

November 21, 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 050-00155/05-004(DNMS)

Dear Mr. Haas:

On November 10, 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 on-site inspections on August 22 through 25, and September 19 through 21, 2005, the inspector evaluated decommissioning and demolition activities, management oversight of decommissioning activities, radioactive waste management, final status surveys, and radiological safety. At the conclusion of on-site inspections on August 25 and September 21, 2005, the inspector discussed the inspection findings with you and members of your staff. On November 10, 2005, the inspector completed an in-office review of laboratory analysis results for soil samples collected during the September 19 through 21 inspection. The inspector conducted a telephone exit interview with members of your staff on November 10, 2005, to discuss the results of the in-office review of the laboratory results.

This inspection 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 inspection are identified in the enclosed report. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations of activities in progress, and interviews with personnel.

Based on the results of this inspection, the NRC did not identify any violations.

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K. Haas

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

Sincerely,

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Jamnes L. Cameron, Chief  
Decommissioning Branch

Docket No.: 050-00155

License No.: DPR-6

Enclosure: Inspection Report 050-00155/05-004(DNMS)

cc w/encl: R. A. Fenech, Senior Vice President, Nuclear, Fossil, and Hydro Operations  
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No.: 050-00155

License No.: DPR-6

Report No.: 050-00155/05-004(DNMS)

Licensee: Consumers Energy Company

Facility: Big Rock Point Restoration Project

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

Dates: August 22 through 25, 2005 (on-site),  
September 19 through 21, 2005 (on-site), and  
November 10, 2005 (in-office)

Inspector: William G. Snell, Senior Health Physicist

Approved by: Jamnes L. Cameron, Chief  
Decommissioning Branch,  
Division of Nuclear Materials Safety

## **EXECUTIVE SUMMARY**

### **Consumers Energy Company Big Rock Point Restoration Project NRC Inspection Report 050-00155/05-004(DNMS)**

This routine decommissioning inspection involved a review of the Consumers Energy Company's and its contractors' performance related to decommissioning and demolition activities, management oversight of decommissioning activities, radioactive waste management, inspection of final status surveys, and radiological safety. During this inspection period, major activities included demolition, decontamination, and scabbing of concrete surfaces inside containment and at the radwaste vaults, and final status surveys of the location of the former turbine, service and administration buildings.

#### **Organization, Management and Cost Controls**

- The inspector determined that the licensee was actively pursuing ways to maintain the restoration project on schedule while minimizing costs. (Section 1.0)

#### **Decommissioning Performance and Status Review**

- The inspector determined that the licensee was effective in ensuring that management's expectations for work performance were being communicated to the workforce. Although a considerable amount of work was being performed, the workforce was working safely and in accordance with license requirements. (Section 2.0)

#### **Maintenance and Surveillance**

- The licensee was doing an adequate job of preparing the containment building for the sphere dismantlement effort. (Section 3.0)

#### **Occupational Radiation Exposure**

- The inspector concluded that the radiological work practices of the licensee and contractor staff were adequate. (Section 4.0)

#### **Inspection of Final Surveys**

- Residual radioactive contamination in the turbine building excavation area was less than the licensee's unrestricted release limit of 5 picocuries per gram (pCi/g) as described in the approved License Termination Plan. The licensee's radioanalytical capability to determine residual radioactivity in soil samples was adequate. (Section 5.0)

#### **Solid Radioactive Waste Management and Transportation**

- The inspector determined that the licensee adequately controlled and stored radioactive waste in the radwaste building and radwaste yard. (Section 6.0)

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

### **1.0 Organization, Management and Cost Controls (36801)**

#### **1.1 Inspection Scope**

The inspector evaluated the licensee's decommissioning planning, scheduling, and cost expenditure.

#### **1.2 Observations and Findings**

The licensee determined that the decline in background radiation levels in the containment building had slowed appreciably even though scabbing and other remediation activities were continuing. This was because most of the high dose areas had already been remediated or shielded, and the ongoing removal of surface material containing low levels of contamination was having a minimal impact on lowering the overall background radiation level. Because the background was remaining higher than expected, the licensee was unable to conduct adequate scanning to verify that building surfaces were remediated to less than 5000 disintegrations per minute (dpm) per 100 square centimeters (cm<sup>2</sup>) that was required by the License Termination Plan (LTP). Since material verified as less than 5000 dpm/100 cm<sup>2</sup> could potentially be disposed of in a local landfill, the inability to conduct the verification meant concrete and debris would have to be disposed of as radioactive waste at a considerably higher cost. This has left the licensee with the option either to continuing to work to reduce the background, or disposing of the containment building concrete and other debris as radioactive waste. To continue to remediate to lower the background levels could delay the dismantlement of the containment structure and extend the site restoration effort by several months or longer, which would add to the cost of the project. However, disposing of the concrete and debris as radioactive waste would also increase the cost of the project. While both options will add millions of dollars in costs to the restoration project, at the time of the on-site inspections the licensee was moving toward the option of shipping the concrete and debris as radioactive waste. This would maintain the current schedule for completing the restoration project by late 2006. The licensee also indicated to the inspector that the LTP would have to be revised to reflect any change in the decommissioning planning and scheduling.

#### **1.3 Conclusion**

The inspector determined that the licensee was actively pursuing ways to maintain the restoration project on schedule while minimizing costs.

### **2.0 Decommissioning Performance and Status Review (71801)**

#### **2.1 Inspection Scope**

The inspector attended and observed the conduct of licensee meetings regarding decommissioning activities, including daily management team meetings. The inspector

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

performed plant tours to assess field conditions and decommissioning activities, and to verify that the licensee and its contracted workforce conducted work safely and in accordance with license requirements, and that radioactively contaminated material was controlled.

