January 18, 2005

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

# SUBJECT: BIG ROCK POINT INSPECTION REPORT 05000155/2004-003(DNMS) AND NOTICE OF VIOLATION

Dear Mr. Haas:

On January 7, 2005, the NRC completed inspection activities at the Big Rock Point Nuclear Plant. The purpose of the inspection was to determine whether decommissioning activities were conducted safely and in accordance with NRC requirements. Specifically, during onsite inspections from October 12 through 15, 2004, November 1 through 5, 2004, and December 13 through 16, 2004, the inspectors evaluated decommissioning support activities, final status surveys, and radiological safety. At the conclusion of the onsite inspections on October 15, November 5, and December 16, 2004, the inspectors discussed the inspection findings with you and members of your staff. On January 7, 2005, the inspectors completed an in-office review of laboratory analysis results for split soil samples that were collected during the November 1 through 15 inspection. The inspectors conducted a telephone exit interview with Mr. Ken Pallagi, Radiation Protection & Environmental Services Manager, on January 7, 2005, to discuss the results of the in-office review of the laboratory results.

The onsite inspections consisted of an examination of decommissioning activities at the Big Rock Point Nuclear Plant as they relate to safety and compliance with the Commission's rules and regulations. Areas examined during the inspections are identified in the enclosed report. Within these areas, the inspections consisted of a selective examination of procedures and representative records, observations of activities in progress, and interviews with personnel.

Based on the results of these inspections, the NRC has determined that one Severity Level IV violation of NRC requirements occurred. The violation is being treated as a Non-Cited Violation (NCV), consistent with Section VI.A of the Enforcement Policy. The current Enforcement Policy is included on the NRC web site at <u>www.nrc.gov</u>; select **What We Do**, **Enforcement**, then **Enforcement Policy**. The NCV is described in the subject inspection report. If you contest the violation or significance of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with a copies to the Regional Administrator, Region III, and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's K. Haas

document system (ADAMS). The NRC's document system is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Please note that on October 25, 2004, the NRC terminated public access to ADAMS and initiated an additional security review of publicly available documents to ensure that potentially sensitive information is removed from the ADAMS database accessible through the NRC's web site. Interested members of the public may obtain copies of the referenced documents for review and/or copying by contacting the Public Document Room pending resumption of public access to ADAMS. The NRC Public Documents Room is located at NRC Headquarters in Rockville, MD, and can be contacted at (800) 397-4209.

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

Sincerely,

## /RA/

Jamnes L. Cameron, Chief Decommissioning Branch

Docket No. 05000155 License No. DPR-6

Enclosure: Inspection Report 05000155/2004-003(DNMS)

cc w/encl: R. A. Fenech, Senior Vice President, Nuclear, Fossil, and Hydro Operations John King, Michigan Public Service Commission L. Shekter Smith, Michigan Department of Environmental Quality Chief, Nuclear Facilities Unit, Michigan Department of Environmental Quality Department of Attorney General (MI) Emergency Management Division, Michigan Department of State Police

Distribution:

M. Masnik, NRR w/encl J. Shepherd, LPM, NMSS (e-mail) G. E. Grant, RIII w/encl M. L. Dapas, RIII w/encl RIII Enf. Coordinator w/encl

OFFICE	RIII	Е	RIII	Е	RIII	С	RIII		
NAME	Martin:mb		Snell		Cameron				
DATE	01/10/05		01/10/05		01/18/05				

DOCUMENT NAME: E:\Filenet\ML050180402.wpd To receive a copy of this document, indicate in the box: C = Copy without enclosure E = Copy with enclosure N = No copy

