



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

SEP 06 1990

Report Nos.: 50-338/90-20 and 50-339/90-20

Licensee: Virginia Electric and Power Company
Glen Allen, VA 23060

Docket Nos.: 50-338 and 50-339

License Nos.: NPF-4 and NPF-7

Facility Name: North Anna 1 and 2

Inspection Conducted: August 6-10, 1990

Inspector: W. M. Sartor, Jr.
W. M. Sartor, Jr., Team Leader

9/4/90
Date Signed

Team Members: A. Gooden
L. King
F. McManus (PNL)
W. Rankin

Approved by: W. H. Rankin
W. H. Rankin, Chief
Emergency Preparedness Section
Emergency Preparedness and Radiological
Protection Branch
Division of Radiation Safety and Safeguards

9/5/90
Dated Signed

SUMMARY

Scope:

This routine, announced inspection involved the observation and evaluation of the annual emergency preparedness exercise. Emergency organization activation and response were selectively observed in the Control Room Simulator, Technical Support Center (TSC), Operational Support Center (OSC), and Local Emergency Operations Facility (LEOF). The inspection also included a review of the exercise scenario and observation of the licensee's post exercise critique. The plume pathway exercise on August 8, 1990, was conducted from 8:45 a.m. to 4:00 p.m. with full participation by State and local governments. Day 2 of the exercise was an ingestion pathway exercise evaluated by FEMA.

Results:

In the areas inspected, violations or deviations were not identified.

Exercise strengths included the licensee's challenging and detailed scenario coupled with an emergency response facility lead controller communications loop that provided excellent exercise control. Licensee performance as observed was timely and sufficient to mitigate offsite consequences of the simulated accident.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *C. Anderson, Emergency Preparedness Specialist
- *M. Bowling, Assistant Station Manager
- *J. Collins, Director, Emergency Planning
- *J. Costello, Surry Station Coordinator, Emergency Planning
- *E. Dreyer, Supervisor, Radiological Protection
- *L. Edmonds, Superintendent, Nuclear Training
- *E. Hallermann, Health Physicist
- *E. Harrell, Vice President, Nuclear Operations
- *S. Harrison, Senior Emergency Planner
- *W. Hartley, Nuclear Oversight Board
- *J. Higgins, Director, Nuclear Security
- *H. Johnson, Manager, Security
- *L. Jones, Supervisor, Health Physics
- *G. Kane, Station Manager
- *P. Kemp, Supervisor, Licensing
- *J. Leberstien, Senior Engineer, Licensing
- *J. Lusher, Station Coordinator, Emergency Planning
- *T. Maddy, Supervisor, Security
- *J. Maciejewski, Manager, Quality Assurance
- *W. Madison, Staff Emergency Planner
- *B. McBride, Coordinator, Emergency Planning
- *J. O'Hanlon, Vice President, Nuclear Services
- *W. Renz, Emergency Preparedness Specialist
- *S. Sowder, Secretary to Manager, Security
- *A. Stafford, Superintendent, Radiological Protection
- *R. Thomasson, Corporate Health Physicist

Other licensee employees contacted during this inspection included engineers, operators, mechanics, security force members, technicians, and administrative personnel.

NRC Resident Inspector

*M. Lesser, Senior Resident Inspector

*Attended exit interview

2. Exercise Scenario (82302)

The scenario for the emergency exercise was reviewed to determine that provisions had been made to test the integrated capability and a major portion of the basic elements existing within the licensee, State, and local Emergency Plans and organization as required by 10 CFR 50.47(b)(14),

10 CFR 50, Appendix E, Paragraph IV.F, and specific criteria in NUREG-0654, Section II.N.

The scenario was reviewed in advance of the scheduled exercise date and was discussed with licensee representatives.

The scenario developed for this exercise was adequate to fully exercise the onsite and offsite emergency organizations of the licensee and provided sufficient emergency information to the State and local government agencies for their full participation in the exercise. The exercise scenario was detailed and had been reviewed on three separate occasions to identify and correct any data that was inconsistent. In addition to having a scenario with well coordinated data, the licensee had also established an excellent process to ensure the scenario events continued to be coordinated after the exercise began by having a lead controller in each of the emergency response facilities (ERFs) on a telephone loop over which all events were coordinated. This proved extremely beneficial with the licensee's first use of the simulator for a graded exercise as the results from actions taken by operators in the Control Room Simulator were immediately made known to the lead controllers in the other ERFs. This contributed to the consistent and coordinated exercise control that was characteristic of this exercise.

No violations or deviations were identified.

3. Assignment of Responsibility (82301)

This area was observed to determine that primary responsibilities for emergency response by the licensee have been specifically established and that adequate staff was available to respond to an emergency as required by 10 CFR 50.47(b)(1), 10 CFR 50, Appendix E, Paragraph IV.A, and specified criteria in NUREG-0654, Section II.A.

