U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-155/90024(DRSS)

Docket No. 50-155 License No. DRP-6

Licensee: Consumers Power Company
1945 West Parnall Road
Jackson, MI 49201

Facility Name: Big Rock Point Nuclear Plant

Inspection At: Big Rock Point Site, Charlevoix, Michigan

Inspection Conducted: December 3-7, 1990

Inspector: D. M. Barss (W. Snell for)
Team Leader

12/21/90
Date

Accompanying Personnel: E. Plettner
J. Muth
T. Froelich

Approved By: (W. Snell)
W. Snell, Chief
Radiological Controls
and Emergency Preparedness Section

12/21/90
Date

Inspection Summary

Inspection on December 3-7, 1990 (Report No. 50-155/90024(DRSS))

Areas Inspected: Routine, announced inspection of the emergency preparedness exercise involving review of the exercise scenario (IP 82302), observations by 3 NRC representatives of key functions and locations during the exercise (IP 82301), follow-up on licensee actions on previously identified items (IP 92701), a review of the knowledge and performance of duties (IP 82206), and a review of shift staffing and augmentation (IP 82205).

Results: One non-cited violation of NRC requirements was identified for a failure to maintain an adequate staff to continuously augment the emergency response organization. No deficiencies or deviations were identified. The licensee demonstrated an adequate response to a hypothetical scenario involving multiple equipment failures and the ability to respond to emergency events under severe winter weather conditions. Four open items were identified. The licensee needs to re-evaluate the use of status boards in the Operational Support Center (OSC) as well as the availability of respiratory protective equipment in emergency situations, and the briefing of repair teams should be improved. Personnel frisking at the Emergency Operation Facility (EOF) needs to be improved.

## DETAILS

1. NRC Observers and Areas Observed

D. Barss, Post Accident Sampling (PASS), Environmental Monitoring Mini-Drill
E. Plettner, Operational Support Center (OSC)
J. Muth, Control Room (CR), Technical Support Center (TSC)
T. Froelich, TSC, Emergency Operation Facility (EOF), PASS, Environmental Monitoring Mini-Drill

2. Persons Contacted

D. P. Hoffman, Vice President, Nuclear Operation Department
*W. L. Beckman, Plant Manager
*J. L. Beer, Chemistry/HP Superintendent
H. Kerkstra, Plant Technical Analyst
W. J. Trubilowick, OPS Superintendent
K. W. Berry, Director, Nuclear Information Management
R. C. Sarki, Maintenance Supervisor
N. Brott, Palisades EP Coordinator
*M. Hobe, Senior EPC
*B. Alexander, Technical Engineer
L. F. Monshor, QA Superintendent
M. Dawson, Nuclear Instructor II/Palisades
W. J. Beckius, Executive Engineer
P. B. Loomis, Emergency Planner/Emergency Planning Administration
D. L. Fugere, Emergency Planner
*A. P. Katarsky, Senior Planner
G. H. R. Petitjean, Supervisory Engineer
*A. Silva, Acting QA Superintendent

All of the above listed personnel (except A. Silva) attended the NRC exercise critique held on December 5, 1990.

*Denotes those attending the NRC exit interview held on December 7, 1990.

The inspectors also contacted other licensee personnel during the course of the inspection.

3. Licensee Action on Previously Identified Items (IP 92701)

(Closed) Open Item No. 50-155/89010-01: This item was identified during the annual Big Rock Point Emergency Preparedness Exercise conducted in May 1989 and concerned sampling techniques demonstrated by the Environmental Monitoring Team, training of plant staff personnel on environmental sampling under emergency conditions and the adequacy of procedure EPIP-5F, "Environmental Monitoring".

The licensee has revised EPIP-5F to include additional guidance for obtaining environmental samples. This guidance includes general instructions for each particular sample type, for example: air, milk,

well water, lake water, municipal water supplies, grasses, leafy vegetables, soil and snow samples.

