

January 16, 2003

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 05000155/2002-007(DNMS)

Dear Mr. Haas:

On November 11, 2002, the NRC completed an inspection 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, the inspectors evaluated management oversight, decommissioning support activities, and spent fuel safety. At the conclusion of the on-site inspections on November 15 and December 5, 2002, the inspectors discussed the findings with you and members of your staff. The inspectors conducted a final telephone exit meeting with your staff on December 23, 2002.

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. The NRC staff also met with the Big Rock Point Citizen's Advisory Board on November 13, 2002.

Based on the results of this inspection, 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 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

K. Haas

-2-

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

Sincerely,

*/RA/*

Christopher G. Miller  
Decommissioning Branch

Docket No. 05000155  
License No. DPR-6

Enclosure: Inspection Report 05000155/2002-007(DNMS)

cc w/encl: R. A. Fenech, Senior Vice President,  
Nuclear, Fossil, and Hydro Operations  
Richard Whale, 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:

Reading File  
PUBLIC IE-01 w/encl  
RIII PRR w/encl  
M. Masnik, NRR w/encl  
J. Minns, LPM, NRR (e-mail)  
J. L. Caldwell, RIII w/encl  
M. L. Dapas, RIII w/encl  
RIII Enf. Coordinator w/encl

DOCUMENT NAME: C:\ORPCheckout\FileNET\ML030360554.wpd

To receive a copy of this document, indicate in the box: **C** = Copy without enclosure **E** = Copy with enclosure **N** = No copy

OFFICE	RIII									
NAME	Snell.js		Leemon		Kulzer		McCann		Miller	
DATE	01/16/03		01/16/03		01/16/03		01/15/03		01/16/03	

**OFFICIAL RECORD COPY**

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No. 05000155  
License No. DPR-06

Report No. 05000155/2002-007(DNMS)

Licensee: Consumers Energy Company

Facility: Big Rock Point Nuclear Plant

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

Dates: November 11 - December 23, 2002

Inspectors: William Snell, Health Physics Manager, (Lead Inspector)  
Roy Leemon, Reactor Decommissioning Inspector  
Ed Kulzer, Reactor Decommissioning Inspector

Approved by: Christopher G. Miller, Chief  
Decommissioning Branch  
Division of Nuclear Materials Safety

## EXECUTIVE SUMMARY

### Big Rock Point Restoration Project NRC Inspection Report 05000155/2002-007(DNMS)

This routine decommissioning inspection involved review of the licensee's performance related to safety assessments, design changes and modifications, self-assessments, audits, corrective actions, maintenance and surveillance, and spent fuel safety. Overall, the licensee's major decommissioning activities were properly monitored and controlled.

#### Facilities Management and Control

- The licensee's safety review program conformed to the requirements contained in 10 CFR 50.59. Licensee staff conducted safety reviews in accordance with Procedure D1.11, "10 CFR 50.59 and 10 CFR 50.82 Evaluation." (Section 1.1)
- The licensee's corrective action program for the identification, root cause evaluation, resolution and prevention of problems was effective in addressing problems and taking appropriate actions that would prevent recurrence. (Section 1.2)
- The licensee was performing effective management reviews for self assessments and audits. These self-assessments were conducted by technically qualified personnel. (Section 1.3)
- The Big Rock Point Restoration Safety Review Committee (RSRC), an outside peer review group, was actively engaged in improving the licensee's restoration program. (Section 1.4)

#### Decommissioning Support Activities

- The licensee adequately maintained the physical condition of the plant. Work controls associated with the cutting of a contaminated resin tank maintained doses ALARA [As-Low-As-Reasonably-Achievable]. There were no concerns in the areas of scheduling, or prioritization of maintenance work. (Section 2.1)
- The licensee took adequate action to ensure that systems important to the safe storage of spent fuel were protected against extreme cold weather. (Section 2.2)
- Revisions to the security plans met the requirements of 10 CFR 50.54(p), and did not decrease the effectiveness of the plans. (Section 2.3)

#### Spent Fuel Safety

- The Spent Fuel Pool (SFP) water level, temperature, chlorine, pH, and conductivity were within guidelines found in the Defueled Technical Specifications and Procedure D5.21, "Water Chemistry Guidelines." The SFP alarm, drainage, leak detection and instrumentation systems were operating satisfactorily. (Section 3.1)

