U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-266/90002(DRSS); 50-301/90002(DRSS)

Docket Nos. 50-266; 50-301 License Nos. DPR-24; DPR-27

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

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

Inspection At: Two Creeks, Wisconsin

Inspection Conducted: January 9-12, 1990 (On-site)

Inspector: J. E. House — Date: 2/13/90

Approved By: M. C. Schumacher, Chief
Radiological Controls and
Chemistry Section — Date: 2/13/90

Inspection Summary

Inspection on January 9-12, 1990 (Reports No. 50-266/90002(DRSS); 50-301/90002(DRSS))

Areas Inspected: Routine unannounced inspection of: (1) the chemistry program, including procedures, organization, and training (IP 84750); (2) primary and secondary systems water quality control programs (IP 84750); (3) quality assurance/quality control program in the laboratory (IP 84750); (4) nonradiolgical confirmatory measurements (IP 84750); and (5) review of past open items (IP 92701).

Results: The licensee's water quality control program conforms to the EPRI Steam Generator Owners and Primary Systems Guidelines. Overall water quality was good as were the nonradiological confirmatory measurements. Laboratory QA/QC Programs continue to improve. No violations or deviations were identified.

DETAILS

1. Persons Contacted

[1]T. Fredrichs, Chemistry Superintendent, WEPCo
[1]J. Knorr, Regulatory Engineer, WEPCo
[1]D. Gehrke, Chemistry Supervisor, WEPCo
[1]R. Parlato, Chemistry Supervisor, WEPCo
[1]D. Stevens, Regulatory Specialist, WEPCo
[1]F. Flentje, Administrative Specialist, WEPCo

[1]J. Gadzala, Resident Inspector, NRC
C. Vanderniet, Senior Resident Inspector, NRC

The inspector also interviewed other licensee personnel in the course of the inspection.

[1]Denotes those present at the plant exit interview on January 12, 1990.

2. Licensee Action on Previous Inspection Findings (IP 92701)

a. (Closed) Open Item Nos. (50-266/88017-01; 50-301/88015-01):

Licensee to spike reactor water with anions and feedwater with metals. Split samples with Brookhaven National Laboratory (BNL), analyze and send results to Region III. The licensee prepared the spiked samples for comparison analysis and provided Region III with their results. Due to different analytical methods used by the licensee and BNL for anions, a valid comparison could not be made. The analysis of feedwater metals was eliminated by BNL, thus no data was available for comparison.

b. (Closed) Open Item Nos. (50-266/88017-02; 50-301/88015-02):

Licensee to review biases in Fluoride, Silica and Boron analyses. The inspector reviewed the assays performed during the current confirmatory measurements inspection along with the licensee's QA program. Proper calibration techniques including the use of independent controls was discussed with the licensee. The QA program continues to show improvement.

c. (Closed) Open Item Nos. (50-266/88017-03; 50-301/88015-03):

Licensee to consider the use of multiple calibration standards, develop computerized control charts and performance test chemistry technicians twice per year. From a review of selected data it appears that the technicians are being tested twice yearly, computerized control charts have been implemented and multiple point calibration curves are in place for most assays (Section 6).

3. Management Controls, Organization and Training (IP 84750)

The inspector reviewed the organizational structure of the chemistry laboratory. The Chemistry Superintendent and the Health Physics Superintendent report to the General Superintendent, Operations, who reports to the Plant Manager. The General Superintendent, Operations, and the General Superintendent, Maintenance are new positions and divide the plant into functional areas of maintenance and operations with chemistry being part of operations. The remainder of the laboratory organization is similar to that described in the previous report (50-266/88017; 50-301/88015).

No violations or deviations were identified

4. Water Chemistry Control Program (IP 84750)

The inspector reviewed the water chemistry control program defined by corporate Nuclear Power Department General Policy 003, "Corporate Water Chemistry Policy," March 1, 1987. Details for implementing this program are contained in procedures PBNP 8.4.1, "Secondary Water Chemistry Monitoring Program," Revision 14, December 1, 1989, and PBNP 8.4.2, "Primary Water Chemistry Monitoring Program," Revision 8, August 31, 1989. These procedures conform to the EPRI Steam Generator Owners Group (SGOG) Guidelines and EPRI PWR primary system guidelines. Deviations from these procedures require approval from the Vice President Nuclear Power.

The licensee has developed a computer based system for trending primary and secondary water chemistry parameters including those contained in the SGOG Guidelines. A review of selected records from 1989 indicated that water quality is very good and chemistry parameters for both primary and secondary systems were well within the Owners Group Guidelines. Water quality data is reviewed daily and weekly by laboratory and plant management.

The licensee has completed construction of a new primary water treatment plant. This system can provide up to 400 GPM of make up water for the demineralizers. In addition, an in-line Dionex Ion Chromatograph is being planned for monitoring secondary systems including steam generator blowdown, condensate and feedwater. The licensee's water quality program appeared to be very good.

No violations or deviations were identified.

