

June 16, 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 50-155/2000003(DNMS)

Dear Mr. Haas:

On May 26, 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, decommissioning support activities, 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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Sincerely,

IRA/
Bruce L. Jorgensen, Chief
Decommissioning Branch

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

Enclosure: Inspection Report 50-155/2000003(DNMS)

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-155
License No: DPR-06

Report No: 50-155/2000003(DNMS)

Licensee: Consumers Energy Company

Facility: Big Rock Point Nuclear Plant

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

Dates: May 1-26, 2000

Inspectors: W. Snell, Health Physics Manager
M. LaFranzo, Radiation Specialist
P. Harris, Licensing Project Manager

Approved By: Bruce L. Jorgensen, Chief
Decommissioning Branch
Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

Big Rock Point Restoration Project NRC Inspection Report 50-155/2000003(DNMS)

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

Facility Management and Control

- The licensee appeared to have sufficient staffing and management to ensure that work was being completed as scheduled while continuing to maintain a safe work environment.
- The licensee should submit the Licensee Termination Plan (LTP) to the Commission prior to January 2003. Until the Commission terminates the license for the Big Rock Point facility, the license continues in effect beyond its May 31, 2000, expiration date.

Decommissioning Support Activities/Spent Fuel Safety

- The licensee has been conducting all Technical Specifications surveillances as required.
- Material integrity of Systems/Structures/Components (SSCs) important to safe storage of spent fuel and safety in decommissioning was being maintained. Housekeeping was being properly maintained.

Radiological Safety

- Work planning, conduct of work, and radiation protection practices observed during the inspection regarding the removal of the resins and sludge from several tanks and sumps were well performed, as were actions to maintain occupational exposures As-Low-As-Reasonably-Achievable (ALARA).
- One Unresolved Item was identified regarding the failure of an operator to close, or verify closed, a valve.
- The licensee appeared to possess adequate knowledge and resources to ensure the safe handling and transport of licensed material in solid waste form. No violations of NRC requirements were identified and no concerns were noted by the inspector.
- Plant activities with ongoing or potential radiological safety significance were being well controlled. Personnel were cognizant of radiological safety issues pertinent to the work they were performing.

Report Details

Summary of Plant Activities

During the inspection period the licensee began the removal of spent resin and sludge from several tanks and sumps with the help of robotics. The removal of piping and components from the Recirc Pump Room was also continuing, four neutron windows were moved from the reactor vessel to the Spent Fuel Pool (SFP), the exterior equipment hatch crane was removed in preparation for installation of a new hatchway into containment, and planning was underway for the cutting up of the grid bars. The licensee was also supporting a joint effort between Florida International University and the Department of Energy by providing a location for them to test newly developed equipment to decontaminate piping.

1.0 Facility Management and Control

1.1 General

The inspector conducted reviews of ongoing plant activities and attended licensee meetings in order to assess overall facility management and controls. Specific events and findings are detailed in the sections below.

1.2 Organization and Staffing (36801)

a. Inspection Scope

Evaluate the licensee's decommissioning organization and staffing.

b. Observations and Findings

On May 10, 2000, Consumers Energy announced that Kurt M. Haas had been named the new General Manager - Big Rock Point Decommissioning Project, effective June 1, 2000. Mr. Haas would replace Ken Powers, who was retiring from Consumers Energy effective June 1, 2000. Mr. Haas had been with Consumers since 1976, and was at the time of his selection the Director of Engineering at the Palisades Nuclear Power Plant.

The core staffing level for the site was a little over 200 individuals. With the exception of Mr. Power's retirement, the management team had remained relatively stable. Based on reviews and observations of work being performed, it appeared that tasks were being sufficiently manned to ensure that the work would be accomplished in a safe manner. Overtime was not observed to be routine and overall staff morale appeared to be very good.

c. Conclusion

The licensee appeared to have sufficient staffing and management to ensure that work was being completed as scheduled while continuing to maintain a safe work environment.

1.3 License Expiration

a. Inspection Scope

Evaluate the expiration of the Big Rock Point (BRP) license pertinent to 10 CFR Parts 50.51 and 50.82.

b. Observations and Findings

10 CFR 50.51, "Continuation of license," states that commercial power reactor licensees must either renew their operating license in accordance with the rules and regulations described in Part 54 to continue reactor plant operation beyond its 40-year licensed-operating life or file an application for license termination pursuant to 10 CFR 50.82. Should a licensee elect to permanently cease reactor power operations, its license continues in effect beyond its expiration date (40-year licensed-operating life) to authorize ownership and possession of the facility until the Commission notifies the licensee in writing that the license is terminated. This, in effect, assures that a licensee completes the decommissioning of the facility within 60 years of the permanent cessation of power operations (10 CFR 50.82(a)(3)). The BRP license states that the license, as amended, expires at midnight, May 31, 2000.

