

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-266/88005(DRSS); 50-301/88005(DRSS)

Docket Nos. 50-266; 50-301

Licenses No. DPR-24; DPR-27

Licensee: Wisconsin Electric 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: February 8-12, 1988

Inspector: *A. Januska*
A. Januska

3/10/88
Date

Accompanied by: R. Bocanegra

Approved by: *M. C. Schumacher*
M. C. Schumacher, Chief
Radiological Effluents
and Chemistry Section

3/11/88
Date

Inspection Summary

Inspection on February 8-12, 1988 (Reports No. 50-266/88005(DRSS);
No. 50-301/88005(DRSS))

Areas Inspected: Routine announced inspection of: (1) quality assurance and confirmatory measurements for in-plant radiochemical analyses; (2) verification of TLD collocation; (3) action on an open item and a violation identified during previous inspections.

Results: No violations or deviations were identified during this inspection.

DETAILS

1. Persons Contacted

- *J. Zach, Manager, PBNP
- *T. Fredrichs, Superintendent, Chemistry
- *J. Knorr, Regulatory Engineer
- *R. Arnold, Chemistry Supervisor
- *J. Reisenbuechler, Superintendent, EQRS
- *F. Flentje, Administrative Specialist
- *T. Slack, Nuclear Specialist
- M. Moseman, Nuclear Specialist
- *R. Hague, Senior Resident Inspector
- *R. Leemon, Resident Inspector

*Denotes those present at the exit meeting.

2. Licensee Action on Previous Inspection Findings (IP 92701, 92702)

- a. (Closed) Open Item (266/86009-02; 301/86008-02): Detailed review of counting room QC during subsequent inspection. The inspectors performed a detailed inspection of the counting room and found QC to be adequate. Details are found in Section 3.a. of this report. This item is closed.
- b. (Closed) Violation (266/87013-01; 301/87012-01): Failure to obtain approval for method of disposal pursuant to 10 CFR 20.302 of radioactively contaminated sewerage treatment plant sludge. The licensee received approval from the Office of Nuclear Reactor Regulation in a memo dated January 13, 1988. The inspectors verified that requirements of this memo have been satisfied, that no material has been disposed of since the issue was raised, and that a procedure describing steps necessary in preparation for land application of potentially contaminated sewage sludge from the plant digester has been approved and is in place.

3. Confirmatory Measurements (IP 83722, 83723, 84725)

a. Quality Assurance

The inspectors reviewed the radioactivity measurements laboratory quality assurance program including the physical facilities, laboratory operations, and procedures. Counting room equipment was found to be in good working order, however, difficulties were noted as the week progressed. These difficulties did not result in failure to perform required analyses. The licensee indicated that the emergency backup counting system was not in service.

Pertinent laboratory operating procedures found in CAMP 100, 300, and 400 series were reviewed by the inspectors. A detailed review of annual calibration procedures for the germanium detectors (CAMP 303) was performed. Other procedures reviewed included PBNP Chemistry Laboratory Quality Assurance Program (CAMP 001), Specified Shelf Life of Reagents (CAMP 105), Interlaboratory Radiological Cross Checks Procedure (CAMP 106), MCA Efficiency Calibrations (CAMP 300), Canberra Series 80 MCA Operating Instructions (CAMP 301), GeLi Detector Calibration Check (CAMP 303), Beta/Gamma Counter Scaler Efficiency Check (CAMP 360), Preparation of Calibration Standards (CAMP 400), Determination of Gross Beta Activity (CAMP 402), and Primary Coolant EBAR Determination (CAMP 406). No problems were noted in these procedures.

The inspectors also reviewed Quality Control records and related supporting documentation. Documents inspected included results for germanium detector calibrations and efficiency curves. The inspectors observed that the licensee is using Shewhart Control Charts to track daily QA checks for the germanium detectors, liquid scintillation counter, and gross alpha-beta counters. The inspectors also verified that calibrations for all geometries being used for radiological effluent analyses were current. The inspectors reviewed records of LLD calculations and found them to be adequate and within the limits set in the Technical Specifications. Radiochemistry Technicians were observed and evaluated on sample acquisition and preparation, and general laboratory practices. No improper actions or practices were noted.

