CP&L

H. B. ROBINSON

SEG PLANT

TITLE

H. B. ROBINSON STEAM ELECTRIC PLANT

UNIT NO. 2

EMERGENCY PLAN AND PROCEDURES

(PEP-304)

~~PEP-3-4-1~~

AUTOMATION OF DOSE ASSESSMENT USING THE IBM PERSONAL COMPUTER

REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE
~~0~~	~~RC/RM~~	~~8-05-83~~						
0	RBS/DR	8-22-83						

Recommend By: [signature] 8/30/83

for Senior Specialist - Emergency Planning — DATE

Approved By: [signature] 8/30/83

Assistant to the General Manager — DATE

LIST OF EFFECTIVE PAGES

EFFECTIVE PAGES	REVISION
Cover Sheet	0
LEP	0
1 through 21	0

TABLE OF CONTENTS

1.0 RESPONSIBLE INDIVIDUAL AND OBJECTIVES

The Radiological Control Director or the Dose Assessment Coordinator is responsible for calculating dose projections to be used by the Radiological Control Director and the Site Emergency Coordinator in determining and evaluating possible off-site consequences from a release of radioactivity. The Radiological Control Manager shall assume responsibility for calculating off-site dose projections (to be used by the Emergency Response Manager) after the Emergency Operations Facility is activated.

2.0 SCOPE AND APPLICABILITY

This procedure is intended to describe the use of a series of computer programs which automate many of the calculations performed in PEP-3.4.2, Whole Body Dose Projections, and PEP-3.4.3, Thyroid Dose Projections. The program is intended for use on an IBM Personal Computer.

Individuals using these programs to automate dose projections should be very familiar with the above mentioned procedures. The program allows the capability of calculating downwind centerline doses at any distance including the site boundary, 1, 2, 5, and 10 miles. The program can also provide X and Y coordinates (X being in the downwind direction) which it uses to plot any desired isopleth. The program does not correct for lateral deviation if the point of interest is not on the centerline of the cloud. These provisions can be included if the correction factors are determined manually and then applied directly to the computer program results where appropriate.

Computer programs available for use are described below. Section 3.1 contains instructions for implementing the dose projection

program. Section 3.2 gives directions for obtaining meteorological data via the plant MET tower. Section 3.3 contains instructions for receiving a meteorological forecast from the CP&L Corporate Meteorological staff. Section 3.4 presents a method of obtaining meteorological data from the National Weather Service if neither the MET tower nor the CP&L forecast is available.

Exhibit 3.4.4-1 provides example test cases which can be used to verify that the computer program HBRDOSE is working properly. Expected results for known computer inputs are given. These test cases can be used to demonstrate the validity of HBR dose each time the program is initially used.

3.0 ACTIONS

If necessary, refer to appropriate plant emergency procedure for guidance in determining the necessary inputs called for by the computer program. PEP-3.4.2 is for whole body dose projections, and PEP-3.4.3 is for thyroid dose projections. The worksheet EXHIBITS in each of these procedures can be used for recording dose projections. The computer printouts can also be used for recording dose projections and documenting meteorological data.

The computer program uses the same calculational methods as those described in the procedures mentioned above. The program calculates X/Q values from the basic equation using inputs of release height, stability class, wind direction, and wind velocity. Other inputs include an appropriate source term and time after reactor shutdown. Inputting the time after reactor shutdown allows the computer to select the dose conversion factor corresponding to the time that the cloud is projected to pass by the point of interest. The program calculates isopleths based on the B. Turner method.

One diskette labeled EMERGENCY DOSE PROJECTIONS is required.

3.1 Dose Projections

3.1.1 Load the diskette into disk drive A (disk drive located on the left). While simultaneously holding the Alt and Ctrl keys, press the Del key.

3.1.2 After a short pause, the screen will clear and the introduction to the dose projection program will be displayed. As instructed, press any key to continue.

3.1.3 The screen will display "DO YOU WANT TO GET MET DATA (YES OR NO)." If you want to call the MET tower or you have the pulses and want to convert them, then enter YES and continue at Step 3.2.1. Otherwise, enter NO and continue below.

NOTE

WHEN A YES OR NO ANSWER IS REQUIRED, GENERALLY Y AND N CAN BE USED IF DESIRED.

3.1.4 The screen will clear, then display "IS THERE A KNOWN DCF THAT YOU WISH TO USE (YES OR NO)." If you have a DCF from a previous run that you wish to use, enter YES; otherwise, enter NO, then RETURN. If a YES was entered, the screen will display "DOSE CONVERSION FACTOR (REM/HOUR PER CURIES/CUBIC METERS)." Enter the DCF in these units and proceed to Step 3.1.6.

3.1.5 The screen will display "DO YOU KNOW THE NUCLIDE MIX (YES OR NO)." If you know the nuclide mix, enter YES and proceed to Step 3.1.23; otherwise, enter NO and continue below.

3.1.6 The screen will display "WHOLE BODY (W) OR THYROID (T) DOSE PROJECTION." The program is asking whether the user intends to make a whole body dose projection or a thyroid dose projection. Enter a W or T, whichever is appropriate.

3.1.7 The screen will display "SOURCE TERM UNITS (Ø-CURIES/SEC,1-CURIES)." Enter the source term units by entering a 0 or a 1, whichever is appropriate.

3.1.8 The screen will display "SOURCE TERM" and the units as selected above. Enter the source term in these units.

1. If the units chosen were CURIES/SEC, the screen will display "ESTIMATED DURATION OF RELEASE (HOURS). IF UNCERTAIN OF DURATION ENTER 1 HOUR." By entering the duration of release, a total curie amount can be derived. If the duration is unknown, enter 1 hour. This allows for easier correction later when the actual duration of release is known.

3.1.9 The screen will display "IS THIS A STACK RELEASE (YES OR NO)." If the release was via the stack, enter YES; otherwise, enter NO.

1. If YES was chosen as the reply, the screen will display "STACK FLOWRATE." Enter the flowrate in CFM.

3.1.10 If the nuclide mix is unknown, the screen will display "TIME SINCE REACTOR SHUTDOWN (HOURS)." Enter this time in units of hours.

3.1.11 The screen will display "STABILITY CLASS (A-G)." Enter the appropriate stability class.

3.1.12 The screen will display "WIND VELOCITY (MPH)." Enter the appropriate wind velocity in units of miles per hour.

3.1.13 The screen will display "DIRECTION WIND BLOWING FROM (DEGREES)." This is used on the isopleth plot to indicate the direction of the plume travel. Make sure to enter the direction the wind is blowing from similar to what is given in the meteorology program.

3.1.14 The screen will display "STANDARD DISTANCES ARE SITE BOUNDARY, 1, 2, 5, 10 MILES. DO YOU WANT TO USE THESE (YES OR NO)." The program is asking whether the user wishes to look at centerline doses corresponding to the specific distances of site boundary, 1, 2, 5, and 10 miles, or to look at centerline doses corresponding to downwind distances yet to be specified. Enter YES or NO, whichever

is appropriate. Choosing nonstandard distances allows the user to obtain a more refined isopleth.

3.1.15 If a NO was entered to the previous question, the screen will display "MAXIMUM DISTANCE (MILES)." Enter the maximum downwind distance in miles for which centerline doses are desired.

1. The screen will then display "DOWNWIND INCREMENT (MILES)." Enter the incremental distance in miles for which centerline doses out to the maximum downwind distance are desired.

3.1.16 At this point, the screen will clear and the information entered will be displayed. In addition, the doses and X/Qs at the specified distances will be displayed. If the amount of information to be displayed exceeds the screen capability, the listing will stop and a message displayed at the bottom of the screen reading "HIT ANY KEY TO RESUME OUTPUT." Upon striking any key, the listing resumes and the previous information is overwritten. Continue this until all the information has been displayed.

3.1.17 The information displayed on the screen is now directed to the line printer. The printer needs to be "on line" (both the "on line" and "power" lights should be lit) in order to print the results.

3.1.18 The screen will display "ISOPLETH VALUE (HIT RETURN TO END)." Enter the desired isopleth value in rem. If no isopleth is desired, press the RETURN key and proceed to Step 3.1.20.

3.1.19 The screen will display "DO YOU WANT TO PRINT THE X-Y COORDINATES (YES OR NO)." Enter YES or NO, whichever is appropriate. The screen will display the X-Y coordinates and, if a YES was entered, send the results to the printer. Return to Step 3.1.18.

3.1.20 If the RETURN key was entered for the isopleth value, the screen will display the isopleth prior to the plotting operation. After viewing it press any key. The screen will now display "CALCULATIONS COMPLETE. DO YOU WANT TO PLOT THE ISOPLETH (YES OR NO)." If you want to plot the isopleth, enter YES; otherwise enter NO.

1. If NO was entered, the screen will display "PRESS F2 TO RE-USE PROGRAM." To use the program again, press F2 (program will be autoloaded).
2. If a YES was entered, there will be a short pause and the screen will display a message informing the user to ensure the plotter is ready and then press any key to continue. Continue with Step 3.1.21 to set up the plotter.

3.1.21 Check the X-Y plotter for the proper setup. Press the lever to the left of the tray to the up position and align the paper in the tray. Press the lever to the down position. On the plotter keys, press the P2 button, then the P1 button to ensure that the tray feed is operating correctly. Ensure that pens are located in the left and right pen stalls. If the plot is going to be done on paper, use the pens designed for that use. These are the ones with a letter P designation on the end. For transparencies, use those having the letter T designation. The map scale has been previously set so that one inch equals one mile.

3.1.22 Press any key to continue. The plot now begins. Upon completion, raise the lever and remove the plot. Notice the arrow drawn on the plot originating from the plant site. This is a reference arrow to provide the proper direction of plume travel with respect to magnetic north/south. (Magnetic north lies approximately four degrees counterclockwise of true north.) If a similar reference arrow exists on the map you are using, line up the two taking note of the proper polarity. The screen will now display "DO YOU WANT TO PLOT THE SAME ISOPLETH(S) AGAIN (YES OR NO)." If another plot is desired enter YES and return to Part 1 of Step 3.1.20.

3.1.23 The screen will clear, then display "WILL NUCLIDE AMOUNTS BE IN CONCENTRATION (C) OR PERCENT (P)." If the concentrations of the nuclides are known, enter a C; if the percents are known, enter a P.

3.1.24 The screen will display "HOW LONG AFTER SAMPLE WILL RELEASE OCCUR (HOURS). IF UNCERTAIN OF TIME ENTER Ø HOURS." Enter the appropriate time between sample time and expected or actual release time. If uncertain, enter Ø hours.

3.1.25 The screen will clear and a message displayed at the top reading "ENTER NUCLIDE...THEN RETURN." This instructs the user how to enter the nuclides and their amounts. The screen will also display titles for the nuclides and the amounts.

3.1.26 When the cursor is under the nuclide title, enter the nuclide in its common form in capitals, e.g., KR-85, XE-133, I-131, etc. Press RETURN and the cursor will shift over under the amount title. Enter the appropriate % or concentration, then RETURN. If dealing with percents, the input will cease when 100% has been reached. In any other situation, pressing the RETURN key when prompted for a nuclide will end input.

NOTE

THE TOTAL % NEED NOT EXACTLY EQUAL 100%, A 2% TOLERANCE IS BUILT IN: I.E., A TOTAL % BETWEEN 98 - 102% IS ACCEPTABLE.

3.1.27 The program will display the sample to release time, the whole body or thyroid DCF, and the units. A message will also be displayed instructing the user to press any key to continue. After this, return to Step 3.1.7.

3.2 Meteorological Data

3.2.1 In order to get meteorological data, another program is loaded. After a short pause, the screen will clear and the introduction to the meteorological data acquisition program will be displayed. As instructed, press any key to continue.

3.2.2 The screen will clear, then display "DO YOU WANT TO CALL THE MET TOWER (YES OR NO)." The user has the option of calling the MET

tower to receive the pulses or converting pulses already on hand to usable units. Enter YES if you want to call the MET tower and continue below. Otherwise, enter NO and continue at Step 3.2.6.

3.2.3 The screen will clear and flash the message "MAKE SURE MODEM IS RESET. PRESS ANY KEY TO CONTINUE." Ensure that the modem is reset by switching the toggle switch on the back right down and then up. Three lights should be displayed on the front panel. When this is okay, press any key.

3.2.4 The screen will clear and inform the user that the modem is attempting to dial the MET tower via the plant extension. You will hear a dial tone, the touch tone dialing, and the ringing. If you receive a busy tone, someone else is using the MET tower at that moment. In this case, a message will be displayed informing the user to "PRESS F2 TO TRY AGAIN OR ENTER RUN HBRDOSE TO RUN DOSE PROJECTIONS." If you press F2, return to Step 3.2.1; otherwise enter RUN HBRDOSE then RETURN and return to Step 3.1.2.

3.2.5 Once the MET tower has been sucoessfully contacted, you will see the word CONNECT displayed on the screen. The meteorological information will then be printed. When all the necessary information has been received, a message will be flashed informing you to turn off the modem to continue. This allows other persons to use the MET tower without it being unnecessarily tied up. Once the modem has been turned off, proceed to Step 3.2.7.

3.2.6 The screen will clear and begin to ask for the pulses in the order that they are given by the MET tower. You will be asked for the following pulses in this order:

1. Upper wind speed pulses.
2. Upper wind direction sine pulses.
3. Upper wind direction cosine pulses.
4. Lower wind speed pulses.
5. Lower wind direction sine pulses.

6. Lower wind direction cosine pulses.

7. Temperature pulses.

8. Differential temperature 1 pulses.

9. Differential temperature 2 pulses.

3.2.7 The pulses and the usable information they represent will then be displayed on the screen. At the bottom of the screen, two messages will be flashing. The first instructs the user to type SHIFT (the upward arrow on the keyboard) and PrtSc if they want a copy of what is on the screen. In this case, make sure the printer is on. When you are done reviewing the meteorological data, press any key as instructed by the second message and you will return to the dose projection program at Step 3.1.2.

3.3 Meteorological Forecast

3.3.1 When it is necessary to receive a forecast from the CP&L Corporate Meteorological staff, the user has the option of using the computer to obtain this information. If this is desired, type TALK then RETURN when in the DOS mode. An introduction to the program is displayed and as instructed press any key to continue.

NOTE

YOU ARE IN THE DOS MODE IF YOU ARE NOT CURRENTLY RUNNING A PROGRAM. YOU KNOW YOU ARE IN THE DOS MODE IF THE SEQUENCE "A>" APPEARS IN THE LEFT OF THE SCREEN. IF YOU ARE CURRENTLY RUNNING A PROGRAM, YOU CAN EXIT TO DOS BY SIMULTANEOUSLY PRESSING THE CTRL AND SCROLL LOCK KEYS. WHEN THE FLASHING PROMPT APPEARS, ENTER "SYSTEM" THEN "RETURN."

3.3.2 Establish verbal communication with meteorological personnel to inform them that you want a forecast.

NOTE

IT IS ADVISABLE TO MAINTAIN THIS SEPARATE COMMUNICATION LINE UNTIL THE FORECAST IS SATISFACTORILY RECEIVED.

3.3.3 If the meteorological unit decides to call the "HBRDOSE" projection computer, then proceed to Step 3.3.5; otherwise, continue below.

3.3.4 Press the Alt key and D key simultaneously; a listing of telephone numbers and other pertinent data will appear. Three telephone numbers are available to call the meteorological unit computer. These are listed as numbers 5, 6, and 7. Enter any of these in an attempt to find a phone line that is not busy. If a busy signal is received, reset the modem, and try again. When you are successful, the word CONNECT will appear on the screen. Proceed to Step 3.3.6.

3.3.5 Press the Alt key and P key simultaneously. You will be asked to enter communication parameters. Enter them as below:

Baud Rate = 1200
Parity = E
Data Bits = 7
Stop Bits = 1

3.3.6 At this point, you should have a communications link established with the remote computer. If this is not the case, return to Step 3.3.3.

3.3.7 Press the Alt key and R key simultaneously. Next, in response to the computer's question, enter the file name that you want to receive the program as. It should be a new file that does not already exist on the diskette.

3.3.8 The next question will ask for the user to specify the modem protocol. Enter 1, then RETURN . At this point, you are ready to receive the forecast. Inform the meteorological personnel on the separate phone line of your status.

3.3.9 Transfer of the program should now begin. It should be displayed in a readable format on the screen. If this is not the case, most

likely the communication parameters between computers are inconsistent. Return to Step 3.3.2 to try again.

3.3.10 When the forecast has been completely received as seen across the screen, press the Alt key and R key simultaneously. You have now finished receiving the forecast. If it is satisfactory, continue below; otherwise, return to Step 3.3.2.

3.3.11 Inform the meteorological personnel that the forecast was correctly received and terminate verbal communication. Reset the modem. Press the Alt key and X key simultaneously and enter Y for yes in answer to the next question in order to exit TALK.

3.3.12 To obtain a hard copy of the forecast, ensure you are in the DOS mode then enter FORECAST and press RETURN. The screen will clear and the introduction to the program displayed. As instructed, press any key. Next you will be asked for the forecast file name. Enter the forecast file name as you specified it in Step 3.3.7.

3.3.13 The program will search for the file and upon finding it will display it on the screen and direct it to the line printer. When the printer stops, the forecast is complete.

3.4 National Weather Service Meteorology

3.4.1 This section is mainly of use when meteorological information cannot be obtained from the MET tower or the CP&L Corporate Meteorological staff. The telephone number to contact the National Weather Service can be found in Appendix A.4 of the Plant Emergency Procedures.

3.4.2 While in the BASICA mode, enter RUN NWS then press RETURN. The screen will clear and an introduction to the program displayed. As instructed, press any key to continue.

3.4.3 The screen will clear, then display "COLUMBIA (C) OR FLORENCE (F) WEATHER STATION?" Enter "C" for Columbia or "F" for Florence.

3.4.4 The screen will display "WIND SPEED (KNOTS)." Enter the wind speed in these units.

3.4.5 The Screen will display "CLOUD COVER (TENTHS)." Enter the cloud cover in tenths; i.e., a totally overcast sky would have a cloud cover equal to 10 tenths.

3.4.6 The screen will display "CLOUD CEILING (FEET)." Enter the cloud ceiling in feet. If there is no cloud ceiling, enter 99,999 feet.

3.4.7 The program now computes the stability class and displays it along with the information entered and the time and date. If you want a hard copy, enter SHIFT and PrtSc. This marks the end of the program.

EXHIBIT 3.4.4-1

VERIFICATION OF "HBRDOSE"

(A COMPUTER PROGRAM FOR EMERGENCY DOSE PROJECTIONS)

This exhibit is intended to provide a means to ensure that "HBRDOSE," the dose projection program designed for the IBM Personal Computer, is working properly. This is demonstrated by duplicating expected results of known computer inputs. These results can also be validated by comparison to manual calculations for the same input.

Three different test cases are presented so that a number of alternate paths within this program can be tested. The test cases with their expected results follow.

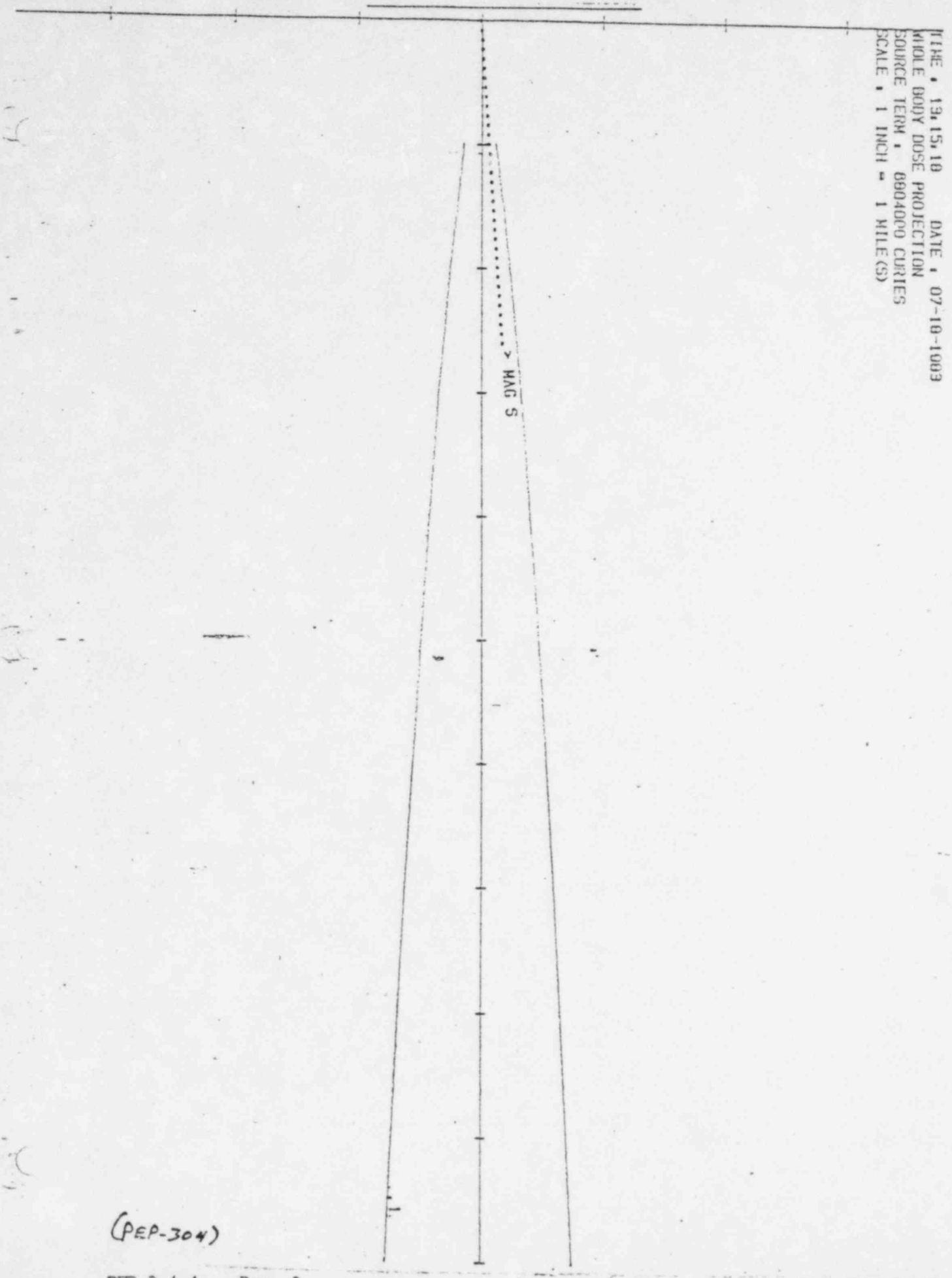
CASE 1 --- WHOLE BODY DOSE PROJECTION

Computer Prompt	Expected Input
>Do you want to get met data ?	NO
>Is there a known DCF you wish to use ?	NO
>Do you know the nuclide mix ?	YES
>Will nuclide amounts be in concentration(C) or percent(P) ?	C
>How long after sample will release occur (hours) ?	2
>Enter the following nuclides and concentrations :	

NUCLIDE	CONCENTRATION
KR-85	10
KR-85M	10
KR-87	10
KR-88	10
KR-89	10
XE-131M	10
XE-133	10
XE-133M	10
XE-135	5
XE-135M	5
XE-137	5
XE-138	5
RETURN KEY	

>Source term units (0-curies/sec,1-curies) ?	0
>Source term (curies/sec) ?	1890
>Estimated duration of release (hours) ?	1
>Is this a stack release ?	YES
>Stack flowrate ?	60,000
>Stability class ?	E
>Wind velocity (mph) ?	5
>Direction wind blowing from (degrees) ?	0
>Standard distances are site boundary,1, 2,5,10 miles. Do you want to use these ?	NO
>Maximum distance (miles) ?	10
>Downwind increment (miles) ?	1
>Isopleth value ?	0.1
>Do you want to print the x-y coordinates ?	YES
>Isopleth value ?	RETURN KEY
>Do you want to plot the isopleth ?	YES
>Do you want to plot the isopleth again?	NO

The results should resemble the printout and isopleth plot on the following pages. If they do not, carefully check your inputs and try the test again. If the results still are not similar, try a backup copy of the program. If that fails then seek programming help.