Section 5.0 of the North Anna Emergency Plan specifies that the Shift Supervisor or Assistant Shift Supervisor initially act in the capacity of the Station Emergency Manager and take action as outlined in the Emergency Plan Implementing Procedures (EPIPs) until properly relieved. The inspectors observed that the Shift Supervisor promptly declared the Notification of Unusual Event and assumed the responsibilities of the Station Emergency Manager. The initial response organization was augmented by designated personnel and there were adequate staff to respond to the simulated emergency.

No violations or deviations were identified.

4. Onsite Emergency Organization (82301)

The licensee's on-shift emergency organization was observed to determine that the responsibilities for emergency response were unambiguously defined, that adequate staffing was provided to insure initial facility accident response in key functional areas at all times, and that the

interfaces were specified as required by 10 CFR 50.47(b)(2), 10 CFR 50, Appendix E, Paragraph IV.A, and specific criteria in NUREG-0654, Section II.B.

The inspector observed that the initial on-shift emergency organization was well defined and the responsibility and authority for directing actions necessary to respond to the emergency were clear. Section 5.2 of the North Anna Emergency Plan clearly delineated the onsite emergency organization prior to augmentation by additional emergency response personnel.

Following an Alert declaration, the on-shift emergency organization was augmented with the activations of the Technical Support Center (TSC), Operational Support Center (OSC), and the Local Emergency Operations Facility (LEOF). The licensee was able to initially activate the above emergency response facilities in approximately thirty minutes.

No violations or deviations were identified.

5. Emergency Classification System (82301)

This area was observed to determine that a standard emergency classification and action level scheme was in use by the nuclear facility licensee as required by 10 CFR 50.47(b)(4), 10 CFR 50, Appendix E, Paragraph IV.C, and specific criteria in NUREG-0654, Section II.D.

An inspector observed that the emergency classification system was in effect as stated in the North Anna Emergency Plan and EPIP-1.01, Emergency Action Level Table, which provided for off-normal events to be classified into one of the four emergency classification levels. The procedure was effectively used by the Station Emergency Manager (SEM) in the Control Room Simulator to classify the Notification of Unusual Event and the Alert, and by the SEM in the TSC to classify the Site Area Emergency and General Emergency.

No violations or deviations were identified.

6. Notification Methods and Procedures (82301)

This area was observed to assure that procedures were established for notification of State and local response organizations and emergency personnel by the license, and that the content of initial and followup messages to response organizations was established. This area was further observed to assure that means to provide early notification to the population within the plume exposure pathway were established pursuant to 10 CFR 50.47(b)(5), Paragraph IV.D of Appendix E to 10 CFR 50, and specific guidance promulgated in Section II.E of NUREG-0654.

An inspector observed that notification methods and procedures had been established in EPIP-2.01, Notification of State and Local Governments, and EPIP-2.02, Notification of NRC. All notifications were made promptly and

correctly with two minor exceptions. The first was an incorrect entry for the Alert declaration time on message #4 from the Simulator Control Room and message #1 from the TSC. Although the Alert had been declared at 0939 (24-hr time), it had been recorded and transmitted as 1000 on the aforementioned messages until corrected by one of the agencies receiving the message #1 from the TSC. The other exception was that all offsite notifications for an initial emergency classification were well within the 15 minutes timeliness goal with the exception of the message for General Emergency which commenced at 14 minutes after the declaration. However, it was also noted that a decision to make more conservative Protective Action Recommendations (PARs) was made during the 14 minutes. Thus the PARs made with the General Emergency Classification message were the more conservative and therefore did not require a change in the PARs which could have been confusing. The inspector also noted that emergency sirens within the 10-mile emergency planning zones (EPZs) were maintained as a means to alert the public.

No violations or deviations were identified.

7. Emergency Communications (82301)

This area was observed to determine that provisions existed for prompt communications among principal response organizations and emergency personnel as required by 10 CFR 50.47(b)(6), 10 CFR 50, Appendix E, Paragraph IV.E, and specific criteria in NUREG-0654, Section II.F.

Communications among the licensee's ERFs and emergency organization and between the licensee's emergency response organization and offsite authorities were good. One equipment problem was observed in that the instaphone for making State/local notifications in the TSC was inoperable. The licensee used an alternate means to make the required notifications from the TSC, then the responsibility for State/local notifications was transferred to the LEOF.

No violations or deviations were identified.

8. Public Education and Information (82301)

This area was observed to determine that information concerning the simulated emergency was made available for dissemination to the public as required by 10 CFR 50.47(b)(7), 10 CFR 50, Appendix E, Paragraph IV.D, and specific criteria in NUREG-0654, Section II.G.

