

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report Nos. 50-373/92014(DRSS); 50-374/92014(DRSS)

Docket Nos. 50-373; 50-374

License Nos. NPF-11; NPF-18

Licensee: Commonwealth Edison Company

Opus West III

Opus 1400 Place

Downers Grove, IL 60515

Facility Name: LaSalle County Nuclear Station, Units 1 and 2

Inspection At: LaSalle County Nuclear Station Site, Marseilles,
Illinois

Inspection Conducted: June 15-18, 1992

Inspector: *J. E. House*
J. E. House

7-2-92
Date

Approved By: *J. E. House for*
William Snell, Chief
Radiological Controls Section

7-2-92
Date

Inspection Summary

Inspection on June 15-18, 1992 (Report Nos. 50-373/92014(DRSS); 50-374/92014(DRSS))

Areas Inspected: Routine announced inspection of radiological confirmatory measurements and radiochemistry quality assurance programs (IP 84750).

Results: The licensee continued to maintain a strong radiochemistry program. Confirmatory measurement results were excellent with all agreements in 102 comparisons with the NRC mobil laboratory. Quality assurance programs were very good as evidenced by the interlaboratory cross check program results in which all 317 comparisons were agreements. No violations or deviations were identified.

DETAILS

1. Persons Contacted

¹D. Bowman, Engineer, Nuclear Quality Programs
¹G. Diederich, Station Manager
¹B. Duttlinger, Counting Room Chemist
¹W. Huntington, Technical Superintendent
¹J. Lockwood, Supervisor, Regulatory Assurance
¹P. Nottingham, Chemistry Supervisor
¹R. Ragan, Administrative Engineer, Corporate
¹J. Schuster, Lead Chemist
¹J. Shields, Nuclear Licensing
¹J. Thean, Quality Assurance Chemist

¹D. Hills, Senior Resident Inspector, NRC
¹W. Snell, Section Chief, NRC
K. Andre, Technician, NRC

¹Present at the Exit Meeting on June 18, 1992.

2. Licensee Action on Previous Inspection Findings (IP 84750)

(Closed) Item (50-373/90023-01; 50-374/90024-01): The licensee will analyze a liquid radwaste sample for gross alpha, gross beta, tritium, Fe-55, Sr-89 and Sr-90 and report the results to RIII. Sample comparison results for the third quarter of 1990 are given in Table 1 and the comparison criteria are given in Attachment 1. Gross beta and tritium were agreements and Fe-55 was a disagreement. Sr-89, Sr-90 and gross alpha were not compared due to poor counting statistics. Due to the low activity of the radwaste sample which resulted in poor counting statistics, a spent fuel pool sample was obtained during the current inspection (Section 3). Licensee representatives indicated that this sample should have more activity.

3. Radiological Confirmatory Measurements (IP 84750)

Five samples (reactor coolant, off-gas, fuel pool, reactor coolant crud filter, and an NRC spiked air particulate) were analyzed for gamma emitting nuclides by the licensee and in the Region III Mobile Laboratory on site. As the licensee's air particulate filter had very little activity, a spiked air particulate filter from the NRC reference laboratory was counted along with the reactor coolant crud filter. Comparisons were made with the licensee's four count room detectors. Results of the confirmatory measurements were excellent with the licensee achieving all agreements in 102 comparisons as listed in Table 2; the comparison criteria are given in Attachment 1. Six analyses were not compared due to poor counting statistics.

A portion of a spent fuel pool sample will be analyzed for gross alpha, gross beta, H-3, Fe-55, Sr-89 and Sr-90 by the licensee and the results reported to Region III for comparison with an analysis by the NRC reference laboratory on a split of the sample. This will be followed under Inspection Followup Item Nos. (373/92014-01; 374/92014-01).

No violations or deviations were identified.

4. Laboratory Quality Assurance (IP 84750)

The inspector reviewed the radiological chemistry quality assurance program as defined by Nuclear Station Chemistry Quality Control Program Manual, Revision 12, December 31, 1991. Count room work space appeared adequate and was well organized. Chemistry technicians that were observed performing sample acquisition and preparation appeared knowledgeable and followed good laboratory practices. Counting instrument performance was monitored with statistically based control charts which had warning and control limits set at ± 2 and 3 standard deviations respectively. Results of the licensee's vendor supplied interlaboratory comparison (cross-check) program for 1991-92 were excellent with all agreements in 317 comparisons.

