October 24, 2000

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 50-155/2000005(DNMS)

Dear Mr. Haas:

On October 5, 2000, the NRC completed an inspection at your Big Rock Point Nuclear Plant Restoration Project which examined decommissioning activities. The areas examined during this inspection were facility management and control, spent fuel safety, and radiological safety. The enclosed report presents the results of this inspection.

Overall, reactor decommissioning activities were being performed satisfactorily. Radiological safety was being effectively conducted.

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We will be glad to discuss any questions you may have regarding this inspection.

Sincerely,

/RA/

Bruce L. Jorgensen, Chief
Decommissioning Branch

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

Enclosure: Inspection Report 50-155/2000005(DNMS)

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-155
License No:	DPR-06
Report No:	50-155/2000005(DNMS)
Licensee:	Consumers Energy Company
Facility:	Big Rock Point Nuclear Plant
Location:	10269 U.S. 31 North Charlevoix, MI 49720
Dates:	September 26-October 5, 2000
Inspectors:	William Snell, Health Physics Manager 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 50-155/2000005(DNMS)

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

Facility Management and Control

- The Big Rock Point staff and management were doing a good job in implementing their Decommissioning Plan in a safe and effective manner. A public meeting to discuss management of the project was held on October 5, 2000. (Section 1.1)

- The licensee's initial assessments of CR's were thorough and broad in scope. Subsequent investigations were reviewed and found to have been adequate to determine root causes, while corrective actions appeared sufficient to address issues and prevent recurrence of the same or similar events. (Section 1.2)

Spent Fuel Safety

- The licensee is making acceptable progress on their dry fuel storage project. (Section 2.0)

Radiological Safety

- No concerns were identified regarding the *Annual Radioactive Environmental Report for the Period January 1999 - December 1999* or the *Annual Radioactive Environmental Effluent Release Report for the Period January 1999 - December 1999*. (Section 3.1)

- Hands-on Radiation Protection Technician (RPT) emergency response drills were well conducted and appeared to be a benefit to maintaining the RPTs trained in emergency response responsibilities and duties. (Section 3.2)

- The collection of environmental samples from the discharge canal was a good initiative by the licensee, and the collection practices observed were determined to be adequate to ensure representative samples were collected. (Section 3.3)

Report Details

1.0 Facility Management and Control

1.1 Organization, Management & Cost Controls (36801)

a. Inspection Scope

A public meeting was held with Big Rock Point management in the NRC Region III office in Lisle, Illinois to discuss the overall status of the Big Rock Point Restoration Project.

b. Observations and Findings

On October 5, 2000, a public meeting was conducted at NRC Region III between Big Rock Point management, NRC Regional management, and the NRC Headquarters Project Manager for Big Rock (who participated via teleconference). No members of the public attended. The purpose of the meeting was for Big Rock Point to brief the NRC on the current status of their Restoration Project, and on the challenges and issues still ahead. The licensee provided information on Project costs and schedules, engineering, operations and licensing issues, dry fuel storage, shipping of the reactor vessel, radiation protection issues, and oversight of Project quality. Kurt Haas, Site General Manager, discussed some of the sites recent milestones, the involvement of stakeholders such as the Citizens Advisory Board, and areas that will challenge them, such as the implementation of Project quality assurance.

Several items of note from the meeting were that in August 2000 Big Rock Point reached 23 years without a loss time accident, and the Restoration Project to date was on schedule and within budget.

c. Conclusions

The Big Rock Point staff and management were doing a good job in implementing their Decommissioning Plan in a safe and effective manner. No concerns were identified as a result of the meeting.

1.2 Self-Assessment, Auditing, and Corrective Action (40801)

a. Inspection Scope

The inspector attended several Corrective Action Review Boards (CARBs), and reviewed several Condition Reports and their corrective actions for adequacy.

b. Observations and Findings

Each morning the licensee holds a CARB to discuss any Condition Reports (CRs) that were generated from the previous day's activities. The intent of the CARB is to assess the event that led to the generation of the CR, and assign an appropriate level of response to ensure corrective actions are properly focused and carried out within a time frame commensurate with the issue. The inspector attended several of the CARBs and found the discussions to be thorough, broad in scope, and adequate to address each CR.

Also reviewed in detail were CRs C-BRP-00-205, concerning a valve that was left open, and C-BRP-00-213, concerning the identification of higher than expected dose rates.

CR C-BRP-00-205 involved the discovery that the Condensate Storage Tank (CST) drain valve VC-101 was still open following a previous evolution. This was identified when the licensee was draining water from the #2 Waste Hold Tank (WHT) to the CST. An operator quickly identified that the water level in the CST was not going up as the water in the WHT was falling and stopped the evolution. The result was that 1200 gallons of water flowed through the CST drain valve VC-101 and into the #2 Clean Waste Receiver Tank. There was no health and safety significance to this event. The root cause of this event was determined to be the use of an inadequate process (i.e., work order) to change and control the configuration of valves, coupled with not using an adequate method to track changes in the status of systems. It appeared that these inadequacies led the Shift Supervisor to inadvertently sign off that VC-101 was closed when in fact it was not. The immediate response to this finding was to verify the valve lineups for the Spent Fuel Cooling and Radwaste Systems, and for all CST valves. In addition, all valves in pathways that could result in a release directly to the environment would be periodically verified they were in the correct position. Training was also conducted for the Operations Planners on the acceptable methods for ensuring that Work Order steps that result in valve manipulations by operators require the use of an operations controlled method of documenting system and component configuration.