TIME : 19:15:10 DATE : 07-10-1989
WHOLE BODY DOSE PROJECTION
SOURCE TERM : 0004000 CURIES
SCALE : 1 INCH = 1 MILE(S)
S
WAG

(PEP-304)

WHOLE BODY DOSE PROJECTION 13:15:18 07-18-1983
STABILITY CLASS : E
WIND VELOCITY : 5 (MPH) BLOWING FROM 0 (DEGREES)
SOURCE TERM : 6804000 (CURIES)
ESTIMATED DURATION OF RELEASE : 1 (HOURS)
RELEASE HEIGHT : 60.7 (METERS)
STACK FLOWRATE : 60000 (CFM)
TIME FROM SAMPLE TO RELEASE : 2 (HOURS)
DCF AT POINT OF RELEASE : 178.1837 (REM/HR)/(CURIE/M^3)

DISTANCE (METERS/MILES)	DOSE (REMS)	X/Q (SEC/METERS^3)
1608 / 1.00	2.62E+00	7.77E-06
3216 / 2.00	2.92E+00	8.67E-06
4824 / 3.00	2.24E+00	6.65E-06
6432 / 4.00	1.74E+00	5.17E-06
8040 / 5.00	1.40E+00	4.15E-06
9648 / 6.00	1.15E+00	3.43E-06
11256 / 7.00	9.77E-01	2.90E-06
12864 / 8.00	8.43E-01	2.50E-06
14472 / 9.00	7.38E-01	2.19E-06
16080 / 10.00	6.54E-01	1.94E-06

.1 REM ISOPLETH COORDINATES (+/- METERS)

X	Y
1608	200
3216	381
4824	528
6432	657
8040	772
9648	876
11256	972
12864	1061
14472	1143
16080	1218

CASE 2 --- THYROID DOSE PROJECTION

Computer Prompt	Expected Input
>Do you want to get met data ?	NO
>Is there a known DCF you wish to use ?	NO
>Do you know the nuclide mix ?	NO
>Whole body(W) or thyroid(T) dose projection ?	T
>Source term units (0-curies/sec,1-curies) ?	1
>Source term (curies) ?	750
>Is this a stack release ?	NO
>Time since reactor shutdown (hours) ?	1
>Stability class ?	B
>Wind velocity (mph) ?	20
>Direction wind blowing from (degrees) ?	180
>Standard distances are site boundary,1, 2,5,10 miles. Do you want to use these ?	YES
>Isopleth value ?	RETURN KEY

The results should resemble those on the following page. If they do not, carefully check your inputs and try the test again. If the results still are not similar, try a backup copy of the program. If that fails then seek programming help.

hs

STABILITY CLASS : B
WIND VELOCITY : 20 (MPH) BLOWING FROM 180 (DEGREES)
SOURCE TERM : 750 (CURIES)
ESTIMATED DURATION OF RELEASE : N/A (HOURS)
RELEASE HEIGHT : 0 (METERS)
TIME SINCE REACTOR SHUTDOWN : 1 (HOURS)
DCF AT POINT OF RELEASE : 774741.6 (REM/HR)/(CURIE/M^3)

DISTANCE (METERS/MILES)	DOSE (REMS)	X/Q (SEC/METERS^3)
418 / 0.26	1.86E+00	1.15E-05
1608 / 1.00	1.31E-01	8.05E-07
3216 / 2.00	3.30E-02	2.02E-07
8040 / 5.00	5.40E-03	3.24E-08
16080 / 10.00	1.39E-03	8.11E-09

CASE 3 --- THYROID DOSE PROJECTION--MIXED MODE RELEASE

Computer Prompt	Expected Input
>Do you want to get the met data?	NO
>Is there a known DCF you wish to use?	NO
>Do you know the nuclide mix?	NO
>Whole body(W) or thyriod(T) dose projection?	T
>Source term units (0-curies/sec.1-curies)?	1
>Source term(curies)?	1500
>Is this a stack release?	YES
>Stack flowrate?	40000
>Time since reactor shutdown(hours)?	1
>Stability class?	D
>Wind velocity?	15
>Direction wind blowing from(degrees)?	180
>Standard distances are site boundary,1, 2,5,10 miles. Do you want to use these?	YES
>Isopleth value?	RETURN KEY

The results should resemble those on the following page. If they do not, carefully check your inputs and try the test again. If the results still are not similar, try a backup copy of the program. If that fails then seek programming help.

THYROID DOSE PROJECTION 10:34:49 07-19-1983
STABILITY CLASS : D
WIND VELOCITY : 15 (MPH) BLOWING FROM 180 (DEGREES)
SOURCE TERM : 1500 (CURIES)
ESTIMATED DURATION OF RELEASE : N/A (HOURS)
RELEASE HEIGHT : 60.7 (METERS)
STACK FLOWRATE : 40000 (CFM)
TIME SINCE REACTOR SHUTDOWN : 1 (HOURS)
DCF AT POINT OF RELEASE : 775188.9 (REM/HR)/(CURIE/M^3)

DISTANCE (METERS/MILES)	DOSE (REMS)	X/Q (SEC/METERS^3)
418 / 0.26	5.81E+00	1.80E-05
1608 / 1.00	1.63E+00	5.01E-06
3216 / 2.00	8.31E-01	2.53E-06
8040 / 5.00	2.65E-01	7.88E-07
16080 / 10.00	1.06E-01	3.02E-07

(PEP-304)

bs

CP&L

H. B. ROBINSON

SEG PLANT

TITLE

EMERGENCY PLAN AND PROCEDURES

~~VOLUME 13~~

AUTOMATION OF DOSE ASSESSMENT

USING THE HP-9830A TABLETOP COMPUTER

(PEP-305)

~~PEP 3.4.5~~

REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE
~~5~~	~~RLC/mo~~	~~8-05-83~~						
0	RBS/DE	8-22-83						

Recommend By: Dan Gainey Jr. 7/28/83

Senior Specialist - ~~Emergency~~ Planning DATE

Approved By: T R Tucker 8/3/83

Assistant to General Manager DATE

(PEP-305)
Rev. 0

~~PEP-3.4.5~~ AUTOMATION OF DOSE ASSESSMENT PROCEDURES

1.0 Responsible Individual and Objectives

The Radiological Control Director or the Dose Assessment Coordinator is responsible for calculating dose projections to be used by the Radiological Control Director and the Site Emergency Coordinator in determining and evaluating possible off-site consequences from a release of radioactivity. The Radiological Control Manager shall assume responsibility for calculating off-site dose projections (to be used by the Emergency Response Manager) after the Emergency Operations Facility is activated.

2.0 Scope and Applicability

This procedure is intended to describe the use of a computer program which automates many of the calculations performed in PEP-3.4.2, Whole Body Dose Projections; PEP 3.4.3, Thyroid Dose Projections. The program is intended for use on a Hewlett-Packard Model 9830A tabletop computer. This program will usually serve as a backup to programs used on the IBM personal computer; PEP-3.4.4.

Individuals using this program to automate dose projections should be very familiar with the above mentioned procedures. The program allows the capability of calculating downwind centerline doses at any distance including the direction dependent site boundary distance, 1, 2, 5, and 10 miles. The program can also provide X and Y coordinates (X being in the downwind direction) for plotting any desired isopleth. The program does not include provisions for calculating the lateral deviation if the point of interest is not on the centerline of the cloud. This provision can be included if the correction factor is determined manually and then applied directly to the computer program's results where appropriate.

3.0 Actions

Refer to the appropriate Plant Emergency Procedure for guidance in determining the necessary inputs called for by the computer program. PEP-3.4.2 is for Whole Body Dose Projections, PEP-3.4.3 is for Thyroid Dose Projections. The worksheet EXHIBITS in each of these procedures can be used for recording dose projections.

The computer program uses the same calculational methods as those described in the procedures mentioned above. The program calculates X/Q values from the basic equation using inputs of release height, stability class, ambient temperature, stack flow rate, wind direction, and wind velocity. Other inputs include an appropriate source term and time after reactor shutdown. Inputting the time after shutdown allows the computer to choose the dose conversion factor corresponding to the time that the cloud is projected to pass by the point of interest. The program calculates isopleth coordinates based on the B. Turner method described in PEP-3.4.2 and 3.4.3.

CP&L

H. B. ROBINSON

SEG PLANT

TITLE

EMERGENCY PLAN AND PROCEDURES

~~VOLUME 13~~

PEP-001

INTRODUCTION

~~PEP-1.0~~

REVISION ~~6~~ 0

REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE
~~7~~	RTC/ms	2-14-83						
~~8~~	RTC/ms	6-14-83						
~~9~~	RJC/RTK	8-12-83						
0	RBS/DR	8-22-83						

Recommend By: _____ 7-1-2
Emergency Planning Coordinator — DATE

Approved By: _____ 7/2/82
Plant General Manager — DATE

EXHIBIT 1.2-1 (cont.)

7.	Representative of the Forward Emergency Operations Center:	
	Primary:	Assistant to Plant General Manager
	Alternate:	Engineering Supervisor - Plant
8.	Site Public Information Coordinator:	
		Manager - News Services
	Alternates:	Vice President - Corporate Communications Director - Media Relations
	Interim:	Plant General Manager or his designee
9.	Emergency Response Manager:	Vice President - Nuclear Operations
	Alternate:	Manager - Corporate Quality Assurance
10.	Administrative & Logistics Manager:	Manager - Construction Procurement Services
	Alternate:	Manager - Purchasing
11.	Technical Analysis Manager:	Director - Nuclear Engineering Safety Review
	Alternate:	Director - Corporate Nuclear Safety
12.	Radiological Control Manager:	Manager - Radiological and Chemical Support
	Alternate:	Director - Health Physics, Harris Energy and Environmental Center
13.	Corporate Emergency Operations Center Manager:	Senior Vice President - Power Supply
	Alternate:	Executive Vice President - Power Supply and Engineering and Construction
14.	Corporate Spokesman:	Vice President - Nuclear Safety and Research or his designee
	Alternate:	Vice President - Technical Services

CP&L

H. B. ROBINSON

SEG PLANT

TITLE

EMERGENCY PLAN AND PROCEDURES

~~VOLUME 13~~

PEP-351

CONFIRMATION OF OFF-SITE DOSE PROJECTIONS

~~PEP-3.5.1~~

REVISION ~~4~~ 0

REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE
~~5~~	RJC/RTM	8-12-83						
0	RBS/DE	8-22-83						

Recommend By: Dan Stevens Jr. 2/8/83
For Emergency Planning Coordinator DATE

Approved By: R T Caswell 2/8/83
for Plant General Manager DATE

	Secondary: S to SW; Rte 39 to Rte 737, Rte 737 to south Rte 21. SW to W: Rte 39 from Rte 28 to Rte 737.
270° and 0° (between W and N)	Rte 23, between Rte 151 and Rte 39.
0° and 90° (between N and E)	Rte 23 to Rte 151, turn right and to north on Rte 21 for ∿ 1 mile. Turn around and go south for ∿ 2 miles.
90° and 180° (between E and S)	Primary: Land vehicle, 1 km from plant (e.g., 400 m. or 1/4 mile beyond coal pile). Secondary: North on Rte 151, right (North) on Rte 172.

These highways and landmarks are shown on Exhibit 3.5.1-1.

3.2.3 If weather conditions do not permit monitoring at ground level or on the lake, advise Radiological Control Director (Radiological Control Manager after Emergency Operations Facility has been activated) that helicopter assistance may be needed.

3.2.4 Once the initial survey location is identified, pick-up Environmental Monitoring Emergency kit(s) and vehicles.

3.2.5 Request from the Radiological Control Director (Radiological Control Manager after Emergency Operations Facility has been activated) information on expected radiation conditions to be encountered and on any special protective gear required.

3.2.6 Proceed to the survey vehicle, load the survey equipment and establish communications with Plant. Each EMT member should be properly outfitted with appropriate dosimetry (i.e., TLD and Dosimeter obtained from EM kits). Record TLD and Dosimeter serial numbers and dosimeter readings on Exhibit 3.5.1-2, "Environmental and Personal Dose Data".

3.2.7 Proceed to the survey location.

3.2.8 Travel at a right angle to the reported wind direction and measure the highest dose rate using an ionization chamber. GM tube survey instruments may be used for initial plume location.

3.2.9 When the maximum dose rate is determined report the value, the time the reading was observed, and the approximate location of the reading to the Radiological Control Director. Proceed until out of radioactive plume, turn around and repeat the survey. Report pertinent information to Radiological Control Director after the Emergency Operations Facility has been activated.

3.2.10 Collect 2-10 minute air samples (particulate filter and charcoal or silver zeolite cartridge) at the location(s) of maximum dose rate.

NOTE: A 10 minute air sample will meet the 10^{-7} uCi/cc detectable limit when using appropriate curve in Exhibit 3.5.1-3 or 3.5.1-4.

NOTE: Silver zeolite cartridges should be used when radioiodine is present or suspected.

3.2.11 Record the starting time, the stopping time, sample flow rate, sample volume, location of the sample, background radiation, name of person collecting sample, and which Environmental Team obtained the sample on Exhibit 3.5.1-2, and on card located in the Emergency Monitoring Kit.

3.2.12 Proceed to a location outside the plume. Excercising care to protect sample during adverse weather, remove the filter paper, using gloves if needed, and place it flat in a poly bag. Do likewise with the charcoal or silver zeolite cartridge. DO NOT CLOSE OR SEAL THE BAGS. Place the survey meter against the surface of each bag and record the readings. Wait five minutes and repeat the readings. Report all four values and the time of the readings and record on Exhibit 3.5.1-2, and on card mentioned in 3.2.11. Insert card in sample bag and seal.

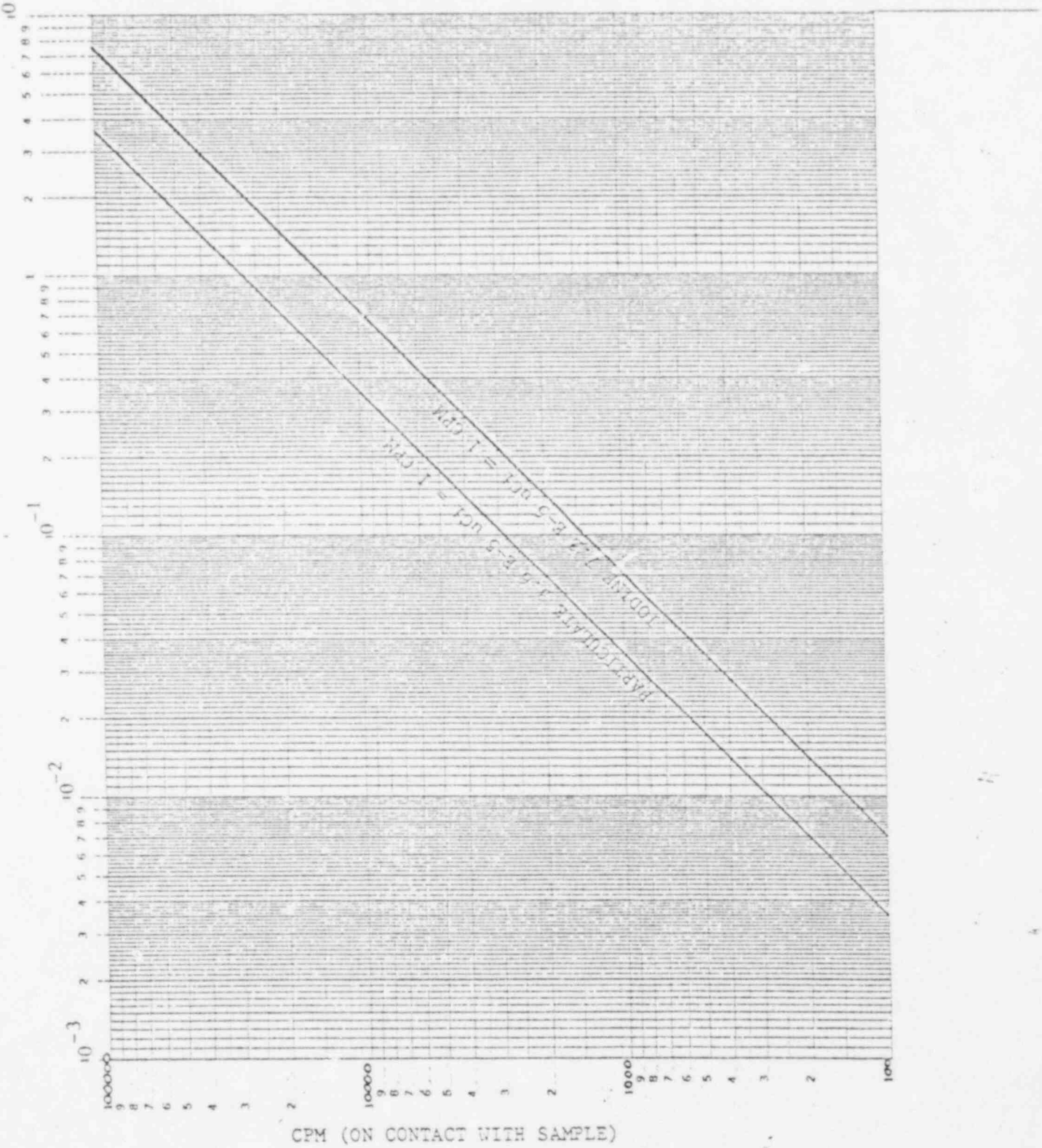
NOTE: Environmental monitoring data will be reported by means of 2-way UHF-VHF radio (operation is explained in PEP-3.1.3). If 2-way radio fails, joint use of radios is acceptable. If joint use of radios is not feasible, the Darlington County Plant phone system may be used. If Darlington County Plant phone system is not in operation, the Company phone system at the downtown office (341 W. Carolina) could be used. If this is not possible, private or public phone systems could be used. If none are available, the CP&L telephones system, CP&L emergency telephone network or Southern Bell system at the information center may be called upon.

3.2.13 Using curves in PEP Exhibit 3.5.1-3 and 3.5.1-4 determine the gross particulate and iodine activities and report to the Environmental Monitoring Team Leader. Proceed, as directed, to the site to return the samples for analysis or to other locations as directed.

EXHIBIT ~~3.5.1~~ - 4

PARTICULATE AND IODINE ACTIVITY USING A
PERSONNEL FRISKER *ON CONTACT WITH SAMPLE

*Acceptable Instrumentation:
Eberline RM-14 or Ludlum 177 rate meters and
Eberline HP-210 or Ludlum 44-9 detector probes



CP&L

H. B. ROBINSON

SEG PLANT

TITLE

H. B. ROBINSON STEAM ELECTRIC PLANT

UNIT NO. 2

EMERGENCY PLAN AND PROCEDURES

PEP-402

~~VOLUME 13~~

RADIOACTIVE SOURCE TERM RELEASE ESTIMATES BASED ON

DIRECT RADIATION MONITOR READINGS

~~REP 3.6.2~~

REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE
~~3~~	RJC/RTM	8-19-83						
0	DBS/DE	8-22-83						

Recommend By: Doc Lainey Jr. 8/16/83

Senior Specialist Emergency Planning DATE

Approved By: T D Conwell 8/16/83

Assistant to General Manager DATE

1.0 RESPONSIBLE INDIVIDUAL AND OBJECTIVES

The Radiological Control Director is responsible to the Site Emergency Coordinator for quantifying radioactive release to the environment. The Radiological Control Director may delegate the calculational aspects of this procedure to the Dose Assessment Coordinator.

2.0 SCOPE AND APPLICABILITY

This procedure shall be implemented by the Site Emergency Coordinator or by the Radiological Control Director whenever an actual or potential radiological release is indicated by direct radiation monitor readings.

3.0 ACTIONS AND LIMITATIONS

The detector response (uCi/cc of radioactivity per counts per minute or mR/hr) will depend on the specific isotopic mixture being released at various times. Grab samples must be taken, analyzed, and evaluated by use of PEP-3.6.1, "Radioactive Source Term Release Estimates Based on Samples Results", to provide an exact relationship; however, the predetermined relationship used in this procedure should be sufficiently accurate to guide initial emergency response actions and assessments.

List of Exhibits

3.6.2-1 Source Term Calculation Worksheet.

3.6.2-2 Flow Rates.

3.6.2-3 Source Term Release Equations.

bs

3.0 ACTIONS AND LIMITATIONS (Continued)

3.1 Source Term Calculations

3.1.1 Use the source term calculation worksheet in Exhibit 3.6.2-1 to calculate the release source term in curies or curies per second for each relevant channel.

3.1.2 If the time duration of the release is unknown, assume 60 minutes and perform this procedure every 60 minutes unless otherwise directed by the Radiological Control Director.

3.1.3 If two monitors are measuring the same source term, use the larger source term.

3.1.4 Report the source term to the Radiological Control Director and/or use to determine projected dose in PEP-Section 3.4. If the Emergency Operations Facility is activated, report information to the Emergency Response Manager.

3.1.5 If there is more than one source term, repeat the above steps for each release point to determine total curies released.

EXHIBIT 3.6.2-1

Source Term Calculation Worksheet

1. Enter monitor's ID. _____ (1)

2. Enter time. _____ (2)

3. Enter monitor's reading in CPM or mR/hr. _____ (3)
(CPM or mR/hr)

4. Verify which HVE systems are operating.

From Exhibit 3.6.2-2 determine appropriate flow rate - if more than one flow rate applies, sum values and enter total.

