

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-373/86008(DRSS); 50-374/86009(DRSS)

Docket Nos. 50-373; 50-374

Licenses No. NPF-11; NPF-18

Licensee: Commonwealth Edison Company
Post Office Box 767
Chicago, IL 60690

Facility Name: LaSalle County Station, Units 1 and 2

Inspection At: LaSalle Site, Seneca, IL

Inspection Conducted: February 24-28 and March 4, 5, 19, 21, 24, 25,
and 31, 1986

A. G. Januska
Inspector: A. G. Januska

4-9-86
Date

M. C. Schumacher
M. C. Schumacher (onsite March 25, 1986)

4-9-86
Date

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

4-9-86
Date

Inspection Summary

Inspection on February 24-28 and March 4, 5, 19, 21, 24, 25 and 31, 1986
(Reports No. 50-373/86008(DRSS); 50-374/86009(DRSS))

Areas Inspected: Routine unannounced inspection of (1) the confirmatory measurements program including comparison of results of samples split, and analyzed by the licensee and onsite in the Region III Mobile Laboratory; (2) quality control of analytical measurements; and (3) licensee action on a violation and an open item identified during past inspections.

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

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DETAILS

1. Persons Contacted

- ¹G. Diederich, Station Manager
- ⁴R. Bishop, Services Superintendent
- ^{1,3,4}D. Berkman, Assistant Services Superintendent
- ^{3,5,6}F. Lawless, Staff Assistant to the Assistant Services Superintendent
 - L. Aldrich, Rad/Chem Supervisor
- ^{1,2}J. Schuster, Chemist
- ¹R. Cozzi, QA Inspector
- P. Nottingham, Lead Chemist
- ²T. Gibes, Training Coordinator
- ¹M. Jordan, NRC Senior Resident Inspector

¹Present at plant exit interview on February 28, 1986.

²Telephone conversations on March 5, 1986.

³Telephone conversations on March 19, 1986.

⁴Telephone conversations on March 21, 1986.

⁵Telephone conversations on March 24, 1986.

⁶Telephone conversations on March 31, 1986.

2. Licensee Action on Previous Inspection Findings

- a. (Closed) Violation (50-373/85003-06; 50-374/85003-06): Failure to conduct an audit of the Radiological Environmental Monitoring Program (REMP) and results thereof as required by T/S 6.1.G.1(B). The inspector examined corrective actions presented in the licensee's response, dated March 21, 1985, to the Notice of Violation. Audit, QA-01-85-40 meeting the Technical Specification requirements was conducted by the licensee on October 15, 1985. It consisted of a review of the 1984 Annual Report and of analyses of various media.
- b. (Open) Open Item (50-373/85017-01; 50-374/85017-01): Review licensee monitoring program for the Unit 2 condensate storage tank (CY-2) HPCS return line break of May 27, 1985.

A licensee internal report of monitoring pursuant to this event was reviewed onsite and afterwards in the Region III office and further discussions were held by telephone with licensee representatives on March 19, 21, 24, and 31, 1986.

Licensee samples indicated the concentration released onsite via the underground break was about twice the unrestricted area release limit (10 CFR 20 Appendix B, Table II) and that the concentration in water reaching the station cooling lake via surface runoff was less than 10 percent of the limit. Total activity in the estimated 200,000 gallons released was about 100 millicuries of activation nuclides and 500 millicuries of tritium.

The fraction of leaked water remaining below ground is unknown and the picture is complicated by an analogous, but smaller leak from the Unit 1 (CY-1) HPCS return line which was confirmed during investigation of this event. Licensee representatives expected, based on hydrological information from site construction, that ground water in this vicinity would migrate to the cooling lake, but this had not been confirmed at the time of this inspection. Four water samples taken in July indicated cobalt-60 and manganese -54 at less than 1% of unrestricted release limits; tritium was not analyzed. In September 1985, the licensee installed a 40' deep well to lower the water table in a caisson sunk to examine the CY-1 leak 12 feet below ground and began sampling of water pumped from it to the cooling lake. Weekly composite samples for September 1985 through January 1986, showed less than 10% of the release limits; the tritium concentration decreased by a factor of about 20 during the period.

