



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA STREET, N.W., SUITE 2900  
ATLANTA, GEORGIA 30323-0199

September 28, 1995

Report Nos.: 50-416/95-13

Licensee: Entergy Operations, Inc.  
Jackson, MS 39205

Docket No.: 50-416

License No.: NPF-29

Facility Name: Grand Gulf Nuclear Station

Inspection Conducted: September 11-15, 1995

Inspector: W. M. Sartor, Jr., Team Leader 9/21/95  
Date Signed

Accompanying Personnel: K. Clark, NRC Region II  
B. Haagensen, Consultant  
J. Kreh, NRC Region II  
A. McQueen, NRC Region IV

Approved by: K. P. Barr, Chief 9/26/95  
Date Signed  
Emergency Preparedness Section  
Radiological Protection and Emergency Preparedness Branch  
Division of Radiation Safety and Safeguards

SUMMARY

Scope:

This routine, announced inspection involved the observation and evaluation of the annual emergency preparedness exercise, conducted from 8:00 a.m. to 2:10 p.m. on September 13, 1995. Correlative offsite activities involving State and local emergency response organizations were evaluated by the Federal Emergency Management Agency. The onsite inspection focused on the adequacy of the licensee's emergency response program, the implementation of the Emergency Plan and procedures in response to the simulated emergency conditions, and the effectiveness of the emergency response training program as reflected by the players' performance during the exercise.

Results:

In the areas inspected, violations or deviations were not identified. The exercise demonstrated that the onsite emergency plans were adequate and that the licensee was capable of implementing them. An exercise strength was the licensee's self-evaluation/critique process which objectively identified, and presented to management, significant performance problems observed during the

exercise. These problems were in the areas of (1) formulation of offsite protective action recommendations and (2) evaluation of the source term and determination of offsite dose projections (details in Paragraph 14).

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

M. Beard, Shift Technical Advisor (Senior Reactor Operator)  
D. Bost, Director, Design Engineering  
E. Cresap, Supervisor, Operations Training  
D. Cupstid, Acting Manager, Performance and System Engineering  
L. Dale, Director, Plant Projects and Support  
W. Deck, Superintendent, Plant Security  
M. Dietrich, Manager, Nuclear Training  
J. Dimmette, Jr., Manager, Operations  
C. Dugger, Manager, Outage Management and Work Control  
D. Ellis, Senior Emergency Planner  
C. Hayes, Director, Quality  
R. Hutchinson, Vice President, Operations  
R. Meisner, Director, Nuclear Safety and Regulatory Affairs  
C. Morgan, Manager, Emergency Planning  
L. Moulder, Technical Coordinator, Maintenance  
D. Pace, General Manager, Plant Operations

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

#### Nuclear Regulatory Commission

J. Tedrow, Senior Resident Inspector

All individuals whose names are listed in Paragraph 1 attended the exit interview with the inspection team on September 15, 1995.

Abbreviations used throughout this report are defined in the last paragraph.

### 2. Exercise Scenario (82302)

The scenario for the emergency exercise was reviewed to determine whether 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 Part 50, Appendix E, Paragraph IV.F, and specific criteria in NUREG-0654, Section II.N.

The scenario was reviewed in advance of the exercise and was discussed with licensee representatives. The scenario developed for this exercise was adequate to drill the onsite and offsite emergency organizations of the licensee. The scenario also prompted a range of response activities

sufficient for local government agencies and the States of Mississippi and Louisiana to exercise the various facets of their respective emergency response plans during this full-participation exercise.

The inspector observed that the exercise controllers were knowledgeable and strived for the most part to maintain the established timeline of scenario events. However, the controllers failed to promptly intercede to prevent the SCR operators from taking mitigative actions that substantially deviated from the scenario timeline when free play was inappropriate. This led to confusion when plant events became decoupled from the radiological data, as illustrated by the following:

- ▶ The controllers did not prevent the ED from ordering the SCR operators to open the RPV head vents and shut the MSIVs. This action effectively terminated the release path into the turbine building. After the controllers realized the significance of the actions, they had to retract exercise events that had already occurred by directing the operators to reopen the MSIVs.
- ▶ The controllers did not prevent the operators from correctly venting containment after containment pressure exceeded 20 psi in accordance with EP-3. They did not recognize that the offsite data in the scenario did not support another release, and the vent path was actually (and correctly) established before controllers intervened to nullify these actions.
- ▶ Several onsite field teams reported plant radiological readings that were inconsistent with scenario data. In one case, they reported background radiation levels at the turbine building roll-up door (at 12:28 p.m.) when the actual reading should have been approximately 400 mR/hr. This caused additional confusion within the TSC with respect to determination of the release path and source term.

