

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 50-237; 50-249  
License Nos: DPR-19; DPR-25

Report Nos: 50-249/97014(DRS); 50-249/97014(DRE)

Licensee: Commonwealth Edison Company

Facility: Dresden Station Units 2 and 3

Location: 6500 N. Dresden Road  
Morris, IL 60450

Dates: August 19 - 22, 1997

Inspectors: Robert Jickling, Emergency Preparedness Analyst  
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Division of Reactor Safety

## EXECUTIVE SUMMARY

Dresden, Units 2 & 3  
NRC Inspection Reports 50-237/97014, 50-249/97014

This inspection included evaluation of performance during the plant's biennial exercise of the Emergency Plan and review of previous emergency preparedness open items by regional emergency preparedness inspectors and the plant resident staff.

Overall, the 1997 Emergency Preparedness exercise was a successful demonstration of the licensee's capabilities to implement its emergency plans and procedures. Event classifications were correct and timely.

### Plant Support

- Offsite notifications and protective action recommendations were correct and timely. Inplant activities were well-thought-out and well-coordinated. A number of equipment mock-ups were used to enhance realism to emergency response for the inplant response teams. Transfers of command and control were smooth and coordinated.
- One Inspection Followup Item was identified related to the licensee's actions to clarify the bases of the loss of annunciator Alert EAL. The licensee provided a comprehensive post exercise self-assessment. (Section P4.1.b.6)
- The control room simulator (CRS) crew was professional and effectively responded to the emergency conditions. Communications by the crew were crisp and efficient. (Section P4.1.b.1)
- The Technical Support Center (TSC) staff's performance was effective. Activation of the facility was rapid. Command and control of the facility by the Station Director were strong.
- Transfers of emergency responsibility from the CRS to the TSC and to the Corporate Emergency Operations Facility (CEOF) were crisp and concise. TSC staff proactively pursued several methods to close the hard vent valves to terminate the radioactive release. (Section P4.1.b.2)
- Performance by Operations Support Center (OSC) personnel was generally competent. Good TSC briefings were transmitted into the OSC and provided the staff current emergency and plant conditions. While OSC briefings communicated essential information to the inplant teams, the inspectors noted several occasions when the status of overall plant conditions, plant configuration, and vital equipment was not provided. Frequent side conversations, radio transmissions, and phone discussions continued during several of the facility briefings. Public address announcements in certain areas of the plant were difficult to hear. The licensee was aware of these inadequacies and had initiated correction of these problems. Radiation protection practices were strong. (Section P4.1.b.3)

- The licensee demonstrated the use of the CEOF in place of the near-site ECF at Mazon. The CEOF staff were knowledgeable of their duties and promptly assumed their roles. The transfer of command and control to the CEOF from the TSC was smooth and efficient. Briefings of plant conditions and status were provided to the corporate manager of emergency operations from the Station Director. Periodic briefings were provided to the staff and facility status boards were continuously maintained throughout the exercise.
- Appropriate protective action recommendations were made to the State of Illinois in a timely manner. The CEOF continuously tracked the actions taken by the State and local agencies and monitored plant conditions and other actions taken by the off site agencies. (Section P4.1.b.4)
- One Inspection Followup Item was identified to track the licensee's clarification of the basis for the loss of control room annunciators emergency action level. (Section P4.1.b.5)

## Report Details

### IV. Plant Support

#### **P3 Emergency Preparedness Procedures and Documentation**

##### **P3.1 Review of Exercise Objectives and Scenario (82302)**

The inspectors reviewed the 1997 exercise objectives and scenario and determined that they were acceptable. The scenario provided an appropriate framework to support demonstration of the licensee's capabilities to implement its emergency plan. The scenario included a large radiological release and several equipment failures.

#### **P4 Staff Knowledge and Performance in Emergency Preparedness**

##### **P4.1 1997 Evaluated Biennial Emergency Preparedness Exercise**

###### **a. Inspection Scope (82301)**

On August 20, 1997, the licensee conducted a biennial exercise involving full State and county participation. The exercise was conducted to test major portions of the onsite and offsite emergency response capabilities. The emergency response organization and emergency response facilities were activated.

The inspectors evaluated performance in the following emergency response facilities:

- Control Room Simulator (CRS)
- Technical Support Center (TSC)
- Operations Support Center (OSC)
- Corporate Emergency Operations Facility (CEOF)

The inspectors assessed licensee recognition of abnormal plant conditions, classification of emergency conditions, notification of offsite agencies, development of protective action recommendations, command and control, communications, and the overall implementation of the emergency plan. In addition, the inspectors attended the post-exercise critiques in each of the facilities to evaluate the licensee's self-assessment of exercise performance.

