

VIRGINIA ELECTRIC AND POWER COMPANY  
RICHMOND, VIRGINIA 23261

February 27, 1995

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Serial No. 95-076  
NEP/SAH  
Docket Nos. 50-338  
50-339  
License Nos. NPF-4  
NPF-7

Gentlemen:

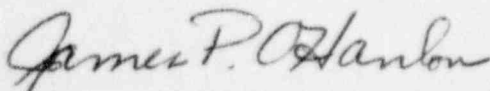
**VIRGINIA ELECTRIC AND POWER COMPANY**  
**NORTH ANNA POWER STATION UNITS 1 AND 2**  
**REVISIONS TO STATION EMERGENCY PLAN**  
**REVISIONS TO EMERGENCY PLAN IMPLEMENTING PROCEDURES**

Pursuant to 10 CFR 50.54(q), enclosed are revisions to the North Anna Power Station Emergency Plan and selected Emergency Plan Implementing Procedures. These revisions include acceptable deviations to Emergency Action Levels (EALs) as described below, and do not implement actions which decrease the effectiveness of our Emergency Plan. The Emergency Plan and Implementing Procedures continue to meet the standards of 10 CFR 50.47(b). Please update your manual by performing the actions described in Attachment 1, Tabulation of Changes.

These revisions include modifications to EALs which are based, in part, on the NRC document titled, "Branch Position on Acceptable Deviations to Appendix 1 to NUREG-0654/FEMA-REP-1," dated July 11, 1994. This document provides "acceptable deviations to the emergency classification guidance in Appendix 1 to NUREG-0654/FEMA-REP-1, Revision 1, 'Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants' based upon a review of the [NRC] staff's regulatory analysis of NUMARC/NESP-007." NUMARC/NESP-007 guidance was also utilized to enhance other EALs and, as a result, complement Virginia Electric and Power Company's emergency classification system as a whole. It should be noted that these changes were discussed with and agreed upon by State and local officials in accordance with Appendix E to 10 CFR Part 50.

A summary of the enclosed Emergency Plan revision is provided in Attachment 2.

Very truly yours,



James P. O'Hanlon  
Senior Vice President - Nuclear

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Attachments

cc: U.S. Nuclear Regulatory Commission (2 copies)  
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Mr. R. D. McWhorter  
NRC Senior Resident Inspector  
North Anna Power Station



**ATTACHMENT 1  
TABULATION OF CHANGES**

**VIRGINIA ELECTRIC AND POWER COMPANY  
REVISIONS TO NORTH ANNA POWER STATION EMERGENCY PLAN  
AND EMERGENCY PLAN IMPLEMENTING PROCEDURES**

Enclosed are recent revisions to the North Anna Power Station Emergency Plan and selected Emergency Plan Implementing Procedures (EPIPs). Please take the following actions in order to keep your manual updated with the most recent revisions.

<b>REMOVE AND DESTROY</b>	<b>DATED</b>	<b>INSERT</b>	<b>EFFECTIVE DATE</b>
North Anna Power Station Emergency Plan, Rev. 16 (entire document)	12/01/94	North Anna Power Station Emergency Plan, Rev. 17 (entire document)	02/08/95
EPIP-1.01, Rev. 26	01/19/94	EPIP-1.01, Rev. 27	02/08/95
EPIP-1.02, Rev. 8	03/18/92	EPIP-1.02, Rev. 9	02/08/95
EPIP-1.03, Rev. 10	01/01/94	EPIP-1.03, Rev. 11	02/08/95
EPIP-1.04, Rev. 10	01/01/94	EPIP-1.04, Rev. 11	02/08/95
EPIP-1.05, Rev. 12	01/01/94	EPIP-1.05, Rev. 13	02/08/95
EPIP-1.06, Rev. 1	01/01/94	EPIP-1.06, Rev. 2	02/08/95
EPIP-3.01, Rev. 6	11/09/93	Not Applicable (procedure deleted)	Not Applicable
EPIP-4.01, Rev. 14	11/28/94	EPIP-4.01, Rev. 15	02/08/95
EPIP-4.02, Rev. 9	11/28/94	EPIP-4.02, Rev. 10	02/08/95
EPIP-4.07, Rev. 12	09/12/94	EPIP-4.07, Rev. 13	02/08/95
EPIP-4.20, Rev. 10	09/12/94	Not Applicable (procedure deleted)	Not Applicable
EPIP-5.01, Rev. 9	09/12/94	EPIP-5.01, Rev. 10	02/08/95
EPIP-5.09, Rev. 1	03/18/92	EPIP-5.09, Rev. 2	02/08/95

Emergency Plan Privacy and Proprietary Material has been removed.  
Reference Generic Letter No. 81-27.

## ATTACHMENT 2 NORTH ANNA EMERGENCY PLAN REVISION 17 SUMMARY

**NOTE:** Deleted Initiating Conditions (ICs) are listed on page 8 and 9 of this attachment. A matrix correlating previous IC numbers (from North Anna Emergency Plan Rev. 16) to the numbering system presented in Revision 17 appears on page 10 of this attachment.

**Section 4:**

Update Tables 4.1 through 4.4, Initiating Conditions for Notification of Unusual Events, Alerts, Site Area Emergencies and General Emergencies, respectively. These changes correspond with updated Initiating Conditions reflected in Appendix 10.11 and, in part, implement modifications permitted in the NRC Office of Nuclear Reactor Regulation, Division of Radiation Safety and Safeguards, Emergency Preparedness Branch, position paper, subject: Acceptable Deviations from Appendix 1 to NUREG-0654 Based Upon the Regulatory Analysis of NUMARC/NESP-007, "Methodology for Development of Emergency Action Levels," dated July 11, 1994, hereafter referred to as the EPBTP.

**Section 7: Pages 7.21 and 7.22:**

Updated monitor location listing and removed non-emergency plan (i.e. environmental) TLDs in Figures 7.1 and 7.2.

**Appendix 10.4:**

Pages 10.4.3 and 10.4.4: Delete references to EPIP-4.20. Provisions of this EPIP have been incorporated into normal station HP procedures.

**Page 10.11.2:**

NOUE IC #1: Revision deletes "Mode Reduction required by Tech. Spec. LCO" and inserts "Inability to reach required mode within technical specification limits." The following extract from page 2 of the EPBTP is provided: "Exceeding technical specification limits for the period designated in the action statement is an analyzed condition of the plant and does not, by itself, represent an emergency. If plant conditions are outside of technical specification limits and those conditions do result in a degradation in the level of plant safety, other initiating conditions would trigger an appropriate classification within an acceptable time frame. . . . When the plant cannot be brought to the required operating mode within the allowable action statement time, then declaration of an Unusual Event would be warranted."

**Page 10.11.2:**

NOUE IC #2: Modified format of indication column to facilitate user understanding. Under RCS indication 2<sup>nd</sup> bullet item, added "after lift or actuation" in order to accurately represent the condition/applicability.

Page 10.11.3:

NOUE IC #3: Delete existing item and replace with IC, in part, per EPBTP page 3, "For EALs related to loss of annunciator or indication in the Control Room, licensees may use the technical bases in...NUMARC/NESP-007 to enhance their classification schemes." In this instance, the existing IC is replaced with, "Unplanned loss of most or all safety system annunciators for greater than 15 minutes." Indications for computer availability and increased surveillance are not included as computer availability is the expected default, and increased surveillance is automatically required per station APs regarding loss of annunciator response.

Page 10.11.4:

NOUE IC #5: Delete "N-16 monitor indicates primary to secondary leakage greater than T. S. allowable limits." This indication is included in NOUE IC #6 and need not be maintained in both ICs. In addition, change "from" to "to" in second bullet item dealing with controlled leakage (leakage is to seals, not from seals).

Page 10.11.5:

NOUE IC #7: Modify indication to reflect T.S. activity limits exceeded in conjunction with reduction in power, load or temperature. Adds the word "to" to Letdown monitor indication. The following extract from page 2 of the EPBTP is provided: "Exceeding technical specification limits for the period designated in the action statement is an analyzed condition of the plant and does not, by itself, represent an emergency. If plant conditions are outside of technical specification limits and those conditions do result in a degradation in the level of plant safety, other initiating conditions would trigger an appropriate classification within an acceptable time frame. . . . When the plant cannot be brought to the required operating mode within the allowable action statement time, then declaration of an Unusual Event would be warranted. Therefore, licensees who propose to eliminate the above ICs should incorporate an IC for 'inability to reach required shutdown within technical specification limits.' Also licensees must maintain or add Unusual Event ICs for coolant activity exceeding technical specifications and for RCS leakage exceeding technical specifications." Also, the word "to" is added to the Letdown indicator.

Page 10.11.5:

NOUE IC #8: Delete reference to Technical Specification allowable limits and replace with ODCM. The limits are calculated using ODCM methodology.

Page 10.11.5:

NOUE IC #9: The phrase "non-spurious" is better characterized by "uncontrolled." Therefore, the EAL is modified to read, "Uncontrolled Loss of Secondary Coolant in progress."

Page 10.11.6, NOUE IC #11:  
Page 10.11.6, NOUE IC #14:  
Page 10.11.6, NOUE IC #15:  
Page 10.11.7, NOUE IC #19:

Each of the above ICs is modified to refine the meaning of "within the station," "onsite," etc. The uses were applied inconsistently. Therefore, the decision was made to specify the precise area(s) of interest in each instance.

#11: Changed Condition and Indication to read "Protected Area or Service Water Pump/Valve House" (safety related areas). The phrase, "fire fighting efforts begin" is also modified to read "Fire Brigade - Dispatched."

#14: Onsite is changed to "within the Protected Area."

#15: Onsite is changed to "within the Protected Area."

#19: Onsite is changed to "within the Protected Area or Switchyard."

Page 10.11.8:

NOUE IC #22: Delete indication, "Intentional reduction in power, load or temperature...an LCO." This is redundant to NOUE IC #1, page 10.11.2). The redundancy impedes the EAL review process and is unnecessary. A NOUE would be classified, minimally, using IC #1 in all cases.

Page 10.11.9:

Alert IC #2:

- Modify second bullet indication to incorporate appropriate operations terminology.
- Add new indication to clarify need for manual trip, i.e., "manual trip - REQUIRED." A spurious trip signal can be generated (e.g., instrument card failure) which is not indicative of a transient, and manual trip may not be required. This event yields entry into a Technical Specification Action Statement and is not representative of an Alert situation.

Page 10.11.10:

Alert IC #3: Delete existing item and replace with IC per NRC EPBTP, page 3, "For EALs related to loss of annunciator or indication in the Control Room, licensees may use the technical bases in...NUMARC/NESP-007 to enhance their classification schemes." In this instance, the existing IC is replaced with, "Unplanned loss of all safety system annunciators with...transient in progress."



Page 10.11.10:

Alert IC #5: "50 gpm" is moved from the Condition column to the Indication column. This forces the user to analyze the Indications so that Pressurizer level is evaluated, preventing classification is not made solely on leak rate.

Page 10.11.10:

Alert IC #6: Change "with SI in progress" to Safety Injection - REQUIRED." If SI is required but does not actuate, the intent of the EAL is still met.

Page 10.11.11:

Alert IC #7: The EAL does not apply when leakage occurs on one pathway, but unrelated indications are representative of another (e.g., indications from multiple pathways are not intended to be combined). The intent is for indications to be representative of a particular affected pathway. Therefore, the phrase, "on affected pathway indicates" is added to the indication.

Page 10.11.11:

Alert IC #8: The word "to" is added to the Letdown monitor indication column.

Page 10.11.13:

Reverses sequence of ICs 12 and 13 to correspond to Emergency Plan Section 4 listing of ICs. In addition, references to Technical Specification allowable limits are deleted and replaced with ODCM. The limits are calculated using ODCM methodology.

Page 10.11.14:

Alert IC #14:

- The phrase "non-spurious" is better characterized by "uncontrolled." Therefore, the EAL is modified to read, "Uncontrolled Loss of Secondary Coolant in progress."
- The EAL does not apply when leakage occurs on one pathway, but unrelated indications are representative of another (e.g., indications from multiple pathways are not intended to be combined). The intent is for indications to be representative of a particular affected pathway. Therefore, the phrase, "on affected pathway indicates" is added to the indication.

Page 10.11.15:

Alert IC #17: The phrase, "within the station" is deleted. Fire causing a safety system to be rendered inoperable requires classification regardless of location.

Page 10.11.15:

Alert IC #19: Restructures Indication column format by combining items.

Page 10.11.15:

Alert IC #20: Adds "that affects plant operations" to Indication. The "Alert" is not justified if plant activities/systems are not affected.



Page 10.11.16:

Alert IC #25: Adds "structures" to Indication. A tornado in the vicinity that does not strike equipment does not justify the classification.

Page 10.11.17:

Alert IC #28: Modify condition to more accurately reflect applicability to an "Alert" classification. Precautionary notification is not made to the public at an Alert.

Page 10.11.18:

Site Area IC #2: Modify indication to incorporate appropriate operations terminology.

Page 10.11.18:

Site Area IC #3: Loss of main board annunciators...transient. Delete existing item and replace with IC per NRC EPBTP page 3, "For EALs related to loss of annunciator or indication in the Control Room, licensees may use the technical bases in...NUMARC/NESP-007 to enhance their classification schemes." In this instance, the existing IC is replaced with, "Inability to monitor a significant transient in progress."

Page 10.11.19:

Site Area IC #5: "300 gpm" is deleted from the Condition column and inserted in the Indication column. This forces the user to analyze the Indications so that the Pressurizer level is evaluated. Classification is evaluated on all parameters and is not made solely on leak rate.

Page 10.11.19:

Site Area IC #6:

- Change "with SI in progress" to Safety Injection - REQUIRED." If SI is required but does not actuate, the intent of the EAL is still met.
- The EAL does not apply when leakage occurs on one pathway, but unrelated indications are representative of another (e.g., indications from multiple pathways are not intended to be combined). The intent is for indications to be representative of a particular affected pathway. Therefore, the phrase, "on affected pathway indicates" is added to the indication.

Page 10.11.22:

Site Area IC #11:

- The phrase "non-spurious" is better characterized by "uncontrolled." Therefore, the EAL is modified to read, "Uncontrolled Loss of Secondary Coolant in progress."
- The EAL does not apply when leakage occurs on one pathway, but unrelated indications are representative of another (e.g., indications from multiple pathways are not intended to be combined). The intent is for indications to be representative of a particular affected pathway. Therefore, the phrase, "on affected pathway indicates" is added to the indication.

Page 10.11.23:

Site Area IC #14: The phrase, "within the station" is deleted. Fire causing a safety system to be rendered inoperable requires classification regardless of location.

Page 10.11.24:

Site Area IC #18: A Site Area Emergency is required if release of toxic or flammable agents causes evacuation of vital areas. This conflicts with Alert IC #4, page 10.11.10, which requires an Alert if the Control Room is evacuated. This apparent discrepancy exists because of auxiliary shutdown capability. This is corrected by revising the IC to read, "Evacuation of Vital Area other than Control Room - REQUIRED."

Page 10.11.25:

Site Area IC #21: Deleted "onsite" from Indication. It is given that the event occurs onsite. Further, confirmation does not occur onsite (within PA or Switchyard) as meteorological towers are located outside the PA.

Page 10.11.25:

Site Area IC #23: Modify condition to more accurately reflect applicability to a "Site Area Emergency" classification. Precautionary notification may be made to the public at this classification level. Activation of emergency response facilities occurs at the Alert level.

Page 10.11.26:

General Emergency IC #1: Under "Indication" column, item C: Delete "Loss of containment integrity as defined in T.S. 1.6" and insert, "Release path to environment exists." By technical specification definition, loss of the ability to automatically close containment isolation valves (e.g., via loss of bus) meets loss of integrity criteria, even though the valves may be closed. The purpose of the IC is to classify the event based on loss of barrier considerations, that is, determination as to whether or not a release path to the environment exists.

Page 10.11.27:

General Emergency IC #2:

- Indication column, item A: "Containment High Range Radiation Monitor, RM-RMS-165, -166, or RM-RMS-265, -266 greater than  $1.88 \times 10^2$  R/hr" was deleted because this indication is indicative of LOCA conditions, not a Steam Generator Tube Rupture. In place of these monitors, Letdown High Range Monitor indications have been inserted (i.e., failed fuel monitor).
- "Indication" column, item B: Change wording to "SI Coincidence - SATISFIED." An SI can occur on conditions other than RCS low pressure. Should this occur, the existing indication, "SI initiated by RCS low pressure" would not be achieved. The modified wording eliminates this situation.
- "Indication" column, item C: The EAL does not apply when leakage occurs on one pathway, but unrelated indications are representative of another (e.g., indications from multiple pathways are not intended to be combined). The intent is for indications to be representative of a particular affected pathway. Therefore, the phrase, "associated with ruptured steam generator pathway" is added to the indication. In addition, this event is associated with a loss of secondary coolant outside the containment. Clarification to this effect is inserted.

Page 10.11.28:

General Emergency IC #3: If RCS pressure is elevated, LHSI flow would not be expected to occur. Therefore, the indication is revised to read, "High or Low Head ECCS flow NOT being delivered to the core (if expected by plant conditions)."

Page 10.11.28:

General Emergency IC #4: Revise modes to read, "Modes 1, 2, 3 and 4" because loss of RHR is addressed by General Emergency IC #3, page 10.11.28.

Page 10.11.29:

General Emergency IC #6: If only the emergency buses are lost, with station service buses still available, then Main Feedwater and Condensate are available and the EAL, as worded, is not applicable. Therefore, the first indication is revised to read, "Loss of all onsite and offsite AC power" to more clearly characterize the situation.

Page 10.11.29:

General Emergency IC #7:

- If RCS pressure is elevated, LHSI flow would not be expected to occur. Therefore, the indication is revised to read, "High or Low Head ECCS flow NOT being delivered to the core (if expected by plant conditions)."
- Cooling capability is not lost if only one Quench Spray and Recirculation Spray train is lost. Both trains must be lost to meet this EAL. Therefore, the last indication is revised to read, "All Quench Spray and Recirculation Spray Systems - NOT OPERABLE."

Page 10.11.30:

General Emergency IC #11: The phrase, "or may warrant evacuation of the public" is added to more accurately reflect General Emergency criteria.

### **DELETIONS:**

NOUE IC #1 from Rev. 16, "ECCS initiation," is deleted.

Refer to NRC EPBTP page 3, "...an inadvertent discharge of ECCS to the vessel, in and of itself, does not represent an emergency condition." Challenges to RCS barrier are adequately addressed via the following:

NOUE IC #5, page 10.11.4, RCS leak rate requiring plant shutdown.

ALERT IC #5, page 10.11.10, RCS leak rate exceeded.

SAE IC #5, page 10.11.19, RCS leak rate exceeded.

NOUE IC #5 from Rev. 16, "Failure of meteorological instrumentation required to perform offsite dose calculations," is deleted and remaining ICs are renumbered sequentially.

Refer to NRC EPBTP page 2, "...loss of meteorological instrumentation is no longer considered to meet the threshold of an Unusual Event."

NOUE IC #7 from Rev. 16, "Safety limit RCS...exceeded," is deleted. This is redundant to new NOUE IC #1, page 10.11.2. The redundancy impedes the EAL review process and is unnecessary. A NOUE would be classified, minimally, using NOUE IC #1.

NOUE IC #8 from Rev. 16, "RCS overpressure," is deleted. This is redundant to new NOUE IC #1, page 10.11.2. The redundancy impedes the EAL review process and is unnecessary. A NOUE would be classified, minimally, using NOUE IC #1.

**DELETIONS:** (continued)

NOUE IC #12 from Rev 16, "Loss of Containment Integrity," is deleted.

Refer to NRC EPBTP page 2, "Exceeding technical specification limits for the period designated in the action statement is an analyzed condition of the plant and does not, by itself, represent an emergency. If plant conditions are outside of technical specification limits and those conditions do result in a degradation in the level of plant safety, other IC #s would trigger an appropriate classification within an acceptable time frame...When the plant cannot be brought to the required operating mode within the allowable action statement time, then declaration of an Unusual Event would be warranted. Therefore, licensees who propose to eliminate the above ICs should incorporate an IC for 'inability to reach required shutdown within technical specification limits.' Also licensees must maintain or add Unusual Event ICs for coolant activity exceeding technical specifications" (NAEP Appx. 10.11, page 10.11.5, NOUE IC #7), "and for RCS leakage exceeding technical specifications" (NAEP Appx. 10.11, page 10.11.4, NOUE IC #5).

NOUE IC #14 from Rev. 16, "Transportation of contaminated injured individual to an offsite medical facility," is deleted. Refer to NRC EPBTP page 1, "This event does not meet the threshold of the emergency class and is not a precursor to a more serious event."

Alert IC #5 from Rev. 16, "RCP locked rotor leading to fuel damage," is deleted and remaining ICs are renumbered sequentially. Refer to NRC EPBTP page 3, "This IC is unnecessary because the concern is the fuel failure and not the seizure of the pump." The condition is adequately addressed under Appx. 10.11, page 10.11.11, new ALERT IC #8, Severe Fuel Clad Damage.



EAL SEQUENCE NUMBER CHANGES  
BETWEEN NAEP REVISIONS 16 (OLD) AND 17 (NEW)

Notification of Unusual Event		Alert		Site Area Emergency		General Emergency	
<u>OLD</u>	<u>NEW</u>	<u>OLD</u>	<u>NEW</u>	<u>OLD</u>	<u>NEW</u>	<u>OLD</u>	<u>NEW</u>
1	*	1	1	1	1	1	1
2	1	2	2	2	2	2	2
3	2	3	3	3	3	3	3
4	3	4	4	4	4	4	4
5	*	5	*	5	5	5	5
6	4	6	5	6	6	6	6
7	*	7	6	7	7	7	7
8	*	8	7	8	8	8	8
9	5	9	8	9	9	9	9
10	6	10	9	10	10	10	10
11	7	11	10	11	11	11	11
12	*	12	11	12	12		
13	8	13	12	13	13		
14	*	14	13	14	14		
15	9	15	14	15	15		
16	10	16	15	16	16		
17	11	17	16	17	17		
18	12	18	17	18	18		
19	13	19	18	19	19		
20	14	20	19	20	20		
21	15	21	20	21	21		
22	16	22	21	22	22		
23	17	23	22	23	23		
24	18	24	23				
25	19	25	24				
26	20	26	25				
27	21	27	26				
28	22	28	27				
		29	28				

\* Denotes deleted EALs.



VIRGINIA POWER

# Station Emergency Plan

**Title:** North Anna Power Station Emergency Plan

**Revision Number:**

17

**Effective Date:**

2-8-95

**Revision Summary:**

Revision 17 updates the North Anna Power Station Emergency Plan in its entirety. Revised material includes (but is not limited to) the following:

- Modifications to Section 4 and Appendix 10.11. These modifications include revisions permitted by NRC Branch Technical Position on Acceptable Deviations to Appendix 1 to NuReg-0654/FEMA-REP-1, Rev. 1, dated July 11, 1994. Additional Emergency Action Level initiating conditions unrelated to the Branch Technical Position have been modified for streamlining and clarification purposes.

Recommended Approval:

J. E. Collins  
Director Nuclear Emergency Preparedness

1-5-95  
Date

Recommended Approval:

D. Alled  
SNSOC Chairman

1-19-95  
Date

Approved By:

J. G. Goe  
Station Manager

2/2/95  
Date

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NORTH ANNA POWER STATION  
EMERGENCY PLAN

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NORTH ANNA EMERGENCY PLAN  
NUREG-0654 CROSS REFERENCE INDEX

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SECTION 1

DEFINITIONS, ACRONYMS AND ABBREVIATIONS

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1.0	Definitions .....	1.2
1.1	Acronyms and Abbreviations .....	1.5



1.0 Definitions

Annually - 12 months +/- 3 months.

Buffer Sectors - Two 22 1/2° sectors flanking each side of the 22 1/2° primary sector.

Commonwealth of Virginia Radiological Emergency Response Plan (COVERERP) - Annex to Volume II of the Commonwealth of Virginia Emergency Operations Plan.

Deep Dose Equivalent (DDE) - Direct external radiation exposure to the body (e.g., cloud shine, contamination, or direct radiation). DDE is assumed equivalent to Effective (external) Dose Equivalent (EDE) with respect to uniform exposure.

Drill - A supervised instruction period aimed at testing, developing and maintaining skills.

Effective Date - Date of change; implementation date assigned by approval authority; date from which 30-day NRC submittals are required in accordance with 10 CFR 50, Appendix E.V.

Emergency - Any situation that may result in undue risk to the health and safety of the public and/or site personnel, or significant damage to property or equipment.

Emergency Action Levels (EALs) - Events, such as equipment malfunctions, natural phenomena, radiological dose rates, etc., that may be used as thresholds for initiating such specific emergency measures as designating a particular class of emergency, initiating a notification procedure, or initiating a particular protective action.

Emergency Plan Implementing Procedures (EPIPs) - Emergency response procedures that implement the Emergency Plan.

Emergency Planning Zones (EPZ):

Plume EPZ - An area delineated by an approximate ten-mile radius circle around the North Anna Power Station.

Ingestion EPZ - An area delineated by an approximate fifty-mile radius circle around the North Anna Power Station with the potential of internal exposure from the ingestion of radioactive material through the food pathway. This zone excludes a small portion of Maryland at the fringe of the 50 mile radius.

Exclusion Area - The area within a 5000 feet radius of the now abandoned North Anna Unit 3 containment.

Exercise - A test of the response capabilities of the Emergency Organization that permits the evaluation of training and response to a given situation. Exercises are conducted in accordance with pre-planned scenarios with defined objectives.

Interim - A temporary or provisional emergency response position or facility which is augmented or transferred as resources become available.

Local Counties - This term shall be used to denote the Counties of Louisa, Spotsylvania, Caroline, Orange, and Hanover in the approximate ten (10) mile emergency planning zone.

Local Emergency Operations Facility (LEOF) - A near site facility where the Recovery Manager controls the overall emergency response.

Local Media Center (LMC) - This facility provides a near site location for official media releases. The Local Media Center is in the North Anna Nuclear Information Center.

Nearsite - Within the Exclusion Area, but beyond Protected Area.

Offsite - Beyond the Exclusion Area.

Onsite - Within the Protected Area, (surrounded by security fence).

Operational Support Center (OSC) - An assembly area where augmentation personnel report and wait for assignments from the Station Emergency Manager, or designee.

Primary Sector - The 22 1/2° sector which bounds the existing wind direction.

Projected Dose - An estimated radioactive dose which affected population groups could potentially receive if no protective actions are taken.

Protected Area (PA) - A designated security area around the operating units and bounded by the double security fence.

Protective Action Guides (PAG) - The projected dose to individuals in the general population or the dose rate which warrants taking protective actions.

Protective Actions - Those emergency measures taken before or after an uncontrolled release of radioactive material has occurred for the purpose of preventing or minimizing radiological exposure.

Recovery Actions - Those actions taken after the emergency to restore the station as nearly as possible to its pre-emergency condition.

Rem (Roentgen Equivalent Man) - A unit of radiation dose that relates exposure to the biological effects of the exposure (absorbed exposure or dose). A unit related to the rem is the millirem (mrem).  $1 \text{ mrem} = 1/1000 \text{ rem}$ .

Restricted Area - Any area where access is controlled for the purpose of radiation protection.

Semi-annual - Occurring once during each of the first and last six months of the calendar year.

Site - The Power Station proper and the 5000 foot radius exclusion area around the Power Station.

Station Emergency Manager (SEM) - Designated onsite individual having the responsibility and authority for implementing the North Anna Emergency Plan.

Technical Support Center - A facility located adjacent to Unit 1 Control Room which will be the central control center for the onsite emergency response organization after the on shift staff has been augmented.

Thyroid Committed Dose Equivalent (CDE) - Radiation exposure to the thyroid through inhalation or ingestion of radioactive material assuming a 50 year exposure period from uptake.

Total Effective Dose Equivalent (TEDE) - The sum of external and internal dose.

1.1 Acronyms and Abbreviations

A/E	-	Architect/Engineer
AC	-	Alternating Current
ANSI	-	American National Standards Institute
APs	-	Abnormal Procedures
ARD	-	Automatic Ringdown Line
Asst.	-	Assistant
B/W	-	Babcock and Wilcox
cc	-	Cubic Centimeter
CEDE	-	Committed Effective Dose Equivalent
CEOF	-	Corporate Emergency Operations Facility
CERC	-	Corporate Emergency Response Center
CERP	-	Corporate Emergency Response Plan
cm	-	Centimeter
CERT	-	Corporate Emergency Response Team
COVERERP	-	Commonwealth of Virginia Radiological Emergency Response Plan
cpm	-	Counts per minute
CR	-	Control Room
CRO	-	Control Room Operator
DBA	-	Design Basis Accident
DC	-	Direct Current
DDE	-	Deep Dose Equivalent
DES	-	Department of Emergency Services (State)
DOE	-	Department of Energy
dpm	-	Disintegrations per minute
EALs	-	Emergency Action Levels
EBS	-	Emergency Broadcast System

ECCS	-	Emergency Core Cooling System
ENS	-	NRC Emergency Notification System
EPs	-	Emergency (Operating) Procedures
EPA	-	Environmental Protection Agency
EPC	-	Emergency Planning Coordinator
EPIPs	-	Emergency Plan Implementing Procedures
EPZs	-	Emergency Planning Zones
ERDS	-	Emergency Response Data System
ERFCS	-	Emergency Response Facility Computer System
ERGs	-	Emergency Response Guidelines
ESFs	-	Emergency Safeguards Features
EWS	-	Early Warning System
FEMA	-	Federal Emergency Management Agency
FRMAP	-	Federal Radiological Monitoring and Assessment Plan
FTS	-	Federal Telecommunications System
H.P.	-	Health Physics
H.P. Tech.	-	Health Physics Technician
HPN	-	Health Physics Network (Communications System)
HRSS	-	High Radiation Sampling System
HSB	-	Hot Standby
I/C	-	Instrumentation and Control
LAN	-	Local Area Network
LEOF	-	Local Emergency Operations Facility
LOCA	-	Loss of Coolant Accident
MCL	-	Management Counterpart Link
MCV	-	Medical College of Virginia
MIDAS	-	Meteorological Information and Dose Assessment System



mph	-	Miles per hour
mR/hr	-	Millirem per hour
MSL	-	Mean Sea Level
NAEP	-	North Anna Emergency Plan
NAPS	-	North Anna Power Station
NRC	-	Nuclear Regulatory Commission
NSSS	-	Nuclear Steam Supply System
OPX	-	Off-Premises exchange (Communications System)
OSC	-	Operational Support Center (Onsite Operations Assembly Area)
P & ID	-	Process and Instrument Diagram
PAGs	-	Protective Action Guides
PBX	-	Private Branch exchange (Communications System)
PMCL	-	Protective Measures Counterpart Link
QC	-	Quality Control
RAA	-	Remote Assembly Area
Reg. Guide	-	Regulatory Guide
Rem	-	Roentgen Equivalent Man
RERP	-	Radiological Emergency Response Plan
RERT	-	Radiological Emergency Response Team
R/hr	-	Roentgen per hour
RMS	-	Radiation Monitoring System
RO	-	Reactor Operator
RSCL	-	Reactor Safety Counterpart Link
S/W	-	Stone and Webster
SCBA	-	Self contained breathing apparatus
SEM	-	Station Emergency Manager
SI	-	Safety injection

SNSOC	-	Station Nuclear Safety and Operating Committee
SPDS	-	Safety Parameter Display System
SRO	-	Senior Reactor Operator
SUPT	-	Superintendent
SUPV	-	Supervisor
Tavg	-	Average Temperature
Tech. Spec.	-	Technical Specification (also, TS)
TEDE	-	Total Effective Dose Equivalent
THY	-	Thyroid
THYROID CDE	-	Thyroid Committed Dose Equivalent
TLD	-	Thermoluminescent Dosimeter
Trnee	-	Trainee
TSC	-	Technical Support Center
$\mu$ Ci	-	Micro ( $\mu$ ) curie
UHF	-	Ultrahigh frequency (Radio)
V	-	Volt(s)
W	-	Westinghouse

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SECTION 2

SCOPE AND APPLICABILITY

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## 2.0 Scope and Applicability

### 2.1 Site Specifics

The North Anna Power Station consists of two units, each of which includes a three loop pressurized light water reactor, nuclear steam supply system (NSSS) and turbine generator furnished by Westinghouse Electric Corporation. The balance of the station was designed and constructed by the Company with the assistance of its Architect/Engineer (A/E), the Stone and Webster Engineering Corporation. Each reactor unit is designed for a core power output of 2893 MWt which results in a gross electrical output of approximately 960 MWe. The units are located on a peninsula on the southern shore of Lake Anna in Louisa County approximately 40 miles North Northwest of Richmond, Virginia; 38 miles East of Charlottesville, Virginia; and 24 miles Southwest of Fredericksburg, Virginia. Cooling water, contained by an earthen dam structure, is obtained from the 17 mile long North Anna Reservoir.

### 2.2 Emergency Plan

The North Anna Power Station Emergency Plan (the Plan) describes the organization, facilities, emergency response measures, and functional interfaces with offsite agencies which can be used to respond to a broad range of defined emergencies. The organization has well defined responsibilities and specific authorities which provide for effective control and coordination of the emergency response, both onsite and offsite. The organization is augmented, as required, to address situations with the most serious potential consequences.

The Plan is formulated for compatibility with existing local, State, and Federal response organizations which may render emergency assistance. A coordinated response effort between Virginia Power and other agencies supports the mutual goals of protecting public health and safety and of minimizing damage to both public and private properties.

The basic purposes of the Plan are as follows:

- 1) To define potential types of emergencies;
- 2) To establish an organization for managing an emergency;
- 3) To provide measures for coping with an emergency;
- 4) To provide facilities from which to perform selected measures;
- 5) To provide for a recovery program following an emergency; and,
- 6) To provide methods for maintaining the Plan active and current.

Emergency Plan Implementing Procedures (EPIPs) provide instructions for accomplishing the provisions established in the Plan. The procedures guide the classification of the emergency, provide for offsite notifications, and activation of the full response organization. They also provide techniques for estimating the consequences of offsite releases and making recommended protective action recommendations.

### 2.3 North Anna Hydroelectric Unit

In addition to the North Anna Emergency Plan, Virginia Power has prepared an Emergency Action Plan applicable only to the North Anna Hydroelectric Plant. The North Anna Hydroelectric Plant, a small hydroelectric generating unit of 855KW capacity, is operated by Virginia Power and located on the North Anna River at the Lake Anna Dam (approximately 5.5 miles Southeast of the North Anna Power Station).

The North Anna Hydroelectric Plant Emergency Action Plan was prepared to conform with the provisions of Title 18 of the Code of Federal Regulations, Part 12, Subpart C, and was developed in consultation and cooperation with Federal, State, and local agencies responsible for public health and safety.

The action Plan includes provisions for notifying State and downstream counties that may be affected by a classified project (dam) emergency. It also sets forth procedures to be followed by station personnel to control the emergency and to notify the appropriate authorities.



In order to meet the requirements of 18 CFR Part 12, Subpart C, provisions for operation of spillway equipment concurrent with an incident at North Anna Power Station is addressed as part of this plan. Should a (nuclear) station emergency occur, the Spillway Attendant(s) shall remain at the dam to ensure proper operation of spillway gates.