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

### **1.0 Facilities Management and Control**

#### **1.1 Safety Reviews, Design Changes, and Modifications (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. The following items were reviewed:

- Procedure D1.11, "10 CFR 50.59 and 10 CFR 50.82 Evaluations," Revision 6;
- Letter to NRC dated September 17, 2002, "Dockets 50-155 and 72-043, License DPR-6, Big Rock Point Plant - 10 CFR 50.59 Report of Changes, Tests and Experiments;"
- Form BRP021, "Quality Review Form," dated 02/08/01; and
- Form BRP124, "10 CFR 50.59 and 10 CFR 50.82 (PSDAR [Post Shut Down Activity Report]) Evaluation," dated 02/26/01.

##### **b. Observations and Findings**

The licensee's process for meeting the intent of 10 CFR 50.59 was provided in Procedure D1.11. The inspectors verified that the requirements in Procedure D1.11 conformed to 10 CFR 50.59. For example, the inspectors determined that the criteria specified in 10 CFR 50.59 for determining whether NRC approval was required for a change, test, or experiment, were adequately addressed by the licensee.

The inspectors reviewed Forms BRP021 and BRP124 for the following safety evaluations prepared for various activities performed over the past year:

- Area and Air Monitoring Systems, 3-DOP-13, Rev. 6, Log #46-02;
- Remove Pipeway Coolers and Associated Ductwork, MA-02-0008, Log #79-02;
- Remove Miscellaneous Equipment From 2<sup>nd</sup> and 3<sup>rd</sup> Floors of Service Building, MA-02-0012, Rev. 0, Log #110-02;
- Weld Vent and Port Drain Cover, DFS-CLOS-4, Rev. 0, Log #122-02;
- Remove Plant Auxiliary Heater Boiler, MWP [Maintenance Work Procedure] 1.5.08, Rev. 0, Log #223-02;
- Containment Overhead Crane Structure Removal, MWP 1.5.05, Rev. 0, Log #331-02;

---

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

- Internal Structures Removal, MWP 1.6.06, Rev 0, Log #401-02;
- Alternate Radwaste Storage Building, MA-02-0027, Log #417-02;
- Install Piping to Drain SFP [Spent Fuel Pool] to CST [Condensate Storage Tank] and to "Batch Out" CST, MA-01-0024, Log #421-02;
- Install New 480V Service at ISFSI [Independent Spent Fuel Storage Island] Site Independent of the Plant, MA-02-0020, Rev. 0, Log #443-02;
- Seating an Installed Bundle in the W74 Canister, DFS [Dry Fuel Storage]-W74-2, Rev. 0, Log #554-02;
- Turbine Building Crane Removal, MWP 1.5.06, Rev. 0, Log #555-02;
- Demolition of Screen Well and Pump House Building, MWP 1.6.07, Rev. 0, Log #582-02; and
- Updated Final Hazards Summary Report (UFHSR) Chapter 9, UFHSR, Rev. 9, Log # 758-02.

The licensee's safety evaluations were adequate in scope, and appropriate personnel conducted the evaluations as required by Procedure D1.11. The inspectors determined that the licensee's conclusions regarding NRC approval were appropriate.

c. Conclusions

The licensee's safety review program conformed to the requirements contained in 10 CFR 50.59. Licensee staff conducted safety reviews in accordance with Procedure D1.11.

1.2 Corrective Action (40801)

a. Inspection Scope

The inspectors reviewed the licensee's corrective action program for the identification, resolution and prevention of problems, including Procedure D1.3, "Corrective Action," Rev. 10.

b. Observations and Findings

Procedure D1.3 detailed the licensee's program for documenting problems. Licensee personnel at all levels, including management, union and non-union, were encouraged to use the corrective action process. From April 2002 through September 2002, licensee personnel issued 259 condition reports (CRs). Non-supervisory employees issued 100 of the 259 CRs, Union and Craft workers issued 46 and Non-Union workers issued 54. Corrective Action Reports issued during the previous 18-month period, totaled 156 for October 2000 through March 2001, 191 for April 2001 through September 2001, and 209 for October 2001 through March 2002. The licensee believes the upward trend reflected the effect of the increasing activities associated with the dry cask storage project.

The licensee performed trend analyses of CRs for affected work processes, and implemented actions to address adverse trends. For example, the licensee attributed approximately 50 percent of the CRs issued during the April-September 2002 reporting period to human error. To address this, the licensee had implemented error reduction techniques such as self checking, pre- and post-job briefs, verification and validation.