###### **b. Emergency Response Facility Observations and Findings**

###### **b.1 Control Room Simulator**

Overall control room crew performance was effective. The CRS crew was professional and effectively responded to the emergency conditions. Communications by the crew were crisp and efficient. Repeat backs and acknowledgements were used extensively in the simulator. Crew teamwork was competent. One example noted was the when a



unit supervisor verified the correct procedure and step number for the nuclear shift operator during their emergency response.

The Acting SD's command and control of the control room simulator was very strong. Briefings were concise and appropriately timed so as not to impact response to the emergency. Changing plant conditions and emergency status were included in the briefings. Good "big picture" awareness was demonstrated by the acting SD.

The Shift Manager and Unit Supervisor recognized the Unusual Event and Alert entry conditions and declared the emergency classifications in a timely manner. Initial notifications were made to the State and local authorities within 15 minutes and the NRC within 30 minutes of the emergency classification. The Emergency Response Data system was activated within approximately 30 minutes of the Alert declaration.

The transfer of command and control from the CRS to the TSC was smooth and well coordinated. The acting SD in the CRS appropriately briefed the TSC SD during a lull in the activity so as not to affect the response to the emergency.

#### b.2 Technical Support Center

Overall, the TSC staff's performance was effective. Activation of the facility was rapid. The staff immediately signed in on the staffing status board upon arriving, properly used the facility activation checklists, and activated their equipment and established communications links.

Command and control by the SD was strong. His initial facility briefing effectively identified his expectations to the staff. Periodic briefings were provided to the staff and included current changes in emergency conditions. The SD provided an excellent initiative by requesting any additional last minute information from the staff before ending the briefings. On several occasions, the support directors provided announcements of late-breaking information.

TSC personnel demonstrated effective communications and teamwork. The SD provided periodic phone calls to the CRS and CEOF to provide and receive current emergency conditions. Noise levels were maintained appropriately low. When necessary, the SD emphasized the need for reduced noise levels.

The technical director's (TD) staff competently tracked plant conditions and reviewed the emergency action levels for possible emergency classification changes. Tasks and priorities were identified for OSC inplant teams by the TD and his staff and rapidly communicated to the OSC.

Transfers of emergency responsibility from the CRS to the TSC and to the CEOF were crisp and concise. Turnover briefing forms were used during command and control turnovers which ensured key information was discussed.

Status boards were effectively maintained and continuously updated. The "Priorities" status board effectively tracked the OSC repair teams priorities and status. A closed circuit television monitor displayed the team tracking status board in use in the OSC.

Two environs field teams were rapidly assembled in the TSC, properly briefed, and dispatched at the Alert classification, according to the emergency procedures. Radio communications with the environs teams was clear and responsibility was smoothly transferred to the CEOF staff when the CEOF assumed command and control.

TSC staff proactively pursued several methods to close the hard vent valves to terminate the radioactive release. TSC staff discussed area radiation levels and valve closure methods when it was determined that an inplant team was necessary to close the hard vent valve in a very high radiation area of the plant.

### b.3 Operations Support Center and Inplant Response Teams

Overall, OSC personnel performance was generally competent. Command and control of the facility was provided by the OSC Director and supervisor. Noise levels were maintained low throughout the exercise. Good TSC briefings were transmitted into the OSC which provided the staff current emergency and plant conditions. While OSC briefings communicated essential information to the inplant teams, the inspectors noted several occasions when the status of overall plant conditions, plant configuration, and vital equipment were not provided. This did not appear to affect OSC emergency response. Frequent side conversations, radio transmissions, and phone discussions continued during several of the facility briefings did negatively influence the effectiveness of the briefings.

Public address (PA) announcements were difficult to hear by personnel in the OSC. OSC staff were unable to hear the announcements for the activation of the emergency facilities and the Unusual Event declaration. The licensee was aware of these inadequacies and had initiated correction of these PA system problems, however, correction of these problems had not been completed prior to the exercise.

The OSC staff provided appropriate support to the TSC and dispatched inplant teams to trouble shoot and correct equipment problems as they occurred. On one occasion the inspectors observed that current TSC plant priorities were requested and obtained by the OSC Director; however, these priorities were not used to update the status board or provided to the staff in a briefing. Later in the exercise, the licensee identified and corrected the differences in priorities displayed on the TSC and OSC plant priorities status boards.

