

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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Report No: 50-346/99006(DRS)

Licensee: FirstEnergy Nuclear Operating Company

Facility: Davis-Besse Nuclear Power Station

Location: 5503 N. State Route 2
Oak Harbor, OH 42449

Dates: December 7 - 9, 1999

Inspectors: J. Foster, Sr. Emergency Preparedness Analyst
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EXECUTIVE SUMMARY

Davis-Besse Nuclear Power Station NRC Inspection Report 50-346/99006(DRS)

This inspection consisted of evaluating the licensee performance during an exercise of the Emergency Plan. The inspection was conducted by three regional inspectors. No violations of NRC requirements were identified. Within these areas, the following conclusions were made:

Plant Support

- Overall licensee performance during the 1999 Emergency Plan exercise was effective. (Section P4.1.c)
- Staff performance in the Control Room Simulator was excellent. Procedures were well utilized by the operators, and communications were effective. (Section P4.1.c)
- The Technical Support Center staff's overall performance was effective. Command and control of the facility was good, and periodic briefings were thorough and concise. (Section P4.1.c)
- Overall performance of Operations Support Center staff was effective. Status boards were continuously maintained, and the briefing and dispatch process for emergency response teams provided timely release of teams from the facility. (Section P4.1.c)
- Overall performance of personnel in the Emergency Control Center was very good. Current plant status and response activities were well monitored. (Section P4.1.c)
- The General Emergency was properly classified, and offsite notifications were made in a timely manner. (Section P4.1.c)
- Facility critiques following termination of the exercise were thorough. In most facilities, participants were encouraged to provide exercise performance strengths and weaknesses. Overall licensee critique findings were consistent with the NRC evaluation team's findings. (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 1999 exercise's objectives and scenario and determined that the exercise 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 several equipment failures and a radiological release.

P4 Staff Knowledge and Performance In Emergency Preparedness

P4.1 1999 Evaluated Biennial Emergency Preparedness Exercise

a. Inspection Scope (82301)

Appendix E to 10 Code of Federal Regulations (CFR) Part 50 requires that power reactor licensees conduct biennial exercises that involve participation by offsite authorities. On December 8, 1999, the licensee conducted a biennial exercise. This exercise was conducted to test major portions of the licensee's onsite and offsite emergency response capabilities. Onsite emergency organizations and response facilities were activated.

The inspectors evaluated performance in the following emergency response facilities:

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

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, the 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 exercise performance.

b. Emergency Response Facility Observations and Findings

b.1 Control Room Simulator

Overall performance of personnel in the Control Room Simulator (CRS) was excellent. Operators promptly responded to conditions displayed in the simulator. Operators were

knowledgeable of their procedures and utilized them extensively. Early in the exercise, a conservative decision was made to implement the rapid shutdown procedure; when plant conditions worsened, the shutdown rate was increased to 50 megawatts per minute. Good discussions of plant conditions and response actions were observed.

Shift staff utilized three-way communications consistently. This precluded communication errors during the time the CRS was observed by the inspectors. An example of this was when the current power level was announced as 78 percent, but was understood as 70 percent, and was corrected when repeated back to the originator.

The Site Area Emergency (SAE) was classified in a timely manner, using the proper Emergency Action Level (EAL). Notifications to offsite authorities and the NRC were made within regulatory time requirements and were appropriately detailed.

Per procedure, CRS shift personnel properly initiated the Computerized Automated Notification System to activate the emergency response organization. They then verified that emergency response organization personnel were receiving appropriate messages on their pagers.

The Emergency Director (ED) reported to the CRS, per procedure, and was appropriately briefed before proceeding to the Technical Support Center (TSC) and Emergency Control Center (ECC). The "ED Turnover Sheet" was properly used to ensure significant points were covered during the briefing.

b.2 Technical Support Center (TSC)

The TSC staff's overall performance was effective. Activation of the facility was rapid and efficient. The staff immediately signed-in on the status board upon arriving, properly used the facility activation checklists, activated their equipment, and established communications links. The ED accepted command and control of the emergency response within forty-one minutes of the SAE declaration.

Command and control of the facility by the TSC Engineering Manager was good. The initial briefing discussed overall plant status, the emergency conditions, and provided guidance to the TSC staff. Subsequent, periodic briefings, conducted by the TSC Engineering Manager and the Emergency Plant Manager (EPM), were concise and informed the staff of current status, priorities, and issues. Significant changes in plant and emergency conditions were promptly announced as they occurred, instead of waiting for the next briefing.

Transfer of emergency responsibility from the CRS to the ECC was crisp and occurred in a seamless manner. The turnover briefing was detailed, and the transfer of ED responsibilities was a formal process. The ED ensured that the staff was aware of the current plant status and that the ECC was responsible for classification, notification, and Protective Action Recommendations.

