

August 17, 2001

Mr. Kurt M. Haas
General Manager
Big Rock Point Nuclear Plant
Consumers Energy Company
10269 US 31 North
Charlevoix, MI 49720

SUBJECT: BIG ROCK POINT INSPECTION REPORT 05000155/2001-004(DNMS)

Dear Mr. Haas:

On August 02, 2001, the NRC completed an inspection at the Big Rock Point Nuclear Plant Restoration Project. The focus of the inspection activities was on facility management and control, decommissioning support activities, spent fuel safety, and radiological safety. The enclosed report presents the results of these inspection activities.

Overall, reactor decommissioning activities were being performed satisfactorily. No violations of NRC requirements were identified.

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We will gladly discuss any questions you may have regarding this inspection.

Sincerely,

/RA/

Bruce L. Jorgensen, Chief
Decommissioning Branch

Docket No. 05000155
License No. DPR-6

Enclosure: Inspection Report 05000155/2001-004(DNMS)

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-155
License No: DPR-06

Report No: 05000155/2001-004(DNMS)

Licensee: Consumers Energy Company

Facility: Big Rock Point Nuclear Plant

Location: 10269 U.S. 31 North
Charlevoix, MI 49720

Dates: July 10 to August 2, 2001

Inspectors: William Snell, Health Physics Manager
Roy Leemon, Reactor Decommissioning
Inspector
Ross Landsman, Project Engineer

Approved By: Bruce L. Jorgensen, Chief
Decommissioning Branch
Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

Big Rock Point Restoration Project NRC Inspection Report 05000155/2001-004(DNMS)

This routine decommissioning inspection covered facility management and control, decommissioning support activities, spent fuel safety, and radiological safety. Overall, major decommissioning activities were properly monitored and controlled.

Facility Management and Control

- The licensee was adequately controlling all major work activities while ensuring that sufficient attention was given to radiological safety. (Section 1.1)

Decommissioning Support Activities

- The plant was staffed according to defueled technical specifications requirements. (Section 2.1)

Spent Fuel Safety

- Spent Fuel Pool temperature and level were being maintained well within established limits, and the spent fuel was being protected from the possibility of heavy loads being dropped onto the fuel during reactor building crane modifications. (Section 3.2)
- The licensee constructed a set of cask mockups as a learning opportunity before the building of production units was to begin. As a result of this initiative the licensee identified a number of lessons learned that were incorporated into the building process. However, additional poor practices still need to be addressed and incorporated into the building of the casks to ensure the overpacks are constructed correctly. (Section 3.3)

Radiological Safety

- Site tours to observe work in progress identified that personnel were following accepted radiological practices, and postings and boundaries were properly established and being adhered to. (Section 4.1)

Report Details

1.0 Facility Management and Control

1.1 Organization, Management, and Cost Controls (36801)

a. Inspection Scope

The inspectors conducted reviews of ongoing plant activities, attended licensee meetings, and met with licensee management to assess overall facility management and controls.

b. Observations and Findings

The inspector attended several daily management meetings, attended a meeting concerning the dry fuel storage project, met with members of management and staff to discuss radiological and environmental issues, the Interim Spent Fuel Storage Installation (ISFSI), installation of the new crane and dismantlement of the existing crane, dry cask storage, and reactor vessel removal. The licensee was observed to be making reasonable progress in each of these areas while ensuring adequate attention was given to radiological safety.

c. Conclusions

No concerns were identified in this area.

2.0 Decommissioning Support Activities

2.1 Plant Staffing (71707)

a. Inspection Scope

The inspector toured the monitoring station and held discussions with the back shift plant personnel.

b. Observations and Findings

The inspector determined during a tour of the monitoring station on July 23, 2001, that the back shift was staffed according to the Defueled Technical Specifications 6.2.2. and TABLE 6.2-1, "Minimum Shift Crew Composition During Permanently Defueled Condition."

c. Conclusion

The plant was staffed according to defueled technical specifications requirements.

3.0 Spent Fuel Safety

3.1 General (60801)

The inspectors evaluated spent fuel and fuel pool safety. Factors considered in the evaluation included spent fuel pool (SFP) heat-up rate; SFP instrumentation, alarms, cleanliness control; criticality controls; and SFP operation. The inspector conducted discussions with the licensee about the safety status of the SFP.

3.2 Temperature and Level Control

a. Inspection Scope

The inspectors monitored SFP level and temperature. The inspectors verified the criticality monitor was functioning. The inspectors also observed that foreign material controls were being used in and around the SFP. Additionally the inspector observed that the SFP was covered with heavy gauge box steel to prevent any heavy objects from dropping into the SFP during up coming modifications to the reactor building crane.

b. Observations and Findings

Defueled Technical Specification 3.1.1 requires: 1) that SFP water temperature shall be greater than 40 °F and less than 140 °F; and, 2) that the SFP level shall be maintained at or above 630 feet.

The operating temperature range for the SFP is 40 to 80°F. The Defueled Technical Specifications SFP upper temperature limit is 140°F. On July 23, 2001, the SFP temperature was 79°F. With the present SFP heat-up rate of 0.15°F/hour, the time for the temperature to rise to 140°F was 16.9 days. Controlling the temperature of the SFP within the operating band was not observed to have been a problem.

On July 23, 2001, the SFP level was 630.55 feet, which was above the required Defueled Technical Specification limit of 630 feet.

