

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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Report Nos: 50-266/98018(DRS); 50-301/98018(DRS)

Licensee: Wisconsin Electric Power Company

Facility: Point Beach Nuclear Plant, Units 1 and 2

Location: 6610 Nuclear Road  
Two Rivers, WI 54241

Dates: August 31 - September 4, 1998

Inspector: K. Lambert, Radiation Specialist

Approved by: G. Shear, Chief, Plant Support Branch 2  
Division of Reactor Safety

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## EXECUTIVE SUMMARY

Point Beach Nuclear Plant, Units 1 & 2  
NRC Inspection Reports 50-266/98018; 50-301/98018

This routine inspection of the radiation protection program included a review of the whole body counter calibration, portable instrument calibration, the routine contamination and monitoring programs, and program audits.

- Overall, the calibration program was adequately implemented. Corrective actions were being developed and implemented for deficiencies in the instrument calibration program, which were identified through condition reports and the contractor performed self assessment. Calibrations were performed as required and technicians involved with the program were knowledgeable of procedures and instruments being calibrated (Section R1.1).
- Whole body counting was being performed in accordance with station procedures and consistent with industry standards. Calibration and instrument checks were properly performed and generally well documented. However, a deficiency was identified with documenting problems and their resolution (Section R1.2).
- The routine contamination and dose rate survey program was effectively implemented. Surveys were performed as required and were appropriately documented. Technicians were knowledgeable of procedures and survey locations, and demonstrated good survey techniques (Section R1.3).
- Radiological postings and container labeling were well maintained, and appropriately informed workers of current plant radiological conditions. Housekeeping and material condition of radiation protection equipment was generally good (Section R2.1).
- The periodic review of the radiation protection program was being performed in accordance with NRC requirements. The self assessments were of sufficient depth to identify program deficiencies. Corrective actions were being developed and implemented for identified deficiencies (Section R7.1).

## Report Details

### IV. Plant Support

#### **R1 Radiological Protection and Chemistry (RP&C) Controls**

##### **R1.1 Portable Instrument Calibration and Control**

###### **a. Inspection Scope (IP 83750)**

The inspector reviewed the licensee's program for calibrating portable radiation survey instruments. Technical Specifications, applicable procedures, calibration records, and a self assessment were reviewed. In addition, cognizant individuals were interviewed, and observations were made of instrument condition and performance of instrument calibrations.

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

The inspector reviewed applicable station procedures for instrument calibrations and noted that while the procedures were adequate, the number and quality of the procedures were burdensome. Discussions with health physics (HP) personnel indicated that the procedures were being reviewed, consolidated, and updated to reduce the burden and increase the effectiveness of the procedures.

The licensee identified a weakness in the instrument calibration and control program from the number of condition reports, initiated by HP technicians, describing many deficiencies in the program. A self assessment of the portable instrument program was performed in March 1998 by a contractor brought in to upgrade the program. The audit identified nine areas where improvements were needed, such as inventorying self reading dosimeters; developing quality control charts for laboratory counting instruments; improving the calibration schedule for instruments; determining the appropriate sources to be used for efficiency calculations based on the average beta energy of the activity identified at the site; replacing or refurbishing calibrators; and upgrading station facilities.

The self assessment included a plan of action to correct the identified deficiencies. This plan included upgrades to the facility; upgrade and combine procedures; refurbish box calibrators; implement electronic dosimetry; and develop expectations for the use, return, and calibration of instruments. The inspector noted that the calibrators had been refurbished, quality control charts had been implemented for laboratory counting equipment, and that calibrations were spread throughout the year to balance the work load. Health physics management indicated that the remaining action plan items were being developed and would be implemented over the next several months.

Radioactive sources were last inventoried in July 1998, with no problems noted. Sources requiring leak tests were last tested in July 1998. Leak tests indicated that all sources tested were below the Technical Specification limit of less than 0.005 microcuries of removable contamination. No problems were identified.

The inspector observed the calibrations of a Bicorn RSO-5 and a RSO-50 ion chamber portable survey instruments. The technician who performed the calibration was familiar with the calibration procedure, the calibrator, and the instrument to be calibrated. The technician appropriately performed and documented the instrument calibration.

c. Conclusions

Overall, the calibration program was adequately implemented. Corrective actions were being developed and implemented for deficiencies in the instrument calibration program identified through condition reports and a self assessment. Calibrations were performed as required and technicians involved with the program were knowledgeable of procedures and instruments being calibrated.

