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

AUG 0 2 1989

Report No.: 50-302/89-12

Licensee: Florida Power Corporation
3201 34th Street, South
St. Petersburg, FL 33733

Docket No.: 50-302 License No.: DPR-72

Facility Name: Crystal River 3

Inspection Conducted: June 20-23, 1989

Inspector: William M Sartor Jr 8/1/89
W. M. Sartor, Jr. Date Signed

Accompanying Personnel: B. Haagensen (PNL)
M. Stein, (PNL)

Approved by: Eldon D. Testa for 8/1/89
W. H. Rankin, Chief Date Signed
Emergency Preparedness Section
Emergency Preparedness and Radiological
Protection Branch
Division of Radiation Safety and Safeguards

SUMMARY

Scope:

This routine, announced inspection was the observation and evaluation of the annual emergency exercise. Selected staffing and response of the emergency organizations in the Control Room, Technical Support Center, Operational Support Center, Emergency Operations Facility, and Emergency News Center were observed. Additionally, an NRC Region II Base Team located at the Region II office and a Site Team located at the site were supported by an NRC Headquarters full response team including the Executive Team.

Results:

Based upon the scenario used, the licensee's performance was satisfactory to determine that they could implement their Emergency Plan and procedures to adequately provide for the health and safety of the public and plant personnel. One exercise weakness was identified for failure to make State notifications within 15 minutes of the General Emergency classification. An additional problem noted was the failure to conduct an adequate self-critique in that the negative observations made by the licensee's evaluation team were not identified for corrective actions.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

*G. Boldt, Vice President Nuclear Production
*S. Chapin, Radiological Emergency Planning Specialist
*P. Ellsberry, Nuclear Technical Training Specialist
*R. Fuller, Senior Nuclear Licensing Engineer
*S. Johnson, Manager, Site Nuclear Services
*M. Laycock, Radiological Emergency Planning Specialist
*W. Marshall, Operations Superintendent
*P. McKee, Director, Nuclear Plant Operations
*T. McLean, Fire Marshall
*J. Pelham, Corporate Security
*D. Porter, Shift Supervisor
*E. Renfro, Director, Nuclear Operations Materials and Controls
*S. Robinson, Chemistry/Radiological Superintendent
*J. Stephenson, Supervisor, Radiological Emergency Planning
*R. Widell, Director, Nuclear Operations Site Support
*W. Wilgus, Vice President Nuclear Operations

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

State of Florida, Department of Emergency Management

*C. Hultquist, Planning Manager, Radiological Emergency Planning
*B. LeBlanc, Operations and Management Consultant

NRC Resident Inspectors

P. Holmes-Ray
J. Tedrow

*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 licensee's integrated emergency response capability as well as to test a major portion of the basic elements within the licensee's Emergency Plan as required by 10 CFR 50.54(t), 50.47(b)(14), and Section IV.F of Appendix E to 10 CFR 50.

The scenario was reviewed in advance of the scheduled exercise date and discussed briefly with licensee representatives. No major problems were identified and the scenario appeared adequate for this two day full scale ingestion exposure pathway exercise.

No violations or deviations were identified.

3. Onsite Emergency Organization (82301)

The licensee's organization was observed during the simulated emergency to ensure the requirements of Paragraph IV.A of Appendix E to 10 CFR 50 were implemented addressing the descriptions, responsibilities, and assignments of the onsite emergency response organization.

The inspector observed that the initial onsite emergency organization was adequately defined and that staff was available to fill key functional positions within the emergency organization. The Shift Supervisor promptly assumed the duties as the Emergency Coordinator upon initiation of the simulated emergency and directed the response until relieved by the Director, Nuclear Plant Operations. The onsite Technical Support Center (TSC) and Operations Support Center (OSC) were promptly staffed and assumed emergency responsibilities in accordance with the Emergency Plan and Implementing Procedures. One exception to the proper utilization of emergency personnel occurred when two members of the on-shift crew in the Control Room were used to provide support to the fire scene, which delayed their availability to the Shift Supervisor when the second loss of annunciators occurred. The fire scene support would have been better provided from the OSC.

