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Operating Company, Inc.
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SOUTHERN COMPANY
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FNP-99-013-NRC-DC
March 7, 2000

DIRECTOR, OFFICE OF NUCLEAR REACTOR REGULATION
ATT: DOCUMENT CONTROL DESK
C/O JIM MCKNIGHT
US NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555

DEAR SIR,

ATTACHED YOU WILL FIND THE NEW REVISION TO THE PROCEDURES LISTED BELOW.

IF YOU HAVE QUESTIONS PLEASE CALL ME AT 334-899-5156 EXTENSION 3439.

FNP-0-EIP-9.1 (3 COPIES)
FNP-0-EIP-9.3 (1 COPY)
FNP-0-EIP-9.5 (1 COPY)

SINCERELY,

Donnie Hardy

DONNIE HARDY

DOCUMENT CONTROL SUPERVISOR

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FARLEY NUCLEAR PLANT

EMERGENCY PLAN IMPLEMENTING PROCEDURE 9.1

FNP-0-EIP-9.1

SAFETY RELATED

AUTOMATED DOSE ASSESSMENT METHOD

PROCEDURE USAGE REQUIREMENTS per FNP-0-AP-6	SECTIONS
Continuous Use	
Reference Use	ALL
Information Use	

Approved:

L. M. Stinson

Nuclear Plant General Manager

Date Issued 2-25-00

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AUTOMATED DOSE ASSESSMENT METHOD

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AUTOMATED DOSE ASSESSMENT METHOD

1.0 Purpose

To provide a method for rapid projection of estimated offsite radiation exposures as a result of a release of radioactive material using Emergency Dose Calculation Method (EDCM) methodology. This procedure provides the guidance for use of the Non-Regulatory Emergency Response Data System (ERDS) Including the Automatic Rapid Dose Assessment (ARDA) system

2.0 References

See TABLE 1

3.0 Entry Conditions

3.1 Entry for using the Non Regulatory ERDS Computer system.

This procedure is entered when it is desired to operate the Non Regulatory ERDS system to provide plant data in the TSC, EOF or the EOC in Birmingham.

3.2 Entry for using the ARDA portion of Non-Regulatory ERDS.

This procedure is entered when it is desired to use the ARDA portion of Non-Regulatory ERDS as a separate method of performing off site dose projection

3.2.1 When dose assessment has been performed using the ARDA system, return to FNP-0-EIP-9.0, step 4.2.8 to evaluate the dose levels against the emergency classification criteria.

3.2.2 If ARDA has not automatically started, it can be manually started at any time for dose assessment per step 9.0 of this procedure.

3.2.3 Refer to step 7.0 of this procedure for a more detailed explanation of what occurs during an ARDA auto start. The auto start setpoints are listed below.

3.2.4 ARDA will automatically start when any of the following monitors go into alarm for two consecutive system polls one minute apart on either unit and use the latest 15 minute average monitor value to perform the calculations:

Monitor	Setpoint
Plant Vent Stack R29 (SPING)	
Noble Gas	4.44e-4 µc/ml
Iodine	1.20e-6 µc/ml
Particulate	4.00e 5 µc/ml
Steam Jet air Ejector R15C	27 mr/hr
TDAFW Exhaust R60D	38 mr/hr
Steam Generator A R60A	38 mr/hr
Steam Generator B R60B	38 mr/hr
Steam Generator C R60C	38 mr/hr

3.2.5 ARDA will also automatically start when any of the following monitors go into alarm for two consecutive system polls one minute apart on either unit. The ARDA system will use the plant Vent stack SPING latest 15 minute average monitor value to perform the calculations when these monitors activate the system:

Monitor	Setpoint	
Plant Vent stack Monitors		
Gas monitor R 14	13000 (U1)	11571 (U2) CPM
Gas monitor R 21	1800 (U1)	4280 (U2) CPM
Particulate monitor R 22	156 (U1)	143 (U2) CPM

4.0 General Non-Regulatory ERDS Information

4.1 Non-Regulatory ERDS terminals are located in the Technical Support Center (TSC), Emergency Operations Facility (EOF) and the Birmingham Emergency Operations Center (EOC).

4.2 Operation of the Regulatory ERDS is provided in FNP-0-EIP-8.3 (Communication Equipment Operating Procedure) at step 10.0.

4.3 The information that the Non-Regulatory ERDS terminals receives comes from the same plant computer points that send data to the Regulatory ERDS system. There is additional information on the Non-Regulatory ERDS terminals that is not located on the Regulatory ERDS database.

4.4 Operation of the Non-Regulatory ERDS system will not effect the Regulatory ERDS operation.

4.5 Starting data transmission to the NRC on the Regulatory ERDS will start the automatic 15 minute print function on the Non-Regulatory ERDS.

4.6 Figures 1 and 2 provide a graphical representation of the menus associated with the Non-Regulatory ERDS.

4.7 Figures 3 through 7 provide a representation of the Non-Regulatory ERDS output displays.

4.8 Operation of the menus associated with the Non-Regulatory ERDS is described in step 6.

4.9 If the Non-Regulatory ERDS fails to operate properly it can be rebooted by turning the computer off then back on again. The reboot process may take up to five minutes or more. Rebooting a terminal in one location will have no effect on the other terminals. If the system is still not operating properly contact computer services.

4.10 The normal method to control the ERDS terminals is through the use of a trackball or mouse by moving the cursor over the desired menu item, as shown in figures 1 and 2, and pushing the left button.

4.11 The keyboard can also be used to control the ERDS. To access the menu hold down the Alternate key and press the key for the menu item you desire that is underlined as shown in figure 1 or 2. Once in the menu press the underline key for the item that you want or use the cursor keys to move from one part of the menu to another and press enter.

4.12 The ERDS has two monitors that will show the same information, a large screen remote monitor and a small monitor at the terminal.

4.13 A screen saver will activate after long periods of inactivity on the terminal. Moving the cursor or pressing any key on the keyboard will return to the normal display.

4.14 The monitors may be turned off during extended periods of inactivity. To reactivate the ERDS turn on the monitors. The terminals themselves should normally be left on.

5.0 Operation of NON-REGULATORY ERDS

The following items as shown on Figures 1 and 2 are available on the ERDS menu:

5.1 UNIT - allows the selection of either Unit or the simulator to be used by the terminal.

- UNIT 1 -selects unit 1 as the input.
- UNIT 2 -selects unit 2 as the input.
- SIMULATION - selects the simulation as the input. This function may be used during drills.

5.2 GROUP DISPLAY -selects which group will be displayed.

- Group 1 -selects group 1 for continuous display.
- Group 2 -selects group 2 for continuous display.
- Group 3 -selects group 3 for continuous display.
- ARDA - selects the ARDA screen for continuous display.
- SCROLL -scrolls between groups 1, 2 and 3 leaving each screen on for approximately 20 seconds - this is the normal mode for display during accidents or drills. If ARDA has been activated, the ARDA page will scroll with the other pages for 15 seconds each instead of 20 seconds

5.3 PRINT -allows selection of print options. Figures 3 through 7 are examples of the displays that can be printed.

- DEMAND - causes the MIDAS input page, all three groups and the ARDA screen, if ARDA has been started, to be printed out with the current data; this will not have any effect on the timing of the auto printout.
- START (or STOP) AUTOMATIC PRINTOUT - will start or stop the automatic printout of the MIDAS input page, all three groups and the ARDA screen, if ARDA has been started, every 15 minutes - when the menu item is selected the display of START or STOP will tell you what function you can perform.

5.4 START (STOP) DOSE ASSESSMENT - allows ARDA to be manually started and stopped if ARDA has not automatically started and there are no radiation monitors in alarm.

START DOSE ASSESSMENT allows starting ARDA manually. Requires selecting a release point from the release point selection prior to starting.

STOP DOSE ASSESSMENT - allows manually stopping ARDA if ARDA has not automatically started and there are no radiation monitors in alarm.

5.5 RELEASE POINT - allows the manual selection of a release point that has not automatically started ARDA.

- The Unit that a release is from must first be selected. The Unit selection and ARDA display on the top menu line must be selected to view the release data.
- Once the unit has been selected then the release point must be selected.
- If a steam generator has been selected then the number of safeties and/or reliefs that are open must be selected.

5.6 MET INFORMATION - selecting this item allows manually overriding the computer generated meteorological data values using the Manual Value Window.

5.7 RADIATION MONITORS - selecting this item allows manually overriding the computer generated radiation monitor values for a specified Unit.

5.8 PLANT PARAMETERS - selecting this item allows manually overriding the computer generated plant parameters values of steam generator pressure, plant vent stack flow and reactor trip time for a specified Unit.

5.9 PREVIOUS HISTORY - selecting this item allows printing out the ARDA display for the three previous fifteen minute time blocks.

5.10 INVENTORY - selecting this item allows inputting a condition of failed fuel for a selected Unit. This item defaults to normal fuel unless an input of failed or melted fuel is selected.

6.0 ARDA Function Description

6.1 When ARDA has been started it will take meteorological data and radiation monitor data from those monitors that are in alarm or monitors that have been manually selected and display the off-site release magnitude, TEDE dose and Thyroid CDE dose.

6.2 The release magnitude is in uCuries per second for noble gas, iodines and particulates.

6.3 Offsite doses, in mrem TEDE and mrem Thyroid CDE, are given for the site boundary and for 2 miles, 5 miles and 10 miles from the site.

6.4 The calculation done by ARDA is for a 15 minute time block starting at each new quarter hour. The data that is used is the average data for the last complete 15 minute time block.

7.0 Dose Assessment Following Automatic ARDA Startup

CAUTION: The ARDA system will automatically start dose assessment based on real time values for the monitor in alarm. However it will use the 15 minute average data from the last complete 15 minute time block to perform the dose calculations. The dose assessment will not show dose values based on the alarming instrument until the next 15 minute time block is complete.

7.1 ARDA will automatically start when the set points as described in step 3 of this procedure are exceeded. It requires two consecutive polls that are one minute apart be above the alarm setpoint to automatically start.

7.2 When ARDA has automatically started, the following will occur:

7.2.1 The displayed page will be the ARDA page for the Unit or simulation that has just had the alarm.

7.2.2 The data used for the calculation will be from the last completed 15 minute time block. The time that this time block was completed is displayed in the upper right hand corner.

7.2.3 The auto print function is started. Nothing will be printed out immediately. The system will print out the five pages specified in step 5.3 at the end of each new 15 minute time block.

7.2.4 Once the system has started, any manual overrides that are put in will not take affect until the end of the 15 minute time block that you are currently in.

7.2.5 When ARDA has automatically started, it cannot be stopped until all of the radiation monitors for the specific unit are below the alarm set point.

7.3 If it is known that a fuel failure or melt has occurred, then select failed or melted fuel per step 8.2.

7.4 If it is known that there are any failed inputs to the ARDA system, then override these inputs per step 8.0.

7.5 Wait until the ARDA screen has updated to the 15 minute time block that the alarm occurred in, then obtain a printout from ARDA.

7.6 Return to FNP-0-EIP-9.0 step 4.2.8 to evaluate emergency classification criteria.

8.0 Override Dose Assessment Inputs Using ARDA

CAUTION **Once the system has started, any manual overrides that are put in will not take affect until the end of the 15 minute time block that you are currently in. Overrides that are put in prior to the start of ARDA will take affect as soon as the ARDA is started.**

NOTE: IF CANCEL IS SELECTED FROM THE MANUAL VALUE WINDOW, THE CURRENT OR PREVIOUS MANUAL OVERRIDE VALUE WILL BE LOST AND THE COMPUTER VALUE WILL BE USED.

8.1 IF the computer generated input data for ARDA as displayed in groups 1, 2 or 3 is known to be incorrect THEN manually override the data per the following steps:

8.1.1 Manually override failed wind speed, wind direction or delta T by: 1) selecting MET INFORMATION, 2) selecting the parameter to overide, 3) entering the correct value in the manual override window, and 4) selecting enter.

8.1.2 Manually override the failed radiation monitors by: 1) selecting RADIATION MONITORS, 2) selecting the correct Unit or simulator, 3) selecting the specific monitor to override, 4) entering the correct 15 minute average value in the manual override window, and 5) selecting enter.

8.1.3 Manually override the failed plant parameter by: 1) selecting PLANT PARAMETERS, 2) selecting the correct Unit or simulator, 3) selecting the specific parameter to override, 4) entering the correct value in the manual override window, and 5) selecting enter.

8.1.4 If a steam generator safety valve or relief is stuck open and the steam generator pressure is below 1035 psig, then override the safety or relief open by: 1) selecting Release Point, 2) selecting the appropriate unit or simulation, 3) selecting Steam Generator A, B, or C, and 4) selecting the number of safeties open or the PORV open.

8.1.5 Manually override the Plant Vent Stack (PVS) flow if the computer value is not correct or available with the following value: (REA 98-1906)

a. Obtain PVS flow from NRERDS, RMDA, PVS flow recorder in the CR or use one of the below default values
b. One Auxiliary Building Fan...94,000 scfm
c. Two Auxiliary Building Fans...136,000 scfm
d. Zero Auxiliary Building Exhaust Fans, one train PRF...5,000 scfm
e. Zero Auxiliary Building exhaust fans, two trains PRF...10,000 scfm

8.2 Select fuel status per the following criteria:

8.2.1 Failed fuel should be selected if Dose Equivalent Iodine is in excess of 300 µcuries per gram as determined by performance of an RCS sample or by comparison of R27A or B monitor readings with Figure 8 of FNP-0-EIP-9.0 or Figure 18 of FNP-0-EIP-30.

8.2.2 Melted fuel should be selected if an FNP-0-EIP-30.0 calculation has determined that there is melted fuel.

8.2.3 IF melted or failed fuel is indicated THEN select INVENTORY, the unit with the fuel problem and then select failed or melted fuel as appropriate. NORMAL is the default value.