The licensee is involved in an interlaboratory quality assessment program. Radiological crosschecks are periodically conducted with two vendors using standard reference materials traceable to the National Bureau of Standards. The standard sources are given to Radiochemistry Technicians for analysis as blind samples. The results are assessed using the same acceptance criteria used by the NRC for Confirmatory Measurements inspections.

b. Sample Split

Seven samples (air particulate, charcoal adsorber, spiked air particulate, spiked charcoal adsorber, reactor coolant, liquid waste, and gas) were analyzed for gamma emitting isotopes by the licensee and in the Region III Mobile Laboratory on site. Comparisons were made on combinations of the licensee's four normally used counting room detectors. The licensee achieved 83 agreements in 88 comparisons as listed in Table 1; the comparison criteria are given in Attachment 1.

The licensee uses a low percent abundance acceptance criteria in identifying nuclides. As a result, some nuclides present in small concentrations were identified and reported as positive by the licensee with a large error and not by the NRC. A disagreement was reported in a liquid waste sample for Nb-95. This was due to the licensee attributing part of the activity of the 765 KeV line to Nb-95 and Ag-110m whereas the NRC analysis attributed all of the

activity to Nb-95 because of the absence of the primary quantification line for Ag-110m. An I-132 disagreement in the second primary coolant sample was due to an I-132 line less than 2 KeV from a Co-58 line which the NRC counting system did not resolve. Some of the activity the NRC attributed to I-132 may in fact be Co-58. In discussing the licensee's results the licensee stated that they were in the process of looking for a method of quantifying primary coolant where higher concentrations can be analyzed. The licensee agreed to investigate a method involving filtering a sample through a 0.45 micron filter, cation paper, then quantifying the activity by summing the activity on the filters and in the filtrate (Open Item 50-266/88005-01; 50-301/88005-01). Other cobalt disagreements appear to be the result of plateout on the walls of the container causing the counting geometry to change. The licensee did not identify Kr-85 in the off gas sample because the quantity present in the sample approached the LLD for the licensee's detector. The inspectors discussed the results with the licensee stressing sample size. Although the LLD's which are a function of count time and sample size appear to be adequate, the licensee agreed to evaluate the use of a larger gas sample container by July 1, 1988 (Open Item 50-266/88005-02; 50-301/88005-02).

Due to the small number of nuclides present in actual samples counted, the licensee was asked to count spiked particulate filters and charcoal adsorbers. An NRC particulate filter was analyzed as an unknown resulting in all agreements. Because the licensee has a different charcoal geometry than the NRC, a licensee spiked adsorber was analyzed by the licensee and the certificate results listed as NRC results. To verify that the licensee's adsorber calibration was representative of actual samples and can thus produce accurate results, the licensee agreed to determine the iodine penetration profile and compare it to the calibration standard material profile by July 1, 1988 (Open Item 50-266/88005-03; 50-301/88005-03).

A portion of a liquid waste sample will be analyzed for gross beta, H-3, Sr-89, Sr-90, and Fe-55 and the results reported to Region III for comparison with an analysis by the NRC Reference Laboratory on a split of the sample. (Open Item 50-266/88005-04; 50-301/88005-04)

c. Audits

The inspectors reviewed licensee audit report QA-87-749 Annual PBNP Primary and Secondary System Chemistry Audit dated July 14-15, 1987. The areas assessed in the audit were not within the scope of this inspection.

No violations or deviations were identified.

4. Radiological Environmental Monitoring Program (IP 80721, TI 25022)

The inspectors reviewed the licensee's Semiannual Environmental Monitoring Reports for calendar year 1986. The Technical Specification sampling, analysis, and sensitivity requirements were met. There appears to be no evidence that the plant operation has had any significant environmental impact.