Technical Support Center personnel demonstrated effective communications, teamwork, and good discussions. One example of good discussions was the review of the Emergency Action Levels for the General Emergency declaration. During the

discussions, the EPM maintained three-way communications with the CRS and Operations Support Center (OSC) to provide and receive current emergency conditions. In general, noise levels were maintained appropriately low. When necessary the TSC Engineering Manager emphasized the need for reduced noise levels. The Emergency Response Data System was rapidly activated.

Status boards were effectively maintained and updated, with only one exception. The OSC Significant Task status board was not always kept current; however, this improved as the exercise progressed. For example, at 10:14 a.m. the EPM received the OSC priorities during their discussion on the three-way phone call. However, this information (as well as another update at 10:34 a.m.) was not accurately displayed on the status board until approximately 11:07 a.m. At that time the TSC Engineering Manager personally interceded and told the status board keeper which items to display on the board. Conversely, the plant data and the plant status boards were continuously updated approximately every 15 minutes.

The Radiation Protection Manager (RPM) maintained appropriate awareness of plant and offsite radiological conditions. For example, the RPM astutely recognized a wind shift and potential radioactive release that would have affected assembled personnel in the training building. Consequently, the RPM relocated personnel to the Energy Education Center.

b.3 Operations Support Center and Emergency Response Teams

Overall, the OSC personnel performance was effective, demonstrating a professional and focused response. Staff started to arrive at the facility within one minute of the Site Area Emergency announcement and immediately set up the facility by arranging the tables, initiating the status boards, issuing dosimetry, connecting communications equipment, and activating the plant data monitors and other equipment. The OSC was rapidly set up and activated within 13 minutes of the announcement to activate the facilities.

The OSC Manager provided appropriate command and control of the facility. Staff were efficiently coordinated during facility activation and throughout the exercise. Periodic briefings were generally concise and provided current relevant plant conditions and emergency status. Briefing input was solicited from the facility managers. When background noise started to rise, the problem was immediately corrected by the OSC Manager.

Status boards were appropriately maintained and continuously updated. The team tracking board effectively displayed the emergency response team (ERT) members, team number and priority, requested function and location, team request time, dispatch time, return time, and debrief time. Name tags from the sign in board were transferred to the team tracking board, which provided a smooth and efficient process for controlling and tracking personnel.

The process for briefing and dispatching ERTs was well implemented. Dose margins and respiratory qualifications were verified prior to dispatch, and teams were dispatched

in a timely manner with appropriate job and radiological briefings. The observed team dispatch times generally ranged from two minutes to approximately seven minutes.

The inspectors accompanied two ERTs dispatched into the plant. The radiation protection technicians provided good radiological control over both teams and demonstrated good radiological practices. Radiological monitoring was performed continuously, and, for one team, appropriate decontamination considerations were discussed. Stay times were conservatively calculated for entering high radiation areas, and no over exposures were observed. Communications with the OSC were appropriately conducted by the ERTs, with emergency condition information being communicated back to the facility as it became available.

Facility habitability surveys were conducted periodically by radiation protection technicians. Air samples, dose rates, and contamination surveys were appropriately demonstrated. Meters and air samplers were calibrated, and ranges were properly selected for the current conditions.

b.4 Emergency Control Center

Overall performance of personnel in the ECC was very good. Plant conditions were appropriately monitored by use of status boards, and the ED made periodic visits to the TSC to obtain technical insights into current plant status and response activities. Status boards were well maintained, and the "Problem Analysis" status board was effectively used to track items assigned for resolution by ECC personnel.

The General Emergency was properly declared in a timely manner, when warranted by plant conditions. Notifications were promptly made following the emergency classification. Protective action recommendations were also accomplished per procedure, utilizing the dose projection program to indicate nearsite and downwind affected subareas in the ten mile emergency planning zone.

Dose assessment personnel were effective in coping with several equipment problems or failures. For example, noticeable difficulty was experienced in obtaining printouts from the dose assessment computer program. However, personnel were able to provide timely dose projections and communicate with field monitoring teams.

Good command and control of the facility was demonstrated. Periodic briefings kept ECC personnel aware of current plant status and ongoing mitigation activities. Briefings were announced beforehand, and personnel were advised to pay attention to the briefings. Noise levels were generally maintained low.

During the exercise, an actual Prompt Notification System siren test was performed, electronically polling each siren, in turn, to determine its operability. One siren failed to respond to the siren test and was noted for a subsequent maintenance check.

The inspectors observed good discussions and appropriate decisions made regarding whether to send assembled, nonessential personnel home, given the scenario's high winds and icy road conditions. Appropriate concern was demonstrated toward verifying

that radiological conditions were acceptable in the Energy Education Center, where approximately 477 simulated, nonessential personnel were assembled.

The Emergency Response Data System (ERDS) was determined to be functional. But as a part of the exercise, the system was simulated to be out of service, necessitating the facsimile transmittal of ERDS data to the individual in the control cell simulating the NRC.

b.5 Scenario and Exercise Control

An excellent effort was observed by the inspectors in promptly detecting a simulator operator error, halting exercise play, "backing up" the simulator, and restarting the exercise.