HVE1A + HVE1B + HVE2A + HVE2B + HVE15A + OTHER = _____ (4)
(CFM)

5. From Exhibit 3.6.2-3 determine the appropriate equation and enter below. Substitute the values from 3 and 4 and solve for Ci/sec. _____ (5)
(Ci/sec)

6. Enter release time duration in minutes. _____ (6)
(Minutes)

7. Multiply the source term emission rate by the time duration to determine source term in curies:

_____ (Ci/sec) x _____ (Minutes) x 60 (Sec./Min.) = _____ (7)
(Curies)

bs

EXHIBIT 3.6.2-2

Flow Rates

RMS-11 - Containment Particulate

HVE 1A - Containment purge - 34,000 CFM
HVE 1B - Containment purge - 34,000 CFM
HVE 2A - Aux. Bldg. purge - 48,650 CFM
HVE 2B - Aux. Bldg. purge - 48,650 CFM
HVE 15A - During fuel handling or R-21 alarm - 12,500 CFM
If unavailable, assume - 60,000 CFM

RMS-12 - Containment - Noble Gas

HVE 1A - Containment purge - 34,000 CFM
HVE 1B - Containment purge - 34,000 CFM
HVE 2A - Aux. Bldg. purge - 48,650 CFM
HVE 2B - Aux. Bldg. purge - 48,650 CFM
HVE 15A - During fuel handling or R-21 alarm - 12,500 CFM
If unavailable, assume - 60,000 CFM

RMS-14 - Vent/Stack - Noble Gas

HVE 1A - Containment purge - 34,000 CFM
HVE 1B - Containment purge - 34,000 CFM
HVE 2A - Aux. Bldg. purge - 48,650 CFM
HVE 2B - Aux. Bldg. purge - 48,650 CFM
HVE 15A - During fuel handling or R-21 alarm - 12,500 CFM
If unavailable, assume - 60,000 CFM

RMS-15 - Air Ejector - Noble Gas

Record CFM as indicated by control room data.
If unavailable, assume 45 CFM.

RMS-20 - Fuel Building Basement Exhaust - Low-Range Noble Gas

Flow rate = 10,200 CFM

bs

EXHIBIT 3.6.2-2

(Continued)

RMS-21 - Fuel Building Upper-Level Exhaust - Noble Gas

Record CFM as indicated by control room data.

If unavailable, assume 13,400 CFM.

RMS-30 - Fuel Handling Building Basement Exhaust - High-Range Noble Gas

Record CFM as indicated by control room monitor.

If unavailable, assume 10,200 CFM.

RMS-31 - A, B, or C - Steam-Line Monitors

Main steam line PORV to atmosphere - 1.67×10^8 cc/sec

PORV and 1 SRV - 3.40×10^8 cc/sec

PORV and 2 SRV - 5.13×10^8 cc/sec

PORV and 3 SRV - 6.86×10^8 cc/sec

PORV and 4 SRV - 8.59×10^8 cc/sec

RMS-35 - Main Stack - Mid-Range Noble Gas

HVE 1A - Containment purge - 34,000 CFM

HVE 1B - Containment purge - 34,000 CFM

HVE 2A - Aux. Bldg. purge - 48,650 CFM

HVE 2B - Aux. Bldg. purge - 48,650 CFM

HVE 15A - During fuel handling or R-21 alarm - 12,500 CFM

If unavailable, assume 60,000 CFM.

RMS-36 - Main Stack - High-Range Noble Gas

HVE 1A - Containment purge - 34,000 CFM

HVE 1B - Containment purge - 34,000 CFM

HVE 2A - Aux. Bldg. purge - 48,650 CFM

HVE 2B - Aux. Bldg. purge - 48,650 CFM

HVE 15A - During fuel handling or R-21 alarm - 12,500 CFM

If unavailable, assume 60,000 CFM

bs

EXHIBIT 3.6.2-3

Source Term Release Equation

RMS-11 - Containment Particulate

$$(CCPM)\ (CFM)\ (1.57 \times 10^{-16}) = Ci/sec$$

RMS-12 Containment - Noble Gas

$$\frac{(CCPM)\ (4.72 \times 10^{-4})\ (CFM)}{(2.9 \times 10^{7}) - (48.6 \times CCPM)} = Ci/sec$$

RMS-14 - Vent/Stack - Noble Gas

(1) $$\frac{(CCPM)\ (4.72 \times 10^{-4})\ (CFM)}{(5.99 \times 10^{7}) - (100 \times CCPM)} = Ci/sec$$

(2) If CCPM $\geq 3 \times 10^{5}$, calculate RMS-35 source term

RMS-15 - Air Ejector - Noble Gas

(1) $$\frac{(CCPM)\ (4.72 \times 10^{-4})\ (CFM)}{(4.59 \times 10^{6}) - (7.67)\ (CCPM)} = Ci/sec$$

(2) If the RMS-15 count rate exceeds 3200 CCPM, the air-ejector flow should be diverted to plant vent. If flow has been diverted, use RMS-14.

RMS-20 - Fuel Building Basement Exhaust - Low-Range Noble Gas

(1) If CCPM $\geq 3 \times 10^{5}$, calculate RMS-30 source term

(2) $$\frac{(CCPM)\ (4.72 \times 10^{-4})\ (CFM)}{(2.78 \times 10^{7}) - [(46.4)\ (CCPM)]} = Ci/sec$$

bs

EXHIBIT 3.6.2-3
(Continued)

RMS-21 - Fuel Building Upper-Level Exhaust - Noble Gas

$$\frac{(CCPM)\ (4.72 \times 10^{-4})\ (CFM)}{(2.30 \times 10^{7}) - [(38.4)\ (CCPM)]} = Ci/sec$$

RMS-30 - Fuel Handling Building Basement Exhaust - High-Range Noble Gas

$$(mR/hr)\ (CFM)\ (4.72 \times 10^{-6}) = Ci/sec$$

RMS-31 - A, B, or C Steam-Line Monitors

Time after accident equals:

(1) 0 minutes:

$$(mR/hr)\ (cc/sec)\ (1.00 \times 10^{-8}) = Ci/sec$$

(2) 30 minutes

$$(mR/hr)\ (cc/sec)\ (7.71 \times 10^{-9}) = Ci/sec$$

(3) 60 minutes

$$(mR/hr)\ (cc/sec)\ (1.54 \times 10^{-8}) = Ci/sec$$

(4) 120 minutes

$$(mR/hr)\ (cc/sec)\ (1.88 \times 10^{-8}) = Ci/sec$$

RMS-35 - Main Stack - Mid-Range Noble Gas

$$(mR/hr)\ (CFM)\ (4.72 \times 10^{-7}) = Ci/sec$$

RMS-36 - Main Stack - High-Range Noble Gas

$$(mR/hr)\ (CFM)\ (4.72 \times 10^{-4}) = Ci/sec$$

bs

W. E. NUCLEAR ENERGY PARK

PROCEDURE OR DISTRIBUTION CHANGE REQUEST AND AUTHORIZATION FORM

DISTRIBUTION:		DATE INITIATED	8-22-83
ADMINISTRATIVE SUPV. ORIGINAL. .	1	PROCEDURE CHANGE NUMBER. . .	3099
QS.	1	REVISION NUMBER.	0
TRAINING SUPERVISOR.	1	SPEC. PROC. (SP) NUMBER. . .	N/A
		TEMPORARY CHANGE NUMBER. . .	N/A
ADDITIONAL COPIES.		TEMPORARY DUE DATE	N/A
TOTAL COPIES (MINUS ORIGINAL). .		(21 DAYS)	

I. A. CHANGE DESCRIPTION (VOLUME NUMBER, PROCEDURE NUMBER, PAGES AFFECTED):

New PQM Volume 2

B. CHANGE TO BE MADE: Reformat existing PQM procedures into the new PQM Volume 2 (as directed by the PAW). Procedures that will constitute the new Volume 2 will be taken from the existing Volumes 1 and 2, as per the attached new PQM Index. All procedures will be redesignated with the new procedure number and designated as Rev. "0". No technical changes will be made to any procedure.

C. REASON FOR CHANGE: Standardization of CP&L Nuclear Unit Plant Operating Manuals

NOTE: The PQM Index Cross Reference is attached to aid in the review of the New PQM Index. It is not to be included as part of this change request review and approval.

D. DOES THIS CHANGE REQUIRE OTHER CHANGES TO THE P.Q.M.? YES X NO ____
(If "YES", list under "REMARKS", Page 2.)

E. DOES THIS CHANGE REQUIRE CHANGES TO HBR DRAWINGS? YES ____ NO X
(If "YES", list drawing numbers under "REMARKS", Page 2.)

F. CHANGE REQUESTED BY: [signature] DATE: 8/16/83

II. A. INCLUDE A THOROUGH SAFETY ANALYSIS: Section 6.5 of the Technical Specifications and Section 17 of the Updated FSAR were reviewed and this change does not increase the probability of occurence or consequences of an accident or malfunction of safety related equipment. It does not create the possibility of an accident or malfunction of a different type than previously evaluated, nor does it reduce any Technical Specification defined margin of safety. The change is Administrative in nature and does not involve an unreviewed safety question. In addition, this change does not constitute or require a change to the Technical Specifications or the Updated FSAR.

B. BASED ON THE SAFETY ANALYSIS:

(1) Does this item increase the probability of occurrence or consequences of an accident or malfunction of equipment important to safety as previously analyzed in the Updated FSAR? YES ____ NO X

(2) Does this item create the possibility for an accident or malfunction of a different type than any previously evaluated in the Updated FSAR? YES ____ NO X

(3) Does this item reduce the margin of safety as defined in the basis for any Technical Specification? YES ____ NO X

(4) Based on positive answers to any of questions B.(1) through B.(3), does this item constitute an unreviewed safety question? YES ____ NO X

(5) Does this item require a change to Technical Specifications? YES ___ NO X

(6) Does this item constitute a change or addition to the Updated FSAR? YES ___ NO X

C. SAFETY ANALYSIS PREPARED BY: [signature] DATE: 8/17/83

III. A. ALARA REVIEW REQUIRED? YES ___ NO ✓
FIRE PROTECTION REVIEW REQUIRED? YES ___ NO ✓

B. CHANGE RECOMMENDED BY: [signature] _____
Responsible Supervisor Date

IV. A. QA/QC REVIEW: [signature] 8/18/83 B. ALARA REVIEW: N/A
Initial Date Initial Date

C. FIRE PROTECTION REVIEW: N/A
Initial Date

V. A. TEMPORARY CHANGE APPROVED THIS DATE: _____

NAME: _____ TITLE: _____
NAME: _____ TITLE: SRO (MANAGEMENT)

B. TEMPORARY CHANGE CANCELLED THIS DATE: _____

NAME: _____ TITLE: _____
NAME: _____ TITLE: SRO (MANAGEMENT)

VI. SAFETY REVIEW (Supervisor: Check applicable expertise blocks if necessary and assign reviewers.)

A. ___ Nuclear Plant Operations ___ Reactor Engineering ___ Mechanical
___ Electrical I&C ___ Structural/Seismic/Thermal ___ Metallurgy
___ Chemistry/Radiochemistry ___ Health Physics ✓ Admin. Controls

B.

Safety Reviewer	Initial	Date	Safety Reviewer	Initial	Date
B. Watkins	[initial]	8-22-83	A. McAuley	[initial]	8/18/83
~~D. Labritte~~					

(Attach additional documentation as necessary)

VII. A. IF SAFETY REVIEW STEPS II.B.(4) or (5) ARE ANSWERED "YES", CNS AND PNSC REVIEWS AND NRC APPROVAL IS REQUIRED PRIOR TO IMPLEMENTATION.

B. IF SAFETY REVIEW STEP II.B.(5) IS ANSWERED "YES", CNS REVIEW IS REQUIRED.

_____ _____
CNS Review Date

_____ _____
PNSC Chairman Date

VIII. ALL REQUIRED REVIEWS HAVE BEEN COMPLETED AND ___ CHANGE APPROVED FOR IMPLEMENTATION.

[signature] [signature] TEMPORARY CHANGE CANCELLED 8/22/83
MANAGER/FUNCTIONAL AREA APPROVED DATE EFFECTIVE DATE - (Allow 4 working days for processing)

PNSC IN-PLANT REVIEW REQUESTED. YES ___ NO ✓

ROUTE PROCEDURE/INSTRUCTION CHANGE TO DOCUMENT CONTROL FOR DISTRIBUTION.

REMARKS: All references to checklist Volumes and/or procedure numbers will be changed in conjunction with the PNM procedure rewrite effort.

[signature]

REV. 1&7

TABLE OF CONTENTS

PLANT OPERATING MANUAL

VOLUME 2

ADMINISTRATIVE MANUAL

REVISION 3

AUGUST 22, 1983

R-0

ADMINISTRATIVE MANUAL

VOLUME 2

TABLE OF CONTENTS

Part 1. ADMINISTRATIVE MANAGEMENT MANUAL (AMM)

R-D

ADMINISTRATIVE MANUAL

VOLUME 2

TABLE OF CONTENTS

Part 2. RECORDS MANAGEMENT PROCEDURES (RMP)

R-D

TABLE OF CONTENTS

Part 3. PROCUREMENT AND MATERIALS CONTROL PROCEDURE (PMC)

TABLE OF CONTENTS

Part 4. SECURITY PROCEDURES (SP)

R-D

TABLE OF CONTENTS

Part 5. PLANT EMERGENCY PROCEDURES (PEP)

R.D

Part 5. PLANT EMERGENCY PROCEDURES (PEP) (Continued)

PEP-162 (2.6.12) Operational Support Center/Evacuation Assembly Area Leader

PEP-163 (2.6.13) Site Public Information Coordinator

PEP-164 (2.6.14) Site Communications Systems Coordinator

PEP-165 (2.6.15) Support Services Coordinator

PEP-166 (2.6.16) Emergency Response Manager

PEP-167 (2.6.17) Administrative & Logistics Manager

PEP-168 (2.6.18) Technical Analysis Manager

PEP-169 (2.6.19) Radiological Control Manager

PEP-170 (2.6.20) Dose Projection Coordinator

PEP-171 (2.6.21) Emergency Communicator

PEP-201 (3.1.1) Follow-up Notification and Communications

PEP-202 (3.1.2) Communications Activities

PEP-203 (3.1.3) Use of Communications Equipment

PEP-204 (3.2.1) Notification of Off-duty Personnel

PEP-2004(PEP APP.A.1)Personnel

PEP-205 (3.2.2) Mobilization of Outside Organizations and Personnel

PEP-2005(PEP APP.A.2)Federal, State and County Agencies

PEP-2006(PEP APP.A.3)Police, Fire and Medical Phone Numbers

PEP-2007(PEP APP.A.4)Other Emergency Response Contacts

PEP-2008(PEP APP.B) Selected Information

PEP-206 (3.2.3) Activation of the Technical Support Center (TSC)/Emergency Operation Facility (EOF)

PEP-231 (3.3.1) In-plant Monitoring and Surveys

PEP-232 (3.3.2) On-site Monitoring and Surveys

PEP-233 (3.3.3) Collection of Very High Level Radioactive Samples

PEP-234 (3.3.4) Analysis of Very High Level Radioactive Samples

R-0

Part 5. PLANT EMERGENCY PROCEDURES (PEP) (Continued)

PEP-301	(3.4.1)	Initial Dose Projections
PEP-302	(3.4.2)	Whole Body Dose Projections
PEP-303	(3.4.3)	Thyroid Dose Projections
PEP-304	(3.4.4)	Automation of Dose Assessment Using the IBM Personal Computer
PEP-305	(3.4.5)	Automation of Dose Assessment
PEP-351	(3.5.1)	Confirmation of Initial Dose Projections
PEP-352	(3.5.2)	Expanded Environmental Monitoring
PEP-353	(3.5.3)	Plume Tracking by Actual Measurement
PEP-354	(3.5.4)	Coordination with State Monitoring
PEP-401	(3.6.1)	Release Estimates Based Upon Stack/Vent Readings
PEP-402	(3.6.2)	Release Estimates Based Upon Direct Radiation Levels
PEP-403	(3.6.3)	Interpretation of Liquid and Gaseous Samples
PEP-451	(3.7.1)	Emergency Work Permits and Exposure Control
PEP-452	(3.7.2)	Emergency Personnel Monitoring and Dosimetry
PEP-453	(3.7.3)	Issuance and Use of Protective Gear
PEP-501	(3.8.1)	Evacuation
PEP-502	(3.8.2)	Personnel Accountability
PEP-503	(3.8.3)	Administration of Radioprotective Drugs
PEP-504	(3.8.4)	Access Control

Part 5. PLANT EMERGENCY PROCEDURES (PEP) (Continued)

PEP-551	(3.9.2)	First Aid and Medical Care
PEP-552	(3.9.3)	Transporting of Contaminated Injured Personnel
PEP-553	(3.9.5)	Personnal Decontamination
PEP-554	(3.9.6)	Search and Rescue
PEP-601	(3.10)	Damage Control Activities
PEP-651	(4.1)	Record Keeping and Documentation
PEP-652	(4.2)	Emergency Facilities and Equipment
PEP-653	(4.3)	Performance of Training, Exercises and Drills
PEP-654	(4.5)	Public Education and Information

R-D

CP&L

H. B. ROBINSON

SEG PLANT

TITLE

EMERGENCY PLAN AND PROCEDURES

~~VOLUME 13~~ Vol. 2

INITIAL DOSE PROJECTIONS

~~PEP 3.4.1~~ PEP-301

~~REVISION 6~~

~~Rev. 0~~

REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE
0	RBS/DC	8-22-83						
1	RBS/RM	9-07-83						

Recommend By: _____ 7-1-82
Emergency Planning Coordinator — DATE

Approved By: _____ 7/2/82
Plant General Manager — DATE

PEP-3.4.1 - INITIAL DOSE PROJECTIONS

1.0 RESPONSIBLE INDIVIDUAL AND OBJECTIVES

The Radiological Control Director is responsible to the Site Emergency Coordinator for determining initial dose projections from readily available data. The performance of the calculations may be delegated to the Dose Assessment Coordinator. The Radiological Control Manager will assume responsibility for off-site dose projection after the Emergency Operations Facility is activated.

2.0 SCOPE AND APPLICABILITY

This procedure is intended to enable a rapid determination of the severity of an emergency. It shall be implemented as the first step subsequent to recognition that an unplanned off-site release has occurred or could have occurred. The procedure can be used to make both whole body and thyroid dose projections.

The dose projections calculated by this procedure are to be compared against preestablished criteria for possible consequences off-site. These projections pertain to radioactive gases at ground level and do not include radiation from an overhead cloud that may contribute to the whole body dose at ground level. Under certain meteorological conditions (elevated release and E, F, or G stability classes), direct radiation from an overhead plume may produce higher doses than calculated by this procedure.

A simplified formula for estimating radiological consequences of an accidental release to the atmosphere is:

$$D = X/Q.Q.DCF$$

where D = Dose in rem.

X/Q = Atmosphere Dispersion Factor in sec/m^3.

Q = Source Term in curies.

DCF = Dose Conversion Factor in $Rem/Ci-sec/m^3$.

3.0 ACTIONS

List of Exhibits

3.4.1-1 - Record Sheet for Initial Dose Projections.

3.1 Obtain a copy of Exhibit 3.4.1-1 and record date, time, and your name.

3.2 Determine wind direction, wind speed, and atmospheric stability class using one of five methods listed in preferred order of use. Record on Exhibit 3.4.1-1.

3.2.1 If operable, use the control room computer or E&RC computer to obtain the atmospheric stability class, wind speed, and wind direction.

3.2.2 Call E&RC and request meteorological data in accordance with PEP-2.6.20, Exhibit 2.6.20-1.

3.2.3 Call Corporate Meteorologists and request meteorological data (see PEP Appendix A.4 for phone numbers).

3.2.4 Call the National Weather Service office in Columbia, South Carolina in accordance with PEP-2.6.20, Step 3.4.

3.2.5 If there is no meteorological data readily available, a general estimate of the current Atmospheric Stability Class can be made by visual observation, using the following table:

	Sunny Day	Cloudy Day	Cloudy Night	Clear Night
light wind or calm ($\leq$ 4 m/s or 9.0 mph)	B	C	E	F
moderately strong wind (>4 m/s or 9.0 mph)	C	D	D	D

NOTE: Assume Stability Class D whenever it is raining.

3.3 Determine the X/Q Value(s)

3.3.1 If the release is out the stack and if the wind velocity at the upper level on the meteorological tower is LESS THAN OR EQUAL TO 9.0 miles per hour, use Table 3.4.1-1. Record the X/Q value(s) on Exhibit 3.4.1-1.

