

March 16, 2000

Mr. Oliver D. Kingsley
President, Nuclear Generation Group
Commonwealth Edison Company
ATTN: Regulatory Services
Executive Towers West III
1400 Opus Place, Suite 500
Downers Grove, IL 60515

SUBJECT: NRC BRAIDWOOD EMERGENCY PREPAREDNESS EXERCISE INSPECTION
REPORT 50-456/2000003(DRS); 50-457/2000003(DRS)

Dear Mr. Kingsley:

On March 3, 2000, the NRC completed an inspection of your emergency preparedness biennial exercise at the Braidwood Nuclear Generating Station, Units 1 and 2. The purpose of this inspection was to evaluate the performance of the emergency response organization during the exercise. The enclosed report presents the results of that inspection.

Areas examined within your emergency preparedness exercise are identified in the report. Within those areas, the inspection consisted of a selective examination of procedures and representative records, observation of performance, and interviews with staff. The objective of the inspection effort was to determine whether the Emergency Plan was adequate and whether personnel were capable of implementing the Emergency Plan in accordance with NRC requirements. Based on the results of this inspection, no violations of NRC requirements were identified.

Overall performance during the exercise demonstrated that the emergency plan and related procedures were competently implemented in response to a challenging scenario. The operating crew responded appropriately to all alarms and correctly used procedures. However, the crew did not aggressively pursue radiation level information at the radioactive waste control room following a radioactive waste spill, to allow the Shift Manager to make a more informed initial emergency classification decision. The Technical Support Center staff's overall performance was very competent and professional. Overall performance of the Operations Support Center personnel was generally effective. The EOF staff performed well as a team. All emergency classification decisions were correctly made, and related notifications of State officials were timely. Protective action recommendations were procedurally correct. Transfers of command and control of emergency response activities were clear and timely.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be placed in the NRC Public Document Room (PDR).

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

/RA/

Wayne J. Slawinski, Acting Chief
Plant Support Branch

Docket Nos. 50-456; 50-457
License Nos. NPF-72; NPF-77

Enclosure: Inspection Report 50-456/2000003(DRS);
50-457/2000003(DRS)

cc w/encl: D. Helwig, Senior Vice President, Nuclear Services
C. Crane, Senior Vice President, Nuclear Operations
H. Stanley, Vice President, Nuclear Operations
R. Krich, Vice President, Regulatory Services
DCD - Licensing
T. Tulon, Site Vice President
K. Schwartz, Station Manager
T. Simpkin, Regulatory Assurance Supervisor
M. Aguilar, Assistant Attorney General
State Liaison Officer
Chairman, Illinois Commerce Commission
W. Curtis, FEMA Region V

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DATE	03/16/00	03/16/00	03/16/00		

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 50-456; 50-457
License Nos: NPF-72; NPF-77

Report No: 50-456/2000003(DRS); 50-457/2000003(DRS)

Licensee: Commonwealth Edison Company

Facility: Braidwood Generating Station, Units 1 and 2

Location: RR #1, Box 84
Braceville, IL 60407

Inspection Dates: February 29 - March 3, 2000

Inspectors: T. Ploski, Senior Emergency Preparedness Analyst
R. Jickling, Emergency Preparedness Analyst
D. Funk, Emergency Preparedness Analyst
J. Foster, Emergency Response Coordinator
D. Pelton, Resident Inspector

Approved by: W. Slawinski, Acting Chief, Plant Support Branch
Division of Reactor Safety

EXECUTIVE SUMMARY

Braidwood Nuclear Generating Station, Units 1 and 2
NRC Inspection Report 50-456/2000003(DRS); 50-457/2000003(DRS)

This inspection consisted of an evaluation of the licensee's performance during the station's biennial exercise of the Emergency Plan. It was conducted by four regional emergency preparedness inspectors and a resident inspector. No violations of NRC requirements were identified.