The inspectors confirmed by field observation that NRC TLD's listed as being collocated were sited close to the licensee's TLD's.

No violations or deviations were identified.

5. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, 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 3.b.

6. Exit Meeting

The inspectors met with licensee representatives denoted in Section 1 at the conclusion of the inspection on February 12, 1988. The scope of the inspection was discussed.

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

Attachments:

1. Attachment 1, Criteria for Comparing Analytical Measurements
2. Table 1, Confirmatory Measurements Program Results, 1st Quarter 1988

ATTACHMENT 1

CRITERIA FOR COMPARING ANALYTICAL MEASUREMENTS

This attachment provides criteria for comparing results of capability tests and verification measurements. The criteria are based on an empirical relationship which combines prior experience and the accuracy needs of this program.

In these criteria, the judgment limits are variable in relation to the comparison of the NRC's value to its associated one sigma uncertainty. As that ratio, referred to in this program as "Resolution", increases, the acceptability of a licensee's measurement should be more selective. Conversely, poorer agreement should be considered acceptable as the resolution decreases. The values in the ratio criteria may be rounded to fewer significant figures reported by the NRC Reference Laboratory, unless such rounding will result in a narrowed category of acceptance.

RESOLUTION

RATIO = LICENSEE VALUE/NRC REFERENCE VALUE

	<u>Agreement</u>
<4	0.4 - 2.5
4 - 7	0.5 - 2.0
8 - 15	0.6 - 1.66
16 - 50	0.75 - 1.33
51 - 200	0.80 - 1.25
200 -	0.85 - 1.18

Some discrepancies may result from the use of different equipment, techniques, and for some specific nuclides. These may be factored into the acceptance criteria and identified on the data sheet.

TABLE 1

U S NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
CONFIRMATORY MEASUREMENTS PROGRAM
FACILITY: PT BEACH
FOR THE 1 QUARTER OF 1988

