U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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License Nos:	DPR-58; DPR-74
Report Nos:	50-315/98019(DRS); 50-316/98019(DRS)
Licensee:	Indiana Michigan Power Company
Facility:	Donald C. Cook Nuclear Generating Plant
Location:	1 Cook Place Bridgman, MI 49106
Dates:	August 31-September 3, 1998
Inspectors:	D. Nissen, Radiation Specialist N. Shah, Radiation Specialist
Approved by:	Gary Shear, Chief, Plant Support Branch 2 Division of Reactor Safety

EXECUTIVE SUMMARY

D. C. Cook, Units 1 and 2
NRC Inspection Reports 50-315/98019; 50-316/98019

This inspection was conducted to review aspects of the radiation protection program, including the radiological environmental monitoring program, maintenance of effluent monitors, and self-assessment activities. Corrective actions for previously identified NRC violations were also reviewed. The following specific observations were made:

Plant Support

- The radiological environmental monitoring program was well conducted, and associated results were documented as required. An increase in the amount of tritium activity discharged to the lake had not resulted in doses exceeding regulatory limits and was adequately addressed by the licensee (Section R1.1).

- Effluent radiation monitors were well maintained, and monitor alarm setpoints were conservatively set. Workers responsible for these monitors were aware of procedural requirements and of contingency actions for monitor inoperability (Section R2.2).

- Self-assessments performed by the licensee were thorough but continued to identify problems with radiation worker practices. These problems were confirmed by inspector observations, and the licensee was planning additional corrective actions to address this issue (Section R7.1).

Report Details

IV. Plant Support

R1 Radiological Protection & Chemistry (RP&C) Controls

R1.1 Radiological Environmental Monitoring Program (REMP)

a. Inspection Scope (IP 84750)

The inspectors reviewed the licensee's implementation of the REMP. The inspection consisted of a walkdown of the REMP sampling equipment (including the meteorological tower), observations of REMP technician sampling activities, a review of documents and interviews with workers.

b. Observations and Findings

The REMP samples were collected by a licensee radiation protection technician (RPT) who had several years experience with the program. During the walkdown, the RPT demonstrated a good knowledge of the REMP procedures and familiarity with the operability of the sampling equipment. This equipment was maintained in good condition based on direct observation and had a good operating history as documented in maintenance records.

The inspectors verified that the locations of onsite air sampling station nos. 1 through 9 were as described in the Offsite Dose Calculation Manual (ODCM) and that the installed equipment was appropriately calibrated. The technician correctly changed the filter paper and charcoal cartridges and was familiar with sample collection procedures and practices. The inspectors also observed the collection of surface water samples at the Lake Township Water Treatment Facility; no problems were identified.

Meteorological data was collected by instrumentation located in an offsite tower which was maintained by the radiation protection (RP) group. The inspectors verified that the equipment was operable and that housekeeping inside the facility was good. This equipment was calibrated semi-annually by licensee mechanical maintenance staff in accordance with manufacturer specifications and had been upgraded within the last 3 to 4 years. Some of the improvements included installation of sacrificial anodes, digital components and new wiring. The inspectors observed that tower indications were appropriately displayed in the licensee's main control room.

The inspectors reviewed the results of the annual 1997 land use survey and the 1997 REMP reports; no problems were identified. In particular, the inspectors noted that program exceptions (such as missing samples or non-participating dairy farms) were appropriately addressed and documented. The inspectors also verified that the monitoring of tritium levels in groundwater (via onsite wells) was conducted as required and that no adverse trends had been identified.

In March 1998, an industry audit identified an increasing trend in the amount of tritium released (in waste water) to the lake. Specifically, the audit noted that from 1992 through 1997, tritium activity discharged increased from about 500 to 1485 curies, which was significantly higher than the industry average. However, the associated doses from these activities remained well below regulatory limits. A licensee investigation concluded that this increase resulted from inefficient management of waste water treatment and not from a adverse plant condition. A similar conclusion was also reached during an independent review by the inspectors. This finding was documented in a station condition report (CR no. 98-2060), and corrective actions were being developed.

c. Conclusions

The REMP was well conducted and associated results were documented as required. An adverse trend regarding the amount of tritium activity discharged to the lake had not resulted in doses exceeding regulatory limits and was being adequately addressed by the licensee.

R2 Status of RP&C Facilities and Equipment

R2.1 Effluent Release Radiation Monitors

a. Inspection Scope (IP 84750)

The inspectors reviewed the operability of the effluent release monitors. The inspection consisted of a walkdown of the monitors, review of records and interviews with workers.

b. Observations and Findings

During the walkdown the inspectors observed that the monitors were in good condition and were operable. However, a problem was noted with excessive dust loading on the air filter for the unit 1 vent effluent monitor. This monitor was located adjacent to a construction area where work was ongoing for the ice condenser project. The inspectors noted that the excessive loading may cause the monitor to overheat and become inoperable. Some minor debris (bolts, nuts, etc) was also noted near the sample pump for the "A" lower containment monitor, which could impact and potentially damage the pump components. The licensee agreed with these observations and was planning corrective actions.