Calculated dilution available in the cooling lake (1E10 gallons) appeared sufficient to reduce the release concentration to below required detection limits. Cooling lake blowdown (about 30,000 gpm) to the Illinois River was secured when the event occurred and was not resumed until June 18, 1985. A blowdown sample taken then showed tritium below the license detection limit (2780 pCi/l). Licensee representatives stated that subsequent gamma analyses by the station of weekly composites showed no quantifiable activity above counting system background. However, these samples were not analyzed for tritium.

Licensee representatives were informed on March 21, 1986, that presence of radioactivity in the cooling lake from dewatering activities and ground water migration meant that the blowdown was a continuous release pathway requiring monthly tritium analyses in accordance with Technical Specification (T/S) 4.11.1.1.3. On March 24, 1986, the licensee informed Region III that its environmental contractor had analyzed monthly composites for tritium throughout the period. The data, obtained from the station on March 25, 1986, showed no tritium or gamma emitters exceeding MDA's of 200 pCi/l and 20 pCi/l respectively. However, it could not be determined from review of licensee's environmental reports or from discussion with a licensee representative on March 31, 1986, if this sample is taken from the blowdown canal prior to dilution as would be necessary to satisfy T/S 4.11.1.1.3 or from the Illinois River after dilution. The licensee was informed on March 31, 1986, that this was considered unresolved. (Unresolved Item 50-373/86008-01; 80-374/86009-01).

The licensee removed approximately 1000 ft³ of soil with an estimated average contamination of 35 pCi/g from surface drainage ditches and the caisson. Some contamination remains in the bottom of the caisson and, although not excavated, it is likely that contamination is also present near the CY-2 line break. Core samples taken in June 1985, from ten bore holes drilled to depths of up to 50 feet showed gross beta activity ranging from 7 to 70 pCi/g; only naturally occurring potassium -40 was identified on gamma scans of these samples.

In a telephone discussion on March 19, 1986, licensee representatives were reminded that contaminated soil disposition, other than shipment to a licensed burial site, would require Commission approval pursuant to

10 CFR 20.302. The licensee representatives stated they were planning to pursue the option of onsite disposition with the office of Nuclear Reactor Regulation. This item will remain open until this matter is resolved and the evaluation of the groundwater migration is completed.

No violations were identified.

3. Management controls, Organization, and Training

The inspector reviewed the organization and staffing of the chemistry department. The Lead Chemist, who reports to the Rad/Chem Supervisor is responsible for both chemistry and radiochemistry. Five Chemists and a Laboratory Foreman, report to the Lead Chemist and are each responsible for specific areas of interest. The Laboratory Foreman supervises four to five Rad/Chem Technicians (RCTs) on day shift. During all other shifts the RCTs assigned to the Chemistry Department are supervised by the Rad Chem Foreman. Except for the Counting Room Chemist and the Laboratory Foreman, the Chemists are new in their positions (less than two years).

The inspector made limited observations of general working habits of laboratory personnel during the splitting of samples for the Confirmatory Measurements. No problems were observed.

No violations were identified.

4. Confirmatory Measurements

Five samples (air particulate filter, charcoal adsorber, fuel pool water, reactor coolant, and offgas) were analyzed for gamma emitters by the licensee and in the Region III mobile laboratory. The licensee analyzed two samples (charcoal adsorber spike and offgas) on his Post Accident Radionuclide Analysis Portable System (PARAPS) as well as on his normal spectroscopy system. Forty agreements were obtained in forty-five comparisons. Table 1 lists the comparison results; Attachment 1 defines the comparison criteria used. In addition, the licensee agreed to analyze a split of a fuel pool sample for gross beta, H-3, Sr-89, and Sr-90 and report the results to Region III (Open Item 50-373/86008-02; 50-374/86009-02).

NRC spike particulate and license spike adsorber results were used for comparison because no nuclides were present on the station vent stack air particulate sample and only a weak peak of I-131 was present on the vent stack charcoal adsorber. In addition to comparing the reactor coolant results, the inspector verified the accuracy of dose equivalent iodine and EBAR calculations.

