

October 6, 2004

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 05000155/2004-002(DNMS)

Dear Mr. Haas:

On September 22, 2004, the NRC completed on-site inspections at the Big Rock Point Nuclear Plant. The purpose of the inspections was to determine whether decommissioning activities were conducted safely and in accordance with NRC requirements. Specifically, the inspectors evaluated decommissioning support activities, emergency preparedness, and radiological safety. At the conclusion of on-site inspections on July 23, August 12, and September 3 and 22, 2004, the inspectors discussed the inspection findings with you and members of your staff.

The 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 did not identify any violations. The decommissioning activities reviewed were being conducted in accordance with applicable regulations and license conditions.

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 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).

K. Haas

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

Sincerely,

/RA/

Kenneth G. O'Brien, Chief
Decommissioning Branch

Docket No. 05000155
License No. DPR-6

Enclosure: Inspection Report 05000155/2004-002(DNMS)

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No. 050-00155

License No. DPR-6

Report No. 05000155/2004-002(DNMS)

Licensee: Consumers Energy Company

Facility: Big Rock Point Restoration Project

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

Dates: July 19 - 23, 2004,
August 10 - 12, 2004,
August 30 - September 3, 2004, and
September 20 - 22, 2004

Inspectors: William G. Snell, Senior Health Physicist (Inspector)
Christopher R. Martin, Reactor Inspector (Decommissioning)
Edward L. Kulzer, Health Physicist (Inspector)

Approved by: Kenneth G. O'Brien, Chief
Decommissioning Branch
Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

Consumers Energy Company Big Rock Point Restoration Project NRC Inspection Report 05000155/2004-002(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 concluded that the licensee and its contractors conducted decommissioning activities in a safe manner and in accordance with procedural requirements. The inspectors also concluded that the daily briefings included the radiological information necessary to conduct decommissioning activities in accordance with regulatory requirements. (Section 2.0)

Final Status Survey

- The inspectors determined that the licensee's final status survey of the discharge canal 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)

Corrective Action Program

- The inspectors concluded that the licensee's use of the corrective action program enabled the staff to identify, resolve, and preclude issues from degrading safety or the quality of decommissioning activities. (Section 4.0)

Safety Reviews

- The inspectors determined that the licensee appropriately evaluated proposed facility changes through established procedures in conformance with the NRC regulatory requirements in 10 CFR 50.59, and 10 CFR 72.48. (Section 5.0)

Emergency Plan Exercise

- The licensee staff responded to a simulated emergency in a timely manner, followed by effective hazard assessment, communications, and control. The licensee's critique findings were consistent with those identified by the inspectors. The inspectors concluded that the exercise adequately tested the licensee's emergency plan response capability. (Section 6.0)

Report Details¹

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 conducted numerous site tours to observe licensee staff conduct decommissioning activities such as scabbling of contaminated concrete surfaces, decontamination and surveys of equipment and building surfaces, final status surveys of the discharge canal area, radiation protection work practices, movement of heavy loads, activated concrete removal, and demolition of the Administration Building.

The inspectors noted that the licensee and its contractors were knowledgeable of their work assignments and attentive to their individual tasks. The inspectors determined that the licensee and its contractors' staff were cognizant of the radiological conditions in their work area and aware of what actions could cause the radiation or contamination levels to change. The inspectors determined 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 health physics (HP) technicians and contractors during the tours to verify 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. Conclusion

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.

¹A 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 commensurate with the radiological hazards associated with decommissioning the facility.

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 current industrial and radiological conditions at the work sites.

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

c. Conclusion

The inspectors concluded that the licensee and its contractors conducted decommissioning activities in a safe manner and in accordance with procedural requirements. The inspectors also concluded that the daily briefings included the radiological information necessary to conduct decommissioning activities in accordance with regulatory requirements.

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 conducted independent confirmatory surveys during the discharge canal final status survey.

b. Observations and Findings

The inspectors observed the licensee's environmental compliance group conduct the discharge canal final status survey. The discharge canal final status survey encompassed approximately 1300 square meters and included the former canal shoreline and bathymetric surface that extended approximately 2.6 meters below the normal high water mark. The licensee staff prepared the discharge canal for the final status survey in accordance with approved procedures, which included, erecting a temporary dike to de-water the area. The workers then evaluated the aquatic life, which had concentrated in the discharge canal, for deposition of radioactive materials. Radiological analysis of the aquatic life determined that a layer of zebra mussels had levels of cobalt-60 contamination in excess of the approved release criteria. The zebra mussels were removed and transferred to a waste broker for final disposition in a

licensed radioactive waste facility. The licensee staff confirmed that the cobalt-60 contamination present in the zebra mussels was the result of normal plant operations.