A news release was published by the Virginia Department of Emergency Services on July 31, 1990, giving an overview of the purpose of the exercise and the primary participants. Included was information on the siren system and the interval of time during which the sirens would be sounded to alert the public to tune to their local radio or television Emergency Broadcast System (EBS) stations for information on what to do in the event of an incident at the plant. The news release also contained

information on the Ingestion Pathway exercise that was conducted on the second day.

No violations or deviations were identified.

9. Emergency Facilities and Equipment (82301)

This area was observed to determine that adequate emergency facilities and equipment to support an emergency response were provided and maintained as required by 10 CFR 50.47(b)(8), 10 CFR 50, Appendix E, Paragraph IV.E, and specific criteria in NUREG-0654, Section 11.H.

The inspector observed the activation, staffing and operation of key emergency response facilities to include the Simulator Control Room, TSC, OSC, and LEOF.

- a. Simulator Control Room - An inspector observed that the Shift Supervisor demonstrated excellent command and control throughout the exercise and classifications and notifications were accomplished in a precise and timely manner. Both operators and supervisors demonstrated good use of normal, abnormal, and emergency procedures throughout the exercise. The communications equipment available in the Simulator was fully adequate with the exception of the audible alarms which had to be set off from the Control Room.
- b. Technical Support Center - The TSC was activated and staffed promptly upon notification by the SEM of the Alert classification. The inspector observed that the facility layout provided for a good interface between the SEM and his Emergency Directors. Strengths noted in the TSC included good command and control of the emergency organization which was enhanced by the periodic briefings regarding the incident status and on going mitigating actions. Status boards were maintained up-to-date throughout the exercise and the tracking and prioritization of damage control teams was displayed.
- c. Operational Support Center - The OSC was promptly staffed and activated following the Alert declaration. Because the exercise had been designed to be damage control intensive, some damage control teams were delayed awaiting personnel that were self contained breathing apparatus (SCBA) qualified.
- d. Local Emergency Operations Facility - The LEOF was promptly staffed and activated with qualified station personnel. An inspector noted that it was not readily apparent as to what emergency action level had been met to require the General Emergency declaration. The inspector noted the Recovery Manager provided good status updates on the changing scenario. The inspector also noted that the command and control of the two field monitoring teams was good. The teams were dispatched early from the site and were pre-positioned at logical projected plume path monitoring points. There was also good discipline in minimizing dose/plume stay time for the field

monitoring teams. It was noted that MIDAS cross validation of field readings with assumed accident/source term was good and that it meshed well with State data.

No violations or deviations were identified.

10. Accident Assessment (82301)

This area was observed to determine whether adequate methods, systems and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition were in use as required by 10 CFR 50.47(b)(9), 10 CFR 50, Appendix E, Paragraph IV.B, and specific criteria in NUREG-0654, Section II.I.

The accident assessment program included both an engineering assessment of plant status and an assessment of radiological hazards to both onsite and offsite personnel resulting from the accident. During the exercise, the engineering accident assessment team functioned effectively in analyzing the plant status so as to make recommendations to the Station Emergency Management concerning mitigating actions to reduce damage to plant equipment, to prevent release of radioactive materials and to terminate the emergency condition.

Onsite and offsite monitoring were effectively demonstrated as noted by observations in the onsite emergency response facilities and the LEOF as discussed in the above paragraph.

No violations or deviations were identified.

11. Protective Responses (82301)

This area was observed to determine that guidelines for protective actions during the emergency, consistent with Federal guidance, were developed and in place, and protective actions for emergency workers, including evacuation of nonessential personnel, were implemented promptly as required by 10 CFR 50.47(b)(10), and specific criteria in NUREG-0654, Section II.J.

An inspector verified that the licensee had and used emergency procedures for formulating PARs for offsite populations within the 10 mile EPZ. Protective actions were initiated for onsite emergency workers following the Alert declaration by conducting a personnel accountability of those personnel inside the protected area. The accountability was completed in 24 minutes. As discussed by the licensee prior to the exercise, an actual site evacuation was not included in the scope of this exercise.

No violations or deviations were identified.

12. Radiological Exposure Control (82301)

This area was observed to determine that means for controlling radiological exposures, in an emergency, are established and implemented for emergency workers and that they include exposure guidelines consistent with EPA recommendation as required by 10 CFR 50.47(b)(11), and specific criteria in NUREG-0654, Section II.K.

As inspector noted that radiological exposures were controlled throughout the exercise and periodic surveys were conducted in the ERFs. Exposure guidelines were in place for various categories of emergency actions and adequate protective clothing and respiratory protection were available and used as appropriate. EPIP-5.06 provided guidance for emergency radiation exposure authorization.

No violations or deviations were identified.

13. Recovery and Reentry Planning (82301)

This area was observed to determine that general plans were made for recovery and re-entry as required by 10 CFR 50.47(b)(13), 10 CFR 50, Appendix E, Paragraph IV.H. and specific criteria in NUREG-0654, Section II.M.

