VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

E. H. LEASBURG
VICE PRESIDENT
NUCLEAR OPERATIONS

April 6, 1982

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
Attn: Mr. Robert A. Clark, Chief
Operating Reactors Branch No.3
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Serial No. 219
EMT/dp
Docket Nos. 50-338
50-339
License Nos. NPF-4
NPF-7

Gentlemen:

EMERGENCY PLAN IMPLEMENTING PROCEDURES - NORTH ANNA POWER STATION

As set forth in the provisions of 10 CFR Part 50, Appendix E, Paragraph 5, the enclosed North Anna Power Station Emergency Plan Implementing Procedure, No. 2 is being forwarded.

Sincerely,

R. H. Leasburg

Enclosure - Emergency Plan Implementing Procedures
- North Anna Power Station (10 copies)

cc: Mr. James P. O'Reilly, Regional Administrator
Office of Inspection and Enforcement
Region II (3 copies)

EMERGENCY PLAN IMPLEMENTING PROCEDURES

EPIP NO.	Procedure	Safety Code	Effective Date
EPIP-1	Emergency Classification and Organization Formation, Notification and Communications	S	01-15-82
EPIP-2	Unplanned or Uncontrolled Release of Radioactive Material	S	02-24-82
EPIP-3	Injured Personnel	S	02-11-81
EPIP-4	Fuel Handling Accident	S	08-31-77
EPIP-5	Steam Generator Tube Rupture	S	08-31-77
EPIP-6	Main Steam Line Rupture	S	08-31-77
EPIP-7	Loss of Coolant Accident	S	11-25-81
EPIP-8	Evacuation and Access Control - Site	S	09-02-77
EPIP-9	Personnel Accountability	S	11-25-81
EPIP-10	Personnel Monitoring and Decontamination	S	11-25-81
EPIP-11	Estimating Release From Radiation Monitoring System Data	S	07-02-80
EPIP-12	Estimating Release From Station System Inventory Data	S	07-30-80
EPIP-13	Estimating Release From Offsite Radiological Data	S	11-25-81
EPIP-14	Estimating Doses From Release Data	S	11-25-81

EPIP NO.	Procedure	Safety Code	Effective Date
EPIP-15	Estimating Doses From Environmental Data	S	08-31-77
EPIP-16	Offsite Air, Contamination and Radiation Monitoring	S	11-25-81
EPIP-17	Offsite Water and Foodstuff Monitoring	S	08-15-77
EPIP-18	Emergency Exposure Criteria	S	08-08-77
EPIP-19	Fire Protection	S	11-25-81
EPIP-20	News and Information Releases	S	11-25-81
EPIP-21	Emergency Preparedness and Training	S	01-15-82

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION

UNPLANNED OR UNCONTROLLED RELEASE OF RADIOACTIVE MATERIAL

1.0 Shift Supervisor Response

2.0 Operations Response

3.0 Health Physics Response

Appendix 1 Stability Class Determination

Appendix 2 Blank Forms EPIP 2.1, Report on Information Sought By Emergency Coordinator or Director

Appendix 3 Blank Forms EPIP 2.2 Gaseous Release Evaluation

Appendix 4 Blank Forms EPIP 2.3 Liquid Release Evaluation

Appendix 5 Dose Equivalent Factors and MPCs for Various Nuclides

RECOMMEND APPROVAL: A H Stafford

APPROVED BY: W R Cartwright
CHAIRMAN STATION NUCLEAR SAFETY AND OPERATING COMMITTEE

DATE: 02-24-82

SAFETY RELATED

1.0 Shift Supervisor Response

1.1 Obtain from Appendix 2 of this procedure a FORM EPIP-2.1, "Report on Information Sought by Emergency Director".

1.2 Check, as appropriate to the existing situation, the blocks opposite the data desired under gaseous or liquid release.

NOTE: If radiation monitoring system data is checked, initiate EPIP 11, Estimating Release from Radiation Monitoring System Data.

NOTE: Dose estimates are going to require radiation surveys and/or sampling and therefore require time to complete. To obtain results sooner, strike out any data not considered applicable.

1.3 Assign responsibility of the FORM EPIP-2.1 to someone in Operations and to the senior HP representative onsite. Sign the Form following "requested by", enter the date and time. Personally ensure the assigned operator receives the Form.