OFFICIAL RECORD COPY

## U.S. NUCLEAR REGULATORY COMMISSION

## **REGION III**

Docket No.	050-00155
License No.	DPR-6
Report No.	05000155/2004-003(DNMS)
Licensee:	Consumers Energy Company
Facility:	Big Rock Point Restoration Project
Location:	10269 U.S. 31 North Charlevoix, MI 49720
Dates:	October 12 through 15, 2004 (Onsite inspection) November 1 through 5, 2004 (Onsite inspection) December 13 through 16, 2004 (Onsite inspection) January 7, 2005 (In-office review)
Inspectors:	William G. Snell, Senior Health Physicist (Inspector) Christopher R. Martin, Reactor Inspector (Decommissioning) Sam Mulay, Materials Inspector
Approved by:	Jamnes Cameron, Chief Decommissioning Branch Division of Nuclear Materials Safety

## **EXECUTIVE SUMMARY**

#### Consumers Energy Company Big Rock Point Restoration Project NRC Inspection Report 05000155/2004-003(DNMS)

These routine decommissioning inspections involved a review of the Consumers Energy Company's and its contractors' current performance related to decommissioning support activities and radiological safety. During the inspection period, major activities reviewed included facility demolition and decontamination, and radiological and environmental surveys.

## **Decommissioning Support Activities**

• The inspectors concluded that the licensee and its contractors conducted decommissioning activities in accordance with appropriate regulatory requirements and in a safe manner. Management oversight of decommissioning activities was commensurate with the scope and complexity of the activities observed. (Section 1.0)

## **Radiation Protection Program**

• The inspectors identified one Non-Cited Violation of 10 CFR 20.1801 for failure to secure from unauthorized removal or limit access to licensed material (activated concrete) located in the radioactive waste building compound, which was a controlled area, nor did the licensee control and maintain constant surveillance of this licensed material. This finding is being treated as a Non-Cited Violation (NCV) consistent with Section VI.A of the NRC Enforcement Policy. (Section 2.0)

#### **Final Status Survey**

• The inspectors determined that the licensee's final status survey of the screen house was consistent with procedural requirements and that the procedures used were consistent with the Final Survey Plan found in Chapter 5 of the License Termination Plan. The inspectors concluded that the licensee implemented the survey program in accordance with approved decommissioning procedures. (Section 3.0)

## **Report Details**<sup>1</sup>

## 1.0 Decommissioning Support Activities (71801)

#### a. Inspection Scope

The inspectors evaluated decommissioning activities to verify that the licensee and its contracted workforce were conducting work in accordance with licensed requirements. In addition, the inspectors evaluated the licensee's management and oversight of decommissioning activities.

#### b. Observations and Findings

The inspectors completed numerous site tours to observe licensee staff conduct decommissioning activities such as the removal of surface contamination from segments of the dismantled stack, decontamination and surveys of equipment and building surfaces, final status surveys of the pump house area, radiation protection work practices, movement of heavy loads, activated concrete removal, and demolition of the Turbine Building.

The inspectors noted that the licensee and its contractors were knowledgeable of their work assignments and attentive to their individual tasks. The inspectors verified that the licensee and its contractors' staff were cognizant of the radiological conditions in their work area and aware of actions that could cause the radiation or contamination levels to change. The inspectors observed that the licensee and its contractors communicated effectively, demonstrated appropriate concern for industrial and radiological safety, conducted work in accordance with procedural requirements, and employed good work practices. The inspectors discussed work activities with management, health physics (HP) technicians and contractors during the tours to verify that they understood the radiological issues pertinent to their assigned activities.

The inspectors observed the material condition of facilities and equipment and determined it to be commensurate with the current decommissioning activities. The inspectors noted that general housekeeping was adequate.

c. <u>Conclusion</u>

The inspectors concluded that the licensee and its contractors conducted decommissioning activities in accordance with appropriate regulatory requirements and in a safe manner. Management oversight of decommissioning activities was commensurate with the scope and complexity of the activities observed.

<sup>&</sup>lt;sup>1</sup>A list of acronyms used in the report is included at the end of the Report Details.

## 2.0 Radiation Protection Program (83750)

#### a. Inspection Scope

The inspectors reviewed selected radiation protection procedures, observed licensee and contractor staff implement the program requirements, and interviewed licensee and contractor staff, to verify that the program was appropriate for the radiological hazards associated with current decommissioning activities.

