

U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No. 50-266/78-18; 50-301/78-21

Docket No. 50-266; 50-301

License No. DPR 24; DPR 27

Licensee: Wisconsin Electric Power Company
231 West Michigan
Milwaukee, WI 53201

Facility name: Point Beach Nuclear Plant, Units 1 and 2

Inspection at: Point Beach Site, Two Creeks, WI

Inspection conducted: October 4-6 and 24-27, 1978

Inspector: L. R. Greger

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12/11/78

Approved by: W. L. Fisher, Chief
Fuel Facility Projects and
Radiation Support Section

W. L. Fisher

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Summary:

Inspection on October 4-6 and 24-27, 1978 (Report No. 50-266/78-18;
50-301/78-21)

Areas Inspected: Routine, announced inspection of radiation protection program, including: qualifications; audits; training; radiation protection procedures; instruments and equipment; exposure control; posting, labeling, and control; surveys; notifications and reports; Bulletins and Circulars; licensee event reports; and licensee action on previously identified enforcement items and commitments. The inspection involved 52 inspector-hours onsite by one NRC inspector.

Results:

No items of noncompliance were identified in the twelve areas inspected.

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DETAILS

1. Persons Contacted

R. Bredvad, Health Physics Foreman
*F. Flentje, Office Supervisor
*J. Greenwood, Assistant to the Plant Manager
*C. Harris, Radiochemical Engineer
*G. Reed, Plant Manager
F. Rhodes, Operations Superintendent
*R. Weedon, Health Physicist

The inspector also contacted several other licensee employees, including members of the technical and engineering staffs.

*denotes those attending the exit interview.

2. General

This inspection, which began at 9:00 a.m. on October 4, 1978, was conducted to examine the licensee's radiation protection activities for compliance with NRC regulations. Refueling outage activities underway during the inspection were examined in addition to the routine radiation protection activities.

3. Licensee Action on Previous Inspection Findings

(Closed) Noncompliance (50-266/77-09; 50-301/77-11): Failure to leak test sealed radioactive sources. The licensee's technical specifications were amended December 23, 1977, to exempt sealed sources of less than 100 microcuries beta and/or gamma activity or less than 5 microcuries alpha activity from the leak test requirements. Leak tests of the remaining sealed sources have been conducted as required by the technical specifications.

(Closed) Noncompliance (50-266/77-09; 50-301/77-11): Failure to document the Radiochemical Engineer's review and approval of changes to procedures. Licensee form AO-25 has been used since September 1977 to document the Radiochemical Engineer's review and approval.

(Closed) Noncompliance (50-266/77-09; 50-301/77-11): Failure to barricade high radiation areas (100 mR/hr to 1000 mR/hr). The licensee has installed either radiation rope barriers or gates at entrances to high radiation areas.

(Open) Noncompliance (50-266/77-09; 50-301/77-11): Failure to properly evaluate an exposure to airborne radioactive material. Licensee procedure HP 10.8 specifies evaluative requirements for ascertaining compliance with 10 CFR 20.103. The licensee's implementation of this procedure will be evaluated during a subsequent inspection.

4. Organization

The licensee's radiation protection organization consists of five Radiation Control Helpers (temporary positions), three Radiation Control Operators, a Health Physics Foreman, and the Health Physicist. The current Health Physicist was appointed during November 1977. His qualifications conform to the criteria stated in ANSI N18.1-1971, as required by the technical specifications. In addition, there are five Radiation Chemistry Technicians and four Chemistry and Health Physics Department Technical Assistants who supplement the radiation protection staff as required. The Plant Radiochemical Engineer directs the activities of the above individuals. Contract radiation protection workers are normally employed during refueling outages.

Normal progression to the auxiliary operator position includes a minimum of six months as a radiation control helper. The auxiliary operators provide the radiation protection experience needed to comply with technical Specification 15.6.2.2 according to licensee personnel.^{1/} The licensee is currently evaluating the need for additional refresher training in radiation protection procedures for auxiliary operators. This item will be reviewed during a future inspection.

No items of noncompliance or deviations were identified.

5. Licensee Audits

The inspector reviewed the audits of radiation protection activities conducted since the previous radiation protection inspection. The December 1977 and May 1978 OSRC meeting minutes contained references to confirm that selected radiation protection activities had been reviewed. Additionally, an ALARA audit was conducted August 11 and 12, 1977, by the WEPCo Nuclear Project Office. The ALARA audit, which appeared comprehensive and thorough in its coverage, is conducted in response to the licensee's ALARA commitment as specified by the Plant Manager in a memo dated October 22, 1975. This memo further specifies conduct of an additional audit of personal exposures yearly under the cognizance of the OSRC. No evidence of this additional audit was available for 1977 or 1978, to date. This item will be reviewed further during a future inspection.