9.0 <u>If ARDA has NOT Automatically Started and it is Desired to Perform an EDCM Offsite Dose Calculation, Then Perform the Following Steps</u>:

9.1 Select UNIT, then in the drop down window select the appropriate Unit or simulator.

9.2 Override any failed parameters for the selected Unit per step 8.1.

9.3 Select fuel status for the selected Unit as appropriate per step 8.2.

9.4 Select RELEASE POINT. Next select the appropriate Unit and then select the appropriate release point.

9.5 IF a steam generator was selected as a release point THEN specify the number of reliefs and/or PORVs that are open.

9.6 Select START DOSE ASSESSMENT.

9.7 Start automatic printout by selecting PRINT then selecting Start Automatic Print.

9.8 If the Radiation Monitor that is being used for dose assessment has been overridden, then select PRINT and Demand Print and go to step 9.10.

9.9 If the Radiation Monitor that is being used for dose assessment has not been overridden, wait until the ARDA screen has updated to the 15 minute time block that ARDA was started in, then obtain a printout from ARDA.

9.10 Obtain a copy of the ARDA printout with offsite dose values and go to FNP-0-EIP-9.0 (Emergency Classification and Actions) step 4.2.8 to evaluate the emergency classification.

TABLE 1

References

1. FNP-0-EIP-9.0 Emergency Classification and Actions
2. FNP-0-EIP-20.0, Chemistry and Environmental Support to the Emergency Plan
3. FNP-0-EIP-30 Post Accident Core Damage Assessment
4. FNP 1/2 -CCP-213.1 Gaseous Effluent Radiation Monitoring System Set points
5. FNP-0-CCP-1300 Chemistry and Environmental Activities During A Radiological Accident
6. FNP-1/2-RCP-252 Radiation Monitoring System Set points
7. FNP-0-M-007, Emergency Dose Calculation Method
8. Joseph M. Farley Nuclear Plant Emergency Plan

FIGURE 1

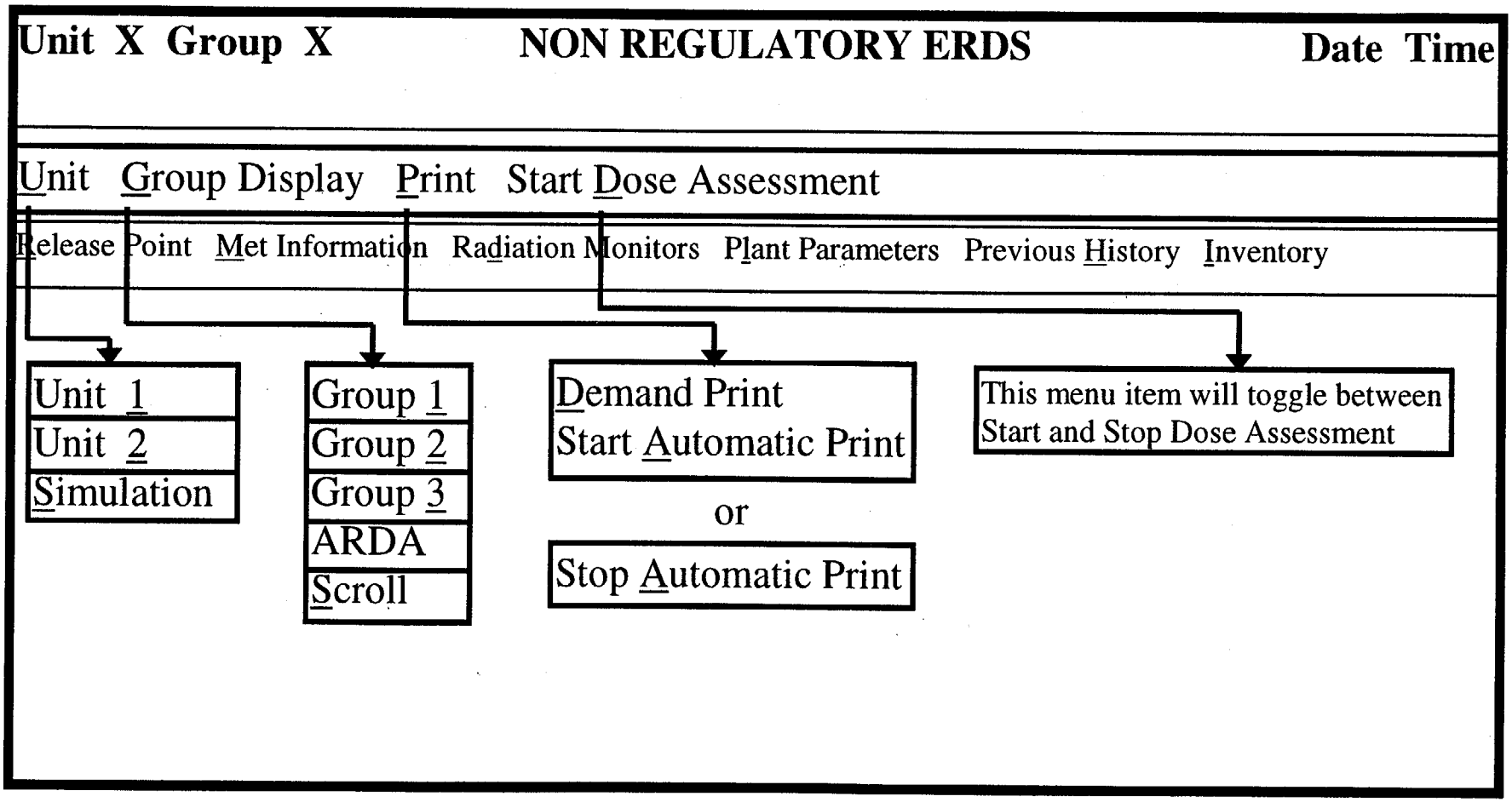
Unit X Group X
NON REGULATORY ERDS
Date Time
Unit Group Display Print Start Dose Assessment
Release Point Met Information Radiation Monitors Plant Parameters Previous History Inventory
Unit 1
Unit 2
Simulation
Group 1
Group 2
Group 3
ARDA
Scroll
Demand Print
Start Automatic Print
or
Stop Automatic Print
This menu item will toggle between Start and Stop Dose Assessment

FIGURE 2

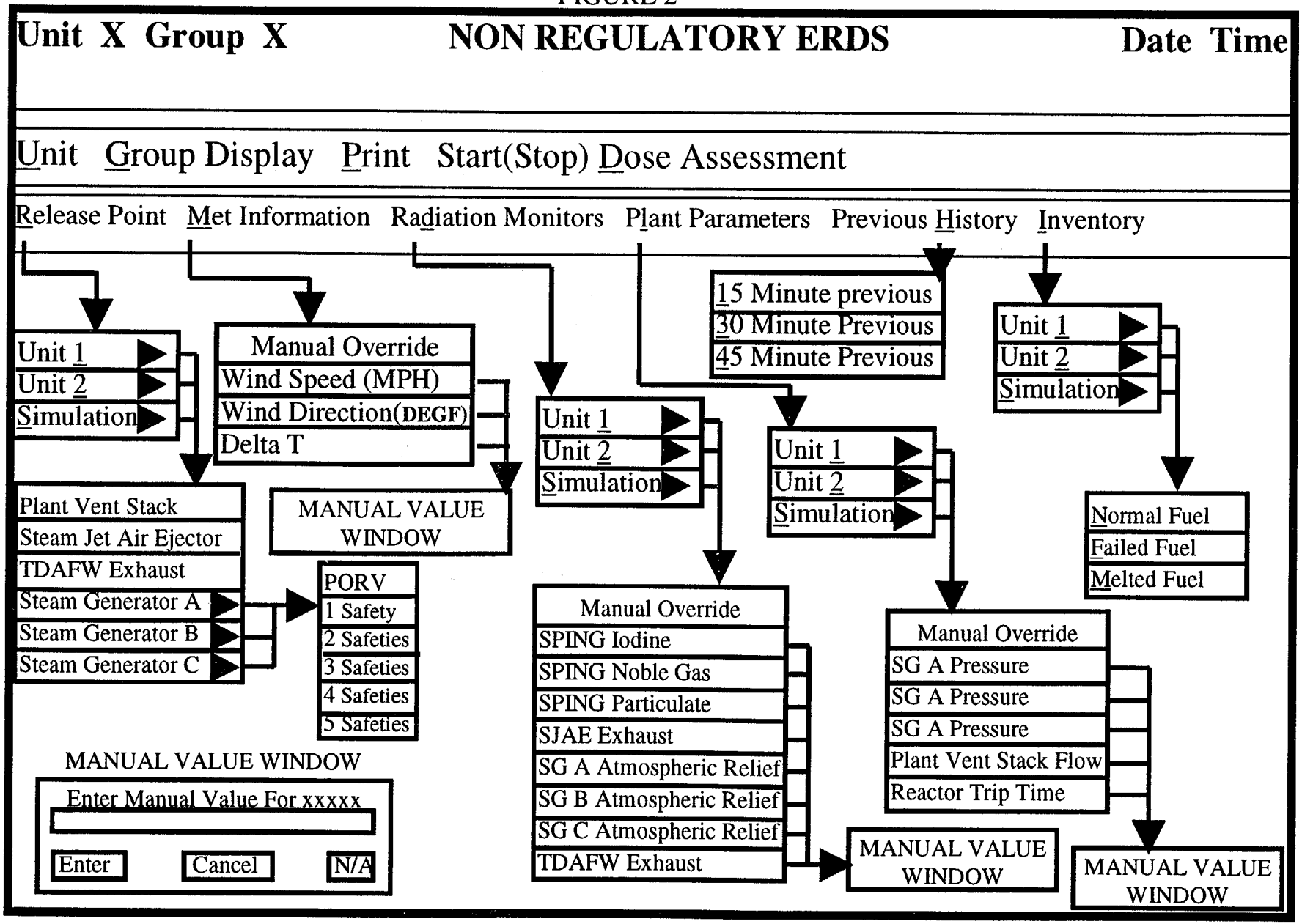
Unit X Group X
NON REGULATORY ERDS
Date Time
Unit Group Display Print Start(Stop) Dose Assessment
Release Point
Met Information
Radiation Monitors
Plant Parameters
Previous History
Inventory
Unit 1
Unit 2
Simulation
Manual Override
Wind Speed (MPH)
Wind Direction(DEGF)
Delta T
Plant Vent Stack
Steam Jet Air Ejector
TDAFW Exhaust
Steam Generator A
Steam Generator B
Steam Generator C
MANUAL VALUE WINDOW
PORV
1 Safety
2 Safeties
3 Safeties
4 Safeties
5 Safeties
MANUAL VALUE WINDOW
Enter Manual Value For xxxxx
Enter
Cancel
N/A
Unit 1
Unit 2
Simulation
Manual Override
SPING Iodine
SPING Noble Gas
SPING Particulate
SJAE Exhaust
SG A Atmospheric Relief
SG B Atmospheric Relief
SG C Atmospheric Relief
TDAFW Exhaust
MANUAL VALUE WINDOW
15 Minute previous
30 Minute Previous
45 Minute Previous
Unit 1
Unit 2
Simulation
Manual Override
SG A Pressure
SG A Pressure
SG A Pressure
Plant Vent Stack Flow
Reactor Trip Time
MANUAL VALUE WINDOW
Unit 1
Unit 2
Simulation
Normal Fuel
Failed Fuel
Melted Fuel
MANUAL VALUE WINDOW

FIGURE 3

ERDS GROUP 1

TAG#	DESCRIPTION	VALUE	UNITS
RC3702	HIGHEST R27 HI LEVEL CTMT RADIATION	XXXX	R/HR
RE0050	GROSS FAILED FUEL DETECTOR	XXXX	CPM
WS35FT	WIND SPEED 35' ELEV	XXXX	MPH
WS150FT	WIND SPEED 150' ELEV	XXXX	MPH
WD35FT	WIND DIRECTION 35' ELEV	XXXX	DEGFR
WD150FT	WIND DIRECTION 150' ELEV	XXXX	DEGFR
STCLASS	STABILITY CLASS DELTA TEMP	XXXX	DEGF
RE0014	VENT GAS MONITOR	XXXX	CPM
RE0021	VENT AIR PARTICLE MONITOR	XXXX	CPM
RE0022	VENT GAS MONITOR	XXXX	CPM
RE0029B-I2	VENT IODINE (131) GAS (SPING4)	XXXX	uCi/ML
RE0029B-NG	VENT NOBLE GAS (SPING4)	XXXX	uCi/ML
RE0029B-P	VENT PARTICULATE (SPING4)	XXXX	uCi/ML
FT2879	PLANT VENT STACK FLOW	XXXX	CFM
RE0015C	SJAE EXHAUST HIGH RANGE MONITOR	XXXX	R/HR
RE0060A	SG A ATMOSPHERIC RELIEF MONITOR	XXXX	R/HR
RE0060B	SG B ATMOSPHERIC RELIEF MONITOR	XXXX	R/HR
RE0060C	SG C ATMOSPHERIC RELIEF MONITOR	XXXX	R/HR
RE0060D	AUX FEED TURBINE EXHAUST MONITOR	XXXX	R/HR
RE0070A	SG A N16 LEAK DETECTION SYSTEM	XXXX	GPD
RE0070B	SG B N16 LEAK DETECTION SYSTEM	XXXX	GPD
RE0070C	SG C N16 LEAK DETECTION SYSTEM	XXXX	GPD

