U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report Nos. 50-237/85011(DRSS); 50-249/85010(DRSS)

Docket Nos. 50-237; 50-249 Licenses No. DPR-19; DPR-25

Licensee: Commonwealth Edison Company
P.O. Box 767
Chicago, IL 60690

Facility Name: Dresden Nuclear Generating Station, Units 2 and 3

Inspection At: Dresden Site, Morris, IL

Inspection Conducted: April 22 through 24, 1985

Inspectors: G. Brown
Team Leader — Date 5/16/85

T. Ploski
T. Ploski — Date 5/16/85

N. Williamsen
N. Williamsen — Date 5/16/85

Approved By: M. P. Phillips, Chief
Emergency Preparedness Section — Date 5/16/85

Inspection Summary

Inspection on April 22 through 24, 1985, (Report Nos. 50-237/85011(DRSS); 50-249/85010(DRSS))
Areas Inspected: Routine, announced inspection of the Dresden emergency preparedness exercise involving observations by seven NRC representatives of key functions and locations during the exercise. The inspection involved 175 inspector-hours onsite by three NRC inspectors and four consultants.
Results: Although no items of noncompliance, deficiencies, or deviations were identified, five exercise weaknesses were identified as summarized in the Appendix.

DETAILS

1. Persons Contacted

NRC Observers and Areas Observed

G. Brown
F. McMannus, Control Room (CR)
D. Schultz, Technical Support Center (TSC)
T. Essig, Operational Support Center (OSC)
N. Williamsen, OSC and Medical Team
J. Pappin, OSC, Offsite and Onsite Field Monitoring Teams
T. Ploski, Emergency Operations Facility (EOF) and Joint Public Information Center (JPIC)

Commonwealth Edison and Areas Observed

*D. Scott, Station Manager
K. Klotz, OSC Controller
G. Powell, OSC Controller
T. Chubb, OSC Controller
*J. Jurecki, OSC Controller
J. Dunbar, OSC Controller
W. Wharrie, OSC Controller
J. Scholtes, OSC Controller
R. Funk, OSC Controller
*D. O'Keefe, OSC Controller
L. Literski, Environs Controller
D. Kenealy, Environs Controller
*D. Strobel, Control Room Controller
*S. Mattson, Control Room Controller
G. Myrick, TSC Controller
T. Gilman, TSC Controller
*L. Duchek, EOF Controller
*T. Ziakis, TSC Controller
*B. Schnell, EOF Controller
*C. Nellis, EOF Controller
*T. Greene, EOF Controller
*J. Barr, EOF Controller
*R. Flessner, Dresden Services Superintendent
*T. Blackmon, CECo Emergency Planning
*P. Bragnini, Burns Training Coordinator
*D. Hamilton, LaSalle Security Administrator
*J. Brunner, Assistant Superintendent, Technical Services
*G. Diederich, LaSalle Station Manager
*R. Stobert, Senior Quality Assurance Inspector
*M. Luoma, Quality Assurance Supervisor

*Indicates those attending the April 24, 1985 exit interview.

2. General

An exercise of the licensee's Generating Stations' Emergency Plan (GSEP) and the Dresden Annex was conducted at the Dresden Station on April 23, 1985. The exercise tested the licensee's capability to respond to a hypothetical accident scenario resulting in a major release of radioactive material to the environment. Attachment 1 describes the scenario. The exercise was integrated with a test of the LaSalle and Grundy Counties emergency plans. This was a partial-participation exercise for the State of Illinois.

3. General Observations

a. Coordination

This exercise was conducted in accordance with 10 CFR Part 50, Appendix E requirements using appropriate station and corporate procedures. The licensee's response was coordinated, orderly, and timely. If the events had been real, the actions taken by the licensee would have been sufficient to permit the State and local authorities to take appropriate actions.

b. Critique

Licensee observers monitored and critiqued this exercise along with seven NRC observers and several Federal Emergency Management Agency (FEMA) observers. The licensee held a critique immediately after completion of each groups' performance in the exercise. The NRC held a critique after the exercise on April 24, 1985. The NRC identified exercise weaknesses in their critique as discussed in this report. In addition, a public critique was held on April 25, 1985, to present both the onsite and offsite findings by the NRC and FEMA representatives, respectively.

4. Specific Observations

a. Control Room

From the onset of the exercise the Shift Engineer maintained positive control. His classification of Emergency Action levels and notifications to State agencies via the NARS system were timely and accurate. The controllers did well in keeping the exercise on time. The Control Room participants exhibited good teamwork throughout the exercise.

However, plant personnel were inadequately informed of emergency conditions by the Control Room. The only announcement made by the Control Room to onsite personnel was simulated at the Site Area Emergency when the Control Room ordered the evacuation of the reactor building. However, even then, there was no consideration given to simulating the assembly alarm or an announcement to begin assembly.

