

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-295/89006(DRSS); 50-304/89006(DRSS)

Docket Nos. 50-295; 50-304

Licenses No. DPR-39; DPR-48

Licensee: Commonwealth Edison Company  
Post Office Box 767  
Chicago, IL 60690

Facility Name: Zion Nuclear Generating Station, Units 1 and 2

Inspection At: Zion Station, Zion, Illinois

Inspection Conducted: February 14-17, 1989

Inspectors: *W. Snell for*  
T. Ploski

3/3/89  
Date

*W. Snell for*  
M. Smith

3/3/89  
Date

Approved By: *W. Snell*  
W. Snell, Chief  
Emergency Preparedness and  
Effluents Section

3/3/89  
Date

Inspection Summary

Inspection on February 14-17, 1989 (Reports No. 50-295/89006(DRSS);  
50-304/89006(DRSS))

Areas Inspected: Routine, announced inspection of the following areas of the Zion Station's Emergency Preparedness (EP) program: licensee action on previously identified items (IP 92701); emergency plan activations (IP 92700); operational status of the program (IP 82701); and training (IP 82206). Section 5 includes an update on the status of the Safety Issues Management System (SIMS) items. The inspection involved two NRC inspectors.

Results: Management attention to the onsite program has begun to increase. This increase is largely due to a July 1988 corporate assessment of the Station's program and the large number of items identified by NRC and licensee evaluators during the September 1988 exercise. While some progress has already been made on previously identified NRC concerns and some self-identified concerns, increased management attention is still necessary to ensure the timely completion of corrective actions on the remaining items. The inspectors also encouraged management support for the quarterly tabletop drills that have begun and are to continue to at least the end of 1989.

Due to changes in the normal station organization, some changes will likely occur in the Technical Support Center's (TSC's) organization during the first quarter of 1989. The licensee committed that those persons, whose emergency positions would be changing, would complete training requirements for their new positions by April 1989. The licensee's commitment to the State of Illinois to upgrade training to technicians, who would assist hospital staff in responding to a radiologically contaminated accident victim, will also be tracked by Region III staff.

## DETAILS

### 1. Persons Contacted

- \*T. Joyce, Station Manager
- \*T. Rieck, Services Superintendent
- \*D. Budowle, Services Director
- \*W. Cramer, Training Supervisor (Non-licensed)
- \*T. Vandervoot, Quality Assurance Supervisor
- \*W. Stone, Regulatory Assurance Supervisor
- \*A. Nykiel, GSEP Coordinator
- \*V. Williams, Lead Health Physicist
- \*R. Carson, Corporate Emergency Planner
- J. Johnson, GSEP Training Instructor
- R. Palatine, Tech Staff Engineer
- K. Landrum, Shift Engineer
- J. Madden, Shift Control Room Engineer
- C. Moser, Shift Control Room Engineer

\*These persons attended the February 17, 1989 exit interview.

### 2. Licensee Action on Previously Identified Items (IP 92701)

(Closed) Open Item No. 295/87002-02; No. 304/87002-03: To better ensure adequate 24-hour staffing capability in the Technical Support Center (TSC), the licensee should identify at least three qualified persons for each director-level position.

Based on a review of quarterly revisions to the onsite emergency organization callout procedure (EPIP 320-1), three persons were listed for all director-level positions in the TSC organization with the exception of the Operations Director. Four persons were listed as qualified Operations Directors. No individual was listed for more than one director-level position. These numbers of personnel are sufficient to better ensure 24-hour staffing capability. This item is closed.

(Open) Open Item No. 295/87007-01; No. 304/87009-01: During the 1987 exercise, an inplant team failed to comprehend and to follow several procedural steps during liquid sample collection using the High Range Sampling System (HRSS).

Records indicated that HRSS equipment problems resulted in the June 1988 liquid sample collection drill to be unsuccessful. Another equipment problem and several ALARA concerns were identified during the December 1988 remedial drill. The next liquid sample collection and analysis drill is scheduled in March 1989. This item will remain open pending successful use of the HRSS to collect a liquid sample.