FIGURE 4

ERDS GROUP 2

TAG#	DESCRIPTION	VALUE	UNITS
TE3187I	CTMT DOME INSIDE AIR TEMP	XXXX	DEGF
PC3700	HIGHEST CTMT PRESSURE	XXXX	PSIG
LC1501	ECCS NR CTMT SUMP LEVEL AVG	XXXX	FT
H2MANUAL	CTMT HYDROGEN		%
PC1402A	RCS PRESSURE AVG 1MA	XXXX	PSIG
NC1100A	POWER RANGE FLUX AVG 1MA	XXXX	%
FC0400A	RCS LOOP A FLOW AVG 1MA	XXXX	%
FC0420A	RCS LOOP B FLOW AVG 1MA	XXXX	%
FC0440A	RCS LOOP C FLOW AVG 1MA	XXXX	%
TMARCETA	SUBCOOLING CHAN A	XXXX	DEGF
TMARCETB	SUBCOOLING CHAN B	XXXX	DEGF
TC1200	FIFTH HOTTEST CORE EXIT TC	XXXX	DEGF
LC1600A	PRESSURIZER LEVEL AVG 1MA	XXXX	%
LC1602	LOWEST UPPER HEAD LEVEL	XXXX	%
LC1603	LOWEST UPPER PLENUM LEVEL	XXXX	%
LT0477	SG A WIDE RANGE LEVEL	XXXX	%
LT0487	SG B WIDE RANGE LEVEL	XXXX	%
LT0497	SG C WIDE RANGE LEVEL	XXXX	%
LT0501	RWST LEVEL CHAN 1	XXXX	FT
FE0605A	RHR LOOP A FLOW	XXXX	GPM
FE0605B	RHR LOOP B FLOW	XXXX	GPM
FC4658	CHARGING LINE CORRECTED FLOW 1MA	XXXX	GPM
FE0943	HHSI FLOW	XXXX	GPM
FT3229A	AUXILIARY FEEDWATER FLOW TO SG A	XXXX	GPM
FT3229B	AUXILIARY FEEDWATER FLOW TO SG B	XXXX	GPM
FT3229C	AUXILIARY FEEDWATER FLOW TO SG C	XXXX	GPM

FIGURE 5

ERDS GROUP 3

TAG#	DESCRIPTION	VALUE	UNITS
RE0018	WASTE DISPOSAL LIQUID MONITOR	XXXX	CPM
RE0023B	SG BLOWDOWN TREATMENT MONITOR	XXXX	CPM
TE3187H	CTMT COOLER A AIR INLET TEMP	XXXX	DEGF
TE3187G	CTMT COOLER B AIR INLET TEMP	XXXX	DEGF
TE3187F	CTMT COOLER C AIR INLET TEMP	XXXX	DEGF
TE3187E	CTMT COOLER D AIR INLET TEMP	XXXX	DEGF
NE0031	SOURCE RANGE FLUX CHAN A		
NE0032	SOURCE RANGE FLUX CHAN B		
NE0035	INTERMEDIATE RANGE FLUX CHAN A		
NE0036	INTERMEDIATE RANGE FLUX CHAN B		
TC0410A	RCS LOOP A CL WIDE RNG TEMP 1MA	XXXX	DEGF
TC0413A	RCS LOOP A HL WIDE RNG TEMP 1MA	XXXX	DEGF
TC0420A	RCS LOOP B CL WIDE RNG TEMP 1MA	XXXX	DEGF
TC0423A	RCS LOOP B HL WIDE RNG TEMP 1MA	XXXX	DEGF
TC0430A	RCS LOOP C CL WIDE RNG TEMP 1MA	XXXX	DEGF
TC0433A	RCS LOOP C HL WIDE RNG TEMP 1MA	XXXX	DEGF
PC2300A	SG A PRESSURE AVG 1MA	XXXX	PSIG
PC2301A	SG B PRESSURE AVG 1MA	XXXX	PSIG
PC2302A	SG C PRESSURE AVG 1MA	XXXX	PSIG
FC4655	SG A FW CORRECTED FLOW 1MA	XXXX	KBH
FC4656	SG B FW CORRECTED FLOW 1MA	XXXX	KBH
FC4657	SG C FW CORRECTED FLOW 1MA	XXXX	KBH

FIGURE 6

ARDA DISPLAY

AUTOMATIC RAPID DOSE ASSESSMENT

CURRENT FIFTEEN MINUTE ESTIMATE

AS OF DATE TIME
(all times central)

**11. TYPE OF RELEASE: [X] GROUND LEVEL
[C] AIRBORNE: Started: Stopped:

**12. RELEASE MAGNITUDE : [X] uCURIES PER SEC.
[E] NOBLE GAS XXXX [F] IODINES XXXX
[G] PARTICULATES XXXX

**13. ESTIMATE OF PROJECTED OFFSITE DOSE: [C] ESTIMATED DURATION: 4 HRS.

	TEDE (mrem)		THYROID CDE (mrem)	
SITE BOUNDARY	[D]	XXXXXX	[E]	XXXXXX
2 MILES	[F]	XXXXXX	[G]	XXXXXX
5 MILES	[H]	XXXXXX	[I]	XXXXXX
10 MILES	[J]	XXXXXX	[K]	XXXXXX

**METEROLOGICAL DATA: [A] WIND DIRECTION (from) XXX [B] SPEED (mph) XXX
[C] STABILITY CLASS X

FIGURE 7

ERDS MIDAS Data

TAG#	DESCRIPTION	VALUE	UNITS
WS35FT	WIND SPEED 35' ELEV	XXXX	MPH
WS150FT	WIND SPEED 150' ELEV	XXXX	MPH
WD35FT	WIND DIRECTION 35' ELEV	XXXX	DEGFR
WD150FT	WIND DIRECTION 150' ELEV	XXXX	DEGFR
TE31895	CTMT INTAKE OUTSIDE AIR TEMPERATURE	XXXX	DEGFR
STCLASS	STABILITY CLASS DELTA TEMP	XXXX	DEGF
RE0029B-NG	VENT NOBLE GAS (SPING4)	XXXX	µCi/ML
RE0029B-I2	VENT IODINE(131) GAS (SPING4)	XXXX	µCi/ML
RE0029B-P	VENT PARTICULATE (SPING4)	XXXX	µCi/ML
RE0014	VENT GAS MONITOR	XXXX	CPM
FT2879	PLANT VENT STACK FLOW	XXXX	CFM
RE0060A	SG A ATMOSPHERIC RELIEF MONITOR	XXXX	R/HR
PC2300A	SG A PRESSURE AVG 1MA	XXXX	PSIG
RE0060B	SG B ATMOSPHERIC RELIEF MONITOR	XXXX	R/HR
PC2301A	SG B PRESSURE AVG 1MA	XXXX	PSIG
RE0060C	SG C ATMOSPHERIC RELIEF MONITOR	XXXX	R/HR
PC2302A	SG C PRESSURE AVG 1MA	XXXX	PSIG
REOO15C	SJAE EXHAUST HIGH RANGE MONITOR	XXXX	R/HR
RE0060D	AUX FEED TURBINE EXHAUST MONITOR	XXXX	R/HR

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FNP-0-EIP-9.3
February 24, 2000
Revision 13

FARLEY NUCLEAR PLANT

EMERGENCY PLAN IMPLEMENTING PROCEDURE

FNP-0-EIP-9.3

PERSONAL COMPUTER-AUTOMATED DOSE ASSESSMENT METHODS

SAFETY RELATED

PROCEDURE USAGE REQUIREMENTS PER FNP-0-AP-6	SECTIONS
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A.M. Stinson

Nuclear Plant General Manager

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11	11	X	X								
12	11	X	X								
13	11	X	X								
14	11	X	X								
ATTACH. 1	10	X	X								
ATTACH. 2	10	DEL									
TABLE 1	10	X	X								
TABLE 2:											
PG.1	10	X	X								
PG.2	10	X	X								
PG.3	10	X	X								
TABLE 3:											
PG.1	10	X	X								
PG.2	10	X	X								
PG.3	10	X	X								
TABLE 4:											
PG.1	11	X	X								
PG.2	11	X	X								
PG.3	11	X	X								

LIST OF EFFECTIVE PAGES

	REVISION NO.										
PAGE NO.	**REV**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**
TABLE 5:											
PG.1	10	X	X								
PG.2	10	X	X								
TABLE 6:											
PG.1	11	X	X								
PG.2	11	X	X								
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PERSONAL COMPUTER - AUTOMATED DOSE ASSESSMENT METHODS

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PERSONAL COMPUTER-AUTOMATED DOSE ASSESSMENT METHOD

1.0 Purpose

The purpose of this procedure is to provide a method of projecting off-site radiation exposure as a result of a release of radioactive material. The Total Effective Dose Equivalent (TEDE) and Thyroid Committed Dose equivalent (CDE) calculated from the computer program can be used to classify Site Area Emergencies or General Emergencies.

2.0 References

See Table 1.

3.0 General

3.1 Description of the mouse and keyboard control of the system is described in Table 2.

3.2 ENTRY CONDITIONS

3.2.1 TSC Entry. This procedure will be entered in the TSC when FNP-0-EIP-9.1 Automated Dose Assessment Method is not operable, or is operable but has not Auto actuated when the proper alarms exist from the following:

a. FNP-0-EIP-9.0, step 4.2.5

b. FNP-0-EIP-9.0, step 4.2.6

3.2.2 TSC Entry. This procedure will be entered in the TSC if long term dose assessment is to be performed in the TSC from the following:

a. FNP-0-EIP-9.0, step 4.2.2

3.2.3 EOF Entry. This procedure will be entered in the EOF as soon as the EOF is activated and dose assessment has been transferred to the EOF from the following:

a. FNP-0-EIP-9.0, step 4.2.2

4.0 System Startup

4.1 If the PC is not currently running the Midas system, then perform the following:

4.1.1 Ensure that the computer, printer and the monitor are all turned on.

4.1.2 Reboot the computer by pressing control, alternate, and delete at the same time, or by turning the computer off and on again to start it up.

4.1.3 If the computer is not on the Midas system, then exit to DOS and type "midas", then press Enter.

4.1.4 When the prompts for date and time verification come up on the screen, press Enter to accept the date/time (if correct), or enter the correct date and time.

4.1.5 Wait for the title screen to clear, or press the space bar.

4.2 There is a backup PC in the document room as a backup to the MIDAS PC in the TSC

4.3 If, a MIDAS PC software has failed and it is desired to reload the software on a designated MIDAS PC then use Attachment 1. The MIDAS system cannot be loaded on a PC that has Windows NT as the operating system.

4.4 If no MIDAS system can be started, then dose assessment should be performed using FNP-0-EIP-9.1 Automated Dose Assessment Method per FNP-0-EIP-9.0, step 4.2.3.

NOTE: DUE TO THE LARGE AMOUNT OF DISK ACTIVITY AND THE COMPLEXITY OF THE PROGRAM, DELAYS AFTER MAKING SELECTIONS CAN BE A MINUTE OR MORE.

5.0 Initial Data Input and Report

NOTE: THE SELECTION OF FARLEY (STATE) PLACES THE SYSTEM IN THE MODE THAT IS PROVIDED TO THE STATE AND LOCAL AGENCIES. THIS OPTION SHOULD ONLY BE SELECTED IF ATTEMPTING TO HELP THE STATE SOLVE PROBLEMS WITH THEIR SYSTEM. OPERATION IN THIS MODE IS DESCRIBED IN STEP 10.0. FARLEY DRILL IS USED WHEN DEVELOPING DRILLS AND SHOULD NOT BE USED FOR DOSE ASSESSMENT

5.1 From the SITE SELECTION screen, select and confirm PLANT FARLEY.

NOTE: SELECTING "RECAP DOSE CALCULATIONS" CAN ONLY BE USED AFTER DATA HAS ALREADY BEEN INPUT. ITS USE IS DESCRIBED IN STEP 6.1.

5.2 From the FUNCTION SELECTION screen, select and confirm ACCIDENT DOSE CALCULATIONS.

NOTE: THE OTHER SELECTIONS ON THIS SCREEN ARE RESERVED FOR FUTURE USE AND SHOULD NOT BE SELECTED AT THIS TIME.

5.3 From the ACCIDENT DOSE CALCULATION screen, select and confirm ENHANCED DOSE PROJECTION (MENU B).

5.4 Determine the release points. Record the release points for use when updating the scenario (Figure 1 may be used as an aid).

NOTE: THE RELEASE POINTS ARE DESCRIBED IN TABLE 5.

5.4.1 On the MISCELLANEOUS PARAMETERS screen, verify that only the following selections are highlighted:

a. SCENARIO MET DATA
b. REL PT 1 U1 VENT
c. REL PT 2 U1 SG
d. REL PT 3 U2 VENT
e. REL PT 4 U2 SG
f. FLOW (EX VEL) (FOR RELEASE POINTS 1 THROUGH 4) SET TO 0.0E+00
g. AUTO SCENARIO INTEGRATION
h. MAX DIST DOWNWIND (MILES) (SET TO 1.10E + 01)

NOTE: WHEN DESELECTING A RELEASE POINT, THE FLOW (EX VEL) WILL ALSO BE DESELECTED.

5.4.2 For an accident on Unit 1 only, on the MISCELLANEOUS PARAMETERS screen, select release point 1 and 2 by **deselecting release points 3 and 4.**

5.4.3 For an accident on unit 2 only, on the MISCELLANEOUS PARAMETERS screen, select release point 3 and 4 by **deselecting release points 1 and 2.**

5.4.4 For an accident involving a potential release from both units, on the MISCELLANEOUS PARAMETERS screen, leave all four release points selected.

5.4.5 Confirm the highlighted selections.

NOTE: THE USE OF THE OTHER 2 SELECTIONS ON THIS SCREEN ARE DESCRIBED IN STEPS 6.5 AND 6.6.

IT IS APPROPRIATE TO HAVE THE PROGRAM DELETE THE DATA FROM PREVIOUS SCENARIOS, IF THIS IS THE FIRST RELEASE FOR THIS INCIDENT.