The licensee developed general plans and procedures for re-entry and recovery which addressed both existing and potential conditions. The plan contained the position/title, authority and responsibilities of each key individual in the recovery organization.

No violations or deviations were identified.

14. Exercise Critique (82301)

The licensee's critique of the emergency exercise was observed to determine whether shortcomings in the performance of the exercise were brought to the attention of management and documented for corrective action pursuant to 10 CFR 50.47(b)(14), 10 CFR 50, Appendix E, Paragraph IV.E, and specific criteria in NUREG-0654, Section II.N.

The licensee conducted facility critiques with the exercise players immediately following the exercise termination on the first day. Licensee controllers and observers conducted additional critiques prior to providing formal critique results to management on August 10, 1990. The critique was thorough and included a review of the objectives that had been established for demonstration during the exercise.

No violations or deviations were identified.

15. Action of Previous Inspection Findings (92701, 92702)

- a. (Closed) Inspector Followup Item (IFI) 50-338, 339/88-14-02: Evaluate validity of use of field monitoring data for calculating a source term and use of same in protective action decisions or in determining emergency classifications.

This finding addressed a change that was to be made with a revision to the RADMET computer code which is no longer used. The licensee now uses MIDAS.

- b. (Closed) IFI 50-338, 339/88-14-04: Modify RADMET model to provide dose projection estimates at future plume positions.

The licensee's new dose assessment model, MIDAS, provided for this as well as the fact that RADMET is no longer used closes this item.

- c. (Closed) Violation 50-338, 339/88-24-02: Failure to demonstrate the capability of meeting staffing requirements for emergency response team personnel.

The licensee has made significant changes to the methods for augmentation of staffing requirements for emergency response team personnel. For example, all thirty minute responders are now on shift to meet Table B-1 requirements and other responders needed for TSC, OSC, and LEOF staffing are on beepers. The licensee has conducted successful tests to insure minimal staffing requirements were met within required times.

- d. (Closed) Exercise Weakness 50-338, 339/89-25-01: Excessive prompting prevented demonstration of objectives.

No prompting was observed during this year's exercise. Exercise control had been greatly improved since last year.

- e. (Closed) Exercise Weakness 50-338, 339/89-25-02: Onsite and offsite monitoring not adequately demonstrated.

The licensee fully met exercise objectives to demonstrate the ability of Health Physics and Chemistry to conduct radiological monitoring activities and the ability to perform off-site dose assessment.

- f. (Closed) Exercise Weakness 50-338, 339/89-25-03: Onsite accountability not adequately demonstrated.

The licensee performed onsite accountability in 24 minutes.

16. Exit Interview

The inspection scope and results were summarized on August 10, 1990, with those persons indicated in Paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

17. Federal Evaluation Team Report

The report by the Federal Evaluation Team (Regional Assistance Committee and Federal Emergency Management Agency, Region 11 staff) concerning the activities of offsite agencies during the exercise will be forwarded by separate correspondence.

Attachment:
Exercise Scope, Objective,
and Time Line

**VIRGINIA POWER
NORTH ANNA POWER STATION
AUGUST 7 AND 8, 1990 EMERGENCY EXERCISE**

EXERCISE SCOPE

Virginia Electric and Power Company will demonstrate its ability to implement both the Corporate and North Anna Power Station Emergency Plans on August 7 and 8, 1990. The purpose of this exercise is to activate and evaluate major portions of the North Anna Emergency Plan, associated implementing procedures, selected portions of the Corporate Emergency Response Plan in accordance with 10CFR50.47(b) (14), and to support the implementation of state and local government emergency response plans as required by the Federal Emergency Management Agency.

This ingestion pathway exercise will be held in conjunction with emergency response demonstrations by the Commonwealth of Virginia and several local governments. The list of participants includes 19 state agencies, 31 local governments, 4 volunteer organizations, 2 federal agencies, 4 special facilities, the State of Maryland Emergency Management Agency, and Virginia Power. The exercise will demonstrate that those individuals and agencies assigned responsibilities in a radiological emergency are capable of providing the necessary protective measures to ensure the health and safety of the public in the event of an accident at North Anna Power Station.

The exercise will demonstrate responses to the four emergency classes established by NUREG-0654, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans Preparedness in Support of Nuclear Power Stations. A scenario will be prepared to accomplish a successive escalation through these emergency classes. Free play is encouraged and controllers will only interfere with participants' responses if the exercise lags behind schedule, if emergency response personnel take inappropriate actions to carry them to the next event, or if action is taken that would correct the expected simulated response earlier than scheduled by the scenario.

At no time will the exercise be permitted to interfere with the routine safe operation of the station. Station management may, at their discretion, suspend the exercise for any period of time necessary to ensure this goal.