CR C-BRP-00-213 was generated when a dose rate of 3 Roentgen per hour (R/hr) versus an expected dose rate of 50 millirem/hr (mrem/hr) was identified above the reactor head during a drain down of the reactor vessel water level from the flange level to elevation 608'. This condition was discovered by a periodically required check of an AM-2 radiation monitor positioned on the Reactor Deck. Due to the potential for rapidly changing dose rates, the Radiation Work Permit (RWP) for this evolution required dedicated Radiation Protection (RP) coverage and instructed the RP Operations Supervisor to evaluate actions necessary for dose reduction if the general area or effective dose rates increased by 50 percent. There was no work being performed on the Reactor Deck during the drain down and no adverse health or safety consequence occurred due to the higher than expected dose rate. It was subsequently determined that the dose rate calculations were flawed in that they did not take into account that the drain down would result in the grid bar stubs and hinge assemblies being exposed, which was the source of the higher than expected dose rates. The evaluation of this event led to a number of corrective actions by the licensee. These included a review/revision of Work Orders for upcoming vessel drainings, shielding recommendations for Reactor Head open penetrations, and a revision to the methods used for monitoring radiation levels during vessel draining operations.

c. Conclusions

The licensee's initial assessments of CR's were thorough and broad in scope. Subsequent investigations were reviewed and found to have been adequate to determine root causes, while corrective actions appeared sufficient to address issues and prevent recurrence of the same or similar events.

2.0 Spent Fuel Safety

Dry Fuel Storage Status (60853)

a. Inspection Scope

The inspector evaluated the licensee's plans for dry fuel storage on site.

b. Observations and Findings

The licensee is using the British Nuclear Fuel Limited Fuel Solutions (BFS) cask system. It consists of four basic components: canister, storage cask, transfer cask, and a transportation cask. At this time, the licensee does not have any plans for the transportation cask and is only planning on storing the fuel on site.

Canister - The canister includes a stainless steel (SS) shell that provides for the confinement of the fuel. Internal SS square guide tubes provide geometric spacing and criticality control. Installed boron plates within the canister absorb neutrons and also provide criticality control. These are separated by multiple carbon steel spacers that are to be coated. Two top SS closure lids provide redundant field-welded seals. In addition, top and bottom and radiation shield plugs are used. The canisters are designed to be handled either horizontally or vertically to or from the storage casks or transportation casks using a transfer cask. At this time, the licensee is only going to handle them vertically. If and when transportation becomes reasonable, horizontal handling equipment will be procured. The canisters are bing fabricated by Westinghouse in Newington, NH.

Storage Cask - The storage cask is reinforced concrete and is in three cylindrical segments with a carbon steel and concrete cover for the top. Incorporated within each segment cavity is an inner carbon steel liner, a thermal shield, and guide rails to center the canister and provide bearing surfaces during horizontal transfer operations. Eight tie rods secure the precast segments together. Four bottom vent openings allow air to flow in at the base via natural convection, rise upward around the canister, and flow out through four top vents. This flow dissipates the fuel decay heat from the canister surface. The storage casks are to be fabricated by the licensee at their Palisades Plant and transported to Big Rock Point.

Transfer Cask - The transfer cask is used to handle the canisters and provide shielding during canister fuel loading, canister closure, and on-site transport operations. It is also designed to be used in a horizontal or vertical orientation. The transfer cask is a right circular cylinder with bolted covers on both ends. It is comprised of a SS liner and an outer carbon steel shell, with gamma lead shielding between them. A neutron shield, consisting of an outer SS jacket forming an annular cavity that can be filled with water, surrounds the structural shell. Both the top and bottom covers include solid neutron shielding. The transfer cask is being fabricated by Hi-Tech in Greensboro, NC.

The only site work to date is clearing and grubbing for the storage pad which is complete. Excavation and backfill operations for the cask haul road were scheduled to begin October 16, 2000, in order to lessen the number of work activities the following Spring and Summer. Actual construction of the pad is projected for Spring 2000.

Preparation work has begun to disassemble the existing crane in containment to make room for the new single failure-proof one to be installed.

The target date for early fuel movement is October 1, 2001.

c. Conclusions

The licensee is making acceptable progress on their dry fuel storage project.