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SECTION 3

SUMMARY OF EMERGENCY PLAN

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### 3.0 Summary of Emergency Plan

Types of emergencies are divided into four classifications which cover a broad spectrum of potential occurrences. The classifications range from a "Notification of Unusual Event", in which offsite officials are notified of an unusual condition, through "General Emergency," in which onsite and offsite evacuation may be required and a major state of emergency exists. This classification scheme is compatible with existing State and local plans.

An emergency response organization is established with specific duties and responsibilities defined, and points of contact between onsite and offsite supporting agencies are designated. Augmentation of the emergency organization will occur at "Alert" and higher levels, and includes activation of both station and corporate emergency response teams. Provisions for prompt notification of State, Local and Federal agencies are established and include pre-planned information which may be required for offsite agency response.

Methods and procedures provide corrective and protective actions including evaluation of the operability of the unaffected unit. The use of protective equipment, protective action guides and exposure limits are also pre-specified. The facilities available for assessment and management of the emergency consist of emergency onsite and offsite response centers, communication systems, and portable or fixed equipment and systems for detection and measurement of those parameters causing or resulting from the emergency. Medical facilities are also available.

A recovery program describes the organization and procedural approach required to re-start the affected unit. The recovery program provides guidance for relaxing protective measures that have been instituted and requires the periodic estimation of total population exposure.

The Emergency Plan and Emergency Plan Implementing Procedures are reviewed

annually. The Station Nuclear Safety and Operating Committee (SNSOC) shall evaluate the review and may provide additional recommendations as necessary. Periodic drills and exercises involving communications, fire-fighting, radiological monitoring and Health Physics activities are routinely conducted. A joint exercise involving participation by State and local response agencies will be held on even-numbered years at North Anna (on odd-numbered years, the State participates at Surry) to ensure all major elements of the Plan are tested within a five year period. Federal response agencies may also participate in these joint exercises. Critiques of each implementation of the Plan allow for critical reviews of technique, methods, and shortcomings. Improvements will be factored into the Plan and/or Implementing Procedures through revisions.

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SECTION 4

EMERGENCY CONDITIONS

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4.0

#### Emergency Conditions

The following guidelines describe the criteria used by station personnel in classifying or determining the type of an emergency. The types of potential accidents or emergencies can be numerous and vary in magnitude. Accordingly, the classification system is wide-ranged, although flexible and straight forward. The four classifications are defined in accordance with Appendix 1 of NUREG 0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants."

The classification system is not intended to include minor deviations during normal operation.

4.1

#### Spectrum of Postulated Accidents

The spectrum of emergencies peculiar to nuclear power stations range from accidents with minor implications on health and safety to the postulation of major occurrences resulting in the release of significant quantities of radioactive material. Examples of minor accidents include the transportation of a contaminated injured worker to an offsite medical facility, and unplanned or uncontrolled releases of small amounts of radioactive material in excess of Technical Specification allowable limits.

Major occurrences, though not expected to take place, have been postulated for planning and design purposes because their consequences could include the potential for release of significant amounts of radioactive material. The range of conditions in Appendix 1 to NUREG-0654 and Section 15 of the North Anna Updated Final Safety Analysis Report (UFSAR) have been included in the classification system of this Plan.

Of the Condition IV - Limiting Faults analyzed in the UFSAR, three are considered to have the potential for releasing significant amounts of radioactivity. These are the loss of coolant accident, the steam generator tube rupture accident and the fuel handling accident. The nature of these three accidents is such that a safety analysis can produce

results which vary considerably in the radiological consequences. The analysis results depend on assumptions used concerning such items as the status of primary coolant radioactivity content, meteorological conditions, or performance of station safety systems. The UFSAR makes very conservative estimates of the consequences. The Emergency Plan Implementing Procedures are written in anticipation of having to contend with these worst case consequences.

#### 4.2

##### Emergency Classification System

Emergency conditions which may develop will be categorized as one of the following emergency classifications:

1. Notification of Unusual Event.
2. Alert.
3. Site Area Emergency.
4. General Emergency.

The Notification of Unusual Event classification requires notification of appropriate offsite support groups and station management personnel that an abnormal condition exists at the station. The purpose of this notification is to increase the awareness of key offsite support organizations and station management of a condition which can currently be managed by the onsite resources, but which could escalate to a more serious condition. The on-shift operations personnel are assigned response tasks in accordance with the pre-augmentation organization responsibilities defined in Section 5 of this plan.

The Alert classification is indicative of a more serious condition which has the potential for radioactive release. As a result, the Virginia Power emergency response organization is notified to augment onsite resources and activate corporate emergency response facilities.

The Site Area Emergency classification reflects conditions where some significant radiation releases are likely or are occurring, but where a core melt situation is not currently

indicated. In this situation, there would be full mobilization in the nearsite environs of monitoring teams and associated communications. A Site Area Emergency can be declared for reasons other than radiological releases.

The General Emergency classification is indicative of actual or imminent substantial core degradation or melting with the potential for loss of containment, or non-radiological events which could endanger public health and/or safety. Within fifteen minutes of declaring a General Emergency, predetermined protective action recommendations will be made to the State based on plant and meteorological conditions.

Tables 4.1 - 4.4 list the initiating conditions for each emergency classification. Appendix 10.11 of this plan provides specific plant parameters for event classification, and EPIP-1.01, "Emergency Manager Controlling Procedure", Attachment 1, groups these conditions by event category for easy reference and identification. For each condition, specific indications available from instruments and unit operating response are defined in this EPIP to confirm that the proper thresholds have been met for declaring a given classification.

**TABLE 4.1**  
**INITIATING CONDITIONS: NOTIFICATION OF UNUSUAL EVENT**

**NOTE:** The alpha-numeric designator, [A.N], preceding each condition/applicability below, indicates the Emergency Action Level designator used in EPIP-1.01, Attachment 1, for that particular item.

1. [A.9] Inability to reach required mode within technical specification limits
2. [A.10] Failure of a safety or relief valve to close after pressure reduction, which may affect the health and safety of the public
3. [A.11] Unplanned loss of most or all safety system annunciators for greater than 15 minutes
4. [A.12] Loss of communications capability
5. [B.8] RCS leak rate requiring plant shutdown IAW T.S. 3.4.6.2 or 3.4.6.3
6. [B.9] Primary to Secondary leakage - greater than 1 gpm
7. [C.11] Fuel clad damage indication
8. [E.5] Effluent release greater than ODCM allowable limit
9. [G.3] Major secondary line break
10. [H.5] Loss of offsite power or onsite AC power capability
11. [I.3] Fire lasting greater than 10 minutes in Protected Area or Service Water Pump/Valve House
12. [J.4] Security threat, unauthorized attempted entry, or attempted sabotage
13. [K.10] Aircraft crash or unusual aircraft activity
14. [K.11] Train derailment within Protected Area
15. [K.12] Explosion within Protected Area
16. [K.13] Onsite or nearsite release of toxic or flammable liquids or gases
17. [K.14] Turbine rotating component failure with no casing penetration
18. [L.8] Earthquake detected
19. [L.9] Tornado within Protected Area or Switchyard
20. [L.10] Hurricane force winds projected onsite within 12 hours
21. [L.11] 50 year flood or low water level
22. [M.4] Station conditions which warrant increased awareness of state and/or local authorities

**TABLE 4.2**  
**INITIATING CONDITIONS: ALERT**

1. [A.5] Total loss of function needed for unit CSD condition
2. [A.6] Failure of the Reactor Protection System to complete a trip which takes the Reactor Subcritical
3. [A.7] Unplanned loss of safety system annunciators with compensatory indicators unavailable or a transient in progress
4. [A.8] Evacuation of Main Control Room required
5. [B.5] RCS leak rate limit - EXCEEDED
6. [B.6] Gross primary to secondary leakage
7. [B.7] Excessive primary to secondary leakage with loss of offsite power
8. [C.8] Severe Fuel Clad Damage
9. [C.9] Fuel damage accident with release of radioactivity to containment or fuel buildings
10. [C.10] Potential for fuel damage to occur during refueling
11. [D.3] High Containment radiation, pressure and temperature
12. [E.3] Effluent release greater than 10 times ODCM allowable limit
13. [E.4] High radiation or airborne contamination levels indicate a severe degradation in control of radioactive material
14. [G.2] Major secondary line break with significant primary to secondary leakage
15. [H.3] Loss of all offsite and onsite AC power
16. [H.4] Loss of all onsite DC power
17. [I.2] Fire potentially affecting station safety systems
18. [J.3] Ongoing Security compromise
19. [K.5] Aircraft crash on the facility
20. [K.6] Explosion damage to facility
21. [K.7] Entry of toxic or flammable gases or liquids into plant facility
22. [K.8] Turbine failure or missile impact
23. [K.9] Missile damage to safety related equipment or structures
24. [L.4] Earthquake greater than or equal to OBE levels
25. [L.5] Tornado striking facility
26. [L.6] Hurricane force winds projected onsite within 6 hours
27. [L.7] Flood or low water level near design level
28. [M.3] Station conditions which have the potential to degrade or are actually degrading the level of safety of the station



**TABLE 4.3**  
**INITIATING CONDITIONS: SITE AREA EMERGENCY**

1. [A.1] Loss of function needed for unit HSD condition
2. [A.2] Failure of the Reactor Protection System to initiate and complete a required trip while at power
3. [A.3] Inability to monitor a significant transient in progress
4. [A.4] Evacuation of Main Control Room with control not established within 15 minutes
5. [B.3] RCS leak rate limit - EXCEEDED
6. [B.4] Gross primary to secondary leakage with loss of offsite power
7. [C.6] Core damage with possible loss of coolable geometry
8. [C.7] Major fuel damage accident with radioactivity release to containment or fuel buildings
9. [D.2] High-high containment radiation, pressure, and temperature
10. [E.2] Release imminent or in progress and site boundary doses projected to exceed 0.1 Rem TEDE or 0.5 Rem Thyroid CDE
11. [G.1] Major secondary line break with significant primary to secondary leakage and fuel damage indicated
12. [H.1] Loss of offsite and onsite AC power for more than 15 minutes
13. [H.2] Loss of all onsite DC power for greater than 15 minutes
14. [I.1] Fire resulting in degradation of safety systems
15. [J.2] Imminent loss of physical Station control
16. [K.1] Aircraft damage to vital plant systems
17. [K.2] Severe explosive damage
18. [K.3] Entry of toxic or flammable gases into plant vital areas other than the Control Room
19. [K.4] Severe missile damage to safety systems
20. [L.1] Earthquake greater than or equal to DBE levels
21. [L.2] Extreme winds above Design Basis Conditions of 80 mph
22. [L.3] Flood or low water level above design levels
23. [M.2] Station conditions which may warrant notification of the public near the site

**TABLE 4.4**  
**INITIATING CONDITIONS: GENERAL EMERGENCY**

1. [B.1] Loss of 2 of 3 fission product barriers with potential loss of 3rd barrier
2. [B.2] Fuel failure with steam generator tube rupture
3. [C.1] Probable large radioactivity release initiated by LOCA with ECCS failure leading to core degradation
4. [C.2] Probable large radioactivity release initiated by loss of heat sink leading to core degradation
5. [C.3] Probable large radioactivity release initiated by failure of protection system to bring Rx subcritical and causing core degradation
6. [C.4] Probable large radioactivity release initiated by loss of AC power and all feedwater
7. [C.5] Probable large radioactivity release initiated by LOCA with loss of ECCS and containment cooling
8. [D.1] Extremely high containment radiation, pressure and temperature
9. [E.1] Release imminent or in progress and site boundary doses projected to exceed 1.0 Rem TEDE or 5.0 Rem Thyroid CDE
10. [J.1] Loss of physical Station control
11. [M.1] Any major internal or external events which singly or in combination cause massive damage to station facilities or may warrant evacuation of the public

NOTE: The appropriate Protective Action Recommendations for the preceding conditions MUST BE provided to the State within 15 minutes following the declaration of a General Emergency.

#### 4.3 State and Local County Emergency Classification System

The Commonwealth of Virginia Radiological Emergency Response Plan (COVRERP) emergency classification system defines two levels based on projected radiological doses resulting from the release of radioactive materials from a fixed nuclear facility. Virginia Power will provide projected radiological doses based on plant parameters and meteorological conditions. Provisions are in the COVRERP for dose assessments within 50 miles of the station for the ingestion of radioactive material via the food pathway.

Thresholds used for protective action determination are based on projected doses recommended in Table 2.1 of EPA-400-R-92-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents", as implemented by the Commonwealth of Virginia.

#### 4.4 Requirements For Written Summaries of Emergency Events

NUREG-0654, Appendix 1 establishes the guidance for providing written summaries of emergency events to offsite authorities. A written summary is provided to the Commonwealth of Virginia Department of Emergency Services (VDES) following activation of the North Anna Emergency Plan. The schedule for submitting the written summary for a Notification of Unusual Event is within 72 hours following declaration. For any other classification, the schedule for submitting the written summary is within 8 hours following termination. This schedule was established with the concurrence of VDES and subsequent notification to the NRC (reference Letter, S/N 84-302, dated 5-31-84).

NORTH ANNA POWER STATION  
EMERGENCY PLAN

SECTION 5

ORGANIZATIONAL CONTROL OF EMERGENCIES

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5.0 Organizational Control of Emergencies

An integral part of this Emergency plan is to assure that classifications of Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency are consistently made in a timely manner. All employees are instructed to contact the Shift Supervisor to report any emergency. This notification and the information available to the Shift Supervisor in the Control Room enable a timely classification of the emergency and subsequent actions.

The Shift Supervisor or Assistant Shift Supervisor initially acts in the capacity of the Station Emergency Manager (SEM) and takes actions as outlined in the EPIPs. If required by the emergency classification, or if deemed appropriate by the Station Emergency Manager, emergency response personnel will be notified and instructed to report to their emergency response locations. The Shift Supervisor is relieved as Station Emergency Manager when the Station Manager or his designated alternate reports to the station (normally to the Control Room) and is updated as to the status of the unit, the emergency actions taken, and the current status of the emergency. Following this relief, the Station Emergency Manager may relocate to the onsite Technical Support Center.

The Local Emergency Operations Facility (LEOF) is activated concurrently with the Technical Support Center (TSC). The LEOF is staffed by station and corporate personnel, including the Recovery Manager, who directs the activities of this facility. Once the LEOF is staffed, the Recovery Manager becomes the liaison between the in-plant emergency organization headed by the Station Emergency Manager and the Corporate Emergency Response Team (CERT). The Recovery Manager is responsible for ensuring the LEOF communicates emergency status to the State and local governments, directs the efforts of the offsite monitoring teams, makes radiological assessments, and recommends offsite protective measures to the State. Other duties include arranging through the CERT for dispatch of any special assistance or services requested by the station and to review, as required, news releases to the public and the media. Specific information relating to the staffing and reporting structure of the LEOF organization is

provided in the Corporate Emergency Response Plan (CERP).

The Recovery Manager reports to the Corporate Response Manager who directs the activities of the CERT at the Corporate Emergency Response Center (CERC). The CERC will be activated at the ALERT or higher emergency classification. The Corporate Response Manager is a senior level company representative who is responsible to the President of the Company for the total execution of the company's emergency response effort. He has the ultimate authority to commit company resources and set policy as part of managing the long term recovery effort. More detailed information on the composition of the CERT and their responsibilities is provided in the CERP.

#### 5.1 Normal Station Organization

The Station Manager is ultimately responsible for the operation of the Station. The minimum staff required to conduct Station operation is maintained at the station at all times. For purposes of the Emergency Plan, the on-shift manning is assumed to be on back-shift because the normal Station complement of personnel is only present during the daytime from Monday through Friday.

The basic shift (back-shift) complement of personnel is comprised of Operations, Health Physics, Chemistry, and Security personnel with coverage by Maintenance on designated shifts. In addition, technical/engineering support is available on all shifts from the Shift Technical Advisor (STA). Station administrative procedures provide the details of the normal station organization including reporting relationships.

#### 5.2 Onsite Emergency Organization

The first line of control in an emergency at North Anna Power Station lies with the on-shift personnel. The shift complement is staffed with personnel qualified to take the initial actions necessary to respond to an emergency. The organizational relationship of the on-shift emergency organization prior to augmentation is shown in Figure 5.1. Coverage by the Chemistry Team and the Damage Control Team would be provided on an as needed basis. However, augmentation of the onsite emergency organization will specifically provide such coverage. Also, personnel assigned to the Search and Rescue Team, the First Aid Team, and the Fire Team may be assigned

other functions until their services are required. The capability of the on-shift personnel to effectively manage an emergency is assured by the timely call out of supplementary emergency response personnel. The capabilities of the assigned on-shift personnel are adequate to assess the condition of the affected unit(s), take initial mitigative actions in accordance with emergency operating procedures, make notifications to off-site authorities, and initiate a call out of supplementary emergency response personnel as required. The EPIPs are used to procedurally control these actions.

Should the Station Emergency Manager deem that additional emergency response personnel are needed or the emergency classification is upgraded to Alert or higher, he shall initiate the augmentation of the on shift Emergency Organization by instructing Station Security to commence callout of supplementary emergency response personnel. Table 5.1 represent the minimum number of personnel that are required to augment emergency operations and the estimated response times of these personnel.

The responsibilities of the emergency response personnel assigned on shift and those who make up the augmentation crews meet the staffing functions identified in Table B-1 of NUREG-0654. The numbers of emergency response personnel designated for both the on-shift and augmentation contingents meet or exceed the guidance. Sufficient training has been provided for the on-shift personnel to ensure that the response actions needed to bring the affected unit(s) to a stable condition in preparation for the longer term recovery will be taken.

If an emergency occurs on one of the two units, the Shift Supervisor or Assistant Shift Supervisor assumes the operational responsibility for the unaffected unit. This allows the other Supervisor to assume the position of Station Emergency Manager until relieved. Figure 5.2 shows the station emergency organization after full augmentation.

#### 5.2.1 Emergency Position and Team Descriptions

The Station Emergency Organization, when fully implemented, will consist of at least the positions discussed below. Reporting relationships are as depicted in Figure 5.2. Additional personnel may be designated by Station Management as emergency responders

providing special expertise deemed beneficial, but not mandatory, to the planned response. The individuals assigned as interim, primary and alternate responders for the emergency positions will be designated by Station Management based on the technical requirements of the position. A listing of candidates, based on normal duty titles is presented in Table 5.4. The designated individuals will receive training in accordance with Section 8 of the North Anna Emergency Plan.

5.2.1.1 Station Emergency Manager

The Station Emergency Manager (SEM) has the responsibility of managing and directing emergency operations during the course of the emergency. He normally operates from the Control Room or the Technical Support Center and reports to the Recovery Manager. His responsibilities shall include, but not be limited to:

- 1) Classifying the emergency,
- 2) Authorizing notification to the NRC, State and local agencies of the emergency status,
- 3) Recommending protective measures,
- 4) Authorizing emergency exposure limits,
- 5) Activating emergency personnel and facilities,
- 6) Reducing power or shutting down both reactors,
- 7) Committing company funds as necessary,
- 8) Acquiring emergency equipment or supplies,
- 9) Ordering site evacuation,
- 10) Restricting access to the site,
- 11) Notifying company management,
- 12) Implementing work schedules, and
- 13) Directing on-site emergency activities.

Items 1 through 4 above MAY NOT BE DELEGATED. Upon activation of the LEOF,



the Recovery Manager will be responsible for assuming the non-delegatable responsibilities of notifying State and local governments of the emergency status, and for recommending offsite protective measures to the State.

5.2.1.2 Emergency Communicator

The Emergency Communicators report to the SEM in the Control Room prior to activation of the TSC, and to the TSC after its activation. The duties of the Emergency communicators are to initially notify and periodically update the Emergency Operations Centers of the counties within the 10-mile Emergency Planning Zone, the State Department of Emergency Services (DES), and the NRC. Upon activation of the LEOF, the LEOF staff becomes responsible for notification of State and local governments. The minimum information to be conveyed is specified in the EPIPs.

5.2.1.3 Emergency Procedures Coordinator

The Emergency Procedures Coordinator (EPC) will report to the SEM in the Control Room and then relocates to the TSC as part of the augmentation of the on-shift emergency organization.

The responsibilities of the EPC include:

- 1) Assisting the SEM in assuring all appropriate procedures and responses are initiated,
- 2) Monitoring emergency action level entry conditions,
- 3) Assisting the SEM in maintaining a working document of the controlling EPIP procedures and other appropriate procedures,
- 4) Assisting the SEM in obtaining all procedures generated as a result of the emergency,
- 5) Reviewing procedures for accuracy and completeness, and
- 6) Assisting in the preparation of these documents for review by the Station Nuclear Safety and Operating Committee.

5.2.1.4 Emergency Operations Director

The Emergency Operations Director (EOD) reports to the SEM in the Technical Support Center as part of the augmentation of the on-shift emergency organization. His duties include directing the activities of Operations personnel, advising the SEM on emergency operations, and directing the development of procedures necessary for conducting emergency operations.

5.2.1.5 Emergency Maintenance Director

The Emergency Maintenance Director (EMD) reports to the SEM in the TSC as part of the augmentation of the on-shift emergency organization. He directs the activities of the Maintenance Support Team. When a need for their services arises, the Damage Control Teams, will be delegated to him by the Operational Support Center Director. Also, the EMD is responsible for advising the SEM on emergency maintenance activities including planning, scheduling, and material requisitioning. He coordinates the work priorities for emergency maintenance with the SEM and directs the development of procedures necessary for conducting emergency maintenance.

5.2.1.6 Emergency Technical Director

The Emergency Technical Director (ETD) reports to the SEM in the TSC as part of the augmentation of the on-shift emergency organization. He directs the activities of the Technical Support Team. The Emergency Technical Director will analyze mechanical, electrical, instrumentation and control, hydraulic, thermodynamic, and reactor physics problems, and develop solutions to the problems. He shall provide technical support to the SEM and assist in developing procedures necessary for conducting emergency operations and maintenance.



5.2.1.7 Shift Technical Advisor

The Shift Technical Advisor (Control Room) will remain in the Control Room to advise the Shift Supervisor or Assistant Shift Supervisor on operations activities. He also provides engineering support until the Technical Support Team is staffed. Shift Technical Advisor (STA) coverage is provided on a 24-hour per day, 7-days per week on-shift basis to enable timely assistance in the Control Room.

5.2.1.8 Emergency Administrative Director

The Emergency Administrative Director (EAD) reports to the SEM in the TSC as part of the augmentation of the on-shift emergency organization. He directs activities of the Administrative Support Team and advises the Station Emergency Manager on emergency First Aid, Fire Protection, Security, Administrative and Logistical Support activities. He coordinates the acquisition of equipment, supplies, personnel, and other assistance needed to cope with the emergency. He also ensures that the TSC log keeper maintains a chronological record of key events.

5.2.1.9 Radiological Assessment Director

The Radiological Assessment Director (RAD) reports to the Station Emergency Manager in the Technical Support Center after relieving the interim director who was the Senior Radiological Protection representative on-site at the initiation of the emergency. He directs the activities of the Radiation Protection Supervisor in maintaining the Radiation Protection Program on-site during an emergency. He also directs the activities of the Dose Assessment Team and Offsite Monitoring Teams in determining offsite consequences of radiological releases until control is assumed by the Radiological Assessment Coordinator at the LEOF.

Other duties of the Radiological Assessment Director are to provide the status of offsite releases to the Station Emergency Manager, to direct the activities

of the Chemistry Team (following augmentation), to evaluate radiological conditions and recommend onsite and offsite protective actions to the Station Emergency Manager, to provide recommendations and Health Physics coverage for onsite corrective actions, to direct decontamination efforts, and to provide advice and monitoring for evacuation of on-site personnel.

5.2.1.10 Radiation Protection Supervisor

The position of Radiation Protection Supervisor will be filled upon augmentation of the on-shift emergency organization. The Radiation Protection Supervisor normally operates from the Station Health Physics office and reports to the Radiological Assessment Director. The Radiation Protection Supervisor directs the activities of the In Plant Monitoring Team, the Sample Analysis Team, the Personnel Monitoring and Decontamination Team, the Onsite (Out of Plant) Monitoring Team, and the Evacuation Monitoring Team. He will also provide radiological support, as needed, to the Search and Rescue Team, the Damage Control Team and the First Aid Team. Additional duties include evaluating onsite radiological conditions, ensuring that appropriate monitoring and sampling is performed, verifying that appropriate personnel monitoring is performed and personnel exposures are evaluated, and maintaining dose records. He shall also recommend onsite protective measures to the Radiological Assessment Director and provide him with survey results and sample analysis results needed for offsite dose assessment.

5.2.1.11 Operational Support Center Director (OSC Director)

Upon augmentation of the onsite shift, the position of OSC Director will be manned. He will base his activities from the Operational Support Center and shall report to the Station Emergency Manager. The duties and responsibilities of the OSC Director include accounting for as well as dispatching the Fire Team, the First Aid Team, the Damage Control Team, the Search and Rescue Team, and the

standby Operations personnel. He shall also coordinate the response of the above teams and personnel when directed to do so by the Station Emergency Manager or his designee.

#### 5.2.1.12 Maintenance Support Team

The Maintenance Support Team will operate out of the TSC or the OSC under the direction of the EMD after augmentation of the on-shift emergency organization. The Maintenance Support Team plans required maintenance evolutions, develops emergency maintenance procedures, arranges for material acquisition, and can direct the efforts of the Damage Control Teams, if activated.

#### 5.2.1.13 Technical Support Team

The Technical Support Team will operate out of the TSC under the direction of the ETD after augmentation of the on-shift emergency organization. The Team members include an Operational Advisor, a Reactor Engineer, a Mechanical and an Electrical Engineer. The on-duty Shift Technical Advisor has the required training to provide technical support until the Team is fully manned.

The Team shall assist the ETD in analyzing electrical, mechanical, instrumentation and control, chemistry, reactor physics, hydraulic and thermodynamic problems and in developing solutions to the problems. The Team shall also assist in developing procedures necessary to deal with the emergency condition.

#### 5.2.1.14 Chemistry Team

The Chemistry Team, after augmentation, reports to the RAD/designee and operates out of the Chemistry area of the Station.

The Chemistry Team will conduct the necessary chemistry sampling and sample analysis. The Team will also obtain post accident liquid and gaseous samples, as directed.

#### 5.2.1.15 Administrative Support Team

The Administrative Support Team will assist the Emergency Administrative Director on emergency fire protection, security, administrative and logistical support activities. The Team will also provide, as required, Quality Assurance review of Emergency Procedures and activities. The Quality Assurance function may not be required immediately and therefore will be staffed only as needed.

If the emergency is Security related, the Station Supervisor-Security will transfer from the Administrative Support Team and report directly to the Station Emergency Manager.

If the emergency is a fire, the Loss Prevention coordinator, or designee, will transfer from the Administrative Support team and report directly to the Station Emergency Manager.

If the emergency is a first aid emergency, the Station Loss Prevention Coordinator, or designee, transfers from the Administrative Support Team and reports directly to the Station Emergency Manager.

#### 5.2.1.16 Security Team

The Security Team reports to the EAD. The Team will maintain personnel accountability, provide site access control, provide station security, and activate the Local Emergency Operations Facility. The Team will also maintain liaison and communications with local law enforcement agencies when directed to do so by the Station Emergency Manager.

#### 5.2.1.17 Dose Assessment Team

This Team will operate out of the TSC under the direction of the RAD. The Dose Assessment Team maintains contact with and transmits instructions to Offsite Monitoring Teams, performs offsite dose assessment calculations, and provides the Radiological Assessment Director with offsite release calculations and dose projections. The Team will also assign an individual to transmit Health Physics and

environmental information to the NRC using the Health Physics Network (HPN) phone, until the LEOF is activated.

Once the LEOF is activated the Dose Assessment Team Leader will report the results of the offsite releases and dose projections to date to the Radiological Assessment Coordinator. The Dose Assessment Team Leader will also inform the Radiological Assessment Coordinator of the locations of the Offsite Monitoring Teams and of the current data received from these teams.

Control of Offsite Monitoring Teams and responsibility for making HPN notifications will transfer to the LEOF. The Dose Assessment Team will then provide support to the RAD regarding onsite response and interface with the LEOF.

#### 5.2.1.18 Offsite Monitoring Teams

These Teams will report to the Dose Assessment Team in the TSC or to the RAC in the LEOF, once activated. These Teams will provide offsite monitoring and sample collection as directed by the Dose Assessment Team or the RAC.

#### 5.2.1.19 Evacuation Monitoring Team

This Team is under the direction of Radiation Protection Supervisor and is activated at the Remote Assembly Area only if a site evacuation is ordered.

The duties of this Team include monitoring station personnel at the Remote Assembly Area following a site evacuation, collecting evacuated personnel dosimetry, and decontaminating personnel as necessary.

#### 5.2.1.20 In-plant Monitoring Team

The In-Plant Monitoring Team reports to the Radiation Protection Supervisor in the Station Health Physics Office. This Team will perform monitoring and sample collection inside the protected area. The team will also provide monitoring services to the Search and Rescue Team, the Damage Control Team, the Fire Team, and the First Aid Team, if required.



5.2.1.21 Sample Analysis Team

The Sample Analysis Team reports to the Radiation Protection Supervisor in the Station Health Physics Office. The team shall analyze samples collected offsite as well as post accident liquid and gaseous samples.

5.2.1.22 Personnel Monitoring and Decontamination Team

This Team reports to the RPS in the Station HP Office. The Team will monitor personnel, decontaminate personnel, and provide monitoring services to the Search and Rescue Team, the Damage Control Team, the Fire Team, and the First Aid Team, if required.

5.2.1.23 Onsite (Out of Plant) Monitoring Team

This Team reports to the RPS and operates out of the Station HP Office. The team will perform monitoring and sample collection within the site boundary but outside the protected area.

5.2.1.24 Fire Team

The Fire Team members arriving at the Station to augment the on-shift Fire Team will report to the Loss Prevention Coordinator in the OSC and remain there until their services are needed. Upon activation, the Team reports to the Loss Prevention Coordinator, Station Emergency Manager or responsible Emergency Director, as needed.

The Fire Team will combat fires in accordance with the Station Fire Protection Program. The on-shift Fire Team members with other duties will not report to the OSC, but will remain in their normal duties unless called out to combat a fire.

5.2.1.25 First Aid Team

The First Aid Team members reporting to the Station to augment the on-shift First Aid Team will report to the Loss Prevention Coordinator in the OSC and remain there until their services are needed. Upon activation, the Team reports to



the Loss Prevention Coordinator, Station Emergency Manager or responsible Emergency Director, as needed.

The Team will respond to first aid emergencies in accordance with the Station Administrative Procedures and in accordance with standard first aid practices.

The on-shift First Aid Team members will remain in their normal duties unless activated to respond to a first aid emergency.

#### 5.2.1.26 Damage Control Team

The Damage Control Team will report to the OSC Director. When their support is required, the team will report to the EMD or the responsible emergency director as needed.

The Damage Control Team will perform emergency assessment and repairs. The Team composition will be determined by the technical expertise required to address the specific problem. Personnel capable of dealing with mechanical, electrical, or instrumentation problems will be assigned to the Team.

#### 5.2.1.27 Search and Rescue Team

This Team will report to the OSC Director in the OSC until circumstances require their function to be performed. Upon activation, the Team will report to the SEM, the Loss Prevention Coordinator or the designated Emergency Director as needed.

Prior to arrival of augmentary personnel, an on-shift Fire Team Scene Leader will lead the Team. The Team members will be members of the Fire Team and the First Aid Team. The Search and Rescue Team will search for and rescue personnel following an explosion, a fire, or any other hazardous event. The Team can be used to locate personnel who are unaccounted for during an emergency.

### 5.3 Augmentation of Onsite Emergency Organization

The Station Emergency Manager has the authority to request assistance from any organization which he deems necessary to mitigate the conditions causing the emergency.

In addition, the Station Emergency Manager may request offsite assistance in fire fighting, rescue services, law enforcement, and medical support prior to augmentation of the onsite emergency organization (see Figure 5.3).

The participating agencies and support services with whom emergency support services have been negotiated are listed, by letters of agreement, in Appendix 10.1 of this Plan.

If conditions at the Station require an Alert or higher classification, the CERC, LEOF, TSC and OSC shall be activated. The Station Emergency Manager would normally forward information or request additional support through the Recovery Manager located in the LEOF (See Figure 5.4). Upon completion of the notification, the Recovery Manager would notify the Corporate Response Manager and provide recommendations concerning additional manpower, equipment, services, and the overall participation of the Corporate Emergency Response Team (CERT). Additional resources shall be obtained through personnel assigned to the CERT. Those additional personnel directed to report to the site during the emergency shall report to either the Station Emergency Manager or Recovery Manager for assignment, as appropriate.

The Corporate Response Manager has the ultimate responsibility for directing the corporate emergency response. Corporate support would be coordinated between the Station Emergency Manager onsite and the Recovery Manager at the Local Emergency Operations Facility. The Recovery Manager and his staff will serve as control point of contact between the Station, corporate emergency response in Richmond, and governmental authorities. In the event that the Local EOF becomes uninhabitable, the functions of the Local EOF will be transferred to the Central EOF located in Richmond, Virginia.

#### 5.3.1 CERT Notification and Response

The EPIPs provide for notification of Corporate Security to activate the Corporate Emergency Response Team in the Event of an Alert, Site Area Emergency or General

Emergency. This will also activate the Corporate Emergency Response Plan as the team members report to the Corporate Emergency Response Center (CERC) in Glen Allen, Virginia. Upon activation of the LEOF, the Recovery Manager will become the liaison between the Station and the CERC. He will provide recommendations concerning the corporate response based on the emergency classification. The Corporate Emergency Response Plan establishes the necessary guidelines for both the CERC and the LEOF to assist the station staff in managing the emergency. These include the following functions which may be necessary for emergency mitigation and recovery:

5.3.1.1 Environmental Monitoring

Provisions for obtaining additional environmental monitoring personnel shall be the responsibility of the CERT.

5.3.1.2 Logistics Support for Emergency Personnel

CERT Administrative Services will be responsible for all administration and logistics including accommodations, Corporate communications, purchasing, finance, commissary, sanitary, transportation, and security services.

5.3.1.3 Technical Support for Planning and Re-entry/Recovery Operations

Technical support for recovery and subsequent re-entry would be directed by the Recovery Manager. Trained technical personnel are available in the areas of nuclear fuel management, water quality, air quality, Quality Assurance, Engineering, Health Physics, and Chemistry. Additional technical support would be obtained from Surry Power Station, A/E, and NSSS vendor. Consulting services would be obtained as necessary.

5.3.1.4 Interface With Governmental Authorities

CERT management is responsible for contacting governmental agencies when coordinating mobilization of resources or requesting additional support. The Local Emergency Operations Facility, once activated, serves as principal point of interaction between Station and governmental authorities once they are mobilized.

#### 5.3.1.5 Release of Information to News Media

News releases shall be coordinated with the Public Affairs Department. The Chief Technical Spokesperson is responsible for meeting with the news media. Releases will be coordinated with the appropriate governmental authorities. Briefings will be conducted at the Joint Public Information Center in the Corporate offices and the Local Media Center in the North Anna Nuclear Information Center (NANIC). The Recovery Manager will review news releases for technical accuracy when the LEOF is activated. At any other time, the Corporate Office will relate newsworthy information to the media.