Exercise participants will not have prior knowledge of the simulated incident or any parts thereof, with the exception of the exercise date.

**VIRGINIA POWER
NORTH ANNA POWER STATION
AUGUST 7 AND 8, 1990 EMERGENCY EXERCISE**

OBJECTIVES SUMMARY

The objectives of this exercise are to demonstrate by actual performance a number of key emergency preparedness functions as they relate to the North Anna Power Station Emergency Plan. The simulated accident will involve: emergency classification, notifications of company and off-site organizations, simulated actions to correct the emergency condition, and initiation of accident assessment and protective actions as necessary to cope with the event. The event will include a simulated off-site radiological release and ground deposition to support an ingestion pathway exercise.

The purpose of this exercise is to demonstrate the adequacy of the North Anna Power Station Emergency Plan, the Corporate Emergency Response Plan, and associated implementing procedures. Those emergency response functions which are impractical to demonstrate will be simulated.

The following objectives were developed to establish the scope of the August 7 and 8, 1990 North Anna Emergency Exercise. The objectives ensure that required events are included in the exercise scenario and establish evaluation criteria used by the controllers and observers.

**VIRGINIA POWER
NORTH ANNA POWER STATION
AUGUST 7 AND 8, 1990 EMERGENCY EXERCISE**

OBJECTIVES

1. Demonstrate the ability to activate the North Anna Power Station and Corporate Emergency Response Plans and appropriate implementing procedures.

North Anna Power Station and Corporate emergency response organizations will demonstrate this objective. Initial activation will occur in the Control Room Simulator.

All North Anna Power Station and Corporate Emergency Response Facilities (ERF) will be activated. As applicable to the events developed by the exercise scenario, each ERF staff will demonstrate functions described in the implementing procedures.

The following North Anna Power Station and Corporate facilities will be staffed by the Emergency Response Organization (ERO) for this exercise:

- (1) Control Room Simulator (CRS)
- (2) Technical Support Center (TSC)
- (3) Operational Support Center (OSC)
- (4) Local Emergency Operations Facility (LEOF)
- (5) Corporate Emergency Response Center (CERC)
- (6) Joint Public Information Center (JPIC)
- (7) Local Media Center (LMC)

Other ERO Groups participating in this exercise, but not responding to the above facilities, include Chemistry, Health Physics, Operations, and Security.

2. Demonstrate the ability to analyze station conditions, assess Emergency Action Level (EAL) parameters, and classify the emergency.

The CRS and TSC ERO will demonstrate this objective by initiation and use of EPIP-1.01 and appropriate operational procedures.

Status forms detailing radiological monitor and operational trend data will be issued at periodic intervals. The ability to acquire data using the Emergency Response Computer System (ERCS) or by back-up methods will be demonstrated in appropriate facilities.

3. Demonstrate the ability to assemble, dispatch, and control on-site emergency teams to perform response activities.

As appropriate, the CRS, TSC, and OSC staffs will demonstrate this objective by dispatching and controlling teams in response to scenario events within the Station Protected Area. Also, the ability to brief emergency teams and establish appropriate protective measures and communications will be demonstrated.

Prior to Emergency Response Facility activation, the CRS staff will demonstrate this objective by initiating applicable procedures. Following facility activation, the TSC and OSC staffs will demonstrate this objective by implementing EPIP-3.02, EPIP-3.03, and EPIP-5.08.

4. Demonstrate the ability to notify and mobilize the North Anna Power Station and Corporate Emergency Response Organization.

The CRS staff, Station Security, and Corporate Security will demonstrate this objective. Station ERO notification will be conducted in accordance with EPIP-3.01 and EPIP-5.09. Corporate Security will initiate ECP-5 for corporate ERO notification.

5. Demonstrate the ability to notify the state and local governments and the NRC within established time constraints.

The CRS, TSC, and LEOF ERO will demonstrate this objective by providing up-to-date information to federal, state, and local governments within required time limits.

a. State and Local Government Notification

Information for these notifications will be identified and recorded by an Emergency Communicator (EC) on EPIP-2.01, Attachment 1 (Report of Emergency to State and Local Governments), and Attachment 2 (Report of Radiological Conditions to the State). Upon approval by the Station Emergency Manager (SEM) or the Recovery Manager (RM), the EC will transmit the information to the state and/or local governments.

The start time for completing the 15-minute initial notification will commence when the SEM declares the emergency classification. Follow-up communications will be maintained using EPIP-2.01, Attachment 1, and will occur at about 30 minute intervals or as conditions change.

As conditions warrant, the ability to transmit Protective Action Recommendations (PARs) to the State will be demonstrated in accordance with EPIP-1.05 and appropriate notification procedures.

