

August 4, 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 50-155/2000004(DNMS)

Dear Mr. Haas:

On July 21, 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. Licensee action is required in the safeguards area regarding the bullet resistance of the central alarm station.

Based on the results of this inspection, the NRC has determined that one violation of NRC requirements occurred. This violation is being treated as a Non-Cited Violation (NCV), consistent with Appendix C of the Enforcement Policy. The NCV is described in the enclosed inspection report. If you deny the occurrence or severity level 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 copies to the Regional Administrator, Region III, and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

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K. Haas

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We will gladly discuss any questions you have concerning this inspection.

Sincerely,

/RA by R. Landsman acting for/

Bruce L. Jorgensen, Chief
Decommissioning Branch

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

Enclosure: Inspection Report 50-155/2000004(DNMS)

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 50-155/2000004(DNMS)

Licensee: Consumers Energy Company

Facility: Big Rock Point Nuclear Plant

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

Dates: June 5-July 26, 2000

Inspectors: William Snell, Health Physics Manager
Gary Pirtle, Safeguards Specialist
Roy Leemon, Decommissioning Inspector
Paul Harris, License Project Manager
Ed Kulzer, Decommissioning Inspector

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

EXECUTIVE SUMMARY

Big Rock Point Restoration Project NRC Inspection Report 50-155/2000004(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

- Overall management and control of the decommissioning process were being effectively performed. (Section 1.1)
- Modification work packages reviewed were complete and comprehensive, adequately addressed 10 CFR 50.59 regulatory requirements, and disclosed no apparent unreviewed safety question nor adverse environmental impacts. (Section 1.2)
- The licensee demonstrated initiative in acquiring diverse, independent reviews of significant plans or proposals and acted responsibly to place findings into a tracking system to ensure technical resolution and management review. (Section 1.3)
- The corrective action reporting system was being adequately implemented and managed. (Section 1.4)

Decommissioning Support Activities

- Maintenance and surveillance activities reviewed were being adequately implemented and managed. (Section 2.1)
- Security equipment functioned as designed. Security plans and procedures were adequate, and security documents reviewed were complete and accurate. Training was completed as required. (Section 2.2)
- Physical fitness testing for security officers required licensee action, and bullet resistance for the alarm station door requires further security staff action. (Section 2.2)

Spent Fuel Safety

- Spent fuel pool chemistry and cleanliness were being adequately controlled. (Section 3.1)

Radiological Safety

- Effective radiological controls were employed during the processing and removal of grid bars from the reactor vessel and the removal of resins and sludge from several tanks and sumps. (Section 4.2)

- Observations of filling, loading and shipment of a HIC containing radioactive waste for disposal identified no concerns. (Section 4.3)
- The licensee's environmental sampling program was being carefully implemented for site characterization. (Section 4.4)
- One Non-Cited Violation was identified for the failure to properly complete a Temporary Operating Instruction in that a valve was not verified closed. (Section 4.5)

Report Details

Summary of Plant Activities

During the inspection period the licensee continued the removal of spent resin and sludge from several tanks and sumps and continued with the removal of piping and components from the Recirc Pump Room. The grid bars were cut up and moved from the reactor vessel to the Spent Fuel Pool, a HIC was filled and shipped, and a resin tank was removed from service. The licensee's support of a joint effort between Florida International University and the Department of Energy (FIU/DOE), which including providing a location for the testing of newly developed equipment to decontaminate piping, was concluded and all FIU/DOE equipment was removed from the site.

1.0 Facility Management and Control

1.1 Organization, Management & Cost Controls (36801)

a. Inspection Scope

The inspector interviewed the new plant general manager, attended two Citizens Advisory Board meetings, and reviewed the licensee's activities involving overall management and control of the decommissioning process.

b. Observations and Findings

Staffing of the Monitoring Station

As a result of the departure of two monitoring station operators, management determined a need for more shifts of operators as a means to reduce the time an operator spends working on the back shifts. To meet this resource need, a training class has been scheduled for the fall of 2000 for training maintenance workers (decommissioning workers class 1) as monitoring station operators. Although some of the existing monitoring station workers are also certified fuel handlers, the maintenance workers will not be trained as certified fuel handlers. Some of the decommissioning workers class 1 now in the maintenance department will also have the opportunity to be trained as equipment operators.

Cost and Budget

The Cost, Scheduling and Purchasing manager informed the inspector that the decommissioning expenditures for the year 2000 were on budget.

