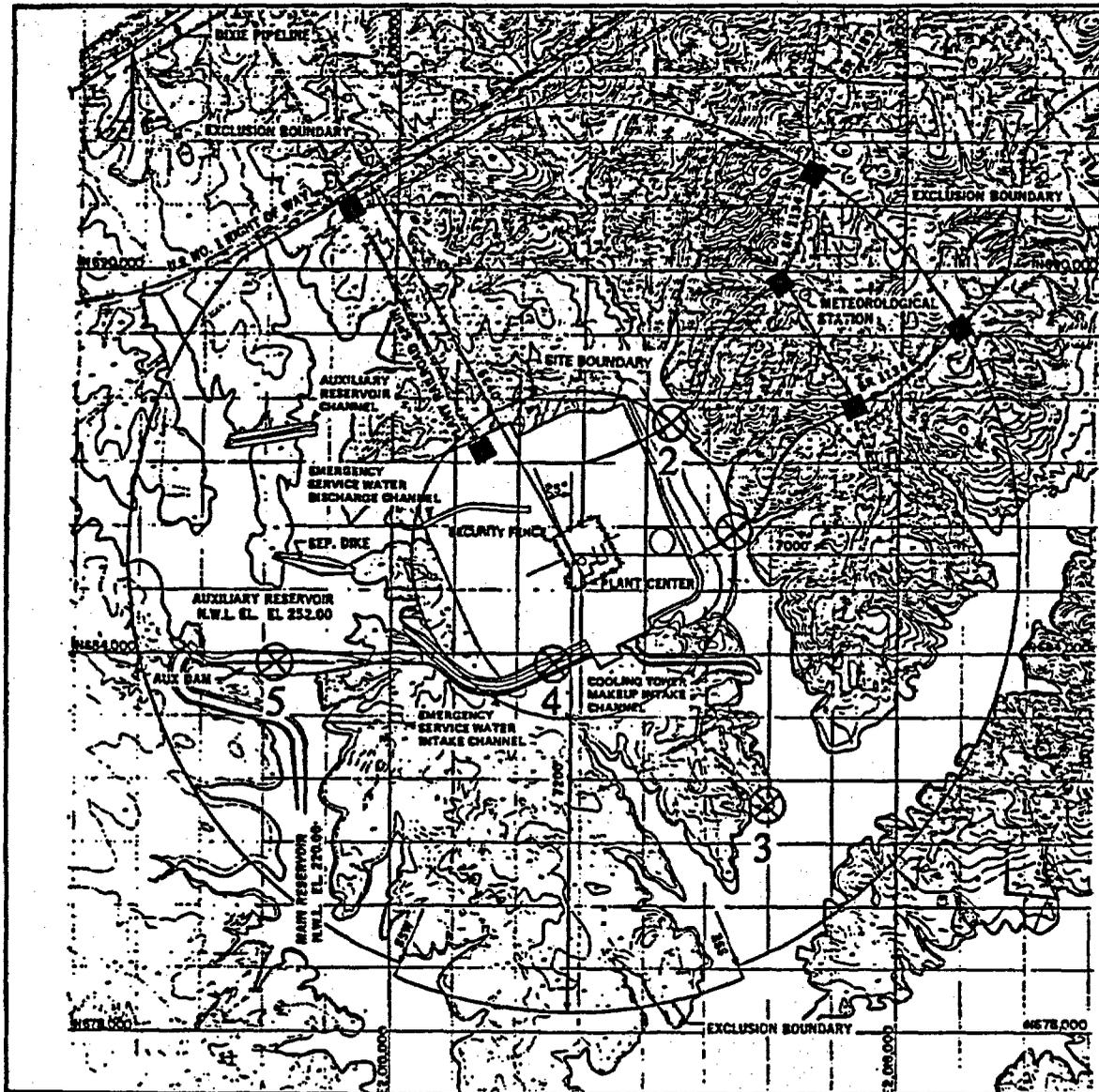
---

13. On the Windows desktop in the facility, go to **START, PROGRAMS, OPERATIONS, HNP, IASSETRAC** and select your facility to upload software.