The EC will transmit the initial Report of Radiological Conditions (EPIP-2.02, Attachment 2) to the state

following data assimilation, recording, and approval. Follow-up notifications on radiological conditions will occur at about 30 minute intervals or as conditions change.

The SEM retains responsibility for state and local government notifications until the LEOF is activated. Following LEOF activation, responsibility for notification is transferred to the Recovery Manager (RM).

b. NRC Notification

Information for these notifications will be identified and recorded by the EC on EPIP-2.02, Attachment 1 (Initial Report of Emergency to the NRC), Attachment 2, (Supplemental Report of Emergency to the NRC), and EPIP-4.03, Attachment 3 (HPN Communications). Upon approval by the SEM, the ECs will transmit the information to the NRC.

The start time for completing the 1-hour initial notification commences when the SEM declares the emergency classification. The initial notification will be performed from the CRS. Following initial notification and unless directed otherwise, the EC will maintain continuous communications with NRC Operations to transmit plant condition changes. Communication dialogue highlights will be documented.

Responsibility for NRC Notifications in accordance with EPIP-2.02 will remain with the TSC ERO. Responsibility for Health Physics Network (HPN) communications will be transferred to the LEOF following activation of that facility.

6. Demonstrate the ability to conduct assembly and accountability of personnel within the Protected Area.

The CRS staff and Security will demonstrate this objective in accordance with EPIP-5.09 and EPIP-5.03. Also, to support the overall accountability process, the Assembly Area Leaders will perform area accountability in accordance with EPIP-5.03, Attachment 1 (Assembly Area Leader Instructions).

7. Demonstrate the ability to develop appropriate Off-site Protective Action Recommendations (PARs) based on assessment of plant conditions and off-site dose projections and/or measurements.

As appropriate, this objective will be demonstrated by the SEM from the CRS or TSC or by the RM in the LEOF. The CRS and TSC organizations will monitor plant conditions and perform off-site dose projections to support formulation of PARs. Responsibility for PAR development is transferred to the LEOF

following activation of that facility.

Radiological parameter data generated during the development of this scenario may be artificially elevated and may not represent the degree of fuel failure and radiological release commensurate with the plant dynamic events. This may be necessary to demonstrate this exercise objective.

8. Demonstrate the ability to assess conditions and implement appropriate protective measures for emergency response personnel, including site access control, contamination control, exposure control, use of protective devices and, as appropriate, the process for authorization of potassium iodide (KI) administration.

This objective will be demonstrated through an interface among the CRS, TSC, and OSC ERO in which the TSC staff will monitor and authorize protective measures for site access, contamination control, and exposure control.

The TSC organization, via the Radiation Protection Supervisor (RPS) located in the Health Physics area, will dispatch and direct monitoring teams within the bounds of the site property per EPIP-4.01 and EPIP-4.02 and associated procedures to assess radiological conditions. Protective measures appropriate for conditions will be developed and/or implemented for site emergency response personnel.

Security will implement access control measures in accordance with EPIP-5.09 and EPIP-5.04.

The OSC Staff and other site personnel will implement any necessary actions associated with protective equipment requirements and in-plant access control.

If necessary, in response to scenario events, the CRS and/or TSC and OSC staffs will demonstrate the process for requesting and authorizing exposure extensions, to include emergency exposure authorization in accordance with EPIP-4.01, EPIP-4.04, EPIP-5.06 and EPIP-5.08. Also, if necessary, the TSC staff will demonstrate the KI authorization process per EPIP-4.01 and EPIP-5.07.

If necessary, in response to scenario events, the TSC will demonstrate the planning and notification process for evacuating non-essential personnel in accordance with EPIP-4.07 and EPIP-5.05.

9. Demonstrate the ability to perform off-site dose assessment.

As appropriate, this objective will be demonstrated by CRS, TSC, and LEOF staffs. The ability to perform initial dose assessment will be demonstrated through the implementation of EPIP-4.01 and associated dose assessment procedures.

Field monitoring teams will be dispatched per EPIP-4.01, EPIP-4.02, and associated procedures to support the dose assessment effort. As appropriate, these teams will be directed by the RPS and/or the TSC and LEOF staffs.

10. As appropriate, demonstrate the ability of Health Physics and Chemistry to conduct radiological monitoring activities, including exposure rate surveys, sample collection, and sample analysis.

As required, radiological monitoring, sampling, and analysis for in-plant and/or on-site activities will be initiated in accordance with EPIP-4.02. Post Accident Sampling activities will be performed in accordance with EPIP-4.22 and EPIP-4.23. The field monitoring teams will perform radiological monitoring activities in accordance with EPIP-4.15 and EPIP-4.16.

Reactor coolant and/or containment samples may be obtained utilizing the High Radiation Sampling System (HRSS). Radiological data necessary to test response and monitoring capabilities will be provided by the controller during sample collection. Isotopic analysis data will be provided following demonstration of proper sample preparation and upon expiration of spectrum collection and analysis times.

