

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

REGION III

Report No. 50-409/78-10

Docket No. 50-409

License No. DPR-45

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

Facility name: La Crosse Boiling Water Reactor

Inspection at: La Crosse Site, Genoa, WI

Inspection conducted: September 20-22, 1978

Inspector: *W. B. Grant*
W. B. Grant

10/20/78

Approved by: *T. H. Essig*
T. H. Essig, Chief
Environmental and Special
Projects Section

10/20/78

Inspection Summary

Inspection on September 20-22, 1978 (Report No. 50-409/78-10)
Areas Inspected: Routine, unannounced inspection of the (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 18 inspector-hours onsite by one NRC inspector.
Results: No apparent items of noncompliance or deviations were identified.

781201 0286

DETAILS

1. Persons Contacted

- *R. Shimshak, Plant Superintendent, LACBWR
- *L. Krajewski, Health and Safety Supervisor, LACBWR
- *R. Prince, Radiation Protection Engineer, LACBWR
- *G. Boyd, Operations Supervisor, LACBWR
- J. Gallaher, Director of Security, LACBWR
- T. Steele, Environmental Department Manager, DPC
- W. Nowicki, Instrument Engineer, LACBWR
- H. Towsley, Quality Assurance Superintendent, LACBWR

*Denotes those present at exit interview.

2. Licensee Action on Previous Inspection Findings

(Open) Open Item (409/77-05): Revision of LACBWR Emergency Plan. The original document was sent to the NRC for review and approval on April 11, 1977. On August 8, 1977, the NRC requested clarification of six items of the original document. According to licensee personnel the August 8 letter was inadvertently not answered due to the higher priority of refueling shutdown activities. However, the Emergency Plan revision has been completed and is awaiting review prior to submittal. The licensee stated that the revised Emergency Plan would be reviewed and submitted to the NRC by October 15, 1978. This item is considered open and will be reexamined during a subsequent inspection.

3. Management Controls

The Environmental Monitoring Program appears to have received significant attention since the last inspection^{1/}. Specifically, procedures have been prepared which define responsibilities for supervision of the program, collection of samples, and final review and data analyses.

Health and Safety Procedure HSP-03.1 assigns responsibility for implementation of the program to the Radiation Protection Engineer and the Health and Safety Supervisor. The Dairyland Power Cooperative (DPC) Environmental Management group is responsible for final review of data and report preparation. HSP-03.1 received approval of the Safety Review Committee on August 18, 1978.

^{1/} IE Inspection Report No. 50-409/77-19

HSP-03.2 is concerned with sample identification. HSP-03.3 outlines the Environmental Monitoring Program sample collection criteria and procedures. HSP-03.4 outlines sample preparation and analyses including an action point at which the sample would be considered abnormal and outlines what action would be taken in that event. Procedures HSP-03.2 through 03.4 are waiting approval by the SRC at its next meeting.

The DPC Environmental Manager is currently assigned the responsibility for review of the environmental data. Interviews of suitable candidates for the position of Environmental Engineer are continuing.

The licensee conducted an Environmental Program audit in June 1978. The audit noted five open items which required a response. The inspector noted that the Radiation Protection Engineer answered the five items with dates of completion of corrective action.

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

4. Quality Control of Analytical Measurements

The licensee's Environmental Monitoring Program is being conducted by plant personnel. The data is 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 beaker to assure a reproducible counting geometry.

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

5. Implementation of the Environmental Monitoring Program

The inspector reviewed the 1977 Annual Environmental Monitoring Report and noted that it contained no apparent missing data, obvious mistakes, anomalous results, observed biases or trends in the data.

The inspector reviewed the 1978 January to June Semiannual Environmental Report and noted there were no apparent anomalous results or trends in the data.

The inspector visited selected offsite environmental sample stations. The air sampling and rain water stations visited were found to be operating correctly. Every offsite environmental air sampler has three meters (flow, vacuum, and time) which determine total air sample volume. The licensee has initiated a calibration program for these meters. All vacuum gauges and time meters have been checked for calibration. A National Bureau of Standards Calibrated Flow Meter has been purchased and all flow meters will be calibrated as the units come in for maintenance.

