

January 14, 2010

Mr. Joseph Jensen  
Senior Vice President and  
Chief Nuclear Officer  
Indiana Michigan Power Company  
Nuclear Generation Group  
One Cook Place  
Bridgman, MI 49106

SUBJECT: NRC INSPECTION REPORTS 072-00072/09-02(DNMS) AND  
050-00315/09-07; 050-00316/09-07 – D.C. COOK NUCLEAR POWER PLANT,  
UNITS 1 AND 2

Dear Mr. Jensen:

On December 15, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed inspection activities at your D.C. Cook Nuclear Power Plant, Units 1 and 2. The purpose of the inspection was to determine whether certain activities associated with the proposed dry cask storage pad were conducted safely and in accordance with the NRC requirements. At the conclusion of the on-site inspection on May 5, 2009, the inspectors discussed the preliminary inspection results with members of your staff. At the conclusion of further in-office review on December 15, 2009, the inspectors discussed the final results of the inspection with your staff on a teleconference. The enclosed report presents the results of this inspection.

The inspection focused on certain activities associated with the proposed dry cask storage pad as they relate to safety and compliance with the Commission's rules and regulations. Specifically, the inspectors evaluated the design of the Upper Parking Lot area radiological survey plan and observed and evaluated the associated soil sampling and radiation survey activities. In addition, the inspectors performed confirmatory soil sampling with evaluation by the Oak Ridge Institute for Science and Education (ORISE). 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, and interviews with personnel.

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

J. Jensen

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

Sincerely,

***/RA/***

Christine A. Lipa, Chief  
Materials Control, ISFSI, and  
Decommissioning Branch  
Division of Nuclear Materials Safety

Docket Nos.: 72-072; 50-315; 50-316  
License Nos.: DPR-58 and DPR-74

Enclosure:  
NRC Inspection Reports 072-00072/09-02(DNMS),  
050-00315/09-07; 050-00316/09-07

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J. Jensen

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos. 072-00072; 050-00315 and 050-00316

License Nos. DPR-58 and DPR-74

Report Nos. 072-00072/09-02(DNMS); 050-00315/09-07 and  
050-00316/09-07

Licensee: Indiana Michigan Power Company

Facility: D. C. Cook Nuclear Power Plant, Units 1 and 2

Location: Bridgman, MI

Dates: May 5, 2009 (On-site)  
September 30 – December 15, 2009  
(In-office review and telephone exit)

Inspectors: Jeremy Tapp, Health Physicist

Approved by: Christine A. Lipa, Chief  
Materials Control, ISFSI, and  
Decommissioning Branch  
Division of Nuclear Materials Safety

Enclosure

## EXECUTIVE SUMMARY

### **D. C. Cook Nuclear Power Plant, Units 1 and 2 Inspection Report Nos. 072-00072/09-02(DNMS); 050-00315/09-07 and 050-00316/09-07**

The purpose of the inspection was to observe and evaluate the licensee's performance of certain activities pertaining to the proposed Independent Spent Fuel Storage Installation (ISFSI) storage pad. Specifically, this inspection evaluated the planned pad location (Upper Parking Lot) and included review of radiation surveys and soil sampling work, and review of the initial survey design and final Radiological Survey Report.

#### Review of ISFSI Storage Pad Design

As part of the plan to design and construct the ISFSI pad, the licensee evaluated the Upper Parking Lot area to be the future location of the ISFSI pad. The Nuclear Regulatory Commission (NRC) inspectors performed independent confirmatory surveys and the independent and confirmatory soil sampling have validated the adequacy and accuracy of the licensee's procedures and final Radiological Survey Report results. Reviews of the initial survey design and final Radiological Survey Report verified surveys were performed as designed and in accordance with Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) guidance. In addition, reviews of the final Radiological Survey Report have determined the licensee has taken representative samples from the Upper Parking Lot area and there is no discernable plant related material remaining.

The inspection focused on activities associated with readiness to construct the future ISFSI pad which specifically included evaluation of the Upper Parking Lot. The licensee's pad design was not completed at the time of the inspection. An inspection of the licensee's ISFSI pad design and construction activities will be performed to ensure compliance with the regulations, Certificate of Compliance, and industry standards prior to loading fuel.

## Report Details

### **1 Review of ISFSI Storage Pad Design (60856, App. A)**

#### **1.1 Soil Characterization**

##### **a. Inspection Scope**

In-process independent confirmatory surveys and independent and confirmatory soil sampling were conducted by the inspectors to determine the adequacy and accuracy of the licensee's procedures and survey results. In addition, the inspectors reviewed the licensee's initial sampling design and final report.

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

The licensee is currently in the design phase for a future Independent Spent Fuel Storage Installation (ISFSI). The dry cask storage pad is currently planned to be constructed in the Upper Parking Lot area. In 1982, this area was covered with slightly contaminated sludge and designated as an onsite waste disposal area. The area was then leveled and covered with a layer of asphalt to form a parking lot. In order to construct the ISFSI storage pad in that location, the licensee plans to terminate this area's current designation as an onsite disposal area and perform unrestricted removal and disposition of those soils. In order to release those soils for unrestricted disposition, the licensee must prove through a representative sample of the area that the soils do not contain plant related radioactive material. In order to obtain a representative sample of the Upper Parking Lot area, the licensee performed a Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) type survey. With this survey design, the licensee performed a 100% gamma scan of the surface of the parking lot and 15 feet beyond the edge of the pavement or to the toe of the slope of the sand dunes, whichever was encountered first. This survey design also included systematic soil sampling from 33 locations under the Upper Parking Lot area and 10 locations around the perimeter of pavement. In addition, the licensee collected background samples from non-impacted areas in the vicinity of the parking lot. All samples were analyzed in the on-site laboratory by gamma spectroscopy for the radionuclides of concern that were placed in this area, which include Cs-137, Cs-134 (cesium), and Co-60 (cobalt). Selected samples were analyzed for hard-to-detect radionuclides, which might still be present considering the origin of the sludge and the time since placement. The inspectors evaluated this survey design and did not have any issues.