These matters were discussed in detail with cognizant licensee managers as an area for improvement.

No violations or deviations were identified.

### 3. Assignment of Responsibility (82301)

This area was observed to determine whether primary responsibilities for emergency response by the licensee had been specifically established and whether adequate staff was available to respond to an emergency as required by 10 CFR 50.47(b)(1) and 10 CFR Part 50, Appendix E, Paragraph IV.A.

The inspectors observed that specific assignments had been made for the licensee's ERO and that there was adequate staff available to respond to

the simulated emergency. The initial response organization was augmented by designated licensee representatives. The capability for long-term or continuous staffing of the ERO was discussed, and planning for relief was initiated at each of the ERFs.

No violations or deviations were identified.

4. Onsite Emergency Organization (82301)

The licensee's onsite emergency organization was observed to determine whether the responsibilities for emergency response were defined, whether adequate staffing was provided to insure initial facility accident response in key functional areas at all times, and whether the interfaces were specified as required by 10 CFR 50.47(b)(2) and 10 CFR Part 50, Appendix E, Paragraph IV.A.

The inspectors determined that the licensee's onsite emergency organization was well defined and was generally effective in dealing with the simulated emergency. Adequate staffing of the ERFs was provided for the initial accident response, and the interfaces between the onsite organization and offsite support agencies were adequate to ensure prompt notification and support from offsite agencies as required.

No violations or deviations were identified.

5. Emergency Response Support and Resources (82301)

This area was observed to determine whether arrangements for requesting and effectively using assistance resources were made, whether arrangements to accommodate State and local personnel in the EOF were adequate, and whether other organizations capable of augmenting the planned response were identified as required by 10 CFR 50.47(b)(2) and 10 CFR Part 50, Appendix E, Paragraph IV.A.

The licensee's Emergency Plan provided information regarding additional support and resources that may be called upon to assist in an emergency. The inspector observed that representatives of the States of Mississippi and Louisiana were readily accommodated at the EOF, and that arrangements for requesting offsite assistance resources were in place and demonstrated during the exercise.

No violations or deviations were identified.

6. Emergency Classification System (82301)

This area was observed to verify that a standard emergency classification and action level scheme was in use by the licensee as required by 10 CFR 50.47(b)(4) and Paragraph IV.C of Appendix E to 10 CFR Part 50.



Emergency Plan procedure 10-S-01-1, "Activation of Emergency Plan", provided for an off-normal event to be categorized (if the applicable criteria are met) as one of the four standard emergency classifications. The licensee's staff made emergency classifications during the exercise as follows:

- ▶ At 8:20 a.m., unidentified drywell leakage increased to a level exceeding 5 gpm. This condition met the criteria for a NOUE, which was declared at 8:26 a.m.
- ▶ The conditions for an Alert began at 9:00 a.m. when a fire was reported in the Division III switchgear room (although the initial report erroneously indicated the location as the Division III diesel generator room). At 9:03 a.m., an Alert was declared by the ED based on meeting the criteria of the EAL which addresses a fire defeating one electrical safety division.
- ▶ The conditions for a SAE began at about 10:00 a.m. with several events in rapid succession leading to a design-basis LOCA. At 10:05 a.m., the SAE was declared by the ED based upon an RCS leak exceeding makeup pump capacity.
- ▶ At 10:59 a.m., a GE was declared based upon a loss of RCS inventory with fuel damage and an offsite radiological release in progress.

The above conditions were all evaluated and classified appropriately and promptly in accordance with procedure 10-S-01-1.

No violations or deviations were identified.

#### 7. Notification Methods and Procedures (82301)

This area was observed to determine whether procedures had been established for notification by the licensee of State and local response organizations and emergency personnel; whether the content of initial and follow-up messages to response organizations had been established; and whether means to provide early notification to the populace within the plume exposure pathway EPZ had been established as required by 10 CFR 50.47(b)(5) and 10 CFR Part 50, Appendix E, Paragraph IV.D.

The inspector observed that notification methods and procedures had been established and were used to provide information concerning the simulated emergency to local agencies and the States of Mississippi and Louisiana. Notification messages contained the appropriate information and were timely, although some minor discrepancies occurred in this area (see Paragraph 8, below, for details).

No violations or deviations were identified.

## 8. Emergency Communications (82301)

This area was observed to determine whether provisions existed for prompt communications among principal response organizations and

emergency personnel as required by 10 CFR 50.47(b)(6); 10 CFR Part 50, Appendix F, Paragraph IV.E; and specific criteria in NUREG-0654, Section II.F.