#### b. Observations and Findings

The inspectors observed the licensee conduct daily briefings prior to the beginning of authorized work activities. The inspectors noted that the briefings, as a minimum, consisted of a discussion of the current industrial and radiological conditions at the work sites.

The inspectors observed the licensee and its contractors perform decommissioning activities within the turbine building, the containment sphere, and the discharge canal. The workers performed the decommissioning activities in accordance with approved radiation work permits (RWPs), and/or procedures.

The inspectors noted that the contractors had begun the removal process of the remaining activated concrete from the containment sphere. The contractors' plan required the staff to soften the concrete by mechanical means prior to removal. The contractor discovered significantly more reenforcing bar than expected, and as a result, the work became more labor intensive than initially planned. The HP staff recognized the potential for increased dose and closely monitored the activity to ensure that worker doses were maintained as low as is reasonably achievable (ALARA).

The inspectors identified that several activated concrete blocks, recently removed from the containment sphere (reactor containment), were stored in shipping containers within the licensee's radioactive waste processing area, which is outside the controlled area. The radioactive waste processing area was neither adequately secured nor under surveillance by licensee staff or its contractors. Radiation levels, resulting from the radioactive material contained within the shipping containers, ranged from 60 to 100 millirem per hour (mrem/hr) on contact with the shipping container.

The inspector had previously discussed the security of licensed materials with the Radiation Protection Manager (RPM). Specifically, in April 2004 the inspectors expressed concern that if the activated concrete blocks were not adequately secured from unauthorized access a member of the public could exceed the public dose limit of 100 mrem in a short period of time. The RPM acknowledged the inspectors' concern. The RPM subsequently engaged the work planning staff to ensure that the activated blocks would remain in the controlled area when removed from the containment sphere. However, scheduling conflicts caused the licensee's contractors to store the blocks in the radioactive waste building compound. The radioactive waste building compound is a controlled area and did not have a contiguous fence to prevent unauthorized access. Specifically, a 20 foot section of fencing was previously removed and a rope barrier was utilized to prevent access. A member of the public could have exited the state road adjacent to the site on foot and followed a cleared path (abandoned power line right of way) for approximately 300 yards to the radioactive waste processing area.

Title 10 CFR 20.1801 requires that the licensee secure from unauthorized removal or access licensed materials that are stored in controlled or unrestricted areas. Title 10 CFR 20.1802 requires that the licensee control and maintain constant surveillance of licensed material that is in a controlled or unrestricted area and that is not in storage. As defined in 10 CFR 20.1003, *controlled area* means an area, outside of a restricted area but inside the site boundary, access to which can be limited by the licensee for any reason; and *unrestricted area* means an area, access to which is neither limited nor controlled by the licensee.

Contrary to the above, between September 24 and November 3, 2004, the licensee did not secure from unauthorized removal or limit access to licensed material (activated concrete) located in the radioactive waste building compound, which was a controlled area, nor did the licensee control and maintain constant surveillance of this licensed material. The licensee entered this issue in its corrective action program (CAP) as No. C-BRP-04-0209, entitled "Issue Identified Related to 10 CFR 20.1801 and 1802 Storage of Licensed Material." This finding is considered to be a Non-Cited Violation of 10 CFR 20.1801 (Violation 05000155/2004-003-01) consistent with Section VI.A of the NRC Enforcement Policy.

The inspectors discussed this issue with licensee management, and the Site Director immediately had his staff erect a contiguous fence around the radioactive waste building compound to prevent unauthorized access. In addition, the site Director directed his management team to determine if additional vulnerabilities to security of licensed materials existed. The management team determined that the controlled area physical barrier (fence line) required additional attention to ensure compliance with regulatory requirements. The staff subsequently added to or modified the existing controlled area fence line.

The inspectors reviewed the licensee's corrective actions and determined that the corrective actions were appropriate to address all the immediate and potential generic aspects of the violation.

c. Conclusion

The inspectors identified one Non-Cited Violation of 10 CFR 20.1801 for failure to secure from unauthorized removal or limit access to licensed material (activated concrete) located in the radioactive waste building compound, which was a controlled area, nor did the licensee control and maintain constant surveillance of this licensed material. This finding is being treated as a Non-Cited Violation (NCV) consistent with Section VI.A of the NRC Enforcement Policy.