1.4 Evaluate the applicability of Appendix 1, "Significance and Evaluation of Release Estimates Based on Station System Inventory Data", of EPIP 12, "Estimating Release from Station System Inventory Data".

2.0 Operations Response

Follow the instructions for the applicable blocks as indicated on FORM EPIP-2.1.

2.1 Meteorological Data

2.1.1 Stability Class - Read directly from template attached to delta T recorder in Control Room. If delta T is not available, use alternate methods given in Appendix 1, "Stability Class Determination", of this procedure.

2.1.2 Wind Speed - Obtain from recorder in Control Room. Use the 150 foot elevation, if not available use the 35 foot elevation, and if neither is available use an estimate from visual observations.

2.1.3 Wind Direction - Obtain from recorder in Control Room using an approximate average of the previous 15 minutes. Use the 150 foot elevation, if not available use the 35 foot elevation, and if neither available use an estimate from visual observations.

2.2 Radiation Monitoring System Data

2.2.1 Initiate EPIP 11, "Estimating Release from Radiation Monitoring System Data".

2.3 Source Evaluation Data

2.3.1 Source of Release - Identify the source as per tank number or in the case of a pipe or tube break the source supplying the pipe or tube, describe system malfunction or any other useful information.

2.0 Operations Response (cont.)

2.3.2 Possible Paths to Environs - Indicate possible paths the liquid or gases may get offsite, such as storm drains or process vent. This will aid HP in selecting sampling locations.

2.3.3 Actual or Estimated Duration of Release - Indicate the actual or estimated duration of the release to the environment in hours.

NOTE: If the release is continuous and an estimate must be made as to when it will be terminated, the Emergency Director, Operations and Health Physics should consult one another and determine the estimated duration. If no estimate of the duration can be arrived at and the actual dose rate at the site boundary exceeds 50 mr/hr sustained for greater than 30 minutes, the Emergency Director shall declare a General Emergency.

2.3.4 Estimated Cubic Feet or Gallons Released - Indicate cubic feet or gallons of gas or liquid actually or projected to be released.

2.3.5 Dilution Water - Indicate the available dilution water flow rate.

2.3.6 Present Status/Remarks - Provide any information which will aid HP such as indicating if the release is still in progress and if so when will it be terminated.

2.4 Forward FORM EPIP-2.1 to the assigned HP representative as soon as the above steps are complete.

3.0 Health Physics Response

3.1 Determine the Activity Released or Dose Estimates as requested on FORM EPIP 2.1 per the following steps as appropriate.

3.2 Activity Released

3.2.1 If either of the four EPIP's listed below have been initiated by Operations, release data will be generated by that EPIP, in which case proceed to step 3.2.3 below.

EPIP-4 Fuel Handling Accident

EPIP-5 Steam Generator Tube Rupture

EPIP-6 Main Steam Line Rupture

EPIP-7 Loss of Coolant Accident

3.2.2 Select and initiate (based on available information) one or more of the following EPIP's to estimate release:

EPIP-11 Radiation Monitoring System Data

EPIP-12 Station System Inventory Data

EPIP-13 Offsite Radiological Data

3.2.3 As release data is obtained the results are to be entered on FORM EPIP 2.2, "Gaseous Release Evaluation", or FORM EPIP 2.3, "Liquid Release Evaluation", as appropriate. Blank forms and instructions are in Appendix 3 or 4, respectively.

3.2.4 Perform the calculations of equivalent Xe-133 and I-131 and percentage MPC as indicated on FORM EPIP 2.2 or 2.3.

3.0 Health Physics Response (cont.)

3.3 Dose Estimates

3.3.1 Select and initate one or both of the following EPIP's to estimate doses.

EPIP-14 Release Data (requires step 3.2 above)

EPIP-15 Environmental Data

3.4 Enter the requested data on FORM EPIP 2.1, sign and enter the date and time and return the form to the originator (Operations) or as directed.

UNPLANNED OR UNCONTROLLED RELEASE OF RADIOACTIVE MATERIAL

APPENDIX 1

STABILITY CLASS DETERMINATION

THIS APPENDIX IS TO BE USED TO DETERMINE STABILITY CLASS IF THE DELTA T RECORDER IN THE CONTROL ROOM IS INOPERABLE

1. Fluctuation of Wind Direction

2. Rules of Thumb

1.0 Fluctuation of Wind Direction

Wind direction fluctuation is the number of compass point degrees, on the wind direction recorder trace, between the two extreme gusts remaining after ignoring the two most extreme gusts (one on the left, one on the right) occuring during a 15 minute period. This difference in degrees between gusts can then be related to stability class.