The licensee conducted a mini-drill during the inspection to demonstrate emergency environmental sampling capabilities. The inspector noted the following observations during this drill:

- Good contamination control practices were demonstrated. Tools were cleaned, wiped down and surveyed to ensure no cross contamination of future samples.

- Environmental TLD's were kept separated from other potentially radioactive samples.

- Samples were labeled in accordance with established procedural instructions and recorded on provided log sheets.

- Soil, snow, milk and grass samples were obtained in accordance with procedural guidance.

- The Environmental Monitoring Team could have reported field readings to the EOF more promptly.

- The sampling plan was discussed and the number and locations of samples was determined to be adequate.

- Environmental TLD's were improperly taken into a high dose rate area. The player recognized this and made plans to obtain additional samples.

At the conclusion of the drill the licensee conducted a critique with controller personnel and players. Players were given the opportunity to provide self evaluation and make comments and suggestions for improvements to the program, procedures and training needs. Controllers also provided suggestions for improvement. Positive and negative findings of the controllers were discussed with the players.

The inspector provided the licensee with several minor suggestions for improvement of the environmental sample kits at the mini-drill critique.

Based upon the above observations the licensee has demonstrated the capability to properly obtain emergency environmental samples. This item is closed.

4. General

An announced, daytime exercise of the Big Rock Point Site Emergency Plan (SEP) was conducted at the Big Rock Point Site on December 4, 1990. The exercise tested the licensee's emergency support organization capabilities to respond to a simulated accident scenario which contained multiple events and equipment failures but did not result in any release of radioactive effluent offsite. This was a utility only exercise, State and local governments did not participate. NRC Region III was scheduled to participate but did not due to severe weather conditions.

Attachment 1 describes the Scope and Objectives of the exercise,
Attachment 2 describes the exercise scenario, and
Attachment 3 describes the Environmental Monitoring Drill Scope and Objectives.

5. General Observations

a. Procedures

This exercise was conducted in accordance with 10 CFR Part 50, Appendix E requirements, using the Big Rock Point Site Emergency Plan and Site Emergency Plan Implementing Procedures.

b. Coordination

The licensee's response was coordinated, orderly and timely. If the scenario events had been real, the actions taken by the licensee would have been sufficient to mitigate the accident and permit State and local authorities to take appropriate actions to protect the public's health and safety.

c. Observers

The licensee's controllers/observers monitored and critiqued this exercise along with 3 NRC observers.

d. Exercise Critique

The licensee's controllers/evaluators held critiques in each facility (with participants) immediately following the exercise. Lead controllers held a joint critique following the facility critiques to discuss observed strengths and weaknesses for each facility and the overall exercise. The NRC discussed observed strengths and weaknesses, developed independently by the NRC evaluation team, during the NRC exercise critique held with the licensee on December 5, 1990.

6. Specific Observations (IP 82301)

a. Control Room (CR)

The Control Room (CR) staff worked well together as a team in evaluating available information and responding to events in an orderly and organized manner. Good discussions were held so that the CR staff understood and agreed upon the actions being taken to mitigate events.

When the Main Steam Isolation Valves (MSIV) closure caused a high reactor pressure spike, and ultimately fuel damage, CR operators considered re-opening the MSIV's. They properly choose to keep the MSIV's closed to minimize the spread of contamination to the Turbine building area.

The CR staff also responded correctly when they isolated the emergency condenser based upon indications that an offsite release

might be occurring. Subsequent actions were taken to evaluate and determine that an offsite release had not occurred and the emergency condenser was cautiously returned to service to help control reactor pressure.

The CR staff was not kept well informed of major changes occurring in other emergency response facilities. The Shift Supervisor was not informed when command and control was transferred to the Emergency Operations Facility (EOF), nor when a General Emergency had been declared.

Scenario events were properly identified and classified in accordance with Emergency Action Levels. Notification to State, local and federal authorities were properly completed in a timely manner.

No violations or deviations were identified during the review of this area.

b. Technical Support Center (TSC)

The Technical Sunport Center (TSC) was promptly staffed by emergency response personnel following the announcement of a Site Area Emergency.

