

U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report Nos. 50-352/90-81
50-353/90-81

Docket Nos. 50-352
50-353

License Nos. NPF-39
NPF-85

Licensee: Philadelphia Electric Company
Post Office Box 7520
Philadelphia, Pennsylvania 19101

Facility Name: Limerick Generating Station

Inspection At: Chesterbrook and Pottstown, Pennsylvania

Inspectors: C. G. Amato
C. G. Amato, Regional Team Leader, Division of
Division of Radiation Safety and Safeguards

Dec. 21, 1990
date

C. Gordon, Region I
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Approved by: William J. Lazarus
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12/21/90
date

Inspection Summary: Inspection on November 19-21, 1990 (Combined Inspection
Report Nos. 50-352/90-81 and 50-353/90-81)

Areas Inspected: Announced, routine safety inspection of the licensee's annual
emergency preparedness exercise.

Results: No violations or weaknesses were identified. The Limerick Generating Station
staff's performance demonstrated their ability to implement the site emergency plan in a
manner which would provide adequate and timely protective measures on behalf of
public health and safety.

DETAILS

1. Persons Contacted

The following individuals attended the exit meeting. Unless identified otherwise, they are licensee staff member assigned to the Limerick Generating Station (LGS), Nuclear Group Headquarters (NG) or Corporate Headquarters (HQ).

C. Adams, Manager, Emergency Preparedness, NG
M. Alexander, Site Captain, Protective Technologies, Inc.
J. Armstrong, Assistant Superintendent, Operations, LGS
R. Brown, Supervisor, Site Emergency Preparedness, LGS
R. Charles, Manager, Nuclear Support Division, NG
P. Duca, Support Manager, LGS
G. Edwards, Technical Superintendent, LGS
D. Helwig, Vice President, Nuclear Engineering and Services, NG
R. Kinard, Branch Lead, Off Site Support, NG
R. Leeds, Chairman, Nuclear Review Board, HQ
G. Leitch, Vice President, LGS Department
R. Mandik, Branch Lead, LGS, NG
M. Parducci, Technical Adviser, Site Emergency Preparedness, LGS
M. Roache, Branch Lead, Peach Bottom Atomic Power Station, NG
F. Strickhart, Manager, Corporate Emergency Preparedness,
Long Island Lighting Company
R. Smith, Senior Vice President, NG
J. Waddington, Analyst, Customer Service and Accounts, HQ
W. Ullrich, Manager, Special Projects, NG

2. EMERGENCY EXERCISE

The Limerick Generating Station, Unit No. 1 announced, partial-participation exercise was conducted on November 20, 1990, from 8:00 a.m. to 3:07 p.m. The Commonwealth of Pennsylvania and surrounding Counties participated.

2.1 Pre-exercise Activities

The exercise objectives were submitted to NRC Region I on June 20, 1990 and, the complete scenario package on September 21, 1990 for NRC review and evaluation. Region I representatives had telephone conversations with the licensee's emergency preparedness staff to discuss the scope and content of the scenario. As a result, minor revisions were made to the scenario which allowed adequate testing of the major portions of the Limerick Generating Station Unit No. 1 Emergency Plan and Implementing Procedures and also provided the opportunity for the licensee to demonstrate those areas previously identified by the NRC as in need of corrective action. NRC observers attended a licensee briefing on November 19, 1990. Suggested NRC changes to the scenario made by the licensee were discussed during

the briefing. The licensee stated that certain emergency response activities would be simulated and that controllers would intercede in exercise activities to prevent disruption to normal plant activities.

2.2 Exercise Scenario

The exercise scenario included the following events:

- Initial Conditions: one control rod drive, one standby liquid control pump, one low pressure coolant injection pump and one residual heat removal loop are out of service at exercise start and there is an unidentified drywell leak.
- A fuel bundle was dropped in the spent fuel pool causing an ALERT declaration as a result of damaged spent fuel and increased radiation levels in the spent fuel building.
- Treatment of a contaminated, injured individual including transporting off-site.
- Failure of one reactor protection system (RPS) bus power supply breaker.
- Loss of all control rod drives.
- An anticipated transient without scram (ATWS) (partial scram and rod insertion).
- Failure of the stand-by liquid control (SLC) system.
- Declaration of a Site Area Emergency as a result of the ATWS.
- Declaration of a General Emergency due to increased radiation levels in the dry well (greater than 10,000 R/hr).

2.3 Activities Observed

During the conduct of the licensee's exercise, NRC inspection team members made detailed observations of the activation and augmentation of the Emergency Response Facilities and the Emergency Response Organization staff and actions of the Emergency Response Organization staff during operation of the Emergency Response Facilities. The following activities were observed:

- Recognition of symptoms by the Control Room operators;
- Correct use of control room procedures;

- Detection, classification, and assessment of scenario events;
- Direction and coordination of emergency response;
- Notification of licensee, Commonwealth and County personnel, and communication of pertinent plant status information to Commonwealth personnel;
- Communications/information flow, and record keeping;
- Assessment and projection of off-site radiological dose and consideration of protective actions;
- Accident analysis and mitigation.

3. CLASSIFICATION OF EXERCISE FINDINGS

Emergency preparedness exercise findings are classified as follows.

Exercise Strengths

Exercise strengths are areas of the licensee's staff response that provide strong positive indication of their ability to cope with abnormal plant conditions and implement the emergency plan implementing procedures.

Exercise Weaknesses

Exercise weaknesses are areas of the licensee's response in which the performance was such that it could have precluded effective implementation of the emergency plan implementing procedures in the event of an actual emergency in the area being observed. Existence of an exercise weakness does not of itself indicate that overall response was inadequate to protect public health and safety.

