U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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Report Nos:	50-266/99007(DRS); 50-301/99007(DRS)
Licensee:	Wisconsin Electric Power Company
Facility:	Point Beach Nuclear Plant, Units 1 and 2
Location:	6610 Nuclear Road Two Rivers, WI 54241
Dates:	February 16-19, 1999
Inspectors:	K. Lambert, Radiation Specialist A. Kock, Radiation Specialist
Approved by:	Gary L. Shear, Chief, Plant Support Branch Division of Reactor Safety

EXECUTIVE SUMMARY

Point Beach Nuclear Plant, Units 1 & 2
NRC Inspection Report 50-266/99007; 50-301/99007

This routine inspection of the radiation protection and chemistry program included the water chemistry control program, instrument quality control and inter-laboratory comparison program, quality assurance in chemistry activities, chemistry technician training and performance, and control room engineered safety feature filtration system.

- The staff's control of plant water chemistry continued to be good and was effective in reducing corrosive impurities in primary and secondary reactor water systems (Section R.1.1).

- A previously identified weakness continued regarding the lack of documentation for corrective actions taken in response to exceeding chemical parameter control limits, which could prohibit identification and correction of recurrent problems (Section R1.1).

- Required surveillances and tests of the control room engineered safety feature filtration system were well implemented and performed in accordance with procedures. Test results indicated that the Final Safety Analysis Report and Technical Specification acceptance criteria were met. Material condition of the ventilation system was good (Section R2.1).

- The chemistry staff effectively implemented routine and emergency sampling and analysis programs. Technicians performed sampling and analysis activities in accordance with procedures and good chemistry practices. Technicians exhibited good radiation work practices during sample collection and surveillance activities (Section R4.1).

- The station's training program for chemistry personnel was effective in providing technicians with necessary skills, in that it was generally comprehensive and well structured. Improvements to the training curriculum permitted more formal, efficient qualification of chemistry personnel (Section R5.1).

- The laboratory and instrument quality control program was adequate, in that instrument verification initiatives were performed as required, and instruments generally performed within specified control limits (Section R.7.1)

- Weaknesses in the laboratory and instrument quality control program were identified for not assessing instrument quality control data for trends and biases or documenting corrective actions when quality control limits were exceeded, and for not performing the inter-laboratory cross check program. The effectiveness of the quality control program was reduced by not performing these activities(Section R7.1).

- The quality verification program was comprehensive and effective in identifying issues and tracking their resolution. Audits, surveillances, and work monitoring reports were thorough and of sufficient depth to identify deficiencies (Section R7.2).

Report Details

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 Water Chemistry Control Program

a. Inspection Scope (IP 84550)

The inspectors reviewed the licensee's water chemistry control program for the control and mitigation of chemical contaminants in the primary and secondary water systems, which contribute to corrosion of reactor vessel and plant piping systems. This included a review of chemistry parameter data for January 1998 through February 1999, and discussions with cognizant individuals.

b. Observations and Findings

The scope of the water chemistry control program was consistent with the Electric Power Research Institute (EPRI) pressurized water reactor guidelines. The inspectors reviewed selected trend records for January 1998 through February 1999 and noted that the levels of impurities in the reactor coolant system were maintained at a minimum. The secondary water chemistry parameter data indicated that water quality was maintained well below EPRI action level one guidelines for sodium, chloride, and sulfate. The reactor coolant chemistry parameter data indicated that coolant quality was also very good, with parameters maintained below EPRI action level one for chloride, fluoride, sulfate, and dissolved oxygen. The inspectors also reviewed the reactor coolant isotopic analysis data for January 1998 through January 1999 and concluded that there were no problems with fuel integrity.

The inspectors noted that when chemistry data indicated that a control parameter limit was exceeded, action was taken to bring the parameter within limits. However, the inspectors also noted a weakness in the program involving the failure to document the corrective actions implemented. The chemistry staff could not always recall the problems encountered and the corrective actions taken. The lack of documentation could prohibit the staff from identifying recurrent water chemistry problems and implementing appropriate corrective actions. The lack of documentation was previously noted as a weakness in inspection reports 50-266/97014(DRS); 50-301/97014(DRS) and will be reviewed during a future inspection (IFI 50-266/99007-01(DRS); 50-301/99007-01(DRS)).