SAMPLE	ISOTOPE	-----NRC-----		----LICENSEE----		---LICENSEE:NRC----		
		RESULT	ERROR	RESULT	ERROR	RATIO	RES	T
PRIMARY	I-131	6.3E-03	3.3E-03	6.6E-03	6.8E-04	1.0E 00	1.9E 00	A
DET 3	I-132	1.3E-01	2.2E-03	1.1E-01	3.1E-03	8.4E-01	6.1E 01	A
	I-133	7.7E-02	1.3E-03	8.1E-02	2.8E-03	1.0E 00	6.0E 01	A
	I-134	2.3E-01	9.1E-03	1.9E-01	7.9E-03	8.2E-01	2.6E 01	A
	I-135	1.4E-01	4.9E-03	1.5E-01	5.8E-03	1.1E 00	3.0E 01	A
OFF GAS	KR-85	2.7E-03	5.0E-04	2.4E-03	1.0E-03	8.8E-01	5.4E 00	A
DET 1								
L WASTE	MN-54	3.2E-06	3.7E-07	2.7E-06	3.7E-07	8.5E-01	8.8E 00	A
DET 4	CO-57	6.1E-07	1.3E-07	2.2E-07	1.9E-07	3.6E-01	4.7E 00	D
	CO-58	1.7E-05	4.6E-07	1.7E-05	8.0E-07	1.0E 00	3.7E 01	A
	CO-60	4.2E-05	6.8E-07	4.8E-05	9.7E-07	1.1E 00	6.2E 01	A
	AG-110M	2.3E-06	3.5E-07	2.1E-06	3.5E-07	8.9E-01	6.7E 00	A
	NB-95	2.5E-06	2.7E-07	1.7E-06	3.2E-07	6.9E-01	9.2E 00	A
	SB-125	1.9E-05	1.3E-06	2.1E-05	1.4E-06	1.1E 00	1.5E 01	A
	CS-134	2.0E-05	4.1E-07	2.1E-05	6.6E-07	1.0E 00	5.0E 01	A
	CS-137	6.5E-05	6.9E-07	6.6E-05	2.1E-06	1.0E 00	9.5E 01	A
	BA-139	3.1E-06	1.1E-06	2.4E-06	1.7E-06	7.7E-01	2.9E 00	A
	CE-144	6.1E-06	1.5E-06	4.4E-06	1.5E-06	7.2E-01	4.2E 00	A
OFF GAS	KR-85	3.1E-03	5.0E-04	2.1E-03	1.5E-03	7.0E-01	6.1E 00	A
DET 1	XE-133	1.2E-04	4.3E-06	1.1E-04	2.0E-05	9.2E-01	2.7E 01	A
(2nd sample)								
PRIMARY	CO-58	1.6E-03	3.8E-05	1.9E-03	0.0E-01	1.2E 00	4.3E 01	A
DET 1	I-131	6.4E-03	8.8E-04	6.8E-03	7.2E-04	1.1E 00	7.2E 00	A
	I-132	1.4E-01	2.2E-03	1.1E-01	3.5E-03	7.9E-01	6.3E 01	D
	I-133	8.1E-02	1.3E-03	8.1E-02	3.0E-03	1.0E 00	6.2E 01	A
	I-134	2.2E-01	9.5E-03	1.7E-01	1.4E-02	7.7E-01	2.4E 01	A
	I-135	1.5E-01	5.0E-03	1.6E-01	6.8E-03	1.1E 00	2.9E 01	A
OFF GAS	KR-85	2.5E-03	2.3E-04	2.4E-03	9.4E-04	9.6E-01	1.1E 01	A
DET 4								
L WASTE	MN-54	3.4E-06	3.5E-07	3.9E-06	3.9E-07	1.1E 00	9.9E 00	A
DET 3								

T TEST RESULTS:
A=AGREEMENT
D=DISAGREEMENT
*=CRITERIA RELAXED
N=NO COMPARISON

TABLE 1

U S NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
CONFIRMATORY MEASUREMENTS PROGRAM
FACILITY: PT BEACH
FOR THE 1 QUARTER OF 1988