The inspectors noted that while personnel accountability was maintained in the OSC, initially, the OSC staging area security guard was mispositioned and at least four persons entered and exited the staging area by going around rope barriers intended to limit facility access to one entry. The licensee noted that the guard was not in the correct position and repositioned the guard and no further access control problems were observed.

The inspectors accompanied several inplant teams dispatched from the OSC into the plant. Communications were effectively maintained between the teams and the OSC. On one occasion a radio battery failed and the team member proactively used an elevator phone to communicate with the facility. Radiation protection practices were strong. Continuous radiation levels were obtained by the technicians and on two occasions the teams moved to actual low dose areas in the plant while they waited for additional instructions from the OSC.

b.4 Corporate Emergency Operations Facility

The licensee demonstrated the use of the CEOF. During this exercise, actual emergency response personnel callout and staffing of the EOF were not demonstrated as facility personnel were assembled in a nearby conference room.

The CEOF staff was knowledgeable of their duties and promptly assumed their roles. Communications were quickly established and checked. The transfer of command and control to the EOF from the TSC was smooth and efficient. Comprehensive briefings of plant conditions and status were provided to the Corporate Manager of Emergency Operations (CMEO) from the SD.

The CMEO maintained good command and control in the facility. Noise levels were kept to a minimum. Periodic briefings were provided to the staff and facility status boards were continuously maintained throughout the exercise. Communications in the facility were effective.

The General Emergency was properly classified based on plant conditions. Throughout the event the staff continuously assessed and confirmed the appropriate classification, emergency conditions, and plant status. The inspectors observed good discussions regarding authorization of potassium iodine for protecting emergency workers against high concentrations of radio-iodine and emergency dose extension authorization to allow inplant teams into high radiation areas to mitigate the radiological release.

The licensee performed appropriate dose assessment and dose projections using plant data, field team data, and data obtained from the State of Illinois. Results were reviewed and then used to back calculate and verify the radiological release from the plant.

Appropriate protective action recommendations (PARs) were made to the State in a timely manner. Weather conditions were properly considered in determining the correct PARs. The CEOF continuously tracked the actions taken by the State and local agencies and monitored plant conditions and other actions taken by the off site agencies.



The EOF staff made appropriate communications and notifications on and offsite. The CMEC conducted periodic updates with the onsite staff and offsite agencies. The Nuclear Accident Report System form prepared for the General Emergency classification was issued in a timely manner. The CMEC also reviewed and verified the accuracy of the press releases.

Status boards were effectively maintained throughout the facility. Emergency events for the two reactor units at the site were clearly marked using different colors and avoid any confusion between the two reactors.

b.5 Scenario and Exercise Control

The inspectors made observations during the exercise to assess the challenge and realism of the scenario and to evaluate the control of the exercise.

The inspectors determined that the scenario was adequate to test basic emergency capabilities and demonstrate onsite exercise objectives. The scenario was challenging with respect to how rapidly plant conditions degraded to warrant a General Emergency declaration and the number of equipment failures that were included in the scenario.

The licensee made extensive use of equipment mock-ups to demonstrate real time emergency mitigation and corrective actions by inplant response teams. These equipment mock-ups were extremely effective and were connected to hydrogen gas, electrical, and water supplies which effectively mimicked live plant equipment. Not only did these mockups provide additional exercise realism, they provided additional challenged the inplant teams.

During the loss of control room annunciators the operators reviewed the emergency action levels (EALs) and determined escalation of emergency classifications to an Alert was not required. The scenario had been written to escalate to an Alert declaration at this point. However, after the control room staff's review of the EALs and appropriate decision not to escalate to an Alert classification, the controllers properly prompted the crew to classify the Alert to preserve the scenario timeline for offsite agency participation. During the licensee's later review of the emergency implementing procedures for the loss of annunciator Alert classification, they identified that the basis for this Alert EAL lacked clarity on whether the loss of one of three control room monitoring systems or loss all three systems were required in addition to the loss of annunciators to declare an Alert. Licensee actions to clarify the EAL basis will be tracked as an Inspection Followup Item (IFI 50-237/97014-01; 50-249/97014-01).

b.6 Licensee Self-Critique

Facility critiques were held immediately after termination of the exercise and included participants and controllers. Participants and controllers were self critical and all participants were encouraged to provide feedback. Controllers requested written comments from the participants to augment the controllers' documents. The licensee's overall self-assessment was comprehensive.



c. Overall Conclusions

The exercise was a successful demonstration of the licensee's capabilities to implement its emergency plans and procedures. Event classifications were correct and timely. Offsite notifications and protective action recommendations were correct and timely. Inplant activities were well-thought-out and well-coordinated. A number of equipment mock-ups were used to enhance realism to emergency response for the inplant response teams. Transfers of command and control were smooth and coordinated. One Inspection Followup Item was identified related to the licensee's actions to clarify the bases of the loss of annunciator Alert EAL. The licensee provided a comprehensive post exercise self-assessment.