The inspectors conducted a detailed review of the following CRs, which included a review of the licensee's evaluation and corrective actions:

- C-BRP-01-0283, Worker Crossed RCA Boundary at CCA, written 9/20/01;
- C-BRP-01-0292, Incidental Oil Release, written 9/26/01;
- C-BRP-01-0312, Incomplete (one-digit) Display on RP&ES Instrument Report, written 10/18/01;
- C-BRP-02-0296, DOP-12 Required Sampling Missing, written 7/3/02;
- C-BRP-02-0336, Instructions on Work Order Not Followed As Stated, written 8/1/02;
- C-BRP-02-0345, Debris Found Floating in the SFP, written 8/10/02;
- C-BRP-02-0413, Form 741 Not Completed for Rad Waste Shipment, written 10/3/02;
- C-BRP-02-0428, Quality Review Form did not Receive Complete SRC Review Prior to Closeout, written 10/16/02;
- C-BRP-02-0430, Defective Battery/No Tag-out, written 10/17/02;
- C-BRP-02-0433, Hole Cut in the Floor - Turbine Deck, written 10/21/02;
- C-BRP-02-0440, DFS [Dry Fuel Storage] Use of Red Tagged Scaffold, written 10/29/02;
- C-BRP-02-0458, Canister Surface Contamination Found > 1000 dpm/100 cm<sup>2</sup> written 11/11/02; and
- C-BRP-02-0467, Worker Allowed to Enter High Radiation Area Without Radiation Protection Being Present, written 11/13/02.

The NRC inspectors determined that the licensee's actions taken following the initiation of CRs were adequate. Licensee staff assigned appropriate levels of significance for follow-up actions on CRs and ensured that root cause analyses were complete and were adequate in scope and in corrective actions. For each CR, the NRC inspectors examined Form BRP156 "Condition Report" dated 02/05/02, which documented and tracked CRs. The NRC inspectors noted that in each case, the CR had received the appropriate management attention through the Corrective Action Review Board (CARB) and Safety Review Committee (SRC) reviews.

The NRC inspectors identified that the licensee granted a high number of extensions to the due date of CRs. For example, during the January through September 2002 period, the number of CRs with due date extensions varied monthly from a low of 12 to a high of 27. The licensee also noted this trend and had been working to reduce the number of extensions. For the month of October 2002, the CRs with extensions had been reduced to five. The licensee attributed the number of CRs that were being extended to the additional resources being used on the dry fuel storage project.

c. Conclusions

The licensee's corrective action program for the identification, root cause evaluation, resolution and prevention of problems was effective in addressing problems and taking appropriate actions that would prevent recurrence.

1.3 Self-Assessment (40801)

a. Inspection Scope

The inspectors evaluated management reviews of self-assessments and corrective actions. The inspectors evaluated whether the self-assessments and audits were performed by technically qualified personnel, and whether corrective actions were initiated to implement recommendations that resulted from the self-assessments and audits.

b. Observations and Findings

The inspectors reviewed the licensee's summarization of approximately 500 self-assessments. The licensee conducted monthly trend analysis on the self-assessments for developing adverse conditions, which then could be targeted for assessment and possible corrective action.

The NRC inspectors reviewed several of the self-assessments, some of which had resulted in the initiation of a Condition Report. The qualifications of the individuals reviewing these assessments were also reviewed and found to be adequate.

c. Conclusions

The licensee was performing effective management reviews for self assessments and audits. These self-assessments were conducted by technically qualified personnel.

1.4 Restoration Safety Review Committee Meeting (40801)

a. Inspection Scope

The inspectors observed meetings by the Big Rock Point Restoration Safety Review Committee.

b. Observations and Findings

Administrative Procedure D1.8, "Big Rock Point Restoration Safety Review Committee (RSRC)," Revision 0, documents the responsibilities for the RSRC. The purpose of the

RSRC was to assist and advise licensee management on issues important to the safety and economic success of the restoration project. The RSRC, composed of five individuals from outside Consumers Energy Company, met at least twice per year and were provided site documents for review prior to meetings.