5. Nonradiological Confirmatory Measurements (IP 84750)

The inspector submitted chemistry standards to the licensee for analysis as part of a program to evaluate the laboratory's capabilities to monitor nonradiological chemistry parameters in various plant systems with respect to regulatory and administrative requirements. These samples had been prepared, standardized, and periodically reanalyzed (to check for stability) for the NRC by the Radiological Sciences Division of Brookhaven National Laboratory (BNL). The samples were analyzed by the licensee using routine methods and equipment.

A single dilution was made for each sample by licensee personnel as necessary to bring the concentrations within the ranges normally analyzed by the laboratory, and run in a manner similar to that of routine samples. The results are presented in Table 1 which also contains the criteria for agreement. These criteria are based on BNL analyses of the standards and on the relative standard deviations (RSD) derived from the results of the plants participating in the 1986 interlaboratory comparisons (Table 2.1. NUREG/CR-5422).

The licensee determined nine analytes at three concentrations each. Of the initial 27 analyses, 20 were agreements, five were qualified agreements and two were disagreements. The qualified agreements are considered as agreements but fall within $\pm$ 3 standard deviations instead of within $\pm$ 2 SD (see Attachment 1). The disagreements were the middle level chloride which had a negative bias of 12% and sulfate with a positive bias of 14%. Following instrument recalibration, these analyses were repeated by a more experienced technician and the results were agreements.

Although the results of the nonradiological confirmatory measurement program were good, a few assays exhibited significant biases. Two of the silica results, although qualified agreements, demonstrated biases with the low level having a positive bias of 14% and the high level a negative bias of 11%. A new calibration curve for silica was prepared and the silica unknowns reanalyzed but the results showed little improvement. The new calibration solutions were prepared from the existing stock standards which could have been the source of the biases.

All three iron levels exhibited biases. The low level had a negative bias of 9% while the middle and high levels had positive biases of 12% and 10% respectively. The inspector discussed instrument calibration and other QA parameters that can affect calibration (Section 6) with licensee representatives.

No violations or deviations were identified.

6. Implementation of the Chemistry QA/QC Program (IP 84750)

The inspector reviewed the QA/QC program for nonradiological chemistry as defined in but not limited to the following procedures:

CAMP-001, PBNP Chemistry Laboratory Quality Assurance Program, Revision 7, May 3, 1989.

CAMP-107, Chemistry Administrative Procedure, PBNP Analytical Chemistry Laboratory QA Checks, Revision 4, May 31, 1989.

CAMP-108, Chemistry Administrative Procedures, PBNP Analytical Chemistry Sample Spiking QA Checks, Revision 8, October 23, 1989.

CAMP-109, Chemistry Administrative Procedure, Verification of Chemistry In-Line Instruments, Revision 3, January 26, 1988.

The licensee uses multiple point calibration curves for most assays. A single point is used to calibrate the Ion Chromatograph; however, a functional check standard is also incorporated into the calibration procedure for this instrument. Although functional check standards are in general use, they are prepared from the same material as calibration standards and thus do not represent true independent controls. The inspector discussed preparation and use of independent controls with licensee representatives.

Computer based control charts are in routine use. The parameter that is plotted is the deviation from the mean and is obtained by subtracting the known certificate value from the observed value of the functional check standard. This difference represents the deviation from the mean. Control limits for this parameter were statistically derived. The inspector noted that there was no formal procedure describing preparation of control charts. The licensee did have a five page memo that was used by laboratory personnel to maintain the control charts. Additional parameters such as retention time and a reference factor (peak height/known value of the check standard) are plotted for the Ion Chromatograph. These parameters enable the licensee to monitor instrument performance more closely.

The inspector discussed plotting the values of independent controls on control charts along with the development of a formal procedure for control charts. The licensee agreed to consider these items which will be followed under Open Item Nos.(50-266/90002-01; 50-301/90002-01).

The licensee's interlaboratory and intralaboratory comparison programs are vendor supplied and are combined into a single program. Data from each technician is averaged and then divided by the vendor supplied value. Each technician is tested twice per year and results must be within an acceptance band. A review of selected data from 1989 indicated that the required testing is being performed and the laboratory's performance when compared with the vendor data is adequate. This program appeared to be well organized and managed.

The licensee has a new cold chemistry laboratory. Equipment included Metrohn Titrators model 665, a Dionex Autoion 400 Gradient Elution Ion Chromatography system, a Perkin Elmer 3030B Atomic Absorption/Graphite Furnace Spectrophotometer and a Milton Roy 1201 Spectrophotometer. The laboratory appeared to be well designed and equipped. Offices for laboratory management and staff were located adjacent to the laboratory. Housekeeping appeared to be very good.

The licensee has the elements of a good QA/QC program in place and the program continues to improve.

No violations or deviations were identified.