Although communications systems worked properly during the exercise, the substance of the communications between the licensee's ERO and offsite authorities, as well as among the licensee's ERFs, was often of substandard quality. This was noted by the licensee's evaluation team as well as the inspectors. The licensee's critique process identified three categories of deficiencies in the area of communications. These will be tracked for follow-up and corrective action by the licensee under the following numbers and descriptions:

- ▶ QDR-0188-95: Miscommunication occurred between the REM (at the EOF) and the State of Mississippi, resulting in the failure to directly notify the State of pertinent data. Instead, the REM notified the State representative in the EOF. This led State personnel in Jackson to believe that they were not receiving timely information.
- ▶ QDR-0189-95: Various emergency notification problems, including offsite message numbering sequence, incomplete information, approval process errors, and discrepancies in PARs.
- ▶ QDR-0190-95: Lack of interfacility communications regarding potential release pathways, methods of release and possible consequences of release, and failure to discuss offsite consequences with the States of Mississippi and Louisiana.

See Paragraph 14 for further discussion of these issues.

In addition to the problems identified by the licensee in QDR-0189-95, an inspector observed that Emergency Notification Form message numbers 2, 3, and 8 contained information in the "INCIDENT DESCRIPTION/UPDATE/COMMENT" section which was excessively technical and/or used abbreviations that would not have been familiar to many State and local emergency response personnel. This is an area for potential improvement.

No violations or deviations were identified.

## 9. Public Education and Information (82301)

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

Information was provided to the media and the public in advance of the exercise. During the exercise, the ENMC was established in the auditorium adjacent to the Claiborne County Emergency Operations Center in Port Gibson, MS. Following the activation of the ENMC, the licensee issued press releases and conducted joint State and licensee news briefings. An inspector noted that the licensee failed to issue a press release in conjunction with the Alert declaration, although a release was made by the State of Mississippi. An area for improvement would be for the licensee to ensure that its Jackson headquarters public information office operates during an emergency until the ENMC is declared operational.

No violations or deviations were identified.

10. Emergency Facilities and Equipment (82301)

This area was observed to determine whether 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 Part 50, Appendix E, Paragraph IV.E; and specific criteria in NUREG-0654, Section II.H.

The inspectors observed the activation, staffing, and operation of selected ERFs and evaluated equipment provided for emergency use during the exercise.

- a. Simulator Control Room - An inspector observed that SCR personnel acted promptly to initiate emergency response to the simulated emergency. The Shift Superintendent assumed the responsibilities of ED on an interim basis and directed the site's response to the simulated emergency until relieved. Emergency procedures were readily available and used effectively. No equipment problems were observed.
- b. Technical Support Center - Staffing and activation of the TSC commenced promptly after the declaration of the Alert classification. The interim ED in the SCR provided an appropriate turnover briefing to the ED in the TSC. The facility and equipment in the TSC were effectively used by the ED and his staff throughout the exercise. The most significant problem in the TSC operation was that the TSC personnel did not know what questions to ask of the SCR in order to elicit data necessary for assessing the condition of the plant.
- c. Operations Support Center - The inspectors observed the activation and staffing, establishment of communications, briefing and dispatch of in-plant response teams, radiological controls, and operation of the facility. The OSC was activated in a timely manner, about 30 minutes after the declaration of the Alert. The activation appeared coordinated and efficient. The OSC was staffed with a sufficient number of individuals with the apparently appropriate expertise. The OSC was properly equipped



to perform its function. Communications with the SCR, TSC, and EOF were quickly established and appeared generally adequate. Radio contact was also established with the offsite monitoring team, and with in-plant response teams as they were formed and dispatched. Initial difficulties with radio channels were quickly overcome. These problems were also identified by licensee players and controllers in the facility after-exercise critique. The SCR, TSC, and EOF were kept informed of activities being implemented by the OSC. The OSC Director exercised good command and control and conducted briefings of his staff, as appropriate. A radiological control point was established on the floor of the maintenance shop concurrent with activation of the OSC, and was staffed and controlled throughout the exercise. OSC personnel exhibited good team work and coordination. A team status board was used to identify teams, team personnel, tasks, dispatch, and return. The team status board appeared adequately used and was updated in a timely manner. Teams were briefed prior to dispatch on tasks, known and assumed radiological conditions, and communications with the OSC. The location, task, and exposures of in-plant teams appeared adequately monitored.

- d. Emergency Operations Facility - Staffing of the EOF during this normal-hours exercise was unusually expeditious, with the facility declared operational by the OEC at 10:27 a.m., only 22 minutes after the SAE declaration which triggered the EOF activation process. The EOF provided adequate space and facilities for evaluating, coordinating, and directing the overall activities involved in coping with the radiological emergency. Except as previously noted in Paragraph 8, personnel were qualified and knowledgeable, and effectively implemented their respective functions.

No violations or deviations were identified.