#### 5.3.2 Vendor and Contractor Support

Support will be obtained from the A/E, the NSSS vendor, and other consultants and vendors as needed to respond to the emergency and recovery operations. Experienced personnel with in-depth expertise in Station design, engineering and construction will be obtained to aid in solving critical technical problems.

This support is normally solicited by the Corporate Response Manager or his representative. In the event of an emergency, Westinghouse (the NSSS vendor) will also be informed of the plant status. In addition, the Institute of Nuclear Power Operations can be contacted to provide sources of additional support, if necessary.

#### 5.3.3 Local Services Support

Agreements have been arranged to provide fire fighting, rescue squad, medical and hospital services. Procedures for obtaining offsite services are provided in the EPIPs. Responding rescue squads are trained in the handling, treatment, and transportation of injured personnel.

The Medical College of Virginia (MCV) has developed an Emergency Plan designed to provide medical care in the case of a radiation emergency. The MCV Radiation Emergency Plan supports the Virginia Power nuclear power stations in the case of occupational and/or major accidents, including contaminated personnel. In the event of

a need for their support, a call ahead to MCV will be made to alert them to activate their Radiation Emergency Plan. A copy of the plan is maintained on file by Nuclear Emergency Preparedness Department and is incorporated into this plan by reference as Appendix 10.9.

In addition, radiological count laboratory resources are available through the Commonwealth to respond to an emergency at the Station. These (with estimated response time) include:

1. University of Virginia, Charlottesville, VA (45 minutes)
2. Virginia Commonwealth Laboratories, Richmond, VA (75 minutes)
3. Medical College of Virginia, Richmond, VA (75 minutes)
4. Newport News Shipbuilding & Drydock, Newport News, VA (3 1/2 hours)
5. State Mobile Laboratory (1 hour)

If required at the time of the event, additional resources can be obtained through purchase agreements with private institutions. These agreements would not be prepared in advance, but would be negotiated on an as needed basis.

Letters of Agreement in support of the North Anna Emergency Plan are re-negotiated once every 2 years. These agreements and new agreements will be included in Appendix 10.1 at the next plan revision. Agreement letters are limited to Federal, State, Local, and volunteer organizations. Negotiation responsibility lies with the Director-Nuclear Emergency Preparedness.

#### 5.4 Coordination with Participating Government Agencies

The State organization for response to radiological emergencies is based on normal governmental structures and channels of communication. The Governor, in his role as Director of Emergency Services, directs the emergency response through the State Coordinator of Emergency Services. The State Coordinator of Emergency Services coordinates the overall response, and the Department of Health provides technical advice and assistance on radiological accident assessment,



protective action, radiological control, and radiological monitoring.

Responsibility for radiological emergency response rests primarily with the elected officials of local governments. As time is a major factor in realizing the benefits of protective action in the event of a radiological emergency, certain of these actions are predetermined and agreed upon by the local governing body and are implemented without delay upon notification of a radiological emergency. An Insta-phone (dedicated county and state ringdown loop), continuously monitored by the Operations Shift, with extensions available in the Control Room, TSC and LEOF, is used for normal transmission of emergency notifications to these authorities (See Section 7.2.2.5). Procedures for authentication of an emergency, via the use of restricted, unpublished call-back telephone numbers, are maintained in State and local Radiological Emergency Response Plans. When notification is received, the Commonwealth of Virginia Radiological Emergency Response Plan is implemented and the State Department of Health initiates action to assess and evaluate the radiological situation in order to provide guidance and assistance to local governments. After the initial immediate actions, subsequent protective actions are made based on the results of the State evaluation of the radiological situation and Virginia Power recommendations. State and Federal agencies provide assistance as required. Response operations at the State level are coordinated by the Department of Emergency Services.

The State will also provide police support during activation of this plan. In the event of an emergency, the dispatcher at the State Police Headquarters in Richmond, Virginia would normally be called. The first response would most likely be from police units normally based in the local area. These resources would be supplemented by additional units dispatched from other parts of the state. The State Police would also provide traffic control and additional security.

The State Department of Game and Inland Fisheries is also part of the response to this Plan. Their role would be to assist in monitoring Lake Anna and provide knowledge of local terrain. The local County Sheriffs of Louisa and Spotsylvania counties also respond to this Plan. They can perform essentially the same functions as the State Police and coordinate their efforts with that organization.



In the event of an emergency, the Station will be in communication with the Louisa, Spotsylvania, Orange, Hanover, and Caroline Directors of Emergency Services who have the capability of activating their Emergency Operations Centers. The Station relies upon these counties to provide assistance in the event an evacuation from the site requires a remote assembly point or for any services the counties are capable of providing to mitigate the results of the emergency.

The Station will also maintain close contact with the NRC Operations Center and/or the NRC Region II offices in Atlanta, Georgia. This is an important function to ensure that accurate information and assessment of the emergency are available to the Federal Government. As a result of these communications, the NRC can best appraise their response to the emergency. In a like manner, the U.S. Department of Energy, Oak Ridge Operations, is available to provide radiological assistance to the Station.

The Station has the responsibility to provide to supporting agencies involved in the recovery of the facility or participating in controlling the emergency the necessary information to permit them to use their resources. In the case of the local counties, the Company provides communication and, when needed, training. This training takes the form of participation in drills and exercises by the county and radiological training for members of local volunteer rescue squads and fire departments. The Company and/or Station will arrange drills and exercises on a routine basis to ensure the plan is workable and to gain experience in its implementation.

The total effort of all parties involved shall be directed toward minimizing the results of an emergency and working toward the recovery of the facility with the least impact on the population at large.

#### 5.4.1 Commonwealth of Virginia Department of Emergency Services

The State Coordinator of Emergency Services coordinates the overall response operations at the State level and performs specific duties as defined in the COVERP.

The State Emergency Operations Center is located in Richmond, Virginia. There are local Emergency Operations Centers in Louisa and Spotsylvania Counties. The State Department of Emergency Services (DES) will send appropriate liaison personnel to the

Local Emergency Operations Facility upon activation.

5.4.2 Commonwealth of Virginia Department of Health

Department of Health personnel, in coordination with the DES, provide technical advice and assistance on radiological accident assessment, protective actions, radiological exposure control, and radiological monitoring. (See the COVERP for more specific information.)

Upon an Alert or higher classification, the State Department of Emergency Services will notify the Radiological Health Section, Department of Health. The Department of Health will implement its response procedures in accordance with the COVERP. Included in the planned response is a team sent to the Virginia Power LEOF which provides direct interface between the Department of Health and the Virginia Power Radiological Assessment Coordinator.

The local county health department is the primary health response agency, with the State Health Department providing assistance to them as required, with emphasis on the special requirements for those individuals who are contaminated with radioactivity. Accident assessment personnel, as part of the Radiological Emergency Response Team will operate from the State EOC.

5.4.3 Additional State Agency Support

Other State organizations having possible responsibilities in a radiological emergency are: Department of Agriculture and Consumer Services, Department of Air Pollution Control, Department of Conservation and Recreation, Division of Consolidated Laboratory Services, Department of Corrections, Department of Forestry, Department of Game and Inland Fisheries, Department of Transportation, Department of Military Affairs, Marine Resources Commission, Department of Mental Health, Mental Retardation and Substance Abuse Services, Department of State Police, State Water Control Board, Department of Waste Management, Department of Motor Vehicles, the Department of Social Services, and the Virginia Cooperative Extension Service. If services are required from any

of these organizations, the requested services will be coordinated through the Department of Emergency Services by the Station Emergency Manager or the Recovery Manager.

#### 5.4.4 Louisa County

The authority and responsibilities of Louisa County are presented in the Louisa County Radiological Emergency Response Plan (RERP). The Louisa County Radiological Emergency Response Plan applies to radiological emergencies within the county and:

- a. Assigns responsibilities to county offices and organizations for radiological emergency response and preparedness.
- b. Sets forth procedures for disseminating warning of radiological emergencies to the citizens of the county.
- c. Specifies response actions for specific emergency classifications.
- d. Delineates the policies and concepts under which the county government will operate in radiological emergency response.

Upon notification from the Station Emergency Manager, the Sheriff's Office will notify the County Coordinator of Emergency Services, or his designated representative, who shall:

- a. Verify the notification from the Power Station.
- b. Initiate the key county official's alert system.
- c. Initiate public warning procedures, as authorized by the appropriate State authority.
- d. Prepare for evacuation of people for the affected area if authorized by the appropriate State authority.

The County Coordinator of Emergency Services or his representative will activate and ensure that the EOC is manned 24 hours per day.

Once initial notifications are complete, the Station Emergency Manager or Recovery Manager provides periodic status reports to the County Coordinator of Emergency Services. These reports will include any changes in status or emergency classification. The County Sheriff's Office will serve as the local point for official communications within and out of the

county, prior to establishment of the County Emergency Operations Center (EOC). When the EOC is established, this responsibility will transfer to the EOC.

5.4.5 Spotsylvania, Caroline, Hanover, and Orange Counties

The authority and responsibilities of the above counties during a radiological emergency are presented in their respective RERP. The RERPs apply to the radiological emergencies within these localities caused by events at the North Anna Power Station. The Spotsylvania, Caroline, Hanover, and Orange County RERPs are identical to the Louisa RERP, as described in Section 5.4.4 of this Plan, except for information that is specific to the respective counties.

In the event of an emergency of any classification, the SEM will notify all local jurisdictions (Louisa, Spotsylvania, Caroline, Hanover, and Orange and the State) by using the Insta-phone loop. If the Insta-phone is out of service, regular commercial telephone will be used to make the notifications and the above localities have a system to call back to the power station and verify the message. All local jurisdictions provide 24 hour per day coverage.

5.4.6 Counties and Cities Within the Fifty Mile Ingestion Emergency Planning Zone (EPZ)

The counties that are directly involved in the emergency plan are Louisa and Spotsylvania. These counties are the major component of the 10 mile zone. They have emergency response functions as previously stated in this section. The counties and cities within the fifty mile EPZ are listed in Table 5.3. In the event of an emergency, notification and coordination with these entities is the responsibility of the State Department of Emergency Services.

5.4.7 Oak Ridge Operations, U.S. Department of Energy (DOE)

The SEM, the Recovery Manager or the Corporate Response Manager can request radiological support assistance from DOE Oak Ridge Operations, Oak Ridge, Tennessee, and implementation of the Federal Radiological Monitoring and Assessment Plan (FRMAP).

The FRMAP was developed as a means whereby participating Federal agencies

may coordinate activities with those of State and local health, police, fire, and civil defense agencies in providing rapid and effective radiological assistance in handling radiological incidents. DOE is the coordinating agency for the FRMAP.

The company would provide space and communications equipment for responding Federal agencies in the Local Emergency Operations Facility. It is estimated that the Federal response could be expected at the site within 3 to 5 hours from the time of activation based on availability of airports close to North Anna. Richmond International Airport, which is a major commercial facility, is within an 85 minute drive. Smaller airports, located within one hour of the site, could also be used.



**TABLE E.1**  
**MINIMUM STAFFING REQUIREMENTS FOR EMERGENCIES**

Major Functional Area	Location	Major Tasks	Emergency Title	On Shift	Additional Within Approx.	
					30 Min.	60 Min.
Assessment of Operational Aspects	CR	Supervision of Station Operations and Assessment of Operational Aspects	Shift Supervisor (SRO)	1*	-	-
	CR	Plant Operations	Asst. Shift Supervisor (SRO)	1*	-	-
			Control Room Operator (RO)	3*	-	-
			Control Room Operator	3*	-	-
Emergency Direction and Control	CR/TSC	Direction and Control of ON-Site Emergency Activities	Station Emergency Manager	1#	-	-
Notifications and Communications	CR/TSC	Notify Offsite Support Groups and Maintain Communications	Emergency Communicator	1#	1	2
Support of Operational Accident Assessment	EOF	Management of Emergency Response Resources and Recovery Operations	Recovery Manager	-	-	1
Radiological Accident Assessment	TSC/EOF	Offsite Dose Assessment	Radiological Assessment Director/Radiological Assessment Coordinator	1#	1	-
	Offsite	Offsite Surveys	Offsite Monitoring Team Leader	-	1	1
			Offsite Monitoring Team Member	-	1	1
	Onsite	Onsite (Out of Plant) Surveys	Onsite Monitoring Team Leader	-	1	-
			Onsite Monitoring Team Member	-	1	-
	In-Plant	In-Plant Surveys and Radiochemistry	In-Plant Monitoring Team Leader	1	-	-
			In-Plant Monitoring Team Member	1	1	1
		In-Plant Chemistry	Chemistry Team Leader	-	-	1
			Chemistry Team Member	1	-	1
Plant Systems Engineering Repair and Corrective Actions	CR/TSC	Operational Technical Support (STA)	Shift Technical Advisor	1*	-	-
			Technical Support Team Member (Operational Advisor)	-	-	1*
	TSC	Core and Thermal Hydraulics	Technical Support Team Member	-	-	1*
	TSC	Electrical	Technical Support Team Member	-	-	1
	TSC	Mechanical	Technical Support Team Member	-	-	1
		Repair and Corrective Actions				
	OSC	Mechanical Maintenance	Damage Control Team Member	1***	-	1
	OSC	Electrical Maintenance	Damage Control Team Member	1***	1	1
	OSC	Instrumentation and Control	Damage Control Team Member	-	1	1
	CR/OSC	Rad Waste Operator	Damage Control Team Member	1#	-	1

In-Plant Protective Actions	In-Plant	Radiation Protection			
	In-Plant	Personnel Monitoring and H.P. Coverage, Dosimetry and Access Control	Personnel Monitoring Team Leader	2#	1
			Personnel Monitoring Team Member	2#	2
Firefighting	In-Plant	Firefighting	Fire Team Members	5#	PLS <sup>1</sup>
First Aid & Rescue	In-Plant	First Aid	First Aid Team Member	2#	PLS
	In-Plant	Search and Rescue	Search and Rescue Team Member	2#	2#
Site Access Control and Personnel Accountability	In-Plant	Security and Access Control	Security Team Members	###	###
	In-Plant	Personnel Accountability	Security Team Leader	###	###
				—	—
				14	10

\* Numbers shown are for 2 Unit Operation, with one Shift Supervisor ( or Assistant Shift Supervisor), one Control Room Operator (RO), and one Control Room Operator operating the unaffected unit. With both units in cold shutdown condition, the minimum shift crew will be as defined in the Technical Specifications.

# This coverage is initially provided by personnel assigned other functions and will be assumed by the additional personnel when they arrive on-site.

\*\*\* Mechanical and Electrical Maintenance coverage will normally be provided on a 16-hour per day, 7 days per week basis. During other periods, this coverage will be provided by personnel assigned other duties until the additional personnel are available.

### The number of Security personnel is as specified in the Security Plan and is considered as Safeguards information not to be released to the public.

1. The abbreviation PLS stands for "Plus Local Support"

2. Approval for the adjustment in augmentation time for this individual was provided via NRC letter dated May 18, 1990.

3. The candidates for this position are limited to qualified STAs, SROs, former STAs, or former SROs. Concurrence for change to position title and resource pool used to staff position provided by NRC via letter dated July 22, 1993. Also reference VP letter, SN 92-053, dated September 15, 1992.

TABLE 5.2

EMERGENCY AND RECOVERY CORPORATE RESPONSE  
REQUIRED FOR NUCLEAR STATION EMERGENCIES

(ALERT STATUS AND ABOVE)

<u>Major Functional Area (Emergency Position Title)</u>	<u>Major Tasks</u>	<u>Available In</u>
Management of Local Emergency Operations Facility (Recovery Manager)	To coordinate the Company's response to emergency and recovery with Federal, State and local authorities.	1 hr.
Health Physics & Chemistry (Radiological Assessment Coordinator)	Report to the Recovery Manager to conduct radiological assessment activities.	1 hr.
Technical Support (Technical Support Manager)	Reports to the Corporate Emergency Response Manager to provide technical and evaluation support.	1 hr.
Plan/Design/Construction (Plan/Design/Construction Manager)	Reports to the Corporate Emergency Response Manager to provide engineering technical and vendor support in areas dealing with construction or design changes.	1 hr.
News Center interface (Chief Technical Spokesman)	Reports to the Corporate Emergency Response Manager to become the Company Spokesman in any statements to the News Media.	1 hr.

TABLE 5.3

CITIES AND COUNTIES WITHIN THE NORTH ANNA 50 MILE EMERGENCY PLANNING ZONE \*\*

<u>VIRGINIA COUNTIES</u>		<u>VIRGINIA CITIES</u>	
1.	Louisa	20.	Fluvanna
2.	Spotsylvania	21.	Nelson
3.	Fredericksburg	22.	Buckingham
4.	Madison	23.	Cumberland
5.	Orange	24.	Amelia
6.	City of Culpeper	25.	Powhatan
7.	Culpeper County	26.	Goochland
8.	Rappahannock	*27.	Henrico
9.	Warrenton	*28.	City of Richmond
10.	Fauquier	*29.	Chesterfield
11.	Prince William	30.	Page
12.	Stafford	31.	Green
*13.	Essex	32.	Rockingham
14.	Westmoreland	33.	Albemarle
15.	King George	34.	Charlottesville
16.	Caroline		
*17.	King and Queen		
*18.	King William		
*19.	Hanover		

\*Within 50 miles of both Surry and North Anna

\*\*That portion of the State of Maryland lying within the 50 mile zone has been excluded. (Reference NRC Letter of February 6, 1981, Serial Number 100).

TABLE 5.4

The Emergency Response Positions will normally be filled by the following individuals as interim, primary and alternates. The list of candidates is representative of normal station position titles but is not meant to be exclusive of individuals that possess the required technical expertise and training. Station Management will make the final determination.

<u>EMERGENCY POSITION</u>	<u>CANDIDATES</u>
Station Emergency Manager	Station Manager Asst. Station Manager (O and M) Asst. Station Manager (NS & L) Supt. Operations Shift Supervisor Asst. Shift Supervisor
Emergency Communicator	Control Room Operator Control Room Operator (trainee) Nuclear Training (designees) Supv. Licensing
Emergency Procedures Coordinator	Asst. Station Manager (NS & L) Supv. Licensing Supv. Station Procedures
Emergency Operations Director	Supt. Operations Supv. Shift Operations Operations Coordinator Supv. Ops. Support
Emergency Maintenance Director	Supt. Maintenance Supv. Electrical Maintenance Supv. Maintenance Support Supv. Inst. & Controls
Emergency Technical Director	Supt. Station Engineering Supv. ISI/NDE & ENGR. PROG. Supv. System Engineering Supv. Safety Engineering
Shift Technical Advisor	Shift Technical Advisor
Emergency Administrative Director	Supv. Administrative Services Supv. Nuc. Office Records Supv. Records Management Business Systems Supervisor



Radiological Assessment Director

Supt. Radiological Protection  
Staff Health Physicist  
Supv. H.P.  
Senior Health Physics (onsite)  
Supv. Rad Engineering  
Supv. Rad. Matl. Control

Radiation Protection Supervisor

Supv. H.P.  
Shift Supv. H.P.  
Health Physics Technician

OSC Director

Supv. NDE  
Supv. Testing  
Operations Coordinator  
Sr. Staff Engineer

Maintenance Support Team Leader

Supv. Maintenance Eng.  
Supv. Mechanical Maint.

Maintenance Support Team (Members)

Stores Supervisor  
Electrical Foreman  
Supt. Materials  
Supt. Outage & Planning  
Unit Outage Coordinator  
Asst. Supv. Inst. & Controls  
Supv. Planning  
Planner  
Maint. Coordinator

Technical Support Team

Leader

Asst. Supt. Engineering  
Supv. Safety Eng.  
Supv. Configuration Management  
Supv. Design Eng.  
Supv. System Eng.

Members

Operational Advisor  
Reactor Engineer  
Mechanical Engineer  
Electrical Engineer

Chemistry Team

Leader

Senior Chemistry Technician  
Chemistry Technician

Members

Chemistry Technician  
Chemistry Technician Trainee

Administrative Support Team

Leader

Station Supv. Security  
Supv. Security Operations

Members

Sr. Staff Eng.  
Staff Eng.  
Sr. Eng.  
Nuclear Training (designees)  
Records Department Clerk  
Safety Coordinator

Security Team

Leader

Security Shift Supervisor  
Asst. Security Shift Supv.

Members

Security Officers  
Security Control System Operators  
Admin. Security Officers

Dose Assessment Team

Leader

Supv. H.P.  
Rad Eng.

Members

H.P. Shift Supervisor  
H.P. Technician  
Coord. H.P.

Offsite Monitoring Team

Leader

H.P. Shift Supervisor  
H.P. Technician

Members

H.P. Tech. Trainee  
H.P. Specialist  
Chemistry Technician  
Chemistry Technician Trainee  
Decon. Technician

Evacuation Monitoring Team

Leader

H.P. Shift Supervisor  
H.P. Technician

Members

H.P. Tech. Trainee  
H.P. Specialist  
Chemistry Technician  
Chemistry Technician Trainee  
Decon. Technician

In Plant Monitoring Team

Leader

H.P. Shift Supervisor  
H.P. Technician

Members

H.P. Tech. Trainee  
H.P. Specialist  
Chemistry Technician  
Chemistry Technician Trainee  
Decon. Technician

Sample Analysis Team

Leader

H.P. Shift Supervisor  
H.P. Technician

Members

H.P. Tech. Trainee  
H.P. Specialist

Personnel Monitoring and Decontamination Team

Leader

H.P. Shift Supervisor  
H.P. Technician

Members

H.P. Tech. Trainee  
H.P. Specialist  
Chemistry Technician  
Chemistry Technician Trainee  
Decon. Technician

Onsite (Out of Plant) Monitoring Team

Leader

H.P. Shift Supervisor  
H.P. Technician

Members

H.P. Tech. Trainee  
H.P. Specialist  
Chemistry Technician  
Chemistry Technician  
Decon. Technician

Fire Team

Leader

Fire Team Scene Leader

Members

North Anna Fire Brigade

First Aid Team

Leader

First Aid Team Captain

Members

Station First Aid Team

Damage Control Team

Leader

Mechanical Foreman  
Electrical Foreman

Members

Mechanical Foreman  
Mechanical Planner  
Sr. Nuclear Instrument Tech.  
Nuclear Instrument Tech. Trainee  
Control Room Operator  
Control Room Operator Trainee  
Mechanics  
Welders  
Electricians

Search and Rescue Team

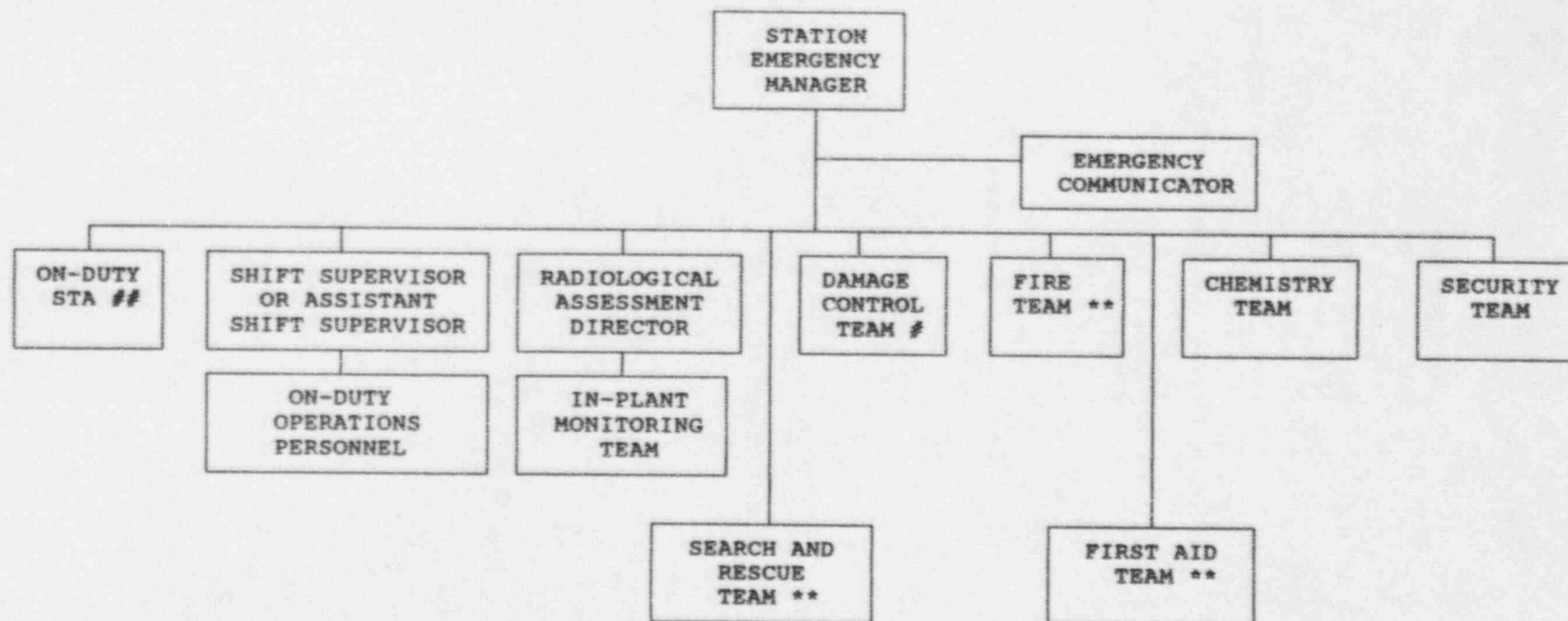
Leader

Fire Team Scene Leader  
Fire Team Member

Members

Fire Team Members  
First Aid Team Members

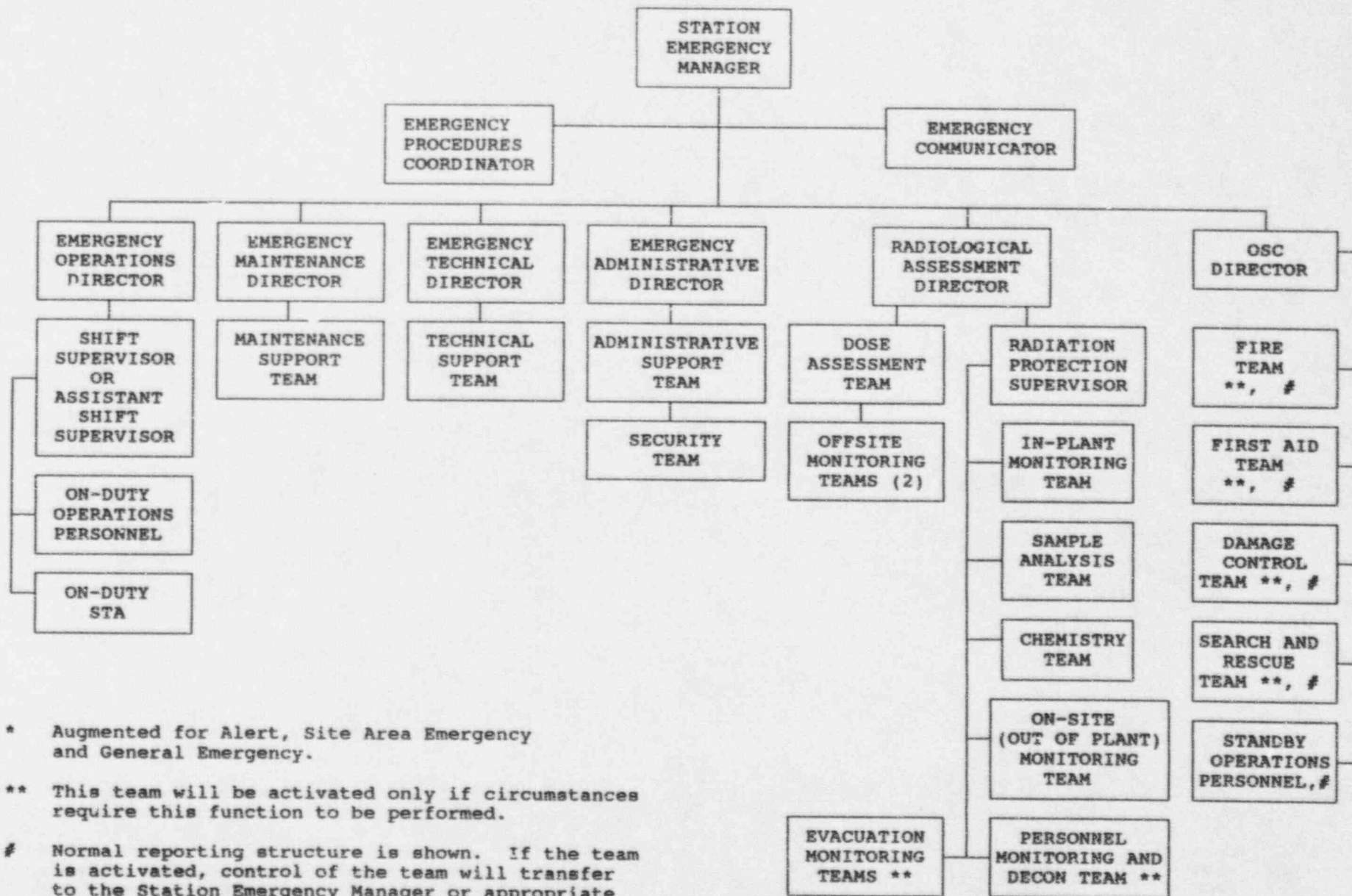
STATION EMERGENCY ORGANIZATION PRIOR TO AUGMENTATION \*  
FIGURE 5.1



- \* Augmented for Alert, Site Area Emergency and General Emergency.
- \*\* This coverage is provided by personnel who may be assigned other functions.
- # This coverage may not be provided on a full time basis.
- ## The on-duty STA provides technical support as well as operations support to the SEM until the Technical Support Team is activated.



STATION EMERGENCY ORGANIZATION FOLLOWING AUGMENTATION \*  
FIGURE 5.2

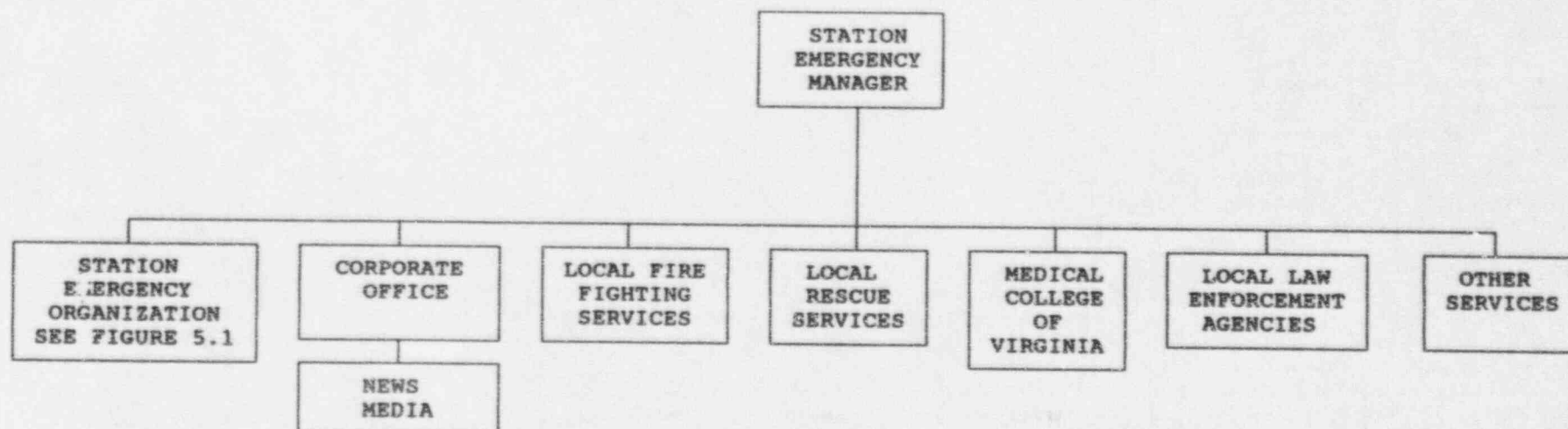


\* Augmented for Alert, Site Area Emergency and General Emergency.

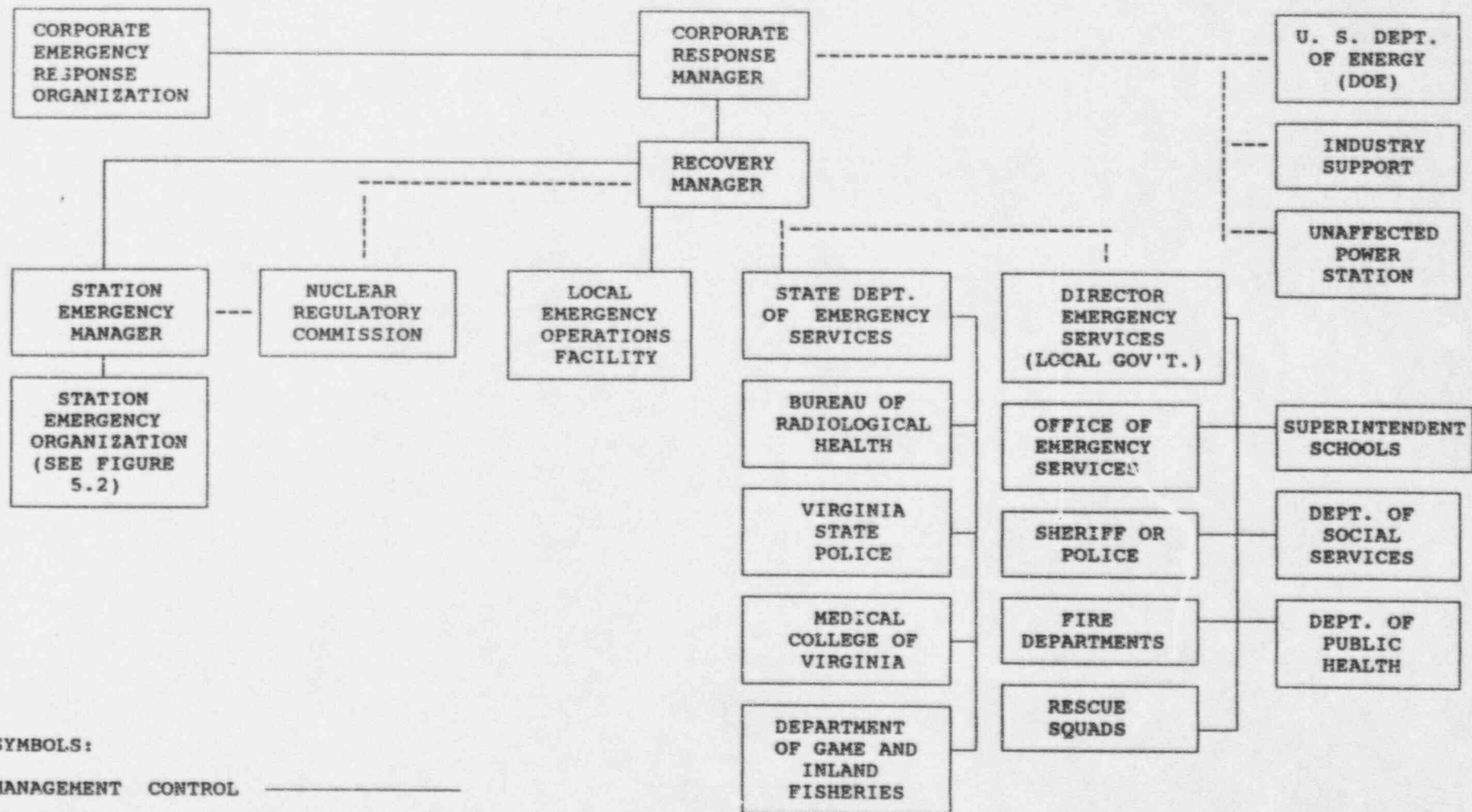
\*\* This team will be activated only if circumstances require this function to be performed.