Areas for Improvement

An area for improvement is an area which did not have a significant negative impact on the licensee's ability to implement the emergency plan implementing procedures and response was adequate. However, it should be evaluated by the licensee to determine if corrective action could improve performance.

4. EXERCISE OBSERVATIONS

The NRC team noted that the licensee's activation of the Emergency Response Organization, Emergency Response Facilities, and use of these facilities were

generally consistent with their Emergency Plan and Emergency Plan Implementing Procedures. The following strengths, and areas for improvement were identified.

4.1 Simulator-Control Room

The following exercise strengths were identified.

1. The simulator was used effectively to drive an exercise for the first time. Use of the simulator permitted an assessment of control room emergency response.
2. The challenging scenario stressed reactor operators who responded very well.
3. Appropriate AOPs and EOPs were used. The use of large boarded Emergency Operating Procedures (EOPs) was effective and enabled operators to mark the EOP overlays so actions could be tracked.
4. The Shift Manager allowed the Senior Shift Supervisor maximum authority and leeway to manage the accident.
5. Use of dedicated communication channels was very effective. Communication to off site agencies was prompt and correct.

The following exercise area for improvement was identified.

1. Maintenance of log books needs improvement. Use of loose sheets of paper in an unofficial log should be avoided.

No exercise weaknesses were identified.

4.2 Technical Support Center (TSC)

The following exercise strengths were identified.

1. There was very good security response including consideration of sabotage and rapid ingress and egress of an ambulance and fire engines.
2. Emergency Response Facility Data System connection to the simulator was effective.
3. TSC staff followed Trip Procedures.

4. Declaration of the General Emergency by the Emergency Director was conservative and correct.

No exercise weaknesses were identified.

The following areas for improvement were identified.

1. A perceived urgent need to enter the refueling floor inhibited thorough evaluation and planning.
2. A standby gas treatment system sample(s) should have been requested and taken.
3. The Emergency Director's and the Emergency Director Communicator's log books contained inaccurate and conflicting entries. Specifically, a statement that a site emergency was declared. This is not an NRC emergency action level. At the time, a Site Area Emergency had not been declared.
3. The Emergency Director was, at times, over extended trying to respond to multiple phone calls when he was evaluating conditions warranting classification as either a Site Area Emergency or General Emergency.

4.3 Operations Support Center (OSC)

The following exercise strengths were identified.

1. There was very good command and control, staff and team briefings and tracking.
2. Use of a facsimile machine to transmit and receive data was very effective.

The following exercise weakness was identified.

There was an excessive delay in removing an injured contaminated individual from the site to hospital. The victim sustained a simulated heart attack. An elbow was contaminated. The Limerick Generating Station first aid squad diagnosed the problem as heat exhaustion. Forty five minutes later, the correct diagnosis was made following apparent and needed controller intervention. Another 27 minutes was required to move the victim to a location for ambulance pick-up. Sixteen minutes later, the ambulance left the site (Security cleared the ambulance from the site in 90 seconds). Health Physics expended considerable time in decontaminating an elbow. The multi-media manual used to train the first aid squad states if a heart attack is diagnosed or suspected, the

victim should be moved to a hospital as rapidly as possible. This is a recurring weakness (50-353/89-20-01 and 50-354/89-20-01).

The following area for improvement was identified.

The security department, in order to expedite ambulance egress, delayed incoming vehicular traffic and a departing environmental monitoring team unnecessarily.

4.4 Emergency Operations Facility

The following exercise strengths were identified.

1. There was timely recognition and attention to the consequences of a turbine trip.
2. Very good communication and interaction existed between the Emergency Director at the Technical Support Center.
3. Good support and interaction with Commonwealth of Pennsylvania, County and Philadelphia representatives existed at the EOF.

No exercise weaknesses were identified.

The following areas for improvement were identified.

1. No explanation was provided for the wide variation of fuel damage estimates prepared.
2. When control rods were inserted following the ATWS, the EOF staff had difficulty determining the number of rods inserted.
3. Off site liaison staff at the EOF should be expanded to include an individual with an operations background.

4.5 Other Findings

1. The use of predetermined Protective Action Recommendations (PARs) was most effective. No delay was encountered in forming PARs. The rapid use of these is indicative of effective training in their use.
2. Four different communications systems were used to communicate with the Commonwealth of Pennsylvania. The licensee should clarify in their implementing procedure which is the prime or "official" system to

communicate PARs to the Commonwealth when the EOF is functional and Commonwealth representatives are present.

3. Press releases contained unnecessary jargon.

5. LICENSEE CRITIQUE

The NRC team attended the licensee's exercise critique on November 21, 1990 during which the licensee's lead controllers and observers discussed observations of the exercise. The licensee's critique was thorough, detailed and fully acceptable.

6. LICENSEE ACTION ON PREVIOUSLY IDENTIFIED ITEMS

The following item was identified during previous inspections. Based on observations made by NRC inspectors, this item was not satisfactorily addressed by the licensee and remains open.

(OPEN) IFI 50-353/89-20-01 and 50-354/89-20-01: Operational Support Center (refer to OSC weakness above). An injured contaminated individual was not removed from the site in a timely manner.

7. EXIT MEETING

Following the licensee's exercise self-critique, the NRC team met with the licensee's representatives listed in Section 1 on November 21, 1990 to discuss findings as detailed in this report. The NRC team leader summarized the observations made during the exercise. The licensee was advised one exercise weaknesses was carried over from the 1989 exercise. The NRC team also determined that within the scope and limitation of the scenario, the licensee's performance demonstrated the capability to implement their Emergency Plan and Emergency Plan Implementing Procedures in a manner that would adequately provide protective measures for the health and safety of the public.