5.5 From the SCENARIO DATA TABLE CONTROL screen, select and confirm START A NEW SCENARIO.

5.6 Enter the meteorological data on the spreadsheet screen, **for all four inputs**.

5.6.1 Figure 1 may be used as an aid to collect the data.

5.6.2 Table 6 describes the methods of collecting the data.

5.6.3 WHEN all of the data has been entered on the spread sheet, THEN press "x" to save the data and exit the spread sheet.

CAUTION: DO NOT ENTER BOTH SPING AND R-14 FOR VENT STACK RELEASES. THIS WOULD CAUSE THE SOURCE TERM TO BE DOUBLE ITS ACTUAL VALUE.

5.7 Enter the radiation monitor and release point flow data on the spreadsheet screen for all release points that currently have an emergency release. An emergency release is defined as a release greater than 10 times normal. Normal release levels are average release levels for steady state operation.

5.7.1 If failed fuel is indicated and SPING iodine or particulate are not available, or reading greater than 1E-6 μc/ml, then enter a value for SPING iodine and/or particulate that is the SPING noble gas value multiplied by 1E-3.

5.7.2 If a stuck open SG relief or safety is the cause of the release enter a steam pressure for that generator of 1040 psig, the program will assume a conservatively high steam flow for the calculation

5.7.3 Figure 1 may be used as an aid to collect the data.

5.7.4 Table 6 describes the methods of collecting the data.

5.7.5 When all of the data has been entered on the spreadsheet, then press "x" to save the data and exit the spreadsheet.

5.8 Determine which type of accident to select. Figure 2 provides guidance if necessary.

5.9 From the DBA ACCIDENT TYPE SELECTION screen, select and confirm the accident type. Record the selections for use when updating the scenario (Figure 1 may be used as an aid).

5.10 If any of the selected release points have no radiation monitor or flow inputs, then a warning screen will appear warning of which release points have a zero source term. This is normal after selecting two release points and there is only an emergency release from one of those release points.

5.10.1 If the release point with zero source term is correct, then select continue.

5.10.2 If the release point(s) with zero source term is wrong, then select reset and proceed to step 6.4 to confirm selections made.

5.11 From the RELEASE TIMING SELECTION screen, set the remaining duration of release. Record the selection for use when updating the scenario (Figure 1 may be used as an aid).

5.11.1 Select REMAINING DURATION (MIN), using the numpad, set the number of minutes from the current time that the release will continue. If the time is unknown, set the duration at 240 minutes. Confirm the selection.

NOTE: THE TIME TO DO THE CALCULATIONS, PRINT THE NOTIFICATION FORM, AND DRAW THE SCREEN DISPLAY MAY TAKE IN EXCESS OF 4.5 MINUTES DEPENDING ON THE NUMBER OF RELEASE POINTS AND THE DURATION OF THE RELEASE.

5.12 The printer will now print out an Emergency Notification Form with the radioactive release data printed on it. Give this form to the Technical Manager (TM) in the TSC or the Dose Assessment Director (DAD) in the EOF.

5.13 The screen will display the Total Effective Dose Equivalent (TEDE) 11 mile plume map with scenario information. Verify that the map is a four-hour projection that has the 10 mile EPZ zones displayed and any other information that is desired by the TM or the DAD

5.14 Inform the TM or DAD that the map is being displayed and if the TM or DAD desire to have the TEDE map printed, then print (SHIFT & PRINT SCREEN) the map described in step 5.13 and give it to the TM or DAD.

5.15 From the TEDE map, sequentially select CONTINUE, then NEXT REPORT, then THYROID CDE DOSE PLOT.

5.16 The screen will display the Thyroid Committed Dose Equivalent (CDE) 11 mile plume map with scenario information. Verify that the map is a four-hour projection that has the 10 mile EPZ zones displayed and any other information that is desired by the TM or the DAD.

5.17 Inform the TM or DAD that the map is being displayed and if the TM or DAD desire to have the Thyroid CDE map printed then Print (SHIFT & PRINT SCREEN) the map described in step 5.16 and give it to the TM or DAD.

5.18 The individual evaluating the radiological release (SS, TM, DAD or other qualified individual) should go to step 9.0 after receiving the Emergency Notification Form and the information from the TEDE and Thyroid CDE plots to evaluate the data.

5.19 From the CDE map, sequentially select CONTINUE, NEXT REPORT, then MORE REPORTS.

5.20 Coordinate with the RMT controller and the DAD or TM, to determine which maps and what features need to be printed. Recommended maps are the Field Monitor (FM) GAMMA + BETA DOSE RATE PLOT (equivalent to open window dose rate readings), FM GAMMA DOSE RATE PLOT (equivalent to closed window dose rate readings) and the EDE DOSE RATE PLOT (equivalent to closed window dose rate readings)

5.21 Select one plot determined in step 5.20 from the more reports screen and confirm.

5.22 Verify projection time of .25 hours and confirm

5.23 Set the map scale at 11.0 miles or other value desired by RMT controller and confirm.

5.24 Select the map features desired by the RMT controller and confirm any changes made.

5.25 Use the select area feature to provide as much detail about the projected dose rates as possible.

5.26 Print (SHIFT & PRINT SCREEN) the map displayed in step 5.25 and give it to the RMT controller.

5.27 Select "continue", then MORE REPORTS.

5.28 If additional maps are required for the RMT controller return to step 5.21 to print these maps

5.29 The scenario should be updated at approximately 30 minute intervals, or other times as specified by the Technical Manager or DAD, to coincide with issuing follow-up reports. The scenario should also be updated if there is a drastic change in release information that could cause a change in emergency classification.

5.30 If more information is desired about this scenario prior to updating, then go to step 7.

5.31 To update this scenario, select EXIT twice and proceed to step 6.0.

6.0 Updating Scenario Information

6.1 If more information is desired about this particular scenario prior to updating, including printing additional emergency notification forms, then perform the following three steps.

6.1.1 From the FUNCTION SELECTION screen, select and confirm RECAP DOSE CALCULATIONS.

6.1.2 From the RECAP DOSE CALCULATIONS screen, select and confirm ENHANCED DOSE PROJECTION (MENU B).

6.1.3 Go to step 7.0.

6.2 To update the scenario, from the FUNCTION SELECTION screen, select and confirm ACCIDENT DOSE CALCULATIONS.

NOTE: THE OTHER SELECTIONS ON THIS SCREEN ARE RESERVED FOR FUTURE USE AND SHOULD NOT BE SELECTED AT THIS TIME.

6.3 From the ACCIDENT DOSE CALCULATION screen, select and confirm ENHANCED DOSE PROJECTION (MENU B).

6.4 Select the same release points that were selected in step 5.4 when initially inputting data.

6.4.1 On the MISCELLANEOUS PARAMETERS screen, verify that only the following selections are highlighted:

a. SCENARIO MET DATA
b. RELEASE POINT 1 UNIT 1 VENT
c. RELEASE POINT 2 UNIT 1 SG
d. RELEASE POINT 3 UNIT 2 VENT
e. RELEASE POINT 4 UNIT 2 SG
f. FLOW (EX VEL) (FOR RELEASE POINTS 1 THROUGH 4) SET TO 0.0E+00
g. AUTO SCENARIO INTEGRATION
h. MAX DIST DOWNWIND (MILES) (SET TO 1.10E+01)

NOTE: WHEN DESELECTING A RELEASE POINT, THE FLOW (EX VEL) WILL ALSO BE DESELECTED.

6.4.2 Deselect the same release points that were deselected at step 5.4.

6.4.3 Confirm the highlighted selections

CAUTION: IF START A NEW SCENARIO IS SELECTED AND CONFIRMED, ALL OF THE MET AND RADIATION DATA FROM THE CURRENT SCENARIO WILL BE ERASED.

6.5 To continue updating, proceed to step 6.6 **or** if it is desired to print out another Emergency Notification Form and return to the TEDE map with the current MET and RAD information, then from the SCENARIO DATA TABLE CONTROL screen, select and confirm CURRENT SCENARIO NO EDIT and proceed to step 8.0.

6.6 From the SCENARIO DATA TABLE CONTROL screen, select and confirm CURRENT SCENARIO EDIT.

6.7 Enter the new meteorological data on the spreadsheet screen, **for all four inputs.**

6.7.1 Figure 1 may be used as an aid to collect the data.

6.7.2 Table 6 describes the methods of collecting the data.

6.7.3 When the data has been entered on the spreadsheet, press "x" to save the data and exit the spreadsheet.

CAUTION: DO NOT ENTER BOTH SPING AND R-14 FOR VENT STACK RELEASES. THIS WOULD CAUSE THE SOURCE TERM TO BE DOUBLE ITS ACTUAL VALUE.

6.8 Enter the radiation monitor and release point flow data on the spreadsheet screen for all release points that currently have an emergency release. An emergency release is defined as a release greater than 10 times normal. Normal release levels are average release levels for steady state operation.

6.8.1 If failed fuel is indicated and SPING iodine or particulate are not available or reading greater than 1E-6 µc/ml, then enter a value for SPING iodine and/or particulate that is the SPING noble gas value multiplied by 1E-3.

6.8.2 If a stuck open SG relief or safety is the cause of the release enter a steam pressure for that generator of 1040 psig, the program will assume a conservatively high steam flow for the calculation

6.8.3 Figure 1 may be used as an aid to collect the data.

6.8.4 Table 6 describes the methods of collecting the data.

6.8.5 When all of the data has been entered on the spreadsheet, then press "x" to save the data and exit the spreadsheet.

6.9 Determine which type of accident to select. Figure 2 provides guidance if necessary.

6.10 From the DBA ACCIDENT TYPE SELECTION screen, select and confirm the accident type. Record the selections for use when updating the scenario (Figure 1 may be used as an aid).

6.11 If any of the selected release points have no radiation monitor or flow inputs, then a warning screen will appear warning of which release points have a zero source term. This is normal after selecting two release points and there is only an emergency release from one of those release points.

6.11.1 If the release point with zero source term is correct, then select "continue".

6.11.2 If the release point(s) with zero source term is wrong, then select "reset" and proceed to step 6.4 to confirm selections made.

6.12 From the RELEASE TIMING SELECTION screen, set the remaining duration of release. Record the selection for use when updating the scenario (Figure 1 may be used as an aid).

6.12.1 Select REMAINING DURATION (MIN), using the numpad, set the number of minutes from the current time that the release will continue. If the time is unknown, set the duration at 240 minutes. Confirm the selection.

NOTE: THE TIME TO DO THE CALCULATIONS, PRINT THE NOTIFICATION FORM, AND DRAW THE SCREEN DISPLAY MAY TAKE IN EXCESS OF 4.5 MINUTES--DEPENDING ON THE NUMBER OF RELEASE POINTS AND THE DURATION OF THE RELEASE.

6.13 The printer will now print out an Emergency Notification Form with the radioactive release data printed on it. Give this form to the Technical Manager (TM) in the TSC or the Dose Assessment Director (DAD) in the EOF.

6.14 The screen will display the Total Effective Dose Equivalent (TEDE) 11 mile plume map with scenario information. Verify that the map is a four-hour projection that has the 10 mile EPZ zones displayed and any other information that is desired by the TM or the DAD.

6.15 Inform the TM or DAD that the map is being displayed and if the TM or DAD desire to have the TEDE map printed, then print (SHIFT & PRINT SCREEN) the map described in step 6.14 and give it to the TM or DAD.

6.16 From the TEDE map, sequentially select CONTINUE, then NEXT REPORT, then CDE THYROID PLOT.

6.17 The screen will display the Thyroid Committed Dose Equivalent (CDE) 11 mile plume map with scenario information. Verify that the map is a four-hour projection that has the 10 mile EPZ zones displayed and any other information that is desired by the TM or DAD.

6.18 Inform the TM or DAD that the map is being displayed and if the TM or DAD desire to have the Thyroid CDE map printed then Print (SHIFT & PRINT SCREEN) the map described in step 6.17 and give it to the TM or DAD.

6.19 The individual evaluating the radiological release (SS, TM, DAD or other qualified individual) should go to step 9.0 after receiving the Emergency Notification Form and the information from the TEDE and Thyroid CDE plots to evaluate the data.

6.20 From the CDE map, sequentially select CONTINUE, NEXT REPORT, then MORE REPORTS.

6.21 Coordinate with the RMT controller and the DAD or TM, to determine which maps and what features need to be printed. Recommended maps are the Field Monitor (FM) GAMMA + BETA DOSE RATE PLOT (equivalent to open window dose rate readings), FM GAMMA DOSE RATE PLOT (equivalent to closed window dose rate readings) and the EDE DOSE RATE PLOT (equivalent to closed window dose rate readings)

6.22 Select one plot determined in step 6.21 from the more reports screen and confirm.

6.23 Verify projection time of .25 hours and confirm

6.24 Set the map scale at 11.0 miles or other value desired by RMT controller and confirm.

6.25 Select the map features desired by the RMT controller and confirm any changes made.

6.26 Use the select area feature to provide as much detail about the projected dose rates as possible.

6.27 Print (SHIFT & PRINT SCREEN) the map displayed in step 6.26 and give it to the RMT controller.

6.28 Select "continue", then MORE REPORTS.

6.29 If additional maps are required for the RMT controller return to step 6.22 to print these maps

6.30 The scenario should be updated at approximately 30 minute intervals, or other times as specified by the Technical Manager or DAD, to coincide with issuing follow-up reports. The scenario should also be updated if there is a drastic change in release information that could cause a change in emergency classification.

6.31 If more information is desired about this scenario prior to updating, then go to step 7.0

6.32 To update this scenario, select EXIT twice and proceed to step 6.0.

7.0 Viewing More Reports

7.1 When it is desired to leave this portion of the program, return to the MORE REPORTS screen and select exit. The program will return to the FUNCTION SELECTION screen. Go to step 6.0 to update the scenario.