The Site Emergency Director (SED) briefed each section leader as they arrived in the TSC. The SED gave timely and informative announcements over the plant Public Address System to keep plant personnel informed. During briefings to the TSC staff, the SED challenged personnel to re-evaluate mitigatory actions in light of new information which was provided.

Personnel safety considerations were appropriately addressed by the TSC staff. When general area exposure rates increased unexpectedly additional considerations were given to the amount of exposure the team attempting to initiate alternate boron injection would receive.

Habitability surveys were conducted in the TSC in a timely and thorough manner by Health Physics Technicians.

Health Physics status boards were reviewed frequently and kept up to date by the offsite dose assessor. Other TSC status boards were generally well maintained. One problem was noted with the status board for "Engineering Safety Features". At one point the emergency condenser was indicated to have a level of 20% when in fact it had been at 0% for about an hour. Additionally, there was no place on the "Engineering Safety Features" board to indicate the time of the last update.

The SED discussed and properly simulated actions to initiate a site evacuation. (The site evacuation was simulated due to near blizzard weather conditions.)

The SED took into consideration the unusually severe weather conditions and provided a protective action recommendation (PAR) to State officials while the plant was still only at a Site Area Emergency. This action was discussed with State officials to ensure they understood and concurred before the PAR was formally transmitted.

Meteorological data was not available from onsite sources during the exercise. TSC personnel effectively utilized alternate methods of obtaining the necessary information.

No violations or deviations were identified during the review of this area.

c. Operational Support Center (OSC)

The Operational Support Center (OSC) was manned in an expeditious manner. Responding personnel brought with them additional tools which proved useful.

Habitability surveys were conducted regularly throughout the exercise in the OSC.

Information received from the TSC was expeditiously provided to OSC personnel in periodic briefings. Personnel present in the OSC were kept informed of established priorities during these briefings.

There was an abundance of hand held radios available in the OSC. Through radio communications, OSC personnel were well aware of events in progress and anticipated possible actions. Radio Communications allowed OSC personnel to plan ahead and effectively use time and available resources to troubleshoot and attempt repairs.

The OSC supervisor in his exuberance to dispatch personnel to assigned tasks neglected to inform the TSC that the OSC was operationally ready. After questioning by evaluators, he remembered this responsibility and appropriately informed the TSC.

Most inplant teams seemed to work well together to accomplish assigned tasks. A delay was observed in getting lifting gear available for use by the team assigned to alternate boron injection set up activities. The operator performing valve line ups for the alternate boron injection did not initially have a procedure available. This caused the initial pumping of sludge to be ineffective until the proper valve line up was obtained.

Health physics and job specific briefings were not well controlled. In one instance the briefing was conducted after arrival at the job site. Responding personnel were attempting to use normal Radiation Work Permits (RWP). The licensee needs to re-evaluate the use of RWP's in emergency situations and the extent and consistency of pre-job briefings under emergency conditions. This is considered Open Item No. 50-155/90024-01.

Accountability of personnel who were out of the OSC on assignments was not consistently maintained. Personnel were supposed to log out with the OSC Data Recorder but not all teams did this.

There were no status boards available for use by OSC personnel. Information on the assignment, priority, team composition and current status of repair teams was not readily available to the OSC Director or other OSC personnel. The licensee had previously used some form of status boards in the OSC but none were utilized during the exercise. The licensee should re-evaluate the use of status boards in the OSC. This is considered Open Item No. 50-155/90024-02.

Events during this exercise did not require the use of respiratory protective equipment by OSC personnel. However it was noted by the inspectors that there was only one respirator available for use by OSC personnel. The normal stock of station respiratory protection equipment is maintained and stored in one common location some distance from the OSC. It was also noted that no respiratory protective equipment was available for use by Emergency Environmental Sampling Teams should the need arise. The licensee should re-evaluate the use and availability of respiratory protective equipment in emergency situations. This is considered Open Item No. 50-155/90024-03.

