U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-237/86009(DRSS); 50-249/86011(DRSS)

Docket Nos. 50-237; 50-249 Licenses No. DRP-19; DRP-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: July 8-10, 1986

Inspectors: W.G. Snell for T. Ploski
Team Leader — 7/25/86 Date

W.G. Snell for T. Allen — 7/25/86 Date

Approved By: W.G. Snell W. G. Snell, Chief
Emergency Preparedness Section — 7/25/86 Date

Inspection Summary

Inspection on July 8-10, 1986 (Reports No. 50-237/86009(DRSS); No. 50-249/86011(DRSS))
Areas Inspected: Routine inspection of the Dresden Station's emergency preparedness exercise, involving observations by five NRC representatives of key functions and locations during the exercise.
Results: No violations of NRC requirements were identified during this inspection. However, weaknesses which will require corrective action are identified in the text of this report and are summarized in the Appendix to this report's transmittal letter.

DETAILS

1. Persons Contacted

NRC Observers and Areas Observed

T. Ploski, Control Room, Technical Support Center (TSC), Emergency Operations Facility (EOF)
T. Allen, Operational Support Center, Inplant and Onsite Teams
L. McGregor, TSC
B. Hare, Control Room, TSC
J. Pappin, TSC and Offsite Environmental Monitoring Teams

Commonwealth Edison

*R. Flessner, Assistant Superintendent, Services
*E. Eenigenburg, Recovery Manager
*F. Krowzack, Lead Controller
D. Reece, Control Room Controller
T. Mohr, Control Room Controller
R. Stohls, Control Room Controller
B. Schnell, OSC Controller
D. Vestal, OSC Controller
*T. Ziakis, TSC Controller
K. Klotz, TSC Controller
*T. Markwalter, EOF Controller
R. Moore, EOF Controller
D. Kenealy, Environs Team Controller
*R. Jeisy, Quality Assurance Supervisor

*Denotes personnel attending July 10, 1986 exit interview.

2. Licensee Action on Previously Identified Item

(Closed) Open Items No. 50-237/85011-05 and 50-249/85010-05: The licensee failed to provide adequately detailed followup messages to State authorities during the 1985 exercise. As indicated in Section 5.d of this report, the licensee demonstrated the ability to formulate and issue detailed followup messages to State authorities. This item is closed.

3. General

An announced exercise of the licensee's GSEP was conducted at the Dresden Station on July 9, 1986. The exercise involved participation by the utility only. The exercise tested the licensee's capability to respond to a hypothetical accident scenario. Attachments 1 through 3 provide, respectively, the scope of licensee participation, the exercise objectives, and a narrative summary of the exercise scenario.

4. General Observations

a. Procedures

This exercise was conducted in accordance with 10 CFR 50, Appendix E requirements using the GSEP, Dresden Annex to the GSEP, and the Station and Corporate organization's emergency plan implementing procedures.

b. Licensee Response

The licensee's overall response was generally coordinated, orderly, and timely. Had these events been real, actions taken by the licensee would have been sufficient to allow State and local authorities to take appropriate actions to protect public health and safety.

c. Observers

Licensee observers and five NRC observers monitored and critiqued the exercise.

d. Exercise Critiques

The licensee held critiques following the exercise on July 9, 1986. The NRC critique was conducted on July 10, 1986.

5. Specific Observations

a. Control Room

The Shift Engineer (SE) maintained positive control of events and an adequate log of events and actions taken. He kept Control Room personnel informed of emergency status and correctly followed applicable procedures. He promptly and correctly classified the Unusual Event and Alert. The associated Nuclear Accident Reporting System (NARS) calls were made by the Shift Control Room Engineer (SCRE) within 15 minutes of each of the two event classifications. The Nuclear Regulatory Commission (NRC) was properly notified within one half hour of each classification.

About 20 minutes into the exercise, the SE made the proper, conservative decision to activate the Technical Support Center (TSC) and the Operational Support Center (OSC). He provided adequate briefings for the corporate Nuclear Duty Officer (NDO), the future Station Director (SD), and the Operating Engineer (OE), on scenario events, responses completed, and actions in progress.

