U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-266/84-22(DRSS); 50-301/84-20(DRSS)

Docket Nos. 50-266; 50-301 Licenses No. DPR-24; DPR-27

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

Facility Name: Point Beach Nuclear Power Plants, Units 1 and 2

Inspection At: Point Beach Site, Two Creeks, WI

Inspection Conducted: December 3-7, 1984

Inspector: R. A. Paul for 1/11/85
Date

Approved By: L. R. Greger, Chief 1/11/85
Facilities Radiation Protection Section Date

Inspection Summary

Inspection on December 3-7 and 26, 1984 (Report Nos. 50-266/84-22(DRSS); 50-301/84-20(DRSS))
Areas Inspected: Routine, unannounced inspection of radioactive waste systems, including: effluent releases; records and reports of effluents; effluent control instrumentation; procedures for controlling releases; and containment air cleaning systems. The inspection involved 41 inspector-hours onsite by one inspector.
Results: One violation was identified (failure to properly calibrate radiation process monitors - Section 8).

DETAILS

1. Persons Contacted

*R. Bredvad, Plant Health Physicist
*F. Flentze, Supervisor, Office Services
R. Fredricks, Radiochemist
C. Gates, Radwaste Supervisor
E. Henshaw, Nuclear Plant Specialist, Chemistry
E. Lange, Health Physics Supervisor
D. LeQuia, Health Physics Supervisor
M. Logan, Quality Engineer
M. Moseman, Specialist, Nuclear
R. Neustadter, Specialist, Nuclear
*J. Zach, Plant Manager
*R. Hague, NRC Senior Resident Inspector
*R. Leemon, NRC Resident Inspector

The inspector also contacted other licensee employees.

*Denotes those present at the exit meeting.

2. General

The inspection, which began at 8:00 a.m. on December 3, 1984, was conducted to examine the licensee's gaseous, liquid, and solid radwaste management activities. Selected records of radioactive liquid and gaseous releases were compared with the releases reported in the licensee's semiannual effluent reports. The inspection included visual inspection of selected gaseous, particulate, and iodine sampling stations and monitor locations. Visits were made to the control room to observe monitor printout readings and alarm/trip setpoints. Calibration data for the gaseous and liquid effluent monitors were reviewed.

3. Licensee Action on Previous Inspection Findings

(Closed) Open Item (266/83-03-02; 301/83-03-02): Only protection factors of up to 2000 could be fit tested for using the Bio-Pak 60 breathing apparatus. According to 10 CFR 20, this breathing apparatus must be tested to demonstrate a protection factor of 5000, and it is not acceptable to apply a measured factor which is less than those listed in 10 CFR 20. Recent guidance to NRC RIII from the Office of Inspection and Enforcement suggests that the licensee need not demonstrate a protection factor of 5000, and that requiring a fit test factor of 5000 in the negative pressure air-purifying mode is too restrictive. The guidance recommended that a factor of 1000 be considered an acceptable fit and only the facepiece equipped with a high efficiency filter need be tested.

(Closed) Open Item (266/83-11-03; 301/83-19-02): Revision of whole body counting procedures to correct observed discrepancies. Procedures HPIP 1.57, "Bioassay - Appendix B - Flagging and Evaluation of Whole Body Count Results," was revised to reflect the discrepancies in the quantities of radioactivity constituting maximum permissible whole body burdens.

(Closed) Open Item (266/84-10-01; 301/84-08-01): Use of personal neutron dosimeters for neutron dose calculations to meet the requirements of Regulatory Guide 8.14 criteria. Persons expected to receive neutron exposure in excess of 300 mrems per quarter are now issued a neutron dosimeter. Personal exposures will be calculated on the basis of the dosimeter results and dose equivalents based on measurements with portable monitoring equipment.

4. Liquid Radioactive Wastes

The inspector reviewed the licensee's reactor liquid radwaste management programs, including determination whether changes to equipment and procedures were in accordance with 10 CFR 50.59; determination whether liquid radwaste effluents were in accordance with regulatory requirements; adequacy of required records, reports, and notifications; determination whether process and effluent monitors are maintained, calibrated, and operated as required; and experience concerning identification and correction or programmatic weaknesses.

Liquid radioactive batch releases are discharged from the waste disposal system, waste condensate tanks or the CVCS monitor tanks into Lake Michigan. The releases are controlled by permit and quantified by pre-release analysis. The liquid discharged via this pathway is monitored with off-li monitors (RE-218; RE-223 and their corresponding background monitors) which have isolation functions, and a service water discharge line liquid process monitor (RE-229). Continuous release pathways are from the steam generator blowdown tanks and the retention pond. Grab samples are used to quantify liquids released from the blowdown system and a composite sample is used to quantify the liquid from the retention pond. In addition, two tank outlet liquid process monitors which have isolation functions (RE-222) are used for the steam generator blowdown system.