The inspectors observed the indications of the effluent monitors in the main control room (via the area and radiation monitor console) and verified, through interviews, that operators were familiar with the console operation and alarm responses.

Each monitor was currently calibrated and had undergone surveillances required by station procedures. All surveillances involving radiation sources were performed by a separate group of instrument technicians assigned to the RP department. These technicians were knowledgeable of as-low-as-is-reasonably-achievable (ALARA) concerns and of monitor operability history. A selective review of maintenance records

and condition reports over the last six months did not identify any adverse trends with monitor operation. However, the licensee had identified several examples of minor problems with the monitors' technical data and use description contained in the Final Safety Analysis Report (FSAR). These examples were being addressed through the stations ongoing process to revalidate and update the FSAR.

The inspectors verified that monitor alarm setpoints were conservatively set, using a methodology consistent with industry practices. Additionally, associated procedures were reviewed to ensure that contingency plans were developed for monitor in operability (i.e., confirmatory sampling). Through discussions, the inspectors verified that workers were aware of the stated actions.

c. Conclusions

Effluent radiation monitors were well maintained, and associated alarm setpoints were conservatively set. Those workers having responsibility for these monitors were aware of procedural requirements and of contingency actions for monitor inoperability.

R7 Quality Assurance in RP&C Activities

R7.1 Radiation Protection Self Assessments (IP 83750)

The RP department initiated a series of self-assessments to address a declining trend in radiation worker performance. Specifically, RPTs were tasked to observe and question workers in the field regarding compliance with RP requirements and acceptable work practices. Several of these assessments, conducted between June and July of 1998, were reviewed by the inspectors. Overall, the assessments were thorough and had identified recurring problems with poor radiation worker practices, such as improper wearing of dosimetry or protective clothing. These findings were confirmed by the inspectors, who observed workers in the Unit 1 containment with their protective clothing improperly worn. As many of these workers appeared familiar with the RP expectations, the inspectors were concerned that the observed behaviors were inconsistent with the understood expectations.

Station management agreed with the inspectors' observations and indicated that additional self-assessments were needed and that station expectations needed to be enforced. Prior to the exit meeting, RP management implemented continuous RPT coverage in the Unit 1 containment to reinforce station requirements. Subsequently, no additional examples of improper behavior were observed during the inspectors' containment walkdowns.

R8 Miscellaneous RP&C Issues (IP 92904)

R8.1 (Closed) Escalated Enforcement Item (EEI) 50-315/98006-01; 50-316/98006-01: A shipment of radioactive materials left the site without the proper shipping paperwork. As a result of enforcement action number 98-113 this issue was determined to be an example of a Severity Level III problem (VIO 98-113-01013). Immediate corrective

actions were to contact the driver and FAX him the appropriate shipping documents and to instruct him to placard the truck as required. In addition, the licensee required that for all shipments that were leaving from outside the protected area or from any area other than the radioactive materials storage building, the carrier must be escorted at all times. No new examples or problems with radioactive materials shipments had occurred. This item is closed.

R8.2 (Closed) EEI 50-315/98006-02; 50-316/98006-02: A shipment of radioactive materials left the site without emergency response paperwork. As a result of enforcement action number 98-113 this issue was determined to be an example of a Severity Level III problem (VIO 98-113-01023). See Section R8.1 for corrective actions. This item is closed.

R8.3 (Closed) Inspection Follow-up Item (IFI) 50-315/98006-03; 50-316/98006-03: Response checks of the RM-14/20 detectors were at the low end of the acceptance criteria. The licensee's investigation identified that the source used for the response check was not properly decay corrected. The licensee corrected this and had revised the procedure used to include a place for the worker performing the check to document the frisker reading. This revision ensured that future response checks would be easily trended to identify problems. The inspectors reviewed the procedure revision and observed the source checks of several friskers. No problems were identified. This item is closed.

R8.4 (Open) Violation (VIO) 50-315/98006-04; 50-316/98006-04: Workers failed to ensure that their electronic dosimeters (EDs) were on prior to entering the radiologically controlled area (RCA). A contributing factor to this event was that an RPT manipulated the workers EDs to change the setpoints but was not trained on the use of the equipment. The workers involved were counseled at the time of the event. An operator aid was developed to help the RPTs in the use of the equipment. Additionally, all RPTs were required to attend training on the use of this equipment. The inspectors reviewed the training records and the operator aid. Further training was planned for the middle of September. However, the licensee identified two additional examples in August 1998 of workers entering the RCA with their EDs off. The licensee indicated that they were reviewing the incidents and continuing to implement corrective actions. This item will remain open pending inspector review of these corrective actions.