The inspectors also noted that the retrieval of chemical analysis data was difficult to accomplish because the data base system was not user friendly. This presented an even greater problem recently due to the loss of several experienced chemistry technicians and the lack of understanding regarding the chemistry data base system by the new technicians. Chemistry management indicated that they purchased a new chemistry data base system and that the station had been working on its

implementation during 1998. Several problems were encountered with the program that prevented its implementation. These problems were subsequently fixed by the vendor. The station planned to implement the new data base in March or April 1999. The new data base has the capability to track and trend chemical parameter data and to document corrective actions for chemical parameters that exceeded the control limits. The new data base also allowed easier access to the data.

The station also maintained a chemistry performance index (CPI) that was an indicator of overall secondary water and steam generator chemistry. The index was calculated daily based on the concentrations of chloride, sulfate, sodium, iron, copper, and dissolved oxygen and reported monthly. The goals for each unit were a daily CPI of less than 1.10 at greater than 30 percent power and a monthly CPI of less than 1.06. The index had been trending downward since October 1998 when the performance index was first reported. The Unit 1 and Unit 2 index values for October 1998 were 1.12 and 1.10 respectively. The index value in January 1999 for Unit 1 was 1.00, and in December 1998 for Unit 2 it was 1.00. There was no Unit 2 index in January 1999 due to the refueling outage. The licensee management indicated that the CPI values were improving through additional sampling points to get a more representative system sample.

c. Conclusions

The staff's control of plant water chemistry continued to be good and was effective in reducing corrosive impurities in primary and secondary reactor water systems. A previously identified weakness continued regarding the lack of documenting corrective actions taken in response to exceeding chemical parameter control limits, which could prohibit identification and correction of recurrent problems.

R2 Status of Radiological Protection and Chemistry Facilities and Equipment

R2.1 Control Room Engineered Safety Feature Filtration System

a. Inspection Scope (IP 84750)

The inspectors reviewed the Final Safety Analysis Report (FSAR), Technical Specifications (TS), and results of the TS required filtration and charcoal adsorber units' performance tests for the control room engineered feature filtration system. The inspectors discussed the system with the cognizant engineer and performed a walk down of the filtration system to observe the material condition.

b. Observations and Findings

The Final Safety Analysis Report and Technical Specifications required that the control room engineered feature filtration system operate at least 10 hours monthly. Additional system tests included an air flow rate test, an in-place high efficiency particulate air (HEPA) filter efficiency test, an in-place charcoal adsorber efficiency test, and a charcoal adsorber laboratory test for iodine removal efficiency.

The inspectors reviewed the control room heating and ventilation system checks, and HEPA filter and charcoal adsorber test data for 1997 and 1998 and concluded that the tests were performed at the frequency specified in the FSAR, the test results were within the FSAR and TS limits, and the tests were performed using proper industry standards. The inspectors noted that as a part of the acceptance test for the HEPA filters, a visual inspection of the housing and components was performed. Several discrepancies were noted on the visual inspection checklist; however, there was no indication whether corrective action was required or whether the discrepancy affected the test such that it would be unacceptable. Station follow up to these discrepancies was also not indicated. The cognizant health physics specialist indicated that any discrepancies affecting HEPA filter or charcoal adsorber tests would be corrected prior to performing the tests. Licensee management indicated that the issue would be reviewed and corrective actions implemented if necessary.

The inspectors performed a walk down of the control room ventilation system including duct work, filter housing, and the control room ventilation panel and noted that the ventilation system was maintained in good material condition.

c. Conclusions

Required surveillances and tests of the control room engineered safety feature filtration system were well implemented and performed in accordance with procedures. Test results indicated that the Final Safety Analysis Report and Technical Specification acceptance criteria were met. Material condition of the ventilation system was good.