Dry Fuel Storage Project Schedule

The current plans for the Dry Fuel Storage Project are to start loading dry fuel storage casks in October 2001. Based on discussions with the Dry Fuel Storage Project Manager this schedule may have to be slipped because of delays with cask part vendors performing quality assurance activities.

Citizen Advisory Board Meetings

The inspector attended the Big Rock Point Citizens Advisory Board (CAB) Meeting on June 27, 2000. The meeting included comments by the new general manager who introduced himself and talked about his work history and why he took the job at Big Rock Point; an update on dry fuel storage, including dry fuel storage location and hardware, storage cask construction, weight, and dimensions, locations of Operating Spent Fuel Storage Sites in the US, regulations guiding dry fuel storage, plans and tentative schedule for constructing the Interim Spent Fuel Storage Installation (ISFSI); the reactor vessel shipment schedule (late 2002 or early 2003 by truck to Petoskey and then by rail to Barnwell, South Carolina) and the steam drum shipment schedule (mid to late 2001 by truck then rail to Memphis, Tennessee); and, the Bulk Material Clearance Program which addresses debris description (buildings, foundations, and soils associated with foundations), debris classification - not exposed to radiation, exposed to radiation with no detectable radioactivity, and debris exposed to radiation with detectable radioactivity (which would be shipped to a low-level waste facility).

The inspectors also attended a July 20, 2000, CAB Meeting. During this meeting the licensee gave a presentation on their site radiological characterization and environmental sampling program. Mr. Bruce Jorgensen from NRC Region III discussed the NRC's confirmatory environmental sampling program for decommissioning reactors. The CAB members also toured the NRC Region III mobile laboratory which was at the site for the collection and analysis of environmental samples.

c. Conclusion

Overall management and control of the decommissioning process were being effectively performed.

1.2 Facility Modifications (37801)

a. Inspection Scope

In the conduct of decommissioning, the licensee modifies facility structures, systems, and components and conducts work to facilitate dismantlement and decontamination. The inspector reviewed some of the engineering packages developed and approved by the licensee to conduct these activities safely and in accordance with licensee-established procedures. These packages included licensee-conducted 10 CFR 50.59 safety evaluations, planning elements, and work control requirements. The following packages were reviewed.

1. MWP-1.5.01, Liquid Poison Tank Removal
2. MWP-1.3.03, Reactor Vessel Grid Bar Removal
3. MA 00-00018, Reactor Cavity Ventilation Modification
MWP - Milestone Work Package
MA - Minor Alteration

The removal of the liquid poison tank has the potential to adversely impact the structural integrity of concrete structures within the spherical enclosure should a lifting and handling failure occur. For example, an unmitigated free drop could crack and/or fail concrete or supporting structures associated with the spent fuel storage pool (SFP) or

reactor vessel. Although a catastrophic structural failure would be extremely unlikely due to the loads involved, the localized consequences could be severe from a radiological or personnel safety perspective should the impact effect the SFP. An event involving a faster-than-normal lowering could also result in impact loads that degrade structural integrity; however, this would be bounded by the drop analysis and significant damage would be of much lower probability.

The reactor vessel grid bars are highly radioactive components located within the reactor vessel. The grid bars are classified as being Greater Than Class C radioactive waste and are required to be removed from the reactor vessel (RV) prior to RV shipment and disposal. The scope of this package involved removal of the grid bars and storage in the SFP. The safety significant elements of this activity involved cutting, removing, and transporting the grid bars to the SFP. Big Rock Point (BRP) utilized the 24 ton transfer cask for transporting the grid bars. The transfer cask is considered a heavy load. All activities were conducted under water except for the RV to SFP transfer operation.

b. Observations and Findings

Big Rock Point procedure 1-D.11, "Safety and PSDAR Evaluations," and BNFL BRP-ADM-04, "Milestone Work Package Process," provide instructions to methodically evaluate modifications to facility systems, structures and components (SSCs). These procedures contains appropriate requirements and guidance to assist personnel in conducting the necessary engineering and administrative activities to assure that the modification will not result in a change to technical specification requirements, an unreviewed safety question (10 CFR 50.59), or environmental impact (10 CFR 50.82).

The poison tank modification package contained detailed drawings of the lifting mechanisms, load pathways, and structural requirements for each lift phase. The drawings accurately represented the modifications planned and provided appropriate dimensional detail to evaluate drop heights and other engineering considerations. The drawings were reviewed and approved. Appropriate management reviews were performed by both the contractor and the licensee.