## 3.0 Final Status Survey (83801)

## a. Inspection Scope

The inspectors evaluated final status survey documentation to verify that areas had been decontaminated to radiological levels consistent with procedural requirements. In addition, the inspectors performed independent confirmatory surveys during the licensee's final status survey of the excavated area resulting from the demolition of the screen house.

#### b. Observations and Findings

The licensee's screen house final status survey encompassed approximately 1820 square meters at the northeast section of the industrial area. The survey area was an open excavation approximately eight meters below grade that resulted from the demolition and removal of the screen house subsurface structures and components (e.g., screen house intake and discharge foundations, septic holding tanks and lift pump station, emergency diesel generator fuel oil storage tanks, and support piping and conduit). The intake pipe that provided Lake Michigan water to the screen house for distribution to the industrial area was located inside the north boundary of the survey area. The licensee and its contractors plugged the pipe to prevent lake water from entering the excavation area. The pipe and a portion of the screen house wall (serving as a concrete anchor for the end of the pipe) were abandoned in place in accordance with the License Termination Plan (LTP). No other material or components from the facility remained in the survey area.

The licensee staff conducted the screen house final status survey described in its survey plan. The inspectors performed side-by-side independent confirmatory surveys with the licensee staff and a representative from the Michigan Department of Environmental Quality. The inspectors performed the independent confirmatory surveys using radiation detection equipment (Ludlum Model 2241-2 with sodium-iodide probe) which was comparable to the licensee's radiation detection equipment (Ludlum Model 2350-1 with sodium-iodide probe). The NRC and licensee radiation detection instruments were verified as operable and met the annual calibration periodicity.

The inspectors initiated the confirmatory survey by performing a background check of the instruments concurrent with the licensee staff. The inspectors noted that both the NRC and licensee radiation detection instrumentation indicated similar background radiation levels of 5,000 to 7,000 disintegrations per minute (dpm). The inspectors then performed side-by-side scanning surveys covering approximately 75 percent of the screen house excavation site. The remaining area was moist and could not be surveyed at that time; however, the area was previously characterized by the licensee and found to be below the applicable release criteria.

The licensee staff determined that cobalt-60 was the most limiting radioisotope expected to be present and assumed that all residual radioactivity was cobalt-60. The licensee staff established an instrument response value of 1818 counts per minute (cpm) above background radiation levels based on the cobalt-60 Derived Concentration Guideline Level (DCGL) as the scanning investigation level for this area. The inspectors observed that the licensee staff denoted survey points found to be greater than the established instrument response value for the collection of "judgmental samples" and subjected them to further radiological analysis in accordance with the previously established investigation levels.

The inspectors noted that none of the licensee's judgmental sample results exceeded the DCGL for cobalt-60.

The site specific DCGL for the radioisotopes expected to be present were: 11.93 picocuries per gram (pCi/g) for cesium-137 and 3.21 pCi/g for cobalt-60. Based on a statistical evaluation of the survey unit, the licensee staff collected 20 random soil samples to demonstrate the discharge canal survey unit was adequately remediated.

The licensee staff also selected 5 percent of these samples (i.e., one sample) for quality assurance/quality control (QA/QC) in accordance with approved procedures.

The inspectors collected split soil samples for two of the samples. The inspectors sent the samples to the Oak Ridge Institute for Science and Education (ORISE) for analysis. The analytical results for the NRC and licensee split soil samples collected were below the applicable DCGL levels and are documented in Table 1. The licensee's results for samples 1 through 6 and 9 through 20 were also below the applicable DCGL levels.