In preparation for removing the reactor building crane and replacing it with an up-graded crane, the licensee placed heavy gauge steel "I" beams across the SFP to protect the pool in event a piece of demolition debris or equipment part is dropped, thus ensuring the safety of the spent fuel during the modifications.

c. Conclusions

Spent Fuel Pool temperature and level were being maintained well within established limits, and the spent fuel was being protected from the possibility of heavy loads being dropped onto the fuel during reactor building crane modifications.

3.3 Dry Cask Fabrication (60853)

a. Inspection Scope

This portion of the inspection was conducted at the Palisades Plant where mockups of the cask concrete overpacks were being constructed. The inspector evaluated whether the cask concrete fabrication met the requirements for quality concrete.

b. Observations

Dry Fuel Services Instruction, WI-BRP-01, "W150 Concrete Cask Construction," states that concrete is to be placed using good concrete placement practices in accordance with American Concrete Institute (ACI) 309 requirements. At the time of the inspection, the licensee had already poured the bottom section mockup, and lessons learned from pouring the bottom section mockup had been incorporated into the top section pour. The inspector observed the pouring of the top mockup section, and in spite of the previous lessons learned, the following deviations from the ACI requirements were identified.

- Effective consolidation of the concrete wasn't being achieved because the vibration crew wasn't following a systematic pattern or procedure. The crew wasn't working closely together and moving as a unit. Each vibrator operator was working separately with widely spaced, random insertions.
- The vibrators were not consistently penetrating the full depth of the new concrete layer and into the preceding layer.
- Vibration at each point wasn't continued until all entrapped air escaped. This was hampered by lack of lighting inside the form. One portable light was being used at the placement location which didn't allow the vibrator operators to visually observe the consolidation area where they were working, or the other side of the form. More lighting was needed.
- Concrete was being placed through elephant trunks at three locations, spaced approximately 12 feet apart, making prolonged use of the vibrators necessary to level the concrete pile to fill in between placement locations. This allowed for segregation of the concrete mix.
- Good concreting practices were not consistently being followed to ensure that the concrete was completely filling in under the upper air vents. The practice of allowing the concrete pressure head from one side to push the concrete under the vents until visible from the other side wasn't being followed.
- Over consolidation was occurring because the vibrators were being held in place for longer than the specified 15 seconds maximum. These practices resulted in questionable concrete quality.

c. Conclusions

The building of a set of cask mockups was a positive initiative by the licensee and was done as a learning opportunity before the building of production units was to begin. As a result of this initiative the licensee identified a number of lessons learned that were incorporated into the building process. However, the inspector identified numerous additional poor practices that needed to be addressed and incorporated into the building of the casks to ensure the overpacks would be constructed correctly.

4.0 Radiological Safety

4.1 Occupational Radiation Exposure (83750)

a. Inspection Scope

The inspector ensured that adequate radiological controls and practices were being employed.

b. Observations and Findings

The inspector toured the site observing work in progress to evaluate whether adequate radiological controls and work practices were being employed. In all cases personnel were noted to be following accepted radiological practices, and postings and boundaries were properly established and being adhered to.

c. Conclusions

No concerns were identified in this area.

**5.0 Inspector Follow-up Item (Emergency Drill Performance) (50-155/2001003-01)
OPEN**

The inspector reviewed the licensee's actions to address concerns identified as a result of a May 2001 emergency response drill. (Note: Inspection Report 05000155/2001-003(DNMS) incorrectly identified the drill as the licensee's biennial emergency preparedness exercise.)

In response to drill performance concerns, the licensee initiated Condition Reports (CRs) C-BRP-01-0167, *EP Drill Identifies RP Performance Issues*, and C-BRP-01-0168, *EP Drill Identifies Poor Use of ESC Status Boards*. Corrective actions included conducting additional training, procedure review and modification as necessary, respirator requalification for Radiation Protection Technicians (RPTs), updating the status boards in the Emergency Support Center (ESC), and scheduling another drill for September 2001. The actions taken were determined to be adequate, however, this item will remain open pending completion of the drill scheduled for September 2001.

6.0 Exit Meeting

The inspectors presented initial inspection results to members of licensee management at the conclusion of the inspection on August 2, 2001. The licensee acknowledged the findings presented. The licensee did not identify any documents or processes reviewed by the inspectors as proprietary.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

K. Haas, Plant General Manager
M. Bourassa, Licensing Supervisor
R. McCaleb, Nuclear Performance Assessment, Site Lead (NPAD)
K. Pallagi, Radiation Protection and Environmental Services Manager
W. Trubilowicz, Cost, Scheduling & Purchasing Manager
G. Withrow, Engineering, Operations & Licensing Manager
D. Parish, Environmental Manager

INSPECTION PROCEDURES USED

IP 36801 Organization, Management and Cost Controls
IP 60801 Spent Fuel Pool Safety
IP 60853 Onsite Fabrication of Components & Construction of an ISFSI
IP 71707 Operational Safety Verification
IP 83750 Occupational Radiation Exposure

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Discussed

50-155/2001003-01 IFI Evaluation of the radiological dose to workers and use of respirators during emergency response conditions. (Section 5.0)

LIST OF ACRONYMS USED

ACI	American Concrete Institute
CR	Condition Report
ESC	Emergency Support Center
IFI	Inspector Identified Item
ISFSI	Independent Spent Fuel Storage Installation
NRC	Nuclear Regulatory Commission
RP	Radiation Protection Technicians
SFP	Spent Fuel Pool

PARTIAL LIST OF LICENSEE DOCUMENTS REVIEWED

Licensee documents reviewed and utilized during the course of this inspection are specifically identified in the "Report Details" above.