(Closed) Open Item No. 295/87002-02; No. 304/87009-02: During the 1987 exercise, the inplant team dispatched to collect and analyze a containment atmosphere sample did not demonstrate adequate familiarity with the Post-Accident Radionuclide Analysis Portable System (PARAPS) utilized to count the sample.

Additional training on the use of the PARAPS was provided to all Radiation Chemistry Technicians (RCTs) in May and June 1988. The lesson plan adequately addressed system limitations, sample positioning, system operation, and ALARA considerations while using the PARAPS. The PARAPS was then successfully used during a June 1988 drill. This item is closed.

(Closed) Open Item No. 295/87007-03; No. 304/87009-03: During the 1987 exercise, the inplant team dispatched to collect and analyze a containment atmosphere sample demonstrated poor ALARA practices during sample collection, transport, and analysis.

Training on the use of the HRSS to obtain a containment atmosphere sample was conducted in May and June 1988. The lesson plan adequately addressed good ALARA practices during sample collection, transport, and analysis. The internal critique of the June 1988 containment atmosphere sample collection and analysis drill indicated that the RCTs demonstrated good ALARA practices throughout the drill. This item is closed.

(Closed) Open Item No. 295/87007-05; No. 304/87009-05: During the 1987 exercise, a field survey team failed to adequately follow procedural guidance on soil sample collection techniques, including the need to clean sample collection tools after use and the need to take smear samples of sample containers before giving the containers to a messenger.

Records indicated that the problems identified during the 1987 exercise were adequately addressed in the 1988 requalification training given to technicians who could be assigned to field survey teams. These problems were not identified during the subsequent environmental monitoring drill. This item is closed.

(Open) Open Item No. 295/88006-01: The licensee must repair and periodically test the Emergency Operations Facility's (EOF's) emergency ventilation system and associated radiation detection equipment.

The Particulate, Iodine, and Noble Gas (PING) monitor had been electronically upgraded during 1988 and was now operable. However, it had not yet been calibrated. A procedure addressing the need to perform periodic PING calibrations and to periodically functionally test the PING and the EOF's ventilation system in the recirculation mode was in the onsite review process. The licensee indicated that its plans had not been finalized regarding: who would be responsible for generating Work Requests if the PING or ventilation system was found to be inoperable; who would ensure that necessary repairs would be completed; and what priority would be assigned to such Work Requests. This item remains open

pending calibration of the PING and approval of one or more procedures that provide adequate assurance that the EOF's PING and the facility's emergency ventilation system well remain adequately maintained.

(Closed) Open Item No. 295/88006-02: The licensee must develop interim measures for continually assessing the EOF's habitability in the event that the EOF's PING or the emergency ventilation system does not properly operate.

Procedures EP-ERF-405 and NST-EOF-13 adequately addressed measures for continually assessing the EOF's habitability in the event of such equipment failures while the EOF is activated. This item is closed.

(Closed) Open Item No. 295/88006-03: The onsite emergency organization's 1988 training program must be conducted utilizing a matrix of position-specific training requirements. The matrix, training modules, and examinations must have the required internal approvals.

This item resulted from the fact that the 1988 training program had not been fully re-defined as of February 1988. Records indicated that Training Department staff had incorporated standardized training modules, provided through the corporate emergency planning staff, into the 1988 onsite training program. The matrix of position-specific training requirements was also finalized. The matrix, modules, and examinations received the required internal approvals prior to the beginning of the training program in the Summer of 1988. This item is closed.

(Closed) Open Item No. 295/88006-04: The licensee must ensure that corrective actions are completed on the onsite problems evident in the internal critique of the 1987 medical drill.

While a number of onsite contamination control problems had been identified in the licensee's drill critique, many had initially been dismissed in the final report as being "acceptable" for a drill situation. Records review indicated that the licensee had reevaluated the 1987 critique and had adequately addressed onsite contamination control techniques in the 1988 onsite medical response training program. This item is closed.

