



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

SEP 25 1987

Report Nos.: 50-335/87-19 and 50-389/87-18

Licensee: Florida Power and Light Company
9250 West Flagler Street
Miami, FL 33101

Docket Nos: 50-335 and 50-389

License Nos: DPR-67 and NPF-16

Facility Name: St. Lucie

Inspection conducted: August 25-September 4, 1987

Inspector:

J. Hickey for
A. L. Cunningham

9/24/87
Date Signed

Accompanying Personnel: G. W. Bethke
D. R. Brewer
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Approved by:

J. Hickey
T. R. Decker, Chief
Emergency Preparedness Section
Division of Radiation Safety
and Safeguards

9/24/87
Date Signed

SUMMARY

Scope: This routine, announced inspection involved evaluation of the annual radiological emergency preparedness exercise.

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *J. W. Dickey, Vice President, Nuclear Operations
- *J. S. Odom, Site Vice President - Plant Turkey Point
- *G. J. Boissy, Plant Manager
- *J. B. Harper, Superintendent of Quality Assurance
- *J. Barrow, Operations Superintendent
- *J. J. Maisler, Emergency Planning Manager
- *G. Casto, Emergency Planning
- *R. Sipos, Services Manager
- *S. Shaw, Communications Supervisor
- *L. J. Snipes, Communications Manager
- *H. F. Buchanan, Health Physics
- *R. J. Frechette, Chemistry Supervisor
- *C. L. Wilson, Department Head, Mechanical Maintenance
- *J. K. Hays, Director - Nuclear Licensing
- *E. Beurrier, Health Physics Supervisor
- *C. Ward, Site Emergency Coordinator
- A. W. Taylor, Emergency Planning Technician (Turkey Point Plant)

Other licensee employees contacted included construction craftsmen, engineers, technicians, operators, mechanics, security office members and office personnel.

NRC Resident Inspector

*H. E. Bibb

*Attended Exit Interview

2. Exit Interview

The inspection scope and findings were summarized on August 27, 1987, with those persons indicated in the paragraph above. The inspector described the areas inspected and discussed in detail the inspection findings listed below. The exercise weaknesses identified in Paragraphs 8 and 14, below, were discussed and clarified with the Site Emergency Coordinator via telephone on September 4, 1987. No dissenting comments were received from the licensee. The licensee did not identify as proprietary any of the material provided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters

(Closed) Violation 50-335, 50-389/87-08-01: Failure to submit Revision 16 of Radiological Emergency Plan to the NRC within 30 days of the effective date. Inspection disclosed that the licensee had implemented administrative measures to preclude untimely issuance of REP Revisions.

4. Exercise Scenario (82301)

The scenario for the emergency exercise was reviewed to assure that provisions were made to test the integrated capability and a major portion of the basic elements defined in the licensee's emergency plan and organization 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 scenario was reviewed in advance of the exercise and discussed in detail with licensee representatives on several occasions. While no major scenario problems were identified, several inconsistencies became apparent during the exercise. The inconsistencies, however, failed to detract from the overall performance of the licensee's emergency organization.

The scenario developed for this exercise was detailed, and fully exercised the onsite emergency organization. The scenario provided sufficient information to the States, counties, local government and federal agencies consistent with their participation in the exercise.

The licensee demonstrated a significant commitment to training and personnel through use of controllers, evaluators, and specialists participating in the exercise. The controllers provided adequate guidance throughout the exercise.

The scenario developed for the medical emergency drill adequately exercised the participating groups of the licensee's organization and offsite local emergency support agencies. Both licensee and offsite support agencies also demonstrated a significant commitment to training and personnel by use of controllers, evaluators, and specialists participating in the medical emergency drill. Neither prompting nor undue interaction between controllers and players was observed.

No violations or deviations were identified.

5. Assignment of Responsibility (82301)

This area was observed to assure that primary responsibilities for emergency response by the licensee were specifically established, and that adequate staff was available to respond to an emergency pursuant to 10 CFR 50.47(b)(1), Paragraph IV.A of Appendix E to 10 CFR 50, and specific guidance promulgated in Section II.A of NUREG-0654.

The inspectors observed that specific emergency assignments were made for the licensee's emergency response organization, and that adequate staff was available to respond to the simulated emergency. The initial response organization was augmented by designated licensee representatives; however, because of the scenario scope and conditions, long-term or continuous staffing of the emergency response organization was not required. Discussions with licensee representatives and detailed review of the site Radiological Emergency Plan indicated that a sufficient number

of trained technical personnel were available for continuous staffing of the augmented emergency organization, if needed.

The inspectors also observed activation, staffing, and operation of the emergency organization in the Technical Support Center (TSC), Operations Support Center (OSC), Emergency Operations Facility (EOF), and near-site Emergency News Center (ENC). The required staffing and assignment of responsibility at these facilities were consistent with the licensee's Emergency Plan and approved Implementing Procedures.

No violations or deviations were identified.

6. Onsite Emergency Organization (82301)

The licensee's onsite emergency organization was observed to assure that the following requirements were implemented pursuant to 10 CFR 50.47(b)(2), Paragraph IV.A of Appendix E to 10 CFR 50, and specific guidance promulgated in Section II.B of NUREG-0654: (1) unambiguous definition of responsibilities for emergency response; (2) provision of adequate staffing to assure initial facility accident response in key functional areas at all times; (3) specification of onsite and offsite support organizational interactions.