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

6. Confirmatory Measurements

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

a. Results of Comparative Analyses

The inspector reviewed the analytical results of the spiked particulate, charcoal and gaseous samples given to the licensee for analysis and the liquid waste sample which was collected on October 28, 1977. A summary of these results by sample type and isotope is presented in Table 1. The results of the licensee's and the NRC Reference Laboratory Analyses were compared using the "Criteria for Comparing Analytical Measurements" (Attachment 1). For seventeen sample comparisons, the licensee's results yielded thirteen agreements or possible agreements. The results were discussed with the licensee. The licensee failed to properly quantify hydrogen 3, strontium-89 and 90, and zinc 65 activity in the analysis of liquid waste. Regarding strontium 89 and zinc 65 the licensee's reported results were 2.3 times higher than those reported by the NRC Reference Laboratory. If this result was real and representative the licensee may have overestimated quantities or concentrations of radionuclides released near the time of sample collection. With regard to

strontium 90 the licensee stated that new laboratory personnel were assigned to perform strontium extractions during that period and it is possible that errors were made in this analysis. The strontium 90 result was 27% of that reported by the NRC Reference Laboratory and based on the licensee records of liquid waste, effluent Technical Specifications limits would not have been exceeded. Regarding the hydrogen 3 result which was approximately 50% lower than the NRC Reference Laboratory, the licensee stated that they have had some problems with their old liquid scintillation electronics, but this has been repaired and the system seems to be functioning properly. A discussion of the liquid scintillator chemicals and the frequency in which they are made up resulted in agreement from the licensee to make the chemicals about monthly and to discard the old chemicals. The licensee's reporting of a hydrogen 3 result which was 50% low would not have resulted in an effluent Technical Specifications being exceeded.

The licensee's results on future analyses on hydrogen 3, strontium 89 and 90, and zinc 65 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 the licensee for subsequent comparative analyses. Results of these analyses will be compared during a future inspection.

7. Exit Interview

The inspector met with the licensee representatives denoted in Paragraph 1 at the conclusion of the inspection on September 22, 1978. The inspector summarized the purpose and scope of the inspection and the findings. In response to an item discussed by the inspector the licensee representatives agreed to have the revised Emergency Plan reviewed and submitted to the NRC by October 15, 1978.

Attachments:

1. Attachment 1, Criteria for Comparing Analytical Measurements
2. Table 1, Confirmatory Measurements Program, LACBWR

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.

<u>RESOLUTION</u>	<u>RATIO = LICENSEE VALUE/NRC REFERENCE VALUE</u>		
	<u>Agreement</u>	<u>Possible Agreement "A"</u>	<u>Possible Agreeable "B"</u>
<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 4 QUARTER OF 1977

SAMPLE	ISOTOPE	-----NRC-----		---LICENSEE---		---NRC:LICENSEE---		
		RESULT	ERROR	RESULT	ERROR	RATIO	RES	T
F SPIKED	SD 125	1.5E-02	4.0E-04	1.6E-02	2.0E-04	1.1E+00	3.7E+01	A
	CS 134	1.4E-02	8.0E-04	1.8E-02	2.0E-04	1.3E+00	1.7E+01	A
	AG 110M	1.0E-03	8.0E-05	9.7E-04	5.0E-05	9.7E-01	1.2E+01	A
	NA 22	3.4E-03	4.0E-05	3.1E-03	1.0E-04	9.1E-01	8.5E+01	A
C SPIKED	BA 133	9.0E-06	5.0E-07	1.4E-05	0.0	1.6E+00	1.8E+01	P
L WASTE	H 3	7.9E-03	2.0E-05	4.3E-03	1.0E-05	5.4E-01	3.9E+02	D
	SR 89	2.3E-05	1.0E-06	5.2E-05	1.0E-06	2.3E+00	2.3E+01	D
	SP 90	2.1E-05	1.0E-06	5.6E-06	4.0E-07	2.7E-01	2.1E+01	D
	CE 144	1.7E-04	5.0E-06	1.4E-04	7.0E-06	8.2E-01	3.4E+01	A
	CS 134	8.8E-05	3.3E-06	8.7E-05	2.0E-06	9.9E-01	2.7E+01	A
	CS 137	2.5E-04	7.2E-06	2.0E-04	9.0E-06	8.0E-01	3.5E+01	A
	ZR 95	3.2E-05	1.4E-06	3.4E-05	6.0E-06	1.1E+00	2.3E+01	A
	NR 95	5.5E-05	1.7E-06	6.9E-05	6.0E-06	1.3E+00	3.2E+01	A
	CO 58	2.6E-04	7.5E-06	2.8E-04	1.0E-05	1.1E+00	3.5E+01	A
	MN 54	2.6E-05	9.3E-07	2.2E-05	3.0E-06	8.5E-01	2.8E+01	A
	ZN 65	3.0E-05	1.4E-06	6.8E-05	1.0E-05	2.3E+00	2.1E+01	D
	CO 60	2.7E-04	7.7E-06	3.1E-04	2.0E-05	1.1E+00	3.5E+01	A

1 TEST RESULTS:
 A=AGREEMENT
 D=DISAGREEMENT
 F=POSSIBLE AGREEMENT
 N=NO COMPARISON