TABLE 3.4.1-1

METEOROLOGICAL DISPERSION (X/Q) VALUE AT
HBR SITE BOUNDARY (1400 FEET)

ELEVATED LEVEL RELEASE

Wind Speed		X/Q Values By Atmospheric Stability Class (Units: sec/m^3)						
MPH	m/s	A	B	C	D	E	F	G
1.0	0.4	$6.7X10^{-5}$	$8.5X10^{-5}$	$4.8X10^{-5}$	$1.0X10^{-6}$	$1.6X10^{-9}$	$1.2X10^{-18}$	$3.5X10^{-42}$
2.0	0.9	$3.3X10^{-5}$	$4.3X10^{-5}$	$3.4X10^{-5}$	$5.0X10^{-7}$	$7.9X10^{-10}$	$6.2X10^{-19}$	$1.7X10^{-42}$
3.0	1.3	$2.2X10^{-5}$	$2.8X10^{-5}$	$1.6X10^{-5}$	$3.3X10^{-7}$	$5.3X10^{-10}$	$4.1X10^{-19}$	$1.2X10^{-43}$
4.0	1.8	$1.7X10^{-5}$	$1.2X10^{-5}$	$1.2X10^{-5}$	$2.5X10^{-7}$	$4.0X10^{-10}$	$3.1X10^{-19}$	$8.6X10^{-43}$
5.0	2.2	$1.3X10^{-5}$	$1.7X10^{-5}$	$9.6X10^{-6}$	$2.0X10^{-7}$	$3.2X10^{-10}$	$2.5X10^{-19}$	$6.9X10^{-43}$
6.0	2.7	$1.1X10^{-5}$	$1.4X10^{-5}$	$8.0X10^{-6}$	$1.7X10^{-7}$	$2.6X10^{-10}$	$2.1X10^{-19}$	$5.8X10^{-43}$
7.0	3.1	$9.5X10^{-6}$	$1.2X10^{-5}$	$6.9X10^{-6}$	$1.4X10^{-7}$	$2.3X10^{-10}$	$1.8X10^{-19}$	$4.9X10^{-43}$
8.0	3.6	$8.4X10^{-6}$	$1.1X10^{-5}$	$6.0X10^{-6}$	$1.3X10^{-7}$	$2.0X10^{-10}$	$1.5X10^{-19}$	$4.3X10^{-43}$
9.0	4.0	$7.4X10^{-6}$	$9.5X10^{-6}$	$5.3X10^{-6}$	$1.1X10^{-7}$	$1.8X10^{-10}$	$1.4X10^{-19}$	$3.8X10^{-43}$

3.3.2 If the release is out of the stack and if the wind velocity at the upper level on the meteorological tower is GREATER THAN 9.0 miles per hour or is NOT from the stack, use Table 3.4.1-2. Record the X/Q value(s) on Exhibit 3.4.1-1.

hs

TABLE 3.4.1-2

METEOROLOGICAL DISPERSION (X/Q) VALUE AT
HBR SITE BOUNDARY (1400 FEET)

GROUND LEVEL RELEASE

Wind Speed		X/Q Values By Atmospheric Stability Class (Units: sec/m^3)						
MPH	m/s	A	B	C	D	E	F	G
1.0	0.4	$8.4X10^{-5}$	$2.4X10^{-4}$	$5.4X10^{-4}$	$1.4X10^{-3}$	$2.7X10^{-3}$	$6.4X10^{-3}$	$1.FX10^{-2}$
2.0	0.9	$4.2X10^{-5}$	$1.2X10^{-4}$	$2.7X10^{-4}$	$7.0X10^{-4}$	$1.3X10^{-3}$	$3.2X10^{-3}$	$7.6.0^{-3}$
3.0	1.3	$2.8X10^{-5}$	$7.8X10^{-5}$	$1.8X10^{-4}$	$4.7X10^{-4}$	$9.0X10^{-4}$	$2.1X10^{-3}$	$5.1X10^{-3}$
4.0	1.8	$2.1X10^{-5}$	$5.9X10^{-5}$	$1.4X10^{-4}$	$3.5X10^{-4}$	$6.7X10^{-4}$	$1.6X10^{-3}$	$3.8X10^{-3}$
5.0	2.2	$1.7X10^{-5}$	$4.7X10^{-5}$	$1.1X10^{-4}$	$2.8X10^{-4}$	$5.4X10^{-4}$	$1.3X10^{-3}$	$3.1X10^{-3}$
6.0	2.7	$1.4X10^{-5}$	$3.9X10^{-5}$	$9.0X10^{-5}$	$2.3X10^{-4}$	$4.5X10^{-4}$	$1.1X10^{-3}$	$2.5X10^{-3}$
7.0	3.1	$1.2X10^{-5}$	$3.4X10^{-5}$	$7.7X10^{-5}$	$2.0X10^{-4}$	$3.9X10^{-4}$	$9.2X10^{-4}$	$2.2X10^{-3}$
8.0	3.6	$1.0X10^{-5}$	$2.9X10^{-5}$	$6.8X10^{-5}$	$1.7X10^{-4}$	$3.9X10^{-4}$	$8.0X10^{-4}$	$1.9X10^{-3}$
9.0	4.0	$9.3X10^{-6}$	$2.6X10^{-6}$	$6.0X10^{-5}$	$1.6X10^{-4}$	$3.0X10^{-4}$	$7.1X10^{-4}$	$1.7X10^{-3}$
10.0	4.5	$8.4X10^{-6}$	$2.4X10^{-5}$	$5.4X10^{-5}$	$1.4X10^{-4}$	$2.7X10^{-4}$	$6.4X10^{-4}$	$1.5X10^{-3}$
11.0	4.9	$7.6X10^{-6}$	$2.1X10^{-5}$	$4.9X10^{-5}$	$1.3X10^{-4}$	$2.5X10^{-4}$	$5.8X10^{-4}$	$1.4X10^{-3}$
12.0	5.4	$7.0X10^{-6}$	$2.0X10^{-5}$	$4.5X10^{-5}$	$1.2X10^{-4}$	$2.2X10^{-4}$	$5.4X10^{-4}$	$1.3X10^{-3}$
13.0	5.8	$6.5X10^{-6}$	$1.8X10^{-5}$	$4.2X10^{-5}$	$1.1X10^{-4}$	$2.1X10^{-4}$	$4.9X10^{-4}$	$1.2X10^{-3}$
14.0	6.2	$6.0X10^{-6}$	$1.7X10^{-5}$	$3.9X10^{-5}$	$1.0X10^{-4}$	$1.9X10^{-4}$	$4.6X10^{-4}$	$1.1X10^{-3}$
15.0	6.7	$5.6X10^{-6}$	$1.6X10^{-5}$	$3.6X10^{-5}$	$9.3X10^{-5}$	$1.8X10^{-4}$	$4.3X10^{-4}$	$1.0X10^{-3}$
16.0	7.2	$5.2X10^{-6}$	$1.5X10^{-5}$	$3.4X10^{-5}$	$8.7X10^{-5}$	$1.7X10^{-4}$	$4.0X10^{-5}$	$9.6X10^{-4}$
17.0	7.6	$4.9X10^{-6}$	$1.4X10^{-5}$	$3.2X10^{-5}$	$8.2X10^{-5}$	$1.6X10^{-4}$	$3.8X10^{-4}$	$9.0X10^{-4}$
18.0	8.0	$4.7X10^{-6}$	$1.3X10^{-5}$	$3.0X10^{-5}$	$7.8X10^{-5}$	$1.5X10^{-4}$	$3.6X10^{-4}$	$8.5X10^{-4}$
19.0	8.5	$4.4X10^{-5}$	$1.2X10^{-5}$	$2.8X10^{-5}$	$7.4X10^{-5}$	$1.4X10^{-4}$	$3.4X10^{-4}$	$8.0X10^{-4}$
20.0	8.9	$4.2X10^{-6}$	$1.2X10^{-5}$	$2.7X10^{-5}$	$7.0X10^{-5}$	$1.3X10^{-4}$	$3.2X10^{-4}$	$7.6X10^{-4}$
21.0	9.4	$4.0X10^{-5}$	$1.1X10^{-5}$	$2.6X10^{-5}$	$6.7X10^{-5}$	$1.3X10^{-4}$	$3.1X10^{-4}$	$7.3X10^{-4}$
22.0	9.8	$3.8X10^{-6}$	$1.1X10^{-5}$	$2.5X10^{-5}$	$6.4X10^{-5}$	$1.2X10^{-4}$	$2.9X10^{-4}$	$7.0X10^{-4}$
23.0	10.3	$3.6X10^{-6}$	$1.0X10^{-6}$	$2.3X10^{-5}$	$6.1X10^{-5}$	$1.2X10^{-4}$	$2.8X10^{-4}$	$6.6X10^{-4}$
24.0	10.7	$3.5X10^{-6}$	$9.8X10^{-6}$	$2.3X10^{-5}$	$5.8X10^{-5}$	$1.1X10^{-4}$	$2.7X10^{-4}$	$6.4X10^{-4}$
25.0	11.2	$3.4X10^{-6}$	$9.4X10^{-6}$	$2.2X10^{-5}$	$5.6X10^{-5}$	$1.1X10^{-4}$	$2.6X10^{-4}$	$6.1X10^{-4}$
26.0	11.6	$3.2X10^{-6}$	$9.1X10^{-6}$	$2.1X10^{-5}$	$5.4X10^{-5}$	$1.0X10^{-4}$	$2.5X10^{-4}$	$5.9X10^{-4}$
27.0	12.1	$3.1X10^{-6}$	$8.7X10^{-6}$	$8.0X10^{-5}$	$5.2X10^{-5}$	$1.0X10^{-4}$	$2.4X10^{-4}$	$5.7X10^{-4}$
28.0	12.5	$3.0X10^{-6}$	$8.4X10^{-6}$	$1.9X10^{-5}$	$5.0X10^{-5}$	$9.6X10^{-5}$	$2.3X10^{-4}$	$5.5X10^{-4}$
29.0	13.0	$2.9X10^{-6}$	$8.1X10^{-6}$	$1.9X10^{-5}$	$4.8X10^{-5}$	$9.3X10^{-5}$	$2.2X10^{-4}$	$5.3X10^{-4}$
30.0	13.4	$2.8X10^{-6}$	$7.8X10^{-6}$	$1.8X10^{-5}$	$4.7X10^{-5}$	$9.0X10^{-5}$	$2.1X10^{-4}$	$5.1X10^{-4}$

3.3.3 If the wind speed has been inferred as per 3.2.5 above, use 2 m/sec (4.5 mph) for light wind conditions and 4 m/sec (9.0 mph) for stronger winds.

3.4 Determine Source Term

3.4.1 Determine which radiation monitor(s) is indicating an abnormal release.

3.4.2 Determine the source term (Ci) indicated by this monitor(s) as per PEP-3.6.2.

3.4.3 For whole body dose projections, apply this source term directly.

OR

3.4.4 For thyroid dose projections, use 15 percent of this source term.

3.4.5 Record results of either Steps 3.4.3 or 3.4.4 on Exhibit 3.4.1-1.

3.5 Determine Dose Conversion Factor

3.5.1 Use Table 3.4.1-3 to determine the Whole Body or Thyroid Dose Conversion Factor (DCF). Record the appropriate DCF on Exhibit 3.4.1-1.

TABLE 3.4.1-3

DOSE CONVERSION FACTORS (Rem/Ci-sec/m^3)

Accident Condition	Whole Body	Thyroid
Unknown/unidentified	0.090	215
Major damage to fuel cladding	0.090	215
RCS leaks or steam line leaks but no major cladding failure	0.055	318
Accidental discharge of waste gas	0.014	522
Fuel handling accident	0.005	800

3.6 To obtain the projected dose at the site boundary, multiply X/Q x Q x DCF. Record the product on Exhibit 3.4.1-1.

NOTE

IF THE RELEASE WAS ELEVATED AS DEFINED BY STEP 3.3.1, MAXIMUM RADIOLOGICAL EXPOSURES COULD OCCUR BEYOND THE SITE BOUNDARY DEPENDING ON STABILITY CLASS. REFER TO STEP 3.8 TO PROJECT DOSES AT DISTANCES BEYOND THE SITE BOUNDARY.

3.7 Report the projected dose near the site boundary to the Radiological Control Director (Radiological Control Manager if Emergency Operations

Facility is activated) or Site Emergency Coordinator. If an elevated release, determine and report maximum off-site projected doses as per Step 3.8.

* *

CAUTION

THE FOLLOWING STEP PROVIDES A QUICK FIRST CUT AT DETERMINING RADIOLOGICAL EXPOSURES OFF-SITE. IT IS INCLUDED TO AID IN DEVELOPING ADDITIONAL PERSPECTIVE ON ACCIDENT CONSEQUENCES. PEP-3.4.2 AND PEP-3.4.3 SHOULD BE USED AS THE BASIS FOR MORE DETAILED ASSESSMENTS, PARTICULARLY THOSE IN SUPPORT OF EVALUATIONS OF POSSIBLE PROTECTIVE ACTIONS.

* *

3.8 The following steps can be used as an initial method to determine the dose at distances in increments out to 10 miles from the plant.

3.8.1 If the release was elevated as defined by Step 3.3.1, use Table 3.4.1-4; and if not, use Table 3.4.1-5.

NOTE

THESE EXHIBITS PROVIDE THE RATIO OF X/Q AT THE NEW DISTANCE COMPARED TO THE SITE BOUNDARY X/Q. ASSUME THE SAME STABILITY CLASS AS FOUND IN STEP 3.2.

TABLE 3.4.1-4

EXTRAPOLATION RATIO FOR ESTIMATING DOSES BEYOND ROBINSON SITE BOUNDARY (1400 FEET)

ELEVATED LEVEL RELEASE

DISTANCE FROM PLANT		EXTRAPOLATION RATIO BY ATMOSPHERIC STABILITY CLASS						
Miles	km	A	B	C	D	E	F	G
1.0	1608	.027	.81	.82	58.3	2.5×10^{4}	4.5×10^{12}	6.0×10^{33}
2.0	3218	< 0.01	.05	.26	33.3	2.6×10^{4}	2.2×10^{13}	6.9×10^{33}
3.0	4824	< 0.01	.02	.13	21.9	2.1×10^{4}	2.5×10^{13}	1.9×10^{36}
4.0	6432	< 0.01	.01	.08	15.3	1.6×10^{4}	2.5×10^{13}	2.8×10^{36}
5.0	8040	< 0.01	<0.01	.05	11.4	1.3×10^{4}	2.2×10^{13}	3.3×10^{36}
6.0	9648	< 0.01	<0.01	.04	8.9	1.1×10^{4}	2.0×10^{13}	3.6×10^{36}
7.0	11256	< 0.01	<0.01	.03	7.2	9.1×10^{3}	1.8×10^{13}	3.8×10^{36}
8.0	12864	< 0.01	<0.01	.02	6.1	7.9×10^{3}	1.6×10^{13}	3.8×10^{36}
9.0	14472	< 0.01	<0.01	.02	5.3	7.0×10^{3}	1.5×10^{13}	3.7×10^{36}
10.0	16080	< 0.01	<0.01	.02	4.4	6.1×10^{3}	1.5×10^{13}	3.7×10^{36}

TABLE 3.4.1-5

EXTRAPOLATION RATIO FOR ESTIMATING DOSES BEYOND ROBINSON SITE BOUNDARY (1400 FEET)

GROUND LEVEL RELEASES

DISTANCE FROM PLANT		EXTRAPOLATION RATIO BY ATMOSPHERIC STABILITY CLASS						
Miles	Km	A	B	C	D	E	F	G
1.0	1608	0.02	0.07	0.09	0.11	0.11	0.11	0.10
2.0	3218	< 0.01	0.02	0.03	0.04	0.04	0.04	0.04
3.0	4824	< 0.01	< 0.01	0.01	0.02	0.02	0.02	0.02
4.0	6432	< 0.01	< 0.01	< 0.01	0.01	0.02	0.02	0.02
5.0	8040	< 0.01	< 0.01	< 0.01	0.01	0.01	0.01	0.01
6.0	9648	< 0.01	< 0.01	< 0.01	< 0.01	0.01	0.01	0.01
7.0	11256	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
8.0	12864	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
9.0	14412	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
10.0	16080	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

3.8.2 Multiply the dose calculated in Step 3.6 by the ratio found in Table 3.4.1-4 or 3.4.1-5. The result is the projected dose at the distance identified in the left hand columns. Record results on Exhibit 3.4.1-1.

3.9 Report the projected doses to the Site Emergency Coordinator or Radiological Control Director.

3.10 Repeat this procedure whenever source term or meteorological conditions change or as directed.

TABLE 3.4.1-1

INITIAL DOSE PROJECTIONS

DATE _____ TIME _____ NAME _____

WIND DIRECTION _____ WIND SPEED _____ STABILITY CLASS _____

SOURCE TERM _____ ESTIMATED DURATION OF RELEASE _____

STACK FLOWRATE _____ RELEASE HEIGHT _____

TIME SINCE REACTOR SHUTDOWN _____

COMMENTS _____

_____

_____

WHOLE BODY

	COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
POINT OF INTEREST	X/Q_3 (sec/m^3)	Source Term (Ci)	DCF (Rem/Ci-sec/m^3)	Extrapolation Ratio	Dose* (Rem)
SITE BOUNDARY					

THYROID

	COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
POINT OF INTEREST	X/Q_3 (sec/m^3)	Source Term (Ci)	DCF (Rem/Ci-sec/m^3)	Extrapolation Ratio	Dose* (Rem)
SITE BOUNDARY					

* Projected Dose = Column 1 x Column 2 x Column 3 x Column 4

CP&L

H. B. ROBINSON

SEG PLANT

TITLE

EMERGENCY PLAN AND PROCEDURES

VOLUME 2

DOSE PROJECTION COORDINATOR

PEP-170

REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE
1	RTC/mo	9.09.83						

Recommend By: Don Gainey Jr. 9/7/83

Emergency Planning Specialist DATE

Approved By: T. D. Walt 9/7/83

Assistant to General Manager DATE

DOSE PROJECTION COORDINATOR

1.0 Responsibilities and Objectives

The Dose Projection Coordinator is responsible to the Radiological Control Director for projecting doses off site during a declared emergency. After activation of the Emergency Operations Facility, the Dose Projection Coordinator will provide meteorological data and source term information to EOF personnel.

2.0 Scope and Applicability

This procedure shall be implemented upon activation of the Dose Projection Team. The actions and responsibilities are limited to the Dose Projection Team Leader and those team members assigned to him.

3.0 Actions and Limitations

3.1 General Requirements:

3.1.1 Report your position and readiness to the Radiological Control Director.

3.1.2 Announce your name and assumed position title to all team members.

3.1.3 Ensure that all personnel actively assigned to you are accounted for at all times. (See PEP-3.8.2, Personnel Accountability, for initial accountability requirements.)

3.1.4 Determine and procure equipment, supplies and manpower necessary for use by the Dose Projection Team.

3.1.5 A. When assuming the Dose Projection Team Leader position, request a briefing on the emergency and emergency actions status from the previous position holder.

B. When relinquishing the Dose Projection Team Leader position, brief your successor on the emergency and emergency actions status.

C. Notify all appropriate personnel of your name, the position you are assuming, and the name of the person you replace.

3.1.6 Ensure documentation of the following:

Communications

Key decisions

Data collected

Data transmitted

(In accordance with PEP-4.1, Record Keeping and Documentation)

3.1.7 Ensure proper use of communications equipment (in accordance with PEP-3.1.3, Use of Communications Equipment).

3.2 Assign personnel to perform dose projection and source term procedures as directed by the Radiological Control Director.

3.3 If the plant computers are not accessible, determine meteorological data in accordance with Exhibit 2.6.20-1, Manual Met Tower Data Acquisition.

3.4 If the on-site meteorological station is completely inoperable, National Weather Service data can be used to obtain an estimate of the on-site wind speed and direction, and the appropriate atmospheric stability class. Refer to PEP Appendix A.4 for NWS phone numbers and record readings on Exhibit 2.6.20-3, National Weather Service Data.

3.5 Periodically call Licensing and Permits Section in Raleigh and request meteorological forecast data. Refer to PEP Appendix A.4 for phone numbers. Make use of Exhibits 2.6.20-4 and 2.6.20-5 for recording forecast and other meteorological data.

3.6 Use Exhibit 2.6.20-6 to detail wind direction in terms of degrees from north versus sector wind is blowing from and sector wind is blowing to.

3.7 Record source term on Exhibit 3.6.1-1, 3.6.2-1, or 3.6.3-1 as appropriate and transmit to EOF personnel if activated.

3.8 Ingestion dose projection procedures are contained in the Harris Environmental and Energy Centers Emergency Procedures should they be needed before activation of the EOF. Copies of HEEC Emergency Procedures are available in the TSC.

3.9 Exhibit 2.6.20-7 provides some considerations to be noted to ensure that future changes to the dose projection procedures, computer programs, and associated documentation are made.

EXHIBIT 2.6.20-1

MANUAL MET TOWER DATA ACQUISITION

1.0 If the CRT, modem circuit, or telephone system for contacting the met tower is out of service, the data is obtained as follows (if unavailable from process computer):

a. Obtain key from E&RC or Security to allow access to the Meteorological Building, located at the base of the tower, northwest of the site.

b. On the shelf in the building, locate the manual pulse counter. This unit should be plugged into a 110 VAC outlet for recharging the internal batteries.

c. The unit has a stop/start switch and a position 1/position 2 switch. It has a black lead and white lead.

d. Unplug manual pulse counter.

e. Open the left-hand cabinet on the right wall of the building.

f. Inside this cabinet you will observe several black jacks and one white jack.

g. Each black jack is labeled as to what parameter is involved.

h. Plug the white lead into the white jack and the black lead into the parameter whose pulses are needed.

j. Reset counter to zero.

k. Place switch into position 2.

m. Observe time, place stop/start to start.

n. At the end of 90 seconds, turn stop/start to stop.

o. Record number of pulses and multiply number by 10. This will scale up the pulses to equal 15 minute values.

p. Proceed to obtain the other parameters.

q. Record readings on Exhibit 2.6.20-2.

r. Record the wind direction and wind speed from the recorders on the data form.

s. Turn switch to stop and plug counter into 110 VAC.

t. Secure all cabinets, lock building, and return keys to E&RC/Security.

u. Convert the pulses to engineering units using IBM or HP9830A personal computers.

v. Compare the wind parameters to the values from q above to see if they are reasonable.

2.0 If the computers are out of service but the pulses can be obtained either automatically or by hand, proceed as follows:

CONVERSION OF PULSES TO ENGINEERING UNITS

WIND SPEED (MPH) = WIND SPEED PULSES ÷ 15
WIND DIRECTION: A = (SIN PULSES - 750)
B = (COS PULSES - 750)
APPARENT ANGLE = ARCTAN OF ABSOLUTE VALUE OF A/B

A	B	WIND DIRECTION (DEGREES FROM NORTH)
+	+	APPARENT ANGLE
+	-	180 - APPARENT ANGLE
-	-	180 + APPARENT ANGLE
-	+	360 - APPARENT ANGLE

AMBIENT TEMPERATURE (°F) = (TEMP PULSES X 0.12) + ZA
ZA = SITE SPECIFIC ZERO ADJUST FACTOR*

DIFFERENTIAL TEMPERATURE (°F) = (DT PULSES ÷ 60) + ZA
ZA = SYSTEM-SPECIFIC ZERO ADJUST FACTOR*
ANSWER IN DEGREES F MULTIPLIED BY SITE SPECIFIC NORMALIZING FACTOR (1.078) CONVERTS UNITS TO °C/100 METERS.

*NOTE: THE MOST RECENT ZERO ADJUST FACTORS ARE USUALLY POSTED IN THE MET TOWER BUILDING. IF CURRENT FACTORS ARE UNAVAILABLE, ASSUME ZA FOR AMBIENT TEMP = -50 AND ZA FOR DELTA T = -10.

