



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

SEP 22 1992

Report Nos.: 50-269/92-16, 50-270/92-16 and 50-287/92-16

Licensee: Duke Power Company
422 South Church Street
Charlotte, NC 28242

Docket Nos.: 50-269, 50-270, License Nos.: DPR-38, DPR-47,
and 50-287 and DPR-55

Facility Name: Oconee 1, 2 and 3

Inspection Conducted: August 10-13, 1992

Inspector: W. M. Sartor, Jr. 9/18/92
W. M. Sartor, Jr., Team Leader Date Signed

Team Members: F. McManus
G. Stoetzel

Approved by: W. H. Rankin 9/21/92
W. H. Rankin, Chief Date Signed
Emergency Preparedness Section
Radiological Protection and
Emergency Preparedness Branch
Division of Radiation Safety and
Safeguards

SUMMARY

Scope:

This routine, unannounced inspection involved the observation and evaluation of the annual emergency preparedness exercise. Emergency organization activation and response were selectively observed in the licensee's Emergency Response Facilities (ERFs) including: the Simulator Control Room (SCR); Technical Support Center (TSC); Operational Support Center (OSC); and Oconee Emergency Operations Facility (EOF). The inspection also included a review of the exercise scenario and observation of the licensee's post exercise critique. This was a full participation exercise with an NRC Region II Site Team.

Results:

In the areas inspected, violations or deviations were not identified. The licensee demonstrated its capability for providing for the health and safety of the public by effectively implementing their Emergency Plan and Procedures in response to the simulated accident scenario. An exercise strength was the

Issaquenna Emergency Operations Facility and its timely activation. One exercise weakness was identified for failing to put the radiological release in perspective for the public (paragraphs 9 and 16).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *S. Adams, Community Relations
- *B. Barron, Station Manager, Emergency Coordinator
- *J. Bolding, Mechanical Maintenance
- *J. Bowers, Compliance Engineering
- *R. Bowser, Radiation Protection
- *W. Brandt, Emergency Planning
- *R. Brown, Emergency Planning
- *W. Clardy, Instrumentation and Electronics
- *R. Cornett, Component Engineering
- *S. Coy, Radiation Protection
- *D. Coyle, Engineering
- *M. Cromer, Commodities and Facilities
- *J. Davis, Safety Assurance Manager
- *W. Foster, Mechanical Maintenance
- *A. Greene, Instrumentation and Electronics
- *M. Green, Corporate Communications
- *G. Hamrick, Chemistry
- *J. Hampton, Site Vice President
- *R. Harris, Regulatory Compliance
- *D. Hubbard, Component Engineering
- *B. Matheson, Mechanical Training Director
- *T. McQuarrie, Security
- *B. McRee, Nuclear Emergency Planning Consultant
- *B. Norris, Chemistry
- *M. Patrick, Regulatory Compliance Manager
- *L. Payseur, Operations
- *J. Peele, Engineering
- *S. Perry, Regulatory Compliance
- *G. Ridgeway, Operations
- *G. Rothenberger, Superintendent of Work Control
- *R. Smith, Chemistry
- *C. White, Safety Assurance
- *C. Yongue, Radiation Protection

Nuclear Regulatory Commission

- *B. Desai, Resident Inspector
- *K. Poertner, Resident Inspector

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 developed for this exercise was adequate to exercise the onsite and offsite emergency organizations of the licensee and provided sufficient information to the state and local government agencies for their full participation in the exercise. Simulator modeling problems created some scenario inconsistencies and led to termination of the exercise prior to restoration of plant power and identification of the release path. However, these inconsistencies did not excessively detract from the licensee's overall ability to demonstrate an effective implementation of their Emergency Plan and Procedures in 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 is available to respond to an emergency as required by 10 CFR 50.47(b)(1), 10 CFR 50, Appendix E, Paragraph IV.A, and specific criteria in NUREG 0654, Section II.A.