The engineering evaluations associated with the poison tank heavy lift included safe load pathways and analyzed drop effects. The assessments paralleled the discussions provided in NUREG 0612, "Control of Heavy Loads at Nuclear Power Plants," including safe horizontal transport lift heights, drop zones, and assessment of crane load capabilities. The evaluations of pathways and drop zones contribute to the overall completeness of the activity and help quantify the potential significance of a drop or mis-handling event. The assumptions in the calculations were, on the whole, conservative. The load is well within the crane load capacity. Based on the licensee documents, the poison tank will be moved from a point south of the reactor vessel further to the west and away from the SFP. The lift, transfer, and accident analyses associated with grid bar removal are similar to those associated with new or spent fuel transfers between the RV and SFP; the inspector had no concerns in this area.

The MWPs for the removal of the liquid poison tank and grid bar removal incorporated specific requirements and appropriate guidance in the following areas: personnel responsibilities, precautions and limitations, prerequisites, and tools and materials. The scope, purpose, and detail of these packages had similar rigor.

“How to” steps were provided in the packages for the actual conduct of work to rig, lift, and transport the components to an awaiting transport mechanism on the containment floor. Both the poison tank and grid bar procedure steps had appropriate detail commensurate with the safety significance of activities being performed. However, for the poison tank evolution, the inspector noted that this assessment was based on the lifting and handling skills and experiences of the licensee sub-contractor, Barnhart Crane and Rigging Company, or other experienced personnel, and was not for lay person implementation. The lift involved is complex as having both vertical and horizontal motion while being elevated and moderately adjacent to the reactor cavity and SFP deck-level edges.

The 10 CFR 50.59 safety evaluations were complete and adequately assessed the regulatory review requirements. No changes to technical specifications were required. The licensee performed calculations to quantitatively assess lift and drop scenarios involving the heavy loads. Appropriate safety considerations and assumptions were made. Regarding the reactor cavity ventilation modification, the inspector identified no concerns with the licensee’s conclusions. There are no apparent adverse environmental impacts caused by planned activities.

The poison tank and grid bar modification packages included evaluations of worker radiation exposure. These efforts focused primarily on area dose characterizations and maintaining radiation exposures as low as reasonably achievable (ALARA). General area effective dose rates in the vicinity of the poison tank are very low (general area approximately 1 mrem/hour) with total dose estimates of 196 mrem. For grid bar removal, general area dose rates were estimated to be less than 6 mrem/hour, with a potential of doses exceeding 1 rem/hour during abnormal occurrences. Grid bar removal was estimated to use approximately 2272 mrem. The ALARA reviews were broken down into three phases: (1) planning, engineering, and procedure preparation; (2) removal activities; and, (3) post-removal activities. Surface contamination, shielding, and inhalation assessments were also performed. Dry runs (i.e., practice sessions) were performed for training to improve the grid bar removal activities in an effort to minimize exposure during actual activities. The grid bar removal package contained a detailed procedure outlining, in part, requirements for contamination and hot particle control; temporary and anti-contamination clothing requirements; radiological surveys; communications; and, contingency plans. Licensee procedure RP-27, “Issue and Control of Radiation Work Permits and Processing ALARA Reviews,” was utilized.

c. Conclusions

The modification packages reviewed met licensee procedural requirements for planning, review, prerequisites, precautions, work instructions, and safety considerations. The level of detail was commensurate with safety and considered appropriate. The 10 CFR 50.59 safety evaluations were complete and adequately addressed regulatory review requirements. The personnel safety considerations, which included lifting and handling of the heavy loads, appeared complete and appropriate for the activities planned. A notable strength was the drop analyses for removing the poison tank and the dose rate evaluations and contingency plans established for the grid bar removal project.