Communications to the Control Room about in-plant actions were poor. For instance, the Control Room was under the assumption that a repair team was at work in the #3 diesel generator room, and did not learn differently until a radiation monitoring technician reported otherwise. On another occasion, a second team was required to be dispatched to learn the status of repairs to the HPCI Injection Valve because the first team had failed to report. On still another occasion, a repair team reported to the Control Room with repair orders for the Spent Fuel Pool Level Indicator. The Control Room seemed unaware of this mission. Also, no plant status updates were provided to the Control Room from the Technical Support Center.

Other observances included the High Radiation Alarm on the SPDS simulated program failed to clear after the release rate dropped below the alarm level; the light on the NARS phone did not work when the phone rang; and no actual habitability checks of the Control Room were observed.

Based on the above findings, the following items should be considered for improvement:

- GSEP training of Shift Engineers should emphasize the need to provide onsite personnel with information on plant conditions and also training in the actual mechanics of conducting assembly and accountability.

- GSEP training of all communicators should emphasize the importance of keeping the Control Room informed.

b. Technical Support Center

The Station Director effectively managed the Technical Support Center (TSC) staff and provided frequent briefings to his staff. The refueling floor explosion was postulated to have occurred at 0745 hours and the TSC provided monitored release rates as soon as 0800 hours. Field Team readings obtained at 0817 were back calculated into the dose-assessment computations providing correlation of results for the release rate within 13 minutes. The telephone communicator performed exceptionally well. However, the TSC was not activated until 0622 hours, one hour and 22 minutes after the Alert declaration.

Access control to the TSC was not accomplished in a timely manner nor was it satisfactorily performed. Even though the Station Director arrived in the TSC at 0543 hours and the Security Director arrived at 0600, a security guard was not posted until 0700 hours. This action is the first step required in the station's Emergency Plan Implementing Procedure (EPIP) 100-C6. Further, once the guard was in position, he did little to control access. The guard did not challenge entry into the TSC, no sign-in log was established, and the guard did not compare ID badge pictures to the faces of the individuals. This was particularly significant since it was unknown

how many saboteurs were in the plant and how they managed to gain access to vital areas. The lack of effective access control and the untimeliness of its establishment is an exercise weakness. (50-237/85011-01 and 50-249/85010-01).

Implementation of shift staffing and augmentation was not accomplished in a timely manner. The Site Area Emergency was declared at 0615. This necessitated call-out of the offsite and onsite environs teams in accordance with Table II, EPIP 300-1, "Guidance for Augmentation of the Onsite Emergency Organization Within 60 Minutes." It was one hour and 43 minutes before the first of the two teams began to move into the field. This problem was largely due to a breakdown in the GSEP notification call tree. It appears that one member of the telephone call tree erroneously concluded that the remainder of the call tree would be completed by the EOF. Thus, it was some time before that limb of the call tree was notified. This breakdown in the call tree is an exercise weakness. (50-237/85011-02 and 50-249/85010-02).

The accident assessment capabilities of the TSC were not fully utilized by the TSC staff. At 0600 a reactor scram coupled with a total loss of AC power occurred in the scenario. No high pressure injection for make-up was available, so the isolation condenser was used for reactor cooling. Reactor vessel level, therefore, commenced a significant downward trend while drywell temperature and pressure commenced a significant trend upward (presumably due to the loss of drywell cooling). Although these data were frequently plotted and updated, they were ignored, for the most part, for about one hour and 45 minutes. This delay possibly contributed to the TSC's erroneous conclusion that there was a loss of coolant accident (LOCA). Finally, a reactor vessel mass balance was completed which verified that the low water level was the result of shrinkage, and not a LOCA.

Evacuation of non-essential personnel was not ordered in a timely manner following completion of assembly/accountability. A Site Area Emergency was declared at 0615 hours followed by a simulated Site Assembly order at 0710. Accountability was completed at 0728. It was not until 0812, however, that the order to evacuate non-essential personnel was issued. Table 6.1.-4 Section 1 Revision 4 of the Commonwealth Edison Company Generating Stations Emergency Plan states that upon declaration of a Site Area Emergency, the Station Director is to "consider evacuation of non-essential personnel within the protected areas; evacuate them if there are no serious impediments for doing so." No apparent impediments existed, and the delay actually would have resulted in the evacuation being conducted during the release of radioactivity. This failure to effect a timely evacuation is an exercise weakness. (50-237/85011-03 and 50-249/85010-03).

In addition to the noted exercise weaknesses, the following item should be considered for improvement:

- TSC personnel should be trained to make them more familiar with the data available with which to provide the Station Director with trends and projections.

c. Operational Support Center

All individuals reporting to staff the Operational Support Center (OSC) were given a thorough status briefing upon arrival. The OSC status board and Key events log were maintained and updated in a timely manner. Use of an operations individual as a communicator/recorder was very effective.