The inspectors observed that specific emergency assignments had been made for the licensee's emergency response organization and there were adequate staff available to respond to the simulated emergency. The initial response organization was augmented by designated licensee representatives and the capability for long term or continuous staffing of the emergency response organization was not demonstrated in the Technical Support Center. The licensee self-identified for followup the failure to meet exercise objective A.b. "Demonstrate the ability to fully staff facilities and maintain staffing around the clock."

No violations or deviations were identified.

4. Onsite Emergency Organization (82301)

The licensee's onsite 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 inspectors determined that the licensee's onsite emergency organization was effective in dealing with the simulated emergency. Adequate staffing of the emergency response facilities was provided for the initial accident response and the interfaces between the onsite organization and offsite support agencies appeared to be adequate.

No violations or deviations were identified.

5. Emergency Response Support and Resources (82301)

This area was observed to determine that arrangements for requesting and effectively using assistance resources have been made, that arrangements to accommodate State and local staff at the licensee's near-site Emergency Operations Facility have been made, and that other organizations capable of augmenting the planned response have been identified as required by 10 CFR 50.47(b)(3), 10 CFR 50, Appendix E, Paragraph IV.A, and specific criteria in NUREG 0654, Section II.C.

State and local staff were accommodated at the Emergency Operations Facility. For this exercise, the licensee also accommodated staff from an NRC Region II Site Team which participated at both the Technical Support Center and the Emergency Operations Facility. Licensee contact with offsite organizations was prompt and assistance resources from various agencies were prepared to assist in the simulated emergency.

No violations or deviations were identified.

6. 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 emergency action level (EAL) scheme was used to identify and classify the emergency and escalate to more severe emergency classifications as the simulated emergency progressed. The alert declaration was announced about five minutes after the shift supervisor (SS) recognized the EAL. The delay was a result of the SS completing the offsite agency notification form before he made the declaration.

No violations or deviations were identified.

7. Notification Methods and Procedures (82301)

This area was observed to determine that procedures had been established for notification by the licensee of State and local response organizations and emergency personnel, and that the content of initial and followup messages to response organizations had been established; and means to provide early notification to the populace within the plume exposure pathway had been established as required by 10 CFR 50.47(b)(5), 10 CFR 50, Appendix E, Paragraph IV.D, and specific criteria in NUREG 0654, Section II.E.

An inspector observed that notification methods and procedures had been established and were used to provide information concerning the simulated emergency conditions to Federal, State and local response organizations and to alert the licensee's augmented emergency response organization.

8. Emergency Communications (82301)

This area was observed to determine that provisions existed for prompt communications among principal response organization 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 emergency response facilities and emergency organization and between the licensee's emergency response organization and offsite authorities were good. No communication related problems were identified during this exercise.

No violations or deviations were identified.

9. 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, 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. The information included details on how the public would be notified and what initial actions they should take in an emergency. A rumor control program was also in place. A media center was activated at the Issaquenna Operations Center and was well equipped and coordinated. A review of information included in the News Release Bulletin No. 3 and in the News Conference No. 2 prevented the full demonstration of exercise objective G.a. for the Joint Information Center "Demonstrate the ability to

brief the media in a clear, accurate, and timely manner." Specifically, information regarding the radiological release was not quantified in a manner to provide an understanding of the threat to the general public. This was identified as an exercise weakness.

Exercise Weakness: 50-269, 270, 287/92-16-01; The licensee's Joint Information Center failed to quantify or put in perspective for the general public the radiological release to the environment.

10. 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 50.45(b)(8), 10 CFR 50, Appendix E, Paragraph IV.E, and specific criteria in NUREG 0654, Section II.H.