No violations or deviations were identified.

4. 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 50.

The licensee's Enclosure 1 to its Emergency Plan Implementing Procedure (EPIP) EM-202, Duties of the Emergency Coordinator, provided a listing of postulated accident for which specific physical indicators and Emergency Action Levels (EALs) had been identified to expedite emergency classification. The licensee effectively used the emergency procedure to classify the simulated emergency situations during the exercise.

No violations or deviations were identified.

5. 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 licensee, and that the content of initial and followup

messages to response organizations were 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.

The inspector observed that notification methods and procedures were established and available for use in providing information regarding the simulated emergency conditions to Federal, State, and local response organizations, and to alert the licensee's emergency response organization. Notifications appeared to be made in accordance with procedures with one noted exception. The exception was the failure to notify the State Warning Point within 15 minutes of the General Emergency classification as required by Paragraph 7.4.11 of EPIP EM-202, Duties of the Emergency Coordinator. This was caused by the General Emergency classification being made by the Emergency Coordinator at approximately 1227 hours to have been effective as of 1204 hours. This retroactive classification caused some confusion as reflected in the news releases carrying the declaration time as 1204 hours, whereas the Emergency Operations Facility (EOF) status board and the notification made to the NRC both indicated a 1220 hours time of the General Emergency declaration. The events also identified an apparent lack of understanding of the relationship between emergency classification level and protective action recommendations (PARs) by the staffs in the TSC and the EOF. Specifically, PARs were made from the TSC to the EOF at 1204 hours when the Site Area Emergency status was still the highest declared emergency classification. The EOF staff acknowledged the recommendations and passed them on to the State without questioning the level of emergency classification. Although this does not directly conflict with EPIP EM-202, the decisions were not in accordance with what would be expected. EPIP EM-202 provided minimum PARs for the State at the General Emergency declaration, however, the procedure made no reference to making PARs for the State at a SAE. The occurrence of this non-proceduralized decision (i.e., the making of PARs while at a Site Area Emergency) would have been expected to be questioned by members of the emergency organization in either the TSC or EOF.

The above observations were identified as an exercise weakness for failure to notify the State Warning Point within 15 minutes of the General Emergency Classification. Corrective action to this finding will be tracked by Inspector Followup Item (IFI) 50-302/89-12-01.

The inspector noted that the licensee's Early Warning Notification System consisted of a system of sirens and tone alert radios that could be utilized to alert the public in the 10-mile Emergency Planning Zone (EPZ).

No violations or deviations were identified.

6. Emergency Communications (82301)

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

The inspector observed communications within and between the licensee's emergency facilities, the licensee and offsite agencies, and the offsite environmental monitoring and the EOF. The inspector also observed information flow among the various groups within the licensee's emergency organization. Emergency communications involving notification of the State, local agencies and the NRC of all Emergency classifications discussed above, appeared adequate and consistent with the Radiological Emergency Plan and Implementing Procedures except as noted in Paragraph 5.

No violations or deviations were identified.

7. 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 an engineering assessment for plant status and an assessment of radiological hazards to both onsite and offsite personnel resulting from the accident. Although the assessment program was adequate to mitigate the simulated accident, areas for improvement were noted. For example, no operational procedures were readily available in the TSC and no attempt was made by TSC personnel to follow where the Control Room personnel were in their procedures. Also, TSC personnel were slow in picking up on the fact that Air Handling Fan 7A and associated dampers had been removed.

The Emergency Coordinator in the TSC kept his personnel apprised of the plant status and was very effective in managing the emergency. Excellent use was made of the status boards and TSC personnel demonstrated excellent awareness of the radiological conditions which were potentially dangerous to the repair teams in the plant. However, the TSC was not effective in formulating and implementing a plan to identify the release path which was provided by a drill implementor at 1617 hours.