The inspector selectively reviewed the monthly liquid release summaries and individual release permits for 1984 to date. It appears that monitoring, sampling, and release rate determination for effluents during this period were in accordance with procedural and technical specification requirements. The releases for this period averaged less than 1% of the technical specification limit. About 63% of the total non-tritium activity released during the first six months of 1984 was from steam generator blowdown. Most of the tritium activity is attributable to processed radwaste and primary coolant letdown.

The licensee continues to conduct tritium sampling from the plant subsoil drainage system. The samples are analyzed, quantified and reported in the semiannual effluent report. The tritium releases via the subsoil drainage system are very small relative to total plant releases.

Monthly composite samples of liquid discharges are sent to a contractor for analysis of gross alpha and strontium 89 and 90 radioactivity. The results of the samples are used in computing maximum discharge concentrations for each release. A review of selected sample results indicated that the strontium 89 and 90 activity ranges between 1 to 65 picocuries per liter. Most of the alpha activity is less than 1 picocurie per liter; however, two composite samples indicated alpha activity of 22 and 1525 picocuries per liter, respectively. According to the licensee, sample results which are significantly higher than normal are followed up and actions are taken to determine the validity of the results and the possible cause of the higher values. In reviewing these actions, the inspector found certain weaknesses. This matter was discussed at the exit interview and will be reviewed at a future inspection (266/84-22-01; 301/84-20-01).

The licensee has taken steps to prevent the problem of contamination buildup in the off-line liquid process monitor which can affect detector response. These steps include use of alarm setpoint placements and the monthly surveillance program of the process liquid monitoring system as described in HPIP 7.51.

No violations were identified.

5. Gaseous Radioactive Waste

The inspector reviewed the licensee's gaseous radwaste management program, including: determination whether changes to equipment and procedures were in accordance with 10 CFR 50.59; determination whether gaseous radioactive waste effluents were in accordance with regulatory requirements; adequacy of required records, reports, and notifications; determination whether process and effluent monitors are maintained, calibrated, and operated as required; and experience concerning identification and correction of programmatic weaknesses.

During normal operations, gaseous wastes emanate from: degassing reactor coolant discharged to the CVCS; displacement of cover gases as liquids accumulate in various tanks; miscellaneous equipment vents and relief valves; and sampling operations and automatic gas analysis for hydrogen and oxygen in cover gases. The licensee's gaseous effluent sampling and monitoring program includes continuous monitoring of the auxiliary building vent, Units 1 and 2 containment purge vent, and the drumming area vent. In addition, weekly grab samples are collected from the auxiliary building vent, Unit 1 and 2 gas stripper building ventilation, and the drumming area vent and isotopically analyzed. Grab samples from the Units 1 and 2 containment purge vents are collected when the system is venting.

The containment noble gas monitors initiate containment ventilation isolation upon detection of high activity which in turn closes the purge valves, secures the continuous vent, and puts the monitor in recirculation mode. The auxiliary building vent stack noble gas monitor shuts the vent gas release valve and initiates exhaust vent filtration through a filter bank upon high alarm. The control room noble gas monitor shifts control room ventilation to 100% recirculation upon high alarm. All process monitoring systems provide indication in the control room computer terminal. All gaseous releases are quantified using effluent monitors. No discrepancies from the technical specification surveillance requirements were identified.

The inspector selectively reviewed the licensee's calculations and records of gaseous releases for 1984 to date. No releases exceeding technical specification release limits were identified. Gaseous releases for this period averaged less than 1% of the technical specification limit.

The auxiliary building vent continues to be the primary airborne release pathway. Typically, three to five waste gas decay tanks are released each year which contributes between 20-40% of the total noble gas activity released.

The licensee calculates Kr-85 releases based upon Kr-85 to Xe-133 ratios in the primary coolant system as measured at the cryogenic adsorber from the gas stripper discharge. For waste gas decay tank discharges, samples are collected, counted for approximately 7 hours, and analyzed. The results are added to the calculated releases and reported in the semiannual effluent report.

No violations were identified.

6. Radioactive Iodine and Particulate Releases

The licensee's calculations and records of iodine and particulate (with half-lives longer than eight days) releases for 1984 to date were selectively reviewed. According to licensee statements and licensee records reviewed by the inspectors, there were no releases greater than the technical specification limit. Releases are quantified from the analysis of isokinetically sampled iodine and particulate samples collected weekly from the auxiliary building and drumming area vents. Units 1 and 2 containment purge system releases are based on low volume air samples collected when venting the containment. Releases for this period averaged less than 1% of the technical specification limit.

No violations were identified.

7. Report of Effluents

The licensee's semiannual reports of radioactive effluents for the first half of 1984 were reviewed by the inspector. Selected comparison of the reported radioactive effluents with the licensee's analysis data did not reveal any discrepancies.