The inspectors observed that the initial onsite emergency organization was adequately defined, and that staff was available to fill key functional positions within the organization. Augmentation of the initial emergency response organization was accomplished through mobilization of off-shift and available on-shift personnel. The on-duty Shift Supervisor assumed the duties of Emergency Coordinator promptly upon initiation of the simulated emergency, and directed the response until formally relieved by the Station Manager. Required interactions between the licensee's emergency response organization and State and local support agencies were adequate and consistent with the scope of the exercise.

No violations or deviations were identified.

7. Emergency Classification System (82301)

This area was observed to assure that a standard emergency classification and action level scheme was in use by the nuclear facility licensee pursuant to 10 CFR 50.47(b)(4), Paragraph IV.C of Appendix E to 10 CFR 50, specific guidance promulgated in Section II.D of NUREG-0654, and guidance recommended in NRC Information Notice 83-28.

An Emergency Action Level matrix was used to promptly identify and properly classify an emergency and escalate it to more severe emergency classifications as the simulated accident sequence progressed. Licensee actions in this area were timely and effective.

Observations confirmed that the emergency classification system was effectively used and was consistent with the Radiological Emergency Plan

and Implementing Procedures. The system was observed to be adequate for classification of the simulated accident sequences. The emergency procedures provided for initial and continuing mitigating actions during the simulated emergency.

No violations or deviations were identified.

8. 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 follow-up messages to response organizations was established. This area was further observed to assure that means to provide early notification to the populace within the plume exposure pathway were established pursuant to 10 CFR 50.47(b)(5), Paragraph IV.D of Appendix E to 10 CFR 50, and specific guidance promulgated in Section II.E of NUREG-0654.

An inspector observed that notification methods and procedures 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 augmented emergency response organizations, if required. Inspection also disclosed that the licensee consistently failed to implement prompt notification of the State and counties within the 15-minute time regime following declaration of the Notification of Unusual Event (NOUE), Site Area Emergency, and General Emergency. In the case of the NOUE, delay in notification was traceable to the State of Florida's procedural requirement to verify the validity of the licensee's notification. This then required the State to call the licensee for verification prior to implementing its notification of the counties and local response agencies. It was noted that, although the State implements notification of the counties, the licensee bears responsibility for all notification, including the State, Federal, and county.

The above finding, and the significant delay in notification of the Site Area Emergency and General Emergency in excess of 15 minutes, was discussed with licensee representatives during the critique conducted on August 27, 1987, and the telephone conversation of September 4, 1987. The licensee committed to review the subject findings and implement indicated corrective actions.

Exercise Weakness 50-335/87-19-01, 50-389/87-18-01: Notification of emergency classifications within the required 15-minute time regime.

9. 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 promulgated in Section II.F of NUREG-0654.

The inspector observed communications within and between the licensee's emergency response facilities (Control Room, TSC, OSC, EOF), the licensee and offsite response organizations, and the offsite environmental monitoring teams and the TSC/EOF. The inspectors also observed information flow among the various groups within the licensee's emergency organization. Emergency communications and communication systems were significantly improved, and consistent with emergency response requirements.

No violations or deviations were identified.

10. Emergency Facilities and Equipment (82301)

This area was observed to assure that adequate emergency facilities and equipment to support an emergency response were provided and maintained pursuant to 10 CFR 50.47(b)(8), Paragraph IV.E of Appendix E to 10 CFR 50, and specific guidance promulgated in Section II.H of NUREG-0654.

The inspector observed activation, staffing, and operation of the emergency response facilities, and observed the use of equipment therein. Emergency response facilities used by the licensee during the exercise included the Control Room, Technical Support Center, Operations Support Center, and Emergency Operations Facility.

- a. Control Room - The Unit 2 Control Room was provided for the exercise Shift Supervisor and his staff. Required communications equipment, Control Room procedures and documents were readily available. The inspector observed that, following review and analysis of the sequence of accident events, Control Room operations personnel acted promptly to initiate required responses to the simulated emergency. Emergency procedures were readily available, routinely followed, and factored into accident assessment and mitigation exercises.

Control Room personnel involvement was essentially limited to those personnel assigned routine and special operational duties. Effective management of personnel gaining access to the Control Room precluded overcrowding, and maintained an ambient noise level required for orderly conduct of operations under emergency conditions.

The Shift Supervisor and the Control Room operators were cognizant of their duties, responsibilities, and authorities. These personnel demonstrated an understanding of the emergency classification system and the proficient use of specific procedures to determine and declare the proper emergency classification.

The Control Room staff demonstrated the capability to consistently and effectively assess the initial conditions and implement required mitigating actions in a timely manner. It was noted that a detailed

log of the facility's activities was maintained by the Shift Supervisor throughout the exercise.

- b. Technical Support Center (TSC) - The TSC was activated and promptly staffed following notification by the Emergency Coordinator of the simulated emergency conditions leading to the Alert classification. The facility staff appeared to be cognizant of their emergency duties, authorities, and responsibilities. Required operation of the facility proceeded in an orderly manner. The TSC was provided with adequate equipment for support of the assigned staff.

During operation of the TSC, radiological habitability was routinely monitored and documented, and personnel dosimetry was distributed as required. Status boards and related visual aids were strategically located to facilitate viewing by the TSC staff. Dedicated communicators were assigned to the facility. Notification is discussed in Paragraph 8, above.