# Normal reporting structure is shown. If the team is activated, control of the team will transfer to the Station Emergency Manager or appropriate Emergency Director.

STATION TO SUPPORT GROUP INTERFACE  
PRIOR TO AUGMENTATION OF THE EMERGENCY ORGANIZATION  
FIGURE 5.3



STATION TO SUPPORT GROUP INTERFACE  
FOLLOWING LEOP ACTIVATION  
FIGURE 5.4



SYMBOLS:

MANAGEMENT CONTROL \_\_\_\_\_

COORDINATED ASSISTANCE - - - - -

NORTH ANNA POWER STATION  
EMERGENCY PLAN

SECTION 6

EMERGENCY MEASURES

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## 6.0 Emergency Measures

Emergency measures provide preplanned actions, methods, and criteria which guide personnel during the course of an emergency.

The initial response to any emergency condition will be the activation of the Emergency Plan. After activation, the emergency organization that is formulated by activation of the Emergency Plan performs the necessary assessment activities to classify the type of emergency. If the emergency is radiological in nature, the potential consequences of the emergency will be evaluated for the necessary offsite and onsite protective actions to guard the health and safety of the population. If additional assistance is required, offsite support will be requested as provided for in letters of agreements established with a variety of government agencies and volunteer organizations.

### 6.1 Activation of the Emergency Plan

Each full time employee of the station is required to be familiar with the provisions of the Emergency Plan. Any employee, upon becoming aware of an emergency condition, shall immediately notify the Shift Supervisor on duty unless it is apparent notification has already taken place. Upon such notification or other indications, a Shift Supervisor or Assistant Shift Supervisor assumes the responsibilities of the Station Emergency Manager. The SEM will classify the emergency, initiate the appropriate notifications and call outs, and coordinate the actions of the emergency response organization as required by the EIPs.

Notifications will be made to the NRC as soon as possible but within 1 hour and to State and county officials within 15 minutes after declaration of an emergency. Dedicated communicators will be available to maintain a continuous channel of communications with the NRC and to provide regular updates to state and local officials approximately every 30 minutes, when conditions change or as otherwise agreed. The initial information provided to the NRC and State and local government is defined by specific report forms which are included in the EIPs. The content of the messages have been established in conjunction with the State and local governments and include the class of emergency, whether a release is in progress, and any recommended protective measures. Additional information will be provided as it becomes

available to formulate recommendations to offsite agencies.

## 6.2 Assessment Actions

EPIP-1.01 is the controlling procedure for categorizing the event and classifying the emergency. If the event has the potential for radiological consequences, the designated Radiological Assessment Director is instructed to initiate his controlling EPIP. This procedure would then call for other EIPs which provide guidance for dose assessment, source term determination, atmospheric diffusion factor determination, monitoring team activities, personnel monitoring and decontamination, monitoring of onsite facilities, evacuation, respiratory protection, sampling and sample analysis, and use of the MIDAS computer model to be implemented.

Once the emergency classification has been determined, the appropriate EIPs are initiated to direct the activation of the required emergency response facilities and call out of designated emergency response personnel. The design of the facilities and the data retrieval and monitoring capabilities provide the information needed to make timely assessments and formulate appropriate protective actions.

## 6.3 Protective Actions

The Recovery Manager or the Station Emergency Manager (if the LEOF is not yet activated) is responsible for recommending offsite protective actions to the State. The State and local governments are responsible for notification of the public and implementation of the appropriate protective measures.

### 6.3.1 Offsite Criteria for the 10 Mile Emergency Planning Zone (EPZ)

Dose contribution from key isotopes such as those listed in Table 6.1 (and analyzed in UFSAR Sections 11 and 15) are used to calculate offsite doses for comparison to protective action recommendation thresholds specified in EIPs. These protective action recommendations shall be no less conservative than the thresholds provided in Table 6.4. Recommended protective actions transmitted to the State consider plant conditions as well as current meteorological data such as wind direction, wind speed

and stability class. Factored into the recommendations will be the protection afforded by dwellings in the plume exposure pathway. The station will have the necessary technical data upon which to base protection factors. Representative shielding factors from gamma cloud source and for surface deposited radionuclides were based on SAND 77-1725, "Public Protection Strategies for Potential Nuclear Reactor Accidents." (See Tables 6.2 and 6.3)

A Site Area Emergency will be declared when offsite doses are projected to exceed 0.1 Rem TEDE or 0.5 Rem Thyroid CDE. A General Emergency will be declared when offsite Protective Action Guides (PAGs) of 1.0 Rem TEDE and/or 5.0 Rem Thyroid CDE are projected to be exceeded due to a direct radiation or inhalation hazard, or when non-radiological conditions exceed General Emergency EALs. These thresholds are reflected in Table 6.4.

Protective action recommendations are required to be made to the State within 15 minutes of declaring a General Emergency. Based on the guidance in Table 6.5, specific protective action recommendations tied to plant and meteorological conditions have been included in an EPIP specifically designed to facilitate meeting this time requirement.

Warnings to the public within the 10-mile EPZ (Figure 6.1) will be the responsibility of State and local officials who will be assisted by the State Department of Police upon request. The primary method of warning the public is by the use of the Early Warning System sirens. Other warning methods may include telephone communications, television and radio Emergency Broadcast System stations, public address systems, bull horns from patrol cars and personal contact. There are currently no hospitals, prisons, or nursing homes within the 10 mile EPZ.

It is estimated that the primary sector and the two buffer sectors (spanning  $67\frac{1}{2}^\circ$ ) can be alerted of the emergency within 15 minutes using the Early Warning System. If evacuation is recommended, it is estimated that the  $67\frac{1}{2}^\circ$  sector can be

evacuated within 2 to 4 hours.

Evacuation zones, routes, and relocation centers have been established in the event that an evacuation is recommended. This information is published in brochures and distributed by the State. Population distribution and evacuation time estimates are maintained on file by the Nuclear Emergency Preparedness Department (reference Appendix 10.8). The existing evacuation time estimate studies will be provided to the State Department of Emergency Services following the 10-year census. At that time, the State will make the determination whether or not a new study is required for the EPZ.

Written preplanned messages intended for transmittal to the public via radio and television stations will be consistent with the classification scheme. They will be released to the media by the State or Local Coordinator of Emergency Services or his designated representative. The messages will give instruction with regard to specific actions to be taken by the occupants of the inhabited area. The messages will, as appropriate, give instruction on the aspects of sheltering, thyroid blocking, evacuation, the nature of the emergency, and recommended protective actions. The local governments are charged by COVERP with the responsibility to conduct information programs to educate their citizens on:

1. Radiological hazards,
2. Procedures for notification of a radiological emergency,
3. Evacuation routes and assembly points, and
4. Other protective measures.

The Commonwealth of Virginia Radiological Emergency Response Plan identifies the methods to be utilized in preventing or minimizing direct or subsequent ingestion exposure to radioactive materials deposited on the ground or other surfaces. Upon notification of a radiological emergency which may affect livestock, crops, or farmlands, the State Department of Agriculture and Consumer Services will institute a program to

assess the impact upon the agriculture community. Members of that department will take samples of milk from dairy cattle in the affected area for analysis and will monitor soil, crops and farm equipment for contamination.

Follow-up action includes the disposition of radiologically contaminated materials. The local county government(s) has the prime responsibility for controlling affected area ingress and egress. Assistance from the State Police shall be supplied as requested by local officials.

#### 6.3.2 Onsite Criteria for the Exclusion Area

The area within 5000 feet of the former North Anna Unit 3 containment is defined as the Exclusion Area for the purposes of this Plan. Company employees, contractor personnel, occasional visitors at the site, and boaters on the reservoir and cooling lagoons may be inside the Exclusion Area. The area immediately surrounding the units which is enclosed by a security fence is defined as the Protected Area. The Station Emergency Manager is responsible for making the decision to evacuate the Protected Area, and will take appropriate measures in cooperation with State and local agencies for evacuation of persons in the Exclusion Area and those members of the public who may be passing through the site or within Company property. Virginia Power will also commit Company personnel and appropriate equipment (search lights, power amplified loudspeakers) to assist the Department of Game and Inland Fisheries in clearing the Exclusion Area when required.

Visitors to the Protected Area of the station are under continuous escort by personnel knowledgeable in emergency personnel accountability procedures. Contractor personnel are also trained in personnel accountability procedures.

Onsite personnel will be immediately notified of an emergency that is initially classified as an Alert or higher event, unless doing so poses a threat to personnel safety. For example, hurricane force winds, a tornado, or a security breach may dictate suspension or deferral of assembly, accountability and/or initiation of facility staffing.



However, these activities would be implemented as quickly as achievable given the specific situation. Normally, alarms will be sounded and announcements will be made to conduct personnel accountability or, if necessary, a site evacuation of non-essential workers. Those individuals within the Exclusion Area will be alerted by station personnel, Security, and/or personnel from the Department of Game and Inland Fisheries. In the event of an evacuation, radiation monitoring teams will be dispatched to the appropriate Remote Assembly Area.

The Station has the capability to conduct personnel accountability for individuals inside the Protected Area within approximately 30 minutes using an EPIP established for this purpose. Visitors, non-Virginia Power workers, and Virginia Power workers with specific series security badge numbers report to the Security Building for accountability. Workers not normally in the Protected Area report to their supervisor who in turn accounts for his personnel. After accountability is completed, an evaluation is made and search teams may be dispatched to locate any individual noted as missing or unaccounted for.

If onsite evacuation is to occur, Security collects only the security badges, not the dosimetry, of all personnel leaving the Protected Area. Continuous accountability of personnel in the Protected Area not evacuating the site shall be maintained throughout the emergency. Evacuees, who may use personal vehicles, proceed to either the primary or secondary remote assembly area (See Figure 6.2).

At the remote assembly area, the Station evacuees will be surveyed for contamination and decontaminated if necessary prior to being released. Decontamination agents and supplies are available at the station which can be transported to the remote assembly areas to provide decontamination capabilities.

### 6.3.3 Use of Onsite Protective Equipment and Supplies

#### 6.3.3.1 Respiratory Protection

Virginia Power has a comprehensive respiratory protection program at its nuclear stations. VPAP 2101, "Radiation Protection Plan", establishes the Respiratory Protection Program which is implemented by HP procedures. Those individuals likely to wear respirators are given a pulmonary examination and formal classroom training on respiratory protection including a practical examination. A "fit test" is given before an individual is allowed to enter an area requiring respiratory protection.

#### 6.3.3.2 Protective Clothing

The station maintains an adequate inventory of protective clothing in the Clean Change Room. Contaminated clothing is washed at the station and re-issued provided contamination is below established radiation criteria. A Radiation Work Permit system is utilized whereby Radiological Protection establishes personnel protective clothing and equipment criteria. Such clothing may consist of cotton coveralls, hoods, cotton glove inserts, rubber gloves, plastic shoe covers, rubber shoe covers and rubber boots. Station personnel requiring access to a Radiological Control Area are given formal classroom training on how to don and remove protective clothing so as to minimize personal contamination or introduction of contamination into adjacent areas.

#### 6.3.3.3 Thyroid Blocking Agent

The Company's Employee Health Services Department, with the advice of its Physician Consultant has authorized the use of a thyroid blocking agent at the Station for a potential radioiodine inhalation situation. An EPIP addresses the approval process for administering the drug.

### 6.4 Aid to Affected Personnel

The Company has made arrangements with the Medical College of Virginia (MCV), to provide medical assistance to personnel injured or exposed to radiation and/or radioactive material. MCV has developed its own plan for responding to the emergency. MCV's plan

establishes a specialized area of the hospital for treatment with appropriate Health Physics functions, and implements a coded system to alert hospital team members. Radiation monitoring equipment, dosimetry, and protective clothing are available at MCV.

The Station will provide and distribute self reading and cumulative type dosimeters to all personnel involved in emergency onsite response regardless of their affiliation. Dose records shall be maintained and checked throughout the emergency.

#### 6.4.1 Emergency Exposure Limits

Upon authorization by the Station Emergency Manager, emergency response personnel may, because of necessity, receive exposures in excess of normal established limits. Selection criteria for volunteer emergency workers includes consideration of those who are in good physical health, are familiar with the consequences of emergency exposure, and are not a "declared pregnant adult". It is preferable, though not mandatory, that volunteers be older than 45 years of age and not be a female capable of reproduction.

Emergency exposure may be authorized for such needs as removal of injured personnel, undertaking corrective actions, performing assessment actions, providing first aid, performing personnel decontamination, providing ambulance service, providing medical treatment, etc. Guidelines for emergency exposure limits, including life saving actions, are specified in the EIPs. These guidelines are consistent with EPA Emergency Worker and Life Saving Activity Protective Action Guides.

#### 6.4.2 Decontamination and First Aid

The station has a primary and alternate First Aid Facility that contains the normal complement of first aid supplies and equipment necessary to treat those injuries not involving hospitalization or professional medical services.

At least two First Aid Team members are available at all times to respond to personnel injury. As a minimum, the First Aid Team personnel are Multi-Media first aid trained. In addition, the following Medical facilities and services are available:

1. Company nurse available during normal working hours (Mon. - Fri.).
2. Company ambulance.
3. Company designated physicians in the area.
4. Local Rescue Squads.
5. The Medical College of Virginia facilities.

The Station Health Physics Procedures and EIPs specify levels of permissible radioactive contamination for workers and equipment. Actions are required to be taken when levels for equipment or areas exceed the limits established in the Health Physics Procedures. Any detected personnel contamination will initiate appropriate evaluation and decontamination in accordance with these procedures.

The Station has onsite contamination control procedures that provide for access control. These procedures state the criteria for permitting the return of the areas and their contents to normal use.

No food supplies are grown on the site and the water supplies come from deep wells. There will be procedures to monitor contamination in areas designated permissible for employees to eat and drink during the emergency and recovery phases of operations.

If onsite personnel are required to relocate or routinely leave the site during an emergency, the Station will provide adequate supplies for personnel decontamination, clothing and means to provide for decontaminating the clothing. If radioiodine contamination of the skin is determined, provisions will be made to provide for decontamination as specified in the Health Physics Procedures.

An EPIP has been developed to provide for the monitoring of vehicles and personnel at the Remote Assembly Areas (RAA). Should decontamination of vehicles or personnel be warranted, Health Physics personnel can perform the task at the Station, the RAA, or if necessary, at Patrick Henry High School in Hanover County.

#### 6.4.3 Medical Transportation

A Station ambulance is available to transport contaminated injured personnel.

Contaminated injured personnel will be suitably clothed or prepared to prevent the spread of contamination in the transporting vehicle. Communication can be maintained with MCV from the station. The Station can also communicate with the ambulance by use of a Virginia Power UHF radio, and the ambulance can communicate with MCV by way of the HEAR system. In addition, arrangements have been made with local volunteer rescue squads to transport injured contaminated personnel to the Medical College of Virginia. Response team members have received training concerning transportation of contaminated injured individuals. A Health Physics technician, with appropriate instrumentation, would normally accompany contaminated injured personnel to MCV. The approximate time to transport a patient to MCV is 75 minutes. The estimated time for local rescue squads to arrive at the station is 30 minutes.

#### 6.4.4 Medical Treatment

The MCV-Virginia Power Radiation Emergency Plan: (Appendix 10.9 of this Plan) provides guidance for the treatment of contaminated injured personnel by qualified individuals. In addition, the State Department of Health maintains a list of facilities that have the capability of receiving and treating injured and/or contaminated individuals. In the event the facilities at MCV become over extended, the State Department of Health would be called to coordinate further assistance.

#### 6.5 Offsite Support

In addition to the offsite agencies listed above, local volunteer fire departments have agreed to assist in fighting fires. A list of services and equipment is included in the Agreement Letters in Appendix 10.1 .

The response time of these volunteer fire departments varies from 30 minutes to 45 minutes, unless adverse weather conditions prevail.

Police support for an emergency is provided by State and local governments as detailed in their respective Emergency Plans.



TABLE 6.1  
RADIONUCLIDES WITH SIGNIFICANT CONTRIBUTION TO DOMINANT EXPOSURE MODES<sup>(1)</sup>

Radionuclides with Significant Contribution to Thyroid Exposure		Radionuclides with Significant Contribution to TEDE Exposure		Radionuclides with Significant Contribution to Lung Exposure (Lung only controlling when thyroid dose is reduced by iodine blocking or there is a long delay prior to releases)	
<u>Radionuclide</u>	<u>Half life (days)</u>	<u>Radionuclide</u>	<u>Half life (days)</u>	<u>Radionuclide</u>	<u>Half Life (days)</u>
I-131	8.05	I-131	8.05	I-131	8.05
I-132	0.0958	Te-132	3.25	I-132	0.0958
I-133	0.875	Xe-133	5.28	I-133	0.875
I-134	0.0366	I-133	0.875	I-134	0.0366
I-135	0.280	Xe-135	0.384	I-135	0.280
Te-135	3.25	I-135	0.280	Cs-134	750
		Cs-134	750	Kr-88	0.117
		Kr-88	0.117	Cs-137	11,000
		Cs-137	11,000	Ru-106	365
				Te-132	3.25
				Cs-144	284

(1) Derived from NUREG 0654

**TABLE 6.2**  
**REPRESENTATIVE SHIELDING FACTORS FROM GAMMA CLOUD SOURCE**

Structure or Location	Shielding	
	Factor <sup>(a)</sup>	Representative Range
Outside	1.0	-
Vehicles	1.0	-
Wood-frame house(b) (no basement)	0.9	-
Basement of wood house	0.6	0.1 to 0.7 <sup>(c)</sup>
Masonry house (no basement)	0.6	0.4 to 0.7 <sup>(c)</sup>
Basement of masonry house	0.4	0.1 to 0.5 <sup>(c)</sup>
Large office or industrial	0.2	0.1 to 0.3 <sup>(c,d)</sup>

- (a) The ratio of the dose received inside the structure to the dose that would be received outside the structure.
- (b) A wood frame house with brick or stone veneer is approximately equivalent to a masonry house for shielding purposes.
- (c) This range is mainly due to different wall materials and different geometries.
- (d) The shielding factor depends on where the personnel are located within the building (e.g., the basement or an inside room).

**TABLE 6.3**  
**REPRESENTATIVE SHIELDING FACTORS FOR SURFACE DEPOSITED RADIONUCLIDES**

Structure or Location	Representative Shielding Factor <sup>(a)</sup>	Representative Range
1 m above an infinite smooth surface	1.00	-
1 m above ordinary ground	0.70	0.47-0.85
1 m above center of 50-ft roadways 50% decontaminated	0.55	0.4-0.6
Cars on 50-ft road:		
Road fully contaminated	0.5	0.4-0.7
Road 50% decontaminated	0.5	0.4-0.6
Road fully decontaminated	0.25	0.2-0.5
Trains	0.40	0.3-0.5
One-and two-story wood-frame house (no basement)	0.4 <sup>(b)</sup>	0.2-0.5
One-and two-story block and brick house (no basement)	0.2 <sup>(b)</sup>	0.04-0.40
House basement, one or two walls fully exposed:	0.1 <sup>(b)</sup>	0.03-0.15
One story, less than 2 ft of basement, walls exposed	0.05 <sup>(b)</sup>	0.03-0.07
Two stories, less than 2 ft of basement, walls exposed	0.03 <sup>(b)</sup>	0.02-0.05
Three-or four-story structures, 5000 to 10,000 ft <sup>2</sup> per floor:		
First and second floors	0.05 <sup>(b)</sup>	0.01-0.08
Basement	0.01	0.001-0.07
Multistory structures, > 10,000 ft <sup>2</sup> per floor:		
Upper floors	0.01 <sup>(b)</sup>	0.001-0.02
Basement	0.005 <sup>(b)</sup>	0.001-0.015

(a) The ratio of dose received inside the structure to the dose that would be received outside the structure.

(b) Away from doors and windows.

TABLE 6.4

EPA PAG AND PROTECTIVE ACTIONS FOR NUCLEAR INCIDENTS<sup>(1)</sup>

<u>Projected exposure (Rem) to the general population<sup>(2)</sup></u>	<u>Recommended Actions<sup>(3)</sup></u>	<u>Comments</u>
Less than 1.0 Rem TEDE <sup>(4)</sup> Less than 5.0 Rem Thyroid CDE	<ol style="list-style-type: none"> <li>1. No protective action required.</li> <li>2. State may issue an advisory to seek shelter and await further instructions or to voluntarily evacuate.</li> <li>3. Monitor environmental radiation levels.</li> </ol>	Previously recommended protective actions may be reconsidered or terminated.
1.0 Rem TEDE <sup>(4)</sup> 5.0 Rem Thyroid CDE	<ol style="list-style-type: none"> <li>1. Conduct evacuation (or, for some situations, sheltering<sup>(5)</sup>)</li> <li>2. Monitor environmental radiation levels and adjust area for evacuation based on these levels.</li> <li>3. Control access.</li> </ol>	

- (1) EPA-400-R-92-001
- (2) State PAGs are within these limits.
- (3) These actions are recommended for planning purposes. Protective action decisions at the time of the incident must take into consideration the impact of existing constraints.
- (4) Sum of the Effective Dose Equivalent (EDE, assumed equivalent to the Deep Dose Equivalent, DDE) resulting from exposure to external sources and the Committed Effective Dose Equivalent (CEDE) incurred from all significant inhalation pathways during the early phase.
- (5) Sheltering may be the preferred protective action when it will provide protection equal to or greater than evacuation, based on consideration of factors such as source term characteristics, and temporal or other site-specific conditions as described in EPA-400-R-92-001, Section 2.3.1.

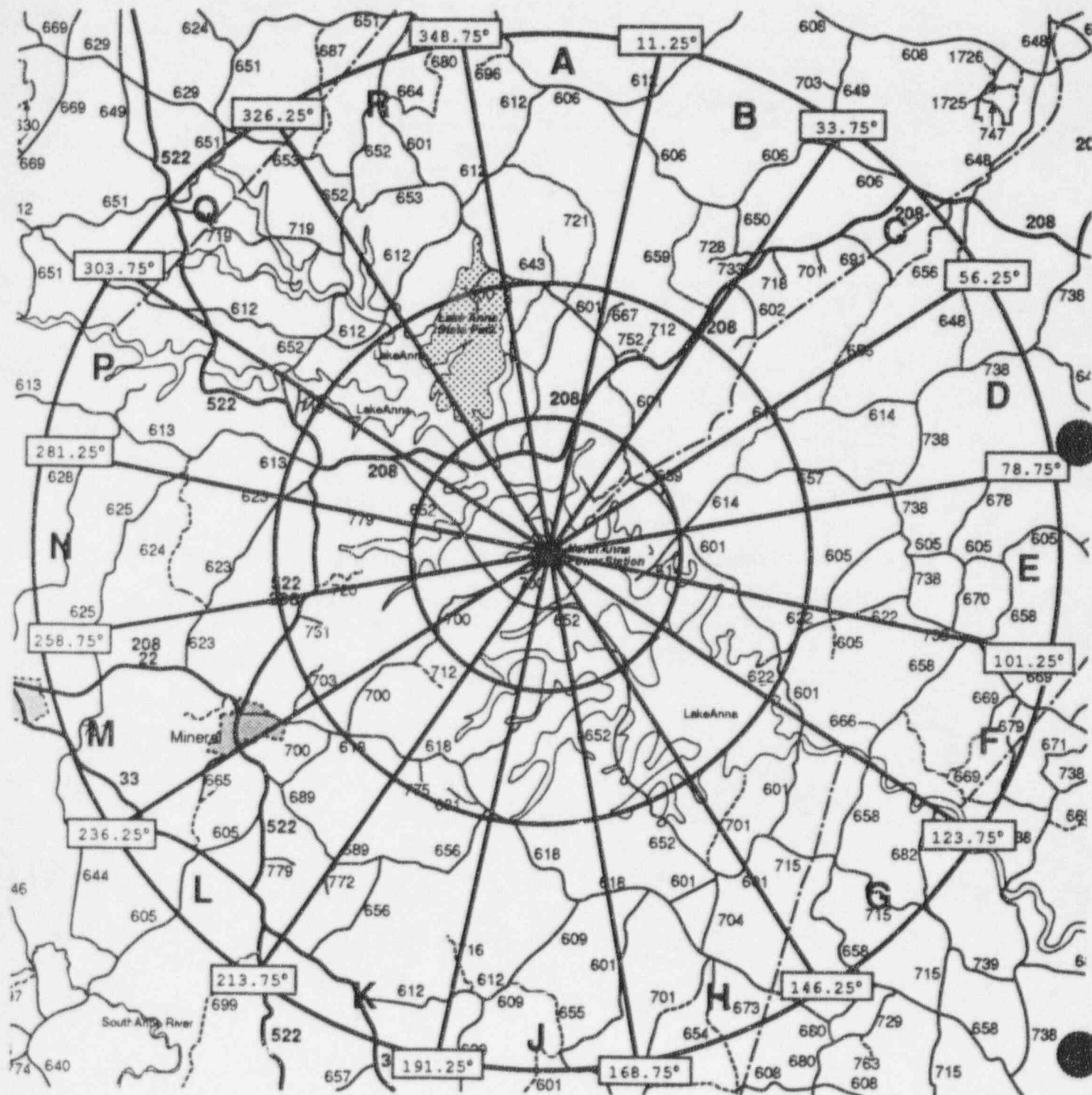
**TABLE 6.5**  
**GENERAL EMERGENCY OFFSITE PROTECTIVE ACTIONS<sup>(1)</sup>**

<u>Event</u>	<u>Recommended Actions<sup>(2)</sup></u>
<b>A. CORE DEGRADATION OR SECURITY SEQUENCES:</b>	<b>MINIMUM:</b>
1. Minimum recommendation	<ul style="list-style-type: none"> <li>• Evacuate 360°, 0 - 2 miles.</li> <li>• Evacuate downwind sectors, 2 - 5 miles.</li> <li>• Shelter downwind sectors, 5 - 10 miles.</li> <li>• Shelter unaffected sectors, 2 - 10 miles.</li> </ul>
2. With high containment source term, pressure, or integrity challenged	<ul style="list-style-type: none"> <li>• Evacuate 360°, 0 - 5 miles.</li> <li>• Evacuate downwind sectors, 5 - 10 miles.</li> <li>• Shelter unaffected sectors, 5 - 10 miles.</li> </ul>
<b>B. SIGNIFICANT RELEASE POTENTIAL</b>	
<ul style="list-style-type: none"> <li>• Site Boundary projected dose exceeds 1.0 Rem TEDE or 5.0 Rem Thyroid CDE.</li> </ul>	<ul style="list-style-type: none"> <li>• Evacuate 360°, 0 - 2 miles.</li> <li>• Shelter downwind sectors, 2 - 5 miles.</li> <li>• Adjust per Health Physics recommendations.</li> </ul>
<b>C. MISCELLANEOUS EVENTS</b>	
<ul style="list-style-type: none"> <li>• Major events which individually or in combination could cause massive damage to the station, or, in the judgement of the SEM, a situation exists which requires actions to protect the health and safety of the public.</li> </ul>	<ul style="list-style-type: none"> <li>• Shelter 360°, 0 - 2 miles.</li> <li>• Shelter downwind sectors, 2 - 5 miles.</li> </ul>
(1) References: NUREG-0654/FEMA-REP. 1., Rev 1; EPA-400-R-92-001; IEIN 83-28; RTM-92.	
(2) Protective action decisions at the time of an incident must consider impact of existing conditions and constraints.	



FIGURE 6.1

**NORTH ANNA POWER STATION**  
**10 - MILE EMERGENCY PLANNING ZONE (EPZ)**



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A map showing evacuation routes from the NAPS site. The map includes the following locations and routes:

- NAPS** (Nuclear Air Pollution Station) is marked with a black circle at the top left.
- MINERAL** is marked with a black square in a box on the left side.
- PRIMARY REMOTE ASSEMBLY AREA** is marked with a black square in the center-left.
- NORTH ANNA DAM: SECONDARY REMOTE ASSEMBLY AREA** is marked with a black square at the top center.
- PATRICK HENRY HIGH SCHOOL (STATE EVACUATION ASSEMBLY CENTER)** is marked with a black square at the bottom right.

The map shows several roads and their intersections:

- RT. 700** runs vertically from NAPS down to the PRIMARY REMOTE ASSEMBLY AREA.
- RT. 632** branches off RT. 700 to the east.
- RT. 622** branches off RT. 632 to the east.
- RT. 701** branches off RT. 622 to the east.
- RT. 601** branches off RT. 701 to the east.
- RT. 715** branches off RT. 601 to the east.
- RT. 658** branches off RT. 715 to the east.
- RT. 738** branches off RT. 658 to the east.
- RT. 671** branches off RT. 738 to the east.
- RT. 54** branches off RT. 671 to the east.
- RT. 33** branches off RT. 54 to the south.
- RT. 618** branches off RT. 700 to the east, leading to the PRIMARY REMOTE ASSEMBLY AREA.
- RT. 656** branches off RT. 618 to the east.

SECONDARY REMOTE ASSEMBLY AREA: PROCEED TO INTERSECTION OF RT. 700 AND 652.  
TURN LEFT ON RT. 652 AND PROCEED TO RT. 622.  
TURN LEFT ON RT. 622 AND PROCEED TO RT. 701.  
TURN LEFT ON RT. 701 AND PROCEED TO RT. 601.  
TURN LEFT ON RT. 601 AND PROCEED 0.1 MILES.  
THE ASSEMBLY AREA IS ON THE LEFT, THROUGH THE GATE, AT THE DAM.

NORTH ANNA POWER STATION  
EMERGENCY PLAN

SECTION 7

EMERGENCY FACILITIES AND EQUIPMENT

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## 7.0 Emergency Facilities and Equipment

The facilities required in the implementation of the Emergency Plan consist of the Control Room (shared for both Unit 1 and 2), the Operational Support Center (OSC), the Technical Support Center (TSC), the Local Emergency Operations Facility (LEOF), the Local Media Center, the Corporate Emergency Response Center (CERC) and the Corporate Emergency Operations Facility (CEOF). These facilities were designed to meet the intent of the guidance in NUREG-0696 and the clarification in NUREG-0737 Supplement 1. A description of each is given below.

### 7.1 Emergency Response Facilities

#### 7.1.1 Control Room

The Control Room of the affected unit(s) shall be the initial location for command and control of the emergency response effort. All controls and instrumentation needed to diagnose plant conditions and to take immediate actions to place the affected unit(s) in a safe condition are available in the Control Room. Within the Control Room, the Station Emergency Manager has access to the information needed to classify the emergency. Redundant communication systems are also available in the Control Room to make the required onsite and offsite notifications. The Control Room has the required shielding and ventilation system to remain habitable during the emergency. Access to the Control Room shall be limited to those individuals responsible for carrying out assigned emergency response tasks plus other technical advisors, as necessary.

#### 7.1.2 Operational Support Center

The Maintenance Building Conference Room (primary) and the Unit One Emergency Switchgear Room (alternate) are designated as the Operational Support Center (OSC). Augmenting Station operations personnel will report to the primary OSC until instructed by the Shift Supervisor/SEM to perform a required emergency function. The OSC is also the designated reporting location for the Fire Team, the



First Aid Team, the Damage Control Team, and the Search and Rescue Team.

7.1.3 Technical Support Center

The Technical Support Center is located adjacent to Unit 1 Control Room, and its alternate location is the Control Room. Emergency response personnel will assemble at the primary TSC unless otherwise instructed by the Station Emergency Manager. The primary location contains controlled copies of selected manuals, procedures, drawings, and other documents as approved by the Station Nuclear Safety and Operating Committee. Information about plant conditions is available via real time data displays from the Emergency Response Facility Computer System (ERFCS). Dedicated phone line communications would also be established with the Control Room to keep TSC personnel knowledgeable on current operating evolutions and to provide consultation and recommendations to the Control Room staff.

The construction of the facility walls and design of the ventilation system are such that the whole body and thyroid doses received by occupants of the TSC are below GDC 19 limits. Radiation monitoring equipment for making airborne particulate and direct radiation measurements is installed in the TSC. The TSC houses the ERFCS Data Communications Processors (redundant units). The inputs from plant sensors are processed by these units and the information is transmitted to the Control Room, LEOF, and CEOF for display on CRTs.

7.1.4 Local Emergency Operations Facility

The station's Local Emergency Operations Facility is adjacent to the NAPS Training Facility. The Facility is located within the Exclusion Area and includes designated work stations for Corporate, Federal and State officials who may be assembled at this location. This facility is the designated central collection point for the receipt and analysis of all field monitoring data and the coordination of

sample media. Plant data is available via an independent I/O unit of the ERFCS which drives the CRTs in the LEOF. The ERFCS provides information, through a data link, to the MIDAS computer which will be used primarily by the Radiological Assessment Coordinator to estimate offsite doses.

The LEOF was designed to provide a specified protection factor from gamma radiation. The facility also has a specially designed ventilation system to limit the exposure of its occupants and further assure its availability during an emergency. Radiation monitoring equipment for making airborne particulate and direct radiation measurements is installed in the LEOF. Should the LEOF become unavailable during an emergency the responsibilities assigned to the LEOF will be transferred to the backup facility known as the Corporate Emergency Operations Facility.

#### 7.1.5 Local Media Center

The Local Media Center for North Anna Power Station is located at the end of Route 700 on Virginia Power property. The facility is designated as the North Anna Nuclear Information Center in normal operation. There are dedicated rooms for Virginia Power, NRC, FEMA, State, and media representatives as well as an auditorium that will accommodate 200 people. Provisions have been made to accommodate TV cameras, copying machines, typewriters, and other equipment needed for press conferences. Should the Local Media Center become uninhabitable, small groups of the Media, no more than 20, can be accommodated in the LEOF with the approval of the Recovery Manager.

7.1.6 Corporate Emergency Response Center and Corporate Emergency Operations Facility

Space is designated for the Corporate Emergency Response Center (CERC) and the Corporate Emergency Operations Facility (CEOF) at the Innsbrook Technical Center in Glen Allen, Virginia. The facility will be manned by members of the Corporate Emergency Response Team as defined in the Corporate Emergency Response Plan. The CERC has access to plant data from the ERFCS via an independent I/O processor.

7.2 Communications System

The station communications system is designed to provide redundant means to communicate with all essential areas of the station associated with North Anna Units 1 and 2 and to essential locations remote from the station during normal operation and under accident conditions. Communication systems vital to Units 1 and 2 operation and safety are designed so that failure of one component would not impair the reliability of the total communications system. This is accomplished within the Station by using diverse systems. The North Anna EPIPs and the State and local county emergency response plans define the responsibilities of designated personnel for use of the communication systems.