The SE properly ordered the OSC to have someone check the inoperable cooling injection system breaker and the water level in the pump bay of the cribhouse. The SCRE correctly wanted to call the U.S. Army Corps of Engineers for an estimate of the river crest height and time. A controller did a good job in formulating the requested forecast.

Also observed was that the SE recorded the Unusual Event declaration time as 0810 on the NARS form, but verbally reported the declaration at 0805. In spite of this recording error, NARS and NRC notifications were made within acceptable time periods, as discussed above. There initially was a communication control problem until the SE established a Control Room message priority system. Also, followup action on the High Pressure Core Injection System could have been initiated about 30 minutes earlier.

Based on the above findings, this portion of the licensee's program was acceptable.

b Technical Support Center

The Technical Support Center (TSC) was fully operational, with the Station Director (SD) in command and control of emergency response activities within 60 minutes after TSC activation was ordered. The transfer of command from the SE in the Control Room to the SD in the TSC was orderly and efficient. The SD used the TSC public address system to inform his staff of TSC activation and to keep them informed of scenario events, major decisions, and response actions. The SD did not, however, always have good control of his staff or their reasonable support. For example, a security guard had been sent to the cribhouse to observe the river level, but no periodic reports were made by the guard or requested by the TSC staff, even though the SD stated several times that he needed to know how fast the river was rising. Also, the safety of this guard was not discussed or apparently considered when the tornado was sighted or after it passed across the site. Another example of poor support was when the TSC communicator assigned to make the NARS call for the Site Area Emergency declaration did not know the proper NARS code. He took no action to locate the code himself, but seemed content to let the SD spend valuable time determining the code. Status board errors were also noticed, such as the wrong time of the Alert declaration, and that the Alert was still listed as the current classification 45 minutes after the upgrade to a Site Area Emergency. Except for the Environs Director, who only had very informal notes, the internal message forms and logkeeping by individual directors was adequate to permit later reconstruction of TSC activities.

The SD and NDO made a conservative and good decision to activate the EOF based on the multiple problems of rising river level, tornado warning, and deteriorating plant conditions. However, although aware of the funnel cloud sighting, the SD took no apparent action to verify whether the funnel cloud was headed toward the station or to alert onsite personnel to seek shelter. Instead, too much time and attention was focused on reviewing the tornado EALs for applicability. The SD declared the Site Area Emergency roughly 12 minutes after receiving the first of several alarms and reports regarding onsite damage. The SD correctly determined that several Alert level EALs had been satisfied, which together justified an upgrade to Site Area

Emergency. He then ordered security and OSC personnel to visually asses damage in the protected area, switchyard, and reactor building refuel floor. The NARS and ENS calls were both initiated within 10 minutes of the declaration and a later NARS call to update State officials was properly made.

The simulated assembly of onsite personnel was not initiated until approximately 10 minutes after the Sight Area Emergency declaration, which was about 25 minutes after the tornado reached the site. There seemed to be no reason for this delay other than the SD was too busy with a telephone call to the EOF, personally filling out the NARS notification form for the Site Area Emergency, determining the correct NARS code for a communicator, and personally simulating an ENS call. Meanwhile, the Security Director was at his desk in another room and apparently waiting to be told to initiate assembly. While Control Room personnel were told to activate the assembly alarm, they were not told why and were not notified of the Site Area Emergency declaration until at least 20 minutes after the declaration. This poor selection of priorities by the SD and poor support and communications by his staff resulted in assembly not being initiated in a timely manner, especially when considering the tornado hazard. The excessive time taken to initiate assembly is an Exercise Weakness. (50-237/86009-01 and 50-249/86011-01)

In addition to the Site Area Emergency declaration discussed above, the TSC was slow in conveying other pertinent information to the Control Room and OSC. Information regarding the funnel cloud sighting was not communicated to the Control Room or OSC until about one half hour after the TSC received the report. The report of a tornado crossing the site was similarly delayed. Thus, OSC response to a request to assess damage on the refuel floor was not fully effective because OSC personnel were not aware of the severe weather conditions. Also, the TSC exhibited an apparent lack of proper concern following the loss of all offsite power. The availability of all diesel generators seemed to be a sufficient reason to not initiate any prompt corrective action to restore offsite power.