R4 Staff Knowledge and Performance in Radiological Protection and Chemistry

R.4.1 Staff Performance During Sample Collection and Analysis

a. Inspection Scope (IP 84750)

To evaluate the chemistry staff's knowledge of sampling and analysis methodology, the inspectors observed technicians collect and analyze routine secondary system samples of steam generator water and feed water, and a primary system sample of Unit 1 reactor coolant. In addition, the inspectors observed a surveillance of the containment air post accident sampling system.

b. Observations and Findings

During observations of routine sampling, the inspectors determined that chemistry technicians were knowledgeable of applicable procedures and techniques. The technicians used appropriate collection techniques, including rinsing the bottles prior to obtaining each sample and wearing required protective clothing and extremity dosimetry. Chemistry staff obtained representative samples by purging sampling lines and ensuring a constant flow through the filter media. During the Unit 1 reactor coolant sample collection, one technician read the procedure steps and verified they were completed while the second technician performed the sampling activity. The technicians properly performed a radiological survey of the reactor coolant sample

container for dose rates prior to disconnecting the sample container. Discussions with the technicians indicated that they were knowledgeable of the chemical characteristics and applicable concentration limits for various chemical parameters.

Chemistry analyses observed were technically sound and according to station procedure. The technicians calibrated instrumentation and rinsed sample lines before measuring chemical contaminant concentrations, as required by station procedures. The inspectors noted that the technicians analyzed the proper volume of liquid, and were knowledgeable of the acceptable range of instrument response to prepared standards.

The inspectors also observed the surveillance for the collection of containment air from the high range sampling system. A supervisor read the steps and a technician performed the activities to ensure satisfactory completion of the surveillance. Accurate performance of the sampling surveillance included manipulating several valves and using three way communication with the control room. The inspectors also noted that the surveillance was completed in accordance with the procedure.

c. Conclusions

The chemistry staff effectively implemented routine and emergency sampling and analysis programs. Technicians performed sampling and analysis activities in accordance with procedures and good chemistry practices. Technicians exhibited good radiation work practices during sample collection and surveillance activities.

R5 Staff Training and Qualification in Radiological Protection and Chemistry

R.5.1 Training of Chemistry Personnel

a. Inspection Scope (IP 84750)

To assess the adequacy of the licensee's chemistry training program, the inspectors interviewed the chemistry training coordinator and reviewed training documentation for two chemistry technicians.

b. Observations and Findings

The training program for chemistry technicians was 14 to 18 months in length, and included classroom training, on-the-job training, and written and practical exams. The required classroom training was extensive, in that it included courses in chemistry fundamentals, radiation protection, pressurized water reactor systems, instrument analysis, and standards and reagents. The licensee developed a sequence of courses that provided technicians an appropriate level of knowledge before they progressed to more complex tasks. However, no specific training requirements were defined for chemistry technicians who advanced to specialist positions; the required knowledge was obtained through informal on-the job training. The station planned to address this issue in 1999 by developing a structured training program for chemistry specialists.

The licensee also established a continuing education program. A training advisory committee established the continuing education schedule based on plant and personnel priorities. The station accomplished these continuing education initiatives annually through formal classroom training and practical exams.

The inspectors' review of training documentation showed that chemistry personnel successfully completed all required training activities before assuming duties. Written and practical tests reviewed showed that the technicians passed the tests with the required score of 80%. The station retained complete documentation of written and practical exams as well as on the job training. Exam questions were probing and comprehensive, and technicians were required to demonstrate competence in a wide range of tasks before assuming duties.

The licensee made improvements to the chemistry training program that more formally and efficiently accomplished training of personnel. For example, the station formalized on-the-job training by designating the length of the training and requiring supervisors to certify completion of the training. To more efficiently use personnel resources, the licensee permitted technicians to independently perform duties for which they were certified before they qualified for all tasks within a program area. In addition, training staff certified technicians for basic duties without requiring the specialized training necessary for advanced tasks. Consistent with the guidelines of the International Nuclear Power Organization, the licensee modified the chemistry training curriculum to require a five week pressurized water reactor systems course. In addition, the station increased the standards for evaluators of practical tests by training them on assessing performance and reviewing the evaluators' competence annually.

c. Conclusions

The station's training program for chemistry personnel was effective in providing technicians with necessary skills, in that it was generally comprehensive and well structured. Improvements to the training curriculum permitted more formal, efficient qualification of chemistry personnel

R7 Quality Assurance in Radiological Protection and Chemistry Activities

R7.1 Laboratory and Instrument Quality Control Programs

a. Inspection Scope (IP 84750)

The inspectors reviewed the laboratory quality control programs for analytical and radioanalytical instrumentation, including the inter-laboratory comparison programs. The review included quality control records and discussions with chemistry technicians and cognizant chemistry personnel.