7.2.1 Communication System Within the Station

The systems which provide for communications within the Station are discussed below.

7.2.1.1 Public Address and Intercom System

A five channel public address and intercom system (Gai-Tronics System) is installed in the Station. The system power is supplied from a power supply which will maintain the system in an operational condition in the event of a normal station service power failure. Zones are provided within that Station to insure operability of a major portion of the system

should equipment in a zone become inoperative. Loudspeaker and paging phone stations are located throughout the Station. The coverage of the loudspeakers permits broadcasts to be heard throughout the station. In the event of an emergency, the system is used to alert Station personnel of any emergency situation and to direct emergency response actions required of on-site personnel.

#### 7.2.1.2 Radio Communications System (Onsite)

A UHF two-way radio trunking system is provided at the Station consisting of base stations/repeaters, mobile units installed in emergency vehicles, and hand-held portable radios. The radio trunking system provides redundancy and independent emergency backup equipment for designated station functions.

#### 7.2.1.3 Private Branch Telephone Exchange

A Private Branch Telephone Exchange (PBX) is installed at the Station. The PBX switching equipment is physically located in the PBX Building and is connected to a commercial telephone exchange in Mineral, Virginia. Backup battery power is provided to maintain the system operable 6 to 8 hours following the loss of A.C. power.

#### 7.2.1.4 Sound Powered Telephone System

A sound powered telephone communications system is installed which serves North Anna Units 1 and 2. This system is a multiple channel system connecting selected operating areas of the plant.

Headsets consisting of an earphone and microphone are connected to a two wire channel for direct communication between persons in different areas. Operation of this system is not dependent on the availability of the electrical power system. During an emergency, the system would provide

an alternate means of relaying messages.

#### 7.2.2 Offsite Communications Systems

Those systems provided for communication between the Station and offsite are described below:

##### 7.2.2.1 Commercial Telephone

Commercial telephone lines are provided between the Station and a commercial telephone exchange in Mineral, Virginia. These lines are connected into the Station PBX. In addition, lines are provided for communications between the Station and the commercial telephone network which are independent of the Station PBX.

##### 7.2.2.2 Microwave System (OPX)

A microwave system is provided for communication between the Station and the General Office Phone Network and the Systems Operator's Office in Richmond, Virginia. The system provides Automatic Ringdown Phone (ARD) communication from station emergency response facilities to the State Department of Emergency Services (DES), to the counties of Spotsylvania and Louisa, and to the CERC. It also supports ARD communications between the LEOF and the TSC. In addition, the microwave system provides the communication link to the Early Warning System (EWS) transmitter located at North Anna. The system is battery operated at all locations to provide continuous operation upon loss of AC power.

##### 7.2.2.3 Radio Communications System (Offsite)

The same UHF two-way radio trunking system that provides onsite communications also provides for communications within a ten mile radius of the Station. During an emergency, this system will allow direct contact



with Radiation Monitoring Teams, Security vehicles, and a separate channel (Talk Group) between the Security Central Alarm Station and the Louisa County Sheriff's Department.

#### 7.2.2.4 Dedicated NRC Communications

Separate telephone lines are dedicated to the NRC and include the following:

- Emergency Notification System (ENS): The ENS is the system on which initial notifications, as well as ongoing information about plant systems, status and parameters, are provided to the NRC. ENS lines are located in the Control Room, TSC and LEOF.
- Health Physics Network (HPN): Provides for communications regarding radiological and meteorological conditions, assessments, trends, and protective measures. HPN lines are located in the TSC and LEOF.
- Reactor Safety Counterpart Link (RSCL): Allows for internal NRC discussions regarding plant and equipment conditions. RSCL lines are located in the TSC and LEOF.
- Protective Measures Counterpart Link (PMCL): Allows for the conduct of internal NRC discussions on radiological releases, meteorological conditions, and protective measures. PMCL lines are located in the TSC and LEOF.
- Emergency Response Data System (ERDS) Channel: Allows transmittal of reactor parametric data from the site to the NRC. ERDS data is transmitted from the ERFCS computer, via modem, to the NRC Operations Center.

- Management Counterpart Link (MCL): This system has been established for internal discussions between the NRC Executive Team Director/members and the NRC Director of Site Operations or licensee management. MCL lines are located in the TSC and LEOF.
- Local Area Network (LAN) Access: Provides access to the NRC local area network. Telephone jacks are provided in the TSC and LEOF for NRC LAN access.

#### 7.2.2.5 Insta-Phone Loop

A County and State Ringdown Loop (Insta-Phone) has been installed that permits simultaneous telephone-speaker communications from the Station to the Counties of Louisa, Spotsylvania, Orange, Caroline, and Hanover and the State DES on a 24-hour per day basis. This loop can be activated at the Station from the Control Room, TSC, or LEOF.

#### 7.2.3 Communication System Reliability

A failure of one communication system will not affect the operation of other communication systems at the Station. The communication systems within the Station have diverse power supplies. The public address system has an emergency backup, and the sound powered phone system does not rely on any

Station power system. Since the onsite communication systems normally will be in use, or periodically tested, equipment failure will not go unnoticed. The multiplicity of onsite communications networks ensures the availability of adequate communications. Equipment for these systems is located in different areas of the

Station thus ensuring that an accident in one area of the Station would not incapacitate all communication systems. Failure of normal power supplies will not deprive the station of offsite communication capability since, in most cases, backup power is provided. Telephone lines which are dedicated are checked at specified schedules.

#### 7.2.4 Emergency Response Facility Communications

The communication systems discussed above are used extensively in the Emergency response facilities. A summary of the types of communications is provided in Table 7.1.

### 7.3 Assessment Facilities Available Onsite

A number of instrumentation and monitoring systems are available onsite for emergency assessments. These systems are described below.

#### 7.3.1 Seismic Monitoring

The Seismic Monitoring System is designed to detect the occurrence of an earthquake at the North Anna site, to alert the Control Room via panel indications and annunciation, and to provide records of the intensity, duration, and frequency of the earthquake. A combination of passive and active detection devices are located in the Unit 1 Containment and the Auxiliary Building. The devices sense and record acceleration and frequency in all three mutually perpendicular directions. Active sensors provide indication and recording of seismic activity in the Control Room, while passive sensors record seismic activity by etching marks on metal plates which are later retrieved and evaluated.

### 7.3.2 Radiological Monitoring

The installed Radiation Monitoring System (RMS) consists of process monitors and area monitors which read out and record in the Control Room. The process system continuously monitors selected lines for radioactive effluents. The system's function is to warn personnel of increasing radiation levels, to give early warning of a system malfunction, and to record and control discharges of radioactive liquids and gases to the environment.

High range process monitors are installed to provide accurate indication of plant releases during and following an accident. The flow paths monitored include the ventilation vents, the process vent (part of the Gaseous Waste System), the main steam lines, and the turbine driven auxiliary feedwater pump exhaust. High range area monitors, located inside the containments, are installed to provide additional information on core integrity during and after a design basis accident.

In addition to the fixed radiation monitoring equipment, portable radiation monitoring equipment would be used to perform dose assessments. The equipment consists of low and high range instruments to measure gamma, alpha, beta, and neutron radiation. This equipment is maintained by the Radiological Protection Department and is used on a routine basis. Portable gamma detection instrument are also dedicated for emergency kit use (See Appendix 10.5). The kits are set aside solely for emergency use and are inventoried and checked for calibration and operability on a quarterly basis.

Portable equipment is also available to take low or high volume air samples. Battery operated air samplers can be used to collect low volume samples either onsite or offsite. Silver Zeolite cartridges would be used for sampling radiiodine with a minimum detectable activity capability of  $5 \times 10^{-6}$  microcuries per cc. Silver Zeolite has a low retention efficiency for Xenon and therefore, interference should

be minimal. Plastic bags and bottles are available to collect water, soil, foodstuffs or other samples.

Emergency Plan Implementing Procedures provide the methodology for determining the magnitude of a release by three separate and independent methods: (1) using data or samples continuously obtained by the onsite Radiation Monitoring System, (2) using known inventory data for the system(s) affected and (3) obtaining offsite data from air samplers or dosimeters which are continuously in place, or taking radiation surveys and appropriate samples, and using this data to calculate releases.

Equipment designated for use in environmental surveillance such as air samplers and thermoluminescent dosimeters (TLDs) is used to obtain offsite data. The radiological monitoring instrumentation and sampling devices used by the station meet the minimum requirements of the NRC Radiological Assessment Branch Technical Position for Environmental Radiological Monitoring Programs. Two Virginia Power TLDs have been placed in each of the 16 sectors within an approximate 5 mile radius of the station for accident monitoring. Eight (8) TLDs are located beyond five miles from the station and are used to establish normal background radiation levels. Further details can be found in VPAP-2103, Offsite Dose Calculation Manual". The State also has TLD monitoring points located around the Station used for verification purposes. Dosimetry and air sampler locations within the 10 mile EPZ are shown on Figures 7.1 and 7.2.

North Anna maintains fixed laboratory equipment to support sampling analysis and monitoring. The equipment includes Multichannel Analyzers, proportional counters, a tritium analyzer, whole body counters and TLD reading processors.



### 7.3.3 Meteorological Monitoring

The station's Meteorological Monitoring System provides the capability for making predictions of atmospheric effluent transport and diffusion. The system consists of a primary and a backup tower, the locations of which were chosen so as to be representative of regional conditions. The data which is input to the Emergency Response Facility Computer System (ERFCS) for use in the MIDAS model and which is transmitted to the Control Room and the Environmental Services Group in Richmond is derived from instrumentation located at these towers. Table 7.2 provides a listing of the parameters measured. The meteorological equipment was designed to meet the criteria of Regulatory Guide 1.23, "On Site Meteorological Programs", dated February 1972.

### 7.3.4 Plant Process Parameter Monitoring

Installed in the Control Room are the necessary instrumentation readouts to assess station status under all conditions. Information is available from meter displays, chart recorders, annunciators, and the plant process computers to assist the operator in contending with accident conditions.

In order to support the data acquisitions need of the emergency response facilities, the ERFCS has been installed. The ERFCS provides plant monitoring, data acquisition, and critical plant data in the form of real-time status displays for the purpose of making a rapid evaluation of the reactor plant's safety status. ERFCS monitors are located in the Control Room, TSC, LEOF, and CERC. The ERFCS includes the Safety Parameter Display System (SPDS), Emergency Response Guidelines (ERGs), process and instrument displays (P and IDs), and pressure-temperature plant displays. Monitor displays are continuously updated by the computer systems as they collect and process parametric data from the various plant sensors.

#### 7.3.5 Fire Detection

The Station's Fire Protection System is designed to furnish water and other extinguishing agents with the capability of extinguishing any single or probable combination of simultaneous fires that might occur. Smoke and heat detectors are utilized for fire detection resulting in automatic fire suppression initiation and/or alarming. These systems are designed in accordance with the standards of the National Fire Protection Association.

#### 7.3.6 Post Accident Sampling

The Sentry High Radiation Sampling System (HRSS) has been installed to accommodate post accident sampling requirements. The HRSS is designed to secure timely samples from the reactor coolant system, containment sump, and the containment atmosphere while minimizing exposure to the sample analysis team. The system is designed to minimize operator exposure by providing shielding, in-line dilution for coolant and gases, flushing capability, and direct connections to rad waste or the containment sump for disposal. Further design criteria were implemented for rapid sampling and analysis by use of directional indicating valves and system mimics to aid operator understanding of system functions. Cooling, depressurization, and handling casks for high activity samples are also provided.

#### 7.4 Assessment Facilities Available Offsite

The facilities and equipment located at the Surry Power Station may be utilized as applicable during emergency conditions at the North Anna Station. Additional seismic and meteorological data would be available. Respiratory protection, portable radiation detection instrumentation, and count room and sample analysis facilities would also be made available. Seismic data may be obtained from the National Earthquake Information Service. Meteorological data can be obtained from the following sources:

<u>LOCATION</u>	<u>ORGANIZATION</u>	<u>DISTANCE FROM NORTH ANNA (MILES)</u>
Chesterfield	Virginia Power	56
Richmond Airport	National Weather Service	53
Charlottesville	Federal Aviation Administration	43
Dulles Airport	National Weather Service	65

The State Health Department has equipped a mobile laboratory with radioassay equipment to respond to radiation emergencies. This vehicle is equipped with a radio to facilitate coordination between the State and Virginia Power's offsite monitoring teams.

#### 7.5 Damage Control Equipment And Supplies

The Station maintains an adequate inventory of spare parts, equipment and supplies, and could rely on additional equipment and supplies from the Surry Power Station. Such equipment and supplies consist of full face respirators with proper filters or canisters, SCBA respirators, air supplied respirators, silver zeolite cartridges (radioiodine sampling), portable survey instruments, protective clothing and auxiliary apparel, portable sampling equipment, TLDs self-reading dosimeters, count room instrumentation, polyethylene bags and bottles, radiation signs and rope, radioactive waste containers, ion-exchange resin (liquid waste processing), portable hand-held 2-way radios, portable lighting equipment, and Company-owned vehicles.

This equipment is normally stored either in the Health Physics office and/or warehouse to facilitate transfer to the Operational Support Center as needed. Equipment specifically designated for emergency response is inspected and inventoried at least once a quarter. Portable survey instrumentation is calibrated in accordance with manufacturer's recommendations, and count room instrumentation is calibrated annually (source checked daily).

7.6 Early Warning System

Virginia Power has installed and is responsible for maintaining and periodically testing an Early Warning System (EWS) consisting of sirens located throughout the 10 mile EPZ. The purpose of this system is to ensure that essentially 100% of the population within 5 miles of the site can be alerted within 15 minutes and that essentially 100% of the population from 5 to 10 miles from the site who may not have received the initial notification can be alerted within 45 minutes. The Federal Emergency Management Agency (FEMA) has determined that the system satisfies the requirements of NUREG-0654/FEMA-REP-1, Revision 1, and FEMA-REP-10.

The state and local governments have ultimate responsibility for warning the public. Should it be necessary, state and local authorities will alert the public within the 10 miles EPZ using alternative methods described in the COVERP.

Members of the public within the ten (10) mile EPZ shall be informed of what actions to take following activation of the EWS. Upon hearing the alert, they have been instructed to turn on their radios or television sets to the Emergency Broadcast System (EBS) to receive further instructions. Louisa and Spotsylvania counties and the State have 24 hour a day capability to activate the EWS system. Messages sent out over the EBS are prepared by the State DES.

TABLE 7.1  
ERF COMMUNICATIONS

Control Room

1. ARD to TSC, OSC, Security, System Operator, DES
2. Insta-phone Loop to State and County EOCs
3. Station PBX Phones
4. Virginia Power OPX Phone (General Office Network)
5. Radio System
6. NRC Emergency Notification System (ENS)
7. Commercial Phones (Independent of Station PBX)
8. Public Address/Intercom (Gal-tronics)
9. Sound Powered System
10. Emergency Response Data System (ERDS) Channel

Technical Support Center (TSC)

1. ARD to Control Room, OSC, LEOF, CERC, Security, Primary Remote Assembly Area, DES
2. Insta-Phone Loop to State and County EOCs
3. Commercial Phones (Independent of Station PBX)
4. Radio System
5. Station PBX Phones
6. Virginia Power OPX Phone (General Office Network)
7. NRC Emergency Notification System (ENS)
8. Public Address/Intercom (Gal-tronics)
9. Sound Powered System
10. NRC Health Physics Network (HPN)
11. NRC Reactor Safety Counterpart Link (RSCL)
12. Protective Measures Counterpart Link (PMCL)
13. Emergency Response Data System (ERDS) Channel
14. Management Counterpart Link (MCL)
15. Local Area Network (LAN) Access

Operational Support Center

1. Public Address/Intercom (Gal-Tronics)
2. Station PBX Phone
3. ARD to TSC, Control Room



Local Emergency Operations Facility (LEOF)

1. ARD to TSC, CERC, LMC, JPIC, Primary Remote Assembly Area, DES, Louisa County, Spotsylvania County
2. Insta-Phone Loop to State and County EOCs
3. Commercial Phones (Independent of Station PBX)
4. Radio System
5. Station PBX Phones
6. Virginia Power OPX Phone (General Office Network)
7. NRC Emergency Notification System (ENS)
8. NRC Health Physics Network (HPN)
9. NRC Reactor Safety Counterpart Link (RSCL)
10. Protective Measures Counterpart Link (PMCL)
11. Management Counterpart Link (MCL)
12. Local Area Network (LAN) Access

Corporate Emergency Response Center (CERC)

1. Virginia Power OPX Phone (Station PBX)
2. ARD to LEOF and TSC
3. Insta-Phone Loop to State and County EOCs
4. General Office Network Phones

Local Media Center (Located in North Anna Nuclear Information Center)

1. Commercial Phones (Independent of Station PBX)
2. ARD to LEOF, CERC, and JPIC
3. NANIC PBX Phones
4. Virginia Power OPX Phones (Station PBX and General Office Network)
5. Media Conferencing Network
6. Central Office (CO) leased phone lines

Legend

ARD - Automatic Ringdown  
DES - State Dept. of Emergency Services  
OPX - Off-Premises Exchange  
ENS - Emergency Notification System (NRC)  
PBX - Private Branch Exchange  
JPIC - Joint Public Information Center

TABLE 7.2

METEOROLOGICAL MONITORING SYSTEM PARAMETERS<sup>(1)</sup>

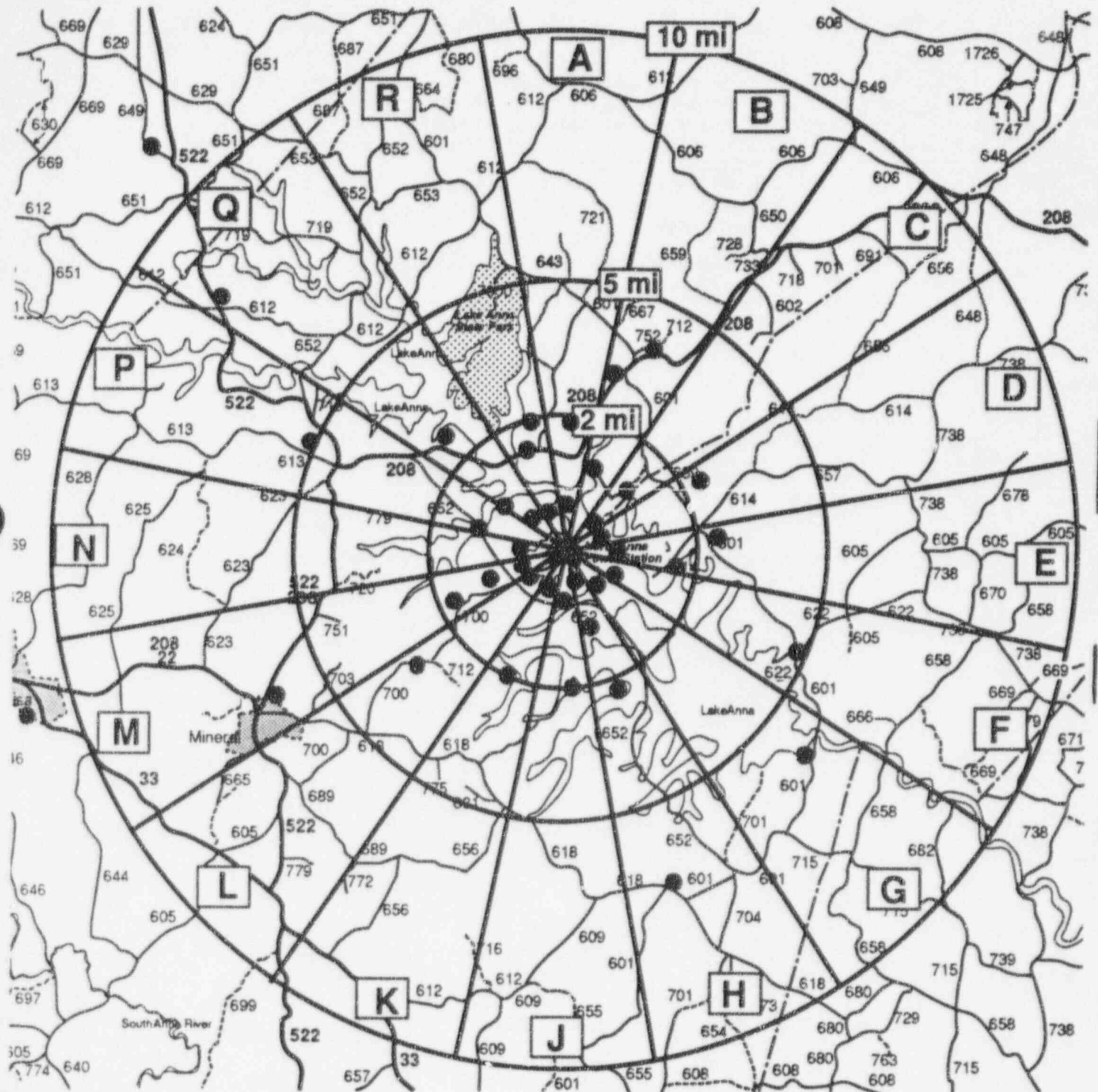
<u>Measurement</u>	<u>Primary Tower</u>			<u>Backup Tower</u>	<u>Control Rm.</u>
	<u>48.5 Meters.</u>	<u>10.7 Meters</u>	<u>Ground</u>	<u>10.7 Meters.</u>	<u>Readout</u>
Wind Spred	X	X		X	X
Wind Direction	X	X		X	X
Sigma-theta	X	X		X	X <sup>(2)</sup>
Temperature		X			X
Differential Temperature	X	X			X
Dew Point Temperature		X			
Precipitation			X		
Solar Radiation			X		

(1) All data available via dial-up link at Meteorological Operations in Richmond.

(2) Signal from Backup Tower only.

**FIGURE 7.1**

**NORTH ANNA POWER STATION  
MONITORING LOCATION MAP**



Note: Specific locations are provided in Figure 7.2.

FIGURE 7.2

**NORTH ANNA POWER STATION  
MONITORING LOCATION LISTING\***

<u>Sample Media</u>	<u>Location</u>	<u>Station #</u>	<u>Distance (miles)</u>	<u>Emergency Plan Sector</u>
Environmental (TLDs)	On Fence at U-2 Side Intake Structure	EPSA	0.20	A
	Sturgeon's Creek Marina	N-2/34	3.20	A
	Parking Lot "C" (Met. Sta. Fence)	NNE-3/35	0.25	C
	Good Hope Church	NNE-4/36	4.96	B
	Rt. 713 and Boggs Drive	NE-6/38	1.49	C
	Weather Tower Fence	ENE-7/39	0.36	D
	Route 689	ENE-8/40	2.43	D
	Morning Glory Hill	E-10/42	2.85	E
	Island Dike	ESE-11/43	0.12	E
	On Power Pole on Island (across from Fire Protection Pump house)	EPSF-3/4	0.15	F
	Route 622	ESE-12/44	4.70	F
	Biology Lab	SE-13/45	0.75	G
	Route 701 (Dam Entrance)	SE-14/46	5.88	G
	Aspen Hills	SSE-15/47	0.93	H
	Elk Creek	SSE-16/48	2.33	H
	Power Pole on Access Road	S-17/49	0.22	J
	Elk Creek Church	S-18/50	1.55	J
	Power Pole on Access Road	SSW-19/51	0.36	K
	Route 618	SSW-20/52	5.30	K
	500 KV Tower	SW-21/53	0.40	L
	Route 700	SW-22/54	4.36	L
	NAPS Radio Tower	WSW-23/55	0.31	M
	Route 700 (Exclusion Boundary)	WSW-24/56	1.00	M
	South Gate Const. Switchyard	W-25/57	0.28	N
	Route 685	W-26/58	1.55	N
	End of Route 685	WNW-27/59	1.00	P
	Power Pole on Rt. 685	WNW-28/60	1.52	P
	North Gate Const. Laydown Area	NW-29/61	0.36	Q
	Lake Anna Campground	NW-30/62	2.54	Q
	#1/#2 Intake	NNW-31/63	0.07	B
	On Door of Substation M	EPSR-5/6	0.31	R
	Route 208	NNW-32/64	3.43	R
	Bumpass Post Office	C-1/2	7.30	H
	Orange, Va.	C-3/4	22.00	Q
	Mineral, Va.	C-5/6	7.10	M
	Louisa, Va.	C-7/8	11.54	M
Airborne Particulate and Radiodine	NAPS Sewage Treatment Plant	01	0.20	C
	Frederick's Hall	02	5.30	K
	Mineral, Va.	03	7.10	M
	Wares Crossroads	04	5.10	P
	Route 752	05	4.20	B
	Sturgeon's Creek Marina	05A	3.20	A
	Levy, Va.	06	4.70	F
	Bumpass, Va.	07	7.30	H
	End of Route 685	21	1.00	P
	Route 700	22	1.00	M
	Aspen Hills	23	0.93	H
	Orange, Va.	24	22.00	Q

\* Source Document: VPAP-2103, Rev. 4, Attachment 23, North Anna Environmental Sampling Locations.

**NORTH ANNA POWER STATION**  
**EMERGENCY PLAN**

**SECTION 8**

**MAINTAINING EMERGENCY PREPAREDNESS**

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## 8.0 MAINTAINING EMERGENCY PREPAREDNESS

Virginia Power has instituted an emergency preparedness program to support development, maintenance and coordination of the company's emergency response capability. The Emergency Plan and associated Emergency Plan Implementing Procedures, which provide specific guidance to emergency response personnel, are revised as required and reviewed at least annually in accordance with this program.

Personnel who may be required to fill emergency response positions receive initial and annual training in their functional responsibilities. Training is also provided for various offsite groups that have agreed to support the station response to an emergency. Dedicated emergency equipment is kept operational through testing in accordance with an established periodic surveillance program. Periodic drills and an annual exercise are conducted for training and to identify program strengths and weaknesses. Additionally, the emergency preparedness program provides for the issuance of public information material. This material provides the public with a description of the emergency notification process, and guidelines used to protect public health and safety in an emergency. Independent reviews of the emergency preparedness program are also conducted.

## 8.1 RESPONSIBILITIES FOR MAINTAINING EMERGENCY PREPAREDNESS

The Senior Vice President - Nuclear, assigned the overall authority for maintaining emergency preparedness, has delegated the responsibility for program maintenance to the Vice President-Nuclear Services and the responsibility for program implementation to the Vice President-Nuclear Operations. The Vice President - Nuclear Services has delegated the responsibility for maintaining corporate emergency preparedness to the Director Nuclear Emergency Preparedness. The primary responsibilities of the Director Nuclear Emergency Preparedness include:

- a) Coordinating the Company emergency preparedness program with offsite emergency response organizations
- b) Coordinating Company emergency preparedness planning activities
- c) Conducting public information and media information activities

- d) Coordinating emergency exercises between Company departments and offsite agencies;
- e) Coordinating emergency preparedness program reviews
- f) Coordinating emergency preparedness activities between the stations and other Company departments
- g) Providing support to the stations in the area of emergency preparedness
- h) Obtaining letters of agreement from appropriate offsite emergency response organizations
- i) Coordinating the annual review of Emergency Action Levels with State and local governmental officials

The Vice President - Nuclear Operations has delegated the responsibility for station emergency preparedness to the Station Manager, who has in turn designated the Assistant Station Manager - Nuclear Safety and Licensing (N, S & L) as responsible for the station emergency preparedness program. These responsibilities have ultimately been delegated to the Station Coordinator Emergency Planning (who reports to the Assistant Station Manager - Nuclear Safety and Licensing).

The primary responsibilities of the Station Coordinator Emergency Planning include:

- a) Coordinating the Station Emergency Preparedness Program with offsite agencies
- b) Coordinating station emergency preparedness planning activities
- c) Performing the annual review of the emergency plan and implementing procedures
- d) Maintaining the Emergency Plan, Implementing Procedures, and other documents related to Emergency Preparedness
- e) Verifying distribution of copies of the Emergency Plan and Implementing Procedures to persons or organizations with responsibility for implementation of the plan or procedures
- f) Coordinating emergency preparedness training and verifying that it is performed
- g) Verifying that required testing and maintenance of emergency equipment is performed
- h) Coordinating drills and exercises and verifying that they are conducted as required
- i) Verifying that required emergency preparedness records are maintained and filed

The hierarchy for program maintenance is further outlined in VPAP-2601, "Maintaining Emergency Preparedness".

8.2 MAINTENANCE OF THE EMERGENCY PLAN , EMERGENCY PLAN IMPLEMENTING PROCEDURES, AND EMERGENCY PERSONNEL NOTIFICATION LIST

Station documents which are required to ensure emergency preparedness include:

- a) The North Anna Emergency Plan
- b) The North Anna Emergency Plan Implementing Procedures
- c) The North Anna Emergency Personnel Notification List

8.2.1 Review of the Emergency Plan and Emergency Plan Implementing Procedures

The Station Coordinator Emergency Planning shall review the North Anna Emergency Plan and its Implementing Procedures at least annually and certify that they are adequate and current. He shall also review the results of independent assessments of the emergency preparedness program and critiques of exercises and drills to evaluate their impact on station emergency preparedness documents. The results of these reviews shall be reported to the Station Nuclear Safety and Operating Committee (SNSOC) and the documentation filed in Station Records. SNSOC shall review proposed revisions to the Emergency Plan and the Emergency Plan Implementing Procedures and make recommendations to the Station Manager, who is responsible for their approval. If a proposed revision is judged to decrease the effectiveness of these documents with respect to the requirements of 10 CFR 50.47 (b) or 10 CFR 50, Appendix E, it shall be submitted to the NRC for approval in accordance with the requirements of 10 CFR 50.54 (q) prior to implementation.

8.2.2 Review of the Emergency Personnel Notification List

The Station Coordinator Emergency Planning shall review the Emergency Personnel Notification List at least quarterly for accuracy and ensure required revisions are made. Documentation of this review shall be filed in Station Records.

### 8.2.3 Distribution of Emergency Plans and Implementing Procedures

In accordance with 10 CFR 50, Appendix E, revisions to the Emergency plan and Implementing Procedures shall be submitted to the NRC within 30 days following the assigned effective date.

The Station Coordinator Emergency Planning shall also ensure that revisions to the Plan and Implementing Procedures (as appropriate) are distributed to those offsite agencies who require them in order to perform their emergency response functions.

## 8.3 TRAINING OF STATION PERSONNEL

The effectiveness of a response to a station emergency relates directly to the level of emergency preparedness maintained by station personnel. Emergency preparedness of station personnel is maintained through an integrated program that includes general orientation for all persons badged at the station and additional detailed training for persons assigned specific emergency response functions to supplement the general orientation and normal job related training.

The primary objectives of this emergency preparedness training program are to:

- a) Ensure emergency response personnel maintain familiarity with the North Anna Emergency Plan, its implementing procedures and their functional responsibilities during an emergency
- b) Inform emergency response personnel of their functional role and responsibilities during an emergency
- c) Familiarize emergency response personnel with significant changes to the North Anna Emergency Plan and its implementing procedures

### 8.3.1 Responsibilities for Maintaining Emergency Preparedness Training

To ensure that regulatory requirements and guidance for conducting emergency preparedness training are met, a Nuclear Training Program Guide has been developed. Responsibilities for ensuring emergency preparedness training are provided as follows:



- a. The Station Manager is responsible for ensuring station personnel are trained in accordance with the Nuclear Power Station Emergency Preparedness Training (NPSEPT) Program Guide.
- b. Department superintendents and supervisors are responsible for ensuring their personnel receive training. This includes designating individuals who may serve as primary, interim or alternate emergency response personnel and ensuring they successfully complete the training specified by the NPSEPT Program Guide.
- c. The Superintendent Nuclear Training is responsible for developing and scheduling training programs that meet the requirements for this plan, and for maintaining records to document the training.
- d. The Station Coordinator Emergency Planning is responsible for independently verifying that the training required by the NPSEPT Program Guide and this plan is accomplished and coordinating training of offsite support personnel.

#### 8.3.2 Nuclear Power Station General Employee and Visitor Training

All persons badged to enter the Protected Area unescorted receive, as part of Nuclear Power Station General Employee Training, initial classroom training and annual retraining in the following subjects:

- a) Station Policies and Procedures including, in part:
  - 1) Reporting abnormal conditions (e.g., fire, first aid event, etc.)
  - 2) Fire and First Aid alarms and announcements
  - 3) Response to Fire and First Aid emergencies
- b) Radiation Protection Training including basic principles of radiological safety
- c) Emergency Preparedness Training Overview including:
  - 1) General scope and overview of the Emergency Plan
  - 2) Station Emergency Alarm and announcements

- 3) Response to Station Emergency Alarm
- 4) Personnel accountability
- 5) Visitor control during an emergency
- 6) Site evacuation
- 7) Emergency Plan Implementing Procedures
- 8) Emergency Organization
- 9) Emergency Control Centers (Emergency Facilities)
- 10) Emergency Action Levels

As appropriate, certain station visitors receive training in some or all of the above subjects in accordance with station administrative procedures.

#### 8.3.3 Emergency Response Personnel Training

Personnel designated to fill interim, primary or alternate emergency response positions will receive training in accordance with the NPSEPT Program Guide. This guide establishes the initial training and retraining requirements for all emergency response positions. Table 8.1 provides a listing of select emergency response positions along with an overview of the training provided. Revisions to the NPSEPT Program Guide that affect those descriptions referenced in Table 8.1 will be reflected in the next scheduled revision of this Plan. Equivalency credit for required training sessions may be awarded based on an individual's knowledge of the subject matter. Such credit requires the approval of the Superintendent Nuclear Training and the Station Manager.

#### 8.3.4 Cognitive Evaluations

Cognitive evaluations may include self critiques, group discussions, and/or written tests administered following completion of NPSEPT classroom training. Evaluations are normally administered by the course instructor and may be scheduled at the end of a workshop, learning

activity, instructional unit, or a number of related units. A minimum score of 70% is considered passing on NPSEPT written tests. For training incorporated into regularly scheduled continuing training programs, the passing criteria for that training program applies. Individuals failing to successfully complete the required training within the required time interval will be relieved of their emergency response assignments.

#### 8.3.5 Task Performance Evaluations

Task performance evaluations are prescribed for individuals who must perform tasks as responders which are outside of their normal day-to-day responsibilities and may be satisfied through completion of a Job Demonstration Guide (JDG), participation in an appropriate Virginia Power Drill or Simulator Exercise, or included in classroom learning activities as part of the classroom training requirement. JDG evaluations are conducted by the applicable primary responder, team leader or instructor and are scored on a pass/fail basis.

#### 8.3.6 Training Records

The Superintendent Nuclear Training is responsible for ensuring that required emergency preparedness training records are maintained. These records are maintained in the North Anna Training Center records vault. The required emergency preparedness training records include:

- a) Program Records: Attendance sheets, master copies of Job Demonstration Guides, master copies of tests and answer keys, copies of instructor guides, NPSEPT Training Rosters and NPSEPT extensions.
- b) Trainee Records: Completed tests and Responder Training Records.

