U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-4091/86016(DRSS)

Docket No. 50-409 License No. DPR-45

Licensee: Dairyland Power Cooperative
2615 East Avenue - South
La Crosse, WI 54601

Facility Name: La Crosse Boiling Water Reactor (LACBWR)

Inspection Conducted: December 8-16, 1986

M. Schumacher for

Inspector: A. G. Januska 1/2/87
Date

M. Schumacher

Approved By: M. Schumacher, Chief 1/2/87
Radiological Effluents and Chemistry Section
Date

Inspection Summary:

Inspection on December 8-16, 1986 (Inspection Report No. 50-409/86016(DRSS))
Areas Inspected: Routine unannounced inspection of (1) the confirmatory measurements program including sample split and onsite analysis with the Region III Mobile Laboratory, (2) the radiological environmental monitoring program and (3) open items identified during previous inspections.
Results: No violations or deviation were identified.

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DETAILS

1. Persons Contacted:

*G. Boyd, Operations Supervisor
*L. Nelson, Health and Safety Supervisor
*P. Shafer, Radiation Protection Engineer
*R. Wery, Quality Assurance Supervisor
A. Hansen, Senior Health Physics Technician
J. Gaynor, Health Physics Technician
G. Roediger, Health Physics Technician
M. Land, Health Physics Technician

*Denotes those present at the exit interview on December 12, 1986.

2. Licensee Action on Pervious Inspection Findings

(a) (Closed) Open Item (409/84015-05): Evaluate the effect of high alpha efficiency on effluent data for 1984. The licensee prepared an AM-241 standard and determined a new counter efficiency. An appropriate correction factor was applied to the first and second quarter 1984 effluent results which had already been submitted in a semiannual report. The corrected values for the first and second quarter along with the third and fourth quarter results, were published in the 1984 Radioactive Effluent Report.

(b) (Closed) Open Item (409/85021-01): Continue efforts to solve chloride analytical problem. The licensee has continued to evaluate the chloride problem since the last inspection and has revised both technique and procedure. More rigid routine probe maintenance has been implemented to compensate for drift which was thought to be a significant part of the problem. A 20 minute test using laboratory demineralized water must result in less than a 2m V drift before a standard check on a 20, 40, 80, 120, or 160 ppb standard can be run. Although no finite numerical acceptance range has been determined corrective measures were taken based on management review. The inspector examined results for the first, second, and third quarters of 1986 for the analytical chemistry cross check with DPC Central Lab on Chloride measurements. Results for the three quarters show an improvement over previous tests.

(c) (Open) Open Item (409/85021-02): Analyze split sample for beta, gamma, H-3, Sr-89 and Sr-90 and report results to Region III. Results of the sample comparisons are listed in Table 2; comparison criteria are given in Attachment 1. The lone disagreement, Sr-90, was from the portion of the sample analyzed by the licensee's environmental contractor. In order to determine the validity of the result the licensee purchased a spike and had it analyzed by the contractor. Results of the analysis were not available at the close of the inspection. This item will remain open until the results are submitted to Region III.

3. Confirmatory Measurements

Seven samples (air particulate, charcoal, retention tank, gas, reactor coolant and two spiked particulate) were analyzed for gamma emitting isotopes by the licensee and in the Region III module laboratory onsite. Results are listed in Table 1. The licensee achieved 40 agreements out of 41 comparisons.

A stack air particulate filter count yielded only one nuclide, Co-60, which was not used for comparison because of poor counting statistics. To check this geometry, the licensee's calibration standard was counted and analyzed as an unknown (F SPIKED LIC). The inspector relaxed the test criteria because of the differences in the NRC and licensee's calibration. Although this resulted in agreements, the NRC's spiked air particulate was counted (F SPIKED NRC) because of an apparent conservative bias which was also observed in a previous inspection. A gas sample analyzed resulted in a disagreement for Xe-135. As no reason could be found for the disagreement, the licensee agreed to (1) prepare a new standard, analyze it as an unknown and examine the 249 and 608 Kev areas and (2) generate a new efficiency curve to be compared with the current curve before the next off gas sample is collected (Open Item 409/86016-01). In addition to the disagreement, the analysis also indicated a conservative bias. Discussion with the licensee revealed that these calibrations were performed using a liquid to simulate the particulate filter and the gas. Liquid calibrations did not exhibit this bias. The licensee stated that the use of air particulate and gas standards supplied by an independent manufacturer will be evaluated (Open Item 409/86016-02) and purchased if determined to be advantageous. A reactor coolant sample split with the licensee initially resulted in eight disagreements in 19 comparisons. The results averaged 20% nonconservative with only two comparisons being conservative. Multiple liquid geometries were compared by both the licensee and the NRC on portions of the same initial sample. It was finally determined that some of the sample preferentially adhered to the NRC's plastic bottle and not the licensee's glass vial for the short period between putting the sample in the containers and adding dilution water. Another split made, adding the sample to dilution water already in the respective containers, resulted in all agreements.