^{1/} Letter, Burstein to Lear, dated April 28, 1977.

6. Training

The radiation protection orientation training videotapes have not been changed since the previous radiation protection inspection. Three individual tapes are available for use, dependent upon the previous training and access requirements of the individual or group receiving the training. A written supplement to the videotapes is provided to trainees to resolve the training shortcomings identified during a previous inspection^{2/}. With one minor exception, the previously identified shortcomings related to the instructional requirements of 10 CFR 19.12 have been corrected. Some improvement in the overall quality of the videotapes remains desirable.

The licensee does not conduct quizzes in conjunction with the orientation training. Continued radiation protection training is provided through monthly safety meetings for general plant staff plus specific retraining for licensed operators and radiation control helpers. Selective review of the training records did not reveal any discrepancies from the training requirements.

No items of noncompliance or deviations were identified.

7. Radiation Protection Procedures

The inspector reviewed changes to the radiation protection procedures issued since the previous radiation protection inspection. No discrepancies from NRC regulatory requirements were identified in the revised procedures nor did the changes appear to diminish the effectiveness of the radiation protection program.

No items of noncompliance or deviations were identified.

8. Instruments and Equipment

Inventories and calibrations of radiation and contamination survey instruments, fixed radiation monitors, and continuous air monitors were selectively reviewed for the period since the preceding radiation protection inspection. Calibration and testing frequencies were noted to conform to the licensee's technical specification and procedural requirements.

No items of noncompliance or deviations were identified.

^{2/} IE Inspection Reports No. 50-266/77-09 and No. 50-307-7-11.

9. External Exposure Control

The licensee's personal monitoring program, which utilizes thermoluminescent dosimeters (TLD's), direct reading pocket dosimeters, and neutron dose calculations, remains unchanged from the previous radiation protection inspection. Dosimetry records for 1977 were reviewed; no doses in excess of 10 CFR 20.101 limits were noted. Selective review of NRC-4 forms for individuals who received greater than 1.25 rems in a quarter did not identify any discrepancies.

The highest individual whole body dose recorded for 1977 was less than six rems for one of the radiation protection personnel. The aggregate station radiation dose for 1977 was reported to be 470 man-rems.^{3/} The aggregate radiation dose for the 1977 Unit 1 refueling outage and the 1978 Unit 2 refueling outage averaged about 160 man-rems each.

The licensee's evaluation of neutron exposures was compared with the neutron monitoring practices recommended in Regulatory Guide 8.14 "Personnel Neutron Dosimeters." (The licensee is not required to comply with the regulatory guide.) The licensee's method of determining neutron doses is not consistent with Regulatory Guide 8.14 in certain areas. The regulatory guide recommends that neutron dosimeters meeting specified minimum sensitivity requirements be worn whenever the neutron dose exceeds 300 mrems in a quarter. The regulatory guide further recommends that if personal monitoring is required by 10 CFR 20.202 because of the total radiation exposure and the neutron dose is between 100 mrems and 300 mrems, then either: (1) a neutron dosimeter with sensitivity greater than the minimum sensitivity requirements (adequate for the neutron dose monitored) should be worn or (2) a neutron dosimeter with the specified minimum sensitivity should be worn and neutron dose should be calculated if the neutron dose cannot be reliably determined with the neutron dosimeter because of lack of sensitivity. Although the licensee's neutron dose records for 1977 and 1978 contained numerous instances of neutron doses in excess of 100 mrems in a quarter and two recorded neutron doses exceeding 300 mrems, the licensee does not use neutron dosimeters but rather calculates neutron doses from surveys conducted during the exposure period or from previous survey information when neutron fields are relatively uniform in both space and time. Stay-times are then used to calculate neutron doses. Calculated neutron doses are submitted to the TLD vendor monthly for addition to the whole body exposure recorded via the TLD's.

3/ PBNP Annual Operating Report for 1977.

Neutron exposure is evaluated for all persons entering containment while the reactor is critical. Calculated neutron doses for 1977 totaled about 12 man-rems. Approximately 6 1/2 man-rems have been incurred through September in 1978.

NTA film is not utilized by the licensee for neutron monitoring.

The licensee continues to: (1) expose 10 to 15 TLD badges to known exposures quarterly as a check on the TLD vendor's performance, (2) perform periodic response and drift checks of pocket dosimeters, and (3) maintain monthly TLD pocket dosimeter comparison data. Review of these records for the period since the previous radiation protection inspection did not identify any significant discrepancies.