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

- a. Simulator Control Room - An inspector observed that simulator control room personnel acted promptly to initiate emergency response to the simulated emergency. Emergency procedures were readily available and the response was prompt and effective.
- b. Technical Support Center (TSC) - The TSC was activated and staffed promptly upon notification by the Emergency Coordinator of the simulated emergency conditions leading to an Alert emergency classification. The TSC staff appeared to be knowledgeable concerning their emergency responsibilities and TSC operations proceeded smoothly. The TSC appeared to have adequate equipment for the support of the assigned staff.
- c. Operations Support Center (OSC) - The OSC was staffed promptly upon activation by the Emergency Coordinator. An inspector observed that teams were formed promptly, briefed and dispatched efficiently.
- d. Emergency Operations Facility - The EOF is located at the Issaquena Operations Center, about 10 miles from the reactor site. The facility appeared to be adequately designed, equipped and staffed to support an emergency response.

No violations or deviations were identified.

11. Accident Assessment (82301)

This area was observed to determine that 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 includes 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, located in the Charlotte General Office, functioned effectively in analyzing the plant status so as to make recommendations to the Recovery Manager concerning mitigating actions to reduce damage to plant equipment, to prevent release of radioactive materials and to terminate the emergency condition.

12. Protective Responses (82301)

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

An inspector verified the licensee had and used emergency procedures for formulating protective action recommendations for offsite populations within the 10-mile EPZ. The licensee's protective action recommendations (PARs) were consistent with their approved Emergency Plan and Procedures and were made to the appropriate State and local authorities within the 15 minute criteria. The licensee identified the difference between their PARs and those of the NRC and State as a Commitment to Action.

No violations or deviations were identified.

13. Radiological Exposure Control (82301)

This area was observed to determine that means for controlling radiological exposures, in an emergency, were established and implemented for emergency workers and that they 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 controlled throughout the exercise by issuing emergency workers supplemental dosimeters and by periodic surveys in the emergency response facilities. Exposure guidelines were in place for various categories of emergency actions and adequate protective clothing and respiratory protection were available and used as appropriate.

No violations or deviations were identified.

14. Exercise Critique (82301)

The licensee's critique of the emergency exercise was observed to determine that 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 50, Appendix E, Paragraph IV.E, and specific criteria in NUREG 0654, Section II.N.

The licensee conducted player critiques following the exercise termination. A formal licensee critique of the emergency exercise was held on August 13, 1992 with exercise controllers, key exercise participants, licensee management and NRC personnel attending. The licensee identified problems noted during the exercise as Commitment to Action items for follow-up.

No violations or deviations were identified.

15. Action on Previous Inspection Findings (92701)

(Closed) EW 50-269, 270, 287/90-26-01: Failure to staff and activate the TSC within 45 minutes as stated in the Oconee Emergency Plan. The TSC was staffed and activated 35 minutes after the alert declaration.

(Closed) EW 50-269, 270, 287/90-26-02: Failure to provide adequate exercise support to the State of South Carolina to enable the State to fully demonstrate their objectives. There were no problems identified with exercise support to the State of South Carolina. During this exercise the State of South Carolina indicated it was withdrawing early from participation because it had already met all their required objectives.

16. Exit Interview

The inspection scope and results were summarized on August 13, 1992, with those persons indicated in Paragraph 1. The inspector described the areas inspected

and discussed in detail the inspection results listed below. Licensee representatives requested clarification of the exercise weakness finding. The inspector indicated the basis was a failure to quantify or put in perspective for the public the information on the release that was included in the News Release Bulletin No. 3 and also addressed in the News Conference No. 2. Further clarification with a licensee representative on August 17 noted that the public information characterization of the release as not a controlled release and no speculation as to the amount of harm possible to the public lent itself to misinterpretation by the press and public. This was in contrast to the information being provided to the State and counties via the Emergency Notification Messages Numbers 8 and 9 which included quantification of the release magnitude and an estimate of projected offsite dose, both of which were computed from containment leak rate versus pressure and containment high activity radiation monitoring readings. Based on the above information, the licensee's representative indicated the request for clarification was not a dissenting comment. Proprietary information is not contained in this report.