Inspection disclosed the following additional findings, namely: (1) engineering, maintenance, and other technical support functions were readily implemented and factored into problem-solving exercises; (2) assumption of duties by the Emergency Coordinator was definite and firm; (3) transfer of certain emergency responsibilities from the Control Room to the TSC was firmly declared and announced to the TSC staff; (4) briefings of the TSC staff were frequent, and consistent with changes in plant status and related emergency conditions; (5) accountability, including identifying missing personnel, was readily implemented within the accepted time regime and was consistent with the scope of the scenario; (6) TSC Controllers were effective in identifying minor scenario problems and interacted with players without prompting. The transfer of authority and specific responsibilities by the Emergency Coordinator to the EOF Recovery Manager following activation of the EOF was prompt, effective and consistent with the Radiological Emergency Plan and implementing procedures. Frequent and effective communications occurred between the respective facility managers.

- c. Operations Support Center (OSC) - The OSC was promptly staffed following activation of the emergency plan by the Emergency Coordinator. An inspector observed that teams were promptly assembled, briefed, and dispatched. A health physics technician accompanied each team. The OSC Supervisor appeared to be cognizant of his duties and responsibilities. During operation of this facility, radiological habitability was routinely monitored and documented.

The OSC Supervisor demonstrated effective management and control practices. The Coordinator frequently updated his staff regarding plant status, and thoroughly briefed each investigation and repair team prior to their deployment to the accident areas. It was noted by the NRC evaluators and licensee observers, however, that the OSC

public address system was not activated. No apparent adverse effects were noted; however, this finding was documented during the licensee's Controller/Evaluator Critique for review and corrective action.

- d. Emergency Operations Facility (EOF) - The EOF was located approximately 10.5 miles west of the plant. The facility was adequately equipped and staffed to support the required response to the simulated emergency.

EOF security was promptly established and was included as a routine requirement for preparation and activation of the facility. Status boards and other related visual aids were strategically located and were readily accessible for viewing by the EOF staff. Dedicated communications were assigned to the facility, and all required notifications were promptly made.

The EOF principal staff freely interacted with State and county representatives assigned to the facility. The subject representatives were routinely informed of plant status, and were consistently factored into the the decision-making process addressing required and proposed protective measures and decisions. Transfer of authority and responsibilities of the TSC Emergency Coordinator to the EOF Recovery Manager, attending activation of the facility, was firm and effective. The Recovery Manager was updated on the status of the emergency and was thoroughly briefed on previous and proposed mitigating actions. EOF communications with the Control Room, TSC, and OSC were maintained throughout the exercise.

No violations or deviations were identified.

11. Accident Assessment (82301)

This area was observed to assure 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), Paragraph IV.B of Appendix E to 10 CFR 50, and specific guidance promulgated in Section II.I of NUREG-0654.

The accident assessment program included an engineering assessment of plant status, and an assessment of radiological hazards to onsite and offsite personnel resulting from the accident. During the exercise, the engineering accident assessment team functioned effectively in analyzing plant status and providing recommendations to the Emergency Director concerning mitigating actions required to reduce damage to plant systems and equipment, prevention and/or control of radioactive releases, and prompt termination of the emergency condition.

Radiological assessment activities involved several groups. An inplant group was effective in projecting the radiological impact within the plant based upon inplant monitoring and onsite measurements. Offsite

radiological monitoring teams were dispatched to determine the level of radioactivity in those areas within the influence of the plume. Radiological effluent data were received in the TSC, where dose calculations were computed and factored into the exercise. All resultant data were consistent with projected scenario parameters.

Radiological field monitoring teams were neither observed nor evaluated by the NRC; however, inspectors assigned to the TSC and EOF observed dose assessment activities and related coordination and management of field monitoring teams deployed to identify, monitor, and track offsite radiological releases. Accordingly, the licensee demonstrated effective interaction with State field monitoring teams and the State dose assessment group assigned to the EOF. Dose assessment and projection calculations performed by the TSC, EOF, and State throughout the release period were compared and determined to readily agree within acceptable limits. TSC, EOF, and State Coordinators conducted consistent and effective command and control of field teams throughout the subject phase of the exercise.

No violations or deviations were identified.

12. Protective Response (82301)

This area was observed to determine whether guidelines established for protective actions, consistent with federal guidance, were developed and in place, and whether protective actions for emergency workers, including evacuation of nonessential personnel, were promptly implemented pursuant to 10 CFR 50.47(b)(10) and specific guidance promulgated in NUREG-0654.

The protective measures decision-making process was observed by the inspectors. For each emergency classification defined, appropriate inplant and offsite protective measures were reviewed. Protective measures recommendations were consistent with the current Radiological Emergency Plan and the scope and objectives of the exercise.

No violations or deviations were identified.

13. Radiological Exposure Control (82301)

This area was observed to determine that methods for controlling radiological exposures in an emergency were established and implemented for emergency workers, and that these methods included exposure guidelines consistent with EPA recommendations pursuant to 10 CFR 50.47(b)(11) and specific guidance promulgated in Section II.K of NUREG-0654.

An inspector noted that radiological exposures were controlled throughout the exercise by issuing supplemental dosimeters to emergency workers. Periodic radiological surveys were conducted in the emergency response facilities. Exposure guidelines were in place for various categories of emergency actions. Adequate protective clothing and respiratory protection was available for use as required.