The licensee staff conducted the survey in accordance with the survey criteria specified in the License Termination Plan (LTP) and approved procedures. The inspectors conducted 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 detection instruments were calibrated at the appropriate periodicity, December 16, 2003, and April 13, 2004, respectively.

The inspectors initiated the confirmatory survey by conducting 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 backgrounds of 5,000 to 7,000 disintegrations per minute (dpm). The inspectors then conducted side-by-side scanning surveys covering approximately 95 percent of the discharge canal surface area. The remaining area was under water and could not be surveyed at that time; however, the area was previously characterized 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 background plus 1818 counts per minute (cpm) 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 1818 cpm above background 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 one of the judgmental sample results was determined to exceed the DCGL for cobalt-60. The licensee determined that a zebra mussel shell fragment was present in the soil sample. The licensee removed the shell fragment and re-analyzed the sample. The result was less than the applicable DCGL.

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. The licensee staff collected 19 random statistical soil samples for the discharge canal survey unit. The licensee staff selected 5 percent of these samples for quality assurance/quality control (QA/QC) in accordance with approved procedures.

The inspectors collected split soil samples for three of the QA/QC samples and two judgmental samples. The inspectors sent the samples to the Oak Ridge Institute for Science and Engineering (ORISE) for analysis. The analytical results for the soil samples collected are documented in Table 1. The inspectors noted that there was a discrepancy in the sample results for Sample J1 and attributed the discrepancy to the fact that these were split samples, which meant that cobalt-60 and cesium-137 contamination existed in both samples, but in different concentrations. In all cases, the results were below the DCGL levels.

Table 1 - Final Status Survey Soil Sample Results¹

Sample No.	Licensee cobalt-60	Licensee cesium-137	NRC cobalt-60	NRC cesium-137
1	0.13	0.48		
2	0.11	0.18		
3	ND ²	0.87	0.01	0.83
4	0.57	2.81		
5	0.07	0.54		
6	0.14	0.38		
7	0.10	0.21		
8	ND	0.19		
9	1.51	0.52	1.68	0.56
10	0.10	0.82		
11	0.26	1.67		
12	0.17	0.54		
13	1.61	0.41		
14	0.26	1.11		
15	ND	ND		
16	0.13	0.40		
17	0.20	1.04		
18	0.23	0.13	0.29	0.21
19	0.12	0.67		
J1	0.43	4.85	2.54	1.70
J2	0.65	3.45	0.58	3.54

¹ sample results are in picocuries per gram soil (pCi/g)

² non-detectable

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: 2003-0088, entitled "Turbine Building Room 114 Pipe Tunnel;" 2003-0102, entitled "Condenser Area Room 117/119/119 Turbine Building;" 2003-0092, entitled

“Turbine Building, B3, West Wall;” 2003-0095, entitled “Turbine Building, South Wall;” 2003-0108, entitled “Turbine Building, B3, Room 325/326, Turbine Deck;” and 2003-0110, entitled “Turbine Building, B3, Room 324, Passage.”

c. Conclusion

The inspectors determined that the licensee’s final status survey of the discharge canal 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.

4.0 Corrective Action Program (40801)

a. Scope

The inspectors reviewed the corrective action program (CAP) to evaluate the effectiveness of licensee controls in identifying, resolving, and preventing issues that degrade safety or the quality of decommissioning. The inspectors interviewed selected licensee staff and reviewed selected CAP issues.

b. Observations and Findings

The licensee’s CAP facilitated the staff’s prompt reporting of deficiencies to management and the NRC, as required, the tracking of issue-specific corrective actions to completion, and the conducting of self-audits of decommissioning performance or facility systems.

The inspectors reviewed the licensee’s organizational chart and noted that the CAP manager reported directly to the site manager. The CAP manager maintained independence from those directly responsible for issues, functional areas, or systems audited. The inspectors reviewed several recent CAP issues and determined that all issues were evaluated commensurate with the safety significance and impact on future decommissioning activities.

c. Conclusion

The inspectors concluded that the licensee’s use of the CAP enabled the staff to identify, resolve, and preclude issues from degrading safety or the quality of decommissioning.

5.0 Safety Reviews (37801)

a. Inspection Scope

The inspectors reviewed the licensee’s safety review process and procedures to determine whether the program conformed to 10 CFR 50.59.

b. Observations and Findings

The inspectors reviewed Procedure 05, of Volume 31A, entitled "Safety Review and Independent Safety Review Committee." The licensee developed this procedure to ensure compliance with the design basis from changes that affect the following requirements and/or evaluations: the Updated Final Hazards Summary Report (UFHSR) or BNFL Fuel Solutions Safety Analysis Reports (SARs); the Post Shutdown Decommissioning Activities Report (PSDAR); the Dry Fuel Storage Certificate of Compliance (CoC); changes, tests, or experiments that require prior NRC approval for implantation; and the Defueled Technical Specifications or Dry Fuel Storage Technical Specifications.