1.3 Independent Audit and Assessment (40801)

a. Inspection Scope

The licensee is considering: (1) submitting a proposed license amendment to its technical specifications to establish, in part, radiological survey requirements for solid materials and (2) the removal and shipment of its reactor vessel. Third-party reviews of these activities were contracted to obtain differing opinions, thoughts, and considerations, to improve their proposals and to identify and resolve potential safety concerns and engineering challenges. The inspector reviewed these third-party audits and assessments to assess the licensee's implementation of its independent audit and assessments programs.

b. Observations and Findings

The proposed license amendment regarding solid material radiation surveys was sent to nine individuals representing nine different organizations (Licensee internal memorandum, Brown to Lesinski, dated June 15, 2000, "Review of Demolition Debris Landfill Disposal Proposed NRC Letter of Transmittal".) These organizations included two nuclear power facilities, the State of Michigan, two universities, two independent contractors, the Nuclear Energy Institute, and a low-level radioactive waste processor. In addition, the Nuclear Performance Assessment Department (NPAD) conducted an audit (No. A-00-05m, dated May 24, 2000) during May 2-11, 2000, which included an assessment of a portion of the proposed TS amendment. Both NPAD and nine individuals made recommendations to improve the overall quality of the proposed amendment. The inspector verified that the NPAD and organizational comments were included in a BRP corrective action/commitment tracking program and were dispositioned. Individual tracking numbers were used, a summary was provided which described how the finding/observation was resolved, and the comment originator was identified to assure that feedback or additional information was possible.

Regarding the shipment of its reactor vessel, the licensee utilized the services of Duke Engineering and Services_{sm} (Duke) to independently audit its proposal. This review included design calculations, drawings, and other engineering documents. By letter dated June 30, 2000, Duke submitted its conclusions and its findings associated with reactor vessel closure lifting and transport features, stress and brittle fracture mechanics, thermal and radiological considerations, and reactor vessel drawings. The Duke audit was forwarded to British Nuclear Fuels Limited, Inc. (BNFL), the licensee's prime contractor to remove the reactor vessel, for evaluation and disposition of the Duke findings. By letter dated July 7, 2000, BNFL responded with its disposition and recommendations. These recommendations were still in the process of being considered by the licensee during this inspection.

The licensee established a Reactor Vessel Peer Review Group to evaluate the activities being performed for the shipment of the reactor vessel. This review group is comprised of individuals representing Consumers, BNFL, and individuals independent of these two organizations. The peer review group chair is an independent contractor. This peer group is independent of any of the formal design reviews being conducted for the RV. The group is chartered to assess, in part, principal risks and uncertainties, engineering criteria, and licensing and regulatory issues. On July 20, the inspector observed the

peer review group discussing the Duke audit and BNFL's response to the Duke findings. The discussion was critical and questioning, and developed insightful conclusions and recommendations.

c. Conclusions

The licensee demonstrated initiative to acquire third-party reviews of its proposed license amendment and reactor vessel shipment. The implementation of this initiative is consistent with the licensee's quality assurance program and embraces high standards for performance and excellence. The comments received for the two proposals were far reaching, technically detailed, and/or administrative in nature, thereby demonstrating the diverse organizations, expertise, and talents tapped for these third-party reviews. Further, the audit findings were appropriately placed in a commitment tracking system to ensure technical resolution and management review. Although these proposals have not yet been or may not be submitted to the NRC for review and approval, the conduct of third-party audits and effective corrective actions contributes to assurance of regulatory compliance and demonstrates a licensee commitment to safety.

1.4 Corrective Actions (40801)

a. Inspection Scope

The inspector reviewed several condition reports and their corrective actions for adequacy.

b. Observations and Findings

The following condition reports (CRs) and corrective actions were reviewed: C-BRP-00-0134, warning label placed on Americium sources as per 10 CFR 31.8; C-BRP-99-0305, assessment of source control program; C-BRP-00-0141, dent on SFP cooling line; and C-BRP-00-0137, vacuum implosion of 55 gallon drum. The CRs were found to adequately state the identified concern, generally correct root causes were being identified, and corrective actions were being closed in a reasonable time.

c. Conclusion

The corrective action reporting system was being adequately implemented and managed.

2.0 Decommissioning Support Activities

2.1 Maintenance and Surveillance at Permanently Shut Down Reactors (62801)

a. Inspection Scope

The inspector evaluated maintenance and surveillance on systems, structures, and components potentially affecting the safe storage of spent fuel and reliable operation of radiation monitoring and effluent control equipment.

b. Observations and Findings

The inspector reviewed and observed the cutting and removal of grid bars nos. 10, 16, and 18 from the reactor, the transfer of those grid bars to the Spent Fuel Pool (SFP), and the preparation and removal of the resin tank. The inspector also made daily checks on the temperature and water level of the SFP, and discussed a discrepancy between plant and outside vendor water chemistry analyses (chrome results) to evaluate the proper implementation of Defueled Technical Specifications, and 10 CFR 50, Appendix B requirements. The inspector observed that proper maintenance, personnel safety, fire protection, radiation protection, and health physics survey practices were performed during these activities.

c. Conclusion

Maintenance and surveillance activities reviewed were being adequately implemented and managed.