2.1 Subtract the degree reading of the gust second in on the left from the degree reading of the gust second in on the right.

2.2 Obtain the stability class from the following table.

DEGREES FLUCTUATION	STABILITY CLASS
> 135	A
105 to 135	B
75 to 104	C
45 to 74	D
23 to 44	E
8 to 22	F
< 8	G

EXAMPLE

The following chart indicates for the last 15 minutes the difference between "second in" gusts is 90 degrees. The stability class would be C.

2.0 Rules of Thumb

If appropriate met tower data is not available use the following table to determine stability class.

ESTIMATED WIND SPEED MPH	DAYTIME Amount of sunlight reaching the surface STRONG	MODERATE	SLIGHT	NIGHTTIME Thin overcast or cloudy	Little Cloudiness
< 4	A	B	B	F	G
4	B	B	C	E	F
9	B	C	C	D	E
> 13	C	D	D	D	D

UNPLANNED OR UNCONTROLLED RELEASE OF RADIOACTIVE MATERIAL

APPENDIX 2

BLANK FORMS EPIP 2.1

REPORT ON INFORMATION SOUGHT BY EMERGENCY COORDINATOR OR DIRECTOR

REPORT ON INFORMATION SOUGHT BY EMERGENCY COORDINATOR OR DIRECTOR

Requested By:_____ Date:_____ Time:_____

Assigned to:_____ OPS _____ HP

GASEOUS RELEASE DATA

OPS ☐ Meteorological Data. By:_____ date/time _____

Stability Class _____ Determined by _____ ΔT, _____ Wind σ _____ Rule of Thumb
Wind Speed _____ MPH _____ Meters per second (MPH x 0.45)
Wind Direction _____

OPS ☐ Radiation Monitoring System Data for Unit ___.
EPIP 11 initiated by:_____ Date/Time:_____

OPS ☐ Source Evaluation Data. By:_____ Date/Time:_____

Source of Release _____
Possible Paths to Environs _____
Actual/Estimated Duration of Release: _____ hours
Actual/Estimated Volume Released: _____ cubic ft.
Present Status/Remarks: _____
_____

HP ☐ Activity Released. By:_____ date/time _____

Curies Xe-133 _____ Curies I-131 _____ _____ x MPC (10CFR20)

HP ☐ Dose Estimates. By:_____ date/time _____

Offsite Whole Body _____ rem Onsite Whole Body _____ rem
Offsite Thyroid _____ rem Onsite Thyroid _____ rem

LIQUID RELEASE DATA

OPS ☐ Source Evaluation Data. By:_____ date/time _____

Source of Release _____
Possible Paths to Environs _____
Actual/Estimated Duration of Release: _____ hours
Actual/Estimated Volume Released: _____ gals. Dilution Water _____ GPM
Present Status/Remarks: _____
_____

OPS ☐ Radiation Monitoring System Data for Unit ___.
EPIP 11 initiated by:_____ Date/Time:_____

HP ☐ Activity Released. By:_____ date/time _____

Gross Curies of Non Tritium or Gases _____
Curies Tritium _____ Curies Gases _____ _____ x MPC (10CFR20)

HP ☐ Dose Estimates. By:_____ date/time _____

Offsite Whole Body _____ rem Onsite Whole Body _____ rem
Offsite Thyroid _____ rem Onsite Thyroid _____ rem
Offsite Any Organ _____ rem

UNPLANNED OR UNCONTROLLED RELEASE OF RADIOACTIVE MATERIAL

APPENDIX 3

BLANK FORM EPIP 2.2

GASEOUS RELEASE EVALUATION

GASEOUS RELEASE EVALUATION

Date/Time of Associated Form EPIP 2.1 ____________________
Results Obtained from Onsite Offsite Data
Remarks/Additional Information: ______________________________
____
____

NUCLIDE	CURIES RELEASED	DOSE EQUIVALENT FACTORS	EQUIVALENT CURIES RELEASED	MPC	CURIES RELEASED / MPC	REMARKS
	A	B	A x B	C	A ÷ C	To illustrate method