The inspectors observed the RSRC members during a meeting with the licensee on November 13 and 14, 2002. The committee and licensee personnel candidly discussed all aspects of the restoration program with open dialogue focused on activities that would improve the program.

c. Conclusions

The Big Rock Point RSRC, an outside peer review group, was actively engaged in improving the licensee's restoration program.

**2.0 Decommissioning Support Activities**

2.1 Maintenance and Surveillance (62801)

a. Inspection Scope

The inspectors conducted a tour of the plant facilities to assess the general physical condition of the structures, systems and components associated with the safe storage of spent fuel. The inspectors observed cutting a contaminated tank using a diamond rope, and reviewed the associated As-Low-As-Reasonably-Achievable (ALARA) controls. The inspectors also reviewed maintenance system logs and records, and attended maintenance meetings to determine scheduling and work priorities.

b. Observations and Findings

The inspectors toured the plant facilities and determined that the overall condition of the structures, systems and components associated with the safe storage of spent fuel were adequate. The inspectors also attended daily pre-job briefs.

During site tours, the NRC inspectors observed the licensee's work using a diamond cutting rope to cut out a contaminated resin tank. This was the licensee's first attempt using the diamond cutting rope to cut the tank. Licensee staff used this operation to reduce worker dose, since the tank being cut was located in a highly contaminated area of the facility. A concrete floor separated the machinery from the tank. The licensee monitored the operation from a remote third location. The licensee used remote control cameras and communication sets to monitor the cutting operation. The licensee's workers encountered a number of problems during the initial cutting operations. Whenever workers encountered a problem, they appropriately stopped work and talked about how to resolve the problems while minimizing their doses. The licensee intended to use the diamond rope for cutting operations throughout the facility. However, because of the problems encountered, the licensee stopped work in order to bring in a consultant with additional experience. The licensee reviewed the doses associated with this job and determined that a total of 49 person-rem had been received, which was 17 person-rem below the pre-job estimates.

At daily management meetings, the managers discussed maintenance work activities and set work priorities on items needing immediate attention. The inspectors attended the daily maintenance meetings, reviewed maintenance backlogs, scheduling, and prioritization of work. The inspectors had no concerns.

c. Conclusions

The licensee adequately maintained the physical condition of the plant. Work controls associated with the cutting of a contaminated resin tank maintained doses ALARA. There were no concerns in the areas of scheduling, or prioritization of maintenance work.

2.2 Cold Weather Preparations (71714)

a. Inspection Scope

The inspectors evaluated the licensee's actions to effectively protect safety-related systems against extreme cold weather.

b. Observations and Findings

The inspectors reviewed the implementation of Procedure No. O-VAS-5B, "Cold Weather Checklist," Revision 3. The purpose of the procedure was to align ventilation systems and various plant equipment for cold weather operations. Licensee personnel initiated the checklist on September 23, 2002, and completed it on October 29, 2002. The inspector determined that the procedure was adequate in scope and that all procedural steps had been appropriately signed off and dated as required.

c. Conclusions

The licensee took adequate action to ensure that systems important to the safe storage of spent fuel were protected against extreme cold weather.

2.3 Safeguards Program Implementation (IP81700)

a. Inspection Scope

The inspectors reviewed Revision 34, dated October 3, 2001, to the Defueled Security Plan; Revision 35, dated February 13, 2002, to the Defueled Security Plan; Revision 36, dated May 3, 2002, to the Defueled Security Plan; and Revision 37, dated November 26, 2002, to the Defueled Security Plan. Additionally, Revision 9, dated February 13, 2002, to the Defueled Security Contingency Plan, and Revision 18, dated February 13, 2002, to the Defueled Security Suitability, Training, and Qualification Plan were also reviewed. The purpose of the review was to verify that the changes did not decrease the effectiveness of the security plans. Revisions to the security plans met the requirements of 10 CFR 50.54(p).

b. Observations and Findings

The revisions to the security plans were primarily administrative in nature, and addressed, in addition to other issues, actions required by a Confirmatory Action Letter,

dated December 14, 2001, the upgraded door capacity of the alarm station, corrected drawings, security measures for movement of spent fuel, and different contingency weapons.

c. Conclusions

Revisions to the security plans met the requirements of 10 CFR 50.54(p), and did not decrease the effectiveness of the plans.

Review of these security plan changes does not relieve the licensee from complying with applicable security advisories and orders issued by the NRC.