Results of an offgas pretreat sample counted on the licensee's normal spectroscopy system resulted in five disagreements out of seven nuclides present in the sample. The licensee's values varied from 121% to 136% of the NRC values. The licensee analyzed the same sample on his PARAPS and obtained all agreements (five). The results of a subsequent sample analyzed corroborated the conservatively biased results on the normal

system and agreement on the PARAPS. The licensee ordered an NBS traceable gas standard by the end of the inspection and agreed to use the PARAPS for future gas analyses until the normal spectroscopy systems are calibrated. The calibrations are to be completed within two weeks of receipt of the standard (Open Item 50-373/86008-03; 50-374/86009-03) and then the PARAPS gas calibration verified.

No violations were identified.

5. Laboratory QA/QC

a. Program Definition

Quality Control Performance Checks of the (1) Ortec Gamma Spectrometer MCA System, LaSalle Chemistry Procedure (LCP)-810-3; (2) Canberra Alpha/Beta Proportional Counter System 2201 and 2201S, LCP-810-11; and (3) Packard Tri-Carb Liquid Scintillation Counter, Model 460C, LCP-810-2 which control the counting room QC program require daily performance checks and the plotting of results. Software programs controlling the gamma spectrometer and the proportional counters limit RCT use of these instruments for sample counting when QC tests show instrument operation outside of established tolerances. Repeated failure of QC tests require management intervention to restore proper operation before an instrument is returned to service.

b. Program Implementation

The inspector reviewed the QC program results for the gamma spectrometers and proportional counters. The checks were performed daily, plotted as required on a three month by the day graph, and reviewed by chemistry supervision. The chemist assigned to the counting room also reviews sample results with particular attention to analyses required by the Technical Specifications. This review appears to be effective.

The inspector noted that on many occasions the graphs contained multiple entries per day for the Ba-133 or Co-60 net count plots, many or all of which were within $\pm 2\sigma$. When these results were acceptable the check failed due to other programmed performance tolerances. The effect of such multiple entries on trending of equipment performance was discussed with the Chemist.

The inspector also discussed other elements of a QC program stressing the method of determining the most representative mean of the net counts, the advantage of maintaining a log for each instrument showing performance and repair history, and the importance of a split/blind sample program with a contractor or any or all of the other CECO nuclear sites. Currently the licensee is not involved in any intercomparison program, nor has he established any program of using blind samples to test RCT analytical competency. This is a program weakness. At the exit interview, the licensee indicated that the station was looking into participating in an intercomparison program. This matter will be reviewed in a subsequent inspection. (Open Item 50-373/86008-04; 50-374/86009-04).

No violations were identified.

6. Audits

Quality assurance audits QAA 01-85-04 "Quality Assurance Scheduled Audit of Radiological and Chemical Control" performed January 30 through February 5, 1985, QAA 01-85-I "Quality Assurance Offsite Audit" performed March 19-22, 1985, and QAA 01-85-II performed September 10-13, 1985 were examined. Subjects related to the inspection were covered in part by these audits; no pertinent findings or observations were made.

No violations were identified.

7. 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 Sections 4 and 5b.

8. Unresolved Items

An unresolved item is a matter about which more information is required in order to ascertain whether it is an acceptable item, an open item, a deviation, or a violation. An unresolved item is identified in Section 2b.

9. Management Meetings

The inspector reviewed the scope and findings of this inspection with licensee representatives (Section 1) present at the exit interview on February 28, 1986. The inspector emphasized the need for recalibrating the station's gamma spectrometers for gas counting and for using the PARAP system for gas analysis until this is accomplished (Section 4).

Contaminated soil resulting from the May 27, 1985, line break was discussed by telephone on March 19, 1986. The licensee stated that disposition of this material pursuant to 10 CFR 20.302 would be resolved with NRR (Section 2b).