10. Internal Exposure Control

The licensee's program for control of internal exposures includes the use of protective clothing and equipment, reduction of surface and airborne contamination levels, and utilization of airborne survey information and stay-time calculations. Whole body counting and urinalyses supplement the routine monitoring program to provide retrospective information regarding airborne exposures.

a. Whole Body Counting

Whole body counting is normally performed on company employees immediately following refueling outages. Contractor personnel are normally counted upon reporting to the site and again upon leaving. A small number, less than 5%, of contractor personnel working within controlled plant areas were not whole body counted upon departure during the previous year.

As a result of findings during a recent inspection,^{4/} the licensee recently revised Procedure HP 10.8 - Bioassay, to include an evaluation of whole body counting results for compliance with the exposure criteria of 10 CFR 20.103. Evaluations of whole body counting results performed since the previous inspection have not always been adequate to ensure compliance with 10 CFR 20.103, especially in cases of suspected external contamination or when the whole body count was performed soon after the suspected intake. Further evaluation, including additional whole body counting, would have been desirable in certain instances to confirm the external contamination or short term retention conclusions. The inspector discussed this item with licensee management, stating that future evaluations should be more thorough.

^{4/} IE Inspection Reports No. 50-266/77-09 and No. 50-301/77-11.

b. Respiratory Protection

The inspector reviewed the licensee's respiratory protection program for conformance to the requirements of 10 CFR 20.103 and Regulatory Guide 8.15. No significant discrepancies were identified. The licensee's program includes the major items specified in Regulatory Guide 8.15. Procedure HP 2.6 - Respiratory Protection is not clear regarding restrictions against respirator usage in airborne concentrations requiring a protection factor greater than that afforded by the respiratory equipment. Also, the protection factor specified for supplied-air hoods (not currently used) does not incorporate the limitations specified in IE Bulletin 78-07. The licensee has not finalized the annual medical qualification requirements. These items will be reviewed further during future inspections.

The licensee performs annual quantitative fit-tests for the two full-face mask models in use. A half-face mask is stocked but is not intended for use at present, due to the irritant smoke test requirement in the regulatory guide. The half-face masks were last used (for protection from airborne radioactive material) during 1977 according to licensee personnel. The full-face mask models in use are NIOSH approved. Neither hoods nor supplied-air suits are used by licensee personnel. The full-face masks are used in both air purifying and supplied-air modes. The protection factors used with the respirators conform to the regulatory guide.

11. ALARA

The licensee has a clear commitment to ALARA, as stated in a memo from the Plant Manager dated October 22, 1975, and as evidenced by continuing efforts to effect reductions in personal exposures. In addition to the annual ALARA audit previously discussed, numerous procedures reference ALARA concepts, procedure revisions are reviewed for ALARA considerations (although this ALARA review is not documented), excessive exposures are scrutinized through routine review of personal exposures by several levels of management (including the use of trend plots for various work groups), and efforts have continued to identify and reduce excessive direct radiation and contamination levels. A recent modification to the reactor cavity drain line replaced a right angle bend with a tee-connection to collect crud in a concrete lined drum instead of on the internal pipe surfaces, thereby reducing local radiation levels significantly. Use of a wet vacuum for decontaminating the upper refueling cavity floor, tried experimentally during this refueling outage, may achieve a significant reduction in contamination levels while reducing personal exposures during the decontamination work.

The licensee's attitude and efforts towards reduction of personal exposures is commendable.

12. Posting, Labeling, and Control

During inspection of the licensee's facilities, the inspector examined radiation caution sign postings, high radiation area access controls, radiation work permit usage, and survey postings for conformance to regulatory requirements and the licensee's procedures. Several examples of poor health physics practices were noted: (1) misuse of radiation rope; (2) radiation area caution signs posted within larger posted radiation areas; and (3) inconsistent high radiation area barricade usage. As a result of findings during a previous inspection, the licensee had installed radiation rope barriers at the entrances to plant areas containing actual or potential radiation fields between 100 mR/hr and 1000 mR/hr. The radiation ropes are required and normally used to barricade areas only when radiation levels exceed 100 mR/hr, although radiation ropes are also installed at entrances to potential high radiation areas. This creates problems in immediate recognition of those areas actually requiring usage of the barriers. Consequently, the licensee has experienced continuing difficulty in ensuring consistent usage of the barriers. These items will be reviewed further during future inspections.