No violations or deviations were identified.

5. Primary Coolant Radiochemistry (IP 84750)

The inspector reviewed Procedure LCP-830-14, Determination of Average Disintegration Energy (E-Bar) and Dose Equivalent I-131 for Reactor Coolant, Revision 4, February 11, 1992. Technical Specification (T/S) 3.4.5 required that the specific activity of the reactor coolant be limited to 0.2 microcurie per gram (uCi/gram) or less of dose equivalent I-131 (DEI-131) and that this limit be verified at least once every 31 days. A review of selected reactor coolant radiochemistry records indicated that the DEI-131 analysis for both units was performed as required and was within the T/S limit. A review of the two previous E-Bar determinations indicated that this procedure had been performed as required.

No violations or deviations were identified.

6. Inspection Followup Items

Inspection Followup 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. An Inspection Followup Item disclosed during the inspection is discussed in Section 3.

7. Exit Interview

The scope and findings of the inspection were reviewed with licensee representatives (Section 1) at the conclusion of the inspection on June 18, 1992. The inspector discussed Inspection Followup Items in Sections 2 and 3, licensee performance in the confirmatory measurements program along with observations on the radiochemistry quality control program. During the exit interview, the inspector discussed the likely informational content of the inspection report with regard to documents or processes reviewed during the inspection. Licensee representatives did not identify any such documents or processes as proprietary.

Attachments:

1. Table 1, Radiological Chemistry Interlaboratory Split Sample Results, Third Quarter 1990
2. Table 2, Radiological Chemistry Confirmatory Measurements Results, Second Quarter 1992
3. Attachment 1, Criteria for Comparing Radiological Chemistry Measurements

TABLE 1
U.S. NUCLEAR REGULATORY COMMISSION
REGION III
FACILITY: LASALLE
FOR THE 3RD QUARTER OF 1990

SAMPLE	NUCLIDE	NRC VAL.	NRC ERR.	LIC.VAL.	LIC.ERR.	RATIO	RESOL.	RESULT
LIQUID	G ALPHA	1.00E-09	2.00E-09	3.70E-09	0.00E+00	3.70	0.5	N
WASTE	G BETA	1.96E-05	1.00E-06	1.50E-05	0.00E+00	0.77	19.6	A
SPLIT	H-3	5.89E-04	9.00E-06	6.50E-04	0.00E+00	1.10	65.4	A
	FE-55	7.95E-06	2.40E-07	3.92E-08	0.00E+00	0.00	33.1	D
	SR-89	3.00E-09	6.00E-09	5.82E-09	0.00E+00	1.94	0.5	N
	SR-90	2.00E-09	4.00E-09	1.89E-09	0.00E+00	0.94	0.5	N

TEST RESULTS:

