U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No. 50-409/79-21

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

Inspection At: LACBWR Site, Genoa, WI

Inspection Conducted: October 29-November 2, 1979

Inspector: W. B. Grant 11/26/79

Approved By: T. H. Essig, Chief 11/30/79
Environmental and Special
Projects Section

Inspection Summary

Inspection on October 29-November 2, 1979 Report No. 50-409/79-21)
Areas Inspected; Routine, unannounced inspection of (1) Environmental Protection Program including; management controls; quality control of analytical measurements; implementation of environmental monitoring program; and (2) Confirmatory Measurements Program including: discussion of results of comparative analyses of previous radiological effluent samples; collection of effluent samples for subsequent comparative analyses. The inspection involved 17 inspector-hours on site by one NRC inspector.
Results: No apparent items of noncompliance or deviations were identified.

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DETAILS

1. Persons Contacted

R. Shimshak, Plant Superintendent, LACBWR
*L. Krajewski, Health and Safety Supervisor, LACBWR
R. Prince, Radiation Protection Engineer, LACBWR
T. Steele, Environmental Department Manager, DPC
H. Towsley, Quality Assurance Superintendent, LACBWR

*Denotes those present at exit interview.

2. Management Controls

The current environmental monitoring program is defined in a series of Health and Safety Procedures HSP-03.1 through HSP-03.4. The procedures assign responsibility for implementation of the program, defines sample identification, list sample collection techniques and describe sample preparation and analysis technique. Procedures HSP-03.2 through HSP-03.4 were approved by the Safety Review Committee (SRC) October 25, 1978. The inspector reviewed procedures HSP-03.2 through HSP-03.4 and no problems were identified.

According to a licensee representative Appendix B Environmental Technical Specification have been written and were submitted to the NRC for review in August 1979.

No items of noncompliance or deviations were identified.

3. Quality Control and Analytical Measurements

The licensee's environmental monitoring program is being conducted by plant personnel. The data are reviewed by the DPC Environmental Department. The program consists of air samples, TLD's, and analyses of milk from three farms, precipitation, river water, vegetation, fish, and silt samples.

The licensee's vegetation samples consist of collecting green leafy vegetables from local gardens and grass and corn silage from local farms as available.

Fish samples consist of collecting and analyzing, fish purchased from a local commercial fisherman. Fish are collected from pools above and below the plant, the edible portions are ground up and counted in a Marinelli Flask to assure a reproducible counting geometry.

No items of noncompliance or deviations were identified in this area.

4. Implementations of Environmental Monitoring Program

The inspector reviewed the 1978 LACBWR annual Environmental Monitoring Report and noted it contained no apparent missing data, obvious mistakes, anomalous results, observed bias or trends in the data.

The inspector also reviewed the 1979 January to June Semi-annual Environmental Report and noted there were no apparent anomalous results or trends in this data.

The inspector visited various on and off-site environmental sample stations. The air sampling and rainwater stations visited were found to be operating properly. Every environmental air sampler has three meters (flow, vacuum and time) which determine total air sample volume. The licensee has a calibration program for these meters. All vacuum gauges and time meters are checked for calibration. A National Bureau of Standards Calibrated Flow Meter has been purchased and all flow meters are being calibrated as the units come in for maintenance.

The inspector reviewed chemical procedures HSP-05.1 through HSP-05.9 and no discrepancies or omissions were noted. Radiochemical procedures which have been issued or revised since the last inspection were also reviewed. These procedures were HSP-06.1 through HSP-06.6 and HSP-07.1 through HSP-07.2. No deficiencies or omissions were noted. A new liquid scintillation detector Packard Model PL has been purchased by the licensee. Procedure HSP-13.7 revision 0 (2/19/79) dealing with the operation of this instrument was also reviewed and no problems were noted. The minutes of the Operations Review Committee (ORC) were reviewed for the period October 1978 through October 1979. It appeared environmental matters presented to the committee were resolved in a timely manner.

No items of noncompliance or deviations were identified in this area.

5. Confirmatory Measurements

The inspector examined the licensee's analytical equipment used to measure reactor coolant and environmental radioactivity. The equipment examined was a model 4096 multi channel analyzer, a model 6600 multi channel analyzer, a liquid scintillation system and the internal proportional beta-gamma counters. Records of maintenance, calibration and daily checks were reviewed and found to be satisfactory.

a. Results of Comparative Analyses

Results of the comparative analyses performed on effluent samples

split at the site in September 1978 are shown in Table No. 1. The criteria for comparing measurement results are given in Attachment No. 1. For 17 comparisons, the licensee's results yielded eleven agreements or possible agreements. The results were discussed with the licensee. The licensee failed to properly quantify iodine 131 activity in analysis of a charcoal adsorber. Since the licensee reported a result that was 1.7 times greater than that reported by the NRC Reference Laboratory, the licensee may have over stated quantities, or concentrations of radionuclides released near the time of sample collection. The licensee failed to properly quantify stontium 89 and 90, zinc 65, cobalt 60 and ruthenium 106 activity in the analysis of liquid waste. Regarding strontium 89, cobalt 60 and ruthenium 106 the licensee's reported results were 2.6, 2.1 and 4.3 times respectively higher than those reported by the NRC Reference Laboratory. If this result was real and representative the licensee may have over stated quantities of concentrations of radionuclides released near the time of sample collection. With regard to strontium 90 and zinc 65 the licensee's results were 45 and 50% respectively of that reported by the NRC Reference Laboratory. The licensee's reporting of a strontium 90 and zinc 65 result which was approximately 50% low would not have resulted in an Effluent Technical Specification being exceeded.