**NOTE:** The next two steps are performed on the hand held scanner keypad while it is in the docking station.

14. On the hand held scanner press **F2** to get to the -- **SEND MENU** --.
15. Contact the **CAS** (ext. 3114 or 2980) to ensure that the import data from the Security computer has been loaded.
16. On the hand held scanner press **F1** to send data to the computer in the **CAS**.
17. **RECEIVING DATA** should flash at the top of the PC screen.
18. On the hand-held scanner, if data transfer is not successful the scanner message will read 'Computer Didn't Respond. Check the PC electrical cords and connections. Retry by entering **Y**. If unsuccessful select **N**, turn the scanner off and bring the scanner to the **CAS** for downloading.
19. Upon completion of the data transfer, call the **CAS** at extension 3114 or 2980 and report download of data completed for your assembly area.
20. When scanned report is displayed appears press **File** and then **Exit** to get back to the Windows desktop.
21. On the handheld scanner press the on-off button to turn the scanner off.

Site and Exclusion Area Boundaries



- - Gate, Barrier or Warning Sign
- ⊗ - Warning Point

Search and Rescue Team Briefing Form

1. Date: \_\_\_\_\_ Time: \_\_\_\_\_ Briefing at: \_\_\_\_\_ Team ID: \_\_\_\_\_

2. Briefing by: \_\_\_\_\_ / \_\_\_\_\_

3. Missing Individual(s): Name \_\_\_\_\_ Badge No. \_\_\_\_\_

Name \_\_\_\_\_ Badge No. \_\_\_\_\_

Last Location \_\_\_\_\_