(Open) Open Item No. 295/88018-01: During the 1988 exercise, licensee staff failed to adequately inform Illinois officials of a Transportation Accident which involved the discharge of simulated dry active waste from its containers, and the simulated contamination and/or injury of roleplayers involved in the accident.

The licensee has proceduralized the State of Illinois' "IESDA Hazardous Materials Radiological Questionnaire." This form contains guidance for informing State officials of an accident involving the offsite transport of radioactive material. The licensee's capability to adequately inform State officials of a Transportation Accident will be evaluated by NRC staff during a remedial drill currently scheduled for April 1989. This item remains open.

(Closed) Open Item No. 295/88018-02: During the September 1988 exercise, neither Control Room staff nor the Technical Support Center (TSC's) Station Director declared a Site Area Emergency in a timely manner.

During the fourth quarter of 1988, Control Room crews and appropriate members of the TSC staff completed a "Team Training/Accident Management" training program which addressed emergency classification, offsite notification requirements, protective action decisionmaking, and Control Room-TSC interface. Each session of the classroom training lasted about 5 hours and included procedure review and a review of NRC evaluations of Control Room and TSC staff performance during exercises. The simulator portion of the training involved the response to a modified version of the 1987 exercise scenario. A response cell of controllers, simulating NRC and State duty officers, accepted calls from the participants as the scenario progressed.

During this inspection, one Shift Engineer (SE) and two Shift Control Room Engineers (SCREs) were interviewed as potential Acting Station Directors. The duties of this position include emergency classification, protective action decisionmaking, and offsite agency notification. All interviewees demonstrated adequate familiarity with relevant procedural guidance on these responsibilities.

This item is closed.

(Open) Open Item No. 295/88018-03: During the September 1988 exercise, TSC and EOF staffs failed to provide simulated NRC duty officers with adequately detailed information on plant conditions associated with the Site Area and General Emergency declarations.

During the fourth quarter of 1988, Control Room crews and appropriate TSC staff completed a "Team Training/Accident Management" program which included training on emergency classification and offsite notification. The NRC's Event Notification Worksheet has been proceduralized at the Zion Station to better ensure that licensee communicators understand the NRC's information needs. Review of the licensee's internal critique of the September 1988 exercise indicated that EOF staff had some difficulties in gaining a full understanding of degrading plant conditions and the continuing response to the Transportation Accident. Thus, the recently-arrived EOF staff had difficulty in satisfying the remaining information needs of simulated NRC duty officers, who had previously been in contact with TSC communicators.

This item will remain open pending an exercise demonstration of the TSC and EOF staffs' capabilities to adequately inform simulated NRC staff of changing plant conditions.

(Open) Open Item No. 295/88018-04: During the September 1988 exercise, the licensee's overall response to the Transportation Accident, which included a simulated medical emergency with contamination complications, was inadequate.



A remedial demonstration of response capabilities to an analogous situation is currently scheduled to take place during April 1989. NRC staff will evaluate this demonstration. This item remains open.

(Closed) Open Item No. 295/88018-05: The licensee must conduct a successful onsite assembly drill during 1988.

The assembly drill conducted as part of the 1988 pre-exercise was considered unsuccessful by licensee controllers and by NRC inspectors who reviewed records of the pre-exercise drill. The licensee was allowed to delete the onsite assembly drill from the 1988 exercise objectives. Records indicated that a successful onsite assembly drill was conducted in December 1988 to fulfill the annual commitment in the Emergency Plan. This item is closed.

3. Emergency Plan Activations (IP 92700)

NRC and licensee records associated with all emergency plan activations that occurred since the February 1988 routine inspection were reviewed. These records included: records generated by NRC Headquarters and Region III Duty Officers; Control Room logs; Nuclear Accident Reporting System (NARS) forms and other forms completed by onshift personnel; and evaluations of licensee records that were performed by the GSEP Coordinator.