#### 11. Accident Assessment (82301)

This area was observed to determine whether adequate methods, systems, and equipment of 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 Part 50, Appendix E, Paragraph IV.B; and specific criteria in NUREG-0654, Section II.I.

The accident assessment program included an engineering assessment of plant status and an assessment of radiological hazards to both onsite and offsite personnel resulting from the accident. During this exercise, the inspectors observed certain problems in this area. Plant operators vented the containment without assessing the offsite effect of this action or warning the State and local authorities in advance that the venting would occur. The TSC accident assessment team did not correctly diagnose the condition of the RPV and containment until after the exercise had terminated. TSC personnel did not determine that the RPV leak was below top of active fuel, and they did not recognize that

flooding the containment would cause an increase in pressure and result in an EOP action to vent containment until 15 minutes before the venting became necessary. The ED did not have sufficient time to prepare for the vent or to warn offsite authorities prior to its occurrence. These problems were also identified by the licensee and will be tracked for follow-up via QDR-0190-95 (see Paragraph 8).

Radiological assessment activities were centered in the EOF once that facility was operational. The results of the dose projections were compared to reports from the field monitoring teams, and differences were reconciled in order to produce more realistic predictions.

No violations or deviations were identified.

12. Protective Responses (82301)

This area was observed to determine whether 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 implementing procedures for formulating PARs for the offsite populace within the 10-mile EPZ. Although the licensee's performance in this area was basically adequate, the OEC approved an erroneous initial PAR (associated with the GE declaration). This error was identified and corrected by a licensee communicator prior to its issuance, but without reapproval by the OEC. Performance faults in this area will be tracked for follow-up via QDR-0190-95 (see Paragraph 8).

No violations or deviations were identified.

13. Radiological Exposure Control (82301)

This area was observed to determine whether means for controlling radiological exposures during an emergency were established and implemented for emergency workers, and whether these means included exposure guidelines consistent with EPA recommendations as required by 10 CFR 50.47(b)(11) and specific criteria in NUREG-0654, Section II.K.

An inspector noted that radiological exposures were monitored throughout the exercise by issuing supplemental dosimeters to emergency workers and by periodic surveys in the ERFs. Exposure guidelines were in place for various categories of emergency actions.

No violations or deviations were identified.

## 14. Exercise Critique (82301)

The licensee's critique of the emergency exercise was observed to determine whether deficiencies identified as a result of the exercise and weaknesses noted in the licensee's emergency response organization were formally presented to licensee management for corrective actions as required by 10 CFR 50.47(b)(14); 10 CFR Part 50, Appendix E, Paragraph IV.E; and specific criteria in NUREG-0654, Section II.N.

The licensee conducted player critiques following termination of the exercise. A detailed controller/evaluator critique was conducted on the day after the exercise. A formal presentation of the licensee's critique conclusions was made on September 15, 1995, with exercise controllers, licensee management, and NRC personnel attending. The licensee reviewed the exercise objectives and evaluated the performance of the emergency organization in meeting the objectives. Several "areas for improvement" and three "areas of significant concern" (viz., the three QDRs listed in Paragraph 8) were delineated. In addition, the licensee determined that its "General Objectives" numbers 5 and 6 (see the Attachment to this report) had not been fully satisfied, and that a drill would be conducted by December 31, 1995, including participation by the State of Mississippi, in an effort to demonstrate improved performance with respect to these exercise objectives as well as the other problem areas cited here. The licensee's critique process was considered by the inspectors to be an exercise strength.

No violations or deviations were identified.

## 15. Licensee Action on Previous Inspection Findings

(Closed) IFI 50-416/93-13-01: Verify the licensee's corrective action to Emergency Plan procedure 10-S-01-1 for the EAL addressing a NOUE for loss of vital accident assessment equipment.

The inspector reviewed the information provided by the licensee to justify closure of this item, and verified that the subject procedure was changed (in Revision 20) to appropriately address the issue identified by this IFI.

## 16. Exit Interview

The inspection scope and results were summarized on September 15, 1995, with the persons whose names are listed in Paragraph 1. The Team Leader described the areas inspected and discussed observations made during the inspection. Licensee management was informed that the NRC considered the exercise to have been successful from an overall perspective, but that player and controller performance problems were so numerous as to make the margin of success extremely narrow. Dissenting comments were not received from the licensee. Proprietary information was reviewed during the inspection but none is contained in this report. Licensee management was informed of the closure of a previous item tracked by the

NRC in the area of emergency preparedness (there were no new items from this inspection), as indicated below:

<u>Type</u>	<u>Number</u>	<u>Status</u>	<u>Description and Reference</u>
IFI	50-416/93-13-01	Closed	Verify the licensee's corrective action to Emergency Plan procedure 10-S-01-1 for the EAL addressing a NOUE for loss of vital accident assessment equipment. (Paragraph 15)