Sum of Equiv. Ci Xe-133 Released ____________ Total ____________

Sum of Equiv. Ci I-131 Released ____________ Total ____________

Calculation of the number of time MPC exceed averaged over 24 hours

$$x\ MPC = \frac{X/Q}{8.64 \times 10^4} \times (\text{Total Ci/MPC for Xe} + \text{Total Ci/MPC for I})$$

$$= \frac{X/Q}{8.64 \times 10^4} \times (\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_) = \text{Times MPC}$$

Results By: ____________________

Date/Time: ____________________

UNPLANNED OR UNCONTROLLED RELEASE OF RADIOACTIVE MATERIAL

APPENDIX 4

BLANK FORMS EPIP 2.3

LIQUID RELEASE EVALUATION

LIQUID RELEASE EVALUATION

Date/Time of Associated Form EPIP 2.1 ______________
Sample Obtained from ______________________________
Remarks/Additional Information: ______________________________
____
____

Nuclide	$\frac{\mu Ci}{ml}$	mls Released	µCi Released	MPC	$\frac{\mu Ci\ Released}{MPC}$	REMARKS
Total Non-Tritium or Non-Radiogases						

H-3				3E-3		
Total Dissolved Radiogases						

Calculation of the number of times MPC exceeded averaged over 24 hours

$$x\ MPC = \frac{1.83 \times 10^{-7}}{\text{Dilution Water GPM}} \times \text{Total for all µCi Released/MPC}$$

$$= \frac{1.83 \times 10^{-7}}{(\quad\quad)} \times (\_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_)$$

$$= \_\_\_\_\_\ X\ MPC$$

Results By: ______________________

Date/Time: ______________________

UNPLANNED OR UNCONTROLLED RELEASE OF
RADIOACTIVE MATERIAL

APPENDIX 5

DOSE EQUIVALENT FACTORS AND MPCs FOR VARIOUS NUCLIDES

DOSE EQUIVALENT FACTORS AND MPC's FOR VARIOUS NUCLIDES

NUCLIDE	DOSE EQUIVALENT FACTOR	MPC - AIR UNRESTRICTED	MPC - WATER UNRESTRICTED
H-3	6.4 E + 0	2 E - 7	3 E - 3
Kr-85	8.8 E - 2	3 E - 7	-------
Kr-85m	5.2 E + 0	1 E - 7	-------
Kr-87	5.2 E - 3	2 E - 8	-------
Kr-88	6.1 E + 1	2 E - 8	-------
Xe-131m	1.1 E + 1	4 E - 7	-------
Xe-133	1.0 E + 0	3 E - 7	-------
Xe-133m	1.1 E + 0	3 E - 7	-------
Xe-135	8.4 E + 0	1 E - 7	-------
Mn-54	7.0 E + 2	1 E - 9	1 E - 4
Mn-56	1.9 E + 2	2 E - 8	1 E - 4
Fe-59	1.6 E + 3	2 E - 9	5 E - 5
Co-58	7.7 E + 2	2 E - 9	9 E - 5
Co-60	2.0 E + 3	3 E - 10	3 E - 5
Cr-51	3.3 E + 1	8 E - 8	2 E - 3
Sr-89	1.6 E + 4	3 E - 10	3 E - 6
Sr-90	1.7 E + 4	3 E - 10	3 E - 7
Sr-91	2.9 E + 2	9 E - 9	5 E - 5
Zr-95	1.4 E + 3	1 E - 9	6 E - 5
Mo-99	1.0 E + 2	7 E - 9	4 E - 5
Ru-106	9.1 E + 3	2 E - 10	1 E - 5
Te-132	3.9 E + 2	4 E - 9	2 E - 5
Cs-134	5.1 E + 3	4 E - 10	9 E - 6
Cs-136	9.1 E + 2	6 E - 9	6 E - 5
Cs-137	2.8 E + 3	5 E - 10	2 E - 5
Ba-140	2.0 E + 3	1 E - 9	2 E - 5
Ce-144	8.6 E + 3	2 E - 10	1 E - 5
I-131	1.0 E + 0	1 E - 10	3 E - 7
I-132	3.8 E - 2	3 E - 9	8 E - 6