7.2 There are two screens of available plots and reports. Select next screen or previous screen to view the other screen. The plots and reports are described in Table 4.

7.3 From the MORE REPORTS screen, select and confirm the desired plot or report.

7.4 From the REPORT PARAMETER SELECTION screen, perform the following:

7.4.1 If this is not the report that is desired, then select EXIT to return to the MORE REPORTS screen and return to step 7.0.

7.4.2 Select on the PROJ TIME box until the desired projection time is displayed.

7.4.3 Select CONFIRM to go to the selected plot or report

NOTE: AFTER A REPORT OR PLOT IS DISPLAYED, IT CAN BE PRINTED BY PRESSING "SHIFT-PRINT SCREEN".

7.5 If a report was selected, then the report will be displayed.

7.5.1 Manipulation of the report is described in Table 3.

7.5.2 After exiting the report, return to step 7.0.

7.6 If a plot was selected, then the MAP SCALE SELECTION screen will come up.

7.6.1 If the map scale in the highlighted box is not correct, then select the box and set the desired map scale to a maximum of 50 miles using the numpad.

7.6.2 If the map scale in the highlighted box is correct, then confirm to go to the map.

7.6.3 Manipulation of the map is described in Table 3.

7.6.4 After exiting the map, return to step 7.0.

7.7 Printing additional emergency notification forms.

7.7.1 Select and confirm SEND STATE REPORT TO THE PRINTER...The current emergency notification form will now be sent to the printer.

7.7.2 To print additional reports or plots select MORE REPORTS and return to step 7.0.

7.7.3 To update the scenario select EXIT twice. The program will return to the FUNCTION SELECTION screen. Go to step 6.0 to update the scenario.

8.0 Using Current Scenario No Edit

8.1 This section of the procedure is used after CURRENT SCENARIO NO EDIT has been selected from step 6.5.

CAUTION: THE PROJECTION NUMBERS PRINTED ON THE EMERGENCY NOTIFICATION FORM AND THE VALUES DISPLAYED ON THE PLOTS AND REPORTS WILL BE DIFFERENT FROM THE ORIGINAL, BASED ON THE TIME DIFFERENCE FROM WHEN THE ORIGINAL CALCULATIONS WERE DONE.

8.2 Selecting CURRENT SCENARIO NO EDIT will allow a printout of another Emergency Notification Form and return to the TEDE map with the current MET and RAD information.

8.3 Return to step 6.6.

9.0 Evaluating the Results and Completing the Notification Form

9.1 The printed Emergency Notification Form and the TEDE and Thyroid CDE information should all be used to evaluate the release.

9.2 Additional information is available from the More Reports section (step 7.0).

9.3 The 10 mile EPZ zones on the TEDE and Thyroid CDE plots that exceed the Protective Action Guidelines (PAGs) for General Emergency are high-lighted.

9.4 Zones adjacent to the high-lighted zones should also be considered for protective actions, based on meteorological conditions and how close the plume is to these zones.

9.5 The data from the printed form may be transcribed to the FNP-0-EIP-9.0, Figure 6, or the printed form may be completed for transmission.

9.6 If the emergency classification determined from this data is higher than the current emergency classification, then the emergency classification should be upgraded per FNP-0-EIP-9.0, Step 6.

9.7 If this is an initial or upgrade notification, then the DAD, TM or SS should return to FNP-0-EIP-9.0, step 4.2.8.

9.8 If this is a follow-up notification, then the DAD, TM or SS should complete the Emergency Notification Form, transmit over the FAX using FNP-0-EIP-8.3, and return to FNP-0-EIP-9.0.

10.0 Using the Farley (State) Program

10.1 The FARLEY (STATE) program is provided to the state and local agencies to allow them to evaluate the plume based on the data provided to them on the Emergency Notification Form.

10.2 Operation of the FARLEY (STATE) program is similar to the procedure described in step 5 and step 6, with the exception of the spreadsheet data.

10.2.1 The spreadsheet data that is entered in this program is the release rate from the plant site in μCi per second, as displayed on the Emergency Notification Form, line 12.

CAUTION: THE COMPUTER THAT IS BEING USED TO ASSESS PLANT CONDITIONS AND GENERATE DATA AND FORMS FOR CONTINUED DOSE ASSESSMENT SHOULD NOT BE USED TO PERFORM THE FOLLOWING STEP.

10.3 If information or help is requested by state or local agencies, then this portion of MIDAS may be selected from the SITE SELECTION screen to help in answering their questions.

RELOADING MIDAS SOFTWARE ON A DESIGNATED MIDAS PC

1.0 The designated MIDAS PCs are in TSC (2), EOF (2) and the Alternate EOF(2). These PCs have a label on them that says MIDAS. There are also MIDAS PCs in Birmingham.

2.0 This procedure should only be performed on a designated MIDAS PC that uses DOS as the operating system. MIDAS will not run under the Windows NT.

3.0 If it is desired to load MIDAS on a computer that is not a designated MIDAS PC then contact the Emergency Planning Group.

4.0 This attachment should be performed if there is a failure of the MIDAS software on any designated MIDAS PC and it is desired to load either the identical software on the PC or to load the previous version of software on the PC.

5.0 Exit any programs to return to DOS for the computer

6.0 If you desire to load a backup copy of the current MIDAS software that is stored on the C:\ hard drive then perform the following steps:

6.1 At the DOS prompt enter "c:\reload\setnew

6.2 Follow the screen instructions

7.0 If you desire to load a new copy of the current MIDAS software that is stored on CD ROM then perform the following steps:

7.1 Verify that the CD rom for MIDAS is in the CD drive.

7.2 At the DOS prompt enter "c:\reload\setcd

6.2 Follow the screen instructions

NOTE: The only time that it is recommenced to try to use the previous MIDAS software is if there is a problem and the current version cannot be run from any location. The old MIDAS software will not have the current updates and there may be procedure conflicts. In some cases the old software will not be available.

8.0 If you desire to load a copy of the previous version of MIDAS software that is stored on the C:\ hard drive then perform the following steps:

8.1 At the DOS prompt enter "c:\reload\setold

8.2 Follow the screen instructions

REFERENCES

1. FNP-0-EIP-9.0, Emergency Classification and Actions

2. FNP-0-EIP-9.2, Obtaining Meteorological Information

3. FNP-0-CCP-1300, Chemistry and Environmental Activities During a Radiological Accident

4. MIDAS Users Manual for Southern Nuclear Operating Company

5. MIDAS Users Guide for Accident Calculations

6. FNP-0-CCP-645

7. FNP-0-CCP-647

8. FNP-1-CCP-643

9. FNP-2-CCP-643

KEYBOARD/MOUSE MANIPULATIONS

1.0 Mouse operations for Main MIDAS screens

1.1 Use the mouse to position the cursor on the desired box of the screen.

1.2 Click the left mouse button once to select the item.

1.3 If there is a number that must be input for the selected item, the numpad will appear in the upper right hand corner. You must enter a value on the numpad before proceeding. The numpad is described below.

1.4 If there is a date/time that must be input for the selected item, the date enter pad will appear in the upper right hand corner. You must enter a value on the date enter pad before proceeding. The date enter pad is described below.

1.5 After selecting an item, it will be highlighted. Click once on the CONFIRM BOX to perform the action selected.

1.6 To exit a screen, click twice on the EXIT BOX. Clicking on the CONFIRM BOX when exit is selected will not perform the exit.

1.7 After the first click on EXIT, you can select another item if you change your mind about exiting.

1.8 When RESET is available as a selection, it will have different functions on different screens.

1.9 If reset is not highlighted, generally it will delete the selections that you have made, or return to the previous selections.

1.10 When reset is highlighted, generally it will return you to the previous screen.

2.0 Keyboard Operation

2.1 The cursor can be moved from one location to another by using the cursor keys.

2.2 The space bar will perform the same function as the left mouse button.

2.3 With numlock off, the number pad will function as cursor keys.

2.4 With numlock on, the keyboard can be used to enter values on the main screen numpad.

2.5 Pressing q, then ENTER, from the main screens will generally cause the program to return to the function selection screen or return to the DOS prompt, depending on where you are in the program.

3.0 Numpad Operation

3.1 Once the numpad has been displayed, you must select EN (or enter on the keyboard or numpad) to return to the main screen.

3.2 Selecting BS (or backspace on the keyboard) will delete the last number entered.

3.3 Selecting CL (or Esc on the keyboard) will delete all numbers entered.

3.4 Selecting - (or - on the keyboard or numpad) before entering the value will yield a negative number.

3.5 Placing a "-" sign anywhere but before the first number will prevent the enter key from working. You must clear the entry and enter a valid number.

3.6 Selecting E (or E on the keyboard) is used for exponents. A "-" behind the E will cause the exponent to be negative.

3.7 If a number is input that is out of the allowable range, the numpad will go away when entered. But the value in the selected item will remain the same as it was before selecting.

4.0 Date Entry Pad

4.1 Once the date entry pad has been displayed, you must select CONFIRM) to return to the main screen.

4.2 The only way to input on the date entry pad is with the mouse.

4.3 Position the mouse on the + or - above or below the number that you want to change.

4.4 Pressing Q, then ENTER will not allow you to leave the date entry pad.

4.5 Once you have the proper date input, select confirm.

5.0 Spreadsheet Data Entry Screens

5.1 The mouse will not function in the spreadsheets.

5.2 The allowable keys and their functions are displayed on the bottom of the spreadsheet screens.

6.0 Maps and Plots

6.1 A single click will cause the action to occur, confirmation is not required except to activate a newly selected projection time.

6.2 Pressing Q and ENTER has inconsistent results.

7.0 Printing Plots and Reports

7.1 Pressing SHIFT and PRINT SCREEN simultaneously will print whatever is currently on the screen.

7.2 Pressing CTRL and PRINT SCREEN simultaneously will print all text as it appears on the screen. Pressing the same keys again will stop printing text.

MAP/REPORT FUNCTIONS

1.0 The TEDE map will automatically be displayed after entering the scenario data. The following information will be displayed on the screen:

An 11 mile radius plume map (includes locations of power block, RW structure, SW structure, met tower and roads)
The type of map (i.e., TEDE, CDE, etc.)
The projection time
Scenario details (start/stop times, peak values, etc.)
A color code for the values in the plume
Selection boxes for the first map screen

2.0 First TEDE Map Screen Selections

2.1 POINT OF INTEREST - after selecting this item, place the cursor anywhere on the map and click on the mouse. The value at that point will be displayed on the screen. The units displayed are the same as the units for the peak value on the map.

To exit the point of interest function, select CURSOR HERE TO EXIT.

2.2 MAP FEATURES - after selecting this item, a menu will be displayed next to the plume map, with the following selections:

ZONES - displays 10 mile EPZ zones
FIELD MONITORS - displays predesignated sampling locations
AIR SAMPLERS - displays air sampler locations
TLDS - displays locations of posted TLDS
COUNTY BOUNDARIES - displays county boundaries
TEXT - displays text for city names, etc.
WIND SPIDER - displays the wind spider used in EIP-4.0

Select or deselect as many of these features as you desire and confirm. Too many selections will clutter the drawing and make it difficult to read.

The map will be redrawn with these selections.

2.3 SELECT AREA - after selecting this item, you must select two points on the map at diagonal corners (upper right and lower left or upper left and lower right) of a square that you want enlarged. After selecting the second point, the map will be redrawn for the area selected. A new selection will be available, RESTORE. Choosing this new selection will redraw the map with the original scale.

2.4 CONTINUE - after selecting this item, the selections will change to the second map screen selections.

3.0 Second TEDE Map Screen Selections

3.1 Projection Time - selecting this item causes the projection time in the selection to cycle between 2, 4, 8 and 60 hour projection time. After selecting the desired projection time, select CONFIRM to have the map redrawn with the new projection item.

3.2 NEXT REPORT - after selecting this item, the selections will change to the third map screen selections.

4.0 Third TEDE Map Screen Selections

4.1 THYROID CDE DOSE PLOT - after selecting this item, the map will be redrawn as the Thyroid CDE 11 mile plot with similar information as described for the TEDE map.

4.2 SKIP TO NEXT REPORT - will cause the selections to change to EXIT (exits scenario and return to function selection screen) and MORE REPORTS (exits map and goes to MORE REPORTS screen).

4.3 MORE REPORTS - exit to MORE REPORTS screen.

5.0 THYROID CDE MAP SCREEN SELECTIONS

5.1 These screens are similar to the TEDE screens except that there is no third screen and the next report on the CDE second screen does the same thing as skip to next report on the TEDE third screen.

6.0 MAP SCREEN SELECTIONS FROM MORE REPORTS

6.1 These screens are identical to the CDE map screen selections.

7.0 Report Screen Selections From More Reports

7.1 From the MORE REPORTS screen, select and confirm the desired report.

7.2 The REPORT PARAMETER SELECTION screen has three selections available:

PROJECTION TIME - click on this item to cycle through the available projection times until the desired projection time is displayed.

CONFIRM - click on this item to display the selected report with the desired projection time.

MORE REPORTS - click on this item to return to the MORE REPORTS screen.

7.3 The screen with the report displayed on it has three selections available:

CONTINUE - click on this item to show the next screen of the report. At the last screen of the report, the selections will change to the ones described in step 7.2.

SKIP REST OF THIS REPORT - clicking on this item will keep the same report screen and change the selections to the ones described in step 7.2.

EXIT TO MORE REPORTS - click on this item to return to the MORE REPORTS screen.