17. Federal Evaluation Team Report

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

18. Index of Abbreviations Used in This Report

CFR Code of Federal Regulations  
 EAL Emergency Action Level  
 ED Emergency Director  
 ENMC Emergency News Media Center  
 EOP Emergency Operating Procedure  
 EP Emergency Procedure  
 EPZ Emergency Planning Zone  
 ERF Emergency Response Facility  
 ERO Emergency Response Organization  
 FEMA Federal Emergency Management Agency  
 GE General Emergency  
 gpm gallons per minute  
 IFI Inspector Follow-up Item  
 LOCA loss-of-coolant accident  
 mR milliroentgen  
 MSIV Main Steam Isolation Valve  
 NOUE Notification of Unusual Event  
 NRC Nuclear Regulatory Commission  
 OEC Offsite Emergency Coordinator  
 OSC Operations Support Center  
 PAR Protective Action Recommendation  
 psi pounds per square inch  
 QDR Quality Deficiency Report  
 RCS Reactor Coolant System  
 REM Radiation Emergency Manager  
 RPV Reactor Pressure Vessel

SAE Site Area Emergency  
SCR Simulator Control Room  
TSC Technical Support Center

Attachment (12 pages):  
Scope, Objectives, and Scenario Précis  
for 1995 Grand Gulf Exercise



## 2.0 SCOPE AND OBJECTIVES

### 2.1 SCOPE

The scope of this exercise, with some exceptions, will endeavor to demonstrate by actual performance a number of primary emergency preparedness functions. At no time will the exercise be permitted to interfere with safe operations, and plant management may, at their discretion, suspend the exercise for any period of time necessary to assure this goal.

The exercise will include the appropriate notifications to Federal, State, Local and plant emergency personnel. Full participation by the states of Mississippi and Louisiana, Claiborne County and Tensas Parish is expected.

### 2.2 GENERAL OBJECTIVES

The Grand Gulf Nuclear Station 1995 Emergency Preparedness Exercise program objectives are based on the Nuclear Regulatory Commission requirements delineated in 10CFR50.47 and 10CFR50 Appendix E. Additional guidance is provided in NUREG-0654 and FEMA, REP-1, REV. 1.

The primary objective of the 1995 Emergency Preparedness Site Exercise is to evaluate the adequacy of the emergency response organization during a simulated accident occurring during normal working hours. The scope of the exercise is sufficient to test the following emergency response capabilities:

1. The ability of Emergency Response Organization to classify actual or simulated emergencies through the understanding of emergency action levels (EAL) and initiating conditions.
2. The ability of Emergency Response Organization to activate the station emergency plan and procedures.
3. The ability of Emergency Response Organization to respond to an emergency, make proper and timely notifications through each emergency classification (Notification of Unusual Event, Alert, Site Area Emergency, General Emergency), and activate the emergency response facilities in an efficient and timely manner.
4. The adequacy, effectiveness, and proper utilization of emergency response facilities and their emergency response equipment (Control Room, OSC, TSC, EOF, ENMC).

5. The ability of Emergency Response Organization to formulate and make protective action recommendations to protect station personnel and the general public based on plant parameters, in-plant and onsite field surveys, and/or offsite field monitoring information.
6. The ability of Emergency Response Organization to evaluate the source term and make dose projections based on plant parameters and field surveys.

### 2.3 SPECIFIC OBJECTIVES

The following specific objectives are broken down by emergency response facility or function. These objectives were used to develop an exercise scenario sufficient to realize the general objectives and provide an aid to exercise observers evaluating the exercise.

1. Control Room (Simulator)
  - a. Demonstrate the capability of the Control Room staff to classify emergencies in accordance with emergency action levels and initiating conditions until the TSC is operational.
  - b. Demonstrate the capability of the Control Room staff to notify the Federal, State and Local agencies in accordance with established protocols (Operational Hot Line (OHL), NRC Emergency Notification System (ENS))
  - c. Demonstrate the capability of the Control Room staff to activate the station emergency plan and make appropriate notifications to activate emergency response personnel during an emergency.
  - d. Demonstrate the capability of the Control Room staff to communicate technical information to the Operations Support Center, Technical Support Center, Emergency Operation Facility, and the NRC.
  - e. Demonstrate the ability of the Control Room staff to recognize operational symptoms and parameters indicative of degrading plant conditions.
  - f. Demonstrate the ability of the Shift Superintendent and/or the Shift Supervisor to make timely and effective decisions to mitigate the consequences of the event and clearly demonstrate control of the response effort.
  - g. Demonstrate the ability of the Control Room staff to adequately turn over control of the event upon activation of the Technical Support Center (TSC).