On June 26 and September 23, 1997, Consumers Energy submitted the shutdown certifications pursuant to 10 CFR 50.82(a)(1) and therefore, had not pursued renewal of its license to operate. Hence, in accordance with 10 CFR 50.51, Consumers Energy must now file an application to terminate its license. 10 CFR 50.82(a)(9) requires that this application must be accompanied or preceded by a LTP and the LTP must be submitted at least two years before termination of the license. Currently, Consumers plans to complete its decommissioning process and terminate its licensee on or about January 2005.

c. Conclusion

The licensee should submit the LTP to the Commission prior to January 2003. Until the Commission terminates the license for the BRP facility, the license continues in effect beyond its May 31, 2000, expiration date.

2.0 **Decommissioning Support Activities/Spent Fuel Safety**

2.1 Technical Specification Surveillance Requirements (62801, 60801)

a. Inspection Scope

Review surveillance requirements specified by the Technical Specifications.

b. Observations and Findings

The inspectors reviewed documentation and discussed with licensee staff the various activities regarding the conducting of surveillance requirements specified by the Technical Specifications (TS). The following surveillances (and the required frequency) were reviewed:

SFP water level, temperature and radiation levels (twice per shift).
SFP radiation monitor(s) (channel check once per day).
Offsite power (once per day).
SFP radiation monitor(s) (channel calibration (once per 31 days).
SFP pH, conductivity, main diesel generator (once per 31 days).
Proper storage of spent fuel assemblies and other materials in SFP (semi-annual or within 4 hours of moving fuel).
Check sources (once per six months or within six months of storage).
SFP makeup flow and pump capacity (once per 12 months).
Containment closure and radiation levels (prior to moving fuel).
Radiation levels (once per shift when moving fuel and at completion of fuel movement).
Reactor crane loads and containment closure (prior to moving load over SFP).

Written verification of the above surveillances was based on reviews of: the daily *Plant Monitoring Station Log Sheets* and *Operations Round Sheets* between August 1, 1999 and May 22, 2000; test results dated April 27, 2000 and March 30, 2000, from Procedure T7-28, *Main Diesel Generator Test*; Chemistry Procedure T30-62/RCP-43 Log Book for November 30, 1999 to May 3, 2000; Procedure T365-26 *Flow Test of Spent Fuel Pool (SFP) Makeup Water Line*, for February 4, 1999 and February 3, 2000; Procedure T180-27 *Spent Fuel Pool Inspections*, for September 21, 1999 and March 15, 2000; and Procedure T180-18/RM-52 *Sealed Source Leak Test*, for August 26, 1999 and February 16, 2000. Also reviewed was Procedure O-RMS-4, *Removal of the Channel Rack From the Spent Fuel Pool*, and associated documentation regarding the February 25, 2000, removal of the "C" channel rack from the SFP, including a diagram of the travel path, the "Proof Load Certificate", the "Engineering Analysis Work Sheet", Procedure RM-60 *Movement of Radwaste Material Outside of Posted Area*, RM-60-1 *High Dose Rad Movement Checklist* for February 26, 2000, and RM-60-2 *Rad Material Movement Plan* for February 26, 2000.

Discussions with licensee personnel determined that individuals were cognizant of TS surveillance requirements, knew when they needed to be performed, who the responsible parties were for conducting the surveillances, and where the written records of surveillances were located. The review of the above documents indicated that the documentation was thorough, all surveillances were being completed as required, and no discrepancies were noted.

c. Conclusion

The licensee has been conducting all TS required surveillances as required.

2.2 Plant Tours to Evaluate Material Conditions and Housekeeping (62801)

a. Inspection Scope

The inspector conducted plant tours to evaluate the material integrity of Systems/Structures/Components (SSCs) necessary for the safe storage of spent fuel and conduct of safe decommissioning, and to observe and assess the status of facility housekeeping.

b. Observations and Findings

Observations from plant tours showed that the material integrity of SSCs Important to Safe Storage of Spent Fuel (ISSSF) was being maintained. The inspector discussed tour observations with plant management. The inspector also observed that plant management was actively monitoring plant material conditions. During this inspection period the plant's material condition remained at a good level.

Housekeeping observations included areas adjacent to and containing SSCs necessary for the safe storage of spent fuel, effluent control, or radiation protection and monitoring. All areas of the plant were kept adequately clean; dismantlement debris were promptly placed into metal boxes. Portable cables and temporary hoses were routed so as not to cause tripping hazards. General area housekeeping was adequate during this period with no specific areas of inspector concern.

c. Conclusion

Material integrity of SSC's important to safe storage of spent fuel and safety in decommissioning was being maintained. Housekeeping was being properly maintained.