Plant Support

- Overall performance during the 2000 Emergency Preparedness exercise demonstrated that the emergency plan and related procedures were competently implemented in response to a challenging scenario. Implementation activities met regulatory requirements (Section P4.1.c).
- The operating crew in the Control Room Simulator (CRS) responded appropriately to all alarms, and correctly used relevant procedures. Notifications to the State of Illinois officials and simulated to NRC officials were made in a timely manner following two emergency declarations (Section P4.1.c).
- The operating crew did not aggressively pursue radiological information at the Radwaste Control Room so that the Shift Manager could make a more informed initial emergency classification decision (Section P4.1.c).
- The Technical Support Center (TSC) staff's overall performance was very competent and professional. Teamwork and effective communications were evident (Section P4.1.c).
- Transfers of command and control of event response activities between senior decision makers in the CRS, TSC, and Emergency Operations Facility (EOF) were clear, timely, and per procedures. The quality of communications among EOF staff and with their counterparts in other response facilities was a strength. Emergency reclassification decisions by the EOF's Manager of Emergency Operations were properly made. Offsite protective action recommendations were procedurally correct and effectively communicated to State officials (Section P4.1.c).
- Overall performance of Operations Support Center (OSC) personnel was generally effective. Radiation protection technicians provided competent support (Section P4.1.c).
- All teams were dispatched from the OSC in an acceptably timely manner, with the exception of one high priority team. One OSC team's briefing was prolonged. There were some difficulties in determining the appropriate protective equipment and in identifying team members having the proper qualifications to use the chosen respiratory protective equipment (Section P4.1.c).

Report Details

IV. Plant Support

P3 Emergency Preparedness Procedures and Documentation

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

The inspectors reviewed the 2000 exercise objectives and scenario and determined that both would acceptably test major elements of the licensee's emergency plan. The scenario provided a challenging framework to support demonstration of the licensee's capabilities to implement its emergency plan. The scenario included a simulated radiological release and multiple equipment failures.

P4 Staff Knowledge and Performance in Emergency Preparedness

P4.1 2000 Evaluated Biennial Emergency Preparedness Exercise

a. Inspection Scope (82301)

On March 1, 2000, the licensee conducted a biennial exercise involving the partial participation by the State of Illinois and Grundy County. Kankakee and Will Counties' participation was full scale. This exercise was conducted to test major portions of the licensee's emergency response capabilities. Onsite and offsite emergency response organizations and emergency response facilities were activated.

The inspectors evaluated licensee performance in the following emergency response facilities:

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

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

b. Emergency Response Facility Observations and Findings

b.1 Control Room Simulator (CRS)

The operating crew responded appropriately to all alarms encountered during the exercise, including: referring to the associated alarm response procedures; and entering appropriate abnormal operating procedures. The crew also dispatched operations personnel to evaluate a radioactive waste (radwaste) handling accident, which resulted in an Unusual Event declaration. This was later upgraded to an Alert declaration.

Upon receipt of annunciator alarms related to the Auxiliary Building, the Shift Manager (SM) requested that an Operations Department Field Supervisor and Radiation Protection (RP) technicians investigate the cause of the alarms. Once the SM was informed that a radwaste handling accident had occurred, a prudent public address announcement was quickly made to have plant personnel avoid the accident scene. Radiation measurements at the scene were requested, including measurements at the Radwaste Control Room. The SM correctly recognized that the radiation levels at the Radwaste Control Panel would impact his emergency classification decision.

Onscene responders gave the operating crew valuable information about conditions at the accident scene with the notable exception of radiation levels at the Radwaste Control Room, because the operating crew did not aggressively pursue radiological information to satisfy the SM's request. Based on the information provided, the SM correctly declared an Unusual Event. State officials were acceptably notified within the regulatory time limit.

While preparing to notify a simulated NRC official of the Unusual Event declaration, the SM was given the requested dose rate information at the Radwaste Control Room through the acceptable action of an exercise controller. The field supervisor had not previously provided this requested information in a timely manner. Upon receipt of radiation level data at the Radwaste Control Room, the SM correctly and rapidly reclassified the emergency as an Alert.

Timely emergency notifications were then made to both the State and the NRC. One call was made to acceptably notify a simulated NRC official of the related Unusual Event and Alert declarations within the regulatory time limit.

Once the steam line break was recognized by the CRS crew later in the exercise, the Unit Supervisor (US) took appropriate, conservative actions in directing a manual trip of the reactor. Operating crew actions in response to this decision were acceptable.

The first CRS crew briefing given by the US was not provided until approximately 90 minutes after the radwaste handling accident. Subsequent briefings were more frequent. However, at times, these briefings did not appear well planned, or did not always provide all pertinent information to the crew concerning changing plant conditions. The crew was not always attentive to the US's briefings.

b.2 Technical Support Center (TSC)

The TSC staff's overall performance was very competent. Facility activation was rapid. Staff immediately signed in upon arriving, properly used their activation checklists, activated equipment, and established communications links. Minimum staffing was achieved within 12 minutes of the Alert declaration. The TSC's Station Director (SD) accepted command and control of the licensee's overall emergency response within 23 minutes of the Alert declaration.