No violations or deviations were identified during the review of this area. Three Open Items were identified as discussed above.

d. Emergency Operations Facility (EOF)

The Emergency Operations Facility (EOF) Director maintained good command and control of EOF personnel and provided information briefings conducted at approximately 30 minute intervals. Individual team leaders participated in these briefings by providing status reports of ongoing activities.

Field monitoring teams were effectively dispatched and utilized during the exercise. Personnel exposure for field monitoring teams was carefully tracked by the health physics support team.

Team leaders in the EOF held an extensive discussion on the need and consequences of re-initiating the emergency condenser. The benefits and risks of this action were carefully evaluated before any action was taken. When it was decided to re-initiate emergency condenser operation, the Emergency Officer (EO) had field monitoring teams pre-positioned to monitor for any potential environmental release.

At times during the exercise the noise level in the EOF, particularly in the area around the EO's desk, became quite high due to the intensity of ongoing technical discussions. Some of these discussions could have been conducted in a conference room in order to keep the general noise level down.

When conditions warranted the declaration of a General Emergency, the appropriate notifications were made in a timely manner. The

EO discussed the PAR with State officials and recommended the continuation of sheltering considering the persistently deteriorating road conditions due to the near blizzard weather.

The frisker at the EOF entrance was improperly set up. The meter was left set on the high voltage setting. This caused an audio response from the instrument but no meter movement. None of the personnel responding to the EOF noticed this error. The proper set up and use of the EOF frisker is considered Open Item No. 50-155/90024-04.

No violations or deviations were identified during the review of this area. One Open Item as discussed above was identified.

e. Post Accident Sampling (PASS)

The licensee conducted a mini-drill on December 5, 1990 to demonstrate post accident sampling (PASS) capabilities utilizing the core spray system.

Health Physics supervision and sampling team technicians held a planning meeting to review the procedure and ensure necessary equipment and support personnel were set up and available. Turn back dose rates and time limits were established in the event unexpected conditions were encountered.

Procedure EPIP-5E, "Core Spray Sampling and Estimating Less Than 10% Core Damage" was followed as it had been written and no difficulties were encountered. The inspector did question the note in Step 5.2 which indicated a dose rate to be 500 mR/hr when other estimates indicated up to 35 R/hr were possible. This inconsistency should be reviewed by the licensee.

The samples were counted using the licensee's standard library for normal plant liquid samples. Under accident conditions involving fuel element failure this library may be inadequate. The licensee could evaluate an alternate library for use under core damage scenarios.

No violations or deviations were identified during the review of this area.

7. Exercise Objectives and Scenario Review (IP 82302)

The licensee submitted the exercise scope and objectives and a draft scenario package of review by the NRC within the established timeframes. The scenario review did not indicate any significant problems, and the licensee adequately responded to the questions raised during scenario review. The scenario package was adequate in scope and content to ensure ease of use and contained enough information so that licensee controllers could control the exercise.

The scenario was realistic in nature and provided adequately challenging events to involve control room and operations personnel, engineering and technical support expertise as well as maintenance and repair teams.

Since no offsite release was involved the scenario relied on real time meteorological data which provided an extra challenge due to the severe weather conditions on the exercise day.

One problem was noted with the radiation monitor data included in the scenario. The monitor associated with the emergency condenser was identified as reading Off Scale High (OSH) when the fuel element failure occurred. Through discussion with cognizant licensee personnel it was identified that this monitor has had additional shielding installed to mitigate the potential for the monitor to fail OSH under core damage scenarios. This erroneous data caused the operators to take actions they other wise would not have normally performed. This additional shielding should be considered when developing future exercise scenarios.

Some minor problems were identified with the scenario's developed for the post accident sampling (PASS) and environmental monitoring mini-drills. The scenario developed for the environmental monitoring mini-drill did not take into account the decay of fission products and the possible delays in obtaining samples. The PASS scenario did not include data on time since reactor shut down and dose rates in some plant areas such as the chemistry lab and access control areas. These details should be included in future scenario packages.