3.0 Radiological Safety

3.1 General

The inspectors conducted a review of ongoing and planned decommissioning activities in order to assess the adequacy and implementation of radiological safety practices. Specific findings are detailed below.

3.2 Resin and Tank Cleaning Project (83750)

a. Inspection Scope

Licensee procedures and practices affecting occupational radiation exposure associated with the removal of resins and sludge from several tanks and sumps were evaluated. Areas examined included: planning, preparation, procedures and contingencies; conduct of work activities; external exposure control; control of radioactive materials and contamination; and maintaining occupational exposure ALARA.

b. Observations and Findings

The resin and tank cleaning project included the removal of approximately 400-500 cubic feet of spent resin and sludge from the resin disposal and concentrate tanks and the room they were in, the rad waste sump and drain line from the disposal tank to the radwaste sumps, the enclosure dirty and clean sumps in containment, two clean waste receiver tanks, and two dirty waste receiver tanks. The resin and sludge collected from this project was being placed into high integrity containers and dewatered for shipment to Barnwell, South Carolina, for disposal. A large portion of this work was to be done with the use of robotics, which was contracted out to Nukem Nuclear Technologies Corporation.

The inspector reviewed Radiation Work Permits (RWPs) B003028, *Resin and Tank Cleaning Project (Radiation Areas)* and B003030, *Resin and Tank Cleaning Project*

(HRA/LHRA), the twelve *Resin/Tank Clean Out Project Contingency Plans*, and six draft Nukem procedures regarding the operation of their equipment. The documentation appeared to be adequate in scope and depth to ensure the work was conducted in a radiologically safe manner. Planning included taking steps to minimize dose to workers, and included contingency planning for potential problems. The ALARA goal for the job was approximately 12 rem.

To help reduce dose, the licensee cut a 36 inch diameter hole through three feet of concrete into the room containing the resin and concentrate tanks. This allowed workers to enter the room without having to pass through other high radiation areas, and also shortened the length of hoses by about 150 feet. Other actions employed included the use of teledosimetry, shielding hoses with lead blankets, using water shields, placing all hoses in continuous plastic sleeving to minimize the spread of contamination in the event of a leak, and controlling personnel access to the work areas. Observations of work in progress indicated that the Radiation Protection Technicians (RPTs) were doing a good job of controlling access to the area, and the other controls to minimize dose were being effectively implemented. However, the total dose to date for this project was greater than expected. Although the work was only about 40 percent completed, the total dose was about 60 percent of what was expected. The licensee stated that this was a combination of higher than expected doses in some areas and various phases of the work taking longer than expected. Discussions with the licensee indicated that they were carefully monitoring activities, were exploring other options for reducing dose, and were still working towards meeting the original ALARA goal of 12 rem total.

c. Conclusions

Work planning, conduct of work, and radiation protection practices observed during the inspection regarding the removal of the resins and sludge from several tanks and sumps were well performed, as were actions to maintain occupational exposures ALARA.

3.3 Mispositioned Valve (83750)

a. Inspection Scope

Condition Report C-BRP-00-0108, *Mispositioned Valve Resulting in Containment Sump Overflow*, was reviewed.

b. Observations and Findings

During preparation for the resin tank and sump project work, a Temporary Operating Instruction (TOI) was developed to ensure a proper valve lineup for supplying treated waste water to the interior Cable Penetration Room. The TOI required the closure or the verification of closure for valves VSFP-21, Treated Waste to Fuel Pit Filter, VSFP-22, Treated Waste to Vacuum Header, and VSFP-137, Treated Waste to Distribution Header. On May 9, 2000, an operator performing the TOI verified that valves VSFP-22 and VSFP-137 were closed. However, the operator assumed VSFP-21 was closed without verifying closure because of wording on a tag hanging from the valve that stated, "do not send treated waste to the SFP due to ESC line leakage". In fact, VSFP-21 was open.

As a result of VSFP-21 being open, when the treated waste water pump was placed in service, treated waste water was sent from the treated waste tank to the surge tank,

which overflowed to the clean sump in containment. This continued until the treated waste tank was pumped dry, filling both the clean sump, the control rod drive sump, and the control rod drive sump room floor, with approximately 1750 gallons of water. An operator making rounds noted the treated waste tank was empty and secured the treated waste pump. No significant radiological concerns resulted from this incident.

The licensee is investigating this incident, including whether VSFP-21 should have already been closed based on a previous action. Pending the results of this investigation, and in particular whether VSFP-21 should have been previously closed, this issue is being tracked as an Unresolved Item (URI 50-155/2000003-01).

c. Conclusions

One Unresolved Item was identified.