b. Observations and Findings

The chemistry staff used quality control checks to monitor the performance of chemistry analytical and radioanalytical instrumentation. The inspectors reviewed selected quality

control data and concluded that quality control initiatives were performed at the required frequency in accordance with station procedures. The inspectors noted that quality control data was being entered into the new chemistry data base system, which flagged control limits when they were exceeded. Quality control data reviewed showed that laboratory instruments generally performed within control limits. However, the inspectors noted some instances when quality control limits were exceeded and there was no documentation of corrective actions. Chemistry procedure CAMP 107, "Analytical Chemistry Laboratory QA Checks" required that if any point exceeds a control limit, the lab supervisor shall be notified and corrective steps should be taken, and analysis may not be performed until the instrument passes the quality control check or the lab supervisor authorized use of the instrument. This procedure was not required by Technical Specifications. The inspectors discussed several examples of control limits being exceeded with the lab supervisor, who could not recall if he was notified in accordance with the procedure or if corrective actions were performed. The lab supervisor reviewed instrument logs and technician logs, but could not find documentation of corrective actions taken in response to the anomalies. In addition, the inspectors noted that quality control data was not evaluated for trends or biases. Evaluating trends or biases can provide early warning of instrumentation degradation and allow early resolution of the problem. The lack of evaluating quality control data for trends and biases was previously noted as a weakness in inspection reports 50-266/97014(DRS); 50-301/97014(DRS).

The inter-laboratory cross check program was implemented through chemistry procedure CAMP 107, "Analytical Chemistry Laboratory QA Checks." The procedure stated that quarterly an outside vendor should supply sets of standards and their known concentrations. Approximately once per month, chemistry technicians analyzed the blind standards from the outside vendor. The inspectors noted generally good agreement with the known standard concentrations for inter-laboratory cross checks of the radioanalytical instruments. When the analysis was outside the acceptable range the cause was evaluated and corrective actions were taken. However, the inspectors noted that between April 1998 and January 1999, cross check samples for analytical instruments were not analyzed. Cross check analysis data from January 1999, and before April 1998, were generally in agreement with the known concentrations. Chemistry management indicated that the inter-laboratory comparison program was not implemented because of staffing constraints. However, they did not document this justification or amend the procedure to reflect their decision.

Station management indicated that the suspension of the cross check program had minimal impact on the department's ability to correctly analyze chemical samples, since it was a secondary verification of instrument accuracy. The daily quality control check of instruments, which provided the primary check of instrument performance, were performed at the required frequency. However, Regulatory Guide (RG) 4.15, "Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment," stated that an inter-laboratory cross check program is an important part of the quality assurance program because it provides a means to detect errors that might not be detected by other in-house quality control measures. The inspectors concluded that not performing the cross check program was a weakness in the chemistry program, since the inter-laboratory cross check was an

independent verification of the chemistry department's capability to accurately prepare and analyze samples.

The inspectors discussed the weaknesses regarding not assessing quality control data, not documenting corrective actions when instrument quality control limits were exceeded, and not performing the inter-laboratory cross check program for analytical instruments. Station management indicated the weaknesses would be evaluated and corrective actions taken to strengthen these program areas. Station management further indicated it was their expectation that procedures be followed. The weaknesses in the analytical chemistry laboratory quality control program will be reviewed during a future inspection (IFI 50-266/99007(DRS); 50-301/99007(DRS)).

c Conclusions

The laboratory and instrument quality control program was adequate, in that instrument verification initiatives were performed as required, and instruments generally performed within specified control limits. However, weaknesses were identified for not assessing instrument quality control data for trends and biases or documenting corrective actions when quality control limits were exceeded, and for not performing the inter-laboratory cross check program. The effectiveness of the quality control program was reduced by not performing these activities.

R.7.2 Quality Verification Assessments of the Chemistry Program

a. Inspection Scope (IP 84750)

To evaluate whether independent assessments of the chemistry program effectively identified and resolved problems, the inspectors interviewed members of the quality verification staff. In addition, the inspectors reviewed documentation of the quality verification department's fourth quarter summary of the chemistry program performance and audit of the chemistry program.

b. Observations and Findings

The quality verification department's assessment program included audits, surveillances, work monitoring reports, and a quarterly summary of chemistry program performance. The assessment schedule was aggressive; during 1998, the quality verification department conducted one audit and 31 field observations. The quality verification staff used a balanced assessment model to evaluate the program broadly, review specific program areas in depth, and observed performance in the field. In addition, functional area forms, which described assessment scope, reference documents, and inspection history, ensured consistent, technically sound evaluations. Finally, the quality verification department's quarterly assessment of the chemistry program provided an overall evaluation by compiling findings from internal and external inspections, evaluating condition reports for trends, and recommending areas to review in the future.