Health Physics control of radiation exposure, contamination control, and radiation area access appeared adequate. Health Physics Supervisors were observed to thoroughly brief survey, investigative, and repair teams prior to their deployment into radiation controlled areas. Dosimetry was available and effectively used. High-range dosimeters were also available and fully used where required.

No violations or deviations were identified.

14. Public Education and Information (82301)

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

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 the initial actions which should be taken during an emergency. A rumor control program was also in place.

An NRC inspector was assigned to observe and evaluate activation, staffing, and routine operation of the near-site Emergency News Center (ENC). The following evaluations were made: (1) the number of telephones available to resident press representatives was adequate; (2) accurate information was contained in news releases; (3) periodic press briefings and related updates were frequent; (4) visiting media personnel were prohibited from interfering with operation and management of the ENC; (5) information provided to the public was simply stated and readily understandable.

It was noted, however, that, contrary to Section 4.1 of Procedure 1103 (Duties of the Emergency Information Manager), the timing and content of all news releases were not formally approved by the Emergency Control Officer prior to actual release. Only verbal approval was given by the subject officer. Consistent with Section 4.1 of the cited procedure, approval implies signature or identifiable initials of the cognizant manager or officer. Licensee management agreed with this finding as discussed during the Exit Interview conducted on August 27, 1987, and the telephone conversation initiated by the NRC on September 4, 1987, to clarify and confirm final NRC inspection findings. The licensee representative committed to review the subject item and clarify required approval to indicate formal signature as the sole means of approval of all news releases issued from the near-site ENC.

Exercise Weakness 50-335/87-19-02, 50-389/87-18-02: Failure of ENC Emergency Control Officer to properly approve all news releases prior to issuance of same to the public. This item will be reviewed during subsequent inspections.

15. Recovery Planning (82301)

This area was reviewed pursuant to the requirements in 10 CFR 50.47(b)(13), Paragraph IV.H of Appendix E to 10 CFR 50, and the specific guidance promulgated in Section II.M of NUREG-0654.

The licensee conducted a recovery planning meeting prior to termination of the exercise. Licensee planners discussed and established the following: administrative and logistical support, manpower and engineering services, radiological surveillance, development and assignment of a recovery organization consistent with the Emergency Plan and Implementing Procedures. A comprehensive review of reentry plans and status was conducted.

No violations or deviations were identified.

16. 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 inspectors observed the licensee's Controller/Evaluator critique following termination of the exercise. The subject critique involved a detailed discussion and analysis of required improvements, weaknesses, and deficiencies identified during the exercise. All findings were documented for review and correction. Positive findings were also discussed and recorded for presentation during the formal NRC/Licensee critique. The critique was effectively managed, controlled, and directed to identification/documentation of substantive findings and indicated improvements. The conduct and content of the cited critiques were consistent with regulatory requirements and guidance cited above.

No violations or deviations were identified.

17. Inspector Follow-up (92701)

- a. (Closed) Inspector Follow-up Item (IFI) 50-335/85-15-01: Need to send HP and Chemistry procedures implementing Radiological Emergency Plan to the NRC in accordance with Appendix E, Section IV of 10 CFR 50. Inspection disclosed that pertinent health physics and chemistry procedures and revisions thereof will be routinely forwarded to the NRC, as required.
- b. (Closed) IFI 50-335/86-IN-98, 50-389/86-IN-98: Offsite medical services. Inspection disclosed that supplemental or backup medical services consistent with the subject IE Information Notice have been provided.

- c. (Closed) IFI 50-335/86-12-01, 50-389/86-11-01 (Exercise Weakness): Delegation of Emergency Coordinator responsibilities without ensuring that timely information flow/updates are provided to the recipient. Inspection disclosed that required transfer of responsibilities from the Emergency Coordinator to the recipient was decisively and effectively implemented and included detailed information updates as required.
- d. (Closed) IFI 50-335/87-EP-01, 50-389/87-EP-01: Verify audibility of alarms in high-noise areas (Bulletin 79-18). The inspector and a cognizant licensee representative requested the Shift Supervisor actuate site alarms as a routine practice. Having located themselves in the maximum noise area of the plant (plant cooling water intake pumps), both persons determined that the subject alarms were readily audible.

18. 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 this exercise will be forwarded by separate correspondence.

Attachment:
Exercise Scope and Objectives



OBJECTIVES

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT
EVALUATED EXERCISE OBJECTIVES
AUGUST 26, 1987

A. General Objectives

1. Notification of Emergency Response Personnel
 - a. Demonstrate the ability to promptly notify and communicate information to NRC, State and local authorities.

2. Emergency Response Facilities, Equipment, and Communications
 - a. Demonstrate the ability to staff the Technical Support Center (TSC), the Operations Support Center (OSC), the Emergency Operations Facility (EOF), and the Emergency News Center (ENC).
 - b. Demonstrate the functional and operational adequacy of the TSC, OSC, EOF, and ENC.
 - c. Demonstrate the adequacy, operability, and effective use of designated emergency response equipment.
 - d. Demonstrate the adequacy, operability, and effective use of emergency communication equipment.

3. Direction and Control
 - a. Demonstrate the ability of each emergency response facility manager to maintain command and control over the emergency response activities conducted within the facility throughout the exercise.
 - b. Demonstrate the ability to gather, assess, and disseminate information to the public and governmental officials regarding the status of the emergency conditions and the status of emergency response activities per regulatory time restraints.
 - c. Demonstrate the ability to initiate and coordinate emergency response activities in an efficient and timely manner.