The licensee agreed to analyze a portion of a retention tank sample (L WASTE) for gross B, tritium, strontium-89 and strontium-90 and submit the results to Region III (Open Item 409/86016-03).

4. Quality Control Of Measurements

The licensee participates in cross check programs for implant measurements with a commercial contractor and for environmental measurements with the EPA. Results of the annual inplant analyses for 1986 were examined and found to be in complete agreement.

Quality Assurance Audit Report 70-86-1, conducted August 11 - September 29, 1986, was examined. No findings were noted in the Analytical Chemistry section of the audit.

5. Radiological Environmental Monitoring Program

The inspector examined five environmental air sample stations in the company of a licensee representative during a normal scheduled sample change. All stations were operating and in good repair. The representative appeared very knowledgeable about sample change requirements.

The inspector reviewed the 1985 Radiological Environmental Monitoring Report. The program is conducted as required by Technical Specifications. The results do not indicate a significant effect due to the operation of the plant. Although there were disagreements between the licensee and the State of Wisconsin for tritium in water samples, the licensee's values were less than the NRC LLD requirements in all but one instance. The licensee changed gross counting equipment during the period which resulted in closer agreement with the State.

6. 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 identified during the inspection are discussed in Section 3.

7. Exit Interview

The inspector met with licensee representatives denote in Section 1 on December 12,1986. The scope and findings were discussed. The licensee acknowledged the need to resolve the bias in the air particulate and gas geometries and agreed to count a portion of the retention tank sample and report the results to Region III.

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.

Attachments:
1. Table 1, Confirmatory Measurements Program Results, 4th Quarter 1986
2. Table 2, Confirmatory Measurements Program Results, 4th Quarter 1985
3. Attachment 1, Criteria for Comparing Analytical Measurements

TABLE 1

U S NUCLEAR REGULATORY COMMISSION

OFFICE OF INSPECTION AND ENFORCEMENT

CONFIRMATORY MEASUREMENTS PROGRAM
FACILITY: LACBWR
FOR THE 4 QUARTER OF 1986

		NRC		LICENSEE		LICENSEE:NRC		
SAMPLE	ISOTOPE	RESULT	ERROR	RESULT	ERROR	RATIO	RES	T
L WASTE	MN-54	4.5E-05	6.9E-07	4.3E-05	4.0E-07	9.6E-01	6.5E 01	A
	CO-58	1.8E-06	3.5E-07	1.6E-06	1.8E-07	8.9E-01	5.1E 00	A
	CO-60	1.5E-04	1.0E-06	1.4E-04	7.2E-07	9.3E-01	1.5E 02	A
	NP-239	5.8E-06	5.1E-07	6.3E-06	7.1E-07	1.1E 00	1.1E 01	A
	SR-91	1.3E-05	2.2E-06	7.9E-06	8.8E-07	6.1E-01	5.9E 00	A
	SR-92	1.5E-06	4.8E-07	2.0E-06	1.9E-07	1.3E 00	3.1E 00	A
	CS-137	1.6E-05	5.0E-07	1.5E-05	2.9E-07	9.4E-01	3.2E 01	A
	LA-140	2.5E-06	2.1E-07	2.3E-06	1.4E-07	9.2E-01	1.2E 01	A
OFF GAS	KR-85M	4.6E-03	7.5E-05	5.0E-03	1.5E-05	1.1E 00	6.1E 01	A
	KR-88	1.5E-02	1.0E-03	1.8E-02	8.9E-05	1.2E 00	1.5E 01	A
	XE-133	2.2E-03	1.2E-05	2.6E-03	1.0E-05	1.2E 00	1.8E 02	A
	XE-133M	1.5E-04	2.5E-05	1.8E-04	2.0E-05	1.2E 00	6.0E 00	A
	XE-135	2.7E-02	5.1E-05	3.6E-02	2.5E-05	1.3E 00	5.3E 02	D
C FILTER	I-131	1.1E-11	2.3E-13	1.0E-11	1.2E-13	9.1E-01	4.8E 01	A
	I-133	2.7E-11	3.8E-13	2.5E-11	1.8E-13	9.3E-01	7.1E 01	A
	I-135	1.7E-11	1.2E-12	1.8E-11	4.7E-13	1.1E 00	1.4E 01	A
F SPIKED	CO-57	1.0E-03	3.1E-05	1.4E-03	3.5E-05	1.4E 00	3.2E 01	A*
	CO-60	6.1E-03	1.6E-04	7.1E-03	1.9E-03	1.2E 00	3.8E 01	A*
	Y-88	7.6E-03	1.8E-04	1.2E-02	2.8E-04	1.6E 00	4.2E 01	A*
	CD-109	2.0E-02	6.7E-04	2.9E-02	8.0E-04	1.5E 00	3.0E 01	A*
	SN-113	4.4E-03	1.0E-04	6.1E-03	1.3E-04	1.4E 00	4.4E 01	A*
	CS-137	7.0E-03	1.6E-04	8.1E-03	1.6E-04	1.2E 00	4.4E 01	A*
	CE-139	1.1E-03	3.5E-05	1.7E-03	4.5E-05	1.5E 00	3.1E 01	A*
PRIMARY	CR-51	6.3E-03	5.1E-04	7.2E-03	4.1E-04	1.1E 00	1.2E 01	A
	MN-54	4.5E-03	1.2E-04	4.2E-03	1.1E-04	9.3E-01	3.7E 01	A
	FE-59	2.6E-03	2.0E-04	2.8E-03	1.9E-04	1.1E 00	1.3E 01	A
	CO-58	3.7E-03	1.4E-04	3.5E-03	1.1E-04	9.5E-01	2.6E 01	A
	CO-60	1.6E-02	1.8E-04	1.3E-02	2.1E-04	8.1E-01	8.9E 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: LACBWR
FOR THE 4 QUARTER OF 1986