Additional telephone discussions concerning liquid monitoring following the line break were held with licensee representatives on March 21, 24, and 31, 1986. The licensee was informed on March 21, 1986, that cooling lake blowdown was considered to be a continuous release path owing to the known presence of radioactivity from the station and that failure to analyze monthly tritium composites was an apparent violation of Technical Specification (T/S) 4.11.1.1.3. The licensee informed Region III on March 24, 1986, that although the station was not analyzing tritium in monthly blowdown samples, its environmental contractor was. This data, obtained from the station on March 25, 1986, showed tritium and gross beta below the MDA level of 200 pCi/l. However, it could not be determined from review of the environmental report or from discussion with a licensee representative on March 31, 1986, if the samples were taken from a location appropriate to monitor undiluted blowdown. This matter was left as an unresolved item (Section 2b).

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 procedures as proprietary.

Attachments:

1. Table 1, Confirmatory Measurements
Program Results, 1st Quarter 1986
2. Attachment 1, Criteria for Comparing
Analytical Measurements.

TABLE 1
 U S NUCLEAR REGULATORY COMMISSION
 OFFICE OF INSPECTION AND ENFORCEMENT
 CONFIRMATORY MEASUREMENTS PROGRAM
 FACILITY: LASALLE
 FOR THE 1 QUARTER OF 1986

SAMPLE	ISOTOPE	-----NRC-----		----LICENSEE----		---LICENSEE:NRC----		
		RESULT	ERROR	RESULT	ERROR	RATIO	RES	T
C FILTER	I-131	2.7E-12	3.3E-13	2.0E-12	0.0E-01	7.6E-01	8.1E 00	A
L WASTE	MN-54	4.7E-06	2.3E-07	4.6E-06	0.0E-01	9.7E-01	2.1E 01	A
	CO-58	1.4E-06	1.4E-07	1.2E-06	0.0E-01	8.7E-01	9.7E 00	A
	CO-60	1.2E-05	3.0E-07	1.1E-05	0.0E-01	9.2E-01	4.1E 01	A
	ZN-65	1.4E-06	3.5E-07	6.7E-07	0.0E-01	4.9E-01	3.9E 00	A
	SB-124	1.2E-06	1.6E-07	1.3E-06	0.0E-01	1.0E 00	7.7E 00	A
C SPIKED	CO-57	1.0E-03	2.4E-04	8.5E-04	0.0E-01	8.2E-01	4.3E 00	A
	CO-60	1.5E-01	2.1E-03	1.5E-01	0.0E-01	1.0E 00	7.1E 01	A
	CS-137	1.4E-01	1.9E-03	1.3E-01	0.0E-01	9.4E-01	7.5E 01	A
F SPIKED	CO-57	4.4E-04	3.3E-05	3.8E-04	0.0E-01	8.6E-01	1.4E 01	A
	CO-60	1.6E-02	3.0E-04	1.6E-02	0.0E-01	1.0E 00	5.1E 01	A
	CS-137	2.0E-02	3.0E-04	1.8E-02	0.0E-01	9.0E-01	6.8E 01	A
C SPIKED	CO-57	1.0E-03	2.4E-04	8.4E-04	0.0E-01	8.2E-01	4.3E 00	A
PARAPS	CO-60	1.5E-01	2.1E-03	1.5E-01	0.0E-01	1.0E 00	7.1E 01	A
	CS-137	1.4E-01	1.9E-03	1.3E-01	0.0E-01	9.4E-01	7.4E 01	A
PRIMARY	NA-24	1.6E-02	4.1E-05	1.5E-02	0.0E-01	9.3E-01	3.9E 02	A
	CR-51	1.6E-02	9.8E-05	1.6E-02	0.0E-01	9.9E-01	1.6E 02	A
	MN-54	1.5E-04	9.8E-06	1.6E-04	0.0E-01	1.1E 00	1.5E 01	A
	MN-56	3.4E-03	4.1E-05	3.0E-03	0.0E-01	8.9E-01	8.1E 01	A
	CO-58	1.0E-04	1.0E-05	9.2E-05	0.0E-01	8.8E-01	1.1E 01	A
	CO-60	8.1E-05	9.4E-06	6.5E-05	0.0E-01	8.0E-01	8.6E 00	A
	AS-76	1.2E-03	2.1E-05	1.3E-03	0.0E-01	1.1E 00	5.6E 01	A
	W-187	6.2E-04	3.5E-05	6.4E-04	0.0E-01	1.0E 00	1.8E 01	A
	I-131	2.5E-05	6.0E-06	3.1E-05	0.0E-01	1.2E 00	4.2E 00	A
	I-132	4.1E-04	3.1E-05	4.1E-04	0.0E-01	9.9E-01	1.3E 01	A
	I-133	1.9E-04	8.9E-06	1.7E-04	0.0E-01	8.9E-01	2.1E 01	A
	MO-99	2.5E-04	5.3E-05	2.2E-04	0.0E-01	8.9E-01	4.7E 00	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: LASALLE
FOR THE 1 QUARTER OF 1986