- d. Demonstrate the ability of emergency response personnel to execute the St. Lucie Plant Radiological Emergency Plan through its associated Emergency Plan Implementing Procedures.
4. Accident Assessment
 - a. Demonstrate the ability of the Control Room, TSC, and EOF to analyze current plant conditions, and their potential consequences, and provide recommendations for mitigating actions.
 5. Radiological Assessment
 - a. Demonstrate the ability to coordinate on-site, in-plant, and off-site radiological monitoring activities.
 - b. Demonstrate the ability to coordinate the TSC and EOF dose assessment activities.
 - c. Demonstrate the ability to control and coordinate the flow of information regarding off-site radiological consequences between radiological assessment personnel stationed at the TSC and the EOF.
 6. Protective Response
 - a. Demonstrate the ability to adequately control radiation exposure to on-site emergency workers.
 - b. Demonstrate the ability for the Emergency Coordinator and/or Recovery Manager to determine Protective Action Recommendations for the public per regulatory time restraints.
 7. Training & Exercise
 - a. Demonstrate the effectiveness of the emergency preparedness training program through the critique of trained participants in a practical demonstration.
 - b. Demonstrate the effectiveness of actions taken to correct past identified weaknesses in the emergency preparedness program.
 - c. Demonstrate the ability of participants and controller/evaluators to evaluate and critique their exercise performance.

B. Specific objectives for those activities conducted from the Control Room, Technical Support Center, and Operations Support Center.

1. Direction and Control

- a. Demonstrate the precise and clear transfer of Emergency Coordinator responsibilities from the Control Room to the TSC.
- b. Demonstrate the ability of each facility manager to periodically inform facility personnel of the status of the emergency situation and the plant conditions.
- c. Demonstrate the ability to timely and accurately transfer information between emergency response facilities.
- d. Demonstrate the ability of the TSC and OSC to coordinate the deployment of emergency teams.

2. Accident Assessment

- a. Demonstrate the ability of the Control Room staff to make a timely determination of the probable cause of the incident, and perform mitigating actions to place the affected unit in a safe, stable condition.
- b. Demonstrate the ability of the TSC staff to support the Control Room efforts to identify the probable cause of an incident, mitigate the consequences of that incident, and place the affected unit in a safe, stable condition.
- c. Demonstrate the ability of the Nuclear Plant Supervisor and Emergency Coordinator to classify an emergency condition.

3. Radiological Assessment

- a. Demonstrate the ability of the TSC to direct and, OSC to deploy on-site and off-site radiological monitoring teams in a timely manner.
- b. Demonstrate the ability of the on-site survey team personnel to efficiently and effectively utilize their procedures to perform dose rate surveys, collection and analysis of radiological samples, and other prescribed on-site and in-plant radiological monitoring activities.
- c. Demonstrate the ability to perform timely assessments and projections of on-site and off-site radiological conditions to support the formulation of protective action recommendations.
- d. Demonstrate the ability to assess information available from the containment and effluent high-level radiation monitoring systems and respond accordingly.

- e. Demonstrate the ability to analyze samples drawn from the in-plant normal and post-accident sampling systems, and assess the resultant data.

4. Protective Response

- a. Demonstrate the ability to formulate and implement on-site protective action measures in a timely manner.

- C. Specific Objectives for those Activities Conducted from the Emergency Operations Facility and Emergency News Center.

1. Emergency Response Facilities and Communications

- a. Demonstrate real time activation of the EOF from the Juno Beach Office and staff in a timely manner.
- b. Demonstrate that adequate communications exist between FPL and offsite agency emergency facilities.

2. Direction and Control

- a. Demonstrate the precise and clear transfer of the responsibility to notify offsite agencies, and issue Protective Action Recommendations from the Emergency Coordinator to the Recovery Manager.

3. Accident Assessment

- a. Demonstrate the ability of the EOF staff to support the on-site efforts to identify the cause of an incident, mitigate the consequences of that incident, and place the affected unit in a safe, stable condition.
- b. Demonstrate as necessary, the ability to obtain vendor and other outside resources to assist accident analysis and mitigation efforts.

4. Radiological Assessment

- a. Demonstrate the ability to coordinate FPL off-site radiological monitoring activities with those conducted by the State.
- b. Demonstrate the ability to perform assessments and projections of off-site radiological conditions to support the timely formulation of protective action recommendations.
- c. Demonstrate the ability to coordinate and compare FPL off-site dose assessment activities with those conducted by the State.

d. Demonstrate the ability to control and coordinate the flow of information regarding off-site radiological consequences with State radiological assessment personnel.

5. Protective Response

a. Demonstrate that decisions can be made in a timely manner regarding protective action recommendations for the general public within the Plume Exposure (10-mile) Emergency Planning Zone (EPZ), and can be communicated to State and local authorities within regulatory time restraints.

6. Public Information

a. Demonstrate the ability to coordinate the preparation, review and release of information with State and local government agencies as appropriate; and provide accurate, clear and timely information releases to the news media.

D. Specific Portions of the Emergency Response that will not be tested.

1. Site evacuation.
2. Real time activation of the Emergency News Center.
3. Real time response by the Emergency Information Manager.



TIMELINE and MINI-SCENARIOS

ST LUCIE EVALUATED EXERCISE

Revision 7/07/87

Unit 2 Initial Conditions

The Unit has just returned to 100% power following an uncomplicated trip. (Unit returned to power on August 25 at 10:00 pm).