**P8 Miscellaneous EP Issues**

(Closed) Inspection Followup Item Nos. 50-237/95009-04; 50-249/95009-04: During the 1995 exercise an Exercise Weakness was identified for poor accident mitigation due to a lack of TSC management direction to the OSC. Emergency response teams were not dispatched in some cases and not dispatched in a timely manner in other cases. During the 1997 exercise, effective communications between the control room, TSC, and OSC afforded timely dispatch of emergency response teams. Tasks and priorities were quickly communicated to the OSC. Additionally, a new task prioritization scheme was implemented, response briefing and debriefing forms were consolidated into one page, and the OSC director's office was relocated closer to the OSC ready room. All affected procedures had been revised and training had been completed by August 13, 1997. This item is closed.

(Closed) Inspection Followup Item Nos. 50-373/94018-04; 50-374/94018-04: During the 1994 LaSalle exercise, written news releases prepared by the corporate communications staff and by the Joint Public Information Center (JPIC) staff were poor. They contained factual errors and typographical errors and did not provide a full picture of events at the plant. Meetings were held subsequent to the exercise to review the press releases and develop corrective strategies. Two individuals from the Corporate Communication Services attended the Nuclear Energy Institute (NEI) Crisis Communication Conference, and Communication Specialists from the sites were trained as newswriters. Increased emphasis was placed on the accuracy of news releases during annual requalification training for Newswriters. News releases numbers 1-7 for the Dresden 1997 were reviewed, and although typographical errors were noted, information in the releases was correct. This item is closed.

**V. Management Meetings**

**X.1 Exit Meeting Summary**

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on August 22, 1997. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

## PARTIAL LIST OF PERSONS CONTACTED

### Licensee

T. Blackmon, Emergency Preparedness Director  
K. Deck, Emergency Preparedness Trainer  
J. Heffley, Station Manager  
B. Holbrook, Training Manager  
R. Krohn, Corporate Emergency Preparedness  
S. Kuczynski, Shift Operations Supervisor  
B. Plant, Corporate Emergency Preparedness  
S. Perry, Site Vice-President  
C. Richards, SQV Supervisor  
H. Simons, Emergency Preparedness Supervisor  
F. Spangenberg, Regulatory Assurance Manager  
M. Vonk, Emergency Preparedness Director  
D. Winchester, QSA Manager

### IDNS

Cecil Settles, Resident Inspector

## INSPECTION PROCEDURES USED

IP 82301 Evaluation of Exercises for Power Reactors  
IP 82302 Review of Exercise Objectives and Scenarios for Power Reactors

## ITEMS OPENED AND CLOSED

### Opened

50-237/97014-01; 50-249/97014-01 IFI 1997 Dresden exercise related to tracking Licensee actions to clarify the loss of control room annunciators EAL basis.

### Closed

50-373/94018-04; 50-374/94018-04 IFI 1994 LaSalle exercise, written news releases prepared by the corporate communications staff and by the Joint Public Information Center staff were poor.

50-237/95009-04; 50-249/95009-04 IFI 1995 Dresden Exercise Weakness identified for poor accident mitigation due to a lack of TSC management direction to the OSC.



## LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
CRS	Control Room Simulator
CEOF	Corporate Emergency Operations Facility
CMEO	Corporate Manager of Emergency Operations
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
EAL	Emergency Action Level
EOF	Emergency Operations Facility
EP	Emergency Preparedness
IDNS	Illinois Department of Nuclear Safety
IFI	Inspection Followup Item
IP	Inspection Procedure
JPIC	Joint Public Information Center
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NRR	Division of Nuclear Reactor Research
OSC	Operations Support Center
PAR	Protective Action Recommendation
SQV	Site Quality Verification
SRI	Senior Resident Inspector
SD	Station Director
TD	Technical Director
TSC	Technical Support Center