## 2.2 Observations and Findings

The inspector observed that licensee management representatives routinely toured the site to observe work and evaluate progress. Observations from these tours were discussed during the daily morning management meetings to ensure that expectations were being communicated to the work force and that managers and workers were focused on the same issues and concerns.

During site tours, the inspector observed licensee staff conducting decontamination of structural surfaces, demolition activities, and radiological surveys. The inspector noted that even though there was a significant amount of work being conducted by numerous work crews, the workers were attentive to other work being performed nearby.

## 2.3 Conclusion

The inspector determined that the licensee was effective in ensuring that management's expectations for work performance were being communicated to the workforce. Although a considerable amount of work was being performed, the workforce was working safely and in accordance with license requirements.

## **3.0 Maintenance and Surveillance (62801)**

### 3.1 Inspection Scope

The inspector walked down areas of the containment building to assess the material condition of the facility and equipment.

### 3.2 Observations and Findings

The licensee's work force was focused on scabbling, jack-hammering, and completing the remediation of surface contamination in preparation for the sphere dismantlement. Additional efforts were under way to remove scaffolding, equipment and other materials. The licensee's goal was to complete all remediation activities in the containment building by late September so that the containment could be readied to start removing the sphere in mid-October. During the sphere removal no workers will be allowed inside the containment building. The inspector observed that a significant amount of material had been and was being removed from the containment building.

### 3.3 Conclusion

The licensee was doing an adequate job of preparing the containment building for the sphere dismantlement effort.

#### **4.0 Occupational Radiation Exposure (83750)**

##### **4.1 Inspection Scope**

The inspector evaluated the radiological work practices of licensee and contractor staff who conducted decommissioning activities.

##### **4.2 Observations and Findings**

During tours of the site, the inspector observed that workers adhered to proper radiological work practices while conducting decommissioning activities. Personnel were observed adhering to radiological boundaries, properly exiting contamination areas, wearing appropriate personal protective clothing for the work being conducted, and wearing dosimetry as required.

##### **4.3 Conclusion**

The inspector concluded that the radiological work practices of the licensee and contractor staff were adequate.

#### **5.0 Final Status Survey (83801)**

##### **5.1 Inspection Scope**

Independent radiological confirmatory surveys were conducted of the turbine building excavation area. Analyses were performed on radiologically contaminated soil samples provided by the licensee to assess the adequacy of the licensee's radioanalytical capability.

##### **5.2 Observations and Findings**

The Oak Ridge Institute for Science and Education (ORISE) conducted independent in-process confirmatory surveys for the NRC of the turbine building excavation area. The surveys included a 90 percent surface scan of the area using sodium iodide (NaI) scintillation detectors and the collection of five surface soil samples. Following the on-site inspection the licensee provided ORISE with three additional soil samples for an inter-laboratory comparison. These three samples contained detectable levels of radiological contamination. The eight soil samples were analyzed by ORISE for tritium (hydrogen-3), cobalt-60, cesium-137, europium-152, europium-154, europium-155 and manganese-54.

The soil surface scanning identified no areas of radiological contamination in excess of background levels. The ORISE analysis of the five soil samples collected during the inspection identified no contamination in excess of the licensee's unrestricted release limit of 5 picocuries per gram (pCi/g) as described in the licensee's License Termination Plan.

The analytical results of the three surface soil samples that were provided by the licensee to verify the adequacy of the licensee's radiological counting capability compared acceptably with ORISE's analysis of the samples. The results of the ORISE analyses are publicly available through NRC's Agencywide Documents Access and Management System (ADAMS) under Accession No. ML053220613.

### 5.3 Conclusion

Residual radioactive contamination in the turbine building excavation area was less than the licensee's unrestricted release limit of 5 picocuries per gram (pCi/g) as described in the approved License Termination Plan. The licensee's radioanalytical capability to determine residual radioactivity in soil samples was adequate.

## **6.0 Solid Radioactive Waste Management and Transportation (86750)**

### 6.1 Inspection Scope

The inspector toured the radwaste yard and radwaste building to verify that radioactive waste stored in those areas was adequately labeled and controlled.

### 6.2 Observations and Findings

Both the radwaste yard and radwaste building contained numerous containers of varying types and sizes. Most of the containers were full or partially full of radioactive waste and were being temporarily stored until they could be shipped off-site for disposal. All the containers examined had legible radiological labeling that was indicative of what was in the container.

### 6.3 Conclusion

The inspector determined that the licensee adequately controlled and stored radioactive waste in the radwaste building and radwaste yard.

## **7.0 Exit Meeting Summary**

The inspector presented preliminary inspection findings to members of the licensee management team at the conclusion of on-site inspection activities on August 25 and September 21, 2005. An additional telephone exit meeting was conducted on November 10, 2005, to provide the licensee with the results of the radiological analysis of soil samples collected during the on-site inspection conducted on September 19 through 21, 2005. 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
- \* William Trubilowicz, Cost, Scheduling and Purchase Manager

\* Persons present at the exit meetings.

## INSPECTION PROCEDURES USED

IP 36801	Organization, Management & Cost Controls
IP 62801	Maintenance and Surveillance
IP 71801	Decommissioning Performance and Status Review
IP 83750	Occupational Radiation Exposure
IP 83801	Inspection of Final Surveys at Permanently Shutdown Reactors
IP 86750	Solid Radioactive Waste Management and Transportation of Radioactive Materials

## ITEMS OPENED, CLOSED, AND DISCUSSED

<u>Opened</u>	None
<u>Closed</u>	None
<u>Discussed</u>	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
DNMS	Division of Nuclear Materials Safety
LTP	License Termination Plan
NRC	Nuclear Regulatory Commission
ORISE	Oak Ridge Institute for Science and Education