Unit 2 is near end-of-life with 20 days left before scheduled refueling.

RCS activity has shown an increase since returning to operation. Initial activity upon return to power was 4 uci/ml I-131 DEQ. The 8:00 am sample indicated .9 uci/ml I-131 DEQ.

2-A Auxiliary feedwater pump is out of service for inboard bearing replacement. Estimated time to repair is 7 hours.

2-B Charging pump is out of service to replace packing. Estimated time to repair is 10 hours.

A small primary/secondary tube leak in S/G 2-A was detected upon return to power; leak has remained steady at approximately .06 gpm.

Periodic containment anomaly check is due this shift coordinated with HP to begin at 10:15 am. Containment mini-purge is in progress at this time.

1 PORV block valve is out of service, closed and de-energized due to burned-out motor. Estimated time to repair is twelve hours.

Unit 1 Conditions

Unit 1 is at 100% power--120 days into current cycle.

All equipment operable and available.

Meteorological conditions are typical for South Florida. The present temperature is 83 degrees F. and the wind is variable at 1 to 3 mph. Forecast for today is partly cloudy, winds from the east to south-east at approximately 5 mph. There is a 50% chance of thunderstorms.

- 10:00 Exercise commences.
- 10:15 Nuclear Operator (NO) and Health Physics Tech. (HP) enter containment for anomaly check.
- 10:30 NO calls control room from containment asking permission to backseat manual letdown isolation valve V-2593 and informs NPS that backseating this valve has worked in the past.
- 10:40 NPS or ANPS grants permission for backseat.
- 10:50 NO has no success backseating valve using reach rod so he takes it upon himself to enter cubicle and physically backseat valve using a valve wrench. HP objects but cannot stop NO. When NO applies pressure to valve, bonnet cracks, releasing large amounts of steam. NO is scalded, jumps away, hits head on angle iron, and is knocked unconscious (which will lead to fatality). Cracked bonnet creates a .85 gpm primary system leak.
- 10:55 HP calls control room for help after pulling unconscious operator from the valve area and carrying him to personnel hatch. Burns to the HP's face and wrists are received in the process.
- 11:00 While dragging the operator out of the containment the HP cuts the face of the inner door seal causing inner door seal failure.
- The HP is extremely excited about the condition of operator and fails to close the inner door before opening the outer door. The ringfeeder (clutch) which should not allow this to occur has become corroded (due to a lack of pm) and is not working properly. The HP succeeds in opening the outer door with the inner door open, but in doing so shears the Geneva latch plate (at a defective area, i.e. manufacturing flaw) and the outer door cannot be latched.
- Alarm in the Control Room will indicate that the personnel hatch is open.
- Ops should curtail mini-purge at this time realizing that a potential primary leak is in progress. Neither butterfly valve completely reseats. Ops should be unaware of this leak path due to open airlock contributing to any increase in plant vent monitor.
- 11:05 First aid team arrives at personnel hatch and finds HP Tech. semi-conscious and NO dead.
- 11:10 Control room receives call from first aid team on the

status of injuries and that both hatch doors are open.

11:15 A NOTIFICATION of UNUSUAL EVENT should be declared for contaminated, injured worker prior to first aid vehicle leaving site for hospital.

Control room leak rate procedure indicates a total .85 gpm primary leak.

NPS sends in a second containment entry team to verify that pressure boundary leakage exists.

Operations department secures inner hatch door and informs Technical group to do a seal test on inner door (outer door will not lock down).

Within approximately 15 minutes of being made aware that both hatch doors are left open the NPS should declare an UNUSUAL EVENT based on a loss of containment integrity.

11:30 Tech group begins seal test on inner personnel hatch.

11:40 Verification from containment entry team that pressure boundary leakage exists causes the NPS to institute shutdown at 1% per minute.

11:45 Tech group test the inner door seal and finds the leakage to be 15,000 SCCM.

12:00 The Mechanical maintenance department checks with stores and finds there are spare Geneva plates and they inform the NPS they will have the personnel hatch repaired in approximately 2 hours.

12:15 V-2593 leak increases to 55 gpm.

12:20 --- At 60% power, shutdown rate increases to 2% per minute to address recognition of the larger leak rate.

12:30 Media rumors of unconfirmed number of deaths and major reactor problems at St. Lucie plant.

At approximately this time, EC should declare ALERT based on >50 gpm mismatch between charging and letdown with other indications of primary leak in containment.

12:40 During controlled shutdown, NPS/EC attempts to swap A and B Aux-Transformer breakers to start-up position (offsite power). 2B fails to swap but remains closed. Ops will attempt to start B diesel which will fail to start.

12:55 Reactor at approximately 20% power and holding to

complete repairs to B Aux transformer breaker and B diesel.

13:00 Contingency message may be given at this time to EOC to activate EDF due to increased media attention.

13:10 2-B Start-up breaker is repaired. Cause was a loose connector on control power fuse block.

Shutdown resumes.

13:15 Bonnet on V-2593 "zipper" off valve, increasing leak rate to approximately 4550 gpm. Reactor trips.

13:18 Start-up breaker reopens and 2B diesel generator still not repaired causing loss of all B-side power, including 2B Aux. feed pumps. C Aux feed pump used to supply feed water to A and B steam generators; trips on overspeed. Ops must get T.O. to reset overspeed latch. Upon reset, 2C Aux feedwater pump starts but trips again on overspeed. T.O. reports oil level in gov. control low and goes out to find oil. In the meantime, RCS is indicating saturated conditions.