7. Analyses Required by Technical Specification (IP 84750)

The inspector reviewed boron analyses required by Technical Specifications. These included Refueling Water Storage Tank (weekly, 2000 ppm minimum

boron concentration), Boric Acid Storage Tank (twice weekly, 11.5% minimum boron concentration), Accumulator (monthly, 2000 ppm minimum boron concentration) and the Spent Fuel Pit (monthly, 1800 ppm minimum boron concentration). Selected data from 1989 indicated that all required analyses were performed and boron concentrations met T/S requirements.

No violations or deviations were identified.

8. Audits and Appraisals (IP 84750)

The inspector reviewed selected quality assurance audits conducted during 1989. The audit teams appeared to address in adequate detail the chemistry QA/QC program and overall plant water systems. The auditors had no findings in the chemistry area.

No violations or deviations were identified.

9. Open Items

Open Items are matters which have been discussed with the licensee, which will be reviewed further by the inspectors, and which involve some action on the part of the NRC or licensee, or both. Open items disclosed during the inspection are discussed in Section 6.

10. Exit Interview

The scope and findings of the inspection were reviewed with licensee representatives (Section 1) at the conclusion of the inspection on January 12, 1990. The inspector discussed the Open Items (Sections 2 and 6), results of the nonradiological confirmatory measurements program, observations on the quality assurance program and water quality trend data.

During the exit interview, the inspector discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. Licensee representatives did not identify any such documents or processes as proprietary.

Attachment: Table 1, Nonradiological
Confirmatory Measurements Results
January 9-12, 1990

TABLE 1
Nonradiological Interlaboratory Test Results
Point Beach Nuclear Plant
January 9-12, 1990

Analyte		Method[1]	Concn[2]	Ratio[3]	Acceptance Ranges[4] ± 2sd	± 3sd	Result[5]
			ppb				
Chloride	A	IC	10-20	1.023	0.933-1.067	0.900-1.100	A
	B		25-35	0.876	0.919-1.081	0.887-1.113	D
	C		10-20	0.970	0.926-1.074	0.895-1.105	A
rerun	B		25-35	0.979	0.919-1.081	0.887-1.113	A
Fluoride	A	IC	10-15	1.083	0.875-1.125	0.813-1.187	A
	B		20-25	1.006	0.875-1.125	0.813-1.187	A
	C		10-20	0.964	0.875-1.125	0.813-1.187	A
Sulfate	A	IC	5-10	1.053	0.895-1.105	0.842-1.158	A
	B		10-20	1.139	0.895-1.105	0.868-1.132	D
	C		10-15	0.953	0.900-1.100	0.867-1.133	A
rerun	B		10-20	1.000	0.895-1.105	0.868-1.132	A
Iron	G	AA/FL	5-15	0.909	0.904-1.096	0.854-1.146	A
	H		15-25	1.122	0.903-1.097	0.857-1.143	A+
	I		25-35	1.103	0.903-1.097	0.855-1.145	A+
Copper	G	AA/FL	5-15	1.005	0.904-1.095	0.859-1.141	A
	H		15-25	0.988	0.904-1.096	0.857-1.143	A
	I		25-35	1.020	0.904-1.096	0.857-1.143	A
Sodium	J	AA/FL	40-60	1.118	0.863-1.137	0.784-1.216	A
	K		90-110	1.010	0.859-1.141	0.788-1.212	A
	L		140-170	1.007	0.862-1.138	0.789-1.211	A
Lithium	J	AA/FL	150-250	1.010	0.859-1.141	0.788-1.212	A
	K		250-350	1.024	0.859-1.141	0.788-1.212	A
	L		350-450	1.038	0.868-1.142	0.787-1.213	A
Silica	S	Spec	30-60	1.137	0.906-1.094	0.859-1.141	A+
	T		100-120	0.945	0.909-1.091	0.860-1.136	A
	U		140-160	0.892	0.907-1.093	0.857-1.143	A+
Boron[6]	D	Titr	1000	0.964	0.979-1.021	0.968-1.032	A
	E		300	0.997	0.979-1.021	0.968-1.032	A
	F		500	0.975	0.979-1.021	0.968-1.032	A

1. Methods: Titr - Titration
   IC - Ion Chromatography
   Spec - Spectrophotometry
   AA/FL - Atomic absorption spectrophotometry (flame)

2. Conc: Approximate concentration analyzed.

3. Ratio of Licensee mean value to NRC mean value.

4. The SD in the fifth and sixth columns represents the coefficient of variation obtained from averaging licensee data from the preceding cycle (Table 2.1 of NUREG/CR-5244). The licensee value is considered to be in agreement if it falls within the $\pm$ 2 SD range; a qualified agreement if it lies outside $\pm$ 2 SD but within $\pm$ 3 SD; and in disagreement if it is outside the $\pm$ 3 SD range.

5. Result:

   A = Agreement: Licensee value is within $\pm$ 2 SDs of the NRC mean value.
   A+ = Qualified agreement, licensee is between $\pm$ 2 and $\pm$ 3 SDs of the NRC value.
   D = Disagreement: licensee value is outside $\pm$ 3 SDs.

6. Boron assays are considered to be agreements based on comparison with other plants in Region III. BNL assay method differs somewhat from that used by Region III licensees.