### 8.4 TRAINING OF OFFSITE SUPPORT PERSONNEL

The various offsite organizations which support the station during an emergency receive training

as part of their own emergency preparedness programs. For example, Virginia Power corporate personnel receive emergency preparedness training as part of the Corporate Emergency Response Plan, and the State and local governments conduct training for their personnel as part of their Radiological Emergency Response Program. However, in order to promote effective emergency response capability, the station offers site specific emergency response training on an annual basis to local offsite emergency support organizations which have agreed to provide assistance. The organizations include the Virginia Department of State Police and local county sheriffs departments, volunteer fire companies, and rescue squads.

The annual training shall address the following:

- a) The basic scope of the North Anna Power Station Emergency Plan
- b) Emergency classifications
- c) Notification methods
- d) Basic radiation protection
- e) Station access procedures
- f) The individual, by title, in the station emergency response organization who will direct their activities onsite
- g) Definition of their support roles

The Station Coordinator Emergency Planning is responsible for offering this training and for coordinating training with the Supervisor Safety and Loss Prevention, or Superintendent Security as appropriate. Safety and Loss Prevention, Security, and Nuclear Training assist in the conduct of offsite training. The Station Coordinator Emergency Planning shall ensure that training records are maintained and filed in Station Records. These records shall include letters of invitation (or record of telephone invitation), attendance sheets, and curriculum outline.

## 8.5 EMERGENCY DRILLS

As a part of maintaining emergency preparedness, periodic drills shall be conducted. The primary objectives of drills are to:

- a) Verify that facilities, equipment, and communication systems function as required
- b) Demonstrate the adequacy of station procedures used during an emergency
- c) Familiarize station emergency response personnel with planned emergency response actions
- d) Disclose deficiencies which may require corrective action

Drills may be conducted independently, in conjunction with another drill or conducted as part of an exercise. The individual responsible for the drill shall ensure that all necessary documentation is maintained.

A scenario will be developed to support the conduct of each drill. The scenario should be designed to allow for open decision-making (free-play). If a drill is conducted in conjunction with another drill or as part of an exercise, the drill scenario, objectives and narrative shall be incorporated into the overall drill/exercise package. Drill packages shall include:

- a) Objectives of the drill
- b) Evaluation criteria
- c) Date and time period of the drill
- d) Participating personnel or organizations
- e) A narrative summary describing the overall integration of scenario events(e.g., simulated casualties, offsite assistance, rescue of personnel, simulated activity levels, and deployment of monitoring teams)
- f) A time schedule of the real and simulated events

It is not required that all emergency response personnel assigned a particular emergency function participate in a drill covering that function. Participation by offsite organizations may be simulated.

Drills shall be controlled and observed by individuals qualified to conduct and evaluate the drill.



Critiques will be used to document evaluation of the drill. Deficiencies identified as a result of the drill evaluation will be presented to Station Management for corrective action.

Records of each drill will be maintained in Station Records and include the drill scenario package and the post-drill critique. Records of drills held in conjunction with an exercise may be integrated into the emergency exercise package (i.e. scope, objectives, critique, etc.).

The types and frequencies of drills conducted at the station are designated below.

#### 8.5.1 Communications Drills

Communications drills shall be conducted at least once per calendar year and shall include:

- a) Use of emergency communications systems between the Control Room, the TSC, the LEOF, the OSC, the NRC Operations Center, the State EOC, the county EOCs, and the Onsite and Offsite Monitoring Teams
- b) Sending, receiving, and verification of message content

#### 8.5.2 Fire Drills

Fire drills shall be conducted in accordance with the requirements of the North Anna Fire Protection Program which meets the requirements of 10 CFR 50, Appendix R, Sec. III.I, Fire Brigade Training.

#### 8.5.3 Medical Emergency Drills

Medical Emergency drills shall be conducted at least once per calendar year and shall include:

- a) A simulated contaminated injured individual
- b) Participation by a local rescue squad
- c) Transport to an offsite medical facility
- d) Participation by the offsite medical facility

8.5.4 Environmental Monitoring Drills

Environmental Monitoring drills shall be conducted at least once per calendar year and shall include:

- a) Collection of water, vegetation, soil, and air samples both onsite and offsite, as appropriate
- b) Analysis of the above samples
- c) Use of communications with the monitoring teams
- d) Use of the appropriate procedures for collecting and analyzing samples and recording results

8.5.5 Post Accident Sampling Drills

Post-Accident Sampling drills shall be conducted at least once per calendar year and shall include:

- a) Obtaining actual liquid and/or atmospheric samples using the High Radiation Sampling System
- b) Analysis of the above samples
- c) Use of the appropriate procedures for collecting and analyzing the samples and recording results

8.5.6 Radiological Monitoring Drills

Radiological Monitoring drills shall be conducted semi-annually with a maximum allowable grace period not to exceed 25%, and shall include:

- a) Response to simulated elevated airborne and/or liquid activity levels, as appropriate
- b) Response to simulated elevated area radiation levels
- c) Analysis of the simulated radiological situation using the appropriate procedures.

#### 8.5.7 Emergency Callout Drills

Emergency Callout Drills shall be conducted at least once per calendar quarter with a maximum allowable grace period not to exceed 25%.

### 8.6 EMERGENCY EXERCISES

An emergency exercise shall be conducted with a stated scope and objectives. The primary objectives of an emergency exercise are to:

- a) Verify the integrated capability of the various emergency response organizations to respond to an emergency
- b) Test a major portion of the basic elements existing within the emergency response plans and organizations
- c) Demonstrate the adequacy of procedures used during an emergency
- d) Provide an opportunity for emergency response personnel to demonstrate their ability to perform planned emergency response actions
- e) Disclose deficiencies which may require corrective action

#### 8.6.1 Scheduling of Emergency Exercises

An emergency exercise shall be conducted at North Anna Power Station at least once per calendar year. On even numbered years, the North Anna exercise shall be a full participation exercise, with a small scale exercise being held on odd numbered years. Emergency exercises will be scheduled to start at different times of the day with advance knowledge of the time held confidentially. At least once every 6 years, the specific exercise date should be unannounced. Additionally and at least once every 6 years, an exercise should be initiated during off-hours (between 6 pm and 4 am on a weekday, or during a weekend).

#### 8.6.2 Emergency Exercise Content

The content of exercises shall be varied from year to year such that all major elements of the state, local, and station plans are tested over a 5 year period.

Full participation exercises shall include:

- a) An emergency classification of at least Site Area Emergency
- b) A mobilization of as many elements of the state, local, and station plans as is reasonably achievable without mandatory public participation
- c) Invitation for involvement of Federal Emergency Response Agencies at least once every 5 years

Small scale exercises shall include:

- a) An emergency classification of at least Alert
- b) Use of the communications systems
- c) Activation of at least one offsite emergency response plan action (e.g., medical transport, fire assistance, offsite monitoring, law enforcement assistance)

#### 8.6.3 Emergency Exercise Scenarios

Each emergency exercise shall be based on a preplanned written scenario. The overall exercise package shall include:

- a) Basic performance objectives of the exercise
- b) Evaluation criteria used to verify demonstration of performance objectives
- c) Date, initiation time, and exercise duration
- d) Participating organizations
- e) Simulated events
- f) Time schedule of the real and simulated events

- g) A narrative summary describing the overall integration of scenario events such as simulated casualties, offsite assistance, rescue of personnel, use of protective equipment, simulated activity and radiation levels, and deployment of monitoring teams
- h) A description of the number, location, and basic duties of the exercise controllers and observers
- i) A description of the arrangements made for, and advance materials to be provided to, the observers

Advance knowledge of the scenario shall be minimized to ensure realistic participation by those involved.

#### 8.6.4 Conduct of Emergency Exercises

The emergency exercise will be initiated and supervised by designated controllers. These controllers shall ensure that:

- a) The information supplied to the participants is of sufficient detail to allow realistic analysis of the simulated events and to provide a basis for rational decision making
- b) The information is supplied on a real time basis
- c) The exercise is not so structured as to prevent free play and independent decision making on the part of the participants

#### 8.6.5 Emergency Exercise Evaluation and Corrective Action

Emergency exercises shall be evaluated by qualified observers. Observers shall be selected based on expertise, knowledge of the areas to be evaluated, and familiarity with emergency response requirements. Observers may include personnel from federal, state, or local governments. Specific areas to be evaluated by the observers will be defined in the form of pre-printed critique sheets.

Critiques will be held as soon as practicable after the exercise. Critiques should be



attended by exercise controllers, observers, and key participants. Notes of critique comments shall be recorded. Observers shall complete critique sheets documenting their observations. Critique sheets shall be submitted in accordance with the schedule established for the exercise.

Within 60 days of the exercise, the Station Coordinator Emergency Planning shall submit to the Assistant Station Manager (Nuclear Safety and Licensing) a Post-Exercise Critique Report, which includes suggested corrective actions. Identified corrective actions will then be assigned for implementation.

#### 8.6.6 Records of Emergency Exercises

The Station Coordinator Emergency Planning shall ensure that the exercise scenario package and Post-Exercise Critique are filed in Station Records.

### 8.7 TESTING AND MAINTENANCE OF EMERGENCY EQUIPMENT

Emergency equipment shall be periodically tested to identify and correct deficiencies. The specific scope and responsibilities for performing these tests are provided in administrative procedures.

The testing shall include:

- a) The contents of the emergency kits dedicated for emergency use shall be inventoried quarterly and following each use.
- b) Dedicated emergency survey instrumentation shall be inventoried and operationally checked quarterly and following each use. Calibration of dedicated emergency survey instrumentation shall be performed in accordance with manufacturer's recommendations.
- c) Self-contained breathing apparatus shall be inspected and operationally checked monthly and following use during an emergency.
- d) State and local ringdown loop (Insta phone) extensions and the ringdown phone to the State EOC located at the station and LEOF shall be operationally checked on a monthly basis. In addition, NRC Emergency Notification System extensions and NRC Health Physics Network

extensions located at the station and LEOF shall be operationally checked monthly.

- e) A daily operability check of the Safety Parameter Display System (SPDS)
- f) Every 18 months, functional and performance testing of the TSC and LEOF Ventilation system
- g) Operability testing in accordance with manufacture's recommendations and biennial calibrations of TSC and LEOF radiation monitors
- h) Weekly calibration checks of analyzers and monthly and quarterly operability testing of the Post Accident Sampling System (PASS)
- i) Semimonthly, monthly, and quarterly operability testing of the Early Warning System (EWS)

#### 8.8 INFORMING THE PUBLIC

Information describing the emergency notification process as well as actions that should be taken in the event of an emergency shall be provided to the public on an annual basis. Information provided to the public shall include:

- a) Educational information on radiation
- b) Contact points for additional information
- c) Special needs of the handicapped
- d) Initial actions following Early Warning System Activation
- e) Protective actions, such as sheltering or evacuation
- f) Evacuation routes

The company will coordinate its efforts with State and local authorities to ensure the public is informed by using the best means available. These means may include:

- a) Information in telephone books
- b) Utility bill inserts
- c) Newspaper ads
- d) Postings in public areas
- e) Information in calendars distributed to residents

The information will be distributed to ensure coverage within the 10 mile emergency planning zone.

The company shall also establish a telephone system for dealing with rumors. The telephone numbers will be announced over the Emergency Broadcast System and individuals within the 10 mile emergency planning zone will be invited to call collect.

The Director Nuclear Emergency Preparedness shall ensure that a program to acquaint the news media with the following information is offered on an annual basis:

- a) Emergency plans
- b) Information concerning radiation
- c) Points of contact for release of public information in an emergency

#### 8.9 INDEPENDENT REVIEW OF THE EMERGENCY PREPAREDNESS PROGRAM

An independent review of the emergency preparedness program shall be conducted at least once every 12 months in accordance with 10 CFR 50.54 (t). This review shall include:

- a) The North Anna Emergency Plan and Implementing Procedures
- b) Emergency Plan training
- c) Emergency drills
- d) Emergency exercises
- e) Emergency equipment
- f) interfaces with State and local governments
- g) Required records and documentation

This review shall be conducted by a Virginia Power organization or outside consultant which has no direct responsibility for emergency preparedness.

The results of the review and recommendations for improvements shall be documented and reported to company management. The results regarding adequacy of interface between Virginia Power and State and local governments shall be made available to the cognizant offsite authority.

Recommendations for improvement shall be evaluated and, when appropriate, assigned for corrective action.

The following records shall be filed in Station Records and maintained for 5 years:

- a) The review results and recommended improvements
- b) The answers to the recommended improvements
- c) A description of the corrective actions taken

TABLE 8.1  
EMERGENCY PREPAREDNESS TRAINING

<u>EMERGENCY RESPONSE POSITION</u>	<u>SCOPE OF TRAINING</u>
	(See Footnotes, next page)
Station Emergency Manager	1, 2, 7, 13, 15
Emergency Communicator	1, 3, 13
Emergency Procedures Coordinator	1, 2, 13
Emergency Operations Director	1, 2, 13, 15
Emergency Maintenance Director	1, 4, 6, 13
Emergency Technical Director	1, 6, 13, 15
Shift Technical Advisor	1, 2, 13, 15
Emergency Administrative Director	1, 6, 7, 13
Radiological Assessment Director	1, 9, 10, 11, 13, 15
Radiation Protection Supervisor	1, 10, 11, 13
Operational Support Center Director	1, 4, 5, 13
Maintenance Support Team	1, 4, 6, 13
Technical Support Team	1, 6, 13, 15
Chemistry Team	1, 12, 13
Administrative Support Team	
Team Leader	1, 6, 8, 13
Clerical Personnel	1, 6, 13
Loss Prevention/Safety Personnel	1, 13, 14
Security Team	1, 8, 13
Dose Assessment Team	1, 9, 13
Sample Analysis and Monitoring Teams	1, 11, 13
Fire Team	1, 13, 14
First Aid Team	1, 13, 14
Damage Control Team	1, 4, 13
Search and Rescue Team	1, 13, 14



SCOPE OF TRAINING FOOTNOTES:

1. Training provided to all emergency response personnel emphasizes: Emergency organization, emergency classification system, personnel accountability, emergency exposure limits, emergency response facilities, security access control and site evacuation process, and exposure control techniques.
2. Training provided emphasizes: Assessing emergencies, classifying emergencies, notification systems, contaminated injured personnel actions, site evacuation, emergency radiation exposure authorization, offsite support group capabilities, and recovery.
3. Training provided emphasizes: Notifications and reports to offsite authorities and communication systems as appropriate for individual position assignments.
4. Training provided emphasizes: Emergency Plan Damage Control organization, communication systems, and planning and coordination of damage control tasks.
5. Training provided emphasizes: Activation and administration of the Operational Support Center.
6. Training provided emphasizes: Activation and administration of the Technical Support Center.
7. Training provided emphasizes: Site evacuation procedure.
8. Training provided emphasizes: Notification of station personnel, LEOF Activation, personnel accountability/evacuation, and station access control during an emergency. The Security Department is responsible for the conduct of this training and for ensuring that documentation is properly maintained for Security Department personnel.
9. Training provided emphasizes: Dose Assessment.
10. Training provided emphasizes: Control of emergency Health Physics organization, emergency exposure evaluation, and protective measures.

11. Training provided emphasizes: Respiratory protection, personnel decontamination, inplant monitoring, offsite monitoring, monitoring of emergency centers and remote assembly areas, contaminated injuries, and radio communications as appropriate for individual position assignments.
12. Training provided emphasizes: Post accident sampling and high level activity sample analysis.
13. Training provided emphasizes: Organizational interfaces and responsibilities appropriate for individual position assignments.
14. Training provided emphasizes: Emergency organizations interfaces, search and rescue procedures, and communications systems. Fire Team members shall also receive Fire Brigade training as required by the North Anna Power Station Fire Protection Program, which meets the requirements of 10CFR50, Appendix R, and is equivalent to the State's certification program. First Aid Team Members shall also receive training as required by the station administrative procedures which meets the requirements of the company Accident Prevention Manual.
15. Training provided emphasizes: Use of the Emergency Response Facility Computer System appropriate for individual position assignments.

NORTH ANNA POWER STATION  
EMERGENCY PLAN

SECTION 9

RECOVERY

<u>Part</u>	<u>Subject</u>	<u>Page No.</u>
9.0	Recovery .....	9.2
9.1	Recovery Methodology .....	9.2
9.2	Population Exposure .....	9.3

## 9.0 Recovery

The recovery process will be managed by a special, designated organization composed of Virginia Power personnel. The recovery organization is described in the Corporate Emergency Response Plan and further outlined in the EPIP specifically designed for administration of the recovery program. The basic organization may be modified, as required, to address the needs of the given situation. The Recovery Manager assumes control and direction of the recovery operation with the authority and responsibilities set forth in the Corporate Emergency Response Plan and EPIPs.

The recovery process is implemented when the Recovery Manager and the Station Emergency Manager, with concurrence of State and Federal agencies, have determined the station to be in a stable and controlled condition. Upon the determination, the Recovery Manager shall notify the NRC Operation Center, the State Emergency Operations Center, and the Local County Emergency Operations Centers that the emergency has been terminated and any required recovery has commenced.

### 9.1 Recovery Methodology

The Recovery organization will develop plans and procedures designed to address both immediate and long term actions. The necessity to maintain protective measures implemented during the emergency will be evaluated and, if deemed appropriate, the Recovery organization will recommend relaxation of the protective measures. The following conditions shall be considered appropriate for the recommendation to relax protection measures.

- a. Station parameters of operation no longer indicate a potential or actual emergency exists.
- b. The release of radioactivity from the Station is controllable, no longer exceeds permissible levels and does not present a credible danger to the public.
- c. The Station is capable of sustaining itself in a long term shutdown condition.

Because it is not possible to foresee all of the consequences of an event, specific recovery procedures may need to be written to address specialized requirements. Where possible, existing station procedures will be utilized in the areas of operations, maintenance and radiological controls. Any special recovery procedures will require the same review and approval process accorded other station procedures and, as such, will require the approval of the Station Nuclear Safety and Operating Committee (SNSOC).

## 9.2 Population Exposure

Total population doses shall be periodically estimated in the affected sectors and zones utilizing population distribution data from within the emergency planning zones.

Station personnel initially determine Total Effective Dose Equivalent (TEDE) due to external exposure from airborne material, external exposure from ground deposition, and internal exposure due to inhalation. Initial calculations are also performed for determination of Thyroid Committed Dose Equivalent (CDE) resulting from inhalation of radiiodines. The methodology used is consistent with that presented in EPA-400-R-92-001, MANUAL OF PROTECTIVE ACTION GUIDES AND PROTECTIVE ACTIONS FOR NUCLEAR INCIDENTS.

Determination of total population doses will be performed utilizing the Meteorological Information and Dose Assessment (MIDAS) computer code or equivalent, and will include assessments of exposure received from (but not necessarily limited to) immersion, inhalation, ground shine, and ingestion of radioactive materials.



**NORTH ANNA POWER STATION**  
**EMERGENCY PLAN**

**SECTION 10**  
**APPENDICES**

<u>Part</u>	<u>Subject</u>
10.1	Copies of Agreement Letters
10.2	Deleted
10.3	Maps of Exclusion Area, Low Population Zone, and Emergency Planning Zone Boundaries
10.4	Listings of EPIP's
10.5	Protective Equipment and Supplies
10.6	Deleted
10.7	Supporting Plan Contact
10.8	Estimation of Evacuation Times
10.9	Medical College of Virginia Radiation Emergency Plan
10.10	Department of Energy: Federal Radiological Monitoring and Assessment Plan (FRMAP)
10.11	Initiating Conditions; Emergency Action Levels

Letters of Agreement

Federal Agencies:

U. S. Department of Energy - Field Office, Oak Ridge

State Agencies:

Commonwealth of Virginia Department of Emergency Services

Commonwealth of Virginia Department of Health

Commonwealth of Virginia Department of State Police

Commonwealth of Virginia Department of Game and Inland Fisheries

Medica College of Virginia, Virginia Commonwealth University

Local Agencies:

Louisa County Administrator

Louisa County Volunteer Firefighter's Association

Louisa County Sheriff

Emergency Medical Services Association of Louisa County (Louisa County Rescue Squad, Inc.: Mineral and Louisa Units, Holly Grove Rescue Squad, Inc., and Trevilians Volunteer Fire Department, Inc.)

Spotsylvania County Sheriff

Spotsylvania Volunteer Fire Department, Inc.

Spotsylvania County Coordinator

Orange County Sheriff

Orange County Coordinator

Caroline County Coordinator

Caroline County Sheriff

Hanover County Administrator

Hanover County Sheriff



## Department of Energy

Field Office, Oak Ridge  
P.O. Box 2001  
Oak Ridge, Tennessee 37831—

March 29, 1994

Mr. Larry M. Girvin  
Vice President - Nuclear Services  
Virginia Power  
5000 Dominion Boulevard  
Glen Allen, Virginia 23060

Dear Mr. Girvin:

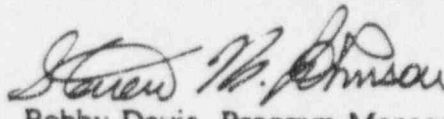
### U. S. DEPARTMENT OF ENERGY (DOE) RADIOLOGICAL ASSISTANCE AVAILABILITY FOR NORTH ANNA AND SURRY POWER STATIONS

This letter is in response to your March 11, 1994, letter requesting an updated Letter of Agreement regarding the availability of DOE Radiological Assistance. This letter will serve to update any existing letters between your organization and the DOE Oak Ridge Operations Office (ORO), and to confirm that the procedures outlined in the document entitled *Guide for Requesting Radiological Assistance* that was issued in 1986 are still valid.

Based on requirements set forth in the *Federal Radiological Emergency Response Plan*, issued in November 1985, DOE ORO will provide radiological assistance for incidents that occur at your facility. Prior to dispatch of radiological assistance, we will consult with the Nuclear Regulatory Commission and appropriate state authorities to ensure that there will not be a duplication of efforts. The type and duration of radiological assistance provided will depend on the severity of the incident and will be limited to advice and emergency actions essential for the control of immediate hazards to health and safety.

If you have any questions or require additional information, please contact me at (615) 576-9725.

Sincerely,

  
(for) Bobby Davis, Program Manager  
Emergency Management

cc:  
U.S. Nuclear Regulatory Commission,  
Region II, Regional Administrator  
C. S. Przybylek, CC-10  
J. E. Rudolph, DP-23



# COMMONWEALTH of VIRGINIA

*Department of Emergency Services*

A. E. SLAYTON, JR.  
State Coordinator

Keith R. Keister  
Deputy Coordinator

310 Turner Road  
Richmond, Virginia 23225-6491  
(804) 674-2499  
(TDD) 674-2417

March 17, 1994

Mr. Larry M. Girvin  
Vice President, Nuclear Services  
Virginia Power  
5000 Dominion Boulevard  
Glen Allen, Virginia 23060

Dear Mr. Girvin:

Reference is made to your letter of March 11, 1994, regarding the need to update our Letter of Agreement in compliance with the federal criteria prescribed by NUREG 0654/FEMA-REP-1.

We have reviewed the North Anna and Surry Power Stations' emergency plans and are assured that they properly interface with the state Radiological Emergency Response Plan (RERP) as well as with the local RERPs, site-specific to either power station. Upon receiving notification of a radiological accident at a Virginia Power nuclear power station, state agencies and local governments will implement their Radiological Emergency Response Plans in accordance with state and local government procedures. Specifically, the Department of Emergency Services (DES) agrees to implement all or parts of the following actions in the event of a radiological emergency at either plant site:

1. Operate the state Emergency Operations Center (EOC).
2. Provide DES on-scene coordinator(s) to the EOF.
3. Provide warning in coordination with other state and local government agencies and the nuclear facility operator.
4. Provide emergency communications.
5. Coordinate emergency response actions of federal and state agencies.

6. Notify the following federal agencies of a radiological emergency:
  - a. Federal Emergency Management Agency (FEMA) when the emergency action level at a nuclear power facility is classed as an Alert and provide updated information and request assistance, if required, when the emergency action level is classed as a Site Area Emergency or General Emergency.
  - b. Federal Aviation Administration air controllers at Richmond International Airport of a radiological emergency and request that aircraft be instructed to avoid affected airspace until notified otherwise.
  - c. Commander, Fifth U.S. Coast Guard District of a radiological emergency at the Surry Power Station and request establishment of traffic control of boats and ships on the James River in the vicinity of the power station.
  - d. Fort Eustis in the event of an incident at the Surry Power Station that could effect the health and safety of personnel stationed at this military installation.
7. Notify CSX Transportation of a radiological emergency at the North Anna or Surry Power Station and request that rail service in the affected area be discontinued temporarily.
8. Notify the state Bureau of Radiological Health, Department of Health immediately of all classes of accidents and incidents reported by operators of nuclear facilities.
9. Notify the Virginia Department of Transportation to establish roadblocks and to temporarily terminate ferry service between James City County and Surry County, when appropriate.
10. Notify other state agencies that have emergency task assignments identified in the state RERP.



Mr. Larry M. Girvin  
Page 3  
March 17, 1994

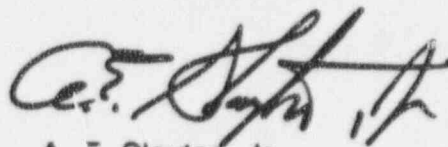
11. Notify the state of Maryland EOC of radiological accidents at the North Anna Power Station resulting in either a Site Area Emergency or General Emergency. Notify the State of North Carolina EOC of radiological accidents at the Surry Power Station resulting in either a Site Area Emergency or General Emergency.
12. Provide public information, based on information furnished by the Department of Health and the nuclear facility operator.
13. Request assistance from the federal government in accordance with the Federal Radiological Emergency Response Plan (FRERP) and the Federal Response Plan (FRP).

In support of the emergency response actions stated above, we will, on an annual basis, perform the following missions:

1. Assist state agencies and political subdivisions in the development, promotion, and maintenance of plans, procedures, and preparedness programs.
2. Coordinate radiological emergency response training and conduct annual training exercises.
3. Maintain a list of media representatives, including names and telephone numbers, and as necessary, issue news releases respective to emergency operations involving the North Anna and Surry Power Stations.

These actions are authorized by the Governor of Virginia (Executive Order Number Nineteen (90) and are consonant with the Commonwealth of Virginia Emergency Services and Disaster Law of 1973 (Code of Virginia, Chapter 3.2, Title 44) as amended.

Sincerely,



A. E. Slayton, Jr.

AESjr/GOU/sdg



# COMMONWEALTH of VIRGINIA

ROBERT B. STROUBE, M.D., M.P.H.  
STATE HEALTH COMMISSIONER

*Department of Health*

P. O. BOX 2448  
RICHMOND, VA 23218

April 18, 1994

Mr. Larry M. Girvin  
Vice President - Nuclear Services  
Virginia Power  
5000 Dominion Boulevard  
Glen Allen, Virginia 23060

Dear Mr. Girvin:

We are renewing our commitment to respond to any radiological emergency at either the Surry or North Anna power stations in accordance with the provisions of the Commonwealth of Virginia Radiological Emergency Response Plan (COVEREP). The response of all State agencies is coordinated by the Department of Emergency Services.

If you have any questions or comments regarding these commitments, please contact the Bureau of Radiological Health at (804) 786-5932.

Sincerely,

Robert B. Stroube, M.D., M.P.H.  
State Health Commissioner

COMMONWEALTH OF VIRGINIA  
DEPARTMENT OF STATE POLICE

POB 9108 Richmond, VA 23227-0108

March 21, 1994

Lt. Colonel James L. Lennett  
Director  
Administrative & Support Services  
Lt. Colonel Charles M. Robinson  
Director  
Field Operations

Mr. Larry M. Girvin  
Vice President - Nuclear Services  
Virginia Power  
5000 Dominion Boulevard  
Glen Allen, VA 23060

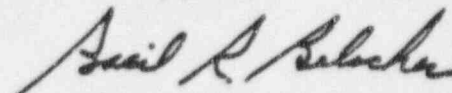
Dear Mr. Girvin:

Thank you for your letter of March 11, 1994, regarding an updating of our Letter of Agreement for North Anna Power Station.

We pledge our continued assistance and hereby agree to provide the following specific support to any emergency that may occur at the North Anna Power Station upon the direction of the State Office of Emergency and Energy Services.

- (1) Assist local officials in disseminating warning
- (2) Assist in evacuation in coordination with local officials
- (3) Enforce access/egress provision in controlled areas in coordinating with local officials
- (4) Provide traffic control
- (5) Assist to the extent possible in radiological monitoring of vehicles and personnel at traffic control points
- (6) Assist with communications in a support role
- (7) Assist with re-entry after emergency
- (8) Participate in training and exercises to prepare for emergencies

Sincerely,



Basil R. Belsches, Captain  
COMMANDER, DIVISION ONE

BRB/jb

cc: Lieutenant Colonel Charles M. Robinson  
First Sergeant Thomas A. Snead



# COMMONWEALTH of VIRGINIA

*Department of Game and Inland Fisheries*

March 16, 1994

Mr. Larry M. Girvin  
Vice President- Nuclear Services  
Virginia Power  
5000 Dominion Boulevard  
Glen Allen, Virginia 23060

Dear Mr. Girvin:

The Department of Game and Inland Fisheries remains in agreement with emergency response plans for the Surry and North Anna Power Stations. This agency will continue to assist you in any future emergency situations as outlined in your plan to the greatest extent possible at the time any emergency might evolve, just as we have previously agreed.

We agree to provide the support listed in Appendix 1, Task Assignments, Virginia Radiological Emergency Response Plan. These services, of course, will be furnished at the Surry or North Anna Power Station as directed by Emergency Services.

Sincerely,

A handwritten signature in cursive script, appearing to read "Larry Hart".

Larry G. Hart  
Deputy Director, Administration

LGH/JKC/lh



**Medical College of Virginia  
Virginia Commonwealth University**

March 31, 1994

Mr. Larry M. Girvin,  
Vice President - Nuclear Services  
5000 Dominion Boulevard  
Glen Allen, Virginia 23060

Dear Mr. Girvin:

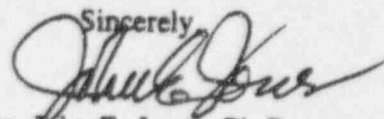
**LETTER OF AGREEMENT  
NORTH ANNA AND SURRY POWER STATIONS**

The Medical College of Virginia Hospitals/Virginia Commonwealth University agrees to participate in the implementation of the Virginia Power Radiation Emergency Plans for the North Anna and Surry Power Stations and to support the plans within the limits of our organizational capabilities.

The Medical College of Virginia/Virginia Commonwealth University agrees to participate in any planning, training and drilling necessary to insure preparedness. We agree that upon verification of an emergency at either station the following services will be provided:

1. Facilities to treat up to four seriously injured and radioactively contaminated patients in the emergency department.
2. Facilities to treat up to ten non-seriously radioactively contaminated patients in the Sanger Hall morgue area.
3. Hospital transportation (stretchers) to move patients from the morgue area to the emergency department.
4. Campus Police to support traffic control and maintain security around the treatment areas.
5. Central services supplies (oxygen, defibrillators, etc.) to support treatment in the morgue area.
6. Monitoring and counting equipment for the detection and analysis of radioactivity or radiation.
7. Decontamination and other supplies necessary for the isolation and treatment of radioactively contaminated patients.

These services will be available 24 hours a day and are outlined in greater detail in the Radiation Emergency Plan. The Radiation Safety Section of the Office of Environmental Health and Safety is responsible for supplying the radiological support services necessary for the implementation of this plan.

Sincerely,  
  
Dr. John E. Jones, Ph.D.  
Vice President for Health Sciences





# County of Louisa

Post Office Box 160  
Louisa, Virginia 23093

(703) 967-0401  
FAX 703) 967-9531

March 24, 1994

Mr. Larry M. Girvin  
Vice President - Nuclear Services  
Virginia Power  
5000 Dominion Boulevard  
Glen Allen, Virginia 23060

Dear Mr. Girvin:

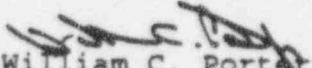
This letter is in response to your request for an updated version of the Letter of Agreement for the North Anna Power Station.

On April 19, 1976, the Louisa County Board of Supervisors, by resolution, adopted the Louisa County Emergency Plan to coordinate emergency services response capabilities. The County has revised its plan to comply with the regulations contained in NUREG-0654 and again in May, 1985, to include the Early Warning Siren System. In March, 1993, the Louisa County Board of Supervisors, re-adopted by resolution, the Louisa County Emergency Plan and all its annexes.

This letter does confirm Louisa County's agreement to provide the following services:

1. Operate the County's Emergency Operations Center (EOC).
2. Coordinate the overall emergency response of the County.
3. Serve as County point-of-contact with State and Federal agencies, and any appointed representative of Virginia Power.
4. Early warning and public information
5. Coordinate radiological emergency response and training.

Sincerely yours,

  
William C. Porter, Jr.  
County Administrator

WCPjr/jwb

# Louisa County



P.O. BOX 338  
MINERAL, VA 23117

## Volunteer Firefighters Association

TELEPHONE  
(703) 967-0401

June 24, 1994

Mr. Larry Girvin  
Vice President Nuclear Services  
Virginia Power  
5000 Dominion Blvd.  
Glen Allen, Va. 23060

Dear Mr. Girvin,

The Louisa County Volunteer Firefighters Association fully supports the Emergency Plan for Virginia Power's North Anna Power Station. The Association welcomes the opportunity to work with a community oriented organization such as yours. If fire service is needed please call the dispatcher at (703) 967-1234 and advise of assistance needed.

We will support your efforts at North Anna to the extent of our ability and resources. At this time we have seven fire departments in Louisa County. All seven departments will respond to North Anna should it become necessary. We have mutual aid between all seven departments. Mineral Company 2 would be the first department to respond, with Bumpass Company 3, Louisa Company 1, Locust Creek Company 5, Trevillians Company 6, Holly Grove Company 4, and Zions Crossroads Company 7 following in that order, as needed.

Within the departments we have approximately 105 Firefighters and the following equipment:

- 7 Engines with 750 to 1000 gallons tanks and 1000 to 1500 gpm pumps
- 3 Wagons with 1000 gallon tanks and 750 to 1000 gpm pumps
- 6 Tankers with 1000 to 2000 gallon tanks and 750 pumps
- 4 Brush trucks with 200 gallon tanks for brush fires
- 1 Aerial platform 100 foot
- Approximately 6000 feet of 4 inch supply hose
- Foam capability on each Engine
- Each Engine carries extension ladders and roof ladders
- 1 Salvage Unit with cascade system for filling air bottles on site
- Each station has cascade system in station for filling air bottles
- 1 Breathing air compressor in Station 1 capable of filling 3 air bottles at once.
- All trucks are equipped with Self-contained breathing apparatus and spare bottles.

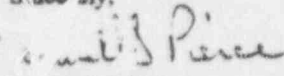
The above equipment would be available on a as needed basis and could respond to North Anna Power Station. The Departments have trained radiation monitoring teams with the dosimetry and meters for monitoring radiation during drills or an actual emergency. A command structure is in place for all monitoring teams to work under direction of the Louisa County Emergency Operations Center and have radios for communication. The Fire Association and all seven Fire Departments participate in the Emergency Drills conducted by Virginia Power and furnish radiation monitoring teams for the County during the drills.

The first in Fire Department has a response time of approximately 15 minutes from time of dispatch. The furthest Fire Department has a response time of approximately 30 minutes.