8.0 Printing Plots and Reports

8.1 Pressing SHIFT and PRINT SCREEN simultaneously will print whatever is currently on the screen.

8.2 To print an entire report, each screen of the report must be displayed and printed individually.

8.3 Pressing CTRL and PRINT SCREEN simultaneously will print all text as it appears on the screen. Pressing the same keys again will stop printing text.

PLOT AND REPORT DESCRIPTIONS

REPORTS - Numerical representations of the parameter that is selected, can be printed (SHIFT - PRINT SCREEN) as a graphic. Each page of the report must be printed separately.

PLOTS - Graphical representation of the parameter that is selected, can be printed (SHIFT - PRINT SCREEN) as a graphic.

4-PLOTS - Special case of plot where the plots for the four allowed projection times are displayed on the same screen.

REPORTS/PLOTS AVAILABLE FROM MORE REPORTS SCREENS	
PARAMETER - DESCRIPTION	TYPE
TEDE 4-DAY DOSE - Integrated Total Effective Dose Equivalent to an individual, assuming that individual is not evacuated for four days. Units for the display is MREM. TEDE is a criteria for making General Emergency and Site Area Emergency classifications, and for Protective Action Guidelines	REPORT PLOT 4-PLOT
THYROID CDE DOSE - Integrated Thyroid Committed Dose Equivalent. Units for the display is MREM. Thyroid CDE is a criteria for making General Emergency and Site Area Emergency classifications, and for Protective Action Guidelines.	REPORT PLOT 4-PLOT
TEDE DOSE RATE - TEDE dose rate is displayed in MREM/HR. This is useful for evaluating the TEDE for an individual who will be in the area for a short period of time. This is <u>not</u> the same reading that you would see with a meter at the specified location.	REPORT PLOT 4-PLOT
THYROID CDE DOSE RATE - Thyroid CDE dose rate is displayed in MREM/HR. This is useful for evaluating the Thyroid CDE for an individual who will be in the area for a short period of time. This is <u>not</u> the same reading that you would see with a meter at the specified location.	REPORT PLOT 4-PLOT
EDE DOSE RATE - Effective Dose Equivalent dose rate is displayed in MREM/HR. This is useful for evaluating the expected dose rate that one might see with a meter at the specified location. The .25 hour projection should provide the most accurate indication of current dose rate.	PLOT REPORT
MET AND RAD SUMMARY - Provides a summary of the meteorological and radiological data that has been input into the program to do the projections	REPORT
PROJECTED DOSE SUMMARY - Provides a summary of dose projection from the start date of integration. The top half of each page is for dose and the bottom half is for dose rate. First page has break at or beyond site boundary and at location, the PAG limit, and the most distant location where the limit is exceeded. The second page is a summary of the pathway doses at the grid point nearest the peak.	REPORT

MULTIPLE PLUME TRACT - Provides a straight line gausian projected plume segment plot showing each 15 minute track of the plume release for a 96 hour projection time.	PLOT
TIME OF ARRIVAL - Provides multiple pages of data tables showing plume arrival time at the varying locations. The first page provides a summary of arrival time in hours by direction and sector for site boundary, 2, 5, 10, 25, and 50 miles. Subsequent pages provide time of arrival predictions for only affected sectors in detail.	REPORT
SKIN DE - Provides data in mr for integrated skin dose equivalent (1 year) useful for evaluating the skin dose an individual is receiving for 10CFR20 limit purposes	REPORT PLOT
POPULATION DOSE - Provides TEDE 4 day dose MANREM projections. Total population dose is based on total population in affected site regions. Projection time defaults to .25 hours, but can be modified to provide forecast capability.	PLOT REPORT
FM GAMMA AND BETA DOSE RATE - Report provides field monitor gamma and beta open window dose rate predicted values in mr/hr for varying direction and distance. The first page of the report provides a summary by direction and sector for site boundary, 2, 5, 10, 25, and 50 miles. Subsequent pages provide detailed time of arrival predictions for affected sectors. Projection time defaults to .25 hours, but can be modified to provide forecast capability. Plot contour legends provide converted open window (mr/hr) and frisker (cpm) predicted readings.	PLOT PRINT
FM GAMMA DOSE RATE - Report provides field monitor gamma closed window dose rate predicted values in mr/hr for varying direction and distance. The first page of the report provides a summary by direction and sector for site boundary, 2, 5, 10, 25, and 50 miles. Subsequent pages provide time of arrival predictions for only affected sectors in detail. Projection time defaults to .25 hours, but can be modified to provide forecast capability. Plot contour legends provide converted closed window (mr/hr) and frisker (cpm) predicted readings.	PLOT PRINT
FM IODINE DOSE RATE - Report provides field monitor thyroid CDE dose rate predicted values in mr/hr for varying direction and distance. The first page of the report provides a summary by direction and sector for site boundary, 2, 5, 10, 25, and 50 miles. Subsequent pages provide time of arrival predictions for only affected sectors in detail. Projection time defaults to .25 hours, but can be modified to provide forecast capability. Plot contour legends provide calculated silver zeolite cartridge readings (cpm) and particulate filter (cpm) predicted readings.	PLOT PRINT
AIR CONCENTRATION - Provides a projection of what the air concentration will be in µCi/m3 for the projection time selected for I-131, Cs-134, Cs-137, Sr-89, and Sr-90.	REPORT PLOT

GROUND CONTAMINATION - Provides a projection of what the ground contamination will be in µCi/m2 for I-131, Cs-134, Cs-137, Sr-89, and Sr-90.	REPORT PLOT
COW MILK CONTAMINATION - Provides a projection of the contamination in µCi/liter of cow's milk for an animal that has been in the area during the course of the accident for I-131, Cs-134, Cs-137, Sr-89, and Sr-90.	REPORT PLOT
VEGETATION CONTAMINATION - Provides a projection of the contamination in µCi/kilogram of vegetation during the course of the accident for I-131, Cs-134, Cs-137, Sr-89, and Sr-90.	REPORT PLOT
MEAT CONTAMINATION - Provides a projection of the contamination in µCi/kilogram of meat for an animal that has been in the area during the course of the accident for I-131, Cs-134, Cs-137, Sr-89, and Sr-90.	REPORT PLOT
UNDEPLETED X/Q - Provides data on the calculated undepleted relative air concentration in sec/m3 (Ci/me per Ci/sec).	PLOT PRINT
DEPLETED X/Q (DVI) - Provides data on the depleted I-131 relative air concentration in sec/m3.	PLOT PRINT
DEPLETED X/Q (DVC) - Provides data on the depleted cesium-137 relative air concentration in sec/m3.	PLOT PRINT
D/Q (DVI) - Provides data on the Iodine-131 relative deposition in 1/m2 (Ci/m2 deposited per Ci/sec released). Assumed deposition rate is .01m/sec.	PLOT PRINT
D/Q (DVC) - Provides data on the Cesium-137 relative deposition in 1/m2 (Ci/m2 deposited per Ci/sec released). Assumed deposition rate is .01 m/sec.	PLOT
COMMITTED GROUND - Provides data on 1 meter ground shine air dose rate in mrad/hr, with an initial ground commitment and with a ground commitment for 1 day, 4 days, 1 year, 2nd year, and 50 years.	PLOT PRINT
PROJECTED INGESTION SUMMARY - Provides a summary of ingestion pathway data for affected organs/pathways as previously described for the following isotopes: I-131, CS-134, CS-137, SR-89, SR-90. Ground shine committed dose is computer using dose factors without weathering. The results are slightly different from the doses integrated over the commitment time. Air dose assumes 0.7 reduction for ground roughness.	PRINT
SEND STATE REPORT TO THE PRINTER – Provides an additional printout of the emergency notification form that is identical to the one that was printed for the current update.	

RELEASE POINTS

1.0 THERE ARE FOUR RELEASE POINTS BUILT INTO THE MIDAS PROGRAM:

Release point 1 - Unit 1 plant vent stack
Release point 2 - Unit 1 steam release points
Release point 3 - Unit 2 plant vent stack
Release point 4 - Unit 2 steam release points

2.0 RELEASE POINT 1 - UNIT 1 PLANT VENT STACK

Selecting release point 1 allows radiation monitor inputs from the unit 1 SPING (R29B) for noble gas, iodine and particulate and from unit 1 R14. Inputs from SPING or R14, but not both, must be entered for release point 1 to have a valid source term. In addition to the radiation monitor input, plant vent stack flow must also be input.

3.0 RELEASE POINT 2 - UNIT 1 STEAM RELEASE POINTS

Selecting release point 2 allows an input from any one or more of the five unit 1 radiation monitors that monitor steam release paths. Those monitors are:

R60A unit 1 A steam generator safeties/relief
R60B unit 1 B steam generator safeties/relief
R60C unit 1 C steam generator safeties/relief
R60D unit 1 TDAFW steam exhaust
R15C unit 1 high range SJAE exhaust

For any of the above monitors that have an emergency radioactive release in progress, the monitor reading should be input to the program.

For any monitor that has a radiation reading input, there must also be a flow input. For the SJAE exhaust and the TDAFW exhaust, there is a default value that should be input. The flow for the steam generator safeties is input as a steam generator pressure. Using the steam generator pressure, the program will determine how many safeties/reliefs are open for that generator and calculate the flow through them. In the event of a stuck open safety or relief valve, a value of 1040 should be entered and the program will calculate a conservatively high flow.

4.0 RELEASE POINT 3 - UNIT 2 PLANT VENT STACK

Selecting release point 3 allows radiation monitor inputs from the unit 2 SPING (R29B) for noble gas, iodine and particulate or from unit 2 R14. Manipulation of the data is identical to that described for release point 1.

5.0 RELEASE POINT 4 - UNIT 2 STEAM RELEASE POINTS

Selecting release point 2 allows an input from any one or more of the five unit 1 radiation monitors that monitor steam release paths. Those monitors are:

R60A unit 1 A steam generator safeties/relief
R60B unit 1 B steam generator safeties/relief
R60C unit 1 C steam generator safeties/relief
R60D unit 1 TDAFW steam exhaust
R15C unit 1 high range SJAE exhaust

Manipulation of the data is identical to that described for release point 2.

6.0 SELECTING RELEASE POINTS WHEN ENTERING DATA

The procedure has you select only the two release points for the affected unit, unless both units are affected.

The release points selected when starting a new scenario are the only release points that can be used throughout the entire scenario. For that reason, the procedure has you select both of the release points for the affected unit. If this were not done and a release started on a second release point some time after the first release started, all of the data entered for the initial scenario would have to be hand copied on to a new scenario to provide accurate readings. Whenever possible, the number of release points is kept to the affected unit only to minimize the input and calculation time.

OBTAINING MET/RAD DATA

Data can be obtained using any combination of the following methods:

GENERAL METHODS

1.0 An emergency release is defined as a release greater than 10 times normal. Normal release levels are average release levels for steady state operation.

2.0 If it is desired to maintain hardcopy of the data input, Figure 1 may be used to list the radiation and meteorological data collected.

3.0 If the ERDS system is available, then the required data can be collected from the ERDS system.

4.0 If the ADMS system is available, then the required data can be collected from the ADMS system per FNP-0-CCP-1300.

5.0 If the plant computer is available, then the required data can be collected from the plant computer.

METEOROLOGICAL SPECIFIC INFORMATION

6.0 If meteorological information is not available from the above sources, then FNP-0-EIP-9.2 may be used to obtain meteorological data.

7.0 Rainfall in the last 15 minutes may be estimated by entering L, M or H for light, medium or heavy rain on the spread sheet. If there is no rain, then 0 inches should be entered.

8.0 Delta temperature may be entered as a number or as stability class designator (A through G).

9.0 Values from the 35 foot elevation are preferred for wind speed and direction.

10.0 The wind direction is the direction from which the wind is blowing.

RADIATION MONITOR SPECIFIC INFORMATION

11.0 SPING data is the preferred data for plant vent stack releases; if SPING data is not available, enter R14 data in the spread sheet.

12.0 If failed fuel is indicated and SPING iodine or particulate are not available or reading greater than 1e-6 µc/ml, then enter a value for SPING iodine and/or particulate that is 1e3 less than the SPING noble gas value.

13.0 If SPING data is not available from the above sources, then FNP-0-CCP-641 may be used to poll the high range vent stack monitor (R29B) for the SPING data.

14.0 If SPING and R14 data is not available, have a vent stack sample drawn per FNP-0-CCP-1300, Appendix G.

15.0 If required radiation monitor data is not available from the above sources, obtain the readings directly from the monitors in the control room.

CAUTION: PRIOR TO HAVING THE FOLLOWING STEP PERFORMED, EVALUATE THE RADIOLOGICAL HAZARD AND OBTAIN THE EMERGENCY DIRECTOR'S APPROVAL.

16.0 If none of the above sources are available for R60A/B/C/D, have dose rate readings performed per FNP-0-RCP-25, Appendix G, or have a grab sample taken and analyzed per FNP-0-CCP-645.

CAUTION: PRIOR TO HAVING THE FOLLOWING STEP PERFORMED, EVALUATE THE RADIOLOGICAL HAZARD AND OBTAIN THE EMERGENCY DIRECTOR'S APPROVAL.

17.0 If none of the above sources are available for R15C, have dose rate readings performed per FNP-0-RCP-25, appendix H, or have a grab sample taken per FNP-1 (or 2)-CCP-643 and analyzed per FNP-0-CCP-647.

RELEASE FLOW SPECIFIC INFORMATION

18.0 If plant vent stack flow is not available from the above sources, obtain the value from the flow recorder in the Control Room.