2.2 Safeguards Program Implementation (IP 81700)

a. Inspection Scope

The inspector reviewed the Big Rock Point Safeguards Program to determine whether physical security requirements were implemented in accordance with the requirements of the security plans and site security procedures.

b. Observations and Findings

Section IC of Appendix B to 10 CFR Part 73 requires armed security personnel to demonstrate physical fitness for assigned duties by performing a practical physical exercise program within a specific time period. The fitness test must include conditions the officer is expected to cope with for both normal and emergency conditions. Section IIE of Appendix B requires the testing to be completed on an annual basis and identified in the Security Training and Qualification Plan (ST&QP). The physical fitness testing requirement was inappropriately deleted by the security staff during the recent revision to the ST&QP. In response to this finding by the inspector the licensee entered this issue into their corrective action program (Condition report No. CBRP-00-0135B). Subsequently, the security staff developed an appropriate physical fitness test which was implemented via a revision to the Defueled Suitability and Qualification Plan (Revision 16), which was issued on July 11, 2000.

Page 7 of the March 29, 1999, NRC reply to the licensee's exemption request letter identified the bullet resistance of the alarm station as partial justification for exempting the requirement for a secondary alarm station being required at the site. The security plan identifies the bullet resistance required for the alarm station door (specifics are safeguards information which are exempt from public disclosure). The security staff discovered that the door is not the level of bullet resistance identified in the security plan. The security plan does identify an alternate location with the required level of bullet resistance as a temporary location that would be responsible for notifying local law enforcement (LLEA) for response support in case of a security threat. However, the alternate location has been designated a "normally manned" location (rather than continuously manned) and is allowed to be unmanned for various reasons other than

personnel, plant or public safety reasons that would justify evacuation of the post. During periods when the post is not manned, the ability to request LLEA support can not be assured. This is an inspector follow-up item (IFI 50-155/2000004-01). This issue has been entered into the licensee's corrective action program (Condition report No. CBRP-00-0135).

Revision 33 to the physical security plan, dated January 5, 2000, Revision 15 to the security training and qualification plan, dated April 18, 2000, and Revision 8 to the security contingency plan, dated January 20, 2000 were reviewed to assure that the plans addressed existing requirements for the 10 exemptions which were granted. Security procedures were also reviewed to assure that they did not conflict with security plan revisions. No deficiencies were identified.

Security equipment functioned well and was well maintained. Compensatory measures were seldom needed for the security equipment and required maintenance for the equipment was usually completed within two or three days. No maintenance work orders have been required for security equipment since May 1, 2000. An aggressive testing program for security equipment continued to be implemented and testing results were accurately documented. Vehicle barrier system inspections were completed at the required quarterly and annual intervals. Equipment observed during observation of ingress into the protected area and alarm station operations functioned as designed.

Security activities were well documented on activity logs reviewed, and security incidents required to be logged were accurately logged. Procedures reviewed were well written and adequately described the functions to complete the tasks. Security training records reviewed were current, complete and accurate. Security officers observed on post were knowledgeable of their responsibilities. No deficiencies were noted during post visits, walk down of the protected area perimeter, and observation of protected area ingress functions for personnel, packages, and vehicles.

The annual audit of the security program completed in May 2000 was very broad in scope, thorough and well documented. Of the 15 major security areas evaluated by the audit team, only one adverse finding pertaining to a security key audit was identified.

c. Conclusions

Security equipment functioned as designed. Security plans and procedures were adequate, and security documents reviewed were complete and accurate. Training was completed as required. Physical fitness testing for security officers required licensee action, and bullet resistance for the alarm station door requires further security staff action.

3.0 Spent Fuel Safety

3.1 Spent Fuel Pool Safety (60801)

a. Inspection Scope

The inspector evaluated spent fuel pool chemistry and cleanliness control.

b. Observations and Findings

The inspector noted that the water chemistry results for chrome were in disagreement with the results received from Bionex North East Laboratory. The results received from Bionex were out of specifications. Bionex retested these samples and the new analysis was in specifications and in agreement with plant analysis.

c. Conclusions

Spent fuel pool chemistry and cleanliness was being adequately controlled.