11. Demonstrate the ability to effectively activate the emergency response facilities.

Activation of the TSC, OSC, LEOF, CERC, JPIC, and LMC will be demonstrated in accordance with the appropriate procedures.

12. Demonstrate that facility layout and equipment adequately support emergency response activities in each facility.

This objective will be demonstrated in the CRS, TSC, OSC, LEOF, CERC, JPIC, and LMC.

13. Demonstrate the ability to establish and maintain effective communications.

The CRS, TSC, OSC, LEOF, CERC, JPIC, LMC staffs, and Field Teams will demonstrate this objective.

Use of backup communications systems will be demonstrated only if primary systems fail.

14. Demonstrate the ability to maintain command and control of the emergency response effort.

The SEM will demonstrate on-site emergency response command and control from the CRS and TSC. The RM will demonstrate command and control of the emergency response effort associated with the LEOF upon activation of that facility.

The SEM will ensure personnel within the Protected Area are informed of emergency event status by the use of emergency alarms and the plant paging system (Gai-Tronics). Remaining site personnel will be notified by other verbal communication methods. All announcements will be preceded and terminated with the phrase: "This is a drill."

The CRS, TSC, and LEOF ERO will demonstrate the ability to transfer appropriate command and control functions.

- a. The CRS functions that will transfer to the TSC include:
 - (1) Notifications to the state, local governments, and NRC.
 - (2) Providing PARs to the state.
 - (3) Determining the emergency classification.
 - (4) Authorizing emergency exposures.
- b. The TSC functions that will transfer to the LEOF are:
 - (1) Notifications to the state and local governments and to the NRC via the HPN.
 - (2) Transmitting PARs to the state.

- 15. Demonstrate the ability to coordinate preparation, review, and release timely and accurate information to the public.

The CERC, JPIC, LEOF and LMC staffs will demonstrate this objective.

Press releases will be prepared and edited at the CERC and transmitted to the LEOF for technical review. Following approval by the RM and/or the Corporate Response Manager, the process for issuing press releases will be demonstrated.

The JPIC Director will be cognizant of all press releases and make them available to the media in the JPIC and LMC.

- 16. Demonstrate the ability to establish and operate rumor control functions.

Public Affairs will demonstrate this objective by establishing an emergency hotline in accordance with CPIP-2.1 and CPIP-2.3. Questions will be called into the Public Information Room requiring response.

- 17. Demonstrate the ability to provide continuous emergency response capability.

The ERO within the Emergency Response Facilities will demonstrate this objective by formulating a shift relief roster.

As appropriate, the ability to provide logistical support for

Emergency Response personnel may be demonstrated.

18. Demonstrate the ability to provide basic life support and to package and transport a contaminated injured person to an off-site medical facility.

This objective will be demonstrated by the First Aid Team implementing procedures appropriate for the victim's level of injury and by Radiological Protection employing the necessary radiological controls in accordance with EPIP-5.01 and EPIP-4.20 to remove the contaminated victim from the accident scene.

As necessary, Station Security will implement applicable sections of EPIP-5.09 to summon off-site support. An off-site rescue unit will demonstrate the ability to respond to the Station.

The contaminated injured person will be transported to an off-site medical facility which will demonstrate the ability to provide appropriate treatment.

19. Demonstrate the ability to establish a Recovery Organization and to develop and implement a Recovery Plan.

This objective will be demonstrated by the JEM and RM by implementing EPIP-6.01 and CPIP-6.5 to develop both a Recovery Organization and Plan to return the Plant to a normal status.

20. Demonstrate the ability to establish a support group to assist/advise the state with their recovery efforts.

This objective will be demonstrated by the RM and Recovery Organization in accordance with CPIP-6.5.

Total population exposure estimates will be provided to the state in accordance with North Anna Emergency Plan, section 9.2.

21. Demonstrate the ability of the Emergency Response Organization to conduct a self-critique and to identify areas for improvement.

The CRS, TSC, OSC, LEOF, CERC, JPIC, LMC, Security, Chemistry, Radiological Protection, Operations, and Field Monitoring Teams will conduct a self-critique to identify weaknesses and improvement items.