No violations or deviations were identified.

8. Exercise Critique (82301)

The licensee's critique of the emergency exercise was observed to determine that shortcomings identified as part of the exercise, were brought to the attention of management and documented for corrective

action pursuant to 10 CFR 50.47(b)(14), Paragraph IV.F of Appendix E to 10 CFR 50, and specific guidance promulgated in Section II.N of NUREG-0654.

The licensee conducted effective player critiques following exercise termination. A formal critique was held on June 23, 1989, with exercise controllers/implementors providing a presentation to licensee management and NRC representatives. The formal critique was essentially a summary of events and did not adequately address the shortcomings of the exercise nor identify those areas requiring corrective action. This observation was identified as IFI 50-302/89-12-02.

No violations or deviations were identified.

9. 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.

10. Action on Previous Inspection Findings (92701)

a. (Open) IFI 50-302/88-15-01: TSC failed to demonstrate an understanding of EALs and proficiency in recognizing and classifying emergency conditions. Although the EALs appeared to be understood, the retroactive classification of the General Emergency and concomitant confusion observed during this exercise prevents closure at this time.

b. (Closed) IFI 50-302/88-15-02: The Alert notification to the State was not initiated in 15 minutes; all notification messages were not reviewed by the Emergency Coordinator; and State notification forms lacked the time and person notified. Corrective action was observed for this previous finding with the exception of notification being initiated to the State within 15 minutes (for the General Emergency in this exercise). The corrective action for timeliness of notifications will be followed by IFI 50-302/89-12-01.

11. Exit Interview

The inspection scope an findings were summarized on June 23, 1989, with those persons indicated in Paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results listed below. No dissenting comments were received from the licensee.

The licensee did not identify as proprietary any of the material provided to be reviewed by the inspector during this inspection.

Item Number	Description and Reference
50-302/89-12-01	IFI - Exercise Weakness for failure to notify the State Warning Point within 15 minutes of the General Emergency Classification (Paragraph 5).
50-302/89-12-02	IFI - Failure of the exercise staff to provide an adequate critique by identifying shortcomings requiring corrective action (Paragraph 8).

Attachments:
Exercise Scope and Objectives
and Exercise Timeline

1989 ANNUAL RADIOLOGICAL EMERGENCY RESPONSE PLAN EXERCISE

PURPOSE

The purpose of this Exercise is twofold: to test the state of emergency preparedness of Crystal River Unit 3 (CR-3), the Florida Power Corporation (FPC) Corporate Emergency Response Organization, and the State and local response organizations; and to meet the annual Exercise requirement for licensees as defined in 10CFR50, Appendix E.

SCOPE

The Exercise will be a two day "full scale ingestion exposure pathway exercise" requiring full participation by FPC as well as the State of Florida and local emergency response agencies. Day one of the Exercise will consist of the plume exposure pathway portion and day two will consist of the ingestion exposure pathway portion of the Exercise. FPC's participation during the second day will be limited to the Emergency Operations Facility and the Emergency News Center to support the State of Florida in the ingestion exposure pathway portion of the exercise.

The Exercise will simulate events that will initiate a minimum of three of the four emergency classifications.

The Exercise will be conducted in a manner that simulates actual emergency conditions as closely as possible.

Throughout the Exercise events may be scheduled such that two or more drills may be conducted simultaneously.

Implementation will occur via Message Cards that will be provided to Exercise participants by Implementors. The Message Cards will contain scenario information which the participants will use to evaluate conditions and initiate specific emergency responses. Incorrect response, or failure to respond within a reasonable time, will be corrected. The correction will be provided both as on-the-spot training, and as a method for keeping the Exercise on schedule. All corrections and prompts will be documented.

The Exercise will be formally critiqued by participants and Implementors. The purpose of this critique will be to evaluate the performance of response organizations, and to determine the degree to which exercise objectives were met.