**3.0 Spent Fuel Safety**

3.1 Spent Fuel Pool Safety (60801)

a. Inspection Scope

The inspectors reviewed and evaluated spent fuel pool (SFP) instrumentation, alarms, drainage and leakage detection systems, configurations of piping, and chemistry and cleanliness control programs.

b. Observations and Findings

The inspectors accompanied an operator on one of his rounds where the operator obtained instrument readings. The instrumentation readings included data for the SFP, drainage systems, alarm systems and leakage detection systems. All systems were operating within the operating specifications. The manual readings were in agreement with instrumentation readings in the operators' monitoring station. The operators in the monitoring station took hourly readings or twice per shift readings in some cases, and noted any trends.

There were no hoses or valves identified in unusual lineups that could lead to siphoning of the SFP. The SFP leakage detection system was divided into eight sections. No leakage was observed in any of the sections. The temperature and level of the SFP on December 9, 2002, was 65°F (degrees Fahrenheit) and 630.57 feet, respectively. These were within the limits of the Big Rock Point Defueled Technical Specifications which required the temperature to be maintained greater than 40°F and less than 140°F, and the water level to be maintained at or above 630 feet.

Procedure D5.21, "Water Chemistry Guidelines" dated August 16, 2001, set guidelines for chlorine, pH, and conductivity of water in the SFP. The NRC inspectors reviewed the water purity results for the previous six months and found no problems. The inspectors observed that the water in the SFP was clean and clear.

c. Conclusions

The SFP water level, temperature, chlorine, pH, and conductivity were within guidelines found in the Defueled Technical Specifications and Procedure D5.21, "Water Chemistry Guidelines." The SFP alarm, drainage, leak detection and instrumentation systems were operating satisfactorily.

#### **4.0 Citizens Advisory Board Meeting**

On November 13, 2002, NRC staff and management representatives attended a meeting of the Big Rock Point Citizens Advisory Board (CAB). The NRC informed the Board of NRC activities regarding the Big Rock Point decommissioning project, and solicited stakeholder input into the development of the Regional Master Inspection Plan (MIP) for Big Rock Point. Each year, the NRC Region III develops a MIP to facilitate the efficient allocation of inspection resources and to specify the inspection effort planned for each inspection procedure. During the meeting, the NRC described the Agency's decommissioning inspection program, discussed the licensee's performance over the previous 12 months, answered questions from the CAB members, and provided an opportunity for any input regarding the development of the MIP for CY(calendar year) 2002.

#### **5.0 Exit Meeting**

The inspectors presented preliminary inspection results to members of licensee management at the conclusion of onsite inspections on November 15, December 5, and December 13, 2002, with additional inspection results provided by telephone on December 23, 2002. 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  
K. Pallagi, Radiation Protection & Environmental Services Manager  
W. Trubilowicz, Dry Fuel Storage Manager  
G. Withrow, Engineering, Operations & Licensing Manager  
M. Bourassa, Corrective Action Administrator  
M. Ruhlman, Operations Supervisor  
T. Petrosky, Public Relations  
R. McCaleb, Nuclear Performance Assessment

#### **INSPECTION PROCEDURES USED**

IP 37801	Safety Reviews, Design Changes, and Modifications
IP 40801	Self Assessment, Auditing, and Corrective Action
IP 60801	Spent Fuel Pool Safety
IP 62801	Maintenance and Surveillance
IP 71714	Cold Weather Preparations
IP 81700	Safeguards Program Implementation

## ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

None

### Closed

None

### Discussed

None

## LIST OF ACRONYMS USED

ALARA	As-Low-As-Reasonably-Achievable
CAB	Citizens Advisory Board
CARB	Corrective Action Review Board
CCA	Contamination Controlled Area
CFR	Code of Federal Regulations
CR	Condition Report
CST	Condensate Storage Tank
CY	Calendar Year
DFS	Dry Fuel Storage
ISFSI	Independent Spent Fuel Storage Island
MIP	Master Inspection Plan
NRC	Nuclear Regulatory Commission
PSDAR	Post Shut Down Activity Report
RCA	Radiation Controlled Area
RP	Radiation Protection
RP & ES	Radiation Protection & Environmental Services
RSRC	Radiation Safety Review Committee
RWP	Radiation Work Permit
SFP	Spent Fuel Pool
SRC	Safety Review Committee
UFHSR	Updated Final Hazards Summary Report

## LICENSEE DOCUMENTS REVIEWED

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