All B-side safeguards are off.

13:35 Personnel hatch is repaired but the seal has not yet been confirmed by a satisfactory leak test. Mini-purge is still leaking but it is not obvious to the Control Room that the valves did not seat or that any additional leakpath from containment exists.

As containment pressure increases, release exits containment through mini-purge and escapes into the environment. 90% of the release is taken up by the Auxiliary Building Supply Fans (directly above the area where the mini-purge is located); 10% escapes ---unmonitored into the environment.

13:45 Reactor core uncovered at this time. A GENERAL EMERGENCY should be declared shortly after the recognition of the loss of 3 fission product barriers. Protective Action Recommendations should be: Evacuate 0-2 miles, complete radius; Evacuate 2-5 miles, complete radius; shelter 5-10 miles, complete radius. Sectors N,P,Q affected WNW sector.

A SITE AREA EMERGENCY may initially be declared due to the primary leak being greater than charging pump capacity. This should be escalated shortly after core uncover.

13:55 T.O. puts oil in 2C Aux feedwater pump. Pump start is successful and feeding steam generators. Total time

without AFW approximately 30 minutes.

2B Start-up Transformer breaker is repaired and E-side power is restored.

14:00 EOP should be operational at this time.

14:15 H2-Analyzer indicating 1.0% H2 in containment.

14:30 Due to increased pressure in containment, airborne radioactive release from containment via the mini-purge intake increases. Release exits the Aux Building unmonitored, and is picked up by the Auxiliary Building ventilation intake. Increased activity is detected by radiation monitors throughout the Aux Building and through the plant vent. Control Room becomes aware of the existence of another release path.

14:45 With H2 recombiners in operation, hydrogen is slowly being reduced in containment.

15:00 Small doses are being measured beyond 2 miles from the plant. Doses are not significant enough to prompt further PARs.

15:30 Containment pressure continues to reduce as plant regains control of incident.

Plant goes into recirculation phase at approximately this time. When this occurs, dose rates and air activity in the Aux. Building increase significantly due to gases in RCS escaping from LPSI pump leaks. Some additional activity is released through the plant vent.

16:00 Plant reaches shutdown cooling temperature.

16:30 Emergency repair crews succeed in securing mini-purge isolation valve, terminating the release from containment.

17:30 Containment hydrogen further reduces, plant conditions appear stable.

18:00 Exercise is terminated.

MINI-SCENARIO #1

CONTAMINATED INJURY AND DEATH

- 10:15 am Nuclear Operator, with Health Physics coverage, enter Unit 2 containment to perform periodic anomaly check. Once inside containment, NO gets a pipe wrench from the rack at the base of the stairway and begins rounds of the outside of biowall area of containment. HP tech. performs typical rad surveys (beta/gamma and neutron) and finds normal readings.
- 10:30 Upon reaching the regenerative heat exchanger area, the NO hears a steam leak coming from the letdown isolation valve cubicle. NO calls the NPS to get permission to backseat the leaking valve (V-2593) which has a wisp of steam releasing from the steam area. The NO has had personal experience with this valve leaking before and has stopped leaks there simply by backseating using the reach rod. The NPS concurs and allows the NO to attempt backseating this valve.
- 10:50 The NO tries to backseat the valve with no success. He is irritated that this failed because he convinced the NPS that he could stop the leak and now feels that the NPS will think less favorably of his expertise. While the HP has his back to the NO to set down the REM ball (survey meter), the NO grabs the pipe wrench and enters the cubicle to manually backseat the valve. HP yells at the NO and orders him to exit the cubicle. The NO hooks up the pipe wrench to give one hard pull on the valve and does so. This cracks the bonnet and releases a burst of steam. The startled NO gasps and inhales the superheated steam as it scalds his face. He jumps back, strikes a piece of angle iron with his head, falls back over the valve and onto the floor. The HP tech. enters the cubicle and pulls out the NO, burning an exposed area of his neck and both wrists in the process as his PC's part at tape down points.
- 10:55 The HP tech, extremely excited and in pain from his burns, manages to pick up the NO over his shoulder in a fireman's carry and get him up the stairs and to the personnel hatch area. He sees the PA next to the hatch and calls the control room requesting help. The HP tech. opens the inner personnel hatch door and drags the NO in (cutting the inner door seal in the process) and now begins to feel the pain from his burns greatly increasing. He becomes more panicked and somewhat disoriented and fails to close the inner hatch before opening the outer hatch. The ringfeeder

- 15:45 A maintenance team is organized to secure the release. Dose rates in the area will prompt authorization of emergency exposure considerations.
- 16:30 The release is terminated as the maintenance team finds a way to secure the release. (It is anticipated that a blind flange will be placed over the release path.)