The Association has a letter of agreement signed with the County of Louisa for providing fire service to the citizens of

the county. All seven Fire Departments are part of the agreement. The Association considers Virginia Power a corporate citizen of the county and supports it as it would any other citizen in the county. If any further information is needed, please notify the Association and we will help in any way possible.

Sincerely,



Doswell S. Pierce  
President

cc: Mr. W. C. Porter

Henry A. Kennon

SHERIFF OF LOUISA COUNTY  
LOUISA, VIRGINIA 23093  
(703) 967-1234

MEMBER  
NATIONAL SHERIFFS' ASSOCIATION

MEMBER  
VIRGINIA SHERIFFS' ASSOCIATION

MARCH 15, 1994

MR. LARRY M. GIRVIN  
VICE PRESIDENT - NUCLEAR SERVICES  
VIRGINIA POWER  
5000 DOMINION BOULEVARD  
GLEN ALLEN, VIRGINIA 23060

RE: LETTER OF AGREEMENT WITH NORTH ANNA POWER STATION

DEAR MR. GIRVIN:

I AM IN RECEIPT OF YOUR LETTER DATED MARCH 11, 1994, REQUESTING AN UPDATE OF OUR LETTER OF AGREEMENT. THIS LETTER IS TO CONFIRM OUR CONTINUING AGREEMENT WITH THE PLAN, AND OUR WILLINGNESS TO PARTICIPATE IF AND WHEN REQUIRED. WE HAVE THE CAPABILITY OF PROVIDING THE FOLLOWING SERVICES:

1. TELEPHONE & RADIO COMMUNICATION WITH THE STATION ON A TWENTY-FOUR HOUR BASIS.
2. TRAFFIC CONTROL.
3. EVACUATION CONTROL.
4. ASSISTANCE IN RADIOLOGICAL MONITORING.
5. POTENTIAL AVAILABILITY OF 21 SHERIFF'S DEPARTMENT VEHICLES.
6. POTENTIAL AVAILABILITY OF 21 SHERIFF'S DEPARTMENT PERSONNEL.

IF I CAN BE OF ANY FURTHER ASSISTANCE TO YOU IN THIS MATTER, PLEASE DO NOT HESITATE TO CONTACT ME.

WITH KINDEST REGARDS, I AM

SINCERELY,

*Henry A. Kennon*  
HENRY A. KENNON, SHERIFF

HAK:GPK



Emergency Medical Services  
Association of Louisa County

---

(EMSAL)  
P.O. Box 1306  
Louisa, Virginia 23093

October 18, 1994

Mr. Larry M. Girvin  
Vice President - Nuclear Service  
Virginia Power  
Glen Allen, Virginia 23060

Dear Mr. Girvin:

**LETTER OF AGREEMENT  
VIRGINIA POWER  
NORTH ANNA POWER STATION**

This letter is an agreement between the Emergency Medical Service Association of Louisa County (EMSAL) and Virginia Power regarding mutual support at the North Anna Power Station.

EMSAL is a entity in the emergency medical services in Louisa County and is recognized as the official representative for all emergency medical service organizations within Louisa County. EMSAL is comprised of Louisa County Rescue Squad, Inc., Holly Grove Rescue Squad, Inc., and Trevilians Volunteer Fire Department, Inc. EMSAL provides 24 hour emergency medical services to Louisa County through its volunteer organizations as outlined below:

Personnel

- . Scheduled duty crews are maintained from 1800 hours to 0600 hours on week days.
- . Scheduled duty crews are maintained for weekend coverage from 1800 hours on Friday until 0600 hours on Monday.
- . During week days (0600 hours until 1800 hours), Holly Grove Rescue Squad has scheduled duty crews during these hours and there are also additional rescue personnel from Louisa and Trevilians who are available to run (when not working or can leave work, etc.).
- . In situations of extreme life threatening injury or illness, medical evacuation will be provided by helicopter when available for non-contaminated patients. This will provide a higher level of patient care (paramedic level) and a much quicker patient transport.



## Equipment

Louisa County Rescue Squad, Inc., has 3 ambulances licensed as Advanced Life Support and 1 ambulance licensed as Basic Life Support, which are located in the central part of Louisa County.

Holly Grove Rescue Squad, Inc. has 2 ambulances licensed as Advanced Life Support and an auxiliary unit (4 wheel drive pickup) equipped as a first response vehicle. These units are located in the southeastern part of Louisa County.

Trevilians Volunteer Fire Department, Inc., has 1 ambulance licensed as Basic Life Support. This unit is located in the western part of Louisa County.

In terms of mutual support, EMSAL will:

- Fully support the North Anna Power Station Emergency Plan to the limit of our capabilities.

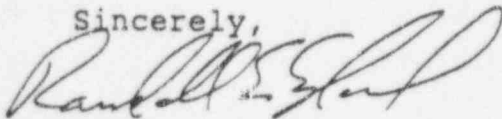
Note: if a medical emergency occurs during any training or drill exercise, the medical emergency will take precedence and the required personnel and/or equipment will respond to the medical emergency.

- Respond to North Anna's emergency medical needs and relieve North Anna's ambulance crew of patient transport when possible. In the event of contaminated patients, EMSAL will only transport if there are multiple patients requiring transport and North Anna's Rescue Unit is out of service or not available.

While your financial support is greatly appreciated, our primary concern is that quality patient care be provided to the citizens and businesses of Louisa County.

Please contact me if you have any questions or concerns regarding the mutual support described above.

Sincerely,



Randall E. England  
President

cc: Jack Ball  
Steve Harrison



Emergency Medical Services  
Association of Louisa County

---

(EMSAL)  
P.O. Box 1306  
Louisa, Virginia 23093

October 18, 1994

Mr. Larry M. Girvin  
Vice President - Nuclear Service  
Virginia Power  
Glen Allen, Virginia 23060

Dear Mr. Girvin:

**LETTER OF AGREEMENT  
VIRGINIA POWER  
NORTH ANNA POWER STATION**

This letter is an agreement between the Emergency Medical Service Association of Louisa County (EMSAL) and Virginia Power regarding mutual support at the North Anna Power Station.

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Trevilians Volunteer Fire Department, Inc., has 1 ambulance licensed as Basic Life Support. This unit is located in the western part of Louisa County.

In terms of mutual support, EMSAL will:

- . Fully support the North Anna Power Station Emergency Plan to the limit of our capabilities.

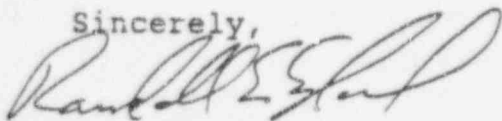
Note: if a medical emergency occurs during any training or drill exercise, the medical emergency will take precedence and the required personnel and/or equipment will respond to the medical emergency.

- . Respond to North Anna's emergency medical needs and relieve North Anna's ambulance crew of patient transport when possible. In the event of contaminated patients, EMSAL will only transport if there are multiple patients requiring transport and North Anna's Rescue Unit is out of service or not available.

While your financial support is greatly appreciated, our primary concern is that quality patient care be provided to the citizens and businesses of Louisa County.

Please contact me if you have any questions or concerns regarding the mutual support described above.

Sincerely,



Randall E. England  
President

cc: Jack Ball  
Steve Harrison

SPOTSYLVANIA COUNTY  
SHERIFF'S OFFICE

THOMAS C. WADDY, JR., SHERIFF  
POST OFFICE BOX 124  
SPOTSYLVANIA, VIRGINIA 22553  
OFFICE PHONE: 582-7116

March 16, 1994

Mr. Larry M. Girvin  
Vice President - Nuclear Services  
Virginia Power  
500 Dominion Blvd.  
Glen Allen, VA 23060

RE: Letter of Agreement - North Anna Power Station

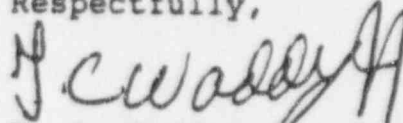
Dear Mr. Girvin:

In reference to your letter dated June 16, 1992, this department agrees to participate if and when required and to offer the following services:

1. Telephone and radio communications with the station on a 24 hour basis.
2. Traffic control
3. Evaluation control
4. Assist in radiological monitoring
5. Potential availability of 38 Sheriff's Department vehicles
6. Potential availability of 45 Sheriff's Department personnel

If there is any other services that you require, please do not hesitate to call me.

Respectfully,



T. C. Waddy, Jr., Sheriff  
Spotsylvania County

TCWJR:bsc

# SPOTSYLVANIA VOLUNTEER FIRE DEPARTMENT, Inc.

P.O. Box 146  
Emergency Phone: 582-7100  
Business Phone: 582-5322



Office of the Chief  
Company No. 1  
SPOTSYLVANIA, VIRGINIA

Company No. 2  
Brokenburg, Virginia  
Phone: 582-7100

Company No. 4  
Four Mile Fork  
Phone: 582-7100

Company No. 3  
Partlow, Virginia  
Phone: 582-7100

March 17, 1994

Mr. Larry M. Girvin  
Vice President-Nuclear Services  
Virginia Power  
5000 Dominion Boulevard  
Glen Allen, VA 23060

Dear Mr. Girvin:

I have received your letter dated March 11, 1994 indicating that it is necessary to revise our agreement with your Emergency Plan and if we will support the North Anna Power Emergency Plan if requested. This letter is to inform you that we are in agreement with the North Anna Emergency Plan and are willing to support it should the occasion arise.

Accordingly, I hereby submit the following AGREEMENT:

We are in agreement with the Virginia Electric and Power Company's North Anna Power Station Emergency Plan and will respond to it within the capabilities of our organization should our services be requested.

Signature:

*Thomas W. Oesterheld*

Thomas W. Oesterheld  
Chief

Spotsylvania Volunteer Fire  
Department  
Spotsylvania, VA 22553

Date:

*March 21, 1994*

SERVICES: Fire Fighting

EQUIPMENT: 1993 95' Aerial/Platform to List

PERSONNEL: 4 to 25 depending upon need

RESPONSE TIMES: 20 min. from Co. 2 (Brokenburg)  
30 min. from Co. 1 (Courthouse)  
45 min. from Co. 4 (Four Mile Fork)



# County of Spotsylvania



Founded 1721

## Board of Supervisors

RONNIE B ACORS  
MARY LEE CARTER  
JEAN W JONES  
B. JERRY MARCUS  
EMMITT B MARSHALL  
MARTHA B MASTIN  
JAMES B SMITH

Department of Fire, Rescue  
and Emergency Services

R. CHRISTIAN EUDAILE  
Fire Marshal

P.O. BOX 816  
SPOTSYLVANIA VIRGINIA 225  
PHONE (703) 582-7095  
FAX (703) 582-6957

March 23, 1994

Mr. Larry M. Girvin  
Vice President - Nuclear Services  
Virginia Power  
5000 Dominion Boulevard  
Glen Allen, Virginia 23060

## Letter of Agreement North Anna Power Station

Dear Mr. Girvin:

Within the control limits of the County of Spotsylvania and in cooperation with local, state, and federal agencies, we will provide the following:

1. Operations of a County Emergency Operations Center (EOC) at Fire Company 1;
2. Coordination of the overall County Emergency Response;
3. A point of contact for local, state, and federal agencies;
4. Coordination of emergency response training, including radiological.

Please feel free to contact us if additional information is needed.

Sincerely,

*Douglas P. Boggs*

DOUGLAS P. BOGGS  
Emergency Services Coordinator

DPB/kew

xc: L. Kimball Payne, III, County Administrator

William D. Spence, Sheriff  
(703) 672-1200



P.O. Box 445  
Orange, Virginia 22960

ORANGE COUNTY SHERIFF'S OFFICE

March 21, 1994

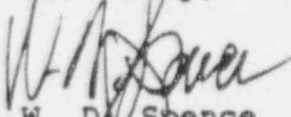
Mr. Larry M. Girvin  
Vice President - Nuclear Services  
Virginia Power  
5000 Dominion Boulevard  
Glen Allen, Virginia 23060

Dear Mr. Girvin:

This is to update our existing emergency plan letter of agreement. We are capable of providing the following services:

- 1) Receive and verify the notification of the radiological emergency.
- 2) Notify key county officials and other agencies assigned a radiological emergency responsibility.
- 3) Alert the public
- 4) Evacuate the public from the area affected.
- 5) Traffic control
- 6) Perimeter control, in coordination with VA State Police.
- 7) Operate the Sheriff's Office Communications Center.

Sincerely,

  
W. D. Spence  
Sheriff

WDS:kcs

Enclosure



**ORANGE COUNTY  
BOARD OF SUPERVISORS**

Box 111  
ORANGE, VIRGINIA 22960

R. DUFF GREEN, Chairman  
WILLIAM G. ROBERTS, V-Chairman  
V. RAY JONES  
JOHN M. NOLAN  
GROVER C. WILSON, JR.  
BRENDA GARTON BAILEY  
County Administrator  
Phone: (703) 672-3313  
(703) 972-1455  
Fax: (703) 672-1679

April 4, 1994

Mr. Larry M. Girvin  
Vice President - Nuclear Services  
Virginia Power  
5000 Dominion Boulevard  
Glen Allen, VA 23060

Dear Mr. Girvin:

Thank you for your letter of March 11 requesting an update of our letter of agreement for North Anna Power Station.

Please be informed that we are in agreement with the plan and are willing to participate in the emergency plan if required. We are capable of providing the following services as outlined in the current Orange County Radiological Response Plan:

1. Operate the Orange County Emergency Operations Center,
2. Coordinate the overall emergency response of the county,
3. Serve as the county point-of-contact with appropriate state and federal agencies,
4. Provide public information for Orange County, and
5. Coordinate radiological emergency response training.

If you have any questions or if you need any additional information, please do not hesitate to give me a call.

Respectfully,

Brenda Garton Bailey  
County Administrator

# CAROLINE COUNTY



Roger D. Raines  
Director of Fire & Rescue

## DEPARTMENT OF FIRE & RESCUE

P. O. Box 447

Bowling Green, Virginia 22427

Telephone 804-633-9831

April 5, 1994

Mr. Larry M. Girvin  
Vice President-Nuclear Services  
Virginia Power Company  
5000 Dominion Boulevard  
Glen Allen, Virginia 23060

Dear Mr. Girvin:

We have received your letter indicating that it is necessary to update our previous letter of agreement concerning response to an emergency at the North Anna Power Station.

This letter is to inform you that Caroline County has an obligation to participate in the North Anna Power Station Emergency Plan if conditions exist that require a response from surrounding jurisdictions. Caroline County will attempt to provide the following services.

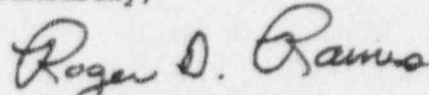
1. Verify the notification from the power plant.
2. Initiate the warning notification.
3. Perform access/egress traffic control in coordination with local law enforcement and the Department of State Police.
4. Arrange and perform those functions necessary for the protection of individuals, properties, homes, businesses, etc., located in the endangered area(s) in cooperation with local law enforcement, the Department of State Police and other private security forces. Will attempt to restrict entry into the hot zone by personnel not properly protected by radiation monitoring devices. Will also attempt to formulate a site plan to monitor workers/individuals entering hot zone area.
5. Attempt to maintain trained radiological monitoring

personnel to be used primarily for low level radiological incidents involving transportation accidents or fixed site emergencies. These individuals will also assist in the decontamination of response personnel and equipment when needed.

6. Provide on scene fire and rescue response to transportation accidents involving radioactive material and initiate proper notification and site area warnings when necessary.

This document represents Caroline County's continued support of the radiological protection package developed cooperatively between Virginia Power, Virginia Department of Emergency Services and local governments.

Sincerely,



Roger D. Raines  
Director of Fire & Rescue  
Emergency Services Coordinator

RDR/dh





## Sheriff's Office

CAROLINE COUNTY, P O BOX 39 HOWLING GREEN, VIRGINIA 22427

PHONE (804) 633-5400

HOMER G. JOHNSON  
SHERIFF

March 17, 1994

Mr. Larry M. Girvin  
Vice President - Nuclear Services  
Virginia Power  
5000 Dominion Boulevard  
Glen Allen, Virginia 23060

### LETTER OF AGREEMENT NORTH ANNA POWER STATION

Dear Mr. Girvin:

This is to acknowledge your letter of March 11, 1994, requesting a revision of our agreement with your emergency plan as well as our intention to participate in the North Anna Emergency Plan, if requested. Services provided by this department will be as follows:

1. Assist in warning the public.
2. Assist in evacuating the public from the affected area.
3. Traffic control wherever feasible under existing manpower conditions.
4. Access/egress control, in coordination with the State Police.
5. Receive and send messages as necessary over the VCIN SYSTEM.
6. Provide law enforcement functions to citizens of county.

If this office can be of further assistance, please do not hesitate contacting us.

With best regards, I remain

Sincerely yours,

Homer G. Johnson  
Sheriff

HGJ:ecc

BOARD OF SUPERVISORS

WILLIAM T. BOLLING, CHAIRMAN  
CHICKAHOMINY DISTRICT

R. J. KLOTZ, JR., VICE CHAIRMAN  
HENRY DISTRICT

WILLIAM C. FRAZIER  
SOUTH ANNA DISTRICT

RICHARD S. GILLIS, JR.  
ASHLAND DISTRICT

AUBREY M. STANLEY, JR.  
BEAVERDAM DISTRICT

ELTON J. WADE, SR.  
COLD HARBOR DISTRICT

J. T. "JACK" WARD  
MECHANICSVILLE DISTRICT



HANOVER COUNTY

P. O. BOX 470  
HANOVER, VIRGINIA 23069-0470

March 21, 1994

JOHN F. BERRY  
COUNTY ADMINISTRATOR

RICHARD R. JOHNSON  
DEPUTY COUNTY ADMINISTRATOR

STERLING E. RIVES, III  
COUNTY ATTORNEY

Mr. E. W. Harrell  
Vice President Nuclear Services  
Virginia Power Company  
5000 Dominion Boulevard  
Glen Allen, Virginia 23060

Re: Letter of Agreement - North Anna

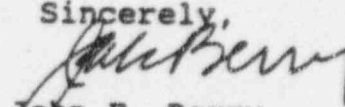
Dear Mr. Harrell:

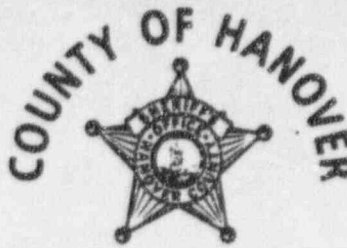
With regard to updating our Letter of Agreement, reference your emergency plan, Hanover will:

- 1) Continue coordination of the overall emergency response of the County as prescribed in the Hanover County Radiological Emergency Response Plan.
- 2) Provide the services and operations of the County Emergency Operations Center, the Evacuation Assembly Center, and the West Hanover Staging Area (Beaverdam Fire Station).
- 3) Serve as the County point-of-contact with State and Federal agencies.
- 4) Provide Public Information Services.
- 5) Coordinate Radiological Emergency Response Training.
- 6) Coordinate the use of Liberty Junior High School and Patrick Henry High School as Evacuation Assembly Centers for Hanover County and Louisa County, if required.

If you need any further assistance, please contact me.

Sincerely,

  
John F. Berry  
County Administrator



OFFICE OF  
COLONEL V. STUART COOK  
SHERIFF  
HANOVER, VIRGINIA 23069  
804 - 537-6110 804 - 730-6110

March 14, 1994

Mr. Larry M. Girvin  
Vice President - Nuclear Services  
Virginia Power  
5000 Dominion Boulevard  
Glen Allen, VA 23060

Dear Mr. Girvin:

This will acknowledge your letter of March 11, 1994 regarding our "Letter of Agreement" which specifies the arrangements for the exchange of information by agencies which agree to respond to emergencies at North Anna Power Station.

We understand the necessity for review of this agreement and submit that under the terms of the Hanover County Emergency Operations Plan, the Hanover County Sheriff's Office is responsible for the following tasks in the event of an emergency:

- 1) warning the public
- 2) assisting in evacuating the public from the affected area
- 3) traffic control when feasible under existing manpower conditions
- 4) access/egress control, in coordination with the Virginia State Police

If I or any member of the Department can be of any further assistance, please do not hesitate to let us know.

Sincerely,

Colonel V. Stuart Cook  
Sheriff

APPENDIX

10.2

(DELETED)

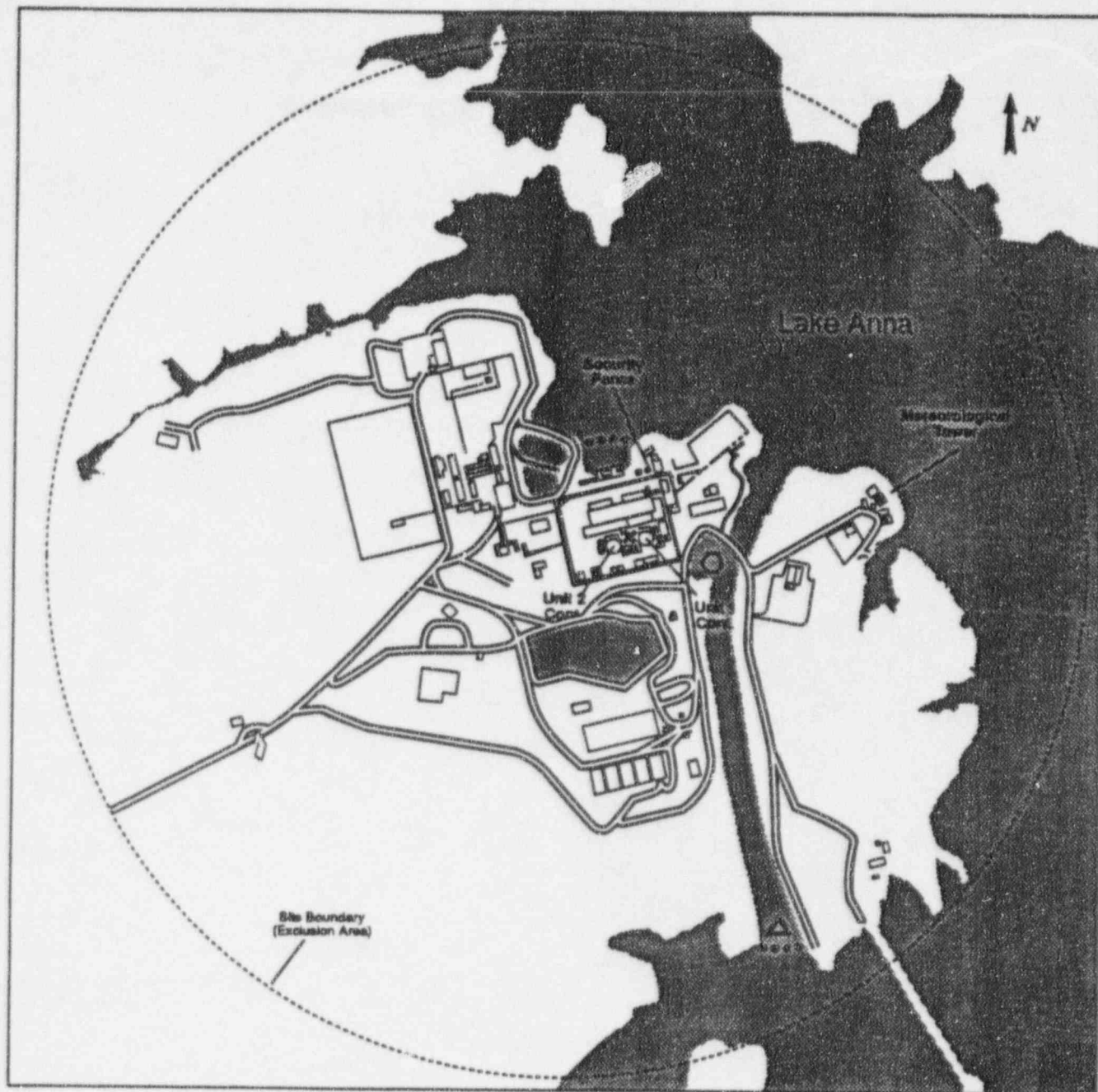
**APPENDIX**

**10.3**

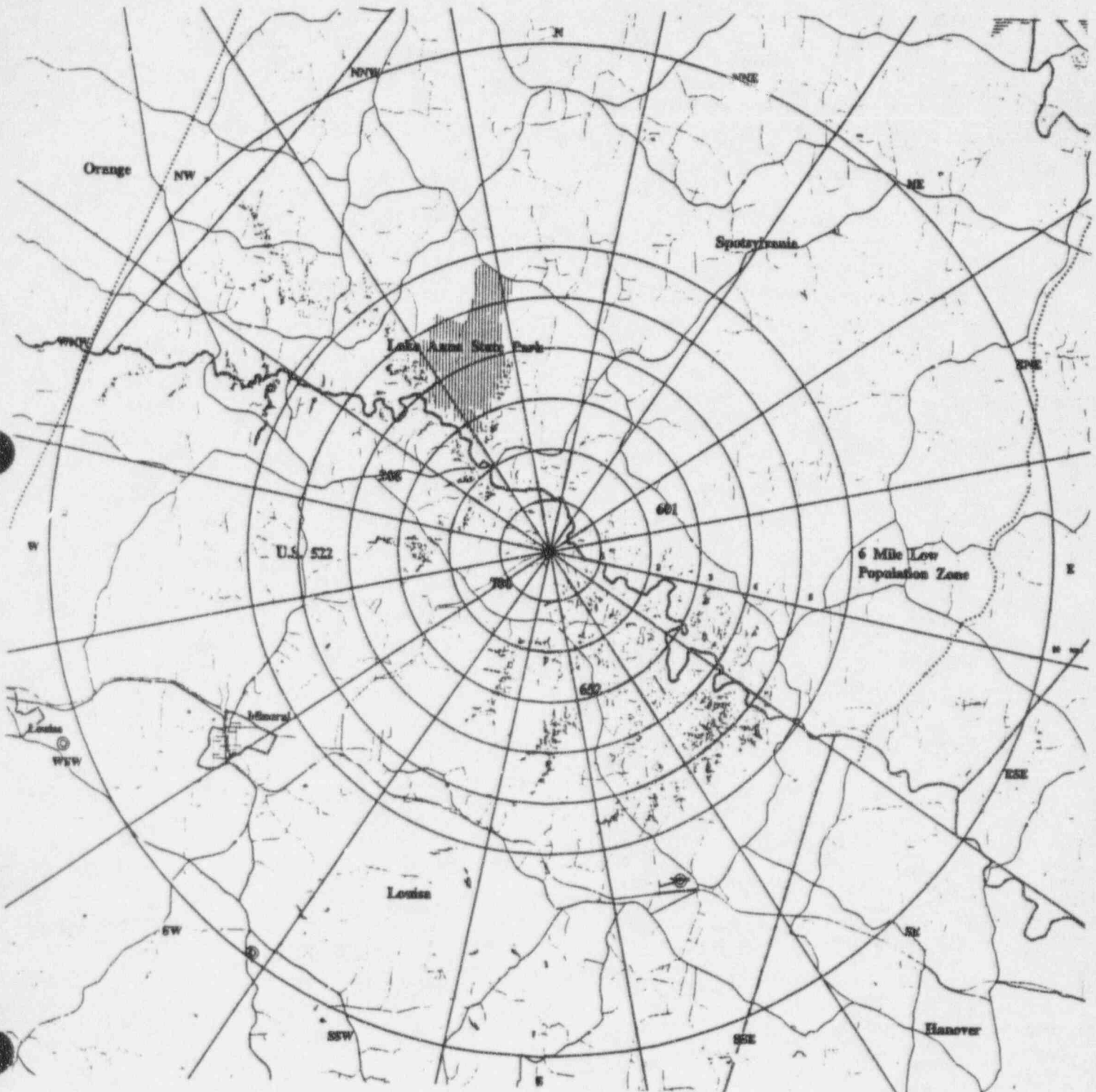
**MAPS OF EXCLUSION AREA, LOW POPULATION AND  
EMERGENCY PLANNING ZONE BOUNDARIES**



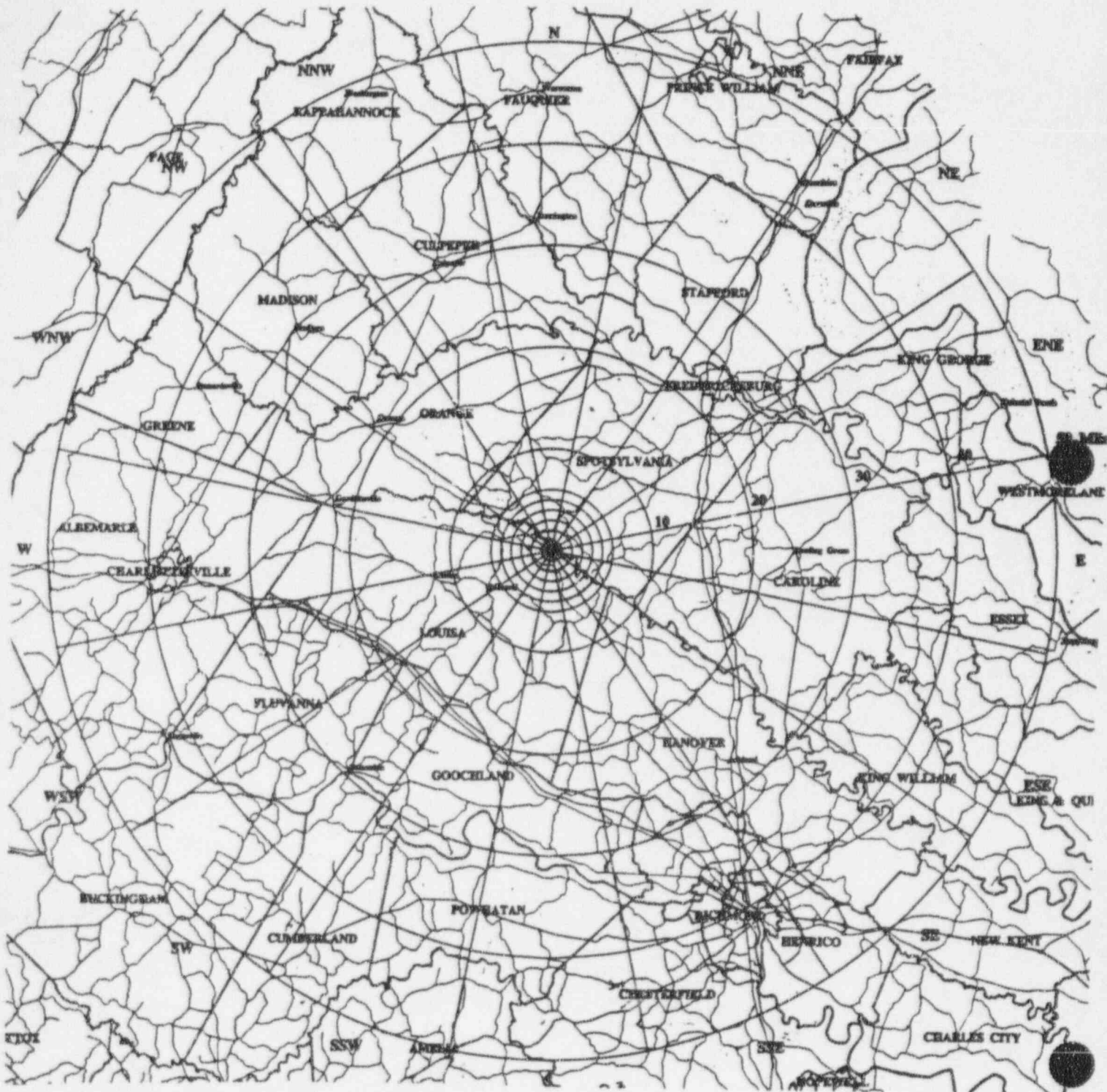
NORTH ANNA POWER STATION  
EXCLUSION AREA



NORTH ANNA POWER STATION  
LOW POPULATION ZONE  
10 MILE EMERGENCY PLANNING ZONE



NORTH ANNA POWER STATION  
50 MILE RADIUS



**APPENDIX**

**10.4**

**LISTING OF EPIP'S**



## LIST OF EMERGENCY PLAN IMPLEMENTING PROCEDURES

1. Emergency Control Procedures
  - 1.01 Emergency Manager Controlling Procedure
  - 1.02 Response to Notification of Unusual Event
  - 1.03 Response to Alert
  - 1.04 Response to Site Area Emergency
  - 1.05 Response to General Emergency
  - 1.06 Protective Action Recommendations
2. Notification Procedures
  - 2.01 Notification of State and Local Governments
  - 2.02 Notification of NRC
  - 2.04 Transmittal of Plant, Radiological and Emergency Status
3. Augmentation Procedures
  - 3.02 Activation of Technical Support Center
  - 3.03 Activation of Operational Support Center
  - 3.04 Activation of Local Emergency Operations Facility
4. Radiological Monitoring and Dose Assessment Procedures
  - 4.01 Radiological Assessment Director Controlling Procedure
  - 4.02 Radiation Protection Supervisor Controlling Procedure
  - 4.03 Dose Assessment Controlling Procedure
  - 4.04 Emergency Personnel Radiation Exposure
  - 4.05 Respiratory Protection and KI Assessment
  - 4.06 Personnel Monitoring and Decontamination
  - 4.07 Protective Measures
  - 4.08 Initial Offsite Release Assessment
  - 4.09 Source Term Assessment
  - 4.10 Determination of X/Q
  - 4.13 Offsite Release Assessment with Environmental Data
  - 4.14 Inplant Monitoring
  - 4.15 Onsite Monitoring
  - 4.16 Offsite Monitoring



4.3 Emergency Plan Implementing Procedures (Cont.)

- 4.17 Monitoring of Emergency Response Facilities
- 4.18 Monitoring of LEOF
- 4.21 Evacuation and Remote Assembly Area Monitoring
- 4.22 Post Accident Sampling of Containment Air
- 4.23 Post Accident Sampling of Reactor Coolant
- 4.24 Gaseous Effluent Sampling During an Emergency
- 4.25 Liquid Effluent Sampling During an Emergency
- 4.26 High Level Activity Sample Analysis
- 4.28 TSC/LEOF Radiation Monitoring System
- 4.30 Use of MIDAS Class A Model
- 4.31 Use of MIDAS Class B Model
- 4.33 Health Physics Network Communications
- 4.34 Field Team Radio Operator Instructions

5. Protective Action Procedures

- 5.01 Transportation of Contaminated Injured Personnel
- 5.02 Search and Rescue
- 5.03 Personnel Accountability
- 5.04 Access Control
- 5.05 Site Evacuation
- 5.07 Administration of Radioprotective Drugs
- 5.08 Damage Control Guideline
- 5.09 Security Team Leader Controlling Procedure

6. Recovery and Restoration Procedures

- 6.01 Re-entry/Recovery Guideline

# NAEP-EPIP CROSS REFERENCE\*

<u>NAEP SECTION NUMBER</u>	<u>IMPLEMENTED BY</u>	<u>EPIP NUMBER</u>
4.1	-	1.01-1.05
4.2	-	1.04-1.05
4.4	-	1.04-1.05
5.0	-	1.01
5.2	-	1.01, 3.02, 3.03, 3.04, 5.08, 5.09
5.3	-	2.01, 2.02, 5.09
5.4	-	2.01
6.1	-	1.01, 2.01, 2.02, 4.34
6.2	-	1.01, 4.01-4.03, 4.08-4.18, 4.22-4.27, 4.30-4.34
6.3	-	1.01, 1.05, 4.05, 4.07, 4.21, 5.01-5.05, 5.07
6.4	-	4.04, 4.06, 5.01
6.5	-	1.02-1.05, 5.09
9.0	-	6.01
9.2	-	4.08-4.14, 4.16, 4.28, 4.30, 4.31

Because the Emergency Plan provides a broad overview of the guidelines that must be considered in mitigating an emergency situation, a number of sections of the Plan do not appear in the cross reference, as they are not specifically activated by an EPIP.