Some confusion was observed by the inspectors regarding a simulated team sent to the number two emergency diesel generator room to trouble shoot and repair a diesel generator problem. When the radiation release was reported, confusion existed regarding whether the simulated team was evacuated due to the high radiation and radiation release, or whether they remained in the room to continue work on the emergency diesel generator. Even after the lead facility controller discussed it with the OSC Manager, the Radiation Protection Manager thought they were evacuated while the OSC Manager indicated they were not. The inspectors attributed the confusion to the control of the simulation.

Scenario radiation data appeared to be well simulated and provided by the controllers. Numerous scenario data were available to controllers to cover most of the possible response paths taken by the various responders. No instances of controller prompting were observed.

b.6 Licensee Critiques

The facility critiques following the exercise were good. In most cases, participants were individually encouraged to provide feedback on exercise strengths and weaknesses. A list of items discussed was maintained. Generally, the licensee's evaluations resulted in findings which were similar to the NRC team's observations and conclusions.

c. Summary of Conclusions

Evaluation of the license's exercise performance was as follows:

- Overall licensee performance during the 1999 Emergency Plan exercise was effective.
- Staff performance in the Control Room Simulator was excellent. Procedures were well utilized by the operators and communications were effective.
- The Technical Support Center staff's overall performance was effective. Command and control of the facility was good, and periodic briefings were concise.

- Overall performance of Operations Support Center staff was effective. Status boards were continuously maintained, and the briefing and dispatch process for emergency response teams provided timely release of teams from the facility.
- Overall performance of personnel in the Emergency Control Center was very good. Current plant status and response activities were well monitored.
- The General Emergency was properly classified, and offsite notifications were made in a timely manner.
- Facility critiques following termination of the exercise were good. In most facilities, participants were encouraged to provide exercise performance strengths and weaknesses. Overall licensee critique findings were consistent with the NRC evaluation team's findings.

P8 Miscellaneous EP Issues

- P8.1** (Closed) Inspection Followup Item No. 50-346/97007-02: During the 1997 exercise, poor radiological practices were observed in the OSC. During the 1999 exercise, good radiological practices were observed in the OSC and with the emergency response teams dispatched into the plant. For example, facilities where eating and drinking had been prohibited pending verification of radiological habitability were properly posted and controlled. This item is closed.
- P8.2** (Closed) Inspection Followup Item No. 50-346/97007-03: During the 1997 exercise, poor simulation of radiological data by controllers affected the ability of the inspectors to evaluate radiological control practices by the participants. Also, several instances of controllers inappropriately providing radiological data to participants who had not "earned" this information by their actions were observed. During the 1999 exercise, scenario radiation data was well simulated and provided by the controllers. Numerous scenario data were available to controllers to cover most of the possible response paths taken by the various responders. This item is closed.
- P8.3** (Closed) Inspection Followup Item 50-346/98015-01(DRS): An item was opened to review the corrective actions resulting from review of the June 1998 tornado event. Following the tornado event, sixty-two items were developed for review by plant staff. During this inspection, a listing of the items and their status was reviewed. Two items were still in progress (self assessment to evaluate ERO positions and assignments, and replacement of personal computers in facilities), but the remainder had either been accomplished or determined to not require further action. All of the determinations reviewed by the inspectors were appropriate. This item is closed.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on December 9, 1999. The inspection team leader stated that

overall exercise performance was effective and that the licensee critiques were appropriate. The licensee acknowledged the preliminary 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

M. Beier, Manager, Quality Assurance
G. Campbell, Site Vice President
R. Coad, Manager, Operations
B. Cope, Senior Emergency Planning Specialist
C. DeTray, Quality Assurance Auditor
C. Gordon, Outage Management
D. Lockwood, Supervisor, Compliance
P. McCloskey, Supervisor, Emergency Planning
D. Missig, Senior Maintenance Advisor
S. Moffitt, Director, Technical Services
J. Vetter, Senior Auditor
G. Wolf, Engineer, Licensing
L. Worley, Director, Support Services

NRC

Kevin Zellers, 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, CLOSED, AND DISCUSSED

Opened

None.

Closed

50-346/97007-02(DRS)	IFI	Poor radiological control practices in the OSC.
50-346/97007-03(DRS)	IFI	Poor simulation of radiological control data by controllers.
50-346/98015-01(DRS)	IFI	Corrective actions developed from review of response to June 1998 Alert.

Discussed

None.

LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
CRS	Control Room Simulator
DPR	Demonstration Power Reactor
DRS	Division of Reactor Safety
EAL	Emergency Action Level
ECC	Emergency Control Center
ED	Emergency Director
EPM	Emergency Plant Manager
ERDS	Emergency Response Data System
ERT	Emergency Response Team
FEMA	Federal Emergency Management Agency
IFI	Inspection Follow up Item
NRC	Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
OSC	Operations Support Center
PDR	NRC Public Document Room
PRR	Public Reading Room
RPM	Radiation Protection Manager
SAE	Site Area Emergency
TSC	Technical Support Center