Description \_\_\_\_\_

4. Unusual Area/Env. Conditions: \_\_\_\_\_

5. Communications Extensions: MCR \_\_\_\_\_ TSC \_\_\_\_\_ OSC \_\_\_\_\_

6. Required Equipment: Search light \_\_\_\_\_ Rope \_\_\_\_\_

Other \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

7. Emergency Radiation Work Permit required? Yes/No ERWP No. \_\_\_\_\_

8. Team member names

Team Leader \_\_\_\_\_ Asst. 3 \_\_\_\_\_

Asst. 1 \_\_\_\_\_ Asst. 4 \_\_\_\_\_

Asst. 2 \_\_\_\_\_ Asst. 5 \_\_\_\_\_

9. Special Instructions: \_\_\_\_\_

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

### Diagram of Rex Hospital Facilities

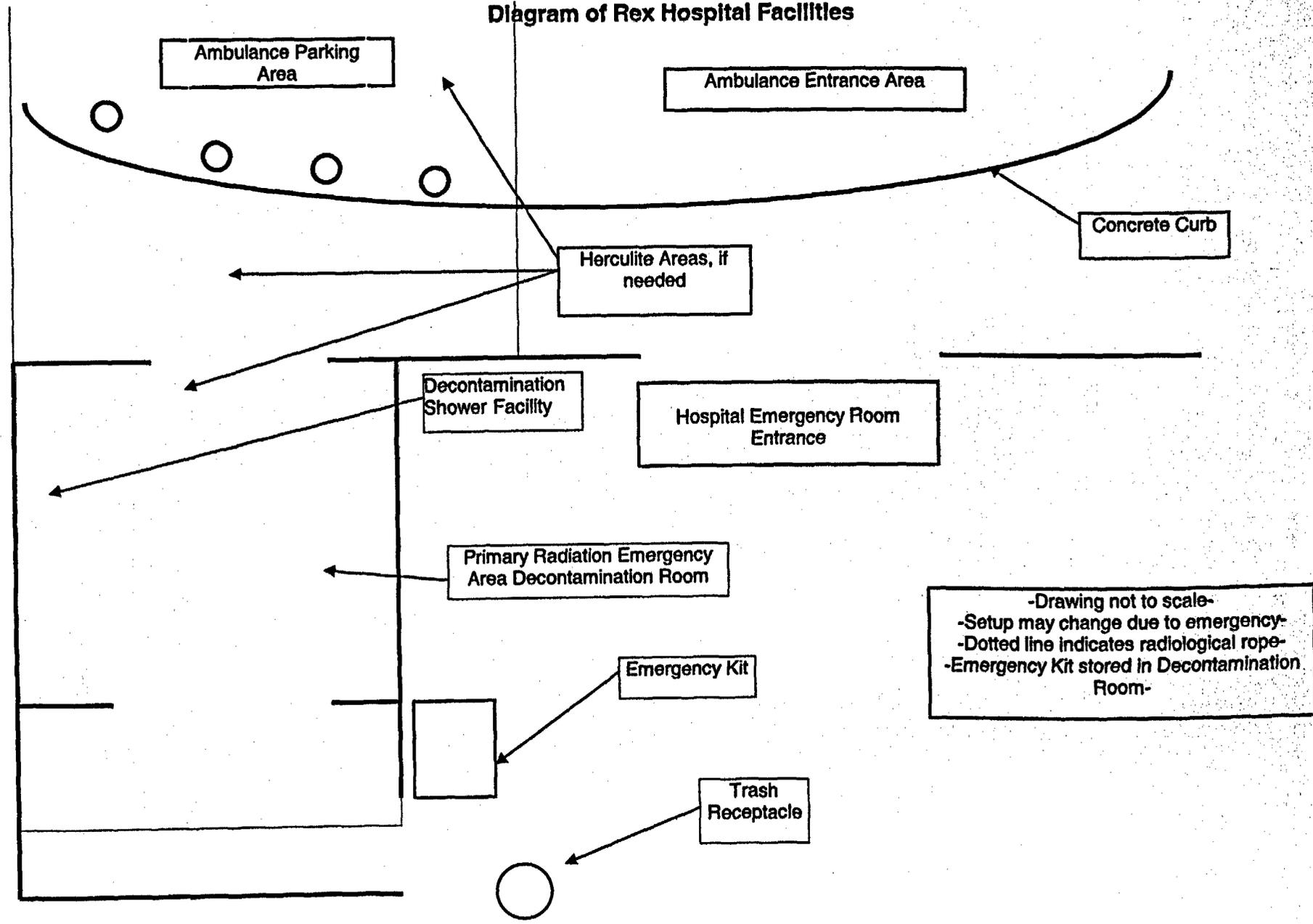
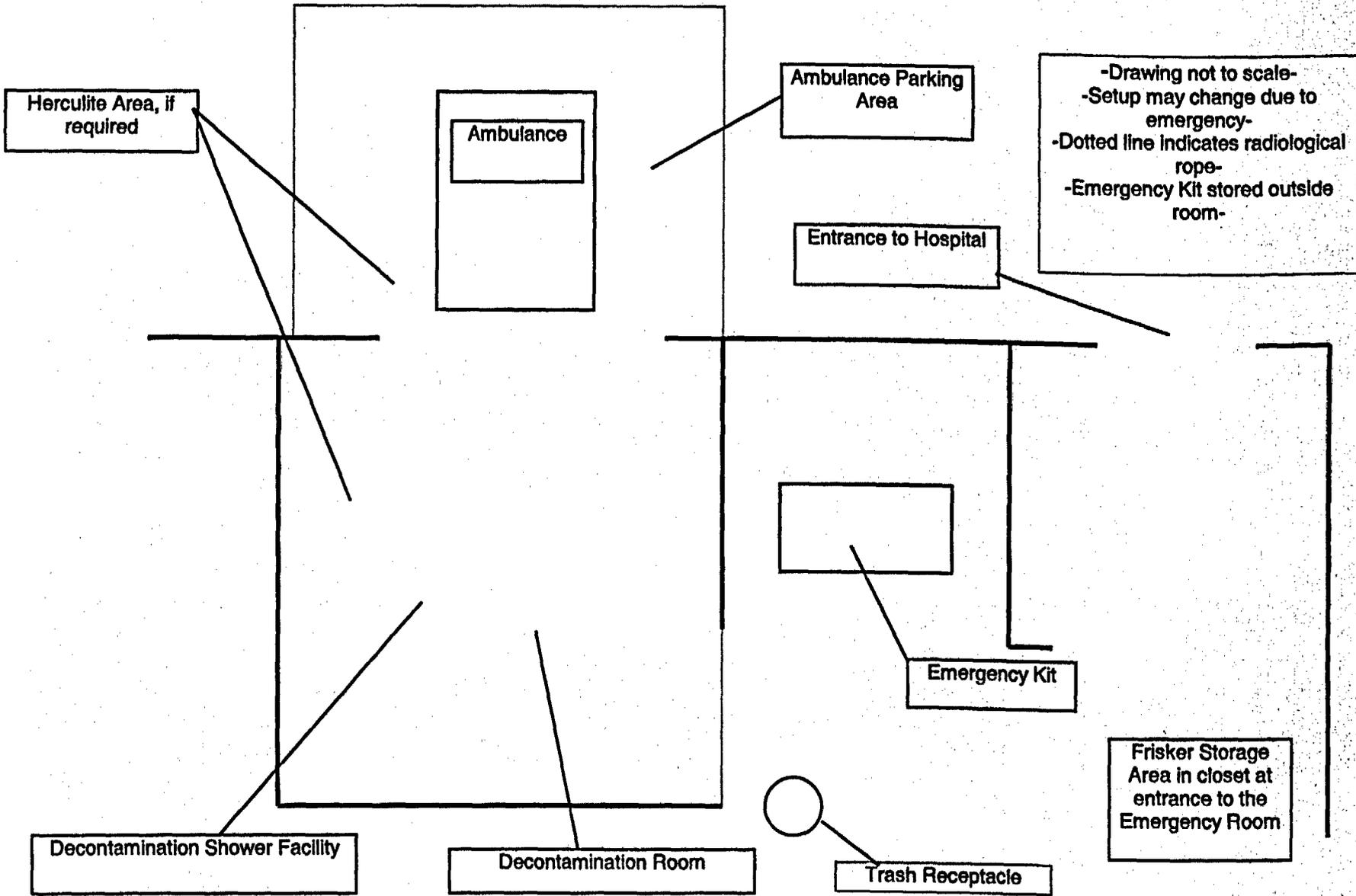
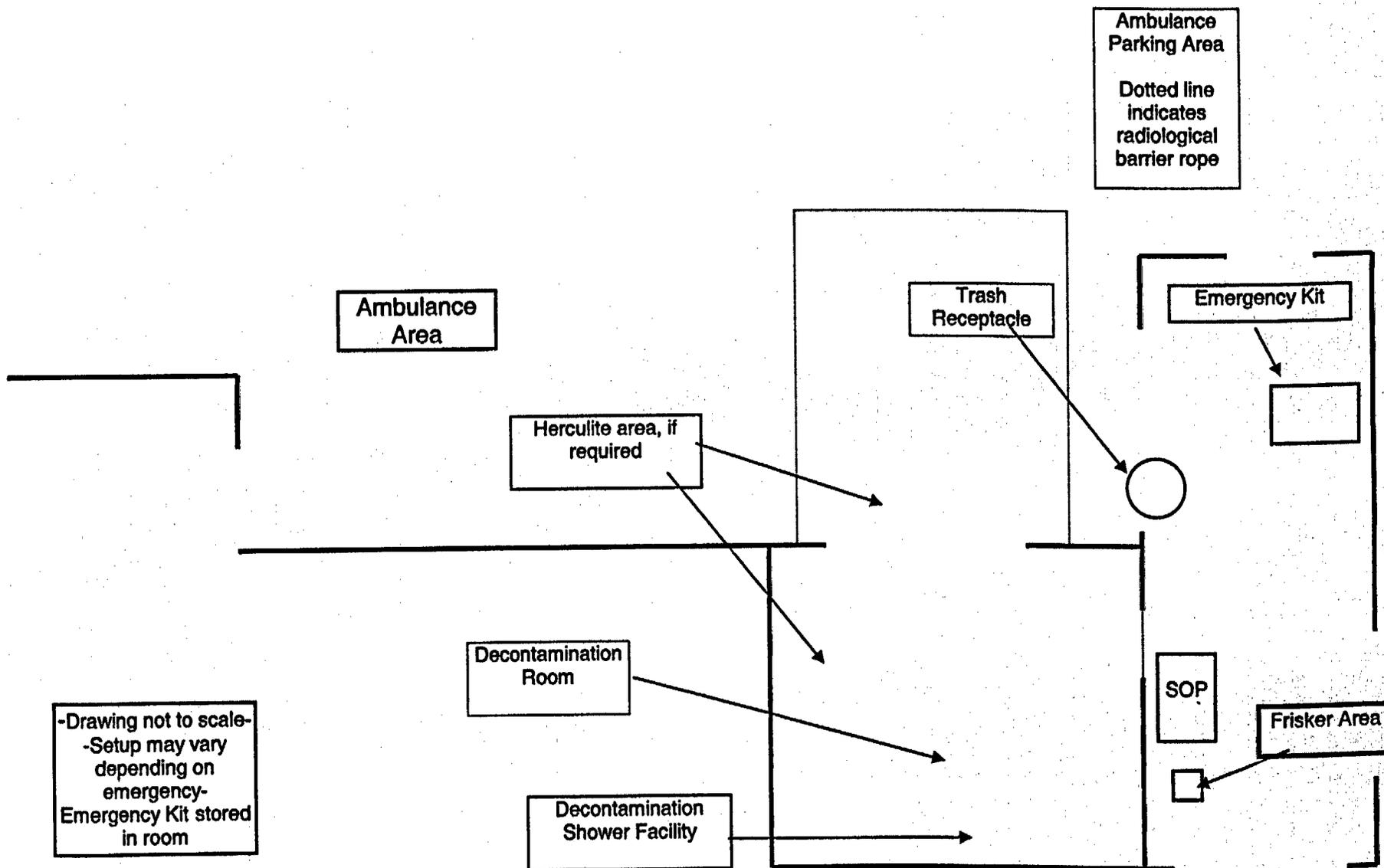