SAMPLE	ISOTOPE	-----NRC-----		----LICENSEE----		---LICENSEE:NRC----		
		RESULT	ERROR	RESULT	ERROR	RATIO	RES	T
PRIMARY	SB-122	5.1E-05	7.7E-06	2.8E-05	0.0E-01	5.5E-01	6.6E 00	A
OFF GAS	KR-85M	2.8E-02	2.9E-04	3.4E-02	0.0E-01	1.2E 00	9.9E 01	A
	KR-87	7.3E-02	7.2E-04	9.6E-02	0.0E-01	1.3E 00	1.0E 02	D
	KR-88	6.6E-02	9.3E-04	8.4E-02	0.0E-01	1.3E 00	7.1E 01	D
	XE-133	5.0E-02	4.8E-04	5.2E-02	0.0E-01	1.0E 00	1.0E 02	A
	XE-135	1.1E-01	4.0E-04	1.3E-01	0.0E-01	1.2E 00	2.7E 02	D
	XE-135M	2.2E-01	4.8E-03	3.0E-01	0.0E-01	1.3E 00	4.7E 01	D
	XE-138	3.2E-01	9.8E-03	4.4E-01	0.0E-01	1.4E 00	3.3E 01	D
L WASTE	MN-54	4.7E-06	2.3E-07	4.4E-06	0.0E-01	9.3E-01	2.1E 01	A
	CO-58	1.4E-06	1.4E-07	1.1E-06	0.0E-01	8.0E-01	9.7E 00	A
	CO-60	1.2E-05	3.0E-07	1.1E-05	0.0E-01	9.2E-01	4.1E 01	A
	ZN-65	1.4E-06	3.5E-07	8.6E-07	0.0E-01	6.3E-01	3.9E 00	A
	SB-124	1.2E-06	1.6E-07	9.0E-07	0.0E-01	7.3E-01	7.7E 00	A
OFF GAS	KR-85M	2.8E-02	2.9E-04	2.7E-02	0.0E-01	9.5E-01	9.9E 01	A
PARAPS	KR-87	7.3E-02	7.2E-04	6.8E-02	0.0E-01	9.3E-01	1.0E 02	A
	KR-88	6.6E-02	9.3E-04	6.5E-02	0.0E-01	9.8E-01	7.1E 01	A
	XE-133	5.0E-02	4.8E-04	4.2E-02	0.0E-01	8.4E-01	1.0E 02	A
	XE-135	1.1E-01	4.0E-04	1.0E-01	0.0E-01	9.4E-01	2.7E 02	A

T TEST RESULTS:

A=AGREEMENT

D=DISAGREEMENT

*=CRITERIA RELAXED

N=NO COMPARISON

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 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.

<u>RESOLUTION</u>	<u>RATIO = LICENSEE VALUE/NRC REFERENCE VALUE</u>
	<u>Agreement</u>
<3	No Comparison
<u>≥</u> 3 and <4	0.4 - 2.5
<u>≥</u> 4 and <8	0.5 - 2.0
<u>≥</u> 8 and <16	0.6 - 1.67
<u>≥</u> 16 and <51	0.75 - 1.33
<u>≥</u> 51 and <200	0.80 - 1.25
<u>≥</u> 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.