SAMPLE	ISOTOPE	-----NRC-----		----LICENSEE----		---LICENSEE:NRC----		
		RESULT	ERROR	RESULT	ERROR	RATIO	RES	T
L WASTE	CO-58	1.7E-05	4.4E-07	1.9E-05	8.0E-07	1.1E 00	3.9E 01	A
DET 3 cont	CO-60	3.9E-05	6.5E-07	5.2E-05	9.8E-07	1.3E 00	6.1E 01	D
	AG-110M	3.0E-06	3.3E-07	2.0E-06	3.1E-07	6.7E-01	9.1E 00	A
	NB-95	2.4E-06	3.4E-07	2.4E-06	3.4E-07	9.8E-01	7.3E 00	A
	SB-125	1.9E-05	1.2E-06	2.1E-05	1.4E-06	1.1E 00	1.6E 01	A
	CS-134	2.0E-05	4.2E-07	2.1E-05	6.0E-07	1.0E 00	4.8E 01	A
	CS-137	6.5E-05	6.9E-07	6.7E-05	2.1E-06	1.0E 00	9.5E 01	A
	CE-144	5.2E-06	1.1E-06	7.1E-06	1.6E-06	1.4E 00	4.8E 00	A
OFF GAS	KR-85	2.9E-03	4.5E-04	0.0E-01	0.0E-01	0.0E-01	6.5E 00	D
DET 4	XE-133	1.2E-04	3.9E-06	1.2E-04	1.8E-05	9.9E-01	3.0E 01	A
(2nd sample)								
C FILTER	I-131	2.0E-12	5.2E-13	1.6E-12	2.7E-13	7.8E-01	3.9E 00	A
DET 2								
P FILTER	CS-138	5.2E-10	1.4E-11	4.1E-10	1.5E-11	8.0E-01	3.7E 01	A
DET 3								
C FILTER	I-131	2.0E-12	5.2E-13	1.2E-12	2.4E-13	6.1E-01	3.9E 00	A
DET 4								
P FILTER	CS-138	5.2E-10	1.4E-11	4.1E-10	0.0E-01	8.0E-01	3.7E 01	A
DET 2								
L WASTE	MN-54	2.6E-06	6.1E-07	2.2E-06	3.3E-07	8.2E-01	4.3E 00	A
DET 4	CO-58	1.4E-05	7.1E-07	1.6E-05	7.5E-07	1.1E 00	2.0E 01	A
	CO-60	3.9E-05	9.9E-07	3.8E-05	8.6E-07	9.8E-01	3.9E 01	A
(2nd sample)	SB-122	3.4E-06	5.0E-07	2.7E-06	3.6E-07	8.0E-01	6.7E 00	A
	SB-125	1.9E-05	1.6E-06	2.1E-05	1.4E-06	1.1E 00	1.2E 01	A
	CS-134	2.0E-05	6.4E-07	2.1E-05	6.0E-07	1.1E 00	3.1E 01	A
	CS-137	6.2E-05	1.1E-06	6.8E-05	2.1E-06	1.1E 00	5.9E 01	A
	CE-144	8.5E-06	2.0E-06	1.9E-06	1.4E-06	5.8E-01	4.1E 00	A
F SPIKED	CO-57	5.8E-03	7.3E-05	6.0E-03	2.3E-04	1.0E 00	7.9E 01	A
DET 3	CO-60	1.5E-02	3.0E-04	1.5E-02	2.2E-04	9.9E-01	5.1E 01	A
	Y-88	1.9E-03	1.3E-04	1.9E-03	8.1E-05	9.9E-01	1.5E 01	A

T TEST RESULTS:
A=AGREEMENT
D=DISAGREEMENT
+=CRITERIA RELAXED
N=NO COMPARISON

TABLE 1
U S NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
CONFIRMATORY MEASUREMENTS PROGRAM
FACILITY: PT BEACH
FOR THE 1 QUARTER OF 1988