Between February 1988 and mid-February 1989, onshift personnel correctly declared two Unusual Events. Both declarations were due to commencement of reactor shutdown per Technical Specification requirements. Illinois, Wisconsin, and NRC officials were initially notified of both declarations in a timely manner. Comparison of licensee and NRC records of each event indicated that the NRC was accurately informed of the circumstances which led to the Unusual Event declarations. The GSEP Coordinator's evaluations of licensee records were adequate.

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

4. Operational Status of the Emergency Preparedness Program (IP 82701)

a. Emergency Plan and Implementing Procedures

By letter dated August 31, 1988, NRC Region III staff approved Revision 6B to the Generating Stations Emergency Plan (GSEP). This revision had undergone the required onsite and offsite reviews prior to being submitted for NRC approval. The Zion Station Annex to the generic GSEP was being revised during this inspection. The relatively minor changes included identification of the Corporate Command Center in Chicago, Illinois as the approved backup Emergency Operations Facility (EOF) for the Zion Station. The licensee planned to submit the annex revision for NRC review following completion of the internal review process.

Revisions to Emergency Plan Implementing Procedures (EPIPs) have been reviewed on an ongoing basis since the 1988 routine inspection by the Region III Emergency Preparedness Analyst assigned to the Zion Station. These revisions accurately reflected the commitments made in the approved GSEP and Zion Station Annex to the GSEP.

The GSEP Coordinator had revised, or was in the process of revising, a number of EPIPs. Revisions which had already been approved included proceduralization of the NRC's Event Notification Worksheet and the State of Illinois' "IESDA Hazardous Materials Radiological Questionnaire." The latter form would be used to assist station staff in satisfying the information needs of State officials in the event of a Transportation Accident involving radiological materials. EPIP revisions in progress were largely the results of a July 1988 corporate self-assessment of the Station's program and the large number of items identified by the NRC and the licensee during the September 1988 exercise. For example, one of the coordinator's supervisors had become involved with the development of a coordinated plan for responding to a Transportation Accident within the city limits of Zion, Illinois. Additional EPIP revisions were anticipated as a result of 1989 tabletop drill critiques.

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

b. Emergency Facilities, Equipment, and Supplies

A tour of the TSC, Operational Support Center (OSC), the onsite assembly area, and the nearsite EOF indicated that all were being maintained on an adequate state of readiness, with the exception of the EOF's PING and emergency ventilation system. The status of the licensee's progress in ensuring the operational readiness of the EOF's PING and emergency ventilation system is provided in Section 2 of this report.

The readiness of the emergency response facilities, communications equipment, and supplies was also evident from a review of periodic equipment test and inventory records. All procedurally required 1988 communications tests and inventories had been conducted and adequately documented. Documentation included evidence that identified problems had been corrected in a timely manner.

The licensee has made progress on plans to construct a new TSC; however, the target date for project completion has slipped from June 1990 to January 1991. The engineering contract was awarded in April 1988 and design work was in progress. The TSC's design is similar to that of the TSCs at the licensee's Byron and Braidwood Stations. It will be located along the northeast side of the Turbine Building. The new TSC will be spacious compared to the relatively cramped workspace which is presently used as a TSC.



The licensee was constructing an addition to the Service Building during this inspection. The addition was expected to be ready for occupancy in the first quarter of 1990. The licensee planned to remodel a portion of the existing Service Building into a meeting room capable of accommodating about 140 persons. The GSEP Coordinator provided information which indicated that this meeting room would be utilized as the primary OSC in an emergency situation. The size and location of this proposed OSC represents a significant improvement over the workspaces that currently must be reconfigured into an OSC.

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

c. Organization and Management Control

The GSEP Coordinator position was a non-supervisory, full-time assignment. The Coordinator's reporting chain to the new Station Manager was uncertain at the time of this inspection, mainly due to the "Introspect Program," which is an effort intended to reduce the number of levels of supervisory positions at the licensee's nuclear stations and the corporate office. Despite the short-term uncertainty in the coordinator's reporting chain and the recent appointment of a new Station Manager, there were no indications of a decline in the increased management attention to the Station's emergency preparedness program.