4.0 Radiological Safety

4.1 Loading of High Integrity Container (83750)

a. Inspection Scope

The loading of the High Integrity Container (HIC) was observed.

b. Observations and Findings

During the loading of the HIC the NRC inspector observed a worker on top of the HIC. This worker was on his knees placing additional waste bags into the HIC, including inserting his arms into the HIC to fill the remaining volume. These actions were authorized by the Radiation Work Permit (RWP). During this process, the inspector noted the worker was having difficulty with placing one bag inside the HIC. The worker rose to his feet, and in an effort to force the bag into the HIC, the worker used his leg. The radiation protection technician (RPT) monitoring the operation instructed the worker to remove his leg from the HIC as it was an action that had not been previously discussed or approved. This event lasted approximately 10-15 seconds. A stand down meeting was held the following day to address this issue. The licensee's follow up to this event indicated that although the worker committed an unauthorized action, there was no additional radiological safety consequence. The dose rates in the area of the worker were well characterized, and the dose to the leg was an extremity dose similar to what would have been received had the worker used his arm. Overall, it appeared the licensee's response was acceptable in that the work was halted as soon as the worker was observed exceeding the activities authorized by the RWP.

c. Conclusions

No concerns were identified as a result of the observation of the loading of a High Integrity Container.

4.2 Occupational Radiation Exposure (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, and the removal of grid bars from the reactor vessel 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 as-low-as-reasonably-achievable (ALARA).

b. Observations and Findings

During the inspection the inspector reviewed the following radiation work permits (RWPs):

RWP B003030	Resin and Tank Cleaning Project.
RWP B99004	Tours, inspections, evaluations and job planning.

The inspector also attended ALARA and the RWP worker briefings addressing the anticipated radiological conditions, access control, and contamination control and hot particle issues. It was noted that the licensee generated specific dose goals for each RWP which were job task evaluated. Briefings covered problems encountered, and the assignments of workers to the job tasks, and the communication of the work scope to the ALARA planners was good.

c. Conclusions

Effective radiological controls were employed during the processing and removal of grid bars from the reactor vessel and the removal of resins and sludge from several tanks and sumps.

4.3 Solid Radwaste Management and Transportation of Radioactive Materials (86740, 86750)

a. Inspection Scope

The inspection included an evaluation to determine whether the licensee properly prepared for and shipped radioactive materials.

b. Observations and Findings

The inspector evaluated licensee compliance with NRC and Department of Transportation (DOT) regulations for packaging and shipment of a HIC containing radioactive materials. Areas examined included the loading of a HIC and radiological survey techniques associated with the shipment.

The loading of the HIC onto a transport carrier for subsequent shipment to Barnwell in South Carolina was observed to be carried out as required, and with associated documentation and record keeping completed as required by procedure.

c. Conclusions

No concerns were identified with the loading and shipment of a high integrity container (HIC) containing radioactive waste for disposal.

4.4 Radiological Environmental Monitoring (84750, 80721)

a. Inspection Scope

An evaluation was conducted of the licensee's preliminary results of their environmental sampling program for site characterization.

b. Observations and Findings

Over approximately the past year the licensee collected over 800 onsite environmental soil samples and 37 offsite soil samples for use in characterizing the site radiological conditions, and for determining background radiation values. Discussions with the licensee involving their sampling techniques and equipment, and preliminary reviews of their sampling results have been conducted. In addition, the NRC collected and analyzed nine soil samples from various locations around the site, including the location of the area where the concrete pad will be constructed for the placement of storage casks for the plant's spent reactor fuel, as a preliminary verification of the licensee's results. The soil samples collected by the NRC were analyzed for cobalt 60 (Co-60) and cesium 137 (Cs-137). Results varied from "not detected" to 0.07 picocuries per gram (pCi/g) for Co-60 and from 0.13 to 1.0 pCi/g for Cs-137. These values compared well with the licensee's results from the onsite samples they had previously collected and analyzed.

c. Conclusions

The licensee's environmental sampling program was being carefully implemented for site characterization.

4.5 Unresolved Item (Mispositioned Valve) (URI 50-155/2000003-01) CLOSED

On May 9, 2000, an operator performing a Temporary Operating Instruction (TOI) to ensure a proper valve lineup for supplying treated waste water to the interior Cable Penetration Room failed to verify the closure of valve VSFP-21, Treated Waste to Fuel Pit Filter, which resulted in approximately 1750 gallons of treated waste water overflowing the spent fuel pool surge tank and covering the control rod drive sump room floor to a level of three inches.