The SD demonstrated effective command and control. The TSC staff received an acceptably detailed initial briefing. Subsequent, concise briefings occurred at a 30 minute frequency. Key staff were expected to contribute to each briefing and to promptly inform the SD of any significant new information they obtained between scheduled briefings. The SD reminded the staff of upcoming briefings and indicated his expectations for the types of information to be presented. Consequently, key TSC staff were well prepared for the briefings and presented their information in a very efficient manner. The TSC staff were attentive during these briefings

Transfers of lead emergency responsibilities from the CRS's Acting SD to the TSC's SD and later to the Emergency Operations Facility's (EOF's) Manager of Emergency Operations (MEO) were crisp and occurred in a seamless manner. The SD appropriately used the Activation and Turnover Briefing Checklist during both turnovers.

The TSC staff performed in a professional manner. Teamwork and communications were evident. Staff were proactive in looking ahead to potential events which could lead to increased plant degradations and higher emergency classifications. A prudent decision was made to initiate a simulated assembly and accountability of all onsite personnel after notification that a suspicious device was onsite. This conservative decision was made prior to declaration of a Site Area Emergency, when onsite assembly would be procedurally required.

Status boards were detailed and well maintained throughout the exercise. A status board was effectively used to track the OSC repair teams' priorities and status. Other status boards were used to accurately track the locations of the licensee's offsite radiological monitoring teams and offsite protective action decisions.

Habitability monitoring of the TSC was conducted periodically when increasing radiation levels in the plant and TSC were identified. A step-off pad and a continuous air monitor were set up at the entrance to the facility. The TSC staff were periodically notified of relevant onsite radiological conditions.

Protective measures staff maintained appropriate awareness of onsite and offsite radiological conditions. Dose projection software was used to conservatively estimate offsite doses associated with the radiological release. The SD and RP Director effectively coordinated with EOF counterparts on decision making to authorize the ingestion of Potassium Iodide (KI) by appropriate emergency responders.

When EOF staff was unable to maintain acceptable radio communications with the offsite radiological monitoring teams, TSC staff appropriately retained control of these teams after overall command of the licensee's response was transferred to the MEO.

The offsite monitoring teams were effectively positioned to locate and track the radiological release. Communications between the TSC staff and the offsite teams were clear and efficient.

An offsite radiological monitoring team from the Dresden Nuclear Station was substituted for one of the two teams deployed from the Braidwood Station. This effective use of resources was done when RP technicians on a monitoring team from the Braidwood Station were needed to promptly accompany an ambulance transporting a contaminated injured worker to a local hospital.

The TSC's engineering staff successfully used a computer to access an industry-wide database on actual occurrences of Main Steam Isolation Valve (MSIV) malfunctions. Such historical information was made available to TSC personnel who were considering potential courses of action to close a stuck open MSIV.

b.3 Operational Support Center (OSC) and Emergency Response Teams

The overall performance of OSC personnel was generally effective. They demonstrated a professional and focused response. Personnel started to arrive within eight minutes of the Alert announcement. The OSC was fully operational within 30 minutes of the Alert declaration.

The OSC Director provided effective command and control of the facility's staff. Staff were efficiently coordinated during facility activation and throughout the exercise. Periodic briefings were concise and included relevant plant conditions and emergency response decisions. Briefing input was solicited from the OSC Supervisor, as needed.

Status boards were well maintained. The team tracking board effectively tracked and displayed each team's membership, designation, priority, mission, and dispatch time. Name tags from the sign-in board were transferred to the team tracking board, which provided an effective process for controlling and tracking staff resources.

The inspectors observed a number of pre-deployment briefings and several debriefings of teams returning to the OSC. The process for briefing and dispatching inplant teams was generally effective. Exposure histories and respiratory qualifications were verified prior to the teams' dispatch from the facility. Briefings on assigned tasks were detailed and thorough. Effective teamwork was demonstrated by the OSC Director, OSC Supervisor, technical briefers, and the dosimetry clerk to ensure that team members understood their missions, including relevant radiological conditions, and that team members had appropriate dosimetry and the latest available relevant information on their missions.