SAMPLE	ISOTOPE	-----NRC-----		----LICENSEE----		---LICENSEE:NRC		--
		RESULT	ERROR	RESULT	ERROR	RATIO	RES	T
F SPIKED DET 3 count	CD-109	3.8E-01	2.8E-03	3.9E-01	2.2E-02	1.0E 00	1.4E 02	A
	SN-113	1.9E-03	1.3E-04	1.9E-03	8.5E-05	9.7E-01	1.5E 01	A
	CS-137	2.9E-02	3.3E-04	2.8E-02	7.6E-04	9.7E-01	8.5E 01	A
	CE-139	1.5E-03	5.3E-05	1.6E-03	1.1E-04	1.1E 00	2.8E 01	A
L WASTE DET 3	MN-54	2.9E-06	4.3E-07	2.7E-06	3.3E-07	9.3E-01	6.7E 00	A
	CO-58	1.5E-05	6.7E-07	1.6E-05	6.8E-07	1.1E 00	2.2E 01	A
	CO-60	3.8E-05	9.9E-07	3.9E-05	8.3E-07	1.0E 00	3.8E 01	A
	NB-95	2.8E-06	4.3E-07	1.3E-06	2.7E-07	4.6E-01	6.6E 00	D
	SB-122	2.6E-06	7.0E-07	2.8E-06	4.1E-07	1.1E 00	3.7E 00	A
	SB-125	2.0E-05	1.7E-06	2.0E-05	1.4E-06	1.0E 00	1.2E 01	A
	CS-134	2.1E-05	6.9E-07	2.1E-05	5.9E-07	1.0E 00	3.0E 01	A
	CS-137	6.0E-05	1.1E-06	6.7E-05	2.1E-06	1.1E 00	5.2E 01	A
C SPIKED DET 3	CE-144	1.0E-05	2.5E-06	5.1E-06	1.5E-06	5.0E-01	4.1E 00	A
	CD-109	4.9E-01	2.2E-02	4.5E-01	2.5E-02	9.2E-01	2.2E 01	A
	CO-57	1.2E-02	5.7E-04	1.1E-02	4.3E-04	9.3E-01	2.0E 01	A
	CE-139	1.2E-02	5.5E-04	1.1E-02	8.2E-04	9.5E-01	2.2E 01	A
	HG-203	3.3E-02	1.7E-03	3.9E-02	1.2E-02	1.2E 00	2.0E 01	A
	SN-113	2.0E-02	9.0E-04	2.0E-02	1.1E-03	9.6E-01	2.3E 01	A
	CS-137	1.4E-02	5.9E-04	1.3E-02	4.0E-04	9.6E-01	2.3E 01	A
	CO-60	1.2E-02	6.4E-04	1.2E-02	2.3E-04	9.4E-01	1.9E 01	A
F SPIKED DET 4	Y-88	3.1E-02	1.3E-03	3.0E-02	1.4E-03	9.6E-01	2.4E 01	A
	CO-57	5.8E-03	7.3E-05	6.2E-03	2.3E-04	1.1E 00	7.9E 01	A
	CO-60	1.5E-02	3.0E-04	1.6E-02	2.3E-04	1.0E 00	5.1E 01	A
	Y-88	1.9E-03	1.3E-04	2.0E-03	8.7E-05	1.0E 00	1.5E 01	A
	CD-109	3.8E-01	2.8E-03	4.0E-01	2.3E-02	1.0E 00	1.4E 02	A
	SN-113	1.9E-03	1.3E-04	1.9E-03	8.8E-05	1.0E 00	1.5E 01	A
	CS-137	2.9E-02	3.3E-04	2.9E-02	7.9E-04	1.0E 00	8.5E 01	A
	CE-139	1.5E-03	5.3E-05	1.6E-03	1.1E-04	1.1E 00	2.8E 01	A
C SPIKED DET 4	CD-109	4.9E-01	2.2E-02	4.6E-01	2.6E-02	9.4E-01	2.2E 01	A

T TEST RESULTS:
A=AGREEMENT
D=DISAGREEMENT
*=CRITERIA RELAXED
N=NO COMPARISON

TABLE 1
U S NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
CONFIRMATORY MEASUREMENTS PROGRAM
FACILITY: PT BEACH
FOR THE 1 QUARTER OF 1988

SAMPLE	ISOTOPE	-----NRC-----		-----LICENSEE-----		---LICENSEE:NRC---		
		RESULT	ERROR	RESULT	ERROR	RATIO	RES	T
C SPIKED CO-57		1.2E-02	5.7E-04	1.1E-02	4.3E-04	9.4E-01	2.0E 01	A
<i>DET 4 count</i> CE-139		1.2E-02	5.5E-04	1.1E-02	8.1E-04	9.5E-01	2.2E 01	A
	HG-203	3.3E-02	1.7E-03	3.5E-02	1.2E-02	1.0E 00	2.0E 01	A
	SN-113	2.0E-02	9.0E-04	2.1E-02	1.2E-03	1.0E 00	2.3E 01	A
	CS-137	1.4E-02	5.9E-04	1.3E-02	4.2E-04	9.9E-01	2.3E 01	A
	CO-60	1.2E-02	6.4E-04	1.2E-02	2.4E-04	9.7E-01	1.9E 01	A
	Y-88	3.1E-02	1.3E-03	3.0E-02	1.5E-03	9.5E-01	2.4E 01	A

T TEST RESULTS:
A=AGREEMENT
D=DISAGREEMENT
*=CRITERIA RELAXED
N=NO COMPARISON