17. Federal Evaluation Team Report

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

Attachment:
Exercise Objectives and
Scenario-Sequence of Events

**DUKE POWER COMPANY
OCONEE NUCLEAR SITE
EXERCISE OBJECTIVES**

A1.K2

MAJOR COMPONENTS OF EMERGENCY PLAN	1991	1992	1993	1994	1995
A. EMERGENCY RESPONSE ORGANIZATION					
a. Demonstrate ability to mobilize staff (TSC, OSC, EOF, JIC) and activate facilities as required by Figure B-5 in ONS Emergency Plan after declaring an Alert or higher emergency classification.		X			
b. Demonstrate the ability to fully staff facilities and maintain staffing around the clock.		X			
c. Demonstrate precise and clear transfer of responsibility from the Shift Supervisor in the Control Room to the Emergency Coordinator in the TSC.		X			
d. Demonstrate precise and clear transfer of responsibility from the Emergency Coordinator in the TSC to the EOF Director in the EOF.		X			
e. Demonstrate the ability to assess the incident and determine/ implement mitigation strategies.		X			
B. EMERGENCY CLASSIFICATION					
a. Demonstrate the ability to properly classify emergency situations in accordance with plant procedures.		X			
b. Demonstrate the ability to notify counties and state within 15 minutes after declaring an emergency or after changing classification.		X			
c. Demonstrate proper use of message format and authentication		X			

A1.K2

MAJOR COMPONENTS OF EMERGENCY PLAN	1991	1992	1993	1994	1995
methodology for messages transmitted to state and counties.					
C. COMMUNICATIONS					
a. Test onsite and offsite communications equipment:					
- Selective Signaling		X			
- Duke Offsite Radio System (FMTs and TSC/EOF)		X			
- Duke Onsite Radio System		X			
- SC State Decision Line		X			
- FTS 2000 System:					
HPN		X			
ENS		X			
- AT&T					
- ONS Switchboard		X			
- Intercom Systems		X			
b. Demonstrate the ability to communicate with all appropriate locations, organizations, and field personnel.		X			
c. Demonstrate the ability to notify the NRC not later than 1 hour after declaring one of the emergency classes.		X			
d. Demonstrate the ability to provide current plant data to appropriate locations, organizations, and field personnel.		X			

MAJOR COMPONENTS OF EMERGENCY PLAN	1991	1992	1993	1994	1995
e. Test adequacy and operability of emergency equipment/supplies.		X			
D. ACCESS AND CONTROL					
a. Demonstrate the ability to account for onsite personnel within 30 minutes.		X			
b. Demonstrate the ability to locate unaccounted personnel determined by site assembly.		X			
c. Demonstrate the ability to effect an orderly evacuation of non-essential personnel.		X			
d. Demonstrate the ability to provide controlled access to the plant site and EOF.		X			
E. RADIOLOGICAL MONITORING					
a. Onsite:					
- Demonstrate appropriate equipment and procedures for determining ambient radiation levels.		X			
- Demonstrate appropriate equipment and procedures for measurement of airborne radioiodine concentrations.		X			
- Demonstrate the ability to provide offsite dose projections in accordance with site procedures.		X			
- Demonstrate the ability to continuously monitor and control emergency worker exposure.		X			
- Demonstrate the ability to make the decision (based on predetermined criteria) whether to issue KI to emergency workers and then to issue same.					
b. Offsite:					

MAJOR COMPONENTS OF EMERGENCY PLAN	1991	1992	1993	1994	1995
- Demonstrate the ability to mobilize teams in the 10-mile EPZ to locate and track the plume for noble gases and radioiodine concentrations in a timely manner.		X			
- Demonstrate appropriate equipment and procedures for collection, transport, and analysis of samples of soil, vegetation, snow, water, and milk as determined by specific scenario requirements.		X			
- Demonstrate the ability to transmit field measurement data to TSC/EOF.		X			
c. Dose Calculations and Protective Action Recommendations:					
- Demonstrate the ability to project dosage to the public via ingestion pathway exposures.		X			
- Demonstrate the ability to project damage to the public based on plant and field data for public via ingestion pathway exposure.		X			
- Demonstrate the ability to provide timely and appropriate protective action recommendations in accordance with site procedures.		X			
F. OFFSITE AGENCY ASSISTANCE					
a. Demonstrate the ability to identify need for, request, and obtain Federal assistance.		X			
b. Demonstrate the adequacy of response to a medical injury involving contamination with transport to an offsite medical facility (contamination and/or radiation consequences).					
c. Demonstrate the adequacy of response to a fire outside the protected area utilizing volunteer fire department support.					
d. Demonstrate county and state participation in exercises/drills.					