3.0 Radiological Safety

3.1 Review of Annual Radioactive Environmental and Effluent Release Reports (84750)

a. Inspection Scope

The Big Rock Point *Annual Radioactive Environmental Report for the Period January 1999 - December 1999* and the *Annual Radioactive Environmental Effluent Release Report for the Period January 1999 - December 1999*, were reviewed.

b. Observations and Findings

The inspector reviewed the above two reports and verified that the scope and content were consistent with the requirements of Sections 6.7.2 and 6.7.3 of the Big Rock Point Defueled Technical Specifications. Reviewing the summaries, interpretations, and statistical evaluations provided within the *Environmental Report* and the summary of the quantities of radioactive liquid and gaseous effluents and solid waste released provided within the *Effluent Release Report*, the 1999 data were determined to be consistent with related data from previous years and no unusual or anomalous data were identified.

c. Conclusions

No concerns were identified regarding the *Annual Radioactive Environmental Report for the Period January 1999 - December 1999* or the *Annual Radioactive Environmental Effluent Release Report for the Period January 1999 - December 1999*.

3.2 Occupational Radiation Exposure (83750)

a. Inspection Scope

The conduct of radiological monitoring drills related to emergency preparedness was evaluated by the inspector.

b. Observations and Findings

The licensee conducted numerous radiological monitoring drills as required by the Defueled Emergency Plan. The objective of the drills was to provide all Emergency Response Organization Radiation Protection Technicians (RPTs) the opportunity to practice their duties and responsibilities, and to determine any weak areas in their training or emergency response program. The training entailed seven drills with three RPTs participating in each drill with supervisory control and direction.

The inspector observed one of the drills which simulated a dropped fuel bundle. The "RPT team" was observed responding to the simulated event, collecting air samples, taking dose readings, and collecting environmental water and vegetation samples. Overall the team demonstrated a good knowledge of health physics practices, were competent in the use of the monitoring and detection equipment available, and worked well as a team. Based on a management assessment of the results of the drills it was determined that the hands-on drills were a benefit to training in this area, and they helped to identify several weaknesses in the RPTs response/duties that could be enhanced.

c. Conclusions

Hands-on Radiation Protection Technician (RPT) emergency response drills were well conducted and appeared to be a benefit to maintaining the RPTs trained in emergency response responsibilities and duties.

3.3 Radiological Environmental Monitoring (84750)

a. Inspection Scope

An evaluation was conducted of the licensee's collection of sediment samples from the discharge canal as part of their environmental sampling program related to site characterization.

b. Observations and Findings

During a recent Citizens Advisory Board meeting that was open to the public, questions were raised regarding radiation levels in the sediment in the site discharge canal. In response to these concerns, the licensee decided to collect samples of the sediment from the canal for radiological analysis. On September 26, 2000, with both the NRC inspector and a representative from the State of Michigan present, the licensee collected 17 sediment samples from various locations within the discharge canal. A sample of paraphyton was also collected off a number of rocks along the shoreline. Sampling practices observed during the collection of the samples were determined to be adequate to ensure representative samples were collected. These samples were split among the licensee, the NRC, and the State of Michigan. The NRC will provide the results of the analysis of the NRC samples in a future inspection report.

c. Conclusions

The collection of environmental samples from the discharge canal was a good initiative by the licensee, and the collection practices observed were determined to be adequate to ensure representative samples were collected.

4.0 Inspector Follow-up Item (Bullet Resistant Door) (IFI 50-155/2000004-01) OPEN

The bullet resistance of the alarm station door was determined to be insufficient. A purchase order was placed with a vendor for the construction of a new door and production began on September 12, 2000. The inspector reviewed the purchase order, which indicated the new door would be adequate to comply with the security plan. The new door was expected to be received and installed in early to mid October 2000.

a. Conclusions

This item will remain open pending the installation of the new alarm station door.

5.0 Exit Meeting

The inspectors presented the inspection results to members of licensee management at the conclusion of the onsite portion of the inspection on September 28, 2000. 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, Site General Manager
K. Pallagi, Interim Radiation Protection and Environmental Services Manager (RP&ES)
R. McCaleb, Nuclear Performance Assessment Supervisor
W. Trubilowicz, Cost, Scheduling & Purchasing Manager
G. Withrow, Engineering, Operations & Licensing Manager
M. VanAlst, Security Manager
M. Bourassa, Dry Fuel Storage Project Manager
G. Petitjean, Licensing Supervisor
J. Wiebe, Dry Fuel Storage

INSPECTION PROCEDURES USED

IP 36801	Organization, Management and Cost Controls
IP 40801	Self-Assessment, Auditing, and Corrective Action
IP 60853	Dry Fuel Storage Status
IP 83750	Occupational Radiation Exposure
IP 86740	Inspection of Transportation Activities

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Discussed

50-155/2000004-01 IFI Bullet Resistance For the Security Central Alarm Station

LIST OF ACRONYMS USED

CAB	Citizens Advisory Board
CARB	Corrective Action Review Board
CR	Condition Report
CST	Condensate Storage Tank
NRC	Nuclear Regulatory Commission
RPT	Radiation Protection Technician
RWP	Radiation Work Permit
WHT	Waste Hold Tank

LICENSEE DOCUMENTS REVIEWED

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