VIRGINIA POWER
NORTH ANNA POWER STATION
AUGUST 7 AND 8, 1990 EMERGENCY EXERCISE

TIME LINE

NOTE: TIMES ARE APPROXIMATE

TIME

EVENT

DAY 1

- 0800 - Controllers and observers positioned. Selected controllers perform necessary participant briefings (i.e., exemptions or message format).
- 0830 - Operations Department participants positioned in the Control Room Simulator and the Operator Assembly Area.
- Simulator run started.
- 1-AP-42, Loss of Prodac-250 Computer, being performed.
- 0845 - Earthquake detected. Annunciator 1A-B6 (EARTHQUAKE INSTRUMENT PANEL TROUBLE) is received.
- 1-AP-36, Seismic Event, is initiated.
- 0850 - First Aid emergency occurs at the 1-CH-P-1C cubicle (contaminated individual requiring transport).
- 0905 - NOTIFICATION OF UNUSUAL EVENT (Tab L-1) declared based on a confirmed earthquake which activates the Event Alarm on the Strong Motion Accelerograph.
- 0930 - Hathaway power supply failure results in loss of all unit 1 main board annunciators.
- 0950 - ALERT (Tab A-11) declared based on simultaneous loss of all annunciator alarms on panels "A" through "K" with loss of unit computer.
- 1045 - Reactor Coolant System leakage from the "B" loop accumulator loop penetration begins. The leakage increases linearly to 60 gpm within 30 minutes.
- 1055 - 1-AP-16, Increasing Primary Plant Leakage, is initiated.
- 1105 - 1-AP-5.1, Unit 1 Radiation Monitoring System, is initiated due to containment radiation levels increasing.
- 1-PT-52.2, RCS Leakrate, is initiated.
- 1109 - Letdown secured.

- 1115
 - Ramp down commenced due to high leak rate from the Reactor Coolant System.
 - 1-OP-2.2, Unit Power Operation Mode 1, to Mode 2, is initiated.
- 1135
 - **SITE AREA EMERGENCY** (Tab A-12) based on failed plant computer, loss of annunciators and an operational transient in progress.
 - Ramp down is continuing.
- 1200
 - 1-RC-P-1B vibration Alert alarm is received.
 - Loose parts indicated in the reactor vessel lower head.
- 1225
 - Reactor Coolant System "B" loop accumulator loop penetration ruptures.
 - Safety Injection, Containment Depressurization Actuation, and Containment Phase "A" and Phase "B" isolation occurs.
 - 1-E-0, Reactor Trip or Safety Injection is initiated.
- 1226
 - Containment pressure peaks at 49 psia.
 - The containment air ejector penetration breaches allowing partial release of the containment atmosphere into the Auxiliary Building.
 - Associated Radiation Monitors alarm.
- 1227
 - Unit 1 "J" Emergency Bus is lost due to an insulator shorting to ground.
 - 1-AP-10, Loss of Electrical Power, is initiated.
- 1228
 - 1-RS-P-1A trips after start due to a grounded motor.
 - 1-RS-P-2A starts and the pump shaft shears.
- 1229
 - Unit 1 Emergency Switchgear Room "Smoke" and "Trouble" alarms are received on the Fire Protection Panels.
- 1234
 - Source Range channels N31 and N32 energize.
- 1246
 - **GENERAL EMERGENCY** (Tab E-5) declared based on ventilation vent radiation monitor readings or projected site boundary doses.
- 1248
 - 1-FR-Z.1, Response to High Containment Pressure is initiated.
 - 1-FR-P.1, Response to Imminent Pressurized Thermal Shock, is initiated.
- 1413
 - Safety Injection automatically realigns from RWST to the containment sump.
- 1445
 - 1-RS-P-1B power is restored and the pump is started.
 - 1-RS-P-2B power is restored and the pump is started.

- 1500 - Containment pressure <14.7 psia and the release is terminated.
- 1700 - Terminate emergency on-site; commence area critiques.
- 1800 - Commence recovery planning phase.
- Establish Environmental Sampling Plan to determine off-site plume deposition footprint.
- 1900 - Terminate exercise on-site, commence recovery critique.
- 2000 - Terminate plume exposure exercise off-site.
- Participant break until Day 2.

DAY 2

- 0730 - Controllers and observers positioned.
- 0800 - Ingestion pathway exercise participants positioned.
- Controllers brief participants on plant and off-site conditions to simulate time advancement to the beginning of Day 3.
- Controllers provide participants the analysis results of the sample plan performed (simulated) on Day 2.
- 0930 - Revise Environmental Sampling Plan.
- Protective Actions recommended for ingestion pathway based on initial sample results.
- Ingestion pathway local governments respond in accordance with applicable plans.
- 1000 - Field sampling begins based on the revised Environmental Sampling Plan.
- 1100 - Environmental samples being analyzed by Consolidated Laboratory Services (CLS).
- 1230 - Field sampling completed.
- 1300 - CLS reports sample analysis results to the Bureau of Radiological Health Assessment Officer.
- "Hot Spots" discovered in evacuated/sheltered areas based on the revised sample plan.
- 1400 - Relocation begins for "Hot Spot" areas.
- Recovery begins off-site.
- 1500 - Selective Re-Entry begins in risk areas.
- 1600 - Recovery continues off-site.
- 1700 - Recovery terminates off-site, commence area critiques.
- 1800 - Exercise terminates off-site.