The Environs Director provided good briefings for field teams, including tornado safety actions and utilized topographics to avoid assignments into areas probably flooded. Later, howerver, inadequate consideration was used when the Environs Director dispatched only one technician to search Sectors Q and R for radioactive debris The search was a good idea, but the area was far too large for one person to search effectively and efficiently.

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

- The licensee should emphasize the supportive teamwork and interface aspects of TSC operations in training and drill sessions.

- The licensee should post the NARS codes to be used and persons/ agencies contacted on (or adjacent to) the NARS telephone.

- Appropriate decisionmakers should be trained to seek confirmation of tornado sightings, including determining if the tornado is approaching the station.

- TSC staff should better consider the task scope when making field team assignments to avoid overtaxing a team or person.

c. Operational Support Center

The Operational Support Center (OSC) was activated, inventories were completed, and communications with the Control Room were established in a timely manner. The OSC Communicator maintained an open line with the Control Room and demonstrated effective communication skills such as, interrupting for priority messages, repeating data for verification, and maintaining detailed logs. Status boards were used to brief inplant teams and were kept updated except for a few periods when the time of update was incorrect. For example, 0930 data were listed as being the data as of 0845.

Periodic habitability surveys were conducted in the OSC and several OSC players demonstrated their interest in this exercise by their participation, thoroughness, willingness, and positive attitude. However, only two Radiation Chemistry Technicians (RCTs) and two Operators were available as inplant team members. Although this shortage of personnel provided good priority determination training, additional personnel should have been available to support the exercise.

The OSC did not have the Dresden Operating Procedures (DOPs) available. On several occasions, work was delayed while OSC supervision obtained a copy of the appropriate DOP from another facility.

Although OSC personnel were kept informed of applicable inplant conditions, they were not adequately informed of the severe weather conditions and probable onsite tornado damage. Consequently, the RCT dispatched to the reactor building refuel floor to check for damage was not looking for storm damage. Some of the lack of information resulted from the TSC not promptly informing the OSC of all pertinent scenario events (discussed in Section 5.b) and the OSC Directors not including all information in briefings. A contributing factor in the communications problem was that the public address speaker in the OSC area was not working. The speaker is supposed to interconnect with the TSC announcing system to facilitate information flow to the OSC. The licensee has committed to repair this speaker system within 60 days of the exit interview.

A panel simulated as having come off the reactor building refuel floor wall during the tornado was located near a sidewalk leading to the service building by an onsite OSC team. The panel was simulated as having radiation levels of 100 mR per hour on contact and removable contamination of several thousand counts per minute. The team did not take any action to control this radioactive material, and was then directed by the OSC to leave the panel as is and return to the OSC. The field team returned to the OSC without making any checks for radioactive contamination of personnel that would likely occur during work around the contaminated panel. Since no frisking station or contamination control procedures were established for OSC entry, any contamination could have been spread to the OSC waiting area and other OSC personnel. The radiological control practices regarding this panel were inadequate and not in accordance with EPIP 300-17, "Radiation Protection Practices Under Accident Conditions." Another poor radiation protection practice observed during the exercise is discussed in Section 5.e. The inadequate contamination control practices, regarding surveying and posting the panel and subsequent surveying for personnel contamination, is an Exercise Weakness (50-237/86009-02 and 50-249/86011-02).

The Rad/Chem Supervisor kept track of personnel exposures and appeared to use job assignments and instructions to minimize exposure of any individual. However, he did not ensure that emergency teams wore the dosimetric devices required by EPIP 300-16, "Radiation Surveys Under Accident Conditions." For example, a survey and inspection team was dispatched into the 613 level of the reactor building without wearing (or simulating) high range pocket dosimeters and extremity monitoring devices. The radiation levels in the inspection area were already known to be unusually high. This failure to provide appropriate dosimetric devices to emergency response personnel is an Exercise Weakness (50-237/86009-03 and 50-249/86011-03).