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2. Operations Support Center (OSC)

- a. Demonstrate the capability of the appropriate staff to activate the OSC at the Alert emergency classification.
- b. Demonstrate the capability of the OSC coordinator to make timely and effective decisions and demonstrate clearly, effective command and control of the OSC and response teams.
- c. Demonstrate the capability of the OSC coordinator and OSC teams leaders to organize, brief, and dispatch repair and corrective action teams in a timely manner.
- d. Demonstrate the capability of the health physics organization to maintain appropriate radiological controls throughout the course of the event.
- e. Demonstrate the ability of the OSC staff to communicate technical information with the Control Room, TSC, EOF and in-plant and onsite field teams.

3. Technical Support Center (TSC)

- a. Demonstrate the capability of the appropriate staff to activate the TSC at the Alert emergency classification and be fully operational within approximately 1 hour after activation.
- b. Demonstrate the capability of the Emergency Director to make timely and effective decisions and demonstrate clearly, effective command and control of the TSC response effort.
- c. Demonstrate the capability of the Emergency Director to classify emergencies in accordance with emergency action levels and initiating conditions until the EOF is operational.
- d. Demonstrate the ability of the TSC staff to communicate technical information with the Control Room, OSC, EOF and NRC.
- e. Demonstrate the ability of the TSC staff to notify the Federal, State and Local agencies in accordance with established protocols (OHL, ENS)
- f. Demonstrate the ability of the TSC staff to evaluate the source term and make dose projections based on plant parameters, meteorological data, or other simulated information made available by the exercise controllers

4. Emergency Operations Facility (EOF)

- a. Demonstrate the capability of the appropriate staff to activate the EOF at the Site Area Emergency classification or sooner and be fully operational within 1 hour after activation.
- b. Demonstrate the ability of the Offsite Emergency Coordinator to assume control of the event from the TSC staff, make timely decisions, and demonstrate clearly, effective command and control of the emergency response effort.
- c. Demonstrate the capability of the Offsite Emergency Coordinator to classify emergencies in accordance with emergency action levels and initiating conditions.
- d. Demonstrate the ability of the EOF staff to notify the Federal, State and Local levels of government in accordance with established protocols (OHL, ENS)
- e. Demonstrate the ability of the EOF staff to communicate technical information with the Control Room, OSC, TSC, ENMC, NRC and offsite agencies.
- f. Demonstrate the ability of the EOF staff to evaluate the source term and make dose projections based on plant parameters, onsite/offsite field survey information, meteorological data, or other simulated information made available by the exercise controllers.
- g. Demonstrate the ability of the EOF staff to make appropriate protective action recommendations to protect station personnel and the general public based on plant parameters, in-plant and onsite field surveys and/or offsite monitoring information.

5. Offsite Monitoring Teams (OMT)

- a. Demonstrate the ability to mobilize Offsite Monitoring Teams within the required time limits of the GGNS Emergency Plan, Table 5-1.
- b. Demonstrate the ability of the Offsite Monitoring Teams to obtain radiation data, collect potentially radioactive contaminated air samples and determine Iodine concentration.
- c. Demonstrate the ability of the Offsite Monitoring Teams to communicate location and radiological field data to the EOF.

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6. Security
  - a. Demonstrate the ability of the security force to conduct accountability as necessary.
  
7. Emergency News Media Center (ENMC)
  - a. Demonstrate the capability of the appropriate staff to activate the ENMC at the ALERT classification or sooner.
  - b. Demonstrate the ability of the ENMC staff to communicate with the EOF.
  - c. Demonstrate the ability of the ENMC to coordinate and assemble timely and accurate information at the ENMC.
  - d. Demonstrate the capability of the ENMC to disseminate emergency information to the media and/or public (briefings, written statements) in a timely manner.
  - e. Demonstrate the ability of the ENMC to respond to technical inquiries during media briefings.
  
8. Emergency Information Center (EIC)
  - a. Demonstrate the capability of the EIC to respond directly to questions from the media and/or public concerning real or rumored events at GGNS.
  - b. Demonstrate the capability of the EIC/MM to identify rumors and correct false information concerning events at GGNS.
  
9. Activities not Demonstrated
  - a. Actual PASS samples will not be drawn.<sup>1</sup>
  - b. Emergency Response Facilities (ERF's) will not be evacuated.
  - c. Backup ERF's will not be activated.
  - d. Corrective action teams will not manipulate any plant systems or components.
  - e. Actual decontamination of vehicles and personnel will not be demonstrated.
  - f. SCBA's will be worn but will not be utilized.

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<sup>1</sup> Requirement demonstrated through separate exercises.