3.4 Transportation of Radioactive Materials (86740 and 86750)

a. Inspection Scope

The inspector's objective was to determine licensee compliance with NRC and U.S. Department of Transportation (USDOT) regulations. Specifically, the inspection focused on a single Low Specific Activity (LSA) and Surface Contaminated Object (SCO) shipment in the areas of 1) shipping documentation; 2) radiation survey techniques and results; and 3) emergency procedures.

b. Observations and Findings

The inspector's review focused on a routine shipment of licensed material to a processing facility in Oak Ridge, Tennessee.

On May 25, 2000, the licensee shipped three strong, tight metal containers containing licensed material. Two of the containers were considered LSA shipments which contained asbestos and possibly small quantities of licensed material. The third container was considered a SCO shipment and contained surface contaminated metal. All waste was in solid form. The inspector reviewed the documentation for all packages which appeared to contain all the information required by NRC/USDOT. All documentation regarding the shipment was presented and explained to the driver of the truck prior to departure.

The inspector interviewed licensee staff that performed the radiation surveys on the vehicle and also demonstrated radiation survey techniques to the inspector. The inspector found that the licensee staff displayed appropriate knowledge and survey techniques to ensure compliance with NRC/USDOT regulatory requirements.

The inspector interviewed staff at the licensee's monitoring station. The phone number for the monitoring station was located on the shipping papers as was the emergency phone number for the shipment. The inspector noted that the staff at the monitoring station had a sufficient amount of knowledge to ensure that appropriate emergency response information would be transmitted to the accident scene via telephone if necessary. According to licensee staff, further response would depend on the type of accident and mitigation and cleanup resources in the area.

c. Conclusions

The licensee appeared to possess adequate knowledge and resources to ensure the safe handling and transport of licensed material in solid waste form. No violations of NRC requirements were identified and no concerns were noted by the inspector.

3.5 Other Radiological Safety Related Activities (83750 and 86750)

a. Inspection Scope

Through observations of work activities, discussions with licensee and contractor personnel, and site tours, the inspectors evaluated various activities with ongoing or potential radiological safety significance.

b. Observations and Findings

The licensee was supporting a joint effort between Florida International University and the Department of Energy by providing a location for them to test newly developed equipment to decontaminate piping. Although no pipe had been decontaminated through the end date of the inspection, the intent was to test the equipment with minimally contaminated piping from the Big Rock Point Plant. The inspectors toured the area where the decontamination equipment was staged and reviewed the actions that the licensee was taking to ensure there was no spread of contamination from the process. It appeared the licensee was being very proactive in this regard, and was being very thorough in addressing potential release pathways.

In addition, activities involving the removal of piping and components from the Recirc Pump Room were observed, and planning efforts involving the removal of four neutron windows and the grid bars from the SFP were reviewed. Inspectors conducted numerous tours in and around the Big Rock Point site, including the Turbine Building, Containment, and the Radwaste Building. The site and facilities were examined for adequate postings, control of contamination, proper segregation of waste, and ALARA management. Personnel were questioned as to their work assignments and knowledge of radiological controls pertinent to the work they were performing. No concerns were identified.

c. Conclusions

Plant activities with ongoing or potential radiological safety significance were being well planned and controlled. Personnel were cognizant of radiological safety issues pertinent to the work they were performing.

4.0 Exit Meeting

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on May 26, 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

M. Bourassa, SFP Clean Out & Licensing Supervisor
M. Lesinski, Radiation Protection and Environmental Services Manager (RP&ES)
R. McCaleb, Nuclear Performance Assessment, Site Lead (NPAD)
W. Trubilowicz, Cost, Scheduling & Purchasing Manager
R. Wills, Radwaste Superintendent
G. Withrow, Engineering, Operations & Licensing Manager

INSPECTION PROCEDURES USED

IP 36801: Organization, Management and Cost Controls
IP 62801: Spent Fuel Pool Clean Out Project Activities
IP 60801: Spent Fuel Pool Safety
IP 71801: Decommissioning Performance and Status Review at Permanently Shut Down Reactors
IP 83750: Occupational Radiation Exposure
IP 86740: Inspection of Transportation Activities
IP 86750: Solid Radwaste Management and Transportation of Radioactive Materials

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

URI 50-155/2000003-01 Failure to close or verify closed valve VSFP-21.

Closed

None

Discussed

None

LIST OF ACRONYMS USED

ALARA As-Low-As-Reasonably-Achievable
HP Health Physics
ISSSF Important to Safe Storage of Spent Fuel
LTP Licensee Termination Plan
LSA Low Specific Activity
NRC Nuclear Regulatory Commission
RP Radiation Protection
RPT Radiation Protection Technician
RWP Radiation Work Permit
SFP Spent Fuel Pool
SCO Surface Contaminated Object
SSC Systems/Structures/Components
USDOT United States Department of Transportation

LICENSEE DOCUMENTS REVIEWED

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