A1..K2

MAJOR COMPONENTS OF EMERGENCY PLAN	1991	1992	1993	1994	1995
Full		X			
Partial					
G. JOINT INFORMATION CENTER					
a. Demonstrate the ability to brief the media in a clear, accurate, and timely manner.		X			
b. Demonstrate the ability to provide advance coordination of information released.		X			
c. Demonstrate the ability to establish and operate rumor control in a coordinated fashion.		X			
H. RECOVERY AND REENTRY					
a. Demonstrate the ability to determine and implement appropriate measures for controlled recovery and reentry.					
b. Demonstrate the ability to take post-accident liquid samples under accident conditions.		X			
c. Demonstrate the ability to take post-accident gaseous samples under accident conditions.		X			
d. Demonstrate adequate equipment and procedures for decontamination of workers, equipment, etc.					
e. Demonstrate the ability to estimate total population exposure.					
f. Demonstrate the capability to respond to simulated Appendix R Scenarios to test a portion of the planned response:					
- Turbine/Auxiliary Building Fire					
- Turbine Building Fire					

A1.K2

MAJOR COMPONENTS OF EMERGENCY PLAN	1991	1992	1993	1994	1995
- Fire in West Penetration Room or SSF cable trench					
- Reactor Building Fire					
- Fire at CT-4 Transformer					
I. EXERCISE/DRILL MANAGEMENT					
a. Semi-annually an ERF activation drill will be scheduled to begin after normal working hours (between 1800 - 0600 hours or on weekends/holidays). This drill is announced.					
b. The Annual Exercise will be scheduled during different seasons of the year.		X			
c. Once every 6 years, an Exercise will be scheduled to begin during the time of 1800 hours through 0400 hours.					
d. Drills/exercises will be under the control of a Drill/Exercise Director. Controllers/Evaluators will be utilized to keep the scenario on track and to allow for "free play".		X			
e. Critiques will be held after all drills/exercises to determine any corrective actions that may need to be made.		X			
f. Drill scenarios should include response to chemical, hazardous wastes, spent fuel shipments, and security incidents, as well as radiological and reactor incidents.					
g. Demonstrate participation in an Ingestion Pathway Exercise:					
- Full		X			
- Partial					

INGESTION PATHWAY EXERCISE
DUKE POWER COMPANY
OCONEE NUCLEAR SITE
ANNUAL EXERCISE 92-4

INITIAL CONDITIONS AT 0800:

1. UNIT 1 AT 100%

LCO: Standby Shutdown Facility is out of service. Due back by 0540 on 8/21/92.
See Unit 2 status.

LCO: Turbine Driven Emergency Feedwater Pump is out of service. Due back
8/11/92 at 1800.

LCO: Keowee Unit 1 taken out of service for unscheduled maintenance.

2. UNIT 2 in refueling shutdown.

Fuel transfer canal filled with 2SF-1 & 2SF-2 open. Making final preparations for
starting defueling.

Condenser cooling water intake isolated and drained for outage work. SSF out
of service for piping modification, diesel generator preventative maintenance, and
breaker preventative maintenance. Main transformer 2T backcharged. CT2 out
of service for dole testing.

3. Unit 3 at cold shutdown for high pressure feedwater heater repairs. Condenser
vacuum broken, condensate system shutdown. 3B1 feedwater heater manway
removed with tube repairs in progress.