**APPENDIX**

**10.5**

**PROTECTIVE EQUIPMENT AND SUPPLIES**

Emergency Kits for Offsite Monitoring Teams

NOTE: Each kit shall contain at least the following items:

<u>Quantity</u>	<u>Description</u>
1	Hand Trowel
1	Forcaps
6	Silver Zeolite Filter
1	Map of Orange
1	Map of TLD Location
1	Preselect Monitor Location Map
1	Map of Site Exclusion Boundary
2	Legal Pads
2	Full-face Respirators, e.g., Ultravue or equivalent
2	Pair Rubber Boots
10	Envelopes
2	Pencils
2	Smears
1	Flashlight
1	Map of Louisa
1	Map of Spotsylvania
1	Map of Lake Anna
1	Dosimeter Charger
1	Box of Kimwipes
1	Qt. Plastic Container
3	Gallon Plastic Container
1	Package of Cotton Inserts
1	Bag (15 pair) of Rubber Gloves
2	Hoods
2	Sets of P.C.s
1	Bag assorted Bags
6	"D" Cell Batteries
1	Pk. Air Particulate Patches
2	100R Dosimeters
2	1 R Dosimeters
4	Caution Envelopes with Bag of assorted signs and barrier rope.

**Emergency Kits**  
**TSC, OSC, ALT OSC, AND LEOF**

NOTE: Each list shall contain at least the following items:

<u>Quantity</u>	<u>Description</u>
2	Full-face Respirators, e.g., Ultravue or equivalent
2	Pair Rubber Boots
2	Boxes Smears
1	Dosimeter Charger
1	Package Cotton Inserts
5	Pairs of Rubber Gloves
2	Hoods
2	Sets of PCs
1	E520 with 177 (or equal)
1	RM-14 with 210 (or equal)
2	Flashlights
2 Sets	Replacement Batteries for flashlight



APPENDIX

10.6  
(DELETED)

APPENDIX

10.7  
SUPPORTING PLAN CONTACT

## SUPPORTING PLAN CONTACT

<u>ORGANIZATION</u>	<u>CONTACT</u>
Virginia Power - Corporate Emergency Response Plan	Virginia Power Nuclear Emergency Preparedness Department
State Plan	State Department of Emergency Services, Emergency Operations Center
Louisa County Plan	Sheriff's Dispatcher
Spotsylvania County Plan	Sheriff's Dispatcher
Orange County Plan	Sheriff's Dispatcher
Caroline County Plan	Sheriff's Dispatcher
Hanover County Plan	Sheriff's Dispatcher
Medical College of Virginia Plan	Hospital Superintendent
Department of Energy - FRMAP	Oak Ridge Operations

**APPENDIX**

**10.8**

**ESTIMATION OF EVACUATION TIMES**

(Maintained on file by Nuclear  
Emergency Preparedness Department.  
Available on request.)

**APPENDIX**

**10.9**

**MEDICAL COLLEGE OF VIRGINIA**

**RADIATION EMERGENCY PLAN**

**(Maintained on file by Nuclear  
Emergency Preparedness Department.  
Available on request.)**



APPENDIX

10.10

DEPARTMENT OF ENERGY

FEDERAL RADIOLOGICAL MONITORING AND ASSESSMENT PLAN (FRMAP)

(Maintained on file by Nuclear  
Emergency Preparedness Department.

Available on request.)

**APPENDIX 10.11**

**INITIATING CONDITIONS**

**EMERGENCY ACTION LEVELS**

NOTIFICATION OF UNUSUAL EVENT

CONDITION/APPLICABILITY

INDICATION

NOTE: The alpha-numeric designator, [A.N], preceding each condition/applicability below, indicates the Emergency Action Level designator used in EPIP-1.01, Attachment 1, for that particular item.

1. [A.9] Inability to reach required mode within technical specification limits

MODES 1, 2, 3 & 4

- Intentional reduction in power, load or temperature IAW T.S. Action Statement - HAS COMMENCED

AND

- T.S. Action Statement time limit for mode change - CANNOT BE MET

2. [A.10] Failure of a safety or relief valve to close after pressure reduction, which may affect the health and safety of the public

MODES 1, 2, 3, 4 & 5

- RCS
  - RCS pressure - LESS THAN 2000 psig

OR

NDT Protection System - IN SERVICE

AND

- Any indication after lift or actuation that Pressurizer Safety or PORV - REMAINS OPEN

AND

- Flow - UNISOLABLE

- Main Steam

- Excessive Steam Generator Safety, PORV or Decay Heat Release flow as indicated by rapid RCS cooldown rate

AND

- Main Steam pressure greater than 100 psi below setpoint of affected valve

NOTIFICATION OF UNUSUAL EVENT

CONDITION/APPLICABILITY

INDICATION

3. [A.11] Unplanned loss of most or all safety system annunciators for greater than 15 minutes

MODES 1, 2, 3 & 4

- Unplanned loss of most (>75%) or all annunciators on panels "A" to "K" for GREATER THAN 15 minutes

4. [A.12] Loss of communications capability

ALL MODES

- Station PBX phone system - FAILED

AND

- Station Gal-tronics system - FAILED

AND

- Station UHF radio system - FAILED

NOTIFICATION OF UNUSUAL EVENT

CONDITION/APPLICABILITY

INDICATION

5. [B.8] RCS leak rate requiring plant shutdown IAW T.S. 3.4.6.2 or 3.4.6.3

MODES 1, 2, 3, & 4

- Intentional reduction in power, load or temperature because the unit has entered an action statement or will exceed an LCO

AND

- Unidentified RCS leakage - greater than 1 gpm

OR

Identified leakage - greater than 10 gpm

OR

Controlled leakage to RCP Seals - greater than 30 gpm total

OR

Any pressure boundary leakage - EXISTS

6. [B.9] Primary to Secondary leakage - greater than 1 gpm

MODES 1, 2, 3, & 4

- Intentional reduction in power, load or temperature because the unit has entered an action statement or will exceed an LCO

AND

- Primary to Secondary leakage greater than 1 gpm

OR

N-16 monitor indicates primary to secondary leakage greater than T. S. allowable limits



NOTIFICATION OF UNUSUAL EVENT

<u>CONDITION/APPLICABILITY</u>	<u>INDICATION</u>
7. [C.11] Fuel clad damage indication MODES 1, 2, 3, & 4	<ul style="list-style-type: none"> <li>Intentional reduction in power, load or temperature IAW reactor coolant activity T.S. Action Statement - HAS COMMENCED</li> </ul> <p style="text-align: center;"><u>OR</u></p> <p>High range letdown radiation monitor, RM-CH-128 or RM-CH-228, increases to greater than <math>1 \times 10^5</math> cpm within 30 minutes and remains for at least 15 minutes</p>
8. [E.5] Effluent release greater than ODCM allowable limit ALL MODES	<p>a) Any of the following monitors indicate valid readings above the specified value for more than 1 hour:</p> <ul style="list-style-type: none"> <li>Clarifier Effluent, RM-LW-111, greater than <math>4.8 \times 10^4</math> cpm</li> <li>Discharge Canal, RM-SW-130 or RM-SW-230, greater than <math>5.00 \times 10^3</math> cpm</li> <li>Vent Vent A Kaman, RM-VG-179, greater than <math>1.83 \times 10^5</math> <math>\mu\text{Ci/sec}</math></li> <li>Vent Vent B Kaman, RM-VG-180, greater than <math>1.83 \times 10^5</math> <math>\mu\text{Ci/sec}</math></li> <li>Process Vent Kaman, RM-GW-178, greater than <math>2.0 \times 10^6</math> <math>\mu\text{Ci/sec}</math></li> </ul> <p style="text-align: center;"><u>OR</u></p> <p>b) HP assessment (sample results or dose projections) indicates greater than ODCM allowable limit</p>
9. [G.3] Major secondary line break MODES 1, 2, 3, & 4	Uncontrolled loss of secondary coolant - IN PROGRESS

NOTIFICATION OF UNUSUAL EVENT

CONDITION/APPLICABILITY

INDICATION

10. [H.5] Loss of offsite power or onsite AC power capability

ALL MODES

- Unit main generator and both emergency diesel generators out of service

OR

Loss of all 34.5 KV reserve station service buses

11. [I.3] Fire lasting greater than 10 minutes in Protected Area or Service Water Pump/Valve House

ALL MODES

Fire within the Protected Area or Service Water Pump/Valve House which is not under control within 10 minutes after Fire Brigade - DISPATCHED

12. [J.4] Security threat, unauthorized attempted entry, or attempted sabotage

ALL MODES

Security Shift Supervisor has recommended that the Operations Shift Supervisor declare a Notification of Unusual Event IAW applicable Security Contingency Plan Implementing Procedures

13. [K.10] Aircraft crash or unusual aircraft activity

ALL MODES

- Confirmed notification of aircraft crash within the site boundary

OR

Unusual aircraft activity in the vicinity of the site as determined by the Operations Shift Supervisor or the Security Shift Supervisor

14. [K.11] Train derailment within Protected Area

ALL MODES

Confirmed report of train derailment within Protected Area

15. [K.12] Explosion within Protected Area

ALL MODES

Confirmed report of unplanned explosion within Protected Area

NOTIFICATION OF UNUSUAL EVENT

CONDITION/APPLICABILITY

INDICATION

16. [K.13] Onsite or nearsite release of toxic or flammable liquids or gases

ALL MODES

Notification of unplanned release of toxic or flammable agents which may affect safety of station personnel or equipment

17. [K.14] Turbine rotating component failure with no casing penetration

MODES 1 & 2

Failure of turbine/generator rotating equipment resulting in immediate unit shutdown

18. [L.8] Earthquake detected

ALL MODES

Confirmed earthquake which activates the Event Alarm on the Strong Motion Accelerograph

19. [L.9] Tornado within Protected Area or Switchyard

ALL MODES

Tornado visually detected within Protected Area or Switchyard

20. [L.10] Hurricane force winds projected onsite within 12 hours

ALL MODES

- Confirmation by Air Quality/Meteorological Dept. that hurricane force winds (greater than 73 mph) projected onsite within 12 hours

21. [L.11] 50 year flood or low water level

ALL MODES

- Flood in the Lake Anna Reservoir with indicated level - greater than 254 feet MSL

OR

Low water level in the Lake Anna Reservoir with indicated level less than 247 feet MSL

NOTIFICATION OF UNUSUAL EVENT

CONDITION/APPLICABILITY

INDICATION

22. [M.4] Station conditions which warrant increased awareness of state and/or local authorities

ALL MODES

Shift Supervisor judgement that any of the following exist:

- Unit shutdown is other than a controlled shutdown

OR

Unit is in an uncontrolled condition during operation

OR

A condition exists which has the potential for escalation and therefore warrants notification

ALERT

CONDITION/APPLICABILITY

INDICATION

1. [A.5] Total loss of function needed for unit CSD condition

MODES 5 & 6

- Secondary system cooling capability - UNAVAILABLE

AND

- Loss of any of the following systems:

- Service Water
- Component Cooling
- RHR

AND

- RCS temperature greater than 140° F.

2. [A.6] Failure of the Reactor Protection System to complete a trip which takes the Reactor Subcritical

MODES 1 & 2

- Reactor trip setpoint and coincidences - EXCEEDED

AND

- Automatic trip from RPS - FAILED

AND

- Manual trip - REQUIRED

AND

- Manual trip from Control Room - SUCCESSFUL



ALERT

CONDITION/APPLICABILITY

INDICATION

3. [A.7] Unplanned loss of safety system annunciators with compensatory indicators unavailable or a transient in progress

MODES 1, 2, 3 & 4

- Unplanned loss of most (>75%) or all annunciator alarms on panels "A" to "K" for GREATER THAN 15 minutes

AND

- All computer monitoring capability (e.g., plant computer, ERFCS) - NOT AVAILABLE

OR

Significant transient - INITIATED OR IN PROGRESS (e.g., reactor trip, SI, turbine runback > 25% thermal reactor power, thermal power oscillations > 10%)

4. [A.8] Evacuation of Main Control Room required

ALL MODES

Evacuation of the Control Room with shutdown control established within 15 minutes

5. [B.5] RCS leak rate limit - EXCEEDED

MODES 1, 2, 3, & 4

- Pressurizer level cannot be maintained greater than 20% with one (1) Charging/SI pump in operation

AND

- RCS inventory balance indicates leakage - greater than 50 gpm

6. [B.6] Gross primary to secondary leakage

MODES 1, 2, 3, & 4

- Steam Generator Tube Rupture - IN PROGRESS

AND

- Safety Injection - REQUIRED

ALERT

CONDITION/APPLICABILITY

INDICATION

7. [B.7] Excessive primary to secondary leakage with loss of offsite power

MODES 1, 2, 3, & 4

- Intentional reduction in power, load or temperature because the unit has entered an Action Statement or will exceed an LCO

AND

- Vent Vent A Kaman Monitor, RM-VG-179, greater than  $1.83 \times 10^6 \mu\text{Ci/sec}$

OR

Steam Generator Blowdown monitor on affected pathway indicates greater than  $1 \times 10^5 \text{ cpm}$

Monitor designations:

RM-SS-122  
RM-SS-123  
RM-SS-124  
RM-SS-222  
RM-SS-223  
RM-SS-224

AND

- A subsequent loss of offsite power indicated by zero volts on voltmeters for 4160V buses D, E, & F.

8. [C.8] Severe Fuel Clad Damage

MODES 1, 2, 3, & 4

- RCS specific activity greater than 300.0  $\mu\text{Ci/gram}$  dose equivalent I-131

OR

High Range Letdown radiation monitor, RM-CH-128 or RM-CH-228, increases to greater than  $1 \times 10^6 \text{ cpm}$  within 30 minutes and remains for at least 15 minutes

ALERT

CONDITION/APPLICABILITY

INDICATION

9. [C.9] Fuel damage accident with release of radioactivity to containment or fuel buildings

ALL MODES

- Verified accident involving damage to irradiated fuel

AND

- Health Physics confirms fission product release from fuel

OR

Vent Vent "B" Kaman monitor, RM-VG-180, greater than  $1.83 \times 10^6 \mu\text{Ci/sec}$

10. [C.10] Potential for fuel damage to occur during refueling

MODE 6

Continuing uncontrolled decrease of water level in Reactor Refueling Cavity or Spent Fuel Pool

11. [D.3] High Containment radiation, pressure and temperature

MODES 1, 2, 3, & 4

- Containment High Range radiation monitor, RM-RMS-165, -166 or RM-RMS-265, -266 greater than 81.5 R/hr

AND

- Containment pressure - greater than 17 psia

OR

Containment temperature - greater than 150°F

ALERT

CONDITION/APPLICABILITY

INDICATION

12. [E.3] Effluent release greater than 10 times ODCM allowable limit

ALL MODES

- a) Any of the following monitors indicate valid readings above the specified values for greater than 15 minutes

- Clarifier Effluent, RM-LW-111, greater than  $4.8 \times 10^5$  cpm
- Discharge Canal, RM-SW-130 or RM-SW-230, greater than  $5.00 \times 10^4$  cpm
- Vent Vent A Kaman, RM-VG-179, greater than  $1.83 \times 10^6$   $\mu\text{Ci/sec}$
- Vent Vent B Kaman, RM-VG-180, greater than  $1.83 \times 10^6$   $\mu\text{Ci/sec}$
- Process Vent Kaman, RM-GW-178, greater than  $2.0 \times 10^7$   $\mu\text{Ci/sec}$

OR

- b) HP assessment (sample results or dose projections) indicate greater than 10 times ODCM allowable limit

13. [E.4] High radiation or airborne contamination levels indicate a severe degradation in control of radioactive material

ALL MODES

Valid readings on any of the following monitors have increased by a factor of 1000 and remain for at least 15 minutes:

- Ventilation Vent Multi-sample gaseous monitor, RM-VG-106, or particulate monitor, RM-VG-105
- Control Room Area, RMS-157
- Auxiliary Building Control Area, RMS-154
- Decontamination Building Area, RMS-151
- Fuel Pool Bridge Area, RMS-153
- New fuel storage Area, RMS-152
- Laboratory Area, RMS-158
- Sample Room Area, RMS-156

ALERT

CONDITION/APPLICABILITY

14. [G.2] Major secondary line break with significant primary to secondary leakage

MODES 1, 2, 3, & 4

INDICATION

- Uncontrolled loss of secondary coolant  
- IN PROGRESS

AND

- Vent Vent A Kaman Monitor,  
RM-VG-179, greater than  
 $1.83 \times 10^6 \mu\text{Ci/sec}$

OR

Steam Generator Blowdown monitor on affected pathway indicates greater than  $1 \times 10^5$  cpm

Monitor designations:

RM-SS-122  
RM-SS-123  
RM-SS-124  
RM-SS-222  
RM-SS-223  
RM-SS-224

OR

Main Steam Line High Range radiation monitor on affected pathway indicates greater than 0.14 mR/hr

Monitor designations:

RM-MS-170  
RM-MS-171  
RM-MS-172  
RM-MS-270  
RM-MS-271  
RM-MS-272



ALERT

CONDITION/APPLICABILITY

INDICATION

15. [H.3] Loss of all offsite and onsite AC power

ALL MODES

- Ammeters for 4160V Reserve Station Service Buses D, E, & F all indicate - zero (0) amps

AND

- Ammeters for 4160V Station Service Buses A, B, & C all indicate - zero (0) amps

AND

- Ammeters for 4160V Emergency Buses H and J both indicate - zero (0) amps

16. [H.4] Loss of all onsite DC power

ALL MODES

- All station battery voltmeters indicate - zero (0) volts

AND

- No light indication available to Reserve Station Service Breakers 15D1, 15E1 and 15F1

17. [I.2] Fire potentially affecting station safety systems

MODES 1, 2, 3, & 4

Fire which has potential for causing a safety system not to be operable as defined by Tech. Specs.

18. [J.3] Ongoing Security compromise

ALL MODES

Security Shift Supervisor has notified the Operations Shift Supervisor of a confirmed unneutralized intrusion into the Protected Area

19. [K.5] Aircraft crash on the facility

ALL MODES

Aircraft crash within the Protected Area or Switchyard

20. [K.6] Explosion damage to facility

ALL MODES

Unplanned explosion resulting in damage to plant structure or equipment that affects plant operations

ALERT

<u>CONDITION/APPLICABILITY</u>	<u>INDICATION</u>
21. [K.7] Entry of toxic or flammable gases or liquids into plant facility  ALL MODES	Notification of uncontrolled release of toxic or flammable agent which causes: <ul style="list-style-type: none"> <li>• Evacuation of personnel from plant areas</li> </ul> <p style="text-align: center;"><u>AND</u></p> <ul style="list-style-type: none"> <li>• Safety related equipment is rendered inoperable</li> </ul>
22. [K.8] Turbine failure or missile impact  MODES 1 & 2	Failure of turbine/generator rotating equipment resulting in casing penetration
23. [K.9] Missile damage to safety related equipment or structures  MODES 1, 2, 3, & 4	Notification of missile impact causing damage to safety related equipment or structures
24. [L.4] Earthquake greater than or equal to OBE levels  ALL MODES	<ul style="list-style-type: none"> <li>• Confirmed earthquake which activates Event Alarm on the Strong Motion Accelerograph</li> </ul> <p style="text-align: center;"><u>AND</u></p> <ul style="list-style-type: none"> <li>• Alarms on the Peak Shock Annunciator indicate a horizontal motion of greater than or equal to 0.06 g or a vertical motion of greater than or equal to 0.04g</li> </ul>
25. [L.5] Tornado striking facility  ALL MODES	Tornado visually detected striking structures within the Protected Area or Switchyard
26. [L.6] Hurricane force winds projected onsite within 6 hours  ALL MODES	<ul style="list-style-type: none"> <li>• Confirmation by Air Quality/Meteorological Dept. that hurricane force winds (greater than 73 mph) projected onsite within 6 hours</li> </ul>

ALERT

CONDITION/APPLICABILITY

INDICATION

27. [L.7] Flood or low water level near design levels

ALL MODES

- Flood in the Lake Anna Reservoir with indicated level - greater than 263 feet MSL

OR

Low water level in the Lake Anna Reservoir with indicated level - less than 245 feet MSL

28. [M.3] Station conditions which have the potential to degrade or are actually degrading the level of safety of the station

ALL MODES

Shift Supervisor/Station Emergency Manager judgement

SITE AREA EMERGENCY

CONDITION/APPLICABILITY

INDICATION

1. [A.1] Loss of function needed for unit HSD condition

MODES 1, 2, 3, & 4

- Total loss of the Charging/SI System

OR

Total loss of the Main Feedwater and Auxiliary Feedwater systems

2. [A.2] Failure of the Reactor Protection System to initiate and complete a required trip while at power

MODES 1 & 2

- Reactor trip setpoint and coincidences - EXCEEDED

AND

- Automatic trip from RPS - FAILED

AND

- Manual trip from Control Room - FAILED

3. [A.3] Inability to monitor a significant transient in progress

MODES 1, 2, 3 & 4

- Most (>75%) or all annunciator alarms on panels "A" to "K" - NOT AVAILABLE

AND

- All computer monitoring capability (e.g., plant computer, ERFCS) - NOT AVAILABLE

AND

- Significant transient - IN PROGRESS (e.g., reactor trip, SI actuation, turbine runback >25% thermal reactor power, thermal power oscillations >10%)

AND

- Inability to directly monitor any one of the following using Control Room indications:

- Subcriticality
- Core Cooling
- Heat Sink
- Vessel Integrity
- Containment Integrity

SITE AREA EMERGENCY

CONDITION/APPLICABILITY

INDICATION

4. [A.4] Evacuation of Main Control Room with control not established within 15 minutes

Evacuation of the Control Room with local shutdown control not established within 15 minutes

ALL MODES

5. [B.3] RCS leak rate limit - EXCEEDED  
MODES 1, 2, 3, & 4

- Loss of Reactor Coolant in progress and inventory balance indicates leakage - GREATER THAN 300 gpm

AND

- Pressurizer level cannot be maintained with two (2) or more Charging/SI pumps in operation

6. [B.4] Gross primary to secondary leakage with loss of offsite power

- Steam Generator Tube Rupture - IN PROGRESS

MODES 1, 2, 3, & 4

AND

- Safety Injection - REQUIRED

AND

- Vent Vent A Kaman Monitor, RM-VG-179, greater than  $1.3 \times 10^6 \mu\text{Ci/sec}$

OR

Steam Generator Blowdown monitor on affected pathway indicates greater than  $1 \times 10^6$  cpm

Monitor designation:

RM-SS-122  
RM-SS-123  
RM-SS-124  
RM-SS-222  
RM-SS-223  
RM-SS-224

AND

- A subsequent loss of offsite power indicated by zero volts on voltmeters for 4160V buses D, E, & F



SITE AREA EMERGENCY

CONDITION/APPLICABILITY

INDICATION

7. [C.6] Core damage with possible loss of coolable geometry

MODES 1, 2, 3, & 4

- a) Fuel clad failure as indicated by any of the following:

- RCS Specific activity greater than  $60 \mu\text{Ci}/\text{gram}$  dose equivalent I-131

OR

High Range Latdown monitor, RM-CH-128 or RM-CH-228, indication greater than  $1 \times 10^6$  cpm

AND

- b) Loss of cooling as indicated by any of the following:

- 5 confirmed core exit thermocouples greater than  $1200^\circ\text{F}$

OR

Core delta T - zero

OR

Core delta T - rapidly diverging

8. [C.7] Major fuel damage accident with radioactivity release to containment or fuel buildings

ALL MODES

- Water level in Rx vessel during refueling below the top of core

OR

Water level in spent fuel pool below top of spent fuel

AND

- Verified damage to irradiated fuel resulting in readings on Vent Vent "B" Kaman monitor, RM-VG-180, greater than  $2.74 \times 10^5 \mu\text{Ci}/\text{sec}$

SITE AREA EMERGENCY

CONDITION/APPLICABILITY

INDICATION

9. [D.2] High-high containment radiation, pressure, and temperature

MODES 1, 2, 3, & 4

- Containment High Range radiation monitor, RM-RMS-165, -166 or RM-RMS-265, -266 greater than  $1.88 \times 10^2$  R/hr

AND

- Containment pressure - greater than 27.75 psia and not decreasing

OR

Containment temperature - greater than 200°F

10. [E.2] Release imminent or in progress and site boundary doses projected to exceed 0.1 Rem TEDE or 0.5 Rem Thyroid CDE

ALL MODES

- HP assessment indicates actual or projected dose at or beyond Site Boundary exceeds 0.1 Rem TEDE or 0.5 Rem Thyroid CDE

SITE AREA EMERGENCY

CONDITION/APPLICABILITY

11. [G.1] Major secondary line break with significant primary to secondary leakage and fuel damage indicated

MODES 1, 2, 3, & 4

INDICATION

Conditions a) and b) exist with c):

- a) Uncontrolled loss of secondary coolant  
- IN PROGRESS

AND

- b) RCS specific activity exceeds limits of T.S. Figure 3.4-1

OR

Letdown High Range, RM-CH-128 or RM-CH-228, greater than  $1 \times 10^5$  cpm

AND

- c) Vent Vent A Kaman Monitor, RM-VG-179, greater than  $6.45 \times 10^7$   $\mu\text{Ci/sec}$

OR

Steam Generator Blowdown monitor on affected pathway indicates greater than  $1 \times 10^6$  cpm

Monitor designations:

RM-SS-122  
RM-SS-123  
RM-SS-124  
RM-SS-222  
RM-SS-223  
RM-SS-224

OR

Main Steam Line High Range monitor on affected pathway indicates greater than 12.2 mR/hr

Monitor designations:

RM-MS-170  
RM-MS-171  
RM-MS-172  
RM-MS-270  
RM-MS-271  
RM-MS-272

SITE AREA EMERGENCY

<u>CONDITION/APPLICABILITY</u>	<u>INDICATION</u>
<p>12. [H.1] Loss of offsite and onsite AC power for more than 15 minutes</p> <p>ALL MODES</p>	<p>The following conditions exist for greater than 15 minutes:</p> <ul style="list-style-type: none"> <li>Ammeters for 4160V Reserve Station Service Buses D, E, &amp; F all indicate - zero (0) amps</li> </ul> <p><u>AND</u></p> <ul style="list-style-type: none"> <li>Ammeters for 4160V Station Service Buses A, B, &amp; C all indicate - zero (0) amps</li> </ul> <p><u>AND</u></p> <ul style="list-style-type: none"> <li>Ammeters for 4160V Emergency Buses H &amp; J both indicate - zero (0) amps</li> </ul>
<p>13. [H.2] Loss of all onsite DC power for greater than 15 minutes</p> <p>ALL MODES</p>	<p>The following conditions exist for greater than 15 minutes:</p> <ul style="list-style-type: none"> <li>All station battery voltmeters indicate zero (0) volts</li> </ul> <p><u>AND</u></p> <ul style="list-style-type: none"> <li>No light indication available to Reserve Station Service breakers 15D1, 15E1 and 15F1</li> </ul>
<p>14. [I.1] Fire resulting in degradation of safety systems</p> <p>MODES 1, 2, 3, &amp; 4</p>	<ul style="list-style-type: none"> <li>Fire which causes major degradation of a safety system function required for protection of the public</li> </ul> <p><u>AND</u></p> <ul style="list-style-type: none"> <li>Affected systems are caused to be <u>NOT</u> operable as defined by Tech. Specs.</li> </ul>
<p>15. [J.2] Imminent loss of physical Station control</p> <p>ALL MODES</p>	<p>Security Shift Supervisor has notified the Operations Shift Supervisor of imminent intrusion into a Vital Area</p>
<p>16. [K.1] Aircraft damage to vital plant systems</p> <p>MODES 1, 2, 3, &amp; 4</p>	<p>Aircraft crash which affects vital structures by impact or fire</p>

# SITE AREA EMERGENCY

## CONDITION/APPLICABILITY

## INDICATION

17. [K.2] Severe explosive damage  
MODES 1, 2, 3, & 4

Explosion which results in severe degradation of any of the following systems required for safe shutdown:

- CVCS System

OR

ECCS System

OR

Main/Auxiliary Feedwater System

18. [K.3] Entry of toxic or flammable gases into plant vital areas other than the Control Room  
MODES 1, 2, 3, & 4

- Uncontrolled release of toxic or flammable agents greater than life threatening or explosive limits in Vital Areas

AND

- Evacuation of Vital Area other than Control Room - REQUIRED

OR

Significant degradation of plant safety systems resulting in loss of a safety system function required for protection of the public

19. [K.4] Severe missile damage to safety systems  
MODES 1, 2, 3, & 4

Missile impact causing severe degradation of safety systems required for unit shutdown

20. [L.1] Earthquake greater than or equal to DBE levels  
ALL MODES

- Confirmed earthquake which activates the Event Alarm on the Strong Motion Accelerograph

AND

- Alarms on the Peak Shock Annunciator indicate a horizontal motion of greater than or equal to 0.12 g or a vertical motion of greater than or equal to 0.08g



SITE AREA EMERGENCY

CONDITION/APPLICABILITY

INDICATION

21. [L.2] Extreme winds above Design Basis  
Conditions of 80 mph

Extreme winds confirmed which exceed UFSAR  
Section 3.3.1 conditions (80 mph)

ALL MODES

22. [L.3] Flood or low water level above  
design levels

- Flood in the Lake Anna Reservoir with  
indicated level - greater than 264 feet  
MSL

All MODES

OR

Low water level in the Lake Anna  
Reservoir with indicated level - less than  
244 feet MSL

23. [M.2] Station conditions which may  
warrant notification of the public near  
the site

Shift Supervisor/Station Emergency Manager  
judgement

ALL MODES

GENERAL EMERGENCY

CONDITION/APPLICABILITY

INDICATION

1. [B.1] Loss of 2 of 3 fission product barriers with potential loss of 3rd barrier

ALL MODES

Any two of a), b) or c) exist and the third is imminent:

- a) Fuel clad integrity failure as indicated by any of the following:

- RCS specific activity greater than or equal to 300.0  $\mu\text{Ci}/\text{gram}$  dose equivalent I-131

OR

5 or more core exit thermocouples greater than 1200°F

OR

Containment High Range Radiation Monitor, RM-RMS-165, -166 or RM-RMS-265, -266, greater than  $1.88 \times 10^2$  R/hr

- b) Loss of RCS integrity as indicated by any of the following:

- RCS pressure greater than 2735 psig

OR

Loss of Reactor Coolant in progress

- c) Loss of containment integrity as indicated by any of the following:

- Containment pressure greater than 60 psia and not decreasing

OR

Release path to environment - EXISTS

GENERAL EMERGENCY

CONDITION/APPLICABILITY

INDICATION

2. [B.2] Fuel failure with steam generator tube rupture

ALL MODECS

Any two of a), b) or c) exists and the third is imminent:

- a) Fuel clad integrity failure as indicated by any of the following:

- RCS specific activity greater than  $300 \mu\text{Ci}/\text{gram}$  dose equivalent I-131

OR

5 or more core exit thermocouples greater than  $1200^{\circ}\text{F}$

OR

High Range Letdown monitor, RM-CH-128 or RM-CH-228, indication greater than  $1 \times 10^6$  cpm

- b) Steam Generator tube rupture as indicated by both of the following:

- SI coincidence - SATISFIED

AND

- Steam Generator tube rupture - IN PROGRESS

- c) Loss of secondary integrity associated with ruptured steam generator pathway as indicated by any of the following:

- Steam Generator PORV - open

OR

Main Steam Code Safety Valve - open

OR

Loss of secondary coolant outside containment in progress

GENERAL EMERGENCY

CONDITION/APPLICABILITY

INDICATION

3. [C.1] Probable large radioactivity release initiated by LOCA with ECCS failure leading to core degradation

ALL MODES

- Loss of reactor coolant in progress

AND

- RCS specific activity - greater than 300  $\mu\text{Ci}/\text{gram}$  dose equivalent I-131

OR

Containment High Range Radiation Monitor, RM-RMS-165, -166 or RM-RMS-265, -266, greater than  $1.88 \times 10^2$  R/hr

AND

- High or low head ECCS flow not being delivered to the core (if expected by plant conditions)

4. [C.2] Probable large radioactivity release initiated by loss of heat sink leading to core degradation

MODES 1, 2, 3 & 4

Loss of Main Feedwater system and Condensate System and Auxiliary Feedwater System

5. [C.3] Probable large radioactivity release initiated by failure of protection system to bring Rx subcritical and causing core degradation

ALL MODES

- Rx nuclear power after a trip - greater than 5%

AND

- RCS pressure greater than or equal to 2485 psig

OR

Containment pressure and temperature rapidly increasing

GENERAL EMERGENCY

CONDITION/APPLICABILITY

INDICATION

6. [C.4] Probable large radioactivity release initiated by loss of AC power and all feedwater

ALL MODES

- Loss of all onsite and offsite AC power

AND

- Turbine Driven Auxiliary Feedwater Pump not operable

AND

- Restoration of either of the above not likely within 2 hours

7. [C.5] Probable large radioactivity release initiated by LOCA with loss of ECCS and containment cooling

ALL MODES

- Loss of reactor coolant in progress

AND

- High or low head ECCS flow not being delivered to the core (if expected by plant conditions)

AND

- Containment RS sump temperature greater than 190°F and NOT decreasing

OR

All Quench Spray and Recirculation Spray systems - NOT OPERABLE

8. [D.1] Extremely high containment radiation, pressure and temperature

MODES 1, 2, 3, & 4

- Containment high range radiation monitor, RM-RMS-165, -166 or RM-RMS-265, -266 indicates greater than  $3.76 \times 10^2$  R/hr

AND

- Containment pressure greater than 45 psia and not decreasing

OR

Containment temperature greater than 280°F



GENERAL EMERGENCY

CONDITION/APPLICABILITY

INDICATION

9. [E.1] Release imminent or in progress and site boundary doses projected to exceed 1.0 Rem TEDE or 5.0 Rem Thyroid CDE

ALL MODES

- HP assessment indicates actual or projected doses at or beyond site boundary greater than 1.0 Rem TEDE or 5.0 Rem Thyroid CDE

10. [J.1] Loss of physical Station control

ALL MODES

- Shift Supervisor has been informed that the security force has been neutralized by attack, resulting in loss of physical control of station

OR

Shift Supervisor has been informed of intrusion into one or more Vital Areas which are occupied or controlled by an aggressor

11. [M.1] Any major internal or external events which singly or in combination cause massive damage to station facilities or may warrant evacuation of the public

ALL MODES

Shift Supervisor/Station Emergency Manager judgement