The inspectors performed in-process independent confirmatory surveys with a 2x2 NaI (sodium iodide) detector of selected Upper Parking Lot area paved surfaces and perimeter soils for elevated gamma radiation levels. All results were in agreement with the licensee's. The inspectors also evaluated the licensee's gamma surface scan survey technique and found it to be appropriate. The inspectors then collected three randomly chosen gravel/soil samples from underneath the paved area, selected a gravel/soil sample already collected by the licensee from under the paved area for independent confirmatory analysis, and collected a background soil sample in the vicinity of the parking lot. All five samples were provided to the Oak Ridge Institute for Science and Education (ORISE) for evaluation by gamma spectroscopy for Cs-137 and Co-60. ORISE completed their analysis of the soil samples and provided the NRC with the results in the document, "Letter Report for Analytical Results for Five Gravel/Soil

Samples from Indiana Michigan Electric Power – DC Cook, Bridgman, Michigan” dated May 20, 2009 (see ADAMS ML091460740). The results showed no detectable concentration of Cs-137 or Co-60 and were in agreement with the licensee’s results. The inspectors verified the licensee followed all applicable procedures, maintained proper control of their samples, and the licensee’s counting techniques and equipment were appropriate for the radionuclides of concern.

The inspectors reviewed the licensee’s final report for the radiological survey and sampling activities, which was prepared by DeNuke Contracting Services, Inc. and titled “Radiological Survey Report, Upper Parking Lot, D.C. Cook Nuclear Station, Bridgman, Michigan” dated September 25, 2009. The report was also reviewed by inspectors in the Region III Division of Reactor Safety and staff in the Office of Nuclear Reactor Regulation and Office of Federal and State Materials and Environmental Management Programs. Four observations for improvement or clarification were communicated to the licensee. These include 1) clarification that the Sr-90 (strontium) activity detected is not plant-related material, 2) clarification that the Derived Concentration Guideline Levels (DCGLs) stated in the report are not used to justify radiological release of materials from the site, 3) that the first two paragraphs of Reference 6 to this final report are clarified as to the increase and decrease in worldwide source term, and 4) a tritium evaluation or soil analysis is performed for the Upper Parking Lot area. The licensee will address these four observations and they will be followed up during baseline Radiation Protection inspections performed by the Region III Division of Reactor Safety. In addition, the inspectors will perform an inspection of the licensee’s ISFSI pad design and construction activities prior to the licensee’s fuel loading activities planned for 2011.

c. Conclusion

As part of the plan to design and construct the ISFSI pad, the licensee evaluated the Upper Parking Log area. The Upper Parking Lot was to be the future location of the ISFSI pad. The NRC inspectors performed independent confirmatory surveys and independent and confirmatory soil sampling have validated the adequacy and accuracy of the licensee’s procedures and final Radiological Survey Report results. Reviews of the initial survey design and final Radiological Survey Report verified surveys were performed as designed and in accordance with Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) guidance. In addition, reviews of the final Radiological Survey Report have determined the licensee has taken a representative sample from the Upper Parking Lot area and there is no discernable plant related material remaining.

The inspection focused on activities associated with readiness to design and construct the future ISFSI pad which specifically included evaluation of the Upper Parking Lot. The licensee’s pad design was not completed at the time of the inspection. An inspection of the licensee’s ISFSI pad design and construction activities will be performed to ensure compliance with the regulations, Certificate of Compliance, and industry standards prior to loading fuel.

## **2 Exit Meeting Summary**

The inspectors presented the inspection results to licensee management at the conclusion of the on-site inspection on May 5, 2009. A follow-up telephone exit was conducted with licensee staff on December 15, 2009, following the receipt and review of the ORISE Final Report and final Radiological Survey Report. The licensee acknowledged the findings presented.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### PARTIAL LIST OF PERSONS CONTACTED

#### Licensee

- \*Raymond A. Hruby, Vice President – Site Support
- \*Paul Schoerf, Compliance Manager
- \*\*\*Michael Scarpello, Licensing Manager
- \*Julie Newmiller, Licensing Coordinator
- \*Walt MacRae, Project Manager
- \*Jeb Kingseed, Dry Cask Storage Project
- \*\*\*Stephen Bell, Health Physicist
- \*\*Helen Etheridge, Licensing
- \*\*Gary Weber, Project Manager
- \*\*Dennis Bean, Dry Cask Storage Project
- \*\*Dave Morse, Dry Cask Storage Project
- \*\*John Flaherty, Dry Cask Storage Project

\*Indicates presence at the interim exit meeting held on May 5, 2009

\*\*Indicates presence at the final exit teleconference held on December 15, 2009

\*\*\*Indicates presence at both exit meetings

### INSPECTION PROCEDURES USED

IP 60856, App. A	Review of ISFSI Storage Pad Design
IP 83801	Inspection of Remedial and Final Surveys at Permanently Shutdown Reactors (for guidance only)

### ITEMS OPENED, CLOSED, AND DISCUSSED

Opened	None
Closed	None
Discussed	None

### LIST OF ACRONYMS USED

DCGL	Derived Concentration Guideline Level
DNMS	Division of Nuclear Material Safety
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
NRC	Nuclear Regulatory Commission
ORISE	Oak Ridge Institute for Science and Education

### DOCUMENTS REVIEWED

Documents used during the inspection were specifically identified in the Report Details, above.