The audit reviewed was thorough and probing. The audit methodology was investigative, in that it included an assessment of the adequacy of procedures, data and associated follow up actions, field work, and sampling frequencies. The inspection scope included all aspects of the programs reviewed, including instrumentation, training, chemical data and trending, and quality control procedures. The merit of the audit findings was evidenced by their favorable comparison to NRC observations, in that the audit team identified several concerns noted by the inspectors. For example, the audit team noted the record retrievability problems discussed in Section R.1.1 of this report.

In addition, the quality verification staff tracked the resolution of identified problems. For example, the quality verification department tracked the chemistry department's proposed solutions to the inability to complete the inter-laboratory comparison program (See Section R.7.1). In response to the data retrievability concern, the audit team requested that the chemistry department evaluate whether their interim storage of records met the station requirements. This evaluation was in progress by the chemistry department.

c. Conclusions

The quality verification program was comprehensive and effective in identifying issues and tracking their resolution. Audits, surveillances, and work monitoring reports were thorough and of sufficient depth to identify deficiencies.

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on February 19, 1999. The licensee acknowledged the findings presented.

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

PARTIAL LIST OF PERSONS CONTACTED

Licensee

G. A. Corell, Chemistry Manager
F. A. Flentje, Senior Regulation & Compliance Specialist
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NRC

F. Brown, Senior Resident Inspector
P. Louden, Resident Inspector

INSPECTION PROCEDURES USED

IP 84750	Radioactive Waste Treatment, and Effluent and Environmental Monitoring

LIST OF ITEMS OPENED AND CLOSED

Opened

50-266/301-99007-01	IFI	Continuing weakness involving the lack of corrective action documentation in response to exceeding chemical parameter control limits.
50-266/301-99007-02	IFI	Analytical instrument quality control weakness involving not documenting corrective actions and not performing the inter-laboratory cross check program.

Closed

None

Discussed

None

LIST OF DOCUMENTS REVIEWED

Procedures

CAMP 001, Rev. 17, PBNP Chemistry Laboratory Quality Assurance Program
CAMP 101, Rev. 50, Daily Routine Sampling Schedule for Operating, Refueling, or Shutdown Units
CAMP 106, Rev. 6, Interlaboratory Radiological Cross Check Procedure
CAMP 107, Rev. 26, Analytical Chemistry Laboratory QA Checks
CAMP 234, Rev.8, Total Metals - Filtration/Acid Digestion Method
CAMP 592, Rev. 6, Dionex Autoion 400 Analysis of Anions and Organic Acids by HPIC
CAMP 600.11, Rev. 0, Primary Side Sampling Procedures: Sampling RCS for Dissolved Gas Samples Using Hot Leg Sample Lineup
NP 3.2.3, Rev. 5, Secondary Water Chemistry Monitoring Program
NP 11.2.3, Rev. 5, Internal Assessment Program Coverage, Planning, Scheduling, and Reporting
TS 9, Rv. 19, Control Room Heating and Ventilation System Monthly Checks

Audits

Quality Assurance Audit Report No. A-P-98-06.
Nuclear Power Business Unit QA Internal Assessment Summary Report Functional Area Quarterly Evaluations, Fourth Quarter 1998.

Miscellaneous

Radioanalytical and analytical inter-laboratory cross check data for 1997, 1998
Chemistry Performance Index
Unit 1, Unit 2 reactor coolant chemical parameter data, 1998
Unit 1, Unit 2 Steam Generator water chemical parameter data, 1998
Iodine-131 Removal Efficiency Laboratory Results, 1997 and 1998
Acceptance Tests for In-Place Testing, 1997 and 1998
Duct Traverse and Calculation Form, 1997 and 1998
Airflow Capacity and/or Distribution Test Report, 1997 and 1998
Control Room Heating ad Ventilation System Monthly Checks, 1998