STABILITY CLASS	DIFFERENTIAL TEMPERATURE ΔT
A	< -1.9 (°C/100m)
B	-1.9 to -1.7
C	-1.7 to -1.5
D	-1.5 to -0.5
E	-0.5 to +1.5
F	+ 1.5 to +4.0
G	> +4.0

EXHIBIT 2.6.20-2

MANUAL PULSE COUNTS

DATE _____ TIME _____

PARAMETER	PULSES/90 Sec			
WSU		X 10	= _____	WSU
WDU SIN		X 10	= _____	WDU SIN
WDU COS		X 10	= _____	WDU COS
WSL		X 10	= _____	WSL
WDL SIN		X 10	= _____	WDL SIN
WDL COS		X 10	= _____	WDL COS
AMB Temp		X 10	= _____	AMB Temp
DT 1		X 10	= _____	DT 1
DT 2		X 10	= _____	DT 2

Wind speed upper from recorder (avg) _____ mph

Wind direction upper from record (avg) _____ degrees

Wind speed lower from detector (avg) _____ mph

Wind direction lower from record (avg) _____ degrees

EXHIBIT 2.6.20-2

MANUAL PULSE COUNTS

DATE _____ TIME _____

PARAMETER	PULSES/90 Sec			
WSU		X 10 =	_____	WSU
WDU SIN		X 10 =	_____	WDU SIN
WDU COS		X 10 =	_____	WDU COS
WSL		X 10 =	_____	WSL
WDL SIN		X 10 =	_____	WDL SIN
WDL COS		X 10 =	_____	WDL COS
AMB Temp		X 10 =	_____	AMB Temp
DT 1		X 10 =	_____	DT 1
DT 2		X 10 =	_____	DT 2

Wind speed upper from recorder (avg)	_____	mph
Wind direction upper from record (avg)	_____	degrees
Wind speed lower from detector (avg)	_____	mph
Wind direction lower from record (avg)	_____	degrees

EXHIBIT 2.6.20-3

DETERMINING STABILITY CLASS FROM NATIONAL WEATHER SERVICE DATA

1. Call the National Weather Service Office at Columbia, South Carolina. Ask for the forecaster on duty and identify yourself by saying, "This is (your name) at the Carolina Power & Light Company (CP&L) H. B. Robinson Nuclear Plant. This is an emergency. May I have the last hour surface weather observation from Florence, South Carolina?" If the last hour data is not available from Florence, then request the last hour surface weather observation from Columbia. The following data should be obtained:

a. Station for which data is given _____
b. Wind Speed (knots) _____
c. Cloud Cover (in tenths of total) _____
d. Cloud Ceiling (feet above ground) _____
e. Wind Direction (N,S,E,W, etc.) _____

2. Also, obtain a 3 hour forecast for Florence from the meteorologist on duty.

3-Hour Forecast

f. Station for which data is given _____
g. Wind Speed (knots) _____
h. Cloud Cover (in tenths of total) _____
i. Cloud Ceiling (feet above ground) _____
j. Wind Direction (N,S,E,W, etc.) _____

Exhibit 2.6.20-4

Carolina Power & Light Company

METEOROLOGICAL FORECAST FORM

Date: _____ Time Issued: _____

Issued By: _____ Received By: _____

Forecast Location: _____

A) Next 1 Hour

1) Wind Direction: Sector _____ Deg. _____

2) Winds Should Remain (Steady; Shifting; Variable)

2a) Variation Should Be _____ Deg.

3) Wind Velocity: _____ to _____ (MPH)

4) Stability Class _____

5) Precipitation Activity Will Be (None, Scattered, Steady)

6) Precipitation Type (Rain, Rainshowers, Thunderstorms, Ice, Snow)

7) Precipitation Intensity (Light, Moderate, Severe)

B) Next 3 Hours:

_____

_____

_____

C) Remarks: _____

_____

_____

_____

Exhibit 2.6.20-5

Carolina Power & Light Company

ONSITE METEOROLOGICAL DATA

Date: _____

Time ( )	_____	_____	_____	_____
Upper Speed (mph) (m/s)	___/___	___/___	___/___	___/___
Upper Direc. (DEG)	_____	_____	_____	_____
Lower Speed (mph) (m/s)	___/___	___/___	___/___	___/___
Lower Direc. (DEG)	_____	_____	_____	_____
AMB Temp. (^{o}F)	_____	_____	_____	_____
ΔT (^{o}C/100m)	_____	_____	_____	_____
Stability Class	_____	_____	_____	_____

Time ( )	_____	_____	_____	_____
Upper Speed (mph) (m/s)	___/___	___/___	___/___	___/___
Upper Direc. (DEG)	_____	_____	_____	_____
Lower Speed (mph) (m/s)	___/___	___/___	___/___	___/___
Lower Direc. (DEG)	_____	_____	_____	_____
AMB Temp. (^{o}F)	_____	_____	_____	_____
ΔT (^{o}C/100m)	_____	_____	_____	_____
Stability Class	_____	_____	_____	_____

EXHIBIT 2.6.20-6

WIND DIRECTIONS

WIND FROM	DEGREES FROM NORTH	WIND TOWARD
N	349-11	S
NNE	12-33	SSW
NE	34-56	SW
ENE	57-78	WSW
E	79-101	W
ESE	102-123	WNW
SE	124-146	NW
SSE	147-168	NNW
S	169-191	N
SSW	192-213	NNE
SW	214-236	NE
WSW	237-258	ENE
W	259-281	E
WNW	282-303	ESE
NW	304-326	SE
NNW	327-348	SSE

EXHIBIT 2.6.20-7

CONSIDERATION FOR MAKING FUTURE CHANGES TO THE DOSE PROJECTION PROCEDURES, THE DOSE PROJECTION COMPUTER PROGRAMS, AND THEIR ASSOCIATED DOCUMENTATION.

The computer programs used to automate emergency dose projections are inherently linked to the various emergency dose projection procedures. Therefore, making a change to a procedure may necessitate changes to the computer programs or vice versa. Furthermore, the dose projection procedures and computer programs used by HBR are somewhat standardized within the CP&L system. When changes to the dose projection procedures or programs are to be made, users of these procedures and programs at other CP&L facilities should be informed and in some cases their concurrence with the changes sought. Documents, computer programs, and concerned groups which are interrelated for dose projections are as follows:

Emergency Dose Projection Documents

--	PEP-2.6.20	Dose Projection Coordinator
--	PEP-3.4.1	Initial Dose Projections
--	PEP-3.4.2	Whole Body Dose Projections
--	PEP-3.4.3	Thyroid Dose Projections
--	PEP-3.4.4	Automation of Dose Assessment Using the IBM Personal Computer
--	PEP-3.4.5	Automation of Dose Assessment Using the HP-9830A Tabletop Computer
--	Volume 13, Book 1, Appendix F	Technical Basis of Emergency Dose Projection Program
--		Documentation of Emergency Dose Projection Computer Programs

Emergency Dose Projection Computer Programs

--	'HBRDOSE'	Emergency Dose Projections
--	'MET'	Meteorological Data Acquisition from Plant MET Tower
--	'TALK'	Receiving Met Forecasts from Forecast Center
--	'FORECAST'	Printing Met Forecasts from Forecast Center
--	'NWS'	Determining Stability Class from National Weather Services Data

CP&L Groups Concerned with Emergency Dose Projection Procedures and Computer Programs

-- BSEP Dose Projection Team (TSC)
-- HBR Dose Projection Team (TSC)
-- HEEC Dose Assessment Team (EOF)
-- Corporate Meteorologists (Forecast Center)

CP&L

H. B. ROBINSON

SEG PLANT

TITLE

EMERGENCY PLAN AND PROCEDURES

~~VOLUME 13~~

THYROID DOSE PROJECTIONS

(PEP-303)

~~PEP 3.4.3~~

~~REVISION 5~~

REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE
~~6~~	RTC/mo	1-21-83						
0	RBS/DR	8-22-83						
1	RTC/mo	9-09-83						

Recommend By: _____ 6-18-2

Emergency Planning Coordinator — DATE

Approved By: _____ 7/21/82

Plant General Manager — DATE

3.4.3-8 Thyroid Dose Conversion Factors for Unknown Mix
3.4.3-9 Doses at Various Distances from Cloud Centerline

3.2 Source Term (Q)

Use the source term calculated in accordance with appropriate PEP-3.6, "Source Term Assessments." The source term needs to be in terms of total curies of iodine released. If the source term is based on stack/ vent monitor readings, use 15 percent of this monitor-based source term. If the curies of iodine released can be determined from isotopic analysis, use this source term directly. Enter the Source Term Value in Column 1 of Exhibit 3.4.3-1.

3.3 Meteorology (χ/Q)

3.3.1 Determine the Atmospheric Stability Class, wind direction, and wind speed. For stack releases, use upper wind speeds and wind directions. For releases from any other location, use lower wind speed and wind directions. The following steps, 3.3.1.1 to 3.3.1.5, should be used in order of preference.

3.3.1.1 If available, use appropriate equipment to access the Met Tower directly. The Control Room's process computer can access the Met Tower and compute usable parameters directly. RC must first access the tower via an acoustic coupler and then use a personal computer to convert the met pulses to usable parameters. Record the wind speed, wind direction, and atmospheric stability class on the worksheet, Exhibit 3.4.3-1.

3.3.1.2 If the Met Tower is unaccessible via phone lines, dispatch an individual to the Met Tower to manually obtain meteorological pulses for each parameter as per PEP-2.6.20 (Exhibit 2.6.20-1).

3.3.1.3 If the on-site meteorological station is completely inoperable, call the Licensing and Permits Section in Raleigh and request meterological data (See PEP Appendix A.4 for phone numbers).

3.3.1.4 Call the National Weather Service (See PEP Appendix A.4 for phone numbers) using the steps given in Exhibit 2.6.20-3 of PEP 2.6.20.

3.3.1.5 If there is no meteorological data readily available, estimate the wind speed and direction, determine, and circle appropriate Atmospheric Stability Class.

	Sunny Day	Cloudy Day	Cloudy Night	Clear Night
light wind or calm ($\leq$4m/s) = ($\leq$9.0 mph)	B	C	E	F
moderately strong wind (>4m/s) = (>9.0 mph)	C	D	D	D

Record wind speed, wind direction, and stability class in Exhibit 3.4.2-1.

Note: Assume Stability Class D whenever it is raining.

3.3.2 Determine the Atmospheric Dispersion Factor (χ/Q)

3.3.2.1 Determine the Atmospheric Dispersion Factor, χ/Q, by either Step 3.3.2.1.1 or Step 3.3.2.1.2.

3.3.2.1.1 Determine the Atmospheric Dispersion factor (X/Q). If the release is via the stack and if the wind velocity at the upper level on the meteorological tower is < or equal to 9.0 miles per hour, use Exhibit 3.4.3-4. In all other cases, use Exhibit 3.4.3-5.

1) Determine the point of interest from the plant.

2) Read up or down to the line for the appropriate stability class as determined in Step 3.3.1.

3) Record the appropriate $\chi\bar{u}/Q$ from the vertical scale for use in 5 below.

4) Record the $\bar{u}$ (wind speed) from Section 3.3.1 and record below.

5) Calculate the χ/Q for the point of interest and enter in Column 2 of Exhibit 3.4.3-1.

$$\frac{\chi}{Q} = \frac{\chi\bar{u}}{Q} \div \bar{u}$$

$$\frac{\chi}{Q} = \_\_\_\_ \div \_\_\_\_ = \_\_\_\_$$

3.3.2.1.2 Determine the Atmospheric Dispersion Factor, χ/Q, using the following equation where concentration is to be calculated along the centerline of the plume at ground level.

$$\frac{\chi}{Q} = \frac{1}{\pi \sigma_y \sigma_z \bar{u}} \exp\left[-\frac{1}{2}\left(\frac{H}{\sigma_z}\right)^2\right]$$

where χ/Q = Atmospheric Dispersion Factor, sec/m^3.

π = 3.1415

$\bar{u}$ = average wind speed, m/sec.

H = release emission height (61 m for stack releases, 0 m for ground level releases).

σ_y = horizontal dispersion coefficient, m; (see Exhibit 3.4.3-6).

σ_z = vertical dispersion coefficient m; (see Exhibit 3.4.3-7).

3.4 Dose Conversion Factor (DCF)

3.4.1 If the nuclide mix of the source term is unknown, go to Step 3.4.2. If the nuclide mix is known, go to Step 3.4.3.

3.4.2 Determine the Dose Conversion Factor corresponding to the time after Rx shutdown plus the travel time of cloud to the point of interest.

3.4.2.1 Estimate the arrival time of cloud to the point of interest and add it to the time after Rx shutdown.

time after shutdown (in hours) + $\frac{\text{distance to point of interest (in meters)}}{3600u}$

= _____ hours

3.4.2.2 Select the Dose Conversion Factor from Exhibit 3.4.3-8 corresponding to the cloud passage time of 3.4.2.1.

3.4.3 On Exhibit 3.4.3-2, enter the known radioiodine nuclides of the source term and their respective concentrations in Column 1.

CP&L

H. B. ROBINSON

SEG PLANT

TITLE

EMERGENCY PLAN AND PROCEDURES

~~VOLUME 13~~

PEP-102

EMERGENCY CONTROL - UNUSUAL EVENT

~~PEP-2.2~~

REVISION ~~4~~ 0

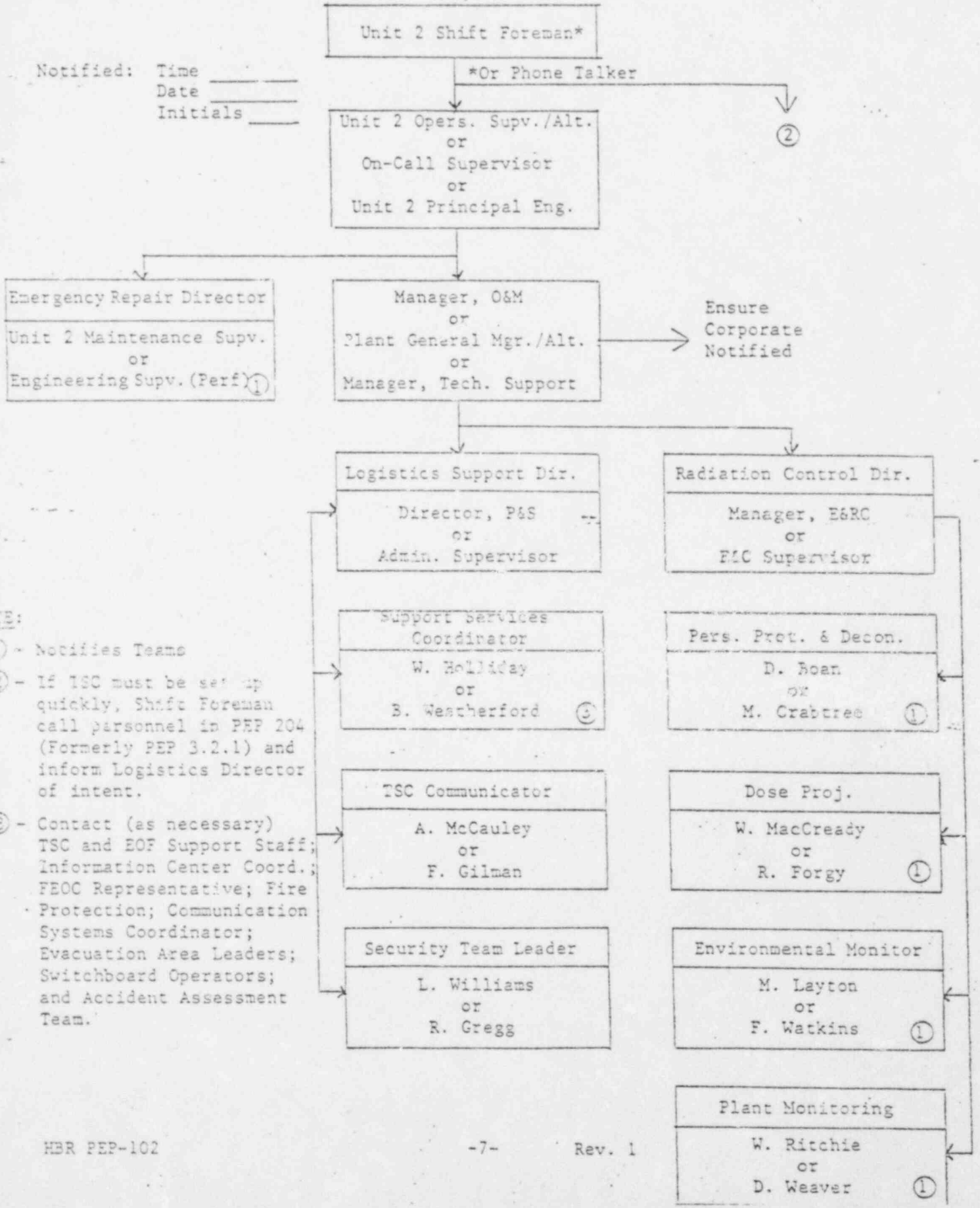
REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE
~~5~~	RTC / MS	10-11-82						
~~6~~	RTC / MS	4-15-83						
~~7~~	RTC / MS	6-14-83						
0	DBS/DR	8-22-83						
1	RTC/RM	9-12-83						

Recommend By: _____ 7-1-2
Emergency Planning Coordinator — DATE

Approved By: _____ 7/2/82
Plant General Manager — DATE

EXHIBIT 2.2-2

EMERGENCY ORGANIZATION NOTIFICATION CHECKLIST



NOTE:

1 - Notifies Teams

2 - If TSC must be set up quickly, Shift Foreman call personnel in PEP 204 (Formerly PEP 3.2.1) and inform Logistics Director of intent.

3 - Contact (as necessary) TSC and EOF Support Staff; Information Center Coord.; FEOC Representative; Fire Protection; Communication Systems Coordinator; Evacuation Area Leaders; Switchboard Operators; and Accident Assessment Team.

CP&L

H. B. ROBINSON

SEG PLANT

TITLE

EMERGENCY PLAN AND PROCEDURES

~~VOLUME 13~~

EMERGENCY CONTROL - ALERT

PEP-103

~~PEP-2.3~~

REVISION ~~6~~ 0

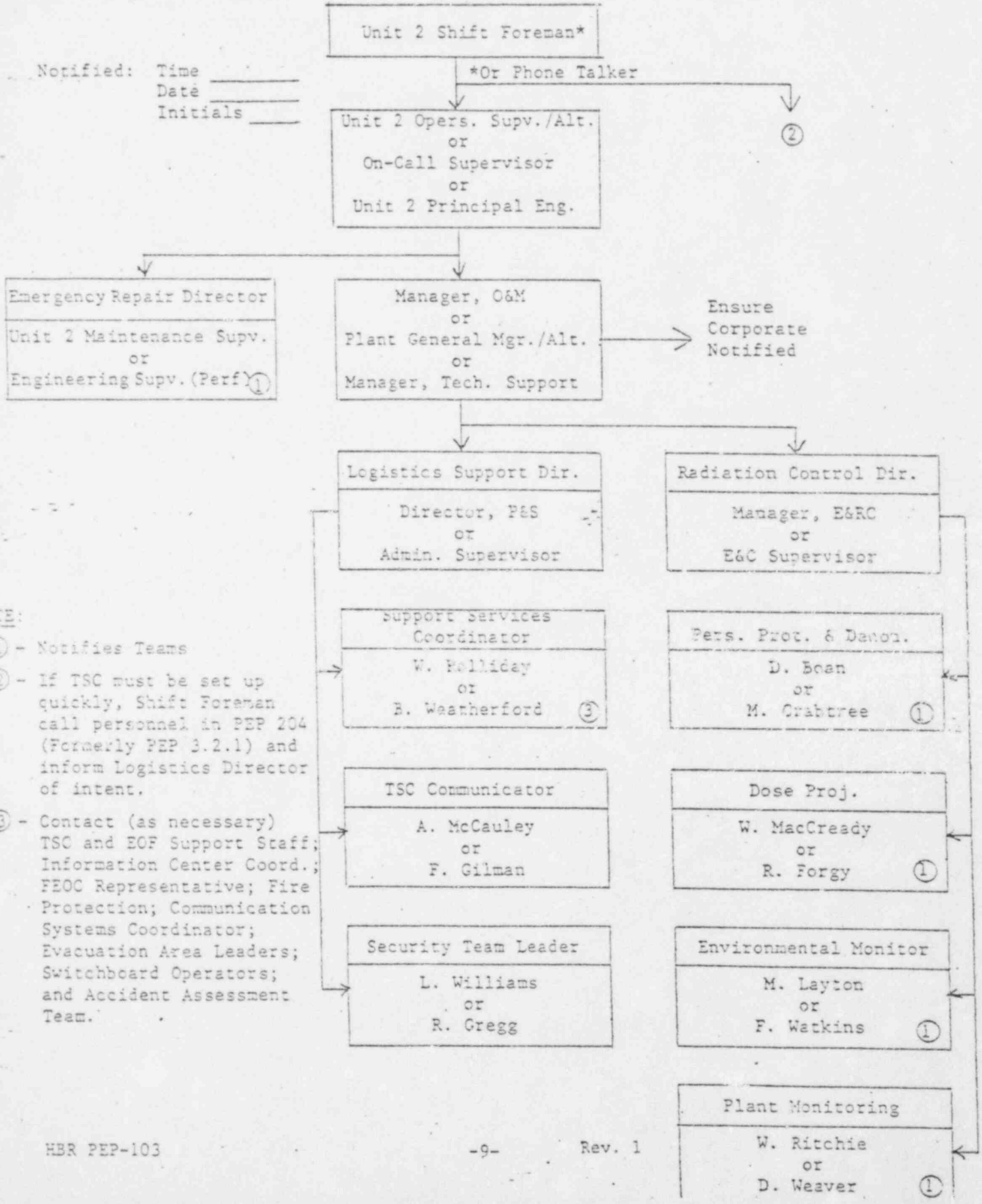
REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE
~~7~~	RTC/RM	10-11-82						
~~8~~	RTC/RM	4-15-83						
~~9~~	RTC/RM	6-14-83						
0	RBS/BE	8-22-83						
1	RTC/RM	9-12-83						

Recommend By: R. T. Connell — Emergency Planning Coordinator — 7/1/82 DATE

Approved By: W. Dorsey Jr. — Plant General Manager — 7/2/82 DATE

EXHIBIT 2.3-2

EMERGENCY ORGANIZATION NOTIFICATION CHECKLIST



NOTE:

① - Notifies Teams

② - If TSC must be set up quickly, Shift Foreman call personnel in PEP 204 (Formerly PEP 3.2.1) and inform Logistics Director of intent.

③ - Contact (as necessary) TSC and EOF Support Staff; Information Center Coord.; FEOC Representative; Fire Protection; Communication Systems Coordinator; Evacuation Area Leaders; Switchboard Operators; and Accident Assessment Team.