Sample No.	Licensee cobalt-60	Licensee cesium-137	NRC cobalt-60	NRC cesium-137
7	0.05 <sup>2</sup>	0.07 <sup>2</sup>	0.03 <sup>2</sup>	0.03 <sup>2</sup>
8	0.05 <sup>2</sup>	0.06 <sup>2</sup>	0.03 <sup>2</sup>	0.03 <sup>2</sup>

Table 1 - Final Status Survey Soil Sample Results<sup>1</sup>

<sup>1</sup> sample results are in picocuries per gram soil (pCi/g) <sup>2</sup> minimum detectable concentration

The inspectors verified by observation that the survey was conducted in accordance with the approved procedures found in the licensee's "Final Status Survey Program." These procedures were: Procedure No. RM-77, entitled "Final Status Survey Implementation;" Procedure No. RM-76, entitled "Final Status Survey Design;" and Procedure No. RM-78, entitled "Final Status Survey Assessment."

The inspectors reviewed the following information, survey, and verification work packages: 2004-0103, entitled "Turbine Building Instrument Shop/Electrical Shop Rooms 122/123A;" 2004-0098, entitled "Turbine Building Lay-Down/Condensate Pump Rooms 124/125;" 2004-0099, entitled "Turbine Building foundations, Rooms 117/118/119;" 2003-0089, entitled "Turbine Building Air Ejector Room 115I;" 2004-0004, entitled "Pipe Tunnel Roof;" 2004-0016, entitled "Screen House Discharge Canal/Apron/Canal Walls Room 505;" 2003-0088, entitled "Turbine Building Condenser Area Rooms 117/118/119;" and 2004-0040, entitled "East Office Building Annex, Septic Tanks and Associated Manholes."

c. <u>Conclusion</u>

The inspectors determined that the licensee's final status survey of the screen house was consistent with procedural requirements and that the procedures used were consistent with the Final Survey Plan found in Chapter 5 of the License Termination Plan. The inspectors concluded that the licensee implemented the survey program in accordance with approved radiological criteria for release.

## 4.0 Exit Meeting Summary

The inspectors presented preliminary inspection findings to members of the licensee management team at the conclusion of onsite inspection activities on October 15, November 5, and December 16, 2004. On January 7, 2005, the inspectors conducted a telephone exit interview with the Radiation Protection & Environmental Services Manager to discuss the results of the in-office review of the laboratory results. The licensee acknowledged the findings presented. The licensee did not identify any documents or processes reviewed by the inspector as proprietary.

## PARTIAL LIST OF PERSONS CONTACTED

Consumers Energy Company

\* Kurt Haas, Site General Manager

- \* Ken Pallagi, Radiation Protection & Environmental Services Manager
- \* Greg Withrow, Engineering, Operations & Licensing Manager
- \* William Trubilowicz, Cost, Scheduling and Purchase Manager

#### State of Michigan

T.R. Wentworth, Michigan Department of Environmental Quality

\* Indicates those individuals present at the preliminary and/or final exit meetings.

## **INSPECTION PROCEDURES USED**

IP 71801	Decommissioning Performance and Status Review
IP 83750	Occupational Radiation Exposure
IP 83801	Inspection of Final Surveys at Permanently Shutdown Reactors

## ITEMS OPENED, CLOSED, AND DISCUSSED

<u>Opened</u>	<u>Type</u>	Summary
05000155/2004-003-01	NCV	Failure to secure licensed material.
Closed		
05000155/2004-003-01	NCV	Failure to secure licensed material.
Discussed		

None

## PARTIAL LIST OF DOCUMENTS REVIEWED

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

## LIST OF ACRONYMS USED

- ADAMS AgencyWide Documents Access and Management System
- ALARA As Low As Reasonably Achievable
- BRP Big Rock Point
- CAP Corrective Action Program
- CFR Code of Federal Regulations
- cpm counts per minute
- DCGL Derived Concentration Guideline Level
- DNMS Division of Nuclear Material Safety
- dpm disintegrations per minute
- HP Health Physics
- LTP License Termination Plan
- NCV Non-Cited Violation
- NRC Nuclear Regulatory Commission
- ORISE Oak Ridge Institute for Science and Education
- pCi/g picocuries per gram
- RWP Radiation Work Permit