R8.5 (Closed) VIO 50-315/98006-05; 50-316/98006-05: A worker failed to notify RP after receiving two alarms of the security guard house gamma-40 portal monitors. The licensee modified the monitors to initiate a recorded message describing the correct worker response following a radiation alarm. New signs with the correct instructions were also placed in a high visibility area. The licensee performed a review of the training provided to workers on the proper response to monitor alarms; several inconsistencies were identified. The study guide used in the general employee training did not provide guidance that was consistent with station procedures. The inspectors discussed this with training personnel who indicated that the study guide was being revised to accurately reflect the procedure requirements. The proposed revisions to the study guide were reviewed by the inspectors and determined to be adequate. This item is closed.

R8.6 (Open) VIO 50-315/98006-06; 50-316/98006-06: A failure to follow the radiation worker permit (RWP) dress requirements was identified. Immediate corrective actions included suspending the RWP, discussing the issue with the work group and the supervisors, and conducting tailgate sessions with the craft personnel. The licensee also issued a radiation worker directive regarding the importance of following procedures and complying with RWPs. RPTs were questioning workers in the field about radiation worker practices (see Section R7.1). The inspectors performed several inspections in containment and the auxiliary building to observe workers' compliance with RWP dress requirements. The inspectors identified several minor problems. Following these observations, RP supervision stationed a RPT in the ice condenser at all times to monitor workers dress. Subsequent inspections revealed that workers were dressed in accordance with their RWP requirements. This item will be reviewed in future inspections.

R8.7 (Closed) IFI 50-315/98006-0; 50-316/98006-07: Poor or incomplete resolution and documentation of condition reports. The inspectors reviewed several condition reports and determined that the investigations had been performed by the due date assigned and no problems were identified regarding the thoroughness of the investigations or documentation. The inspectors verified that one condition report (CR 97-3203), which had been open past it's due date, had been responded to and closed as appropriate. This item is closed.

R8.8 (Closed) VIO 50-315/98013-01; 50-316/98013-01: A worker entered containment with an open wound on his shoulder without notifying RP personnel. The inspectors reviewed a procedure revision which clarified who had the responsibility to notify RP personnel of an open wound. The procedure indicated that all radiation workers have a responsibility to notify RP personnel of a wound, including the worker with the wound and anyone else with knowledge of the wound. This item is closed.

V. Management Meetings

X1 Exit Meeting Summary

On September 3, 1998, the inspectors presented the inspection results to licensee management. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

D. Cooper, Plant Manager
R. Fard, Health Physicist
D. Foster, Radioactive Materials Specialist
P. Holland, General Supervisor, Radiation Support
D. Noble, Radiation Protection Superintendent
M. Snyder, Health Physicist

INSPECTION PROCEDURES USED

IP 83750	Occupation Radiation Exposure
IP 84750	Radioactive Waste Treatment, and Effluent and Environmental Monitoring
IP 92904	Follow-up-Plant Support

ITEMS OPENED, CLOSED, OR DISCUSSED

Closed

50-315/316-98013-01	VIO	Failure to notify RP of open wound prior to entry to RCA.
50-315/316-98006-01	EEI	Shipment of radioactive material without shipping paper work.
50-315/316-98006-02	EEI	Shipment of radioactive material without emergency response paper work.
50-315/316-98006-03	IFI	Response checks of detectors low end of acceptable range.
50-315/316-98006-05	VIO	Failure to notify RP after monitor alarm.
50-315/316-98006-07	IFI	Poor or incomplete resolution and documentation of condition reports.

Discussed

50-315/316-98006-04	VIO	Failure to ensure EDs on prior to RCA entry.
50-315/316-98006-06	VIO	Failure to follow RWP dress requirement.

LIST OF ACRONYMS USED

ALARA	As-Low-As-Is-Reasonably-Achievable
AR/PR	Area Radiation/Process Radiation
CFR	Code of Federal Regulations
CR	Condition Report
ED	Electronic Dosimetry
EEI	Escalated Enforcement Item
FSAR	Final Safety Analysis Report
IFI	Inspection Follow-up Item
ODCM	Offsite Dose Calculation Manual
PDR	Public Document Room
RCA	Radiologically Controlled Area
REMP	Radiological Environmental Monitoring Program
RP	Radiation Protection
RPT	Radiation Protection Technician
RP&C	Radiation Protection and Chemistry
RWP	Radiation Work Permit
VIO	Violation

LIST OF DOCUMENTS REVIEWED

Station Procedure Numbers.