A review of the licensee's investigation of this incident (C-BRP-00-0108: Mispositioned Valve Resulting in Containment Sump Overflow) determined that on two previous occasions, other workers had also failed to close or verify closed valve VSFP-21. These failures occurred on April 26 and April 27, 2000. No adverse impact occurred from the April 26 and 27 failures to close VSFP-21. During a site tour, the inspectors observed the location of the valve and determined that although a step ladder would be necessary to reach the valve, it would not have been difficult to gain access to the valve. In the second two cases a tag on the valve misled the workers into assuming the valve was already closed.

The licensee's prompt corrective actions to this event were to write an operations daily order stating the management expectations for performing TOIs, and directing that in the future, a verification would be required for all valve lineups on systems involving

radioactive liquids. In addition, a brainstorming session was conducted with operations department personnel to discuss actions that could be taken to prevent this type of event from occurring again.

The failure to fully carry out the TOI on May 9, 2000, and ensure that valve VSFP-21 was closed, is a Severity Level IV violation and is being treated as a Non-Cited Violation, consistent with Appendix C of the NRC Enforcement Policy (NCV 50-155/2000004-02(DNMS)).

Conclusion

One Non-Cited Violation was identified for the failure to properly complete a Temporary Operating Instruction in that a valve was not verified closed.

5.0 Exit Meeting

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on July 21, 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

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R. McCaleb, Nuclear Performance Assessment, Site Lead (NPAD)
W. Trubilowicz, Cost, Scheduling & Purchasing Manager
G. Withrow, Engineering, Operations & Licensing Manager
R. Baker, Security Manager, Burns International Security Services, Inc. (BASSI)
M. Bourassa, Licensing Supervisor
M. VanAlst, Security Supervisor
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INSPECTION PROCEDURES USED

IP 36801	Organization, Management and Cost Controls
IP 40801	Self-Assessment, Auditing, and Corrective Action
IP 62801	Maintenance and Surveillance
IP 60801	Spent Fuel Pool Safety
IP 81700	Safeguards Program Implementation
IP 83750	Occupational Radiation Exposure
IP 86740	Inspection of Transportation Activities
IP 86750	Solid Radwaste Management and Transportation of Radioactive Materials
IP 84750	Radwaste Treatment and Effluent and Environmental Monitoring
IP 80721	Radiological Environmental Monitoring

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-155/2000005-01	IFI	Bullet Resistance For the Security Central Alarm Station
50-155/2000004-02	NCV	Failure to Implement Procedure for Valve Alignment (VSFP-21)

Closed

URI 50-155/2000003-01		Failure to close or verify closed valve VSFP-21.
NCV 50-155/2000004-02		Failure to Implement Procedure for Valve Alignment (VSFP-21)

Discussed

None

LIST OF ACRONYMS USED

ALARA	As-Low-As-Reasonably-Achievable
CAB	Citizens Advisory Board
CR	Condition Report
DOT	Department of Transportation
FIU/DOE	Florida International University/Department of Energy
HIC	High Integrity Container
LLEA	Local Law Enforcement
MA	Minor Alteration
MWP	Maintenance Work Package
NRC	Nuclear Regulatory Commission
RPT	Radiation Protection Technician
RWP	Radiation Work Permit
SFP	Spent Fuel Pool
SSC	Systems/Structures/Components
TOI	Temporary Operating Instruction

LICENSEE DOCUMENTS REVIEWED

NRC Letter Dated March 29, 1999; Subject: Exemption From Certain Physical Protection Requirements (10 CFR Part 73) - Big Rock Point Nuclear Plant (TAC NO. MA4240)
Nuclear Performance Assessment Department Audit No. A-00-05, issued May 24, 2000
Vehicle Barrier System Inspection Checklist from June 1998 through March 2000
Training Records for 10 Security Officers
Safeguards Event Logs Between June 1999 and March 2000
Alarm Station Daily Activity Logs for June 1999 through April 2000
Identification Station Daily Activity Logs for June 1999 through April 2000
Revision 33 of the Physical Security Plan
Revision 8 to the Safeguards Contingency Plan
Revision 15 to the Security Training and Qualification Plan
Weekly Security Alarm Test Results from June 1999 through April 2000

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