A=AGREEMENT

D=DISAGREEMENT

*=CRITERIA RELAXED

N=NO COMPARISON

TABLE 2

U.S. NUCLEAR REGULATORY COMMISSION
REGION III
CONFIRMATORY MEASUREMENTS

FACILITY: LASALLE

FOR THE 2ND QUARTER OF 1992

SAMPLE	NUCLIDE	NRC VAL.	NRC ERR.	LIC.VAL.	LIC.ERR.	RATIO	RESOL.	RESULT
RCS	NA-24	3.88E-03	2.69E-05	3.59E-03	2.50E-04	0.93	144.2	A
DET P20	CR-51	7.43E-03	9.53E-05	6.76E-03	5.95E-04	0.91	78.0	A
	MN-54	8.39E-05	9.38E-06	9.84E-05	7.86E-06	1.17	8.9	A
	MN-56	3.31E-04	6.95E-05	3.07E-04	2.39E-05	0.93	4.8	A
	CO-58	1.40E-04	8.77E-06	1.29E-04	9.80E-06	0.92	16.0	A
	CO-60	2.70E-04	1.13E-05	2.46E-04	1.29E-05	0.91	23.9	A
	AS-76	1.61E-04	1.16E-05	1.51E-04	1.35E-05	0.94	13.9	A
	I-132	4.15E-04	1.65E-05	4.22E-04	1.67E-05	1.02	25.2	A
	I-133	1.35E-04	6.25E-06	1.19E-04	9.30E-06	0.88	21.6	A
	I-134	7.63E-04	8.47E-05	8.49E-04	5.41E-05	1.11	9.0	A
	I-135	3.51E-04	3.55E-05	2.69E-04	1.47E-05	0.77	9.9	A
	SR-91	1.64E-04	2.97E-05	1.57E-04	1.20E-05	0.96	5.5	A
	SR-92	3.34E-04	1.64E-05	3.25E-04	4.66E-05	0.91	21.7	A
	MD-99	2.96E-04	5.81E-05	2.81E-04	2.30E-05	0.95	5.1	A
	BA-139	2.57E-04	6.45E-05	2.29E-04	4.14E-05	0.89	4.0	A
RCS	NA-24	3.88E-03	2.69E-05	3.74E-03	2.79E-04	0.96	144.2	A
DET TP51	CR-51	7.43E-03	9.53E-05	6.66E-03	5.58E-04	0.90	78.0	A
	MN-54	8.39E-05	9.38E-06	9.07E-05	7.88E-06	1.08	8.9	A
	MN-56	3.31E-04	6.95E-05	3.74E-04	3.10E-05	1.13	4.8	A
	CO-58	1.40E-04	8.77E-06	1.16E-04	8.90E-06	0.83	16.0	A
	CO-60	2.70E-04	1.13E-05	2.56E-04	1.48E-05	0.95	23.9	A
	AS-76	1.61E-04	1.16E-05	1.55E-04	1.44E-05	0.96	13.9	A
	I-132	4.15E-04	1.65E-05	4.10E-04	2.56E-05	0.99	25.2	A
	I-133	1.35E-04	6.25E-06	1.19E-04	1.02E-05	0.88	21.6	A
	I-135	3.51E-04	3.55E-05	2.94E-04	2.20E-05	0.84	9.9	A
	SR-91	1.64E-04	2.97E-05	1.85E-04	1.71E-05	1.13	5.5	A
	SR-92	3.56E-04	1.64E-05	3.57E-04	5.54E-05	1.00	21.7	A
	MD-99	2.96E-04	5.81E-05	3.20E-04	2.77E-05	1.08	5.1	A