Diagram of Wake Medical Center Facilities



### Diagram of Western Wake Medical Center Facilities



Contaminated Injured Personnel Log

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

Injured Person(s): \_\_\_\_\_

Transporting person(s): \_\_\_\_\_

(Ambulance driver, Progress Energy driver, and so forth)

Accompanying person(s): \_\_\_\_\_

(Radiological Control Team Member)

Vehicle Number: \_\_\_\_\_

(License #, Progress Energy No., and so forth)

Persons Involved in Treatment

Name	Exposure (SRPD or ED)

The Transportation Vehicle has been monitored, decontaminated (if necessary), and released.

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

Signature

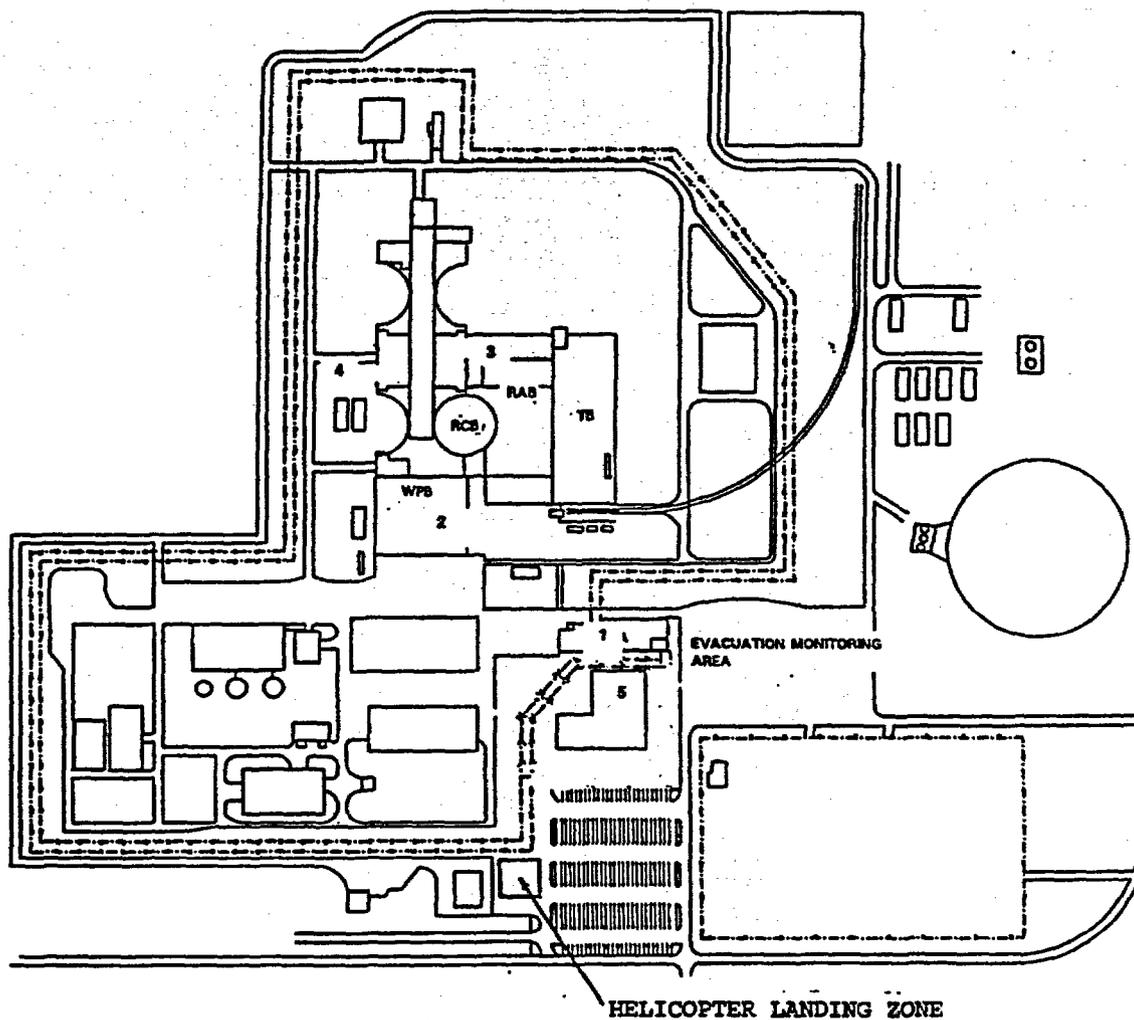
Date

Time

Comments:

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

Helicopter Landing Zone



## Revision Summary for PEP-350, Rev 6

<b>Section</b>	<b>Changes</b>
Title page	Added Progress Energy Logo
Attachment 2	Sheet 2 of 2, corrected numbering of steps
3.1.1	Added "Alert" in front of "Site Emergency"
3.1.6 NOTE	Added wording for delaying accountability when detrimental to the safety of personnel
3.4 – ALL	Changed "MCR" to "POD/MCR" for communications between the search and rescue team and the MCR.
3.4.1	Added step to describe who coordinates search and rescue.
3.4.2	Moved this step to Search and Rescue from the General section.
3.4.5	Changed "SEC-TSC" to SEC
3.4.6.a	Changed "Operational Support Center" to "Main Control Room" in the last message.
3.4.9.a	Changed OSC to Main Control Room as preferred muster location for the team.
3.4.9.a	Deleted the note that was in front of 3.4.9 and included it in 3.4.9.a
3.4.12.b(3)	Changed "... returning to OSC ..." to "... returning to MCR ..."
3.4.12.c(1)	Changed "Returns to OSC ..." to "Returns to MCR ..."
3.4.12.c(2)	Changed "ERD" to "POD"
3.6 NOTE	Second bullet, deleted "If the TSC is not yet activated" and replaced with "The Main Control Room approves"
All	Converted to Word 2000 format Changed "CP&L" to "Progress Energy" where appropriate Changed "Site Emergency" to "Site Area Emergency" Corrected NOTE formats (bulletized those notes that had multiple items) and moved notes to be in compliance with AP-005.