The onsite emergency organization's staffing had increased slightly during 1988. There were currently three, and infrequently four, persons identified for each director-level position, with no cases of an individual being listed for more than one position in the callout procedure. However, a number of changes to the callout roster were anticipated during the first quarter of 1989 due to the arrival of the new Station Manager, the "Introspect Program," and the reorganization of the Radiation Chemistry Department into the Radiation Protection and Chemistry Departments. The GSEP Coordinator anticipated that such changes in the normal organization would affect some assignments to the following positions in the onsite emergency organization: Station Director, Operations Director, Rad Chem Director, and Environs Director. The coordinator indicated that many of the current emergency organization members who should soon be eligible for new emergency organization positions lacked only position-specific training for the new positions. This training would include tabletop drill experience in their new positions. The next tabletop drills were scheduled for March 1989. To better ensure the continuation of adequate staffing for all TSC director-level positions, the licensee committed at the exit interview that all persons eligible for different director-level positions during the first quarter of 1989 would complete all training requirements by April 1989. This commitment will be tracked as Open Item No. 295/89006-01.

The license has continued the practice of conducting semiannual off-hours drills to demonstrate the capability of key TSC staff to augment onshift personnel in a timely manner. Successful augmentation drills were conducted in February and September 1988.

Records indicated that the GSEP Coordinator had been effectively utilizing the Station's Nuclear Tracking System to document progress made on NRC and self-identified action items.

With the exception of one Open Item, this portion of the licensee's program was acceptable.

d. Training (Also IP 82206)

The Station's Training Department was responsible for providing and tracking initial qualifying and annual requalifying training for the onsite emergency organization. The 1988 training was a mixture of classroom training on relevant modules and required readings of relevant EIPs. The training modules were revised during 1988 to incorporate earlier refinements made by Braidwood Station staff to the "generic" modules in use at the Zion Station. Records review indicated that all members of the onsite emergency organization had completed their 1988 training requirements. The matrices listing the position-specific classroom modules and reading assignments had been approved. The revised training modules had been approved during 1988.

Although the Station's annual emergency preparedness training program had been conducted, a number of items were identified during the September 1988 exercise whose corrective actions included upgrades to EIPs and/or the Station's training program. As one method of improving the onsite emergency organization's training, the licensee planned to conduct quarterly tabletop drills during 1989. Each tabletop session would be offered twice each quarter. TSC director-level personnel and OSC supervisory personnel would be expected to observe or participate in two tabletop drills during 1989.

Thus far, the Station's Training Department had arranged for the development of six tabletop drill scenarios. Tabletop drills for the first quarter of 1989 had been conducted and critiqued in late January and early February. Since the annual exercise and a remedial response to a Transportation Accident situation were scheduled for April and May, the next tabletop drills were scheduled for late March 1989. Future tabletop drills had been tentatively scheduled for August and November 1989. The feasibility of conducting a tabletop drill in conjunction with a periodically required drill, such as an inplant Health Physics drill, was being considered.



The 1989 annual training program was scheduled to take place during the Summer. The licensee planned to have the EPIP revisions currently in progress and lesson plan revisions completed prior to conducting the 1989 classroom training sessions.

Records review indicated that all required emergency preparedness drills had been conducted and critiqued during 1988. The internal critique from the September 1988 exercise was reviewed. This critique was thorough and objective, and addressed the root causes for the significant performance problems that were identified by licensee and NRC evaluators during the exercise.

As indicated in Section 2, the licensee reevaluated the critique from the 1987 medical drill and upgraded the 1988 training given to RCTs with respect to their onsite response to a medical emergency with contamination complications. A representative from the Federal Emergency Management Agency (FEMA) Region V office observed the performance of hospital and ambulance staffs and Zion Station RCTs at the local hospital during the 1988 medical drill. In the drill evaluation report forwarded to the State of Illinois, FEMA identified several contamination control problems at the hospital which were related to the performance of the RCTs. The licensee has committed to the State of Illinois that the RCTs' training would be upgraded during 1989 regarding their responsibilities at the local hospital. This commitment to the State of Illinois will be tracked as Open Item No. 295/89006-02.