In addition to the above weaknesses, the following items should be considered for improvement:

- A copy of the Dresden Operating Procedures should be readily available in the OSC.

- Contamination control procedures should be established to prevent the spread of radioactive contamination into the OSC.

d. Emergency Operations Facility

The Emergency Operations Facility (EOF) was fully operational, with the Recovery Manager (RM) in command and control of emergency response about 60 minutes after EOF activation was ordered. Access control was adequately maintained during the exercise.

Status boards were kept current and accurate and the environmental staff effectively used status boards to post current and forecast weather conditions and warnings. Weather conditions were properly considered and used to correctly delay the evacuation of nonessentials following the simulated onsite assembly.

The RM and his staff were kept adequately informed of changes to plant conditions, damage assessment, repair activities underway, onsite protection actions, and post accident sample results. This was accomplished through frequent, concise update briefings by key directors over the EOF public address system. The Environment Emergency Coordinator (EEC) staff kept field teams informed of appropriate changes to emergency declarations, protection actions, and weather warnings.

The Advisory Support Director did a good job in formulating and documenting well detailed, periodic followup messages to the State. The RM approved these messages prior to simulated transmittal. Six messages were simulated as being sent at about 45 minute intervals.

Drafts of press releases were reviewed by the RM, but neither he nor a designee reviewed the final, typed releases. Several typed press releases were later determined to contain errors that were not in the drafts reviewed by the RM.

The RM and EEC showed good concern for the need to verify with the station and field teams whether or not a 2 mR per hour offsite dose rate report could be from radioactive debris or from a release. Eventually, it was determined that it was from debris only.

The exercise scenario called for a time break and advance to the recovery mode. Well before this time break the EOF had begun recovery planning actions, usually in consultation with the TSC. Examples of actions discussed were restoration of fuel pool level, restoration of secondary containment, and obtaining DOE and corporate helicopter assistance to locate any more radioactive debris. The RM ensured that no EALs were still applicable and that a Recovery Mode could be declared just before the scenario time break. After the time break the RM and key EOF staff adequately completed a prioritization of short term recovery tasks, identification of short term staffing needs, and identification of a number of non-licensee organizations whose interest or assistance would impact recovery efforts.

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

- The Recovery Manager or his designee should review and approve all final, typed press releases prior to their issuance to better assure correctness.

e. Environs Teams

Two teams were utilized to search for debris and evidence of a radioactive release downwind of the plant. Both teams were briefed by the EOF staff of the Site Area Emergency, weather conditions, and precautions if encountering severe weather. The environs teams demonstrated the ability to take open and closed window radiation level readings, and to collect soil, water, and air samples.

One team was effectively directed to the Lock and Dam area after the EOF received a debris report from that area, while the second team was sent further downwind and across the river. The team near the Lock and Dam eventually located the radioactive debris and, using good radiation protection practices (plaster bag and long wooden sticks), secured the debris inside a licensee fenced area. The EOF then instructed the team to rope off and post the area. When the team described how this would be done, the posting and roping was simulated at the fence perimeter. However, the radiation levels at this fence and posting would have exceeded 100 mR per hour. Yet, the fence would have been accessible, without restriction, by the general public. This poor radiation protection practice is similar to the poor practice discussed in Section 5c.

f. Scenario and Controller Comments

Prior to the exercise, the Controller's meeting was conducted to provide an overview of the scenario, discuss the latest changes and concerns, review control and critique techniques, and for group discussions. Included were lead controller instructions on how to handle data conflicts, missing data, and that sample data would be simulated and delayed for real time effect since the HRSS was inoperable.

During the exercise, two examples of inadequate scenario depth and review were observed. In one case, the scenario did not anticipate a phone call, required by procedures, to the Army Corps of Engineers to obtain predicted river crest time and height. This phone call was adequately handled by a Control Room controller who improvised a reasonable prediction. In the second case, an environs team member went to the Lock and Dam office to find out where the reported debris was located. The debris had been sighted and reported to the licensee by the Army Engineer Office. A controller stopped the team member and told him that no data were available since the Army Engineers were not players. The team member had taken logical action in attempting to locate the debris and the controller should have acted as the Army Engineer and provided the material location.