Since the 1978 sample split the licensee has performed several equipment calibrations, some of the analytical equipment has been moved to a lower background area and laboratory personnel have been additionally trained in analytical methods. The licensee's performance on future analyses of strontium 89 and 90, iodine 131, zinc 65, cobalt 60, ruthenium 106 will be examined during the next confirmatory measurements inspection.

No apparent items of noncompliance or deviations were identified.

b. Collection of Samples for Future Comparative Analyses

The inspector collected samples of liquid and gaseous waste, a particulate filter and a charcoal adsorber sample from licensee for subsequent comparative analyses. The results of these analyses will be compared during a future inspection.

6. Exit Interview

The inspector met with licensee respresentatives denoted in Paragraph 1 at the conclusion of the inspection on November 2, 1979. The inspector summarized the purpose and scope of the inspection and the findings.

Attachments:
1. Criteria for Comparing
   Analytical Measurements
2. Confirmatory Measurements
   Program

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 Reference Laboratory'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 to maintain statistical consistency with the number of significant figures reported by the NRC Reference Laboratory, unless such rounding will result in a narrowed category of acceptance. The acceptance category reported will be the narrowest into which the ratio fits for the resolution being used.

RESOLUTION	RATIO = LICENSEE VALUE/NRC REFERENCE VALUE		
	Agreement	Possible Agreement "A"	Possible Agreeable "B"
<3	No Comparison	No Comparison	No Comparison
≥3 and <4	0.4 - 2.5	0.3 - 3.0	No Comparison
≥4 and <8	0.5 - 2.0	0.4 - 2.5	0.3 - 3.0
≥8 and <16	0.6 - 1.67	0.5 - 2.0	0.4 - 2.5
≥16 and <51	0.75 - 1.33	0.6 - 1.67	0.5 - 2.0
≥51 and <200	0.80 - 1.25	0.75 - 1.33	0.6 - 1.67
≥200	0.85 - 1.18	0.80 - 1.25	0.75 - 1.33

"A" criteria are applied to the following analyses:

Gamma spectrometry, where principal gamma energy used for identification is greater than 250 keV.

Tritium analyses of liquid samples.

"B" criteria are applied to the following analyses:

Gamma spectrometry, where principal gamma energy used for identification is less than 250 keV.

Sr-89 and Sr-90 determinations.

Gross beta, where samples are counted on the same date using the same reference nuclide.

TABLE I

U S NUCLEAR REGULATORY COMMISSION

OFFICE OF INSPECTION AND ENFORCEMENT

CONFIRMATORY MEASUREMENTS PROGRAM
FACILITY: LACBWR
FOR THE 3 QUARTER OF 1978

SAMPLE	ISOTOPE	------NRC------- RESULT	ERROR	---LICENSEE----- RESULT	ERROR	---NRC:LICENSEE---- RATIO	RES	T
P FILTER	I 131	3.4E-04	4.0E-05	6.2E-04	1.0E-05	1.8E+00	8.5E+00	P
	BE 7	9.0E-05	3.2E-05	0.0	0.0	0.0	2.8E+00	N
	BA 140	5.3E-04	7.9E-05	4.0E-04	1.5E-05	7.5E-01	6.7E+00	A
C.F.ILTER	I 131	3.8E-03	1.7E-04	6.5E-03	6.0E-05	1.7E+00	2.2E+01	D
OFF GAS	XE 133	3.8E-02	1.3E-03	5.1E-02	6.0E-05	1.3E+00	2.9E+01	P
	XE 133M	1.7E-03	2.0E-04	3.7E-03	2.2E-04	2.2E+00	8.5E+00	P
L WASTE	H 3	6.1E-03	2.0E-05	6.0E-03	5.0E-05	9.8E-01	3.0E+02	A
	BETA	4.5E-04	2.0E-05	4.1E-04	5.0E-07	9.1E-01	2.2E+01	A
	SR 89	5.3E-06	3.0E-07	1.4E-05	3.0E-07	2.6E+00	1.8E+01	D
	SR 90	4.7E-06	2.0E-07	2.1E-06	1.0E-07	4.5E-01	2.4E+01	D
	CE 144	7.1E-05	2.9E-06	1.4E-04	9.0E-06	2.0E+00	2.4E+01	P
	CS 134	4.0E-05	1.3E-06	4.9E-05	2.0E-06	1.2E+00	3.1E+01	A
	CS 137	1.4E-04	4.0E-06	1.6E-04	4.0E-06	1.1E+00	3.5E+01	A
	CO 58	7.2E-05	2.2E-06	9.8E-05	4.0E-06	1.4E+00	3.3E+01	P
	MN 54	1.9E-05	8.3E-07	2.8E-05	4.0E-06	1.5E+00	2.3E+01	P
	ZN 65	1.8E-05	1.4E-06	9.0E-06	6.3E-06	5.0E-01	1.3E+01	D
	CO 60	2.4E-04	6.9E-06	5.0E-04	7.0E-06	2.1E+00	3.5E+01	D
	RU 106	1.5E-05	5.0E-06	6.4E-05	1.5E-05	4.3E+00	3.0E+00	D