No violations were identified.

8. Effluent Control Instrumentation

Selected gaseous and liquid effluent/process monitor surveillance records for calendar year 1984 to date were reviewed for compliance with technical specification and procedural requirements for operability, trip setpoint, calibrations, and functional testing. The following monitors were examined and were found to have met the above noted requirements.

Containment Noble Gas Monitor (RE-212)
Auxiliary Building Vent Stack Noble Gas Monitor (RE-214)
Waste Disposal System Discharge Liquid Process Monitor (RE-218)
Steam Generator Blowdown Liquid Process Monitor (RE-219)
Steam Generator Blowdown Tank Outlet Liquid Process Monitor (RE-222)
Drumming Area Vent (RE-221)
Unit 1 and 2 Condenser Air Ejectors (RE-215)
Unit 1 and 2 Service Water Monitors (RE-229)
Auxiliary Building Vent (SPING 23)
Unit 1 and 2 Containment Purge Vents (SPING 21 & 22)

Liquid and gaseous monitors (some of which are used to quantify releases) which perform indication, alarm, and control functions were found to be calibrated in accordance with procedural requirements. Calibration constants are established to relate detector readout values to activity. The calibration constants are based on a one-point calibration utilizing a fluid source. The licensee does not perform a linearity check of the monitors with either fluid or solid radioactive sources. No curve is generated graphing release rate versus monitor response. This is not a sufficient method of calibration and is considered a violation of the calibration requirements of Technical Specification 15.1.F.3 because the calibration did not consist of adjusting a channel output such that it responds over the range of the instrument, especially for the gross liquid activity monitors (RE-218 and 223) and the plant vent activity monitor (RE-214) required by Technical Specifications 15.3.9.A.3.b and 15.3.9.B.4.b. Weekly gaseous grab samples collected from the auxiliary building vent during normal operations have occasionally been compared to the auxiliary vent monitor response. The results of the comparison appear reasonable; however, the licensee has not attempted to compare the gaseous sample results to detector response during a gas decay tank discharge when more, and a different mixture of radioactive gases would be available (266/84-22-02; 301/84-20-02).

The inspector verified that certain settings for alarm trip points for liquid and gaseous process monitors were set at the technical specification required alarm and trip setpoints, and in accordance with setpoints identified in Procedures STPT 13.0, "Point Beach Nuclear Plant Setpoint Document."

According to the licensee, the auxiliary building and drumming area vent are isokinetically sampled with a system which includes velocity sensors in the vents (which readout on a control panel) and flow control valves that regulate the sample flow as the main effluent stream velocity changes. Sample lines from the main exhaust systems are designed to minimize line loss for particulate and iodine sampling. Contractors have performed particle count and particulate size distribution studies to confirm minimal line loss.

One violation was identified.

9. Containment Air Cleaning Systems

Although there are no technical specification requirements for testing other than the control room filter systems, all systems are tested annually. In-place filter tests and laboratory methyl iodide tests were performed on plant ventilation systems during March and April 1984. The in-place testing included visual inspections of filter installations, DOP testing of HEPA filters, and Freon testing of charcoal adsorbers. The ventilation systems tested include containment purge (1F11A, 2F11A, 1F11B, 2F11B), control room emergency ventilation (F16), auxiliary building ventilation (F20, F21, F23, F25, F29), drumming area ventilation (F26) combined air ejector vent (F30), and containment cleaning (1F32 and 2F32). Except for the Freon test of the Unit 1 containment purge A filter (98.51%) and the Unit 2 containment cleaning filter (98.92%), all in-place tests indicated greater than 99% removal. Laboratory testing (methyl iodide) of charcoal samples indicated greater than 90% removal in all cases.

The tests are conducted in accordance with Procedure HPIP 11.50, "Filter Testing," and HPIP 11.50, Appendix A, "Control Room Filter Testing," and use the testing methodology in ANSI/ASME N509-1980.

No violations were identified.

10. Quality Assurance Audits

The Quality Assurance Department does not conduct audits to ensure performance of required surveillance tests and calibrations on the liquid and gaseous off-gas monitoring systems. A yearly corporate audit is performed of radiation safety activities. The last audit was conducted on January 19, 1984; however, the results of the audit were not available at the station during this inspection. Based on a document describing the items which were audited, it appears the audit did not include radwaste (effluent and solid) activities. This matter was discussed at exit interview.

No violations were identified.

11. Reactor and Secondary Coolant Radiochemistry

The inspector selectively reviewed the licensee's reactor coolant and secondary coolant radiochemistry results for 1984 to date to determine compliance with technical specification requirements for coolant activities and surveillance.

The most recent E analysis yielded 1.26 MEV and 1.74 MEV for Units 1 and 2, respectively. Reactor coolant activities were less than technical specification limits for Units 1 and 2. No discrepancies from the radioactivity technical specification surveillance requirements were identified.