EXERCISE OBJECTIVES

GENERAL OBJECTIVES

1. Demonstrate the ability to alert and mobilize FPC emergency response personnel and to activate FPC emergency response centers in a timely manner.

2. Demonstrate the adequacy, operability, and effective use of emergency communications equipment.

3. Demonstrate the ability of FPC to support the State in emergency response activities within the ingestion exposure pathway emergency planning zone.

4. Demonstrate that weaknesses observed in the 1988 Exercise have been corrected.

OPERATIONS OBJECTIVES (Control Room)

1. Demonstrate the understanding of Emergency Action Levels (EALs) and proficiency in recognizing and classifying emergency conditions.

2. Demonstrate accident assessment and mitigation in the Control Room, including recognition and evaluation of degrading plant conditions, and recommendation of specific corrective actions to stabilize the plant.

3. Demonstrate the ability to perform emergency notifications, as required, to the State of Florida, local authorities, and the Nuclear Regulatory Commission.

4. Demonstrate an effective turnover of Emergency Coordinator responsibilities between the Shift Supervisor and the Director, Nuclear Plant Operations or Man-On-Call.

ONSITE EMERGENCY RESPONSE ORGANIZATION OBJECTIVES

1. Demonstrate effective implementation of EM-206, "Emergency Plan Roster and Notification".

2. Demonstrate site (protected area) evacuation and provisions to warn all personnel within the Owner Controlled Area.

3. Demonstrate accident assessment and mitigation capabilities in the Technical Support Center (TSC).

4. Demonstrate adequate management and control of onsite emergency response capabilities.

5. Demonstrate an understanding of EALs and proficiency in recognizing and classifying emergency conditions in the TSC.

6. Demonstrate an effective transfer of notification responsibilities from the Emergency Coordinator to the EOF Director when the Emergency Operations Facility is activated.

7. Demonstrate the effectiveness and control of the Emergency Repair Team and the plant Fire Brigade.

8. Demonstrate the receipt and analysis of all field monitoring data and coordination of those results with non-FPC agencies at the EOF.

9. Demonstrate the effectiveness and control of the Medical Emergency Team.

10. Demonstrate the communications link to offsite medical facilities (fixed or mobile).

11. Demonstrate provisions and decision-making capability for utilization of evacuation routes.

CORPORATE EMERGENCY RESPONSE ORGANIZATION OBJECTIVES

1. Demonstrate effective implementation of REP-02, "Activation and Notification of the Corporate Emergency Response Organization".

2. Demonstrate the ability to establish and maintain appropriate communications with State and Federal emergency management representatives including the recommendation of protective actions and the dispatching of FPC representatives to principal local government Emergency Operations Centers.

3. Demonstrate the ability to formulate a recovery/re-entry plan.

RADIOLOGICAL CONTROL OBJECTIVES

1. Demonstrate the ability to perform radiological monitoring and assessment in the plant and site environments.

2. Demonstrate effective estimation and assessment of a (simulated) release of airborne radioactivity to the environment, including formulation of onsite/offsite radiological dose projections.

3. Demonstrate the ability to provide the Emergency Coordinator, the EOF Director, or the Emergency/Recovery Director, timely and sound emergency protective action recommendations.

4. Demonstrate the availability and operability of emergency supplies and equipment.

CHEMISTRY AND WASTE MANAGEMENT OBJECTIVES

1. Demonstrate the ability to utilize emergency sampling procedures and equipment in response to an accident at CR-3 (samples will be simulated).

ENGINEERING OBJECTIVES

1. Demonstrate the capability of ascertaining the need for, and requisitioning, parts and components that will be used during recovery and corrective maintenance of damaged equipment.

2. Demonstrate the ability to use and coordinate engineering support as outlined in REP-02.

SECURITY OBJECTIVES

1. Demonstrate the ability to perform accountability onsite within 30 minutes of a site evacuation.

2. Demonstrate the capability of providing timely access into the CR-3 protected area to non-FPC personnel who are part of the accident response.