CP&L

H. B. ROBINSON

SEG PLANT

TITLE

EMERGENCY PLAN AND PROCEDURES

~~VOLUME 13~~

EMERGENCY CONTROL - SITE EMERGENCY

(PEP-104)

~~PEP-2.4~~

~~REVISION 6~~

Rev. 0

REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE
~~7~~	~~RTC/RM~~	~~8-9-83~~						
~~8~~	~~RTC/RM~~	~~9-12-83~~						
~~9~~	~~RTC/RM~~	~~10-12-83~~						
0	RBS/DR	8-22-83						
1	RTC/RM	9-12-83						

Recommend By: R. E. Conrad — 7-1-82 (DATE)

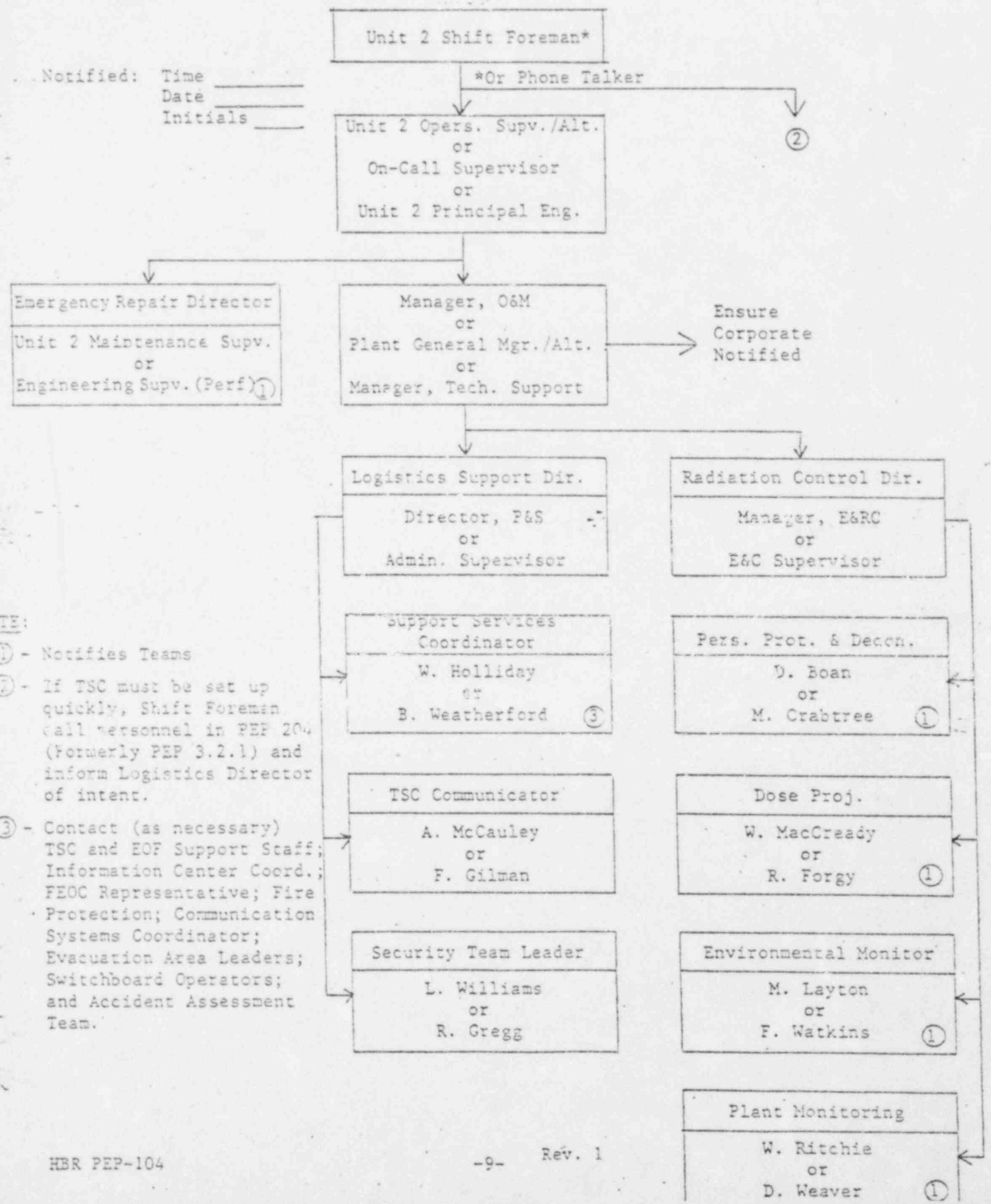
Emergency Planning Coordinator

Approved By: W. S. Hartsfield Jr. — 7/2/82 (DATE)

Plant General Manager

EXHIBIT 2.4-2

EMERGENCY ORGANIZATION NOTIFICATION CHECKLIST



NOTE:

① - Notifies Teams

② - If TSC must be set up quickly, Shift Foreman call personnel in PEP 204 (Formerly PEP 3.2.1) and inform Logistics Director of intent.

③ - Contact (as necessary) TSC and EOF Support Staff; Information Center Coord.; FEOC Representative; Fire Protection; Communication Systems Coordinator; Evacuation Area Leaders; Switchboard Operators; and Accident Assessment Team.

CP&L

H. B. ROBINSON

SEG PLANT

TITLE

EMERGENCY PLAN AND PROCEDURES

~~VOLUME 13~~

EMERGENCY CONTROL - GENERAL EMERGENCY
(PEP-105)
~~PEP-2.5~~

~~REVISION 8~~
Rev. 0

REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE
~~7~~	~~RTC/RM~~	~~7-1-82~~						
~~8~~	~~RTC/RM~~	~~7-15-82~~						
~~9~~	~~RTC/RM~~	~~6-14-83~~						
0	RTC/RM	8-22-83						
1	RTC/RM	9-12-83						

Recommend By: _____ 7-1-2
Emergency Planning Coordinator — DATE

Approved By: _____ 7/2/82
Plant General Manager — DATE

(PEP-105)

~~PEP 2.5~~ EMERGENCY CONTROL - GENERAL EMERGENCY

1.0 Responsible Individuals and Objectives

1.1 The Site Emergency Coordinator is responsible for:

1.1.1 Directing and coordinating the combined activities of plant personnel in the Control Room, the Technical Support Center, the Operational Support Center, the Plant Media Center, and elsewhere on the site.

1.1.2 Making the initial in-plant and off-site notifications. Once activated, the Emergency Operations Facility will make all necessary off-site notifications.

1.1.3 Activating and issuing instructions to the Radiological Emergency Teams and the Technical Support Group.

1.1.4 Activating and issuing instructions to additional Emergency Teams, as needed, and assessing that the appropriate procedures are being followed.

1.1.5 Requesting outside emergency response assistance, if required.

1.1.6 Augmenting the on-site shift personnel.

1.1.7 Assessing the emergency condition for possible reclassification or termination.

1.1.8 Assigning an Emergency Communicator.

Note: Figure 2.5-1 provides a Logic Flow Diagram of this procedure.

1.2 The Emergency Communicator is responsible to the Site Emergency Coordinator for:

1.2.1 Assisting in making the initial notifications.

1.2.2 Contacting needed off-duty personnel and requesting that they report to the site.

1.2.3 Contacting outside emergency response agencies, if required, prior to Emergency Operations Facility activation. This Notification should include recommendations to consider sheltering the population in a 2 mile radius.

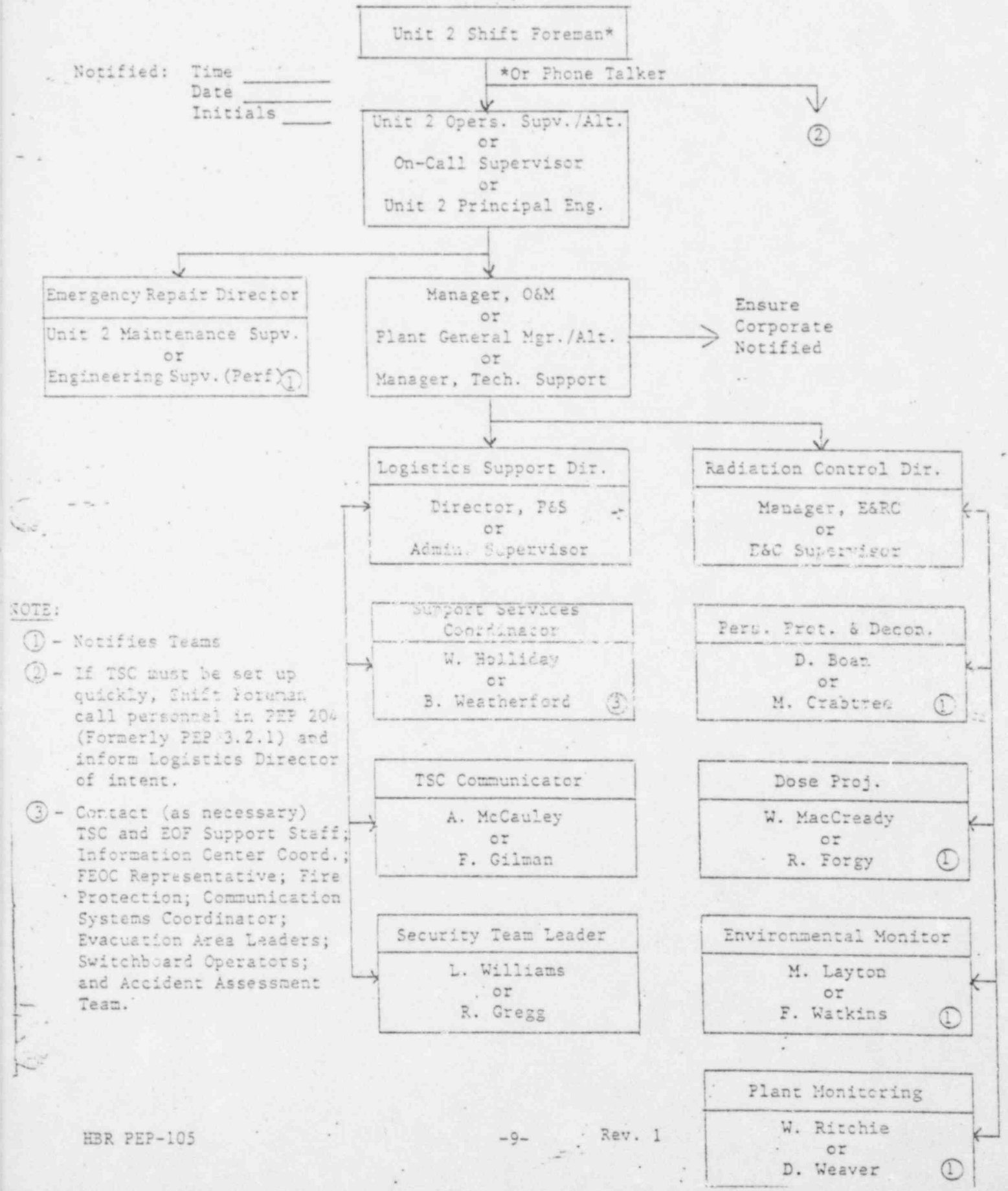
1.2.4 Documenting calls in accordance with PEP Section 3.1, "Communications Procedures."

1.3 Upon activation, the Emergency Response Manager is responsible for:

1.3.1 Providing liaison between the Site Emergency Coordinator and off-site support personnel (Corporate Headquarters,

EXHIBIT 2.5-2

EMERGENCY ORGANIZATION NOTIFICATION CHECKLIST



NOTE:

① - Notifies Teams

② - If TSC must be set up quickly, Shift Foreman call personnel in PEP 204 (Formerly PEP 3.2.1) and inform Logistics Director of intent.

③ - Contact (as necessary) TSC and EOF Support Staff; Information Center Coord.; FEOC Representative; Fire Protection; Communication Systems Coordinator; Evacuation Area Leaders; Switchboard Operators; and Accident Assessment Team.

EXHIBIT 2.5-3

PROTECTIVE ACTIONS AT VARIOUS PROJECTED DOSES

Protective Action Recommendations

I. Protective Actions for Immediate Notifications
(No Dose Projection Required)

Recommend State Should Consider Sheltering 2 Mile Radius and 5 Miles Downwind When General Emergency is Declared

I. REPRESENTATIVE PROTECTIVE ACTIONS TO REDUCE WHOLE BODY AND THYROID DOSE FROM EXPOSURE TO A GASEOUS PLUME

Projected Dose (rem)	Recommended Action(s)[a]	Comments
Whole Body <1.0 or Thyroid <5.0	No planned protective action.[b] State may issue an advisory to seek shelter and await further instructions. Monitor environmental radiation levels.	Previously recommended protecti actions may be reconsidered or terminated.
Whole Body 1 to 5 or Thryoid 5 to 25	Seek shelter as a minimum. Consider evacuation unless constraints make it impractical. Monitor envirdnmental radiation levels. Control access.	If constraints exist, special consideration should be given t evacuation of children and pre women.
Whole Body 5 or above or Thyroid 25 or above	Conduct mandatory evacuation. Monitor environment radiation levels and adjust for mandatory evacuation based on these levels. Control access.	Seeking shelter would be an alt native if evacuation were not immediately possible.

(a) These actions are recommended for planning purposes. Protective action decisions at the time of the incident must take existing conditions into consideration.

(b) At the time of the incident, officials may implement low-impact protective actions in keeping with the principle of maintaining radiation exposures as low as reasonably achievable.

Source: *The information in this Table is taken from EPP-520/1-75-001, "Manual Guides and Protective Actions for Nuclear Incidents," U.S. Environment September 1975 (Revised June 1979).

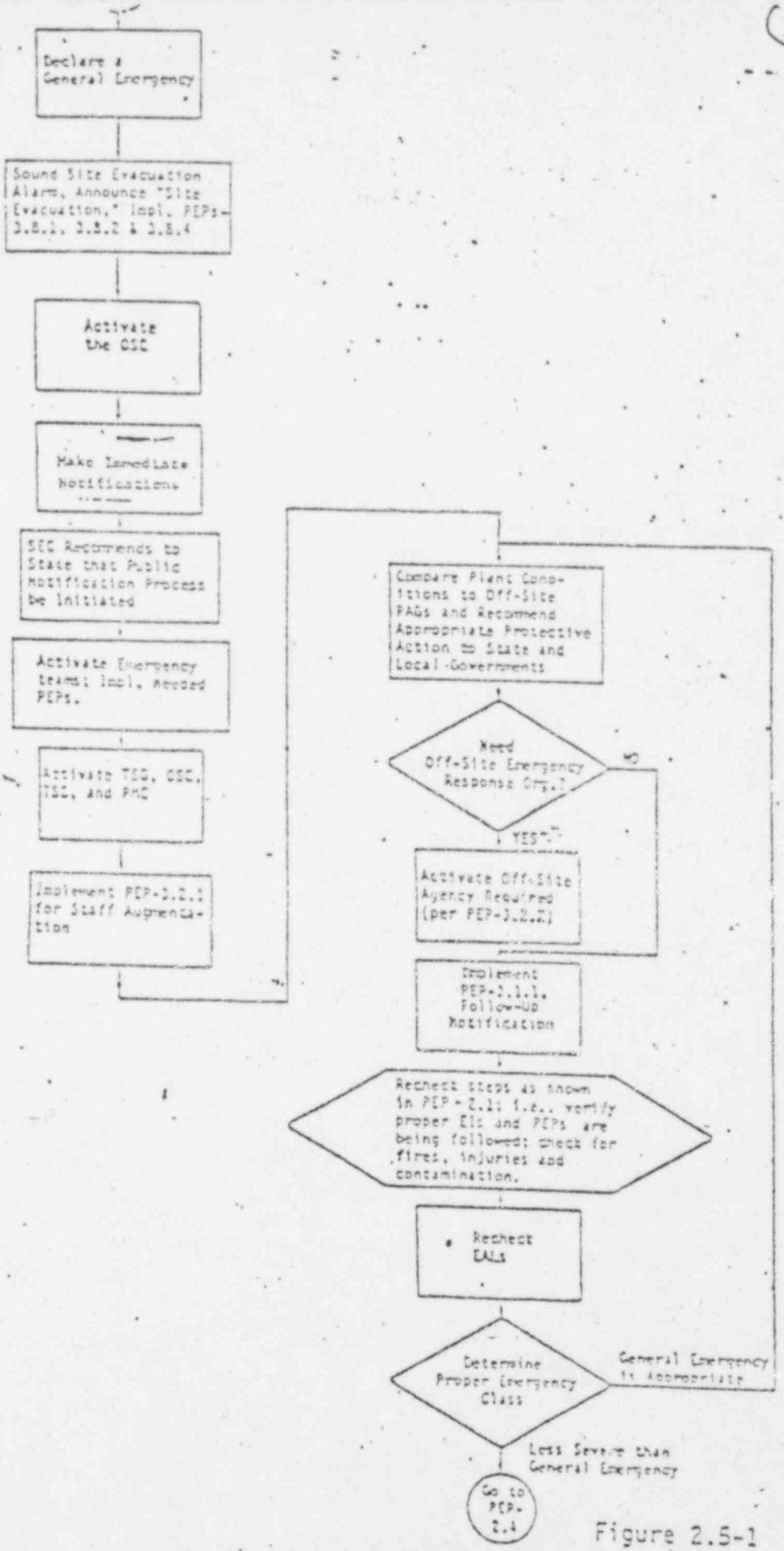


Figure 2.5-1
Logic Flow Diagram for PEP-2.5

CP&L

H. B. ROBINSON

SEG PLANT

TITLE

EMERGENCY PLAN AND PROCEDURES

~~VOLUME 13~~

PEP-201

FOLLOW-UP NOTIFICATIONS AND COMMUNICATIONS

~~PEP-3.7.1~~

REVISION ~~0~~ 0

REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE	REV	APPROVED BY	DATE
0	RBS/DC	3-22-83						
1	RTC/RM	9-12-83						

Recommend By: R T Conrad — Emergency Planning Coordinator — 7-1-2 DATE

Approved By: W S Hartley Jr — Plant General Manager — 7/2/82 DATE

(PEP-201)

~~PEP-3.1.1~~ FOLLOW-UP NOTIFICATIONS AND COMMUNICATIONS

1.0 Responsible Individual and Objectives

Until the Emergency Operations Facility is activated, the Emergency Communicator is responsible to the Site Emergency Coordinator for providing follow-up information regarding the emergency. After the Emergency Operations Facility is activated, the Emergency Response Manager, in coordination with the Emergency Coordinator, is responsible to provide required follow-up information to off-site agencies.

2.0 Scope and Applicability

This procedure shall be implemented and terminated by the Site Emergency Coordinator in accordance with the Emergency Control Procedure in effect (i.e., PEP-2.2, 2.3, 2.4 or 2.5). This procedure should not be implemented until all immediate notifications have been verified except as directed by the Site Emergency Coordinator. (Emergency Response Manager after the Emergency Operations Facility is activated.)

3.0 Actions

3.1 Complete EXHIBIT 3.1.1-1, "Follow-up Communications Information Sheet." If an item is unknown or not applicable, indicate such on the EXHIBIT.

3.2 Have the Site Emergency Coordinator review and approve EXHIBIT 3.1.1-1 prior to transmittal.

3.3 Make follow-up notifications

3.3.1 Utilize EXHIBIT 3.1.1-2, "Follow-up Communications Checklist," to determine which organizations and individuals must be contacted for the level of emergency that is currently applicable.

3.3.2 Request from the Site Emergency Coordinator (the Emergency Response Manager after the Emergency Operations Facility is activated) which of the optional contacts should be made.

(PEP-201)

EXHIBIT 3.1.1-1

Follow-up Communications Information Sheet

WARNING MESSAGE: NUCLEAR FACILITY TO STATE/LOCAL GOVERNMENT

Instructions:

A. For Sender:

1. Complete Part I for the Initial Warning Message.

2. Complete Part I & II for followup messages.

B. For Receiver:

1. Record the date, time and your name in the area below

2. Authenticate this message by verifying the code word or by calling back to the facility. (See Part I)

Time: _____ Date: _____

Message Received By: _____

P A R T I

1. This is: E. B. Robinson Plant
(Insert name of facility)

2. My name is: _____

3. This message (number____):

_____(a) Reports a real emergency.

_____(b) Is an exercise message.

4. My telephone number/extension is: _____

5. Message authentication: _____
(State & County Only) (Receiver verify code word or call back to the facility)

6. The class of the emergency is: _____(a) Notification of Unusual Event

_____(b) Alert

_____(c) Site Emergency

_____(d) General Emergency

~~PEP 3.1.1-1~~
PEP-201

EXHIBIT 3.1.1-1 (Continued)

7. This classification of emergency was declared at: _____(a.m./p.m.) on _____(date)

8. The initiating event causing the emergency classification is: _____

_____

_____

9. The emergency condition:

_____(a) Does not involve the release of radioactive materials from the plant.

_____(b) Involves the potential for a release, but no release is occurring.

_____(c) Involves a release of radioactive material.

10. We recommend the following protective action:

_____(a) No protective action is recommended at this time.

_____(b) People living in zones_____remain indoors with the doors and windows closed.

_____(c) People in zones_____evacuate their homes and businesses.

_____(d) Pregnant women and children in zones_____remain indoors with the doors and windows closed.

_____(e) Pregnant women and children in zones_____evacuate to the nearest shelter/reception center.

_____(f) Other recommendations: _____

_____

11. There will be:

_____(a) A followup message

_____(b) No further communications.

12. I repeat, this message:

_____(a) Reports an actual emergency.

_____(b) Is an exercise message.

13. RELAY THIS INFORMATION TO THE PERSONS INDICATED ON YOUR ALERT PROCEDURE FOR AN INCIDENT AT A NUCLEAR FACILITY.

E N D O F I N I T I A L W A R N I N G M E S S A G E

~~2.6.21~~ (PEP-201)

EXHIBIT 3.1.1-1 (Continued)

P A R T I I

1. The type of actual or projected release is:

_____(a) Airborne

_____(b) Waterborne

_____(c) Surface spill

_____(d) Other

2. The source and description of the release is: _____

_____

3. _____(a) Release began/will begin at _____a.m./p.m.; time since reactor trip is _____hours.

_____(b) The estimated duration of the release is _____ hours.

4. Dose projection base data:

Radiological release: _____curies, or _____curies/sec.

Windspeed: _____mph

Wind direction: From_____°

Stability class: _____(A,B,C,D,E,F, or G)

Release height: _____Ft.