There was excessive simulation by OSC personnel which detracted from the effectiveness of the exercise. For instance, the collection of air samples was simulated. The inspector realized that there was little to be gained by the Radiation Chemistry Technician demonstrating the actual sampling, since he does this task every day, but the actual running of the sampler would have caused background noise with which the OSC staff would have had to contend, as in a real emergency. This was missed because of the simulation. Posting of radiation areas and access control was also simulated.

There was inadequate briefing of OSC teams. For instance, after the scenario's explosion on the Refuel Floor, the Radiation Protection Foreman (RPF) incorrectly assessed the radiation levels on the 613-foot level as due to "shine" (direct radiation) as opposed to airborne radioactivity, as was the case. This assessment could have misled teams making entries into various levels of the Reactor Building because they would have expected little or no airborne radioactivity and would have actually found a significant amount. Additionally, no high range dosimetry was issued to the teams for the abnormal plant conditions. All entries observed by NRC inspectors were carried out wearing low range dosimetry. There was no notice of any use of high range dosimeters, alarming pocket dosimeters or even the use of high range survey instruments.

Other observations included the fact that it was difficult to hear public address announcements in the OSC because the speaker was out of service. None of the monitoring teams performed operational checks of instruments prior to leaving on a mission.

Based on the above findings, the following should be considered for improvement:

- In future exercises, the licensee should not simulate events just for expediency's sake but restrict simulation to those events which would be too costly or cause harmful effects rather than benefits if they were actually carried out unnecessarily.

- The training of Radiation Protection and Operations Foreman should emphasize the importance of adequate team briefings.

- The public address speaker in the OSC should be repaired.

d. Field Monitoring Teams

All individuals appeared to be competent and well trained in their jobs. They functioned well together as a team. Good health physics practices were used in collecting samples, surveying equipment, and surveying the van. The team and the EOF kept close cognizance of accumulated doses to the team personnel. ALARA practices were frequently considered and used.

The air sampler air flow indicator ball was stuck on zero and failed to function properly during the sample process. This made accurate air sampling impossible. Also, only "closed window" radiation measurements were performed during the monitoring. Beta/gamma measurements were not made.

Based on the above findings, the following should be considered for improvement:

- The air sampling equipment in the van should be repaired.

- Monitoring teams should be instructed to always survey for beta as well as gamma radiation.

e. Medical Team

The Medical Team responded quickly to find the injured individual. The ambulance arrival was timely and the ambulance personnel wore proper protective equipment. The first aid kits were adequate and well stocked.

Poor radiological technique was observed during the handling of the radiological injury. When the RadChem Technician (RCT) arrived at the scene, the patient had already been wrapped and placed in the stretcher by two operations personnel who had responded. The RCT immediately made the assumption that the wound was contaminated even though he had never surveyed the area. No effort was made to survey other personnel, the hallway, elevator, stretcher or other equipment even though there was adequate time and the patient was well attended by the two operations personnel. The technician was not observed making a full survey of the patient until he and the patient were on the elevator going down to the ambulance. There was no followup surveillance afterwards. Since one exercise objective was to demonstrate the capability to provide initial care and transportation of a radiologically contaminated casualty, the inability to demonstrate this goal is an exercise weakness. (50-237/85011-04 and 50-249/85010-04).

Differences in units of measurement caused some problems in communicating with hospital and ambulance personnel. The RCT reported readings in "dpm" (disintegrations per minute) which the other personnel did not understand. They were accustomed to readings reported in "mR/hr."

In addition to the aforementioned weakness, the following should be considered for improvement:

- The licensee should coordinate with all appropriate offsite support agencies to standardize units in which to report radiation dose rates.

f. Emergency Operations Facility

The Emergency Operations Facility (EOF) was activated in a timely manner with access control established by the first group of arriving participants and maintained until relieved by security personnel.

The EOF did not receive damage reports from the Refuel Floor in a timely manner. Although a damage assessment team had been dispatched to the area, the lack of a report from it caused a delay in fully accepting the readings indicated by the SPING Channel 9 release data.

The EOF provided incomplete followup messages to the State authorities between 0840 and 1110 hours. Guidance in NUREG-0654 and the licensee's EOF Procedure EOF-1 paragraphs 4.2.f and 5.2.f state, in part, that follow-up messages to State and Local authorities shall contain the following information, if it is known and appropriate: (1) Licensee emergency response actions underway; and (2) Prognosis for worsening or termination of event based on plant information.