SEQUENCE OF EVENTS

0730 Unit 1 operating at 100%, no major problems.

0735 Dispatcher contacts Control Room. 100KV line (CT-5) has been taken out of
service for Transmission Service Inspection and OCB preventive maintenance.
Should return to service by 1530 hours.

0745 Switchboard operator receives outside phone call claiming that a bomb is planted
in the Radwaste Facility.

0805 - 0830

Search of area (detailed by the phone call) inside the Protected Area reveals a "suspicious" package that appears to be a bomb. An emergency classification of "ALERT" should be declared due to "Discovery of bomb in the protected area." This classification requires activation of the Emergency Response Organization and site assembly. Workers in the Unit 1 West Penetration Room installing and cutting hangers for the Instrument Air up-grade inadvertently leave their acetylene and oxygen bottles on and the lines charged when they report for Site Assembly.

Approximately 0830 - 0930

State of South Carolina Emergency Preparedness, Oconee County Emergency Preparedness, Pickens County Emergency Preparedness should be notified of the event. NRC should be notified within one hour of the emergency classification. Security will also activate the Security Contingency Plan. Calls should be made to a "bomb" squad to assist in defusing the bomb. The Emergency Response Organization should be activated with turnover in place between the Technical Support Center and the Control Room within 75 minutes of the Alert classification. The Emergency Operations Facility should be staffed and operational within 75 minutes of the emergency classification. Turnover may not have taken place.

Areas of concern for Emergency Coordinator:

- ◆ Evacuating people from the Radwaste Facility
- ◆ Getting people here to "disarm" the bomb
- ◆ Large number of people onsite for two outages

Approximately 0915

Unit 1 is operating at 100% power. 1TA bus (6900V) lockout (spurious overcurrent relay trip) occurs and trips normal incoming breakers and blocks startup incoming breakers from closing. Reactor coolant pumps 1A1 and 1B1 trip. Reactor protective system channels trip but control rod drive breakers fail to open. Operators enter the Emergency Operations Procedure and take actions to try to shutdown the reactor. Turbine is manually tripped and auxiliaries transfer to CT-1. Reactor coolant system pressure increases to > 2450 psig. DSS channels 1 & 2 should actuate. DSS fails to de-energize regulating group rods. The reactor cannot be tripped from the Control Room and the control rods cannot be inserted from the Control Room. The reactor is tripped by manually removing power to the control rods in the cable room and the turbine building. Main feedwater pumps may trip during the ATWS event. Emergency feedwater pumps start and supply the once through steam generators if the main feedwater pumps trip. Some failed fuel (less than 1%) is assumed to have occurred as a result of the ATWS.

Approximately 0930 - 0945

The emergency classification of "Site Area Emergency" should be declared due to "ATWS - 2 or more RPS channels trip without automatic reactor trip AND control rods remain withdrawn and cannot be manually tripped or inserted from the Control Room."

Approximately 1045

Unit 1 is being maintained at Hot Shutdown, main feedwater or emergency feedwater is feeding the once-through steam generators. Two reactor coolant pumps are providing forced circulation cooling.

Unit 1 startup bus faults (insulator fails) in the isolated phase bus. E1 and E2 breakers receive trip signal. PCB (17 and 18) trip to isolate fault. Main feeder bus monitor panel will monitor main feeder bus undervoltage for 20 seconds. After that time, it will initiate an emergency start on the Keowee unit tied to the underground. CT-4 becomes energized. SK-1 and SK-2 close in and energizes Unit 1 standby bus. After an additional 10 seconds, S1 and S2 close in to the main feeder bus. Main feeder buses are now energized from CT-4.

Keowee Unit 1 is out of service. Keowee Unit 2 trips from 86 E-2 caused by an 87G-2 relay target.

CT-5 is not energized. 100kv line has been taken out of service by the dispatcher for Transmission Inservice Inspection and OCB 101 scheduled maintenance.

Power is lost to the following equipment: hotwell and condensate booster pumps, motor driven emergency feedwater pumps, emergency safeguard pumps including the high pressure injection pumps. The turbine driven emergency feedwater pump is out of service due to a 72-hour LCO and will not be available until 8/11/92 at 1800.