Dose conversion factor: _____R/hr/Ci/m^3 (whole body)

_____R/hr/Ci/m^3 (Child Thyroid)

Precipitation: _____

Temperature at the site: _____°F

5. Dose projections:

DOSE COMMITMENT

Distance	Whole Body Rem/hour	(Child Thyroid) Rem/hour of inhalation
Site boundary		
2 miles		
5 miles		
10 miles		

~~PEP 3.6.21~~ (PEP-201)

EXHIBIT 3.1.1 (Continued)

PROJECTED INTEGRATED DOSE IN REM

Distance	Whole Body	Child Thyroid
Site boundary		
2 miles		
5 miles		
10 miles		

6. Field measurement of dose rate or contamination (if available): _____

_____

7. Emergency actions underway at the facility include: _____

_____

8. Onsite support needed from offsite organizations: _____

_____

9. Plant status:

(a) Reactor is: not tripped/tripped

(b) Plant is at: _____% power/hot shutdown/cold shutdown/cooling down

(c) Prognosis is: stable/improving/degrading/unknown

10. I repeat, this message:

_____(a) Reports an actual emergency.

_____(b) Is an exercise message.

11. Do you have any questions?

END OF FOLLOW-UP MESSAGE

EXHIBIT 3.1.1-1 (Continued)

NOTE: Record the name, title, date, time, and warning point notified. (Senders)
Record the name, title, date, time, and persons notified per alert procedure. (Receivers)

1. _____ (name) _____ (title)

_____ (date) _____ (time) _____ (warning point)

2. _____ (name) _____ (title)

_____ (date) _____ (time) _____ (warning point)

3. _____ (name) _____ (title)

_____ (date) _____ (time) _____ (warning point)

4. _____ (name) _____ (title)

_____ (date) _____ (time) _____ (warning point)

5. _____ (name) _____ (title)

_____ (date) _____ (time) _____ (warning point)

6. _____ (name) _____ (title)

_____ (date) _____ (time) _____ (warning point)

7. _____ (name) _____ (title)

_____ (date) _____ (time) _____ (warning point)

3.1.1-2

EXHIBIT ~~3.1.1~~-2

FOLLOW-UP COMMUNICATIONS CHECKLIST

FOR: U.E.	FOR: A1.	FOR: S E.	FOR: G.E.	ORGANIZATION/INDIVIDUAL TO BE CONTACTED	TIME CONTACTED	TIME CONTACTED
#	X	X	X	Nuclear Regulatory Commission		
#	X	X	X	State Bureau of Radiological Health		
#	#	#	#	State Emergency Preparedness Div.		
#	X	X	X	Corporate Headquarters		
#	#	#	#	Darlington County		
#	#	#	#	Chesterfield County		
#	#	#	#	Lee County		
#	#	#	#	Rescue Assistance		
#	#	#	#	Medical Assistance		
#	#	#	#	Fire Fighting Assistance		
#	X	X	X	Westinghouse		
#	X	X	X	Ebasco		
#	X	X	X	INPO		

KEY

X - Contact must be made

- Contact is optional: Site Emergency Coordinator will circle contacts to be made for the specific emergency.

3.1.1-3

EXHIBIT ~~3.1.1~~ 3

FOLLOW-UP COMMUNICATIONS QUESTION LOG

CONTACT (Name/Organization)	QUESTION	ANSWER (Use continuation page if necessary)	ANSWER TRANSMITTED (Time/Date)

CP&L

H. B. ROBINSON

SEG PLANT

TITLE

EMERGENCY PLAN AND PROCEDURES

~~VOLUME 13~~

H. B. ROBINSON UNIT NO. 2 PERSONNEL

~~PEP-APPENDIX A.1~~

PEP-2004

REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE
~~4~~	RTC/mo	7-28-83						
0	RBS/DC	8-22-83						
1	RTC/RM	9-12-83						

Recommend By: Don Gainey for — 7/25/83 DATE

Emergency Planning Coordinator

Approved By: R A Anderson — 7/25/83 DATE

for Plant General Manager

APPENDIX A.1 H. B. ROBINSON UNIT TWO CP&L PERSONNEL

HBR Personnel

Technical Support Center

Site Emergency Coordinator	Home Phone	Office	TSC/EOF	Blu
Primary - C. W. Crawford	332-4268	203	252	48
Alternate - J. M. Curley	332-1517	367	252	48
Plant Operations Director				
Primary - Fred Lowery	332-0050	300	255	45
Alternate - J. F. Benjamin	383-4385	298	426	45
Radiological Control Director				
Primary - D. S. Crocker	332-6068	205	293	15
Alternate - J. A. Eaddy	332-8054	232	370	15
Emergency Repair Director				
Primary - R. H. Chambers	332-0723	289	405	44
Alternate - M. F. Page	383-5272	366	405	44
Logistic Support Director				
Primary - H. S. Zimmerman	332-0554	206	254	18
Alternate - B. M. Watkins	332-7278	211	211	18
Representative To FEOC				
Primary - R. T. Connolly	332-5227	204	ARD	
Alternate - W. J. Flanagan	332-1486	360	ARD	
Personnel Protection and Decon Leader				
Primary - David Boan	332-0283	419	412	1
Alternate - Mike Crabtree	332-5295	419	412	1

	Home	Office	TSC/EOF	Blue
Environmental Monitoring Leader				
Primary - Mike Layton	383-6570	433	370	13
Alternate - Frank Watkins	383-5421	251	370	13
Dose Projection Coordinator				
Primary - W. L. MacCready	383-4276	247	231	
Alternate - B. F. Forgy	383-6922	229	276	
Plant Monitoring Leader				
Primary - W. T. Ritchie	332-7312	417	344	13
Alternate - Danny Weaver	383-5585	419	344	13
Damage Control Leader				
Primary - P. M. Odom	332-0213	313	426	16
Alternate - B. Murphy	383-6429	310	426	16
Operational Support Center Leader				
Primary - L. P. Sansbury	332-2001	382	391	
Alternate - Cecil Oates	332-6398	387	391	
Accident Assessment Leader				
Primary - Rusty Shoemaker	383-5945	309	426	16
Alternate - Charlie Bethea	332-2738	306	426	16
Emergency Communicator				
Primary - Andy McCauley	332-6794	409	256	48
Alternate - Frank Gilman	395-0577	363	256	48
Assistant Emergency Communicator				
Primary - Bill Blaisdell	332-4586	340	256/431	48/36
Alternate - Steve Allen	383-3057	341	256/431	48/36
Evacuation Assembly Leader				
Primary - L. K. Dutton	332-7139	217	217	
Alternate - Penny Ballard	332-3857	217	217	
Emergency Security Leader				
Primary - L. N. Williams	665-4810	345	345	16
Alternate - Randy Gregg	332-0946	123	345	16

	Mobile	Office	TSC/EOF	Blue
Site Communications Coordinator				
Primary - R. S. McGirt	332-4239	350	308	
Alternate - D. M. Edwards	(704) 694-6289	351	308	
Support Services Coordinator				
Primary - R. W. Holliday	332-0908	208	409	
Alternate - M. B. Weatherford	393-7638	220	409	
Stenographer To SEC				
Primary - Tonda McLeod	1-335-8594	201	252	47
Alternate - Julie Tedder	667-0406	201	252	47
TSC - EOF - CEOC Talker				
Primary - Ken Dripps (TSC)	1-498-6978	445	439	28/24
Alternate - Ray Howell (TSC)	332-5268	337	204	28/24
*Primary - Gregg Ross (EOF)	383-5928	334	292	36
*Alternate - French Bishop (EOF)	1-428-6528	339	431	36
*Note: EOF-Phone Talker & Plotter				
TSC - Status Board Plotter/Comm.				
Primary - Vic Smith (Phone)	332-9553	174	292	28/24
Alternate - Jim Pierce (Phone)		415	431	36
Primary - John Russ (Plotter)	332-0203	325	439	28/24
Alternate - Joe Scarborough (Plotter)	1-437-2670	447	439	28/24
Emergency Notifier (TSC & EOF)				
Primary - Arlene Stokes	332-5781	227	321	12
Gaye Moore	332-1633	346	321	12
Alternate - Dianne Hardee	332-2819	388	307	11
Jewell Campbell	332-1246	218	307	11
Nuclear Regulatory Commission				
Steve Weise	383-6472	301/302	271/274	46

	Home	Office	TSC/EOF	Blue
Fire Protection Specialist				
Primary - Willard Brown	332-2327	429	341	16
Alternate - Ed Roper	383-4480	428	341	16

EMERGENCY OPERATIONS FACILITY (EOF)

	Home	Office	EOF	Blue
EOF Manager				
Primary - B. J. Furr	919-467-4687	919-836-6253	435	36
Alternate - Joe Harness	919-467-3260	919-836-6187	435	36
Assistant to ERM - EOF				
Primary - J. R. Bohannon	919-787-7493	919-362-3332	435	29
Alternate - Joe Holder	919-395-2980	919-457-9521	435	29
Tech. Analysis Manager - EOF				
Primary - Sam McManus	919-772-5870	919-891-7202	427	30
Alternate - A. R. Wallace	919-425-7511	383-4524	431	30
Admin. & Logis. Manager - EOF				
Primary - Storey Hamilton	919-772-5235	919-891-6013	432	28
Alternate - J. E. Rice	919-469-1422	919-892-6988	432	38
Radiation Control Manager - EOF				
Primary - Billy Webster	919-467-7119	919-817-2219	436	27
Alternate - George Warriner	919-362-6631	919-817-2235	436	27
Alternate - J. A. Padgett	919-832-1478	919-362-3248	436	27

	Home Phone	Office	EOF	Blue
Data Takers (Loggers) - EOF				
Primary - Sharon Tyner	332-7724	222/218		
Teresa Hodges	332-7231	241		
Alternates - Beverly Shepard	665-4194	434		
Eileen Welch	332-4327	227		
Dose Assessment Coordinator - EOF				
Primary - Garry L. Stewart	919-851-2716	8172-244	236	14
Alternate - Russ Andrews	919-469-0211	243	236	14
Environmental Monitor Leader - EOF				
Primary - Ron Shearin	919-467-8546	233	237/209	10
Alternate - Don Edwards	919-362-0621	220	237/209	10
Environmental Team Log Keeper - EOF				
Primary - Lynn Harwell	919-929-5549	390	236	10
Alternate - K. Hannah	919-876-4378	221	236	10
Site Public Info. Coordinator				
Primary - Annette Taylor	332-0002	239	238/239	
Alternate - Mary Jordan	332-4949	238	238/239	
Corporate EOF Manager				
Primary - Lynn Eury	919-787-6295	6331		
Alternate - Ed Utley	919-787-8562	6464		
Corporate Spokesman				
Primary - Tom Elleman	919-782-6685	7617		
Alternate - A. B. Cutter	919-847-0377	770-6231		
CEOC				
Phone Talker	8-770-7736			

Environmental and Radiation Control
Supervisors

	Home	Office
J. A. Eaddy (E&C)	332-8054	232
Ron Denney (RC)		223

Foreman

	Home	Office
D. F. Boan (RC)	332-0283	419
T. Ritchie (RC)	332-7312	417
F. Watkins (E&C)	383-5421	251
D. Crabtree (RC)	332-5295	418
D. Weaver (RC)	383-5585	419

E&RC Specialists/Engineers

B. F. Forgy (RC)	383-6922	229
R. R. Hitch (E&C)	393-2483	215
M. L. Layton (E&C)	383-6570	433
J. E. Petitgout (RC ALARA)	335-6608	224
Pat Harding (RC)	332-6420	230
Andy Newman (RC)	332-4214	225

Operations

Shift Technical Advisors (STA)

P. P. Binuya (Pat)	665-2772	478
J. L. Buckingham	383-5474	308
J. B. Gee (Jim)	383-6537	307
J. M. Moon, Jr. (Chip)	669-4307	107
J. H. Cox (Jim)	383-5581	106
S. H. Sewell (Steve)	383-4386	105
Dale Nelson	332-6097	104
C. T. Baucom	332-0883	335
R. J. Englert	669-5355	331

Shift Foreman

E. A. Lee		278/279
F. S. Pearce	335-7744	278/279
D. R. Nelson		278/279
D. V. Seagle	332-5996	278/279
R. Moore	383-5045	278/279
J. Allen	662-0277	278/279
D. McCaskill	428-6266	278/279

Operations Engineer

E. M. Shoemaker (Rusty)	383-5949	309

	Home	Office	TSC/EOF
Regulatory Compliance			
F. Gilman	395-0577	363	
C. L. Wright	332-1748	242	
H. T. Cox	332-8359	243	
Senior Specialist - Emergency Planning			
D. Gainey	332-2180	412	412
Instruments & Controls Foremen (I&C)			
R. C. Abbott	393-1556	384	
L. P. Sansbury	332-2001	382	
Marion Goodson	332-1815	383	
Mechanical Foremen			
D. R. Clark	335-5510	390	
C. P. Oates	332-6398	387	
C. R. Scott	332-7830	389	
James McInnis	332-2930	391	
Qualified Operators for Emergency Switchboard			
Penny Ballard	332-3857	212	
Sally Griggs	332-0495	108	
Tonda McLeod	335-8594	228	
Gaye Moore	332-1633	346	
Arlene Stokes	332-5781	227	
Fire Protection			
W. E. Brown	332-2327	429	
E. Y. Roper	383-4480	428	
Director - Corporate QA/QC			
H. J. Young	383-6405	291	
Operations & Maintenance Supervisor Unit 1			
W. T. Traylor	332-2886	326	
Director - Training			
C. A. Bethea	332-2738	306	

	Home	Office	TSC/EOF
TSC/EOF Set-up Team			
Doc Gainey	332-2180	412	
Gail Bowen	332-3093	430	
Tom Hay	383-4495	246	
William King	332-5385	476	
Beverly Shepard	665-4194	434	

CP&L

H. B. ROBINSON

SEG PLANT

TITLE

EMERGENCY PLAN AND PROCEDURES

~~VOLUME 13~~

PEP-206

ACTIVATION OF THE TECHNICAL SUPPORT CENTER (TSC)/

EMERGENCY OPERATIONS FACILITY (EOF)

~~PEP-3.2.3~~

REVISION ~~1~~ 0

REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE	REV.	APPROVED BY	DATE
~~1~~	RTC/ms	11-22-82						
0	RBS/DR							
1	RTC/ms	10-06-83						

Recommend By: T R Tuned
Emergency Planning Coordinator — 7-1-2 DATE

Approved By: W S Stanley Jr
Plant General Manager — 7/2/82 DATE

~~PEP-3.2.3~~ ACTIVATION OF THE TECHNICAL SUPPORT CENTER (TSC)/
EMERGENCY OPERATIONS FACILITY (EOF)

1.0 Responsible Individuals and Objectives

The objective of this procedure is to provide guidelines to be used in the activation of the Technical Support Center/Emergency Operations Facility. It is the responsibility of the Site Emergency Coordinator that the appropriate personnel are utilized in setting up the Technical Support Center/Emergency Operations Facility.

2.0 Scope and Applicability

This procedure provides guidelines for the activation of the Technical Support Center/Emergency Operations Facility.

3.0 Actions

3.1 When informed of the need to activate either the Technical Support Center or the Emergency Operations Facility, the appropriate personnnel listed in EXHIBIT 3.2.1-1 are to report to their designated facility.

3.2 Follow the floor plans listed in EXHIBIT 3.2.3-1 for the Technical Support Center and EXHIBIT 3.2.3-2 for the Emergency Operations Facility.

3.2.1 Arrange tables as per floor plan.

3.2.2 Place identification cards and wooden blocks on the tables.

3.2.3 Syncronize clock with Control Room. TSC will contact Control Room for correct times and the EOF is to contact the TSC.

3.2.4 Turn on radiation monitoring devices.

3.3 EXHIBIT 3.2.3-3 and EXHIBIT 3.2.3-4 show the location and phone numbers of the telephones for each of the emergency response personnel in the Technical Support Center and Emergency Operations Facility.

NOTE: TSC telephones are stored either in the phone cabinet at the Emergency Switchboard or on tables near their respective jacks. EOF telephones are stored in both of the Emergency Supply Closets.

3.3.1 Place each telephone in the appropriate location.

NOTE: Certain locations have a blue phone and a beige phone. The blue phone is a backup system to the beige phone.

3.3.2 Include at each location an emergency telephone directory. Directories are stored with the telephones.

(PEP-206)

3.3.3 Plug the phones into the proper jacks; these jacks are numbered for simple installation.

NOTE: Phone jacks for the TSC Directors are located on a pre-numbered block which is located in the phone cabinet. A telephone cable in the center of the TSC ceiling can be dropped and connected to the block. All other phone jacks for the TSC are located in the walls and are numbered in accordance with the proper phone numbers. Phone jacks in the EOF are also located on a pre-numbered block with the phone cable located in the center of the EOF ceiling. The phone cable can be dropped and connected to the block. The EOF phone block is located in the EOF supplies closet.

3.3.4 Test the operability of all phones; the blue phones are tied into an emergency switchboard located in the TSC which will be activated by a qualified operator (listed in App. A.1).

3.4 Arrange status boards as shown in EXHIBIT 3.2.3-5 and EXHIBIT 3.2.3-6 for the TSC and EOF, respectively.

3.4.1 Place visual aides on the status boards via hooks as shown in the respective EXHIBIT.

NOTE: TSC visual aides located near the TSC file cabinet. EOF visual aides located in Emergency Supply closet.

3.4.2 If less than 3 copies of each visual aide are present, contact drafting and ask that additional copies be made for each particular visual aide.

3.5 Review EXHIBIT 3.2.3-7 for any additional equipment that may be needed during an emergency.

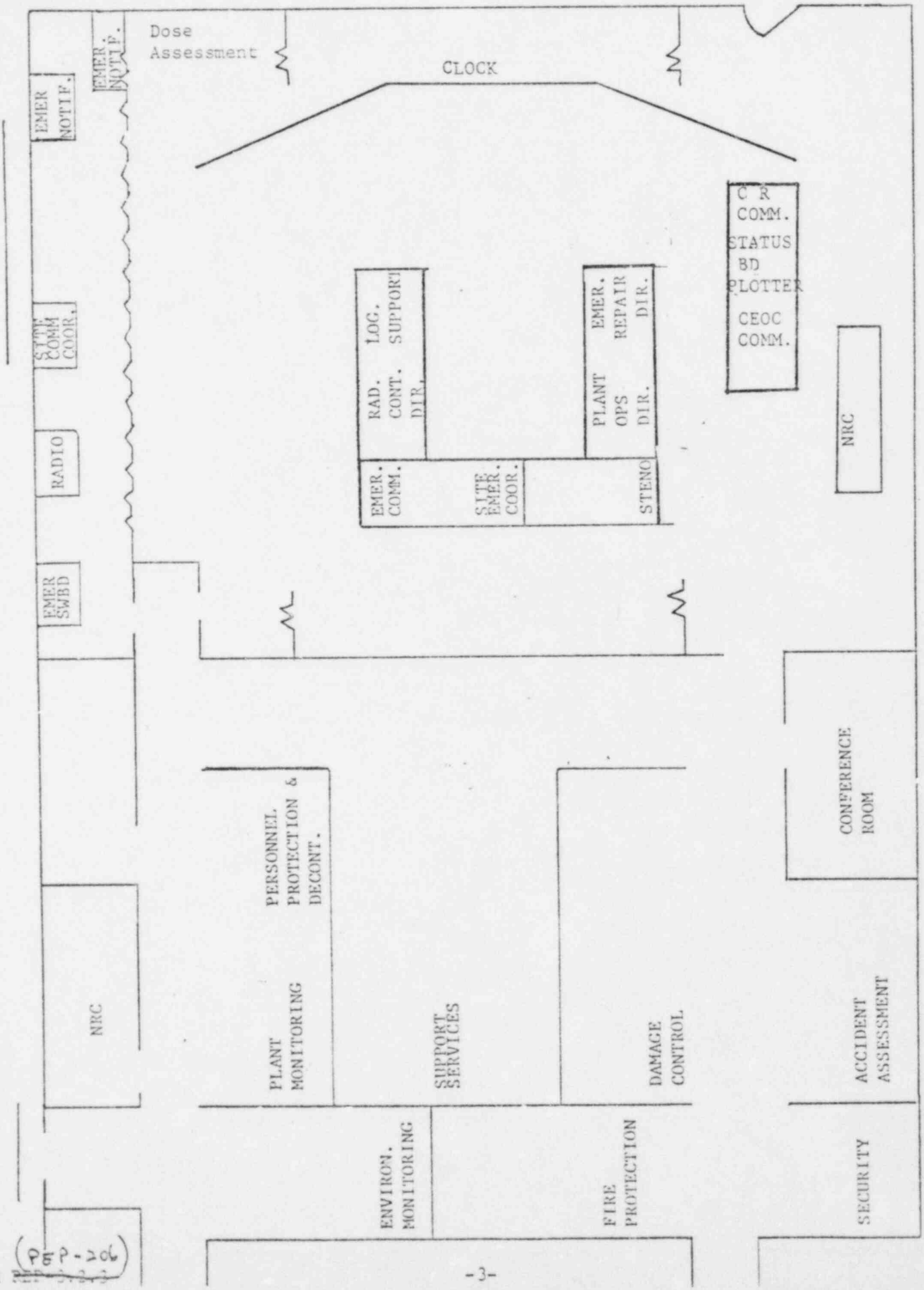
3.6 Contact the Emergency Communicator when the TSC or EOF is operational.

NOTE: In the event of a fast breaking emergency situation, emergency personnel may be reporting to the Emergency Response Facility prior to the facility being set up. In such a situation, it will be the responsibility of each director and team leader to set up their equipment.