There were two observed cases of improper controller action. The TSC requested the OSC to collect HRSS air and liquid samples. The TSC communicator informed the OSC to simulate this sampling and that

the TSC staff already had the results of sample analyses. Normally, it takes about 1 to 2 hours to collect and analyze HRSS samples. Later, a controller provided a RCT with incorrect radiation level data for the refuel floor panel found outside the service building. The information, although incorrect, was reasonable and did not impact the rest of the exercise. However, about half an hour later, the OSC communicator was told by a TSC communicator that the radiation level data for the panel was incorrect. Inquiries by the OSC Director determined that a TSC controller had informed the TSC Rad/Chem Director that the panel radiation level data reported by the OSC was incorrect and should be less than 1 mR per hour. This data conflict was not reported or discussed via the lead controller and group controllers as prescribed at the controller's meeting and unnecessarily involved and confused exercise participants. The advance reporting of data and incorrectly resolving conflicting information is an Exercise Weakness (50-237/86009-04 and 50-249/86011-04).

g. Critiques

The controllers held critiques following the exercise. A controller-only critique was usually held first, followed by the group controller's critique with exercise participants. Several of these critiques were attended by inspectors and the critique comments were usually frank and appropriate. Each controller was provided an opportunity for input at the controller-only critiques, and exercise participants were invited to comment in the group critiques.

6. Exit Interview

The inspectors met with those licensee representatives identified in Paragraph 1 at the conclusion of the inspection to discuss their preliminary findings. The lead inspector discussed the likely content of the inspection report. The licensee did not identify any of the material as proprietary or safeguards.

Only two licensee exercise participants attended the exit meeting. Attendance by additional key players should be encouraged to improve the understanding of inspector observations and concerns and the corrective actions expected.

Attachments:
1. Exercise Scope of Participation
2. Exercise Objectives
3. Exercise Narrative Summary

SCOPE OF PARTICIPATION

Commonwealth Edison will participate in the Dresden Station Exercise by activating the on-site emergency response organization and the EOF, as appropriate, subject to limitations that may become necessary to provide for safe efficient operation of the Station and other CECo nuclear generating stations.

Activation of the TSC and other on-site participants will be conducted on a real time basis during the daytime hours. The Exercise shift personnel on duty will receive the initial scenario information and respond accordingly.

The Nuclear Duty Person and the balance of the Recovery Group will be prepositioned close to the Dresden Station to permit use of Recovery Group personnel from distant locations.

The Corporate Command Center will not be activated.

The Dresden Station, July 09, 1986, Exercise is a daytime event to test the integrated capability of Commonwealth Edison to assure adequate resources to verify their capability to respond to a simulated emergency.

Commonwealth Edison will demonstrate the capability to make contact with contractors, whose assistance would be required by the simulated accident situation, but will not actually incur the expense of using contractor services to simulate emergency response except as prearranged specifically for the Exercise.

Commonwealth Edison will arrange to provide actual transportation and communication support in accordance with existing agreements to the extent specifically prearranged for the exercise. Commonwealth Edison will provide unforeseen actual assistance only to the extent the resources are available and do not hinder normal operation of the Company.

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OBJECTIVES

PRIMARY OBJECTIVE:

Demonstrate the capability to implement the Commonwealth Edison Generating Station's Emergency Plan in cooperation with the Illinois Plan for Radiological Accidents to protect the public in the event of a major accident at the Dresden Station.

SUPPORTING OBJECTIVES

1) Incident Assessment and Classification

   a. Demonstrate the capability to assess the accident conditions, to determine which Emergency Action Level (EAL) has been reached, and to classify the accident level correctly in accordance with GSEP. (Control Room, TSC and EOF.)