Radiation work permits (RWP's) are required for work performed under certain radiological conditions. It was noted that usage of RWP's was not consistent regarding worker's signatures, terminations, and recording of dosimeter doses. When respiratory protection equipment usage is specified on an RWP, representative air samples are required to be collected by the licensee's procedures. It was suggested that the licensee record these airborne survey results on the RWP. These items will be reviewed further during future inspections.

The documents required to be posted pursuant to 10 CFR 19.11 were noted to be posted as required.

No items of noncompliance or deviations were identified.

13. Surveys

The licensee's direct radiation, contamination, and airborne survey records for the period since the preceding radiation protection inspection were selectively reviewed. No significant discrepancies were identified. Revised Procedure HP 8.5 - Airborne Radioactivity Surveys, changes the unidentified airborne concentration which requires conduct of gamma isotopic analyses to $1E-9$ uCi/cc. This change enables the licensee to be in a position to post airborne radioactivity areas at 25% of MPC.^{5/} Selective review of the

5/ Ibid.

licensee's records indicated that gamma isotopic analyses have been conducted when airborne particulate activity exceeded $1E-9$ uCi/cc except when similar samples had been recently analyzed. It was suggested that the licensee annotate the airborne survey records in those cases where previous isotopic analyses are utilized.

The licensee assumes a 100% collection efficiency for particulate sampling media. Charcoal cartridge (KI-impregnated) collection efficiencies, determined quarterly by series testing, generally range from 85% to 95%.

The licensee's records of sealed source leak tests and inventories were reviewed for the period since the preceding radiation protection inspection. The most recent leak tests were conducted during June 1978. No leaking sources were identified.

No items of noncompliance or deviations were identified.

14. Notification and Reports

Selected records of notifications and reports related to radiation protection as required by 10 CFR 19, 10 CFR 20, and the technical specifications were reviewed for the period from September 1977 through September 1978.

No items of noncompliance or deviations were identified.

15. Review of Nonroutine Events

The inspector reviewed the licensee's actions with respect to the radiological aspects of the following licensee event report. No items of noncompliance or deviations were identified.

LER 50-266/78-11: Incorrect valve lineup allowing bypass of gas decay tanks (June 14, 1978)

Discussions with licensee personnel did not reveal any significant discrepancies in the report. The event did not cause a significant radioactive release.

16. Review of Bulletins and Circulars

The inspector reviewed the licensee's actions regarding the following Bulletins and Circulars.

IEB 78-07: Protection Afforded by Air-Line Respirators and Supplied-Air Hoods

IEB 78-08: Radiation Levels from Fuel Element Transfer Tubes

IEC 78-03: Packaging Greater than Type A Quantities of Low Specific Activity Radioactive Material for Transport

The specified actions for IEB 78-07 are not applicable, since the licensee's respiratory program does not include the use of air-line supplied-air respirators operated in the demand mode or supplied-air hoods. Although not required, the licensee submitted a negative report.

The specified actions for IEB 78-08 have been completed for Unit 1 and are scheduled for completion for Unit 2 by the 1979 refueling outage for that Unit. The specified report was submitted. Completion of the licensee's actions for Unit 2 will be reviewed during a future inspection.

IEC 78-03 was discussed with licensee personnel. No problems were noted.

No items of noncompliance or deviations were identified.

17. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on October 27, 1978. The inspector summarized the scope and findings of the inspection. In response to certain items discussed by the inspector, the licensee:

- a. Stated that conduct of the annual OSRC personal audit would be reviewed at the next OSRC meeting. (Paragraph 5)
- b. Stated that, due to personnel changes, the anticipated revisions to the radiation protection orientation videotapes had not been completed. (Paragraph 6)
- c. Acknowledged the inspector's remarks concerning conformance of personal neutron monitoring practices to Regulatory Guide 8.14 and agreed to provide personal neutron monitoring devices to individuals entering containment, when critical, in the future. (Paragraph 9)
- d. Acknowledged the inspector's remarks concerning evaluation of whole body counting results for conformance to the airborne intake limits of 10 CFR 20.103 and stated that with the recent implementation of a plant procedure (HP 10.8) for conducting such evaluations, future evaluations would be more conclusive. (Paragraph 10)
- e. State that the composition of the annual medical clearance for respiratory equipment usage would be finalized and implemented by the end of 1978. (Paragraph 10)

- f. Stated that the respiratory program would be reviewed regarding allowable peak airborne concentrations and supplied-air hood protection factors. (Paragraph 10)
- g. Stated that the controlled area housekeeping problems noted by the inspector would be investigated and corrective action initiated. (Paragraph 12)
- h. Stated that radiation work permit (RWP) usage and airborne survey records would be reviewed in light of the inspector's comments. (Paragraphs 12 and 13)