(PEP-206)

EXHIBIT ~~9.2.3~~-1

TSC Floor Plan



(P&P-26)

(PEP-206)

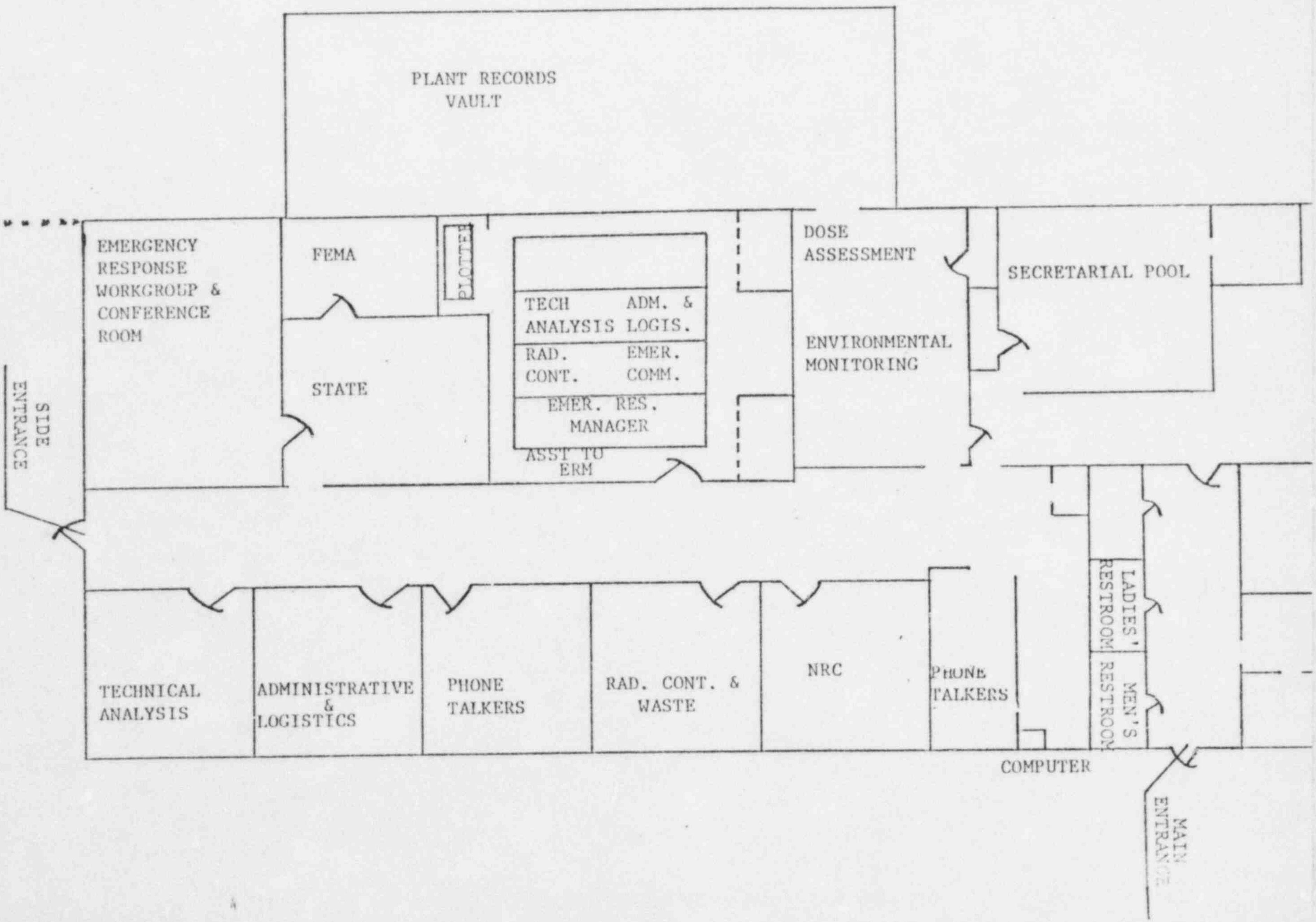


EXHIBIT 3.2.3-2

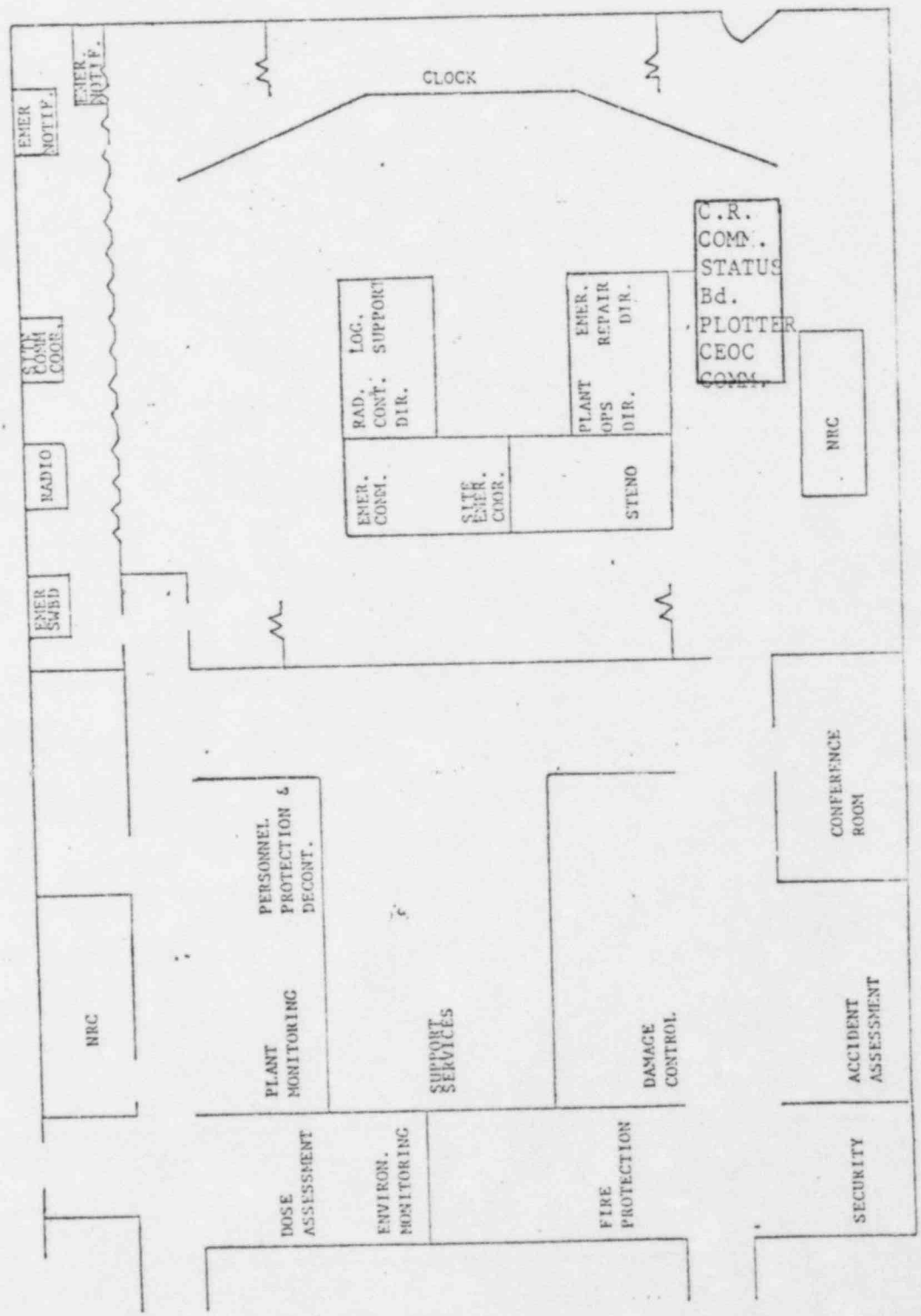
EOF Floor Plan

Rev.1

EXHIBIT ~~5.2.3~~ 3

TSC Phone System

Section	Beige Phone	Blue Phone
Acc. Assess.	426	16
Con. Room Comm.	254	24
Damage Cont.	426	16
Dose Assess.	231	13
Emerg. Comm.	256	48
Emerg. Noti.	307	11
Emerg. Noti.	321	12
Emerg. Repair	405	44
Environ. Monitoring	370	13
Fire Protect.	341	16
Logistic Sup.	254	18
NRC		46
Per. Prot. & Decon.	412	13
Plant Monitor.	344	13
P nt OPS Dir.	255	45
. Cont. Dir.	293	15
Security	345	16
Site Comm. Coordinator	308	
Site Emerg. Coordinator	252	47
Status Bd. Plotter	439	28
Steno.		47
Support Serv.	409	16
CEOC Comm.	204	28/24

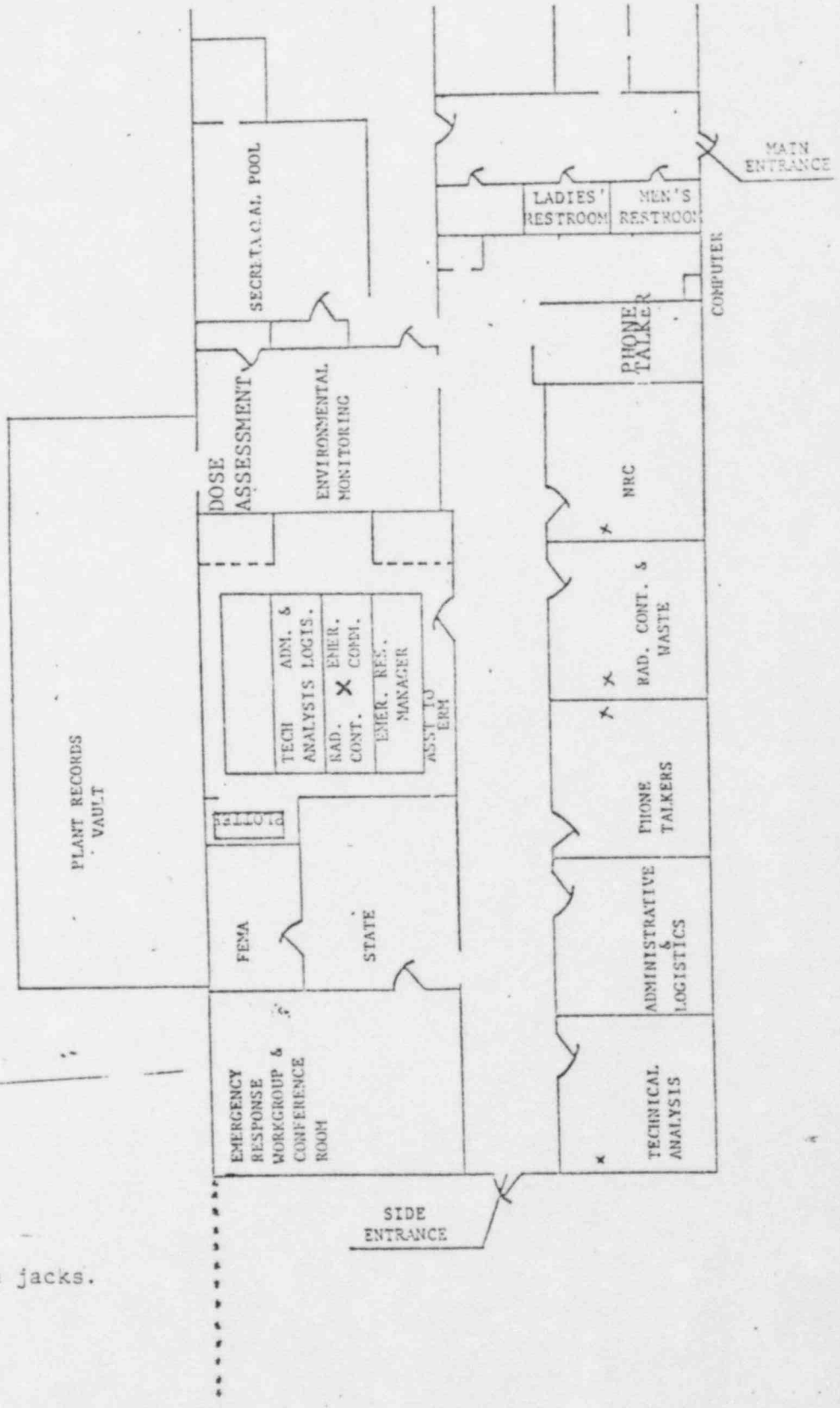


(PEP-206)

EXHIBIT ~~3.2.3~~ 4

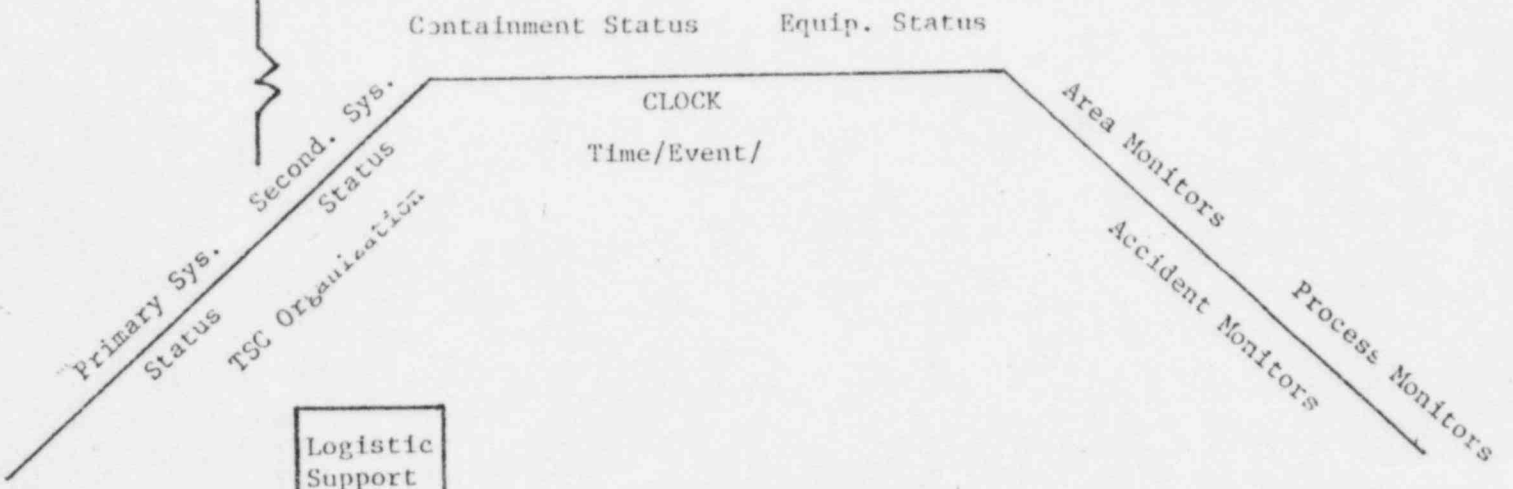
EOF TELEPHONE SYSTEM

Section	Beige Phone	Blue Phone
Admin. & Logistics Mang.	432	38
Admin. & Logistics Work Group	206	31
Ass. to Emerg. Resp. Mang.	435	29
Phone Talkers	236	14
Emerg. Comm.	431	36
Emerg. Resp. Mang.	435	29
Env. Monitoring	237,209	10
FEMA	435	
NRC	211	35
Phone Talkers	204	33
Rad. Cont. Mang.	436	27
Rad. Cont. Work Group	205	34
State	202,228	
tus Bd. Plotter	438	26
Tech. Anal. Mang.	427	30
Tech. Anal. Work Group	203	37
Dose Assessment	237,209	10



NOTE: An "x" marks the approximate location in the ceiling for the blue phone telephone jacks.

(PEP-206)



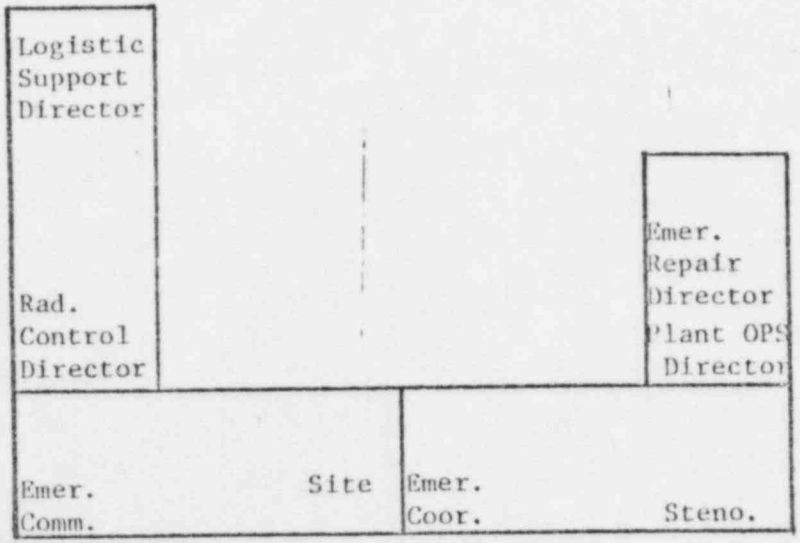


EXHIBIT 3.2.3-5 TSC VISUAL DISPLAYS

EXHIBIT ~~3.2.3~~-6

EOF VISUAL DISPLAYS

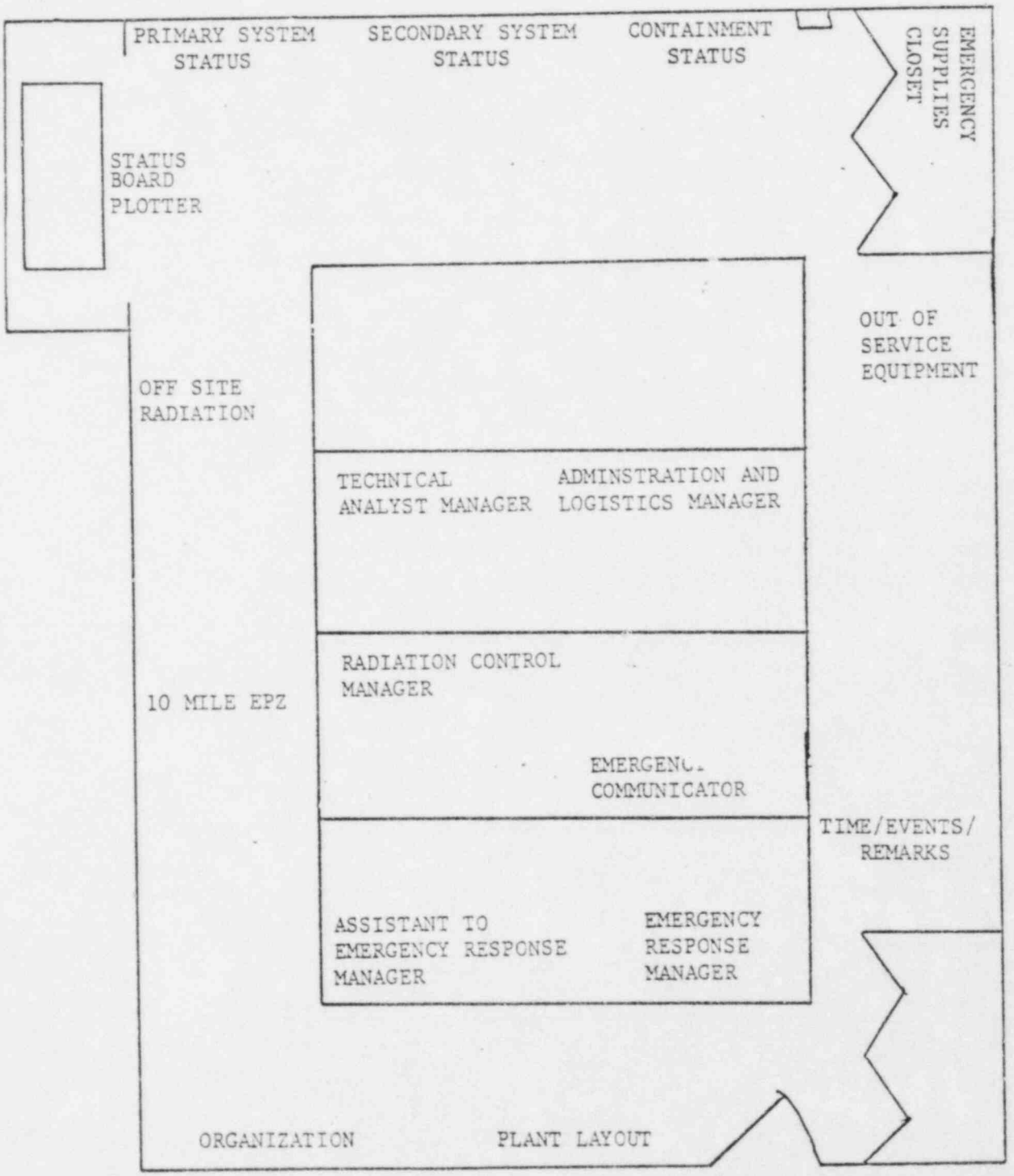


EXHIBIT ~~3.2.3~~ 7

TSC/EOF EMERGENCY SUPPLY LIST

	Supplies	TSC Location	EOF Location
1.	Telecopier	Receptionist's Desk	Obtain from Eng. Building
2.	Xerox Machine	Xerox Room	Xerox Room
3.	Radiological Instruments:		
	a. Survey Meter MR/HR to R/HR	TSC Emergency Kit	Vault
	b. Dosimeters	TSC Emergency Kit	Vault
	c. Positioned TLDs	TSC Emergency Kit	Vault
4.	Identification Signs for Desks	Phone Cabinet	Emerg. Supplies Chest
5.	Clock	On Wall	Emerg. Supplies Closet
6.	Emerg. Resources Manual (INPO)	Emerg. Planning Bookcase	Emerg. Supplies Closet
7.	Maps		
	a. 10 mile EPZ	TSC File Cabinet	Emerg. Supplies Closet
	b. 50 mile EPZ	TSC File Cabinet	Emerg. Supplies Closet
	c. Topo Map of Plant Environs	TSC File Cabinet	Emerg. Supplies Closet
	d. Plant Site Layout	Emerg. Planning File	Emerg. Supplies Closet
8.	Mechanical Systems Drawings	Training Library	Vault
9.	Electrical Systems Drawings	Training Library	Vault
10.	FSAR	Training Library	Vault
11.	Systems Descriptions	Training Library	Vault
12.	Technical Specifications	Training Library	Vault
13.	Emergency Plans		
	a. Corporate Plan and Procedures	Emerg. Planning Bookcase	Emerg. Supplies Closet
	b. Plant Plan and Procedures	Emerg. Planning Bookcase	Emerg. Supplies Closet
	c. State and Local Plans	Emerg. Planning Bookcase	Document Control Library
	d. Westinghouse and Ebasco Plans	Plant Emerg. Plan App. B	Plant Emerg. Plan App. B
14.	Emergency Notification Phone Lists		
	a. Corporate Emergency Response	Emerg. Planning File	Emerg. Supplies Closet
	b. HBR Plant Emergency Response	HBR PEP-Appendix 1	HBR PEP-Appendix 1
	c. Non-CP&L Emergency Response	HBR PEP-Appendix 2 - Appendix 4	HBR PEP-Appendix 2 - Appendix 4
	d. CP&L Corporate Phone Directory	Emerg. Planning Bookcase	Emerg. Supplies Closet
	e. Hartsville Telephone Directory	Emerg. Planning File	Document Control Library
	f. Raleigh Telephone Directory	Emerg. Planning File	Document Control Library

EXHIBIT ~~3.2.3~~-7

(Continued)

	Supplies	TSC Location	EOF Location
15.	System Parameter Data and Status Displays		
	a. Primary System Status	TSC File Cabinet	Emerg. Supplies Closet
	b. Secondary System Status	TSC File Cabinet	Emerg. Supplies Closet
	c. Containment System Status	TSC File Cabinet	Emerg. Supplies Closet
	d. Equip. Out of Service	TSC File Cabinet	Emerg. Supplies Closet
	e. Radiation Monitoring	TSC File Cabinet	Emerg. Supplies Closet
	f. Time/Event/Remarks	TSC File Cabinet	Emerg. Supplies Closet
	g. Off-site Radiological Status	TSC File Cabinet	Emerg. Supplies Closet
16.	CP&L Emergency Organization Chart	TSC File Cabinet	Emerg. Supplies Closet
17.	Emergency Procedure Forms	Emerg. Planning File	Emerg. Supplies Closet
18.	Environmental Monitoring Radios	Telephone Cabinet	To Be Brought From HE&EC
19.	Office Supplies	Emerg. Planning Bookcase	Office Supplies Closet
20.	Site Emerg. Coord./Emerg. Resp. Mang. Notebook	Emerg. Planning Bookcase	Emerg. Supplies Closet