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- g. Medical team response and transportation will not be demonstrated.<sup>1</sup>
- h. Shift turnover will not be demonstrated.
- i. Site evacuation will not be demonstrated.
- j. Ingestion exposure pathway will not be demonstrated
- k. Off-hours staffing will not be demonstrated
- l. Backup communications will not be utilized
- m. KI use will not be demonstrated.

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<sup>1</sup> Requirement demonstrated through separate exercises.

7.0 EXERCISE SCENARIO

INITIAL CONDITIONS

The plant is operating at 100% power near the end of its current operating cycle.

LPCS pump red tagged out of service due to high vibration during last surveillance run. Maintenance found damaged motor bearings and has motor removed. Day three(3) of outage.

Division I SPMU valve E30F001A red tagged out of service due to burnt motor windings. Electrical maintenance awaiting WO to work.

The 'A' diesel driven fire pump is being overhauled as a result of a failed surveillance test. It is expected to be returned to service day after tomorrow.

The 'A' CRD pump is red tagged out of service for maintenance activities. It is expected to be returned to service tomorrow.

Weather is partly cloudy.

## NARRATIVE SUMMARY

The exercise begins at approximately 0800.

At 0810 the control room will experience a Division II half scram due to loss of RPS bus. The control room will take actions per the ONEP. RPS will be switched to the alternate power supply and the half scram reset.

At 0820 unidentified leakage begins to increase in drywell. Drywell leakage will be slowly increasing until LOCA occurs. Leakage is from pipe weld between B33F023A and suction of recirculation pump. An Unusual Event should be declared. (UE at > 5 GPM) (LCO 3.4.5)

At 0840 an electrician will enter control room and request the key from main steam safety relief valve B21F051D be replaced per his WO. Upon replacement of the handswitch key, the MSRV will open and stick open until fuses are pulled. If control room does not let him perform his work instructions, then the SRV will open on its own. Reclose SRV prior to 100° F being reached in the suppression pool. Controllers to prevent the shift from performing a manual reactor scram if necessary. (LCO 3.6.1.6 and LCO 3.6.2.1)

At 0900 a fire will occur in Division III switchgear room and inop Division III. At approximately 0910 an ALERT should be called based on the fire defeating one electrical safety system (Division III). With both HPCS and LPCS inop, the plant should enter Tech. Spec. LCO 3.0.3 via LCO 3.5.1. Shutdown may commence but controllers will prevent a manual reactor scram as the shutdown method. TSC, OSC, ENMC, and EIC activation should begin.

At 0935 the control room will experience a loss of power to LCC 11BD5. An operator should be sent to the LCC to investigate. Operator will find main feeder breaker 52-11501 tripped and will not be able to reclose. Affected loads lost should be identified and discussed. Power will be lost to B33F067A, B33F023A and HPU A, as well as other loads. (Loss of power to the B33 valves prevents isolation of drywell leak) (Loss of HPU impacts Reactor Shutdown)

At 1000 a feedwater line break inside the drywell will occur. A Reactor scram will occur. Upon reactor scram, the recirculation pipe crack will fail catastrophically initiating a DBA LOCA. EP-2 and EP-3 should be entered. RHR A and C pumps start but suction strainers clog. RHR B starts but injection valve F042B will not open. When RHR B is placed in the containment spray mode of operation, the suction strainer will clog. RCIC starts but trips on overspeed which cannot be reset. Only CRD B and SLC are available for injection into the RPV. A Site Area Emergency (SAE) should be declared based on a leak greater than makeup pump capability and reactor water level less than -167 inches. EOF activation should begin.

Whenever Division II SPMU is initiated, the breaker for valve E30F001B will trip. An operator or OSC team investigation will find the breaker stabs damaged. Breaker will be recoverable at 1040.

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At approximately 1010 the TSC, OSC, ENMC and EIC should be manned and operational. (Within 1 hour of Alert for all but OSC)

At 1040 the breaker for E30F001B is returned to service and the valve opened allowing SPMU to dump.

At approximately 1050 the suppression pool level will reach 24.31 feet and reactor venting will be required. A **General Emergency** should be declared based on (1) radiation monitoring teams report Radiation levels at the site boundary corresponding to 1000 mr TEDE, 5000 mr Thyroid CDE or Iodine levels of  $1.2 \text{ E-5 uCi/cc}$  at the site boundary or (2) loss of 2 out of 3 fission product barriers with a potential loss of 3rd barrier. (ED/OEC may call a discretionary GE based on plant conditions that make the release of large amounts of radioactivity in a short period of time likely prior to actual venting of reactor )

If RCIC is selected as RPV vent pathway, E51F064 will not open. All other vent paths will result in a release through the turbine building. The OSC may dispatch a team to try and manually open F064. If attempted, they will be unable to open the valve.