19.0 If plant vent stack flow is not available from the above sources, assume the following default values based on system air balance ventilation flow technical report: (REA 98-1906)

One Auxiliary Building fan running - 94,000 scfm
Two Auxiliary Building fan running - 136,000 scfm
Zero Auxiliary Building exhaust fans, one train PRF - 5,000 scfm
Zero Auxiliary Building exhaust fans, two trains PRF - 10,000 scfm

20.0 For the TDAFW flow, use the default value of 11,175 cfm.

21.0 For the SJAE flow, use the default value of 1,050 cfm.

22.0 If steam generator pressure is not available, obtain the information from the control room instruments.

23.0 If there is a stuck open safety or relief valve associated with a steam generator that has a radioactive release, enter a pressure for the steam generator of 1040, which will cause a conservatively high flow for that steam generator.

FIGURE 1
MET/RAD DATA

MET DATA

Wind Speed_____mph ☐ 35 ft (Preferred) ☐ 150 ft ☐ Other

Wind Dir From_____deg ☐ 35 ft (Preferred) ☐ 150 ft ☐ Other

Delta Temp/Stability Class_____ (Most Positive Delta T/Closest To G)

Rainfall_____ (inches in 15 minutes or L,M,H)

VENT STACK DATA ☐ UNIT 1 (release point 1) ☐ UNIT 2 (release point 3)

ENTER SPING VALUES

R29B(I)_____µCi/cc R29B(NG)_____µCi/cc R29B(P)_____µCi/cc

Or Enter R-14 Value R-14_____cpm

PLANT VENT STACK FLOW

☐ As Read_____cfm ☐ Default 1 Fan 94,000 cfm ☐ Default 2 Fans 136,000 cfm
☐ Default 0 Fans/1 trn PRF 5,000 cfm ☐ Default 0 Fans/2 trns PRF 10,000 cfm

STEAM RELEASE POINT DATA ☐ UNIT 1 (release point 2) ☐ UNIT 2 (release point 4)
(Enter 1040 psig for a SG with a stuck open valve)

R-60A_____rem/hr
SG A Flow (pressure)_____psig

R-60B_____rem/hr
SG A Flow (pressure)_____psig

R-60C_____rem/hr
SG C Flow (pressure)_____psig

R-60D_____rem/hr
TDAFW Flow 11,175 cfm

R-60D_____rem/hr
SJAE Flow 1,050 cfm

RELEASE POINTS SELECTED ☐ 1 and 2 (UNIT 1) ☐ 3 and 4 (UNIT 2)

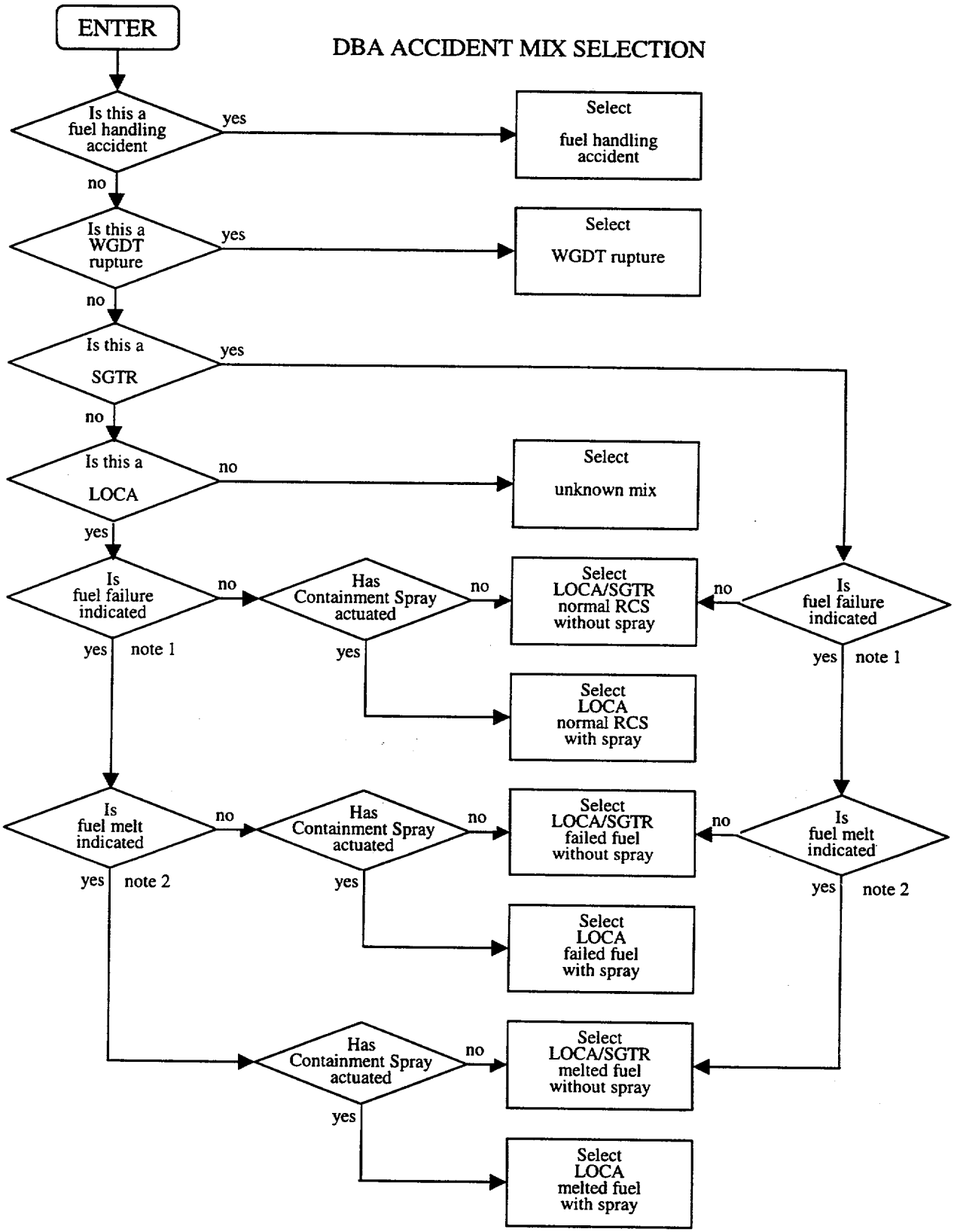
DBA ACCIDENT SELECTION

☐ Unknown Mix ☐ Fuel Handling Accident ☐ WGDT Rupture
☐ LOCA/SGTR normal RCS without spray ☐ LOCA normal RCS with spray
☐ LOCA/SGTR failed fuel without spray ☐ LOCA failed fuel with spray
☐ LOCA/SGTR melted fuel without spray ☐ LOCA melted fuel with spray

RELEASE TIMING Remaining Duration _____ (default 240 minutes)

FIGURE 2

DBA ACCIDENT MIX SELECTION



1. Indications of failed fuel are sample results, Gross Failed Fuel Detector valid alarm, the results of performing an evaluation of core damage With FNP-0-EIP-30.0or other indications that the SS, TM or DAD use to evaluate if failed fuel has occurred.
2. Indications of melted fuel are the results of performing an evaluation of core damage with FNP-0-EIP-30.0.

SHARED

FARLEY NUCLEAR PLANT

EMERGENCY PLAN IMPLEMENTING PROCEDURE

FNP-0-EIP-9.5

SAFETY RELATED

EMERGENCY CLASSIFICATION BASED ON ODCM

PROCEDURE USAGE REQUIREMENTS per FNP-0-AP-6	SECTIONS
Continuous Use	
Reference Use	**ALL**
Information Use	

Approved:

R. M. Thomas
Nuclear Plant General Manager

Date Issued 2-25-00

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2	3	X	X								
3	3	X	X								
4	3	X	X								
5	3	X	X								
6	3	X	X								
ATTACH. 1	2	DEL									
TABLE. 1		X	X								
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FIGURE 1	3	X	X								
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EMERGENCY CLASSIFICATION BASED ON ODCM

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EMERGENCY CLASSIFICATION BASED ON ODCM

1.0 Purpose

To provide a method of emergency classification based on exceeding Technical Specification effluent criteria using the annual average mixed mode X/Q value, as defined in the ODCM.

2.0 References

See Table 1.

3.0 General

This procedure is entered to perform dose assessment using the Offsite Dose Calculation Method (ODCM) if Automated Dose Assessment was NOT required to automatically activated OR if a General, or Site Area Emergency is not indicated by FNP-0-EIP-9.1 or FNP-0-EIP-9.3 from the following:

a. EIP-9.0, step 4.2.7

b. EIP-9.0, step 4.2.10

4.0 Determining The Release Concentration or Release Count Rate

4.1 For a release that takes less than 1 hour, normalize the release concentration or release count rate to 1 hour and add this value to the average background (e.g., if the release lasted 15 minutes, divide by 4; if the release lasted for 10 minutes, divide by 6, etc.). For releases that lasted more than 1 hour, use the method above to determine the highest average release for any continuous 60-minute period with the highest average release (i.e., comparable to a moving average).

4.2 If a single grab sample is the only method of determining release concentration the value of that grab sample will be the release concentration.

4.3 If multiple grab samples are taken within a 60 minute period they may be averaged to provide the release concentration.

5.0 ODCM Dose Assessment for the Plant Vent Stack

Steps 5.1, 5.2, and 5.3 should be used in sequence order any time that a plant vent stack ODCM calculation is performed. This is true even if the alarm that required doing the calculation was a different alarm.

5.1 Classification based on RE-29B noble gas or iodine channel values.

NOTE: Figure 1 may be used as an aid to calculate ODCM off site dose rates based on RE-29B noble gas or iodine channel values.

5.1.1 Obtain noble gas release concentration per step 4.0 from the Non-Regulatory Emergency Response Data System (NRERDS), the Radiological and Meteorological Data Acquisition System (RMDA), Plant Computer or directly from the low range gas channel. IF the noble gas channel of RE-29B is INOPERABLE, THEN go to 5.2.

5.1.2 Obtain iodine release concentration per step 4.0 from NRERDS, RMDA, Plant Computer or directly from the iodine channel. IF the iodine channel is inoperable, THEN go to 5.3.

5.1.3 Obtain Plant Vent Stack (PVS) flow rate from NRERDS, RMDA, Plant Computer or from the PVS flowrate recorder in the Control Room.

5.1.4 IF the PVS flow rate is NOT available from these sources, THEN use the following default values: (REA 98-1906)

a. One Auxiliary Building Fan...94,000 scfm
b. Two Auxiliary Building Fans...136,000 scfm
c. Zero Auxiliary Building Exhaust Fans, one train PRF...5,000 scfm
d. Zero Auxiliary Building Exhaust Fans, two trains PRF...10,000 scfm

5.1.5 Calculate the noble gas and iodine dose rates at the site boundary using the following ODCM equations:

noble gas release concentration in µci/ml from step 5.1.1	X	PVS flowrate (scfm) from step 5.1.3/4	X	conversion factor 8.54E-07	=	noble gas dose rate (rem/hr)

iodine release concentration in µci/ml from step 5.1.2	X	PVS flowrate (scfm) from step 5.1.3/4	X	conversion factor 9.41E-04	=	Iodine dose rate (rem/hr)

5.1.6 Go to EIP-9.0, step 4.2.11 for evaluation of emergency classification criteria.

5.2 Classification based on RE-14 count rate (cpm)

NOTE: Figure 2 may be used as an aid to calculate ODCM off site dose rates based on RE-14 count rate.

5.2.1 Obtain release count rate (cpm) per step 4.0 from NRERDS, RMDA, Plant Computer or directly from RE-14.

5.2.2 IF RE-14 count rate is less than 650,000 cpm, no emergency classification can be based on effluent noble gas dose rates. Go to step 5.2.7.

5.2.3 IF RE-14 release count rate (cpm) is greater than 1,000,000 cpm (full scale) OR NOT operable, THEN go to step 5.3.

5.2.4 Obtain Plant Vent Stack (PVS) flow rate from NRERDS, RMDA, Plant Computer or from the PVS flowrate recorder in the Control Room.

5.2.5 IF the PVS flow rate is NOT available from these sources, THEN use the following default values: (REA 98-1906)

a. One Auxiliary Building Fan...94,000 scfm
b. Two Auxiliary Building Fans...136,000 scfm
c. Zero Auxiliary Building Exhaust Fans, one train PRF...5,000 scfm
d. Zero Auxiliary Building Exhaust Fans, two trains PRF...10,000 scfm

5.2.6 Calculate the noble gas dose rate at the site boundary using the following ODCM equation:

RE-14 release count rate in cpm from step 5.2.1	X	PVS flowrate (scfm) from step 5.2.4/5	X	conversion factor 5.697E-16	=	noble gas dose rate (rem/hr)

5.2.7 Go to step 5.1.2 to perform applicable steps if the iodine dose rate is required or go to EIP-9.0, step 4.2.11 for evaluation of emergency classification criteria.

5.3 Classification based on Plant Vent Stack grab sampling and analyses

NOTE: Figure 3 may be used as an aid to calculate ODCM off site dose rates based on Plant Vent Stack grab sampling and analyses.

5.3.1 IF RE-14 is reading full scale or inoperable AND the low range noble gas channel of RE-29B is NOT operable, THEN request that the Shift Radiochemist obtain a plant vent stack noble gas grab sample AND analyze it for DOSE EQUIVALENT Xe-133.

5.3.2 IF the RE-29B iodine channel is NOT operable, THEN request that the Shift Radiochemist obtain a plant vent stack iodine grab sample AND analyze it for DOSE EQUIVALENT I-131.

5.3.3 Obtain Plant Vent Stack (PVS) flow rate from NRERDS, RMDA, Plant Computer or from the PVS flowrate recorder in the Control Room.