No violations were identified.

12. Radwaste Procedures

The following operating and calibration procedures concerning gaseous, liquid, and solid radioactive activities were reviewed.

HPIP 7.51, Revision 2	Monthly Operational Test of the Radiation Monitoring System
STPT 13.0, Revision 6	Point Beach Nuclear Plant Setpoint Documentation
HPCAL 3.21, Revision 1	Stack Exhaust Monitor Calibration
HPCAL 3.14, Revision 4	Liquid Monitor Calibration Procedure
HPCAL 3.1, Revision 1	Radiation Monitoring System Calibration Procedure
HPCAL 3.23, Revision 1	Component Cooling Liquid Monitor Calibration Procedure
HPCAL 3.19, Revision 2	PNG Calibration Procedure
RDW 3.2, Revision 2	Disposal of Radioactive Waste

With the exception of those calibration procedures which do not require multi-point and/or linearity checks for process monitors (see Section 8) no significant problems or deviations from the procedures were noted.

No violations were identified.

13. Solid Radioactive Waste

The inspector reviewed the licensee's solid radioactive waste management program including: determination whether changes to equipment have reduced effectiveness of the systems; adequacy of the system to prevent and collect spillage; adequacy of test programs of solid waste system; adequacy of monitoring system to determine valid radiation measurements; adequacy of required records and procedures; and experience and training concerning operation of the solid waste program.

Solid radioactive waste consists primarily of compacted dry radioactive waste (DAW), and some process filter elements. Demineralizer resins and blowdown evaporation bottoms were solidified using an ATCOR cementing system until early 1984, at which time the licensee determined the system could not be used because it could not meet 10 CFR 61 requirements. The licensee intends to replace the system in 1985. Since early 1984, the licensee used the Chem-Nuclear cement solidification system. From January through June 1984, the licensee shipped approximately 1100 cubic feet of evaporator bottoms, 300 cubic feet of primary plant resins and 900 cubic feet of decontamination solution. The matter concerning the installation of the new solidification system was discussed at the exit interview and will be reviewed during a future inspection (266/84-22-03; 301/84-20-03).

While observing a transfer of evaporation bottoms into a Chem-Nuclear liner, the inspector reviewed the licensee's radiation protection coverage. Also reviewed were Chem-Nuclear solidification and test procedures, the licensee's methodology used to determine curie content for waste solidified by Chem-Nuclear, contractor analysis of transuranics and certain other isotopes, and licensee independent tests and evaluations of Chem-Nuclear tests to ensure regulatory requirements are met. No problems were noted.

The inspector reviewed the licensee's use of Procedure RDW 3.2, "Disposal of Radioactive Waste," which contains calculations used to determine curie content as a function of direct radiation measurements for a variety of shipping containers. Using the equations in the procedure to determine curie content for compressible and noncompressible trash, and a hypothetical set of parameters, the inspector generated a value for curie content in a 55 gallon drum. This value was compared to another value generated by the inspector using a different calculational method. The comparison showed close agreement between the values.

During a tour of the radwaste facilities, it was noted that hoses were used during a transfer of evaporator bottoms into a Chem-Nuclear line. The hoses have been used for the transfer of evaporator bottoms and resins to the liners ever since Chem-Nuclear was contracted for the solidification of these wastes. A licensee representative stated on one or two occasions, the hoses have clogged during resin transfers and had to be repaired, a radiation exposure job. This matter was discussed at the exit interview.

The licensee has, and is, in the process of instituting several changes in the handling and processing of solid wastes to achieve ALARA. These changes are the result of ALARA review which identify problems, make recommendations, and describe possible corrective actions; the possible corrective actions include: not filling the cement to the top of the drum, which prevents workers from having to chip concrete from the drum for proper lid fit; improved procedures to reduce exposures by preventing resin waste from being placed into improper containers; and transuranic sample analysis results made available before processing and shipping of wastes.

No violations were identified.

14. Exit Interview

The inspector met with licensee representatives (denoted in Section 1) on December 7, 1984. Further discussions were held by telephone on December 26, 1984. The inspector summarized the scope and findings of the inspection. In response to certain items discussed by the inspector, the licensee:

a. Acknowledged the item of noncompliance (Section 8).

b. Stated that the radiochemist will evaluate the results of the transuranic and strontium 89 and 90 liquid discharge samples upon return from the contractor to determine if any action is required when anomolous values are reported (Section 4).

c. Stated that increased effort will be given to develop an inhouse QA program for radwaste activities (Section 10).

d. Stated a review would be made to determine if replacement of hoses with hard piping for the transfer of evaporator bottoms and resin transfers is feasible (Section 13).

e. Stated that an ALARA engineering review of the proposed new radwaste solidification system will be made as part of an engineering study (Section 13).