3. Demonstrate the capability of maintaining site security throughout an emergency at CR-3, including the capability of establishing and enforcing access control points.

4. Demonstrate Security escort capabilities.

INFORMATION SERVICES OBJECTIVES

1. Demonstrate timely activation of the Emergency News Center.

2. Demonstrate the ability to obtain emergency related information.

3. Demonstrate the ability to disseminate timely, accurate, and appropriate emergency information.

4. Demonstrate the ability to coordinate the release of emergency related information with State and County Public Information Officers.

5. Demonstrate the ability to respond to telephone inquiries concerning an emergency at CR-3, and to direct these inquiries to the proper source for resolution.

1989 RADIOLOGICAL EMERGENCY RESPONSE PLAN EXERCISE
LISTING OF EVENTS

0830 The initial conditions are given to the control room.
* The plant has been at 100% power for 115 days.
* Makeup Pump 1B (MUP-1B) is disassembled to determine the cause of high vibration.
* Diesel fuel truck on southeast berm preparing to ref el Emergency Diesel Generator tanks.
* Air Handling Fan 7A (AHF-7A) and associated dampers are disassembled and the motor is offsite to be re-wound.
* Plant computer is out of service due to software problems.

0850 A power supply failure causes a loss of annunciators. Plant electricians begin troubleshooting. An ALERT is declared based on the loss of annunciators AND computer alarms (plant computer alarms OOS).

The Technical Support Center (TSC) is activated and "in shop" accountability is performed per EM-205.

0920 A fork lift collides with a parked diesel fuel truck that is in the process of filling diesel tank A (located on the southeast berm). The fill line and the shut off valve on the truck are severed, spilling fuel over the berm. Both drivers appear to be injured. The Control Room is notified and the Fire Brigade and Medical Emergency Team is dispatched.

The TSC is declared operational.

0930 The Fire Brigade and the Medical Emergency Team (MET) arrive at the accident scene and observe the following:

* Diesel fuel has spread over the southeast berm and continues to spill from the tank.
* The diesel truck driver is on the ground and conscious but appears to be hurt.
* The fork lift is on its side and the drivers foot is wedged between the accelerator and floorboard. He does not appear to be injured anywhere else. Gasoline is leaking out of the fuel tank.

0930 The loss of annunciators is determined to be a blown fuse. The fuse is replaced and the annunciators are returned to service.

0940 Initial medical treatment is performed on the injured drivers. The diesel truck driver is able to walk but his hip and elbow are very sore. The fork lift drivers foot is freed and found to be bleeding due to a cut on the ankle. He is otherwise stable.

0945 The Fire Brigade continues attempts to contain diesel spill.

0955 Annunciators fail again, repair crew begins troubleshooting.

1000 High winds and rain thwart attempts by the Fire Brigade to cover the spilled diesel fuel with foam.

1005 The Control Room receives indications of feedwater pump and flow oscillations.

1015 A loss of control oil pressure causes the main feedwater pump to trip. A 0.5 gpm Reactor Coolant System (RCS) leak begins and the Reactor Building Atmospheric Monitor (RM-A6) trends upward slightly. The plant automatically runs back to 55% power.

1020 A **SITE AREA EMERGENCY** is declared based on the loss of annunciators and computer alarms WITH a plant transient. The Emergency Operations Facility (EOF) is activated and the CR-3 protected area is evacuated.

1025 The annunciators are returned to service.

1030 The diesel fuel on the southeast berm ignites.

1050 Protected Area accountability is complete.

1120 The EOF is declared operational.

1130 The Fire Brigade extinguishes the fire and reports damage to the control room. There are no additional injuries and equipment damage is limited to the two vehicles.

1155 The RCS leak degrades to a small break Loss of Coolant Accident (LOCA) of approximately 3500 gpm releasing significant activity to the Reactor Building. The Reactor Building atmospheric monitor (RM-A6) alarms. Makeup Pump 1C (MUP-1C) fails to start due to a breaker problem thus limiting makeup coolant flow to the RCS. An Emergency Repair Team is dispatched to the MUP-1C Breaker cubicle to investigate.