5.3.4 IF the PVS flow rate is NOT available from these sources, THEN use the following default values: (REA 98-1906)

a. One Auxiliary Building Fan...94,000 scfm
b. Two Auxiliary Building Fans...136,000 scfm
c. Zero Auxiliary Building Exhaust Fans, one train PRF...5,000 scfm
d. Zero Auxiliary Building Exhaust Fans, two trains PRF...10,000 scfm

5.3.5 Calculate the dose rates at the site boundary using the following ODCM equations:

DE Xe-133 release concentration in µci/ml from step 5.3.1	X	PVS flowrate (scfm) from step 5.3.3/4	X	conversion factor 8.54E-07	=	Noble gas dose rate (rem/hr)

DE I-131 release concentration in µci/ml from step 5.3.2	X	PVS flowrate (scfm) from step 5.3.3/4	X	conversion factor 9.41E-04	=	Iodine dose rate (rem/hr)

5.3.6 Go to EIP-9.0, step 4.2.11 for evaluation of emergency classification criteria.

6.0 ODCM Dose Assessment for Steam Generator Atmospheric Relief and/or Safety Release and/or Turbine Driven Auxiliary Feedwater (TDAFW) Release.

NOTE: Figure 4 may be used as an aid to calculate ODCM off site dose rates based on Steam Generator Atmospheric Reliefs, Safeties and TDAFW.

6.1 Using the values from the R-60 series of instruments, HP surveys or other criteria, determine which steam generators have a radioactive release in progress.

6.2 Obtain the current pressure (psig) for each steam generator of the affected unit that has a radioactive release in progress.

6.3 Determine the number of valves that are open for each steam generator that has a radioactive release in progress by consulting Operations staff. Table 2 may be used as an aid in determining this.

6.4 Determine the total flow in cfm from each generator that has a radioactive release in progress by using the following equation:

steam pressure psig from step 6.2	X	# valves open from step 6.3	X	conversion factor 359.12	=	steam flow cfm

6.5 Using the values from the R-60D, HP surveys or other criteria, determine if the TDAFW exhaust has a radioactive release in progress. If the TDAFW is determined to have a radioactive release the flow for that release point is 11175 cfm.

6.6 Add the flows determined in step 6.4 and 6.5 for all steam generators and the TDAFW that have a radioactive release in progress.

6.7 Obtain noble gas release concentration per FNP-0-CCP-1300, Appendix O.

6.8 Obtain total iodine release concentration per FNP-0-CCP-1300, Appendix O.

6.9 If the reactor is at power, convert from total iodine concentration to I-131 concentration by dividing the total iodine concentration from step 6.8 by 8.4.

6.10 If the reactor is shutdown, convert from total iodine concentration to I-131 concentration by dividing the total iodine concentration from step 6.8 by the ratio obtained from Figure 6.

6.11 Calculate the noble gas and iodine dose rates at the site boundary using the following ODCM equations:

noble gas release concentration (µci/ml) from step 6.7	X	steam flow rate (cfm) from step 6.6	X	conversion factor 3.85E-05	=	noble gas dose rate (rem/hr)

iodine 131 release concentration in µci/ml from step 6.9/10	X	steam flow rate (cfm) from step 6.6	X	conversion factor 4.24E-02	=	iodine dose rate (rem/hr)

6.12 Go to EIP-9.0, step 4.2.11 for evaluation of emergency classification criteria.

7.0 ODCM Dose Assessment for Steam Jet Air Ejector Release

NOTE: Figure 5 may be used as an aid to calculate ODCM off site dose rates based on Steam Jet Air Ejector.

7.1 Obtain noble gas concentration per FNP-0-CCP-1300, Appendix O.

7.2 Obtain total iodine concentration per FNP-0-CCP-1300, Appendix O.

7.3 If the reactor is at power, convert from total iodine concentration to I-131 concentration by dividing the total iodine concentration from step 7.2 by 8.4.

7.4 If the reactor is shutdown, convert from total iodine concentration to I-131 concentration by dividing the total iodine concentration from step 7.2 by the ratio obtained from Figure 6.

7.5 Calculate the noble gas and iodine dose rates at the site boundary using the following ODCM equations:

noble gas release concentration in µCi/ml from step 7.1.	X	conversion factor, includes 1050 scfm flow 4.0425 E-2	=	noble gas dose rate (rem/hr)

iodine 131 release concentration in µci/ml from step 7.3/4 (block 3)	X	conversion factor, includes 1050 scfm flow 44.52	=	iodine dose rate (rem/hr)

7.6 Go to EIP-9.0, step 4.2.11 for evaluation of emergency classification criteria.

TABLE 1

REFERENCES

1. FNP-0-CCP-1300, Chemistry and Environmental Activities During a Radiological Accident
2. FNP-0-EIP-9.0, Emergency Classification and Actions
3. FNP-0-EIP-20.0, Chemistry and Environmental Support to the Emergency Plan
4. NT-86-0014, Gaseous Releases, Emergency Classifications
5. FNP-0-M-011, Off-site Dose Calculation Manual

TABLE 2

Steam Generator Relief/Safety Valves Open

This table may be used to help determine the number of valves that are open for each steam generator assuming there are no failed open or stuck valves.

Steam Generator Pressure Range in PSIG	Total Number Of Valves Open Per SG	Valves That Are Open For Each SG
<1035	0	NONE
1035-1074	1	1 SG PORV
1075-1087	2	1 SG PORV / 1 SG SAFETY
1088-1101	3	1 SG PORV / 2 SG SAFETIES
1102-1114	4	1 SG PORV / 3 SG SAFETIES
1115-1128	5	1 SG PORV / 4 SG SAFETIES
≥1129	6	1 SG PORV / 5 SG SAFETIES

FIGURE 1

Calculations Based On RE-29B Noble Gas Or Iodine Channel Values (STEP 5.1)
WORKSHEET

1. Enter the noble gas release concentration in µCi/ml from step 5.1.1 in block 1.
2. Enter the RE-29B iodine release Concentration in µCi/ml from step 5.1.2 in block 5.
3. Enter the PVS flowrate in scfm from step 5.1.3 or 5.1.4 in blocks 2 and 6.
4. Obtain the noble gas dose rate by multiplying block 1 times block 2 times block 3 and enter the results in block 4.
5. Obtain the iodine dose rate by multiplying block 5 times block 6 times block 7 and enter the results in block 8.
6. Return to step 5.1.6.

noble gas release concentration in µci/ml from step 5.1.1	X	PVS flowrate (scfm) from step 5.1.3/4	X	conversion factor	=	noble gas dose rate (rem/hr)
BLOCK 1	X	BLOCK 2	X	BLOCK 3 **8.54E-07**	=	BLOCK 4

iodine release concentration in µci/ml from step 5.1.2	X	PVS flowrate (scfm) from step 5.1.3/4	X	conversion factor	=	Iodine dose rate (rem/hr)
BLOCK 5	X	BLOCK 6	X	BLOCK 7 **9.41E-04**	=	BLOCK 8

FIGURE 2

Calculation Based On RE-14 Count Rate (STEP 5.2)
WORKSHEET

1. Enter the RE-14 release count rate in cpm from step 5.2.1 in block 1.
2. Enter the PVS flowrate in scfm from step 5.2.4 or 5.2.5 in block 2.
3. Obtain the noble gas dose rate by multiplying block 1 times block 2 times block 3 and enter the results in block 4.
4. Iodine dose rate must be calculated using step 5.1.2 (figure 1) or step 5.3.2 (figure 3).
5. Return to step 5.2.7.

RE-14 release count rate in cpm from step 5.2.1	X	PVS flowrate (scfm) from step 5.2.3/4	X	conversion factor	=	noble gas dose rate (rem/hr)
BLOCK 1		BLOCK 2		BLOCK 3		BLOCK 4
	X		X	**5.697E-16**	=	

FIGURE 3

Calculations Based On Plant Vent Stack Grab Sampling And Analyses (STEP 5.3)
WORKSHEET

1. Enter the dose equivalent Xe-133 release concentration in µci/ml from step 5.3.1 in block 1.
2. Enter the dose equivalent I-133 release concentration in µci/ml from step 5.3.2 in block 5.
3. Enter the PVS flowrate in scfm from step 5.3.3 or 5.3.4 in blocks 2 and 6.
4. Obtain the noble gas dose rate by multiplying block 1 times block 2 times block 3 and enter the results in block 4.
5. Obtain the iodine dose rate by multiplying block 5 times block 6 times block 7 and enter the results in block 8.
6. Return to step 5.3.6.

DE Xe-133 release concentration in µci/ml from step 5.3.1	X	PVS flowrate (scfm) from step 5.3.3/4	X	conversion factor	=	Noble gas dose rate (rem/hr)
BLOCK 1		BLOCK 2		BLOCK 3		BLOCK 4
	X		X	**8.54E-07**	=	

DE I-131 release concentration in µci/ml from step 5.3.2	X	PVS flowrate (scfm) from step 5.3.3/4	X	conversion factor	=	Iodine dose rate (rem/hr)
BLOCK 5		BLOCK 6		BLOCK 7		BLOCK 8
	X		X	**9.41E-04**	=	

FIGURE 4

Calculations Based On SG Atmospheric Reliefs, Safeties and TDAFW Releases (STEP 6.0)
WORKSHEET

1. Enter the steam pressure in psig from step 6.2 for each SG with a radioactive release, determined in step 6.1, in blocks 1, 5 and 9 respectively.

2. Enter the number of valves open from step 6.3 for each SG with a radioactive release, determined in step 6.1, in blocks 2, 6 and 10 respectively.

3. Obtain the steam flow for each SG with a radioactive release by multiplying the steam pressure in blocks 1, 5 and 9 times the number of valves open in blocks 2, 6 and 10 times the conversion factor in blocks 3, 7and 11. Enter the results in blocks 4, 8 and 12.

4. If there is a radioactive release, determined in step 6.5, from the TDAFW then enter a value of 11175 in block 13 otherwise enter a value of ZERO there.

5. Obtain total steam flow by adding the values in blocks 4, 8, 12 and 13. Enter the total steam flow value in block 14 and in blocks 19 and 23 on the following page.

Steam Generator A						
steam pressure psig from step 6.2	X	# valves open from step 6.3	X	conversion factor	=	steam flow cfm
BLOCK 1	X	BLOCK 2	X	BLOCK 3 **359.12**	=	BLOCK 4
Steam Generator B						
steam pressure psig from step 6.2	X	# valves open from step 6.3	X	conversion factor	=	steam flow cfm
BLOCK 5	X	BLOCK 6	X	BLOCK 7 **359.12**	=	BLOCK 8
Steam Generator C						
steam pressure psig from step 6.2	X	# valves open from step 6.3	X	conversion factor	=	steam flow cfm
BLOCK 9	X	BLOCK 10	X	BLOCK11 **359.12**	=	BLOCK 12
TDAFW						
If there is a radioactive release from the TDAFW then enter a value of 11175 in block 13 otherwise enter a value of ZERO						BLOCK 13
Total Steam Flow						
Add the Steam flow from all three SGs and the TDAFW and enter the value in block 14 and in blocks 19 and 23 on the following page						BLOCK 14

FIGURE 4

6. Enter the total iodine release concentration from step 6.8 in block 15.

7. Enter the ratio of total iodine to I-131 from step 6.9, step 6.10 or figure 6 in block 16.

8. Determine the Iodine 131 release concentration by dividing block 15 by block 16 enter the value in block 17 and block 22.

9. Enter the noble gas release concentration from step 6.7 in block 18.

10. Enter the steam release flow rate (cfm) from step 6.6 (Block 14 from the previous page).

11. Obtain the noble gas dose rate by multiplying block 18 times block 19 times block 20 and enter the results in block 21.

12. Obtain the iodine dose rate by multiplying block 22 times block 23 times block 24 and enter the results in block 25.

13. Return to step 6.12.

total iodine release concentration in µci/ml from step 6.8	/	ratio of total iodine to I-131 from step 6.9/10	=	iodine 131 release concentration in µci/ml
BLOCK 15		BLOCK 16		BLOCK 17
	/		=	

noble gas release concentration (µci/ml) from step 6.7	X	steam flow rate (cfm) from step 6.6 (block 14)	X	conversion factor	=	noble gas dose rate (rem/hr)
BLOCK 18		BLOCK 19		BLOCK 20		BLOCK 21
	X		X	**3.85E-05**	=	

iodine 131 release concentration in µci/ml from step 6.9/10 block 17	X	steam flow rate (cfm) from step 6.6 (block 14)	X	conversion factor	=	iodine dose rate (rem/hr)
BLOCK 22		BLOCK 23		BLOCK 24		BLOCK 25
	X		X	**4.24E-02**	=	

FIGURE 5

Calculation Based On Steam Jet Air Ejector Release (STEP 7.0)
WORKSHEET

1. Enter the total iodine release concentration from step 7.2 in block 1.
2. Enter the ratio of total iodine to I-131 from step 7.3, step 7.4 or figure 6 in block 2.
3. Determine the Iodine 131 release concentration by dividing block 1 by block 2. Enter the value in block 3 and block 7.
4. Enter the noble gas release concentration from step 7.1 in block 4.
5. Obtain the noble gas dose rate by multiplying block 4 times block 5 and enter the results in block 6.
6. Obtain the iodine dose rate by multiplying block 7 times block 8 and enter the results in block 9.
7. Return to step 7.6.

total iodine release concentration in µci/ml from step 7.2	/	ratio of total iodine to I-131 from step 7.3/4	=	iodine 131 release concentration in µci/ml
BLOCK 1	/	BLOCK 2	=	BLOCK 3

noble gas release concentration in µCi/ml from step 7.1	X	conversion factor, includes 1050 scfm flow	=	noble gas dose rate (rem/hr)
BLOCK 4	X	BLOCK 5	=	BLOCK 6
		4.0425 E-02		

iodine 131 release concentration in µci/ml from step 7.3/4 (block 3)	X	conversion factor, includes 1050 scfm flow	=	iodine dose rate (rem/hr)
BLOCK 7	X	BLOCK 8	=	BLOCK 9
		44.52		

Figure 6
RATIO OF TOTAL IODINES TO IODINE - 131