No violations or deviations were identified during the review of this area.

8. Exercise Control

The licensees exercise control was considered adequate. Controllers were knowledgeable of their duties and had adequate knowledge of the scenario to control the exercise.

When questions developed which were not directly answered by the prepared scenario, controllers were able to provide adequate answers and keep the exercise on course.

No instances of controller prompting were observed.

No violations or deviations were identified during the review of this area.

9. Licensee Critiques

The licensee's controllers held critiques in each facility immediately following the termination of the exercise. In most of these critiques the players were provided with direct feed back as to the controllers and evaluators positive and negative observations. It was noted by the NRC inspection team that the critique provided to the players in the OSC did not include the negative observations which were later reported by the OSC controllers/evaluators.

Lead controllers from each facility met following individual facility critiques to evaluate the complete exercise. At the controller only critique both positive and negative findings were discussed.

The day following the exercise the licensee held a critique with management personnel and key exercise players to discuss the conclusions of the overall exercise evaluation.

NRC personnel attended these critiques, and determined that significant NRC identified exercise deficiencies had also been identified by licensee personnel.

10. Training and Shift Staffing Review (IP 82206, 82205)

The licensee's shift augmentation list for November 1990 was reviewed. Through this review and discussions with cognizant licensee personnel, it was learned that the licensee has a shortage of one individual to meet their minimum commitment for complete and continuous augmentation.

In accordance with 10 CFR 50.47 (b)(1) the licensee is required to have sufficient emergency response staff to respond initially and to augment this response staff on a continuous basis. The licensee committed in Chapter 5, Table 1 of the Big Rock Point Site Emergency Plan to have a total of six Chemistry/Radiation Protection Technicians available within one hour and should be able to augment this staffing on a continuous basis. This would require a total of twelve trained and qualified individuals of which the licensee currently only has eleven.

The licensee has been aware of this situation since it developed in August 1990 when two individuals unexpectedly left the licensees organization. The licensee has hired replacement personnel to fill these positions and is currently training these individuals. It is anticipated that by February 1991 one individual will be fully qualified to assume these responsibilities and the licensee's augmentation capabilities will be in full compliance. Two additional personnel will also be fully trained and qualified later in 1991.

The failure to maintain an adequate staff to provide continuous staffing of the emergency response organization would normally be considered a violation. However, the violation is not being cited because the criteria specified in 10 CFR 2, Appendix C, Section V.A. of the Enforcement Policy were satisfied. This is considered Open Item No. 50-155/90024-05.

Through further discussion with cognizant licensee personnel it was determined that personnel in the site emergency organization had completed training as required by the training matrix. Some emergency response positions are filled by personnel assigned to the licensees corporate office. Records for the training of those individuals from the corporate office was not reviewed by the inspector.

One non-cited violation was identified in the review of this program area.

11. Open Items

Open Items are matters which have been discussed with the licensee which will be reviewed further by the inspector and which involve some actions on the part of the NRC or licensee or both. Open Items disclosed during this inspection are discussed in Paragraphs 6.c., 6.d. and 10. of this report.

12. Exit Interview

The inspectors held an exercise critique on December 5, 1990, and an exit interview at the conclusion of the inspection on December 7, 1990, with the licensee representatives denoted in Paragraph 2.

The NRC team discussed the scope and findings of the inspection. The following Open Items were discussed:

- prejob breifings and emergency RPW use in the OSC needs to be improved;
- status board use in the OSC needs to be evaluated;
- availability of respirators in the OSC needs evaluation;
- and setup and use of the frisker in the EOF needs to be improved.

The non-cited violation for inadequate staffing to continuously staff Chemistry/Radiation Protection Technicians was also discussed.

The licensee was also asked if any of the information discussed during the exit interview was proprietary. The licensee responded that none of the information was proprietary.

Attachments:
1. Exercise Scope and Objectives
2. Exercise Scenario Outline
3. Environmental Monitoring Drill Scope and Objectives