2. Notification and Communication

   a. Demonstrate the capability to notify the principal offsite organizations via NARS within 15 minutes of classification. (Control Room, TSC and EOF.)

   b. Demonstrate the ability to notify the NRC within one hour of incident occurence. (Control Room, TSC and EOF.)

   c. Demonstrate the capability to contact organizations that would normally assist in an emergency, but are not participating in this exercise (i.e., Sargent & Lundy, General Electric, INPO.) (EOF and TSC.)

   d. Demonstrate the ability to notify State agencies with hourly plant status followup information. (TSC and EOF)

3) Radiological Assessment

   a. Demonstrate the capability to calculate offsite dose projections. (TSC and EOF)

   b. Demonstrate the capability of Environmental Field Teams to conduct field radiation surveys, collect air, liquid, vegetation and soil samples when needed. (Environs Team.)

   c. Demonstrate the capability to conduct in-plant radiation protection activities. (OSC/Health Physics Teams.)

d. Demonstrate the ability to collect and conduct analysis of air or liquid samples onsite via HRSS. (OSC/Rad Chem)

e. Demonstrate the ability to perform calculations with radiological survey information, trend this information and make appropriate recommendations concerning protective actions. (EOF and TSC)

4. Emergency Facility Manning

a. Demonstrate the ability to activate the emergency organization and staff the nuclear station Emergency Response Facilities in accordance with procedures. (Control Room, TSC, EOF, OSC/General Plant and JPIC.)

b. Demonstrate through discussion and staff planning, the ability to perform a shift change in the TSC, EOF and Control Room.

c. With the limitation that the pipe replacement outage is completed by the Exercise date, demonstrate the capability to provide timely and accurate onsite personnel accountability in accordance with procedures. (TSC)

5. Emergency Direction and Control

a. Demonstrate the ability of the Directors to manage the emergency organizations in the implementation of the GSEP. (TSC and EOF)

b. Demonstrate the Security Force's capability to limit and control access to affected areas of the Station. (General Plant)

6. Recovery and Re-entry

a. Demonstrate the capability of the emergency response personnel to identify requirements, programs, policies governing damage assessments and implementation of procedures for recovery and re-entry. (TSC and EOF)

DRESDEN EXERCISE
JULY 9, 1986

NARRATIVE SUMMARY

The events for the 1986 Dresden Exercise Scenario will be driven mainly by inclement weather affecting the station.

Dresden Unit 3 has been shutdown for 10 months for the Reactor Pipe Replacement Outage. Unit 2 has been operating at about 90% power for the last twelve (12) weeks. The Unit 2 isolation condenser is out of service for the second of six expected days of motor operated valve EQ work.

UNUSUAL EVENT T=0 TO T=45

Heavy rain is being experienced and the forecast is for continued heavy rain. The Illinois River level is at 508' 10" and rising. It is projected to rise above 509'. This is an Unusual Event per EAL #15.2.

ALERT T=45 TO T=110

At T=45, the Illinois River reaches 509'. This is an Alert per EAL #15. As plant personnel begin to drop load because of high river level, there will be a reactor recirculation pump run out to exceed 100% speed which will cause some fuel clad failure. The fuel clad failure will cause a main steam line high radiation alarm resulting in a Group I isolation. HPCI will fail to start thus requiring ADS (Automatic Depressurization System) to cycle for pressure control. The HPCI will fail to start due to a breaker trip on the HPCI auxiliary oil pump.

SITE EMERGENCY T=110 TO T=360

At T=110, a tornado strikes the Unit 2/3 reactor building and switchyard. This is a Site Emergency per EAL #14.1. The tornado causes a loss of secondary containment due to damage to the building on the refuel floor. This sustains the Site Emergency per EAL #9. The fuel pool will lose approximately 5 feet of water level causing a low fuel pool level alarm in the control room and high radiation readings on the refuel floor ARMs. The refuel floor will be inaccessible to personnel due to debris and high radiation. The tornado also causes a loss of offsite power, and the loss of a section of the security fence. Debris will be carried offsite requiring field team monitoring. An electromatic valve leak will cause drywell pressure to increase to 12 psig. HPCI now becomes available.

RECOVERY T=360 TO T=420

At T=360, there will be a two week time jump so that the Recovery phase can begin.

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