Facility habitability surveys were conducted periodically by RP technicians. Dose rate and contamination surveys were appropriately demonstrated. Radiation survey meters were currently calibrated. Meter ranges were properly selected for current conditions. Effective radiological concern was demonstrated by OSC management when dose rates from five to ten millirem per hour were measured in the facility, and personnel were moved to the lower dose rate area of the OSC to reduce their exposures.

An inspector accompanied three teams dispatched from the OSC. The RP technicians demonstrated good radiological protection practices. Radiological monitoring was performed continuously. No unnecessary exposures were observed. Communications with an OSC communicator were effectively conducted by these inplant teams. The OSC communicators then forwarded the teams' feedback to TSC counterparts.

An inspector accompanied the "urgent priority" inplant team requested for a medical response. Team dispatch was rapid. Medical care was the top priority demonstrated by responders at the scene. The worker was checked for injuries and his vital functions were obtained. The ambulance crew arrived quickly and efficiently assessed the situation, transferred the victim onto a stretcher, and into an ambulance. Adequate radiological surveys were demonstrated from the team's arrival at the scene until the victim was placed in the ambulance.

The teams' deployments were generally timely. However, dispatch of team number 12, which was requested to try to close a stuck open MSIV, was delayed about 75 minutes from the time the team was requested by TSC management. Team number 12 was identified as the highest priority team and also was a "high" dispatch priority. The licensee defines, in part, a "high" dispatch priority team as "the task must be accomplished to mitigate a release to the public... team dispatch from the OSC must be accomplished as quickly as possible commensurate with ensuring the safety of team members."

A contributing factor for the slow dispatch of this team included a prolonged team briefing lasting approximately 35 minutes. Another factor that slowed the team's dispatch was that several problems arose regarding the respirator and self contained breathing apparatus (SCBA) qualifications of selected team members.

Respirators and protective clothing (PCs) were initially required for the team members to respond to the MSIV room. Continued OSC staff discussions identified a concern that a potential hydraulic leak could exist in the MSIV room. As a result, the protective equipment requirements were upgraded to SCBAs and "rain suits" (besides the PCs). The two maintenance technicians selected for the team were not currently qualified for using respirators or SCBAs. Three operations personnel, who were qualified for respirators and SCBAs, were eventually identified for this mission and were briefed. They acceptably demonstrated donning of PCs and SCBAs and were dispatched to the MSIV room. The licensee identified similar concerns and initiated an action tracking item to evaluate these issues.

b.4 Emergency Operations Facility (EOF)

The EOF was rapidly activated following the Alert declaration. The paging system worked well, with pages received within approximately 14 minutes of the Alert declaration. All "Alert level" response positions were filled within 10 minutes following pager activation. When the Site Area Emergency was declared, the full compliment of EOF "augmented" staff were contacted and rapidly filled their assigned positions.

The EOF's news center was purposely activated earlier than procedurally required to test the value of earlier activation. Having the news center activated earlier appeared to

add worthwhile public affairs expertise to initial efforts, and to facilitate the generation of timely press releases.

The EOF staff utilized facility activation procedures effectively. The MEO was well aware of the need to assume classification and notification duties from his TSC counterpart in order to allow TSC staff to focus their efforts on onsite concerns. The Turnover Briefing Checklist was properly utilized to ensure an orderly and timely transition of lead responsibilities to the EOF staff with one acceptable exception. The TSC staff retained responsibility for radio communication with the environs teams, as the EOF's radio equipment would not operate properly in "scrambled mode." Discussion with licensee personnel indicated that this equipment had similarly failed during a recent drill, but functioned properly during subsequent testing.

The EOF staff worked very effectively, demonstrating the value of training as a team. Periodic briefings kept the staff aware of ongoing actions and plant status. Successful arrangements were made to broadcast briefings held within the TSC to all EOF staff.

Communications among EOF staff and with counterparts in other facilities was a strength. For example, a number of communications were made personally from the MEO to the Illinois Department of Nuclear Safety's (IDNS) senior responder. These communications usually preceded official notifications, and provided additional information to this IDNS official. The MEO and the TSC's SD also frequently conferred.

Emergency reclassifications were properly made based on appropriate Emergency Action Levels. The MEO's immediate staff was proactive in looking for events which could lead to emergency classification upgrades. Formal notifications by communicator and facsimile were rapidly conducted following classification decisions.