At 1100 the EOF should be manned and operational. (Within 1 hour of SAE)

At approximately 1225, the repair team at the RHR B F042B will be successful in unbinding the valve. Operations may open the valve and inject water into the reactor vessel from either the suppression pool (if the suction strainer has been back flushed) or by using SSW B. Reactor water level will slowly increase but remain less than the Top of Active Fuel (TAF) due to break.

At 1245 maintenance will restore power to valves B33F023A and B33F067A. They are available for the control room to use to isolate the leak by closing the valves.

Reactor water level is returned to normal. Release may be terminated by closing MSIV's.

Reentry and recovery discussions should be occurring. Consideration should be given to placing shut down cooling in service and the radiation problems associated with placing it in service. Entry into containment to clean suction strainers may be discussed.

At 1250 the radiological release is terminated due to MSIV closure. The EOF will continue to track the plume until it clears the EPZ.

At 1350 the radiological plume clears the EPZ.

At 1400 the exercise is terminated.

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<u>SEQUENCE OF EVENTS</u>		
Actual Time	Scenario Time	Summary
0800	00:00	Scenario starts.
0810	00:10	Division II half scram on loss of RPS buss. Control room expected to swap to alternate power supply and reset half scram.
0820	00:20	<b>Unusual Event</b> Drywell leakage > 5 gpm.
0840	00:40	SRV opens.
0900	01:00	CO <sub>2</sub> predischage alarm received for Div. III switchgear room.
0902	01:02	CO <sub>2</sub> activated alarm received for Div. III switchgear room.
0904	01:04	Smoke alarm received for Div. III switchgear room. The fire brigade is dispatched to Div. III switchgear room.
0910	01:10	An <b>ALERT</b> should be declared based on a fire defeating one safety electrical division. TSC, OSC, ENMC and EIC activation should begin.  With HPCS and LPCS both inop, the Plant should enter LCO (3.0.3). Orderly shutdown should commence within one (1) hour.
0935	01:35	Loss of LCC 11BD5. This results in loss of power to B33F023A, B33F067A and HPU A. (This will impact reactor shutdown.)



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<u>SEQUENCE OF EVENTS</u>		
Actual Time	Scenario Time	Summary
1000	02:00	<p>Reactor scram on loss of feedwater due to feedwater line break in drywell. DBA LOCA occurs as recirc line breaks on scram transient. RCIC starts and trips on overspeed(not recoverable). RHR B starts but injection valve F042B binds in the closed position(recoverable later). RHR A and C pumps starts and experiences suppression pool strainer clogging.</p> <p><u>Site Area Emergency</u> should be declared based on leak greater than pump makeup ability. EOF activation should begin.</p>
OPERATOR DEPENDENT		<p>When Division II Suppression Pool Makeup is initiated, breaker for valve E30F001B will trip.</p>
10:0	02:20	<p>TSC, OSC, ENMC, and EIC must be manned.(Within 1 hour of Alert declaration, for all except OSC)</p>
1040	02:40`	<p>E30F001B breaker repaired and valve opened initiating SPMT..</p>
1050	02:50	<p>RPV venting should begin per EP 2 on suppression pool level reaching 24.31 feet. Release begins.</p> <p>A <u>GENERAL EMERGENCY</u> should be declared based on (1) radiation monitoring teams report corresponding to radiation levels of 1000 mr TEDE, 5000 mr Thyroid CDE or Iodine levels of 1.2 E-5 uci/cc at the site boundary or (2) loss of 2 out of 3 fission product barriers with a potential loss of a 3rd barrier. (ED/OEC may call a discretionary GE based on plant conditions that make the release of large amounts of radioactivity in a short period of time likely prior to actual venting of reactor.)</p>
1100	03:00	<p>EOF must be activated(Within one hour following Site Area Emergency declaration.)</p>

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<u>SEQUENCE OF EVENTS</u>		
<u>Actual Time</u>	<u>Scenario Time</u>	<u>Summary</u>
1225	04:25	RHR B injection valve F042B unbound by repair team. RHR B available for injection (if suction strainer has been back flushed). SSW B may be used otherwise.
1245	04:45	Power restored to B33F023A and B33F067A. LOCA may be stopped by closing both valves.  RPV level will be restored to normal. Release may be terminated by closing MSIV's.  Reentry and recovery discussions/activities should begin. Shut down cooling may be placed into service.
1250	04:50	The radiological release is terminated due to MSIV closure. The EOF is expected to track the plume until it clears the EPZ.
1350	05:50	The radiological plume clears the EPZ.
1400	06:00	The exercise is terminated.