R1.2 Whole Body Counter Calibration and Control

a. Inspection Scope (IP 83750)

The inspector reviewed the whole body counting program for determining internal exposures of workers. This included a review of applicable procedures and calibration records, and interviews with HP personnel.

b. Observations and Findings

Station procedures for whole body counting of personnel were consistent with industry guidance and NRC requirements. Entrance and exit whole body counts were performed on personnel. Station employees and long term contractors also received annual whole body counts. A random review of personnel whole body counting records indicated that the records were appropriately completed with no problems identified. The licensee was in the preliminary stages of developing a study to implement passive whole body counting of workers. When passive monitoring was implemented, health physics management planned to eliminate or reduce the number of annual whole body counts.

Whole body counter calibrations were performed annually by the contractor from which the system was rented. Calibration data for 1997 and 1998 were reviewed and indicated that the counter was calibrated at the appropriate frequency and that calibration records were complete. The calibration was performed using a phantom and compared the analysis results with the activity of National Bureau of Standards traceable sources of cobalt-60, cesium-137, and barium-133. The inspector noted that the calibration was technically sound. In addition to the annual calibration, checks for counter operation and energy calibration were performed daily or before the next use. These checks were performed in accordance with the applicable procedure and were generally well documented. However, the inspector noted deficiencies in documenting notes on the daily check form. For example, during a change in the high voltage and gain settings, a note indicated that the manufacturer was contacted. However, the results of the phone call or why the high voltage settings and gain were adjusted were not documented. Health physics management planned to evaluate the matter and institute improvements if warranted.

c. Conclusions

Whole body counting was being performed in accordance with station procedures and consistent with industry standards. Calibration and instrument checks were properly performed and generally well documented. However, a deficiency was identified with documenting problems and their resolution.

R1.3 Routine Contamination and Exposure Rate Surveys

a. Inspection Scope (IP 83750)

The inspector reviewed the licensee's program for performing routine contamination and exposure rate surveys. This included a review of procedures and survey records, discussions of the program with the health physics staff, and observations of surveys being performed.

b. Observations and Findings

The station maintained procedures that adequately described the routine dose rate and removable contamination survey program. Surveys included dose rate measurements and smears, and were performed daily in accordance with the routine daily survey schedule. Surveys of specific locations were performed daily, weekly, or monthly dependent on the potential for contamination to be present. General areas of the radiologically controlled area (RCA) were surveyed weekly.

Radiation contamination and dose rate surveys for 1998 were randomly reviewed. Survey records reviewed were appropriately completed, and no problems were identified. When removable contamination greater than 300 disintegrations per minute per 100 square centimeters (dpm/100 cm<sup>2</sup>) of beta/gamma activity was identified in general areas, the area was controlled until decontaminated and resurveyed. When beta/gamma activity greater than the minimal detectable activity was identified, then a representative number of smears were counted for alpha activity.

The inspector observed a HP technician perform dose rate and contamination surveys of the Unit 1 facade. The technician was knowledgeable of the procedures and the areas to be surveyed. The procedure did not specify the locations to be surveyed. The technician performed random surveys to try to identify areas with elevated dose rates or removable contamination greater than 300 dpm/100 cm<sup>2</sup>. The technician evaluated the condition of postings and area housekeeping, and verified that doors and gates were locked as required.

c. Conclusions

The routine contamination and dose rate survey program was effectively implemented. Surveys were performed as required and were appropriately documented. Technicians were knowledgeable of procedures and survey locations, and demonstrated good survey techniques.

## **R2 Status of RP&C Facilities and Equipment**

### **R2.1 Radiological Postings, Labeling, and Housekeeping**

#### **a. Inspection Scope (IP 83750)**

The inspector reviewed radiological postings and labeling of containers during several tours of the reactor building. In addition, housekeeping and material condition of radiation protection equipment was reviewed.

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

The inspector observed that radiological postings and boundaries in the radiologically controlled area (RCA) of the reactor building were well maintained. The inspector determined, through independent measurements, that radiological postings reflected the actual area radiological conditions. Containers were labeled in accordance with station procedures and regulatory requirements. Material condition of radiation protection equipment was good.