Interviews were conducted with a Shift Engineer (SE) and two Shift Control Room Engineers (SCREs) regarding the responsibilities of the Acting Station Director. All interviewees were adequately familiar with procedural guidance regarding: the undelegatable responsibilities of that position; emergency notification requirements; and various aspects of onsite and offsite protective action decisionmaking. They were also able to properly classify several abnormal situations using the Station's Emergency Action Levels (EALs). Control Room crews had participated in classroom and simulator training sessions during late 1988 which addressed the topics covered in these interviews.

Interviews were also conducted with nine individuals who could be assigned to supervisory positions in the OSC or to inplant repair teams. These individuals were adequately familiar with their responsibilities as members of the onsite emergency organization.

The annual meeting with members of offsite support organizations was conducted in late 1988. The Station's EALs were discussed at that meeting. Attendees were also informed on how to obtain a copy of the Quality Assurance (QA) Department's annual evaluation of the Station's interface with offsite support organizations.



With the exception of one Open Item, this portion of the licensee's program was acceptable.

e. Audits

Records of 1988 QA Department audits and surveillances of the Station's program were reviewed. All records were complete and readily available. The 1988 audits were adequate in scope, and satisfied the requirements of 10 CFR 50.54(c). Surveillance No. QAS-22-89-007 was a good evaluation of the Station's interface with State and local offsite support agencies.

A self-assessment of the Zion Station's emergency preparedness program was conducted in July 1988 by corporate emergency planners and a GSEP Coordinator from one of the licensee's other nuclear stations. This assessment was in addition to and independent of the efforts of the Quality Assurance (QA) Department. Corporate staff were tracking the Station's progress on "Category I and II improvement items." These items included the need for a number of EPIP revisions, improved operability of the HRSS, and upgrades to the annual training program.

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

5. TMI Safety Issues Management Systems (SIMS) Items

On October 31, 1980, the NRC issued NUREG-0737, which incorporated into one document all TMI-related items approved for implementation by the Commission at that time. On December 17, 1982, the NRC issued Supplement 1 to NUREG-0737 to provide additional clarification regarding Regulatory Guide 1.97 (Revision 2) - Application to Emergency Response Facilities, and Meteorological Data, as well as other areas. The status of the completion of these TMI SIMS items are internally tracked by the NRC.

The October 26, 1988 Inspection Report (No. 295/88018; 304/88018) provided a status listing of the SIMS Items related to emergency preparedness. The following listing provides an updated status of those SIMS items that were "open" in the October 26, 1988 Report. The listing indicates how the item was tracked on SIMS as of February 23, 1989.

III.A. Current Status: Closed

This item has been determined to be no longer applicable and has been administratively closed.

III.A.2.4 Current Status: Closed

This item has been determined to be no longer applicable and has been administratively closed.

- III.A.2.5      Current Status: Closed
- This item has been determined to be no longer applicable and has been administratively closed.
- III.A.2.6      Current Status: Closed
- This item has been determined to be no longer applicable and has been administratively closed.
- III.A.2.8      Current Status: Closed
- This item has been determined to be no longer applicable and has been administratively closed.
- MPA-F-63      Current Status: Open
- This item involves a review of the TSC during a future inspection.
- MPA-F-65      Current Status: Open
- This item involves a review of the EOF during a future inspection.

6. Exit Interview

On February 17, 1989, the inspectors met with those licensee representatives listed in Section 1 to present their preliminary inspection findings. The licensee indicated that none of the matters discussed were proprietary in nature. The licensee also committed that those TSC directors, whose positions would be changing during the first quarter of 1989, would complete all training requirements for their new positions by April 1989.

The inspectors acknowledged that increased management attention to the Station's emergency preparedness program was evident since the July 1988 corporate assessment and the September 1988 exercise. However, increased management attention remained necessary to ensure timely completion of corrective actions in progress on remaining items that were identified during previous NRC inspections and the corporate assessment. The plan to conduct quarterly tabletop drills during 1989 was also supported by the inspectors.