The EOF personnel actively tracked plant mitigation activities and their respective priorities. While no problems were observed, a computerized system for displaying plant priorities was not available. Instead, priorities were tracked on status boards in various EOF rooms and were based on verbal communications.

Protective Action Recommendations (PARs) were properly developed based on procedural guidance. When dose projection program results indicated the possibility of elevated thyroid exposures to radioiodine, the initial PAR was revised. Relevant IDNS personnel were quickly advised of the revised PAR, and of the overall status of the radioactive releases from the plant, which had peaked and was decreasing.

The decision was made to issue KI to emergency workers who might be significantly exposed to radioiodine. The EOF news center's staff were not clear on the technical aspects of the use of KI as an agent to reduce the uptake of radioiodine to the thyroid gland.

b.5 Licensee Self-Critiques

The inspectors observed the licensee's initial self-critiques in the CRS, TSC, OSC, and EOF performances. These critiques were conducted minutes after the exercise. Exercise controllers solicited inputs from participants in addition to providing the participants with the controllers' initial assessments of participants' performances. The initial self-critiques were thorough and in close agreement with the bulk of the inspectors' observations.

b.6 Scenario and Exercise Control

The inspectors assessed the challenge of the scenario and evaluated the licensee's control of the exercise. The scenario was challenging and exercised the majority of the licensee's emergency response capabilities. The scenario was appropriate to test basic emergency capabilities and to demonstrate the licensee's exercise objectives.

Overall control of the exercise was appropriate. No significant controller prompting or exercise control problems were identified. The CRS lead controller's action to provide the operating crew with radiation level data at the Radwaste Control Room was acceptable in order to support State and county participants to demonstrate their exercise objectives. The data provided by the controller enabled the SM to make a more informed emergency classification decision, rather than the controller making this decision for the SM.

c. Overall Conclusions

Overall performance during the 2000 Emergency Preparedness exercise demonstrated that the emergency plan and related procedures were competently implemented in response to a challenging scenario. Implementation activities met regulatory requirements.

- The operating crew in the CRS responded appropriately to all alarms and correctly used relevant procedures.
- The operating crew initially notified State and simulated NRC officials in a timely manner following two emergency declarations.
- The operating crew did not aggressively pursue radiological information at the Radwaste Control Room so that the SM could make a more informed initial emergency classification decision.
- The TSC staff's overall performance was very competent and professional. Teamwork and effective communications were evident.
- Transfers of command and control of event response activities between senior decision makers in the CRS, TSC, and EOF were clear, timely, and per procedures.
- Overall performance of OSC personnel was generally effective. Radiation protection technicians provided competent support.

- With the exception of one high priority team, all teams were dispatched from the OSC in an acceptably timely manner.
- One OSC team's briefing was prolonged. There were some difficulties in determining the appropriate protective equipment and in identifying team members having the proper qualifications to use the chosen respiratory protective equipment.
- The quality of communications among EOF staff and with their counterparts in other response facilities was a strength.
- Emergency reclassification decisions by the MEO were properly made. Offsite protective action recommendations were procedurally correct and effectively communicated to State officials.

V. Management Meetings

X.1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the exit meeting on March 2, 2000. 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

G. Baker, Security Supervisor
T. Burns, Corporate Emergency Preparedness Scenario Development Supervisor
S. Butler, Licensing Engineer
L. Gerovac, Emergency Preparedness Trainer
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M. Ray, Emergency Preparedness Coordinator
T. Saksefski, Nuclear Oversight Group Leader
T. Simpkin, Regulatory Assurance Manager
P. Sunderland, Corporate Emergency Preparedness Scenario Developer
T. Tulon, Site Vice President
M. Vonk, Corporate Emergency Preparedness Director

IDNS

J. Roman, Resident Inspector

INSPECTION PROCEDURES USED

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

LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
CRS	Control Room Simulator
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
EOF	Emergency Operations Facility
IDNS	Illinois Department of Nuclear Safety
IP	Inspection Procedure
KI	Potassium Iodide
MEO	Manager of Emergency Operations
MSIV	Main Steam Isolation Valve
NRC	Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
OSC	Operations Support Center
PAR	Protective Action Recommendation
PC	Protective Clothing
PDR	NRC Public Document Room
radwaste	Radioactive Waste
RP	Radiation Protection
SCBA	Self Contained Breathing Apparatus
SD	Station Director
SM	Shift Manager
TSC	Technical Support Center
US	Unit Supervisor