Radiological housekeeping in the RCA was generally good. The inspector noted during a tour of the primary auxiliary building (PAB) that a work order tag was hung on the Unit 1 steam generator blow down liquid monitor that indicated that a valve and cap were leaking by. The inspector observed water on the floor under the valve and noted that a drip funnel or a bucket had not been installed. This was brought to the attention of health physics management who indicated that the matter would be reviewed. During a tour of the PAB later in the week, the inspector noted that a drip funnel had been installed.

#### **c. Conclusions**

Radiological postings and container labeling were well maintained, and appropriately informed workers of current plant radiological conditions. Housekeeping and material condition of radiation protection equipment was generally good.

## **R7 Quality Assurance in RP&C activities**

### **R7.1 Radiation Protection Program Reviews**

#### **a. Inspection Scope (IP 83750)**

The inspector reviewed the procedures implemented, and the audits and reviews performed of the radiation protection program to comply with the requirement for a periodic review of the radiation protection program.

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

Health physics personnel indicated that the annual review of the radiation protection program was completed through the department's self assessment program and was

augmented through quality assurance audits, corporate reviews, and other audits. Health physics personnel had developed a self assessment schedule from November 1997 to January 2000. This schedule included the major portions of the health physics program, such as the as-low-as-is-reasonably-achievable (ALARA) program, radiation monitoring system, respiratory protection, and instrument calibration.

A review of self assessment records revealed that assessments were generally being performed as scheduled. Scheduling changes were made to perform assessments at earlier dates if several deficiencies in a program were identified by HP management. The self assessments included reviews of procedures, discussions with personnel, and observation of program implementation. Deficiencies identified by the self assessments were documented and tracked through the condition reporting system to ensure corrective actions were developed and implemented.

In addition to the self assessments, a quality assurance audit was performed from March to April 1998 of the radiation protection program. This audit included team members from another facility. The audit was extensive and covered the following areas: monitoring radiation and contamination; radiological work permits; waste disposal; external dosimetry; ALARA programs; respiratory protection; the radiological environmental monitoring program; and instrument calibrations.

The audit concluded that the radiation protection program was marginally effective with an improving trend. Several quality condition reports were initiated because of the audit, and radiation protection personnel were addressing corrective actions to those items. The radiation protection manager, onsite since January 1998, indicated that radiation protection program improvements were in progress for all phases of the program, with many scheduled for implementation before the upcoming outage in December 1998.

c. Conclusions

The periodic review of the radiation protection program was being performed in accordance with NRC requirements. The self assessments were of sufficient depth to identify program deficiencies. Corrective actions were being developed and implemented for identified deficiencies.

**R8 Miscellaneous RP&C Issues**

- R8.1 (Closed) VIO 50-266/97008-01(DRS); 50-301/97008-01(DRS): The failure of contract painters to follow health physics procedures and the Radiologically Controlled Area Entry Permit resulted in a violation for entering a high radiation area (HRA). Immediate corrective actions included suspending access to the RCA for the painters, discussing the event with the painters, and retraining the painters on the entry permit requirements and restrictions. Due to recurring HRA boundary violations, a memo was issued to all staff from plant management regarding expectations for radiation workers, which was later included in a station procedure. In addition, based on a common cause analysis, revisions were made to the nuclear general employee training (NGET) lesson plans; the RCA access point was modified to enhance access, egress and overall control and monitoring of personnel; health physics staff created an orientation check list to be

discussed with new personnel before unescorted access in the RCA; and all painters received NGET classroom retraining. The inspector verified that these actions had been completed and that there had been no recurrence of HRA boundary violations. This item is considered closed.

R8.2 (Closed) VIO 50-266/97016-06(DRP); 50-301/97016-06(DRP): The failure to lock the Unit 2 lower containment equipment access door, a posted locked high radiation area. The immediate corrective action was to lock the door as required. Two root causes to the violation were identified: the lack of an effective process within the health physics department for communication of information regarding changes in radiological postings, and the lack of procedural guidance to ensure that the personnel airlock doors were locked when changes were made to containment internal postings when a reactor unit's operating mode was changed. Corrective actions included the development and implementation of a health physics supervisory shift turnover system and development of a procedure to control the radiological posting changes required when reactor operating mode changes were made. The inspector verified that the corrective actions were implemented and that there had not been a recurrence of the violation. This item is considered closed.