During this period the licensee had several emergency response actions underway, such as, conduction of a bomb search, a saboteur search, inplant repair activities, and evacuation of non-essential personnel. Also the EOF had established a prognosis and even considered downgrading the event. This failure to provide adequately detailed followup messages to State authorities is an exercise weakness. (50-237/85011-05 and 50-249/85010-05).

f. Joint Public Information Center

As in the previous exercise, the licensee arranged for journalism students from Lewis College to serve as media representatives in the Joint Public Information Center (JPIC). The JPIC was activated and staffed in a timely manner. The Recovery Manager (RM) delegated the responsibility for approving press releases to the Advisory Support Director (ASD). There were six press releases.

Prior to the exercise, the JPIC area was already set up with a podium, microphone, speaker and slide projectors in place and ready for use. There were several errors noted in the first press release, namely: (1) the cause of the Unusual Event was incorrectly stated as an electrical power failure to some Control Room warning alarms, although the Unusual Event was actually due to the transport of a contaminated, injured employee to the hospital; (2) the press release did not indicate that an Alert had been declared; and (3) the time of the press release was incorrectly stated as 11:46 a. m. instead of 7:46 a. m.

Based on the above findings, the following items should be considered for improvement:

- Exercise participants should be required to set up the JPIC equipment.

- Additional care should be taken to ensure the accuracy of press release information, especially the initial release.

g. Scenario Comments

Prior to the exercise, the Controller's meeting was conducted with each related activity meeting in individual groups to discuss the exercise from that particular vantage point. For example, the EOF Controllers met in one group, the OSC Controllers in another, the Environs Group still another, etc. At the end of the meeting, there was no provision for feedback to the general body as to the results of these individual meetings. For instance, at the group meeting of the OSC controllers it was identified that the scenario lacked data in certain key areas, such as dose rates near the Standby Gas Treatment System. Since no vehicle was provided to input this information into the general body for corrective action, the scenario was enacted without it and resulted in later confusion.

Radiologically stressful situations, such as that resulting from the explosion in the spent fuel pool, were not used to good advantage to challenge the radiological expertise of the staff. For example, the OSC could have been directed to repair a vital piece of equipment in a very high radiation area. This would have forced the OSC and TSC staff to review various considerations and implement actions associated with exposing individuals up to the 25 Rem limit.

4. Exit Interview

On April 24, 1985, an exit interview with license representatives was held to present the NRC's preliminary findings. The inspector discussed the likely content of the inspection report. The licensee did not identify any of the material as proprietary or safeguards.

Attachment: Exercise Scenario Narrative Summary

NARRATIVE SUMMARY
FOR
THE 1985 DRESDEN EXERCISE SCENARIO

The events in the 1985 Dresden Exercise scenario will be driven mainly by a saboteur within the station.

Unit 2 will be shutdown after being at 100% power for eight (8) consecutive months. The spent fuel from Unit 2 will have just been transferred to the fuel pool. Unit 3's Diesel Generator will be Out of Service for the annual Diesel Generator Inspection and the 5-year, 18,000 hour Diesel Generator Inspection.

T = 0 - T = 60 UNUSUAL EVENT

The Unusual Event will be declared due to a contaminated injured person requiring transport to an offsite medical facility (EAL #1). The injured person will have been found unconscious with a laceration to his head. When the injured person regains consciousness, he will indicate that he was injured by receiving a blow to the head from an intruder. Also, ongoing throughout the Unusual Event will be a resin intrusion on Unit 3. This will be indicated by conductivity increases and MWe decreases.

T = 60 - T = 135 ALERT

The Alert again will be caused by a saboteur. There will be a loss of all annunciators on Panels 902(3)-3 and 902(3)-5 for greater than 30 minutes (EAL #3 (4)). The loss will be caused by the saboteur cutting the Panel's power cables in the Aux. Electric Room. The plant personnel will not discover that it was an act of sabotage until about 15 minutes before the Site Emergency.

T = 135 - T = 225 SITE EMERGENCY

The Site Emergency will be declared when the Unit 3 main transformers are knocked out and the Diesel Generator 2/3 fails to start. It will be declared per EAL #4 (Loss of all AC power to Unit 3 for greater than 15 minutes.) Again, both of the failures will be caused by the saboteurs. The current transformer wires to the differential relays will be cut, causing the transformer trip. The Diesel Generator 2/3 will fail to start because the air start lines have been cut and the air start solenoid has been smashed. Also, HPCI will fail to initiate, thus, requiring the reactor to be cooled down using the iso-condenser. The HPCI will fail to start due to a breaker trip on 2301-3 valve.

0911A/12/wjm

T = 225 - T = 420 GENERAL EMERGENCY

At T = 225, the General Emergency will be initiated by an explosive device detonating in the Spent Fuel Pool. This will cause a spike release through Standby Gas Treatment and the EAL for release rates will be exceeded. The release rate will reach a peak of 3.0×10^{8}uCi/sec and then begin to taper off through the end of the Exercise.

T = 420 - T = ? RECOVERY

At T = 420, there will be a two week time jump so that the Recovery Phase can begin.

0911A/13/wjm