		-------NRC--------		----LICENSEE----		---LICENSEE:NRC----		
SAMPLE	ISOTOPE	RESULT	ERROR	RESULT	ERROR	RATIO	RES	T
PRIMARY	W-187	8.5E-03	5.4E-04	7.1E-03	4.2E-04	8.4E-01	1.6E 01	A
	NP-239	5.4E-03	1.9E-04	4.9E-03	3.7E-04	9.1E-01	2.8E 01	A
	I-131	2.1E-04	5.4E-05	2.1E-04	4.3E-05	1.0E 00	3.9E 00	A
	I-133	6.9E-04	1.6E-04	6.2E-04	1.2E-04	9.0E-01	4.3E 00	A
	ZR-97	4.6E-04	1.2E-04	3.8E-04	1.1E-04	8.3E-01	3.8E 00	A
	RU-103	8.5E-04	7.0E-05	6.2E-04	5.8E-05	7.3E-01	1.2E 01	A
	BA-140	2.0E-03	2.0E-04	2.0E-03	2.7E-04	1.0E 00	1.0E 01	A
	CE-141	3.6E-04	5.1E-05	3.3E-04	3.5E-05	9.2E-01	7.1E 00	A
	CE-144	3.4E-03	3.3E-04	2.7E-03	2.0E-04	7.9E-01	1.0E 01	A
F SPIKED	CO-57	2.0E-04	3.8E-05	2.4E-04	1.9E-05	1.2E 00	5.3E 00	A
	CO-60	1.5E-02	3.6E-04	1.5E-02	2.6E-04	1.0E 00	4.2E 01	A
	CD-109	3.9E-02	1.3E-03	4.7E-02	1.0E-03	1.2E 00	3.0E 01	A
	CS-137	1.9E-02	3.5E-04	2.1E-02	2.3E-04	1.1E 00	5.4E 01	A

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TABLE 2

U S NUCLEAR REGULATORY COMMISSION

OFFICE OF INSPECTION AND ENFORCEMENT

CONFIRMATORY MEASUREMENTS PROGRAM
FACILITY: LACBWR
FOR THE 4 QUARTER OF 1985

		------NRC------		----LICENSEE----		---LICENSEE:NRC----		
SAMPLE	ISOTOPE	RESULT	ERROR	RESULT	ERROR	RATIO	RES	T
L WASTE	BETA	6.6E-05	2.0E-06	6.0E-05	1.1E-06	9.1E-01	3.3E 01	A
	SR-90	5.3E-07	3.0E-08	3.5E-07	0.0E-01	6.6E-01	1.9E 01	D
	CO-58	3.3E-06	4.0E-07	2.5E-06	1.7E-07	7.7E-01	8.3E 00	A
	CO-60	6.4E-05	1.2E-06	7.2E-05	5.4E-07	1.1E 00	5.4E 01	A
	CS-137	1.4E-05	4.0E-07	1.5E-05	2.4E-07	1.1E 00	3.5E 01	A
	MN-54	8.1E-06	3.0E-07	9.1E-06	2.4E-07	1.1E 00	2.7E 01	A

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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
	Agreement
<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.