R8.3 (Closed) IFI 50-266/97024-01(DRS); 50-301/97024-02(DRS): A weakness was identified in the instrument calibration program based on the number of condition reports initiated pertaining to deficiencies in the program. As a result of the identified deficiencies the licensee brought in a contractor to assess and make improvements to the program as discussed in Section R1.1 of this report. This item is considered closed.

## **X1 Exit Meeting Summary**

The inspector presented the inspection results to members of licensee management at the conclusion of the inspection on September 4, 1998. The licensee acknowledged the findings presented.

The licensee did not identify any information discussed as being proprietary.



## PARTIAL LIST OF PERSONS CONTACTED

### Licensee

R. Farrell, Manager, Health Physics  
V. Kaminskas, Manager Regulatory Services and Licensing  
J. Knorr, Manager, Regulatory Services  
E. Lange, General Supervisor, Health Physics  
R. Mende, Plant Manager  
C. Onesti, General Supervisor, Health Physics  
M. Reddemann, Site Vice-President  
S. Thomas, General Supervisor, Health Physics

### NRC

F. Brown, Senior Resident Inspector

## INSPECTION PROCEDURES USED

IP 83750 Occupational Radiation Exposure  
IP 92904 Followup - Plant Support

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

None

### Closed

50-266(301)/97008-01	VIO	The failure of contract painters to follow a health physics procedure and the radiologically controlled area entry permit.
50-266(301)/97016-06	VIO	Failure to lock a high radiation area.
50-266(301)/97024-01	IFI	A weakness was identified in the instrument calibration program based on the number of condition reports initiated pertaining to deficiencies in the program.

### Discussed

None

## LIST OF ACRONYMS USED

ALARA	As Low As is Reasonably Achievable
dpm/100 cm <sup>2</sup>	Disintegrations per Minute per 100 Square Centimeters
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
HP	Health Physics
IFI	Inspection Followup Item
IP	Inspection Procedure
NGET	Nuclear General Employee Training
NRC	Nuclear Regulatory Commission
PAB	Primary Auxiliary Building
PDR	Public Document Room
RCA	Radiologically Controlled Area
RP&C	Radiation Protection and Chemistry
VIO	Violation

## LIST OF DOCUMENTS REVIEWED

### AUDITS

ALARA Self Assessment—ALARA Reviews  
Health Physics Group Self-Assessment Schedule  
Health Physics Self Assessment: Portable Survey Instrument Program, HP 98-01  
Health Physics Self Assessment: Contamination Control Program, HP 98-02  
Radiation Protection Self Assessment of Self Reading Dosimeters for Emergency Plan Inventory, HP 98-03  
Quality Assurance Audit Report, A-P-98-03, Radiation Protection Program

### PROCEDURES

HP 2.12, Rev. 17, Containment Entry/Exit Procedure  
HP 3.1, Rev. 9, Radiological surveys and Records  
HPCAL 1.27, Rev.6, Calibration of the RSO-50 Portable Survey Instrument  
HPIP 1.57, Rev. 23, Operation and Energy Check of the Helgeson Whole Body Counter  
HPIP 3.50, Rev. 12, Radiation Surveys  
HPIP 3.51, Rev. 9, Contamination Surveys  
HPIP 3.61, Rev. 4, Routine Radiation and Contamination Survey Schedules  
NP 4.1.2, Rev. 1, Response to Health Physics Work Practice Violation  
NP 4.2.12, Rev. 6, Requirements for Radiologically Controlled Area Entry

### MISCELLANEOUS

Containment Hatch Status Criticality Checklist  
Health Physics Radiologically Controlled Area Orientation Checklist  
HPIP 3.61 Routine Daily Survey Schedule  
Liquid Radioactive Source Inventory and Leak Test Record, July 1998  
Source Inventory Records, July 1998  
Source Leak Test Records, July 1998  
Whole Body Counter Calibration, 1998  
Whole Body Counter Pre-use Energy Calibration Data Summary for 1998