The Reactor Building Purge Valves begin to leak with the slight increase in Reactor Building Pressure and activity. The Reactor Building activity is released into the Auxiliary Building through the purge valves and the hole left by the removal of the Air Handling Fan. The plant vent monitor RM-A2 begins to trend upward slightly however, the release to the environment is below Technical Specification limits.

1156 The above transient cases a reactor trip.

1200 The site looses power because of a failure in the 4160 Engineered Safeguards (ES) us causing MUP-1A to shut down. There is now no makeup flow to the RCS. Emergency Repair Teams are dispatched to the 4160 ES Switchgear Room in the Control Complex.

1215 A GENERAL EMERGENCY is declared based on likely core damage The following protective action recommendations are made based on the plant and meteorological conditions (release is still below Tech. Spec. levels).

WIND DIRECTION: 318 °F
WIND SPEED: 3.7 mps (8.3 mph)

TWO MILE 360° EVACUATION
FIVE MILE EVACUATION OF SECTORS F,G, &H

ALL NON-ESSENTIAL PERSONNEL ARE EVACUATED FROM THE GENERATING COMPLEX.

1243 Core uncovery starts and super heat temperatures are reached. Reactor Building Pressure peaks at 15 psig causing the RB Purge valves to open further thus increasing the release of activity out of the Reactor Building through the plant vent and to the environment. The Environmental Survey Team and Dose Assessment Team begin plume tracking.

1247 Fuel cladding temperature passes 1400° F and gap activity is released.Protective action recommendations are upgraded as follows:

TWO MILE 360° EVACUATION
10 MILE EVACUATION OF SECTORS F,G,H, &J
10 MILE SHELTER OF REMAINING SECTORS

1253 The fuel cladding temperature is at 1800°F and the Reactor Building temperature peaks. Significant release to the environment continues.

1254 RCS pressure drops under 600 psi and Core Flood Tanks partially dump however, the cold water causes thermal stress fracturing of the fuel and increases the release rate.

1300 The A 4160 ES bus is repaired, offsite power is restored and MUP-1A is returned to service providing limited cooling to the core.

1305 MUP-1C breaker is repaired and the pump is returned to service providing adequate core cooling however, the release continues due to the significant activity in the Reactor Building atmosphere.

1337 Low Pressure Injection is now providing cooling to the core. The RCS is stabilizing.

1445 The radioactive release peaks at this point and then begins to trend downward.

1500 The offsite releases but continues to trend downward. FPC and State monitoring teams continue plume tracking.

1700 The plant is stable a slight offsite release continues to decrease. DAY ONE OF THE EXERCISE IS TERMINATED

1989 RADIOLOGICAL EMERGENCY RESPONSE PLAN EXERCISE
DAY TWO EVENTS

0830 Initial briefing conducted at EOF (see briefing paper).

0905 The plant requests additional recovery support personnel. 130 Health Physics Technicians are required ASAP. Also, additional radiation monitoring equipment is needed. The plant requests utility contacts to provide monitoring equipment.

0930 Fossil Operations requests that essential operations personnel be allowed on site. The Energy Control Center reports high electrical demand and are requesting the restart of Units 4&5. The Emergency/Recovery Director begins to evaluate this request.

1015 The Emergency Diesel Generators still require refueling, the plant requests personnel to clean up the area of the diesel fuel fire to prepare for another tanker. Heavy equipment is necessary to move the burned vehicles.

1030 The State of Florida requests an estimate of total activity released. FPC Dose Assessment personnel begin evaluation.

1045 Health Physics reports that south coal pile has contamination levels slightly above acceptable limits. Fossil Operations has inquired as to the burning of coal from that pile. Additionally, a coal train is due to arrive on site in 3 hours, Fossil Operations requests that the train be allowed access.

1400 THE EXERCISE IS TERMINATED.