12THP6010RPP.632 (rev. 4) Calibration of Environmental Air Samplers
12THP6010RPP.630 (rev. 2) Calibration of REMP Surface Water Samplers
12THP6010RPP.633 (rev. 4) Calibration of Environmental Radiation Dosimeters
12THP6010RPP.634 (rev. 2) Collection of Groundwater Samples
12THP6010RPP.622 (rev. 1) Collection of Drinking Water Samples
12THP6010RPP.643 (rev. 1) Quarterly Review of REMP Data
12THP6010RPP.637 (rev. 1) Collection of Lake Sediment Samples
12THP6010RPP.638 (rev. 1) Collection of Grape and Broadleaf Samples
12THP6010.RPC.810 (rev. 0) Eberline RMS Channel Restoration
12THP6010RPC.804 (rev. 10) Eberline RMS Iodine Channel Recalibration
12THP6010RPC.815 (rev. 0) Eberline Radiation Monitoring System Particulate and Low Range Noble Gas Calibration
12THP6010RPC816 (rev. 0) Eberline RMS DA1.1 and DA 1.6 Area Monitor Calibration
12THP6010RPC817 (rev. 0) Eberline Radiation Monitoring System Mid and High Range Noble Gas Calibration
12THP6010RPC814 (rev. 10) Eberline RMS Liquid Channel Calibration

Calibration Records

12IHP6030.333 (5/30/98) Meteorological Instrument Calibration
Air Sampler Calibration Records: AVS28-5512 (3/26/98); AVS 28-5508 (3/31/98); AVS 28-5505 (4/13/98); AVS 28-5501 (2/23/98)
Eberline RMS Iodine Calibration Records for Detector Nos: 2217 (4/28/98); 2126 (5/12/98); 221 (7/17/98); 2570 (2/26/98)
Eberline Particulate and Low Range Noble Gas Monitor Calibrations for Detector Nos: P2497 (3/4/98); LNG2493 (5/12/98); P2405 (5/21/98); LNG2261 (5/21/98); P2548 (6/2/98); LNG2523 (7/14/98); P1803 (2/13/98); LNG2260 (2/24/98)
Eberline RMS Mid and High Range Noble Gas Calibrations for Detector Nos: 52872 (6/15/98); 62688 (8/10/98); 74417 (1/30/98); 23900 (1/9/98); 74314 (3/11/98)
Eberline Liquid RMS Channel Calibrations for Detector Nos: 2558 (10/16/97); 1902 (10/29/97); 2560 (10/28/97)

Radiation Protection Technical Evaluation Numbers.

97-06 (rev. 0) Determination of Reference Response to Beta Reference Disc Source Set for Eberline RDA-31 Detectors
97-07 (rev. 0) Determination of Low Range Noble Gas Detector Calibration Constant
97-08 (rev. 0) Determination of the Particulate Channel Calibration Constant for the Eberline SPING
97-13 (rev. 0) Determination of Area Monitor Calibration Constants
97-16 (rev. 0) Determination of Reference Responses for DAI-1 and DAI-6 (Area Monitors) Detectors
97-19 (rev. 1) Voltage/Gain Setpoint and Reference Response Determination for Eberline RMS

Liquid Detectors (RDA-5A)
97-17 (rev. 0) Determination of Reference Responses for High Range Noble Gas Detectors
97-14 (rev. 1) Eberline RMS Calibration Constants
97-19 (rev. 0) Voltage/Gain Setpoint and Reference Response Determination for Eberline Monitors
97-20 (rev. 0) Multiple Release Point Factor Determination

Condition Report Numbers.

98-2060
98-1860
98-2749
98-0368
98-4368
98-4370
98-0544
98-2845
98-2715
98-1930
98-2736
98-3157
98-2309

Miscellaneous.

Offsite Dose Calculation Manual (ODCM) section 4.5, "Radiological Environmental Monitoring Program (REMP)"
1998 Land Use Survey Report (6/23/98)
Annual Environmental Operating Report for 1/1/97 to 12/31/97
Environmental Air Sample Log for 1st and 2nd Quarter of 1998 (4/1/98-5/27/98)
Surface Water Sample Log for 4/98-7/98
Environmental Thermolumiscent Dosimeter Sample Log for 4/1/98 and 7/1/98
Groundwater Sample Log for 4/23/98 and 1/22-23/98
Drinking Water Sample Log for 4/98 - 6/98
Unavailable REMP Sample Log for 1st and 2nd Quarter of 1998
Sediment Sample Log for 4/98
Broadleaf Sample Log for 6/98
Plant Performance Audit no. PA-98-14/NSDRC#255 (5/29/98)
Operability History Records for Effluent Monitor Nos: CRS-3301, CRS 3400, CRS-3401, DRS-3101, DRS-4101, ERA-7703, ERA-7504, ERA-7600, ERS-1301, ERS-1400, and ERS-1401
Rps-98-020 Tour/Inspection of ice condenser maintenance
Rps-98-021 Work control- Aux/Containment radworker Compliance with RWP's and ED's