Approximately 1100 - 1115

An emergency classification of "General Emergency" should be declared by the Emergency Operations Facility. The classification should be based on "Failure of offsite and onsite AC power along with the total loss of emergency feedwater makeup capability." Protective action recommendation to shelter out to five miles should be made initially to offsite groups (State of South Carolina, Oconee County and Pickens County via an emergency notification form.)

Approximately 1115

Reactor coolant makeup pump to Unit 1 trips on emergency high vibration. With no makeup to the reactor coolant pump seals, a large LOCA occurs (approximately 2000 gpm). Core uncover is imminent unless power is restored to vital equipment. (Note: At the rate of 2000 gpm, it will take 1 hour and 45 minutes to uncover the core.)

Jobs in progress to restore cooling to the unit:

- ◆ Turbine driven emergency feedwater pump repairs
- ◆ CT-1 (Will take approximately 2 hours to determine the problem. Can either replace the insulator or open 7KV transformer gang.)
- ◆ Keowee Unit 1 is out of service due to unscheduled maintenance. Keowee 2 failed to start on emergency start signal. (NOTE: Controller will not allow power to be restored until the core is uncovered to provide the amount of activity needed to drive the ingestion pathway exercise).
- ◆ 100KV line is out of service for transmission service inspection. OCB101 is out of service for scheduled maintenance.

Problems that will have to be addressed by the Emergency Response Organization for a loss of power scenario:

- ◆ Radiation monitors used for dose assessment (except RIA 57-58 high range monitors) will not have power.
- ◆ Dose calculations will have to be done based on what was being seen offsite
- ◆ Assume release in progress based on RIA 57-58 on scale and a large-break LOCA will cause pressure in the building to increase. Very little activity (if any) will be seen by field monitoring or onsite RP teams.
- ◆ Data system will be operable but readings given for radiation monitor readings will be bogus data.

With a core uncover imminent (approximately 2 hours) and projections that power may be restored in 2 hours, the EOF Director should recommend at a minimum that people living 2 miles around the site and 5 miles downwind should be evacuated. Less than 20% gap activity is in containment. Containment is intact. However, he may be pro-active and recommend that 5 miles around the and 10 miles downwind should be evacuated based on the fact that if the core is uncovered before power can be restored, greater than gap activity would be released to containment.

Approximately 1245

A spark ignites the gaseous mixture of acetylene and oxygen in the West Penetration room. (See 0805-0900 sequence of events). The explosion blows the siding off the West Penetration room and rips holes (equivalent to a 4" or 5" diameter opening) in the reactor building purge ductwork at Reactor building penetration #19 between valves IPR-5 and IPR-6, resulting in a radioactive release to the environment. The explosion causes IPR-6 to allow slight leakage from the containment building to enter the ductwork. Fire Brigade responds to the explosion/fire, but the radiation levels prevent action. The fire quickly burns itself out.

Protective action recommendations at this time from the Emergency Operations Facility would be:

If people were not evacuated out to five miles and ten miles downwind, with a release in progress greater than gap, a recommendation to shelter people until the plume passed may be in the best interests of the residents of Oconee and Pickens Counties. This would have to be discussed with the State of South Carolina by the Emergency Operations Facility Director.

Between 1300 and 1330

Power is restored to CT-1 by opening 7KV disconnect at CT1 or by replacing insulator on the isolated phase bus. High pressure injection and emergency feedwater are re-established. Reactor building spray and containment cooling will place radioactive iodine into solution. It will take approximately 12 hours to reach cold shutdown. The OSC will work to seal the containment leak at RB penetration #19.

Approximately 1300

Release should stop after Operations cycles PR6 to close.

The Operational Support Center would begin to develop a temporary patch to the side of the building.

1330 Plume Exposure Pathway Exercise terminated. Recovery will be entered into by negotiating with offsite agencies and the Nuclear Regulatory Commission.