Messages associated with this mini-scenario are: 1,10,12,17

10/10/80

MINI-SCENARIO #2

BROKEN PERSONNEL HATCH

- 11:00 am Alarm in the Control Room will indicate that the personnel hatch is open but it will not immediately be known that both doors are open. This alarm will stay on until someone is sent to investigate.
- 11:15 When someone responds to close the doors, the inner door will close but the outer door will not lock. The Tech. Department will be called to do a leak test on the personnel hatch to verify that the inner door is sealed.
- 11:45 Tech. Department will report that 15,000 SCCM is leaking between the inner door, the outer door cannot be closed and locked, therefore, a loss of containment integrity exists. The plant should enter Tech. Spec. action statement 3.6.1.1.
- 12:00 Mechanical Maintenance inspects the door, finds the problems (corroded ringfeeder and sheared Geneva plate), and finds spare part for Geneva plate in stores. They estimate that they can fix the door in two hours.
- 13:35 Maintenance fixes the outer personnel hatch door. When the Tech. Department comes to check the leak rate, the first test fails but the tester finds oil in the flow gauge and has to go get other leak rate test equipment in order to perform the test.
- 14:00 Tech. Department finds equipment, returns to the personnel hatch, and retests to find personnel hatch sealed. It should become apparent to the Control Room by this time that another containment failure exists as activity is still being released via the plant vent and ECCS.

Messages associated with this mini-scenario are: 10,13,16,17,18
26,47

(clutch), which would normally prevent this from occurring, breaks due to lack of preventive maintenance and the outer personnel hatch opens, shearing the Geneva plate in the process.

11:00 The HP tech. collapses after pulling the NO out of the airlock and down the stairs. Security is at the personnel hatch and tries to aid by calling via the security radio to get first aid.

The First aid/Decontamination Team responds, taking care of the injured HP and doing whatever they can for the already dead NO, until offsite medical assistance arrives. Offsite medical assistance will transport the contaminated/injured HP tech. to Lawnwood Hospital and leave the dead NO on site.

Messages associated with this mini-scenario are : 4,6,8,10,20,21, 23(?), 24

MINI-SCENARIO #3

MEDIA ATTENTION ADDRESSING DEATH AT SITE

Revised 7/7/87

11:30 am Police scanner report is overheard by a reporter at Stuart News.

Rumors about the death onsite begin to spread around the plant workers. A contract laborer overhears and calls WTVX (Channel 34) saying that he thinks someone died inside the reactor at the plant. He won't give his name and, upon being questioned, gets nervous and hangs up. A camera crew that is on the beach filming tourists is sent to the site.

11:45 The Stuart News reporter, being knowledgeable of protocol with the press by FPL, calls Corporate Communications to get some verification of this story.

12:00 The WTVX camera crew finds a plant worker, an apprentice electrician, who is leaving the site to move his pregnant wife out of their beach front condo 2 miles south of the site. The plant worker was in the control room area around 11:00 am and heard the annunciators and some talk of the injuries and the primary leak in containment. As rumors spread among other workers about the death of the NO, the apprentice electrician became worried and left to evacuate his wife. When approached by the news crew, the electrician gives a seemingly accurate, but not truthful, account of the events in progress.

12:20 More rumors are generated by the ambulance staff after arriving at Lawnwood. An ER nurse overhears the talk of deaths at St. Lucie and calls her husband who is a printer at The Fort Pierce News Tribune. He, in turn, perpetuates the rumor that dead workers are being brought into the hospital from a radioactive explosion at the plant and the ambulance had to leave people behind, probably because they were radioactive.

12:30 A reporter from The Fort Pierce News Tribune calls Corporate Communications to get a story on the deaths at St. Lucie. A news crew is on the way to the ENC as well as TV crews from Palm Beach, Channel 12, and Channel 5 who have called the paper for information.

12:55 It is expected that, in light of the degraded condition at the plant and the increased media attention over the death, the EOF will initiate activation. Personnel will leave the Juno Beach Office by this time.

Messages associated with this mini-scenario are: 23, 33, 34

MINI-SCENARIO #4

RELEASE FROM MINI-PURGE (VALVES I-FCV-25-26, I-FCV-25-36)

- 10:00 am Containment purge is in progress for normal venting and anticipation of anomaly check scheduled for 10:15.
- 11:00 Once primary leak is realized by Control Room, the containment purge will be terminated. When mini-purge isolation valves (I-FCV-25-26, I-FCV-25-36) shut, neither close completely. Due to lack of preventive maintenance, one valve has a corroded seal area and the other locks up slightly open. Initial switches indicate closed in the Control Room as the valves actuate enough toward the closed position to trip the closed switch. Release path is not detectable until activity in containment, combined with high containment pressure, force release through mini-purge.
- 13:15 Bonnet on letdown isolation valve (V-2593) comes off initiating a small break LOCA. As RCS flashes to steam and releases to containment, containment pressure increases.
- 13:30 The core is uncovered, causing a major release of radioactive materials into containment as fuel cladding fails. Containment pressure at 10 psig forces radioactive release out of containment via mini-purge. This release goes from the purge room outside containment, out the intake filters, and into the area between the Auxiliary Building, Containment, and the Fuel Handling Building. The HVS-4-A/B fans pick up the majority of the radioactive release (90%) and carry it back into the Auxiliary Building and out the plant vent. CIAS causes the Fuel Handling Building Supply fans to stop so the release is not taken up by those fans.
- The majority of the release is dispersed fairly evenly throughout the Auxiliary Building and exits to the environment, monitored by the plant vent and ECCS A and B effluent monitors. The remaining 10% of the release not taken up by the Auxiliary Building Supply fans (HVS-4-A/B) disperses to the environment from its exit outside of containment.
- 15:15 An HP team is sent from the TCS to do a survey inside the RCA and outside the Auxiliary Building. When they reach the area near the release, they get indications of plume inversion. Upon further investigation, they hear a whistle sound (air passing through the mini-purge isolation valves).