The licensee staff used Form BRP021, entitled "Quality Review Form," to identify items requiring a nuclear safety review pursuant to 10 CFR 50.59 and/or 10 CFR 72.48. The licensee staff documented design basis changes that may affect the following: the PSDAR; amendments to the Technical Specification or the CoC; a reduction in the effectiveness of plans covered by 10 CFR 50.54 (Security Plan, Fire Plan, or Emergency Plan); or a reduction in commitments that require NRC approval.

The inspectors selected five completed quality review forms for review, which included: a revision of the Off-Site Dose Calculation Manual; the cancellation of administrative Procedure D1.4, entitled "Safety Review Committee;" a cancellation of the monitoring station annunciator tabulation; a revision of procedure RIP 59, entitled "Operation, Calibration and Maintenance of Gamma Scintillation Probes Used for General testing in Field Conditions;" and a revision of the retention basin release operation. The inspectors determined that changes implemented by the licensee were consistent with site procedures and the applicable NRC regulations.

The inspectors noted that the Independent Site Safety Review Committee (ISSRC) provides independent oversight and review of activities involving the safe operation of the Independent Spent Fuel Storage Installation (ISFSI), and 10 CFR Part 20, 10 CFR Part 50, and 10 CFR Part 71 activities. The ISSRC formulates conclusions, concerns, and recommendations based on review of site documents to maintain appropriate protection of the health and safety of the public and employees.

c. Conclusion

The inspectors determined that the licensee appropriately evaluated proposed facility changes through established procedures in conformance with the NRC regulatory requirements in 10 CFR 50.59, and 10 CFR 72.48.

6.0 Emergency Plan Exercise (36801 & 81700)

a. Scope

The inspectors observed the licensee exercise its emergency plan. Observations included the pre-exercise brief, response to the exercise scenario by licensee staff, and the post-exercise critique. The inspectors also evaluated the licensee's actions related to NRC Bulletins and Commission Orders.

b. Observations and Findings

The exercise scenario simulated an intruder and subsequent explosion at the ISFSI pad. The licensee developed the scenario with sufficient detail to test its full emergency plan response capability.

The exercise began with a communication from the security force indicating that an intruder was seen exiting the wooded area and throwing a backpack onto the ISFSI pad. Security personnel then communicated that an explosion had occurred at the base of a spent fuel vertical storage unit. Within several minutes, the Emergency Coordinator and other command and control and response staff manned the Emergency Control Center and the Emergency Coordinator was informed about the accident using facility communications. The response staff assessed the radiological hazards at the scene and determined the extent to which the spent fuel vertical storage unit was damaged. The exercise was terminated following the completion of the required objectives.

The licensee staff who observed but did not participate in the exercise conducted an exercise critique. The licensee staff candidly discussed the positive and negative findings associated with the emergency plan, facilities, equipment, licensee staff training, and overall event response effectiveness. The critique findings were used as a means of improving emergency response and were consistent with those identified by the inspectors.

c. Conclusion

The licensee staff responded to a simulated emergency in a timely manner, followed by effective hazard assessment, communications, and control. The licensee's critique findings were consistent with those identified by the inspectors. The inspectors concluded that the exercise adequately tested the licensee's emergency plan response capability.

7.0 Exit Meeting Summary

The inspectors presented preliminary inspection findings to members of the licensee management team at the conclusion of onsite inspection activities on July 22, August 12, and September 3 and 22, 2004. 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 36801	Organization, Management & Cost Controls
IP 37801	Safety Reviews, Design Changes, and Modifications
IP 40801	Self-Assessment, Audits
IP 71801	Decommissioning Performance and Status Review
IP 81700	Physical Security Assessment
IP 83750	Occupational Radiation Exposure
IP 83801	Inspection of Final Surveys at Permanently Shutdown Reactors

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
BRP	Big Rock Point
CAP	Corrective action program
CFR	Code of Federal Regulations
CoC	Certificate of Compliance
cpm	Counts per Minute
DCGL	Derived Concentration Guideline Level
DNMS	Division of Nuclear Material Safety
dpm	disintegrations per minute
HP	Health Physics
ISFSI	Independent Spent Fuel Storage Installation
ISSRC	Independent Site Safety Review Committee
LTP	License Termination Plan
NRC	Nuclear Regulatory Commission
ORISE	Oak Ridge Institute of Science and Education
pCi/g	picoCuries per gram
PSDAR	Post Shutdown Decommissioning Activities Report
RWP	Radiation Work Permit
SARs	Safety Analysis Reports
UFHSR	Updated Final Hazards Summary Report