SAMPLE	NUCLIDE	NRC VAL.	NRC ERR.	LIC.VAL.	LIC.ERR.	RATIO	RESOL.	RESULT
OFF GAS	KR-85M	8.75E-05	2.36E-06	9.02E-05	1.03E-05	1.03	37.1	A
COUNT 1	KR-87	5.59E-04	1.61E-05	6.44E-04	5.79E-05	1.15	34.7	A
DET TP10	KR-88	3.48E-04	1.12E-05	3.21E-04	3.26E-05	0.92	31.1	A
	XE-135	2.45E-04	3.61E-06	2.28E-04	1.87E-05	0.93	67.9	A
	XE-135M	2.11E-03	2.89E-04	1.65E-03	1.32E-04	0.78	7.3	A
	XE-138	7.33E-03	9.44E-04	7.12E-03	3.77E-04	0.97	7.8	A
OFF GAS	KR-85M	8.77E-05	2.76E-06	8.98E-05	8.34E-06	1.02	31.8	A
COUNT 2	KR-87	5.53E-04	3.58E-05	4.95E-04	4.87E-05	0.90	15.4	A
DET TP51	KR-88	3.14E-04	1.28E-05	3.38E-04	2.86E-05	1.08	24.5	A
	XE-133	1.96E-05	2.23E-06	2.06E-05	4.48E-06	1.05	8.8	A
	XE-135	2.43E-04	3.52E-06	2.37E-04	1.96E-05	0.98	69.0	A
OFF GAS	KR-85M	8.77E-05	2.76E-06	9.27E-05	7.17E-06	1.06	31.8	A
COUNT 3	KR-87	5.53E-04	3.58E-05	4.71E-04	1.17E-04	0.85	15.4	A
DET P20	KR-88	3.14E-04	1.28E-05	3.31E-04	3.05E-05	1.05	24.5	A
	XE-133	1.96E-05	2.23E-06	1.78E-05	2.66E-06	0.91	8.8	A
	XE-135	2.43E-04	3.52E-06	2.35E-04	1.68E-05	0.97	69.0	A
FUEL	MN-54	1.09E-05	3.21E-06	1.09E-05	8.30E-07	1.00	3.4	N
POOL	CO-58	9.13E-07	1.83E-07	1.13E-06	2.99E-07	1.24	5.0	A
DET P32	CO-60	4.09E-05	5.30E-07	4.27E-05	2.31E-06	1.04	77.2	A
	CS-137	1.02E-06	2.19E-07	6.76E-07	1.79E-07	0.66	4.7	A
FUEL	MN-54	1.09E-05	3.21E-06	1.16E-05	9.30E-07	1.06	3.4	N
POOL	CO-58	9.13E-07	1.83E-07	9.96E-07	1.95E-07	1.09	5.0	A
DET TP10	CO-60	4.09E-05	5.30E-07	4.26E-05	2.11E-06	1.04	77.2	A
	CS-137	1.02E-06	2.19E-07	8.04E-07	1.73E-07	0.79	4.7	A
NRC	CO-57	3.82E-03	6.73E-05	3.39E-03	2.36E-04	0.89	56.8	A
AP SPIKE	CO-60	5.45E-02	5.51E-04	5.04E-02	2.46E-03	0.93	98.9	A
DET TP10	SR-85	4.94E-04	1.09E-04	4.00E-04	1.47E-04	0.81	4.5	A
	Y-88	5.18E-03	2.22E-04	4.79E-03	3.07E-04	0.92	23.3	A
	CD-109	1.54E-01	1.90E-03	1.40E-01	1.09E-02	0.91	81.1	A
	SN-113	1.44E-03	1.51E-04	1.64E-03	2.47E-04	1.14	9.5	A
	CS-137	5.31E-02	4.37E-04	5.03E-02	3.67E-03	0.95	121.5	A
	CE-139	1.45E-03	5.78E-05	1.17E-03	1.29E-04	0.81	25.1	A
NRC	CO-57	3.82E-03	6.73E-05	3.59E-03	2.33E-04	0.94	56.8	A
AP SPIKE	CO-60	5.45E-02	5.51E-04	5.08E-02	2.47E-03	0.93	98.9	A
DET P20	SR-85	4.94E-04	1.09E-04	3.54E-04	1.17E-04	0.72	4.5	A
	Y-88	5.18E-03	2.22E-04	4.71E-03	2.97E-04	0.91	23.3	A
	CD-109	1.54E-01	1.90E-03	1.46E-01	1.10E-02	0.95	81.1	A
	SN-113	1.44E-03	1.51E-04	1.28E-03	1.82E-04	0.89	9.5	A
	CS-137	5.31E-02	4.37E-04	5.02E-02	3.49E-03	0.95	121.5	A
	CE-139	1.45E-03	5.78E-05	1.23E-03	1.16E-04	0.85	25.1	A

SAMPLE	NUCLIDE	NRC VAL.	NRC ERR.	LIC.VAL.	LIC.ERR.	RATIO	RESOL.	RESULT
NRC	CO-57	3.82E-03	6.73E-05	3.70E-03	2.63E-04	0.97	56.8	A
AP SPIKE	CO-60	5.45E-02	5.51E-04	4.98E-02	2.43E-03	0.91	98.9	A
DET P32	SR-85	4.94E-04	1.09E-04	4.26E-04	1.28E-04	0.86	4.5	A
	Y-88	5.18E-03	2.22E-04	4.61E-03	3.29E-04	0.89	23.3	A
	CD-109	1.54E-01	1.90E-03	1.43E-01	1.12E-02	0.93	81.1	A
	SN-113	1.44E-03	1.51E-04	1.73E-03	3.05E-04	1.20	9.5	A
	CS-137	5.31E-02	4.37E-04	4.87E-02	3.45E-03	0.92	121.5	A
	CE-139	1.45E-03	5.78E-05	1.21E-03	1.36E-04	0.83	25.1	A
NRC	CO-57	3.82E-03	6.73E-05	3.94E-03	3.48E-04	1.03	56.8	A
AP SPIKE	CO-60	5.45E-02	5.51E-04	5.28E-02	2.90E-03	0.97	98.9	A
DET TP51	SR-85	4.94E-04	1.09E-04	3.72E-04	1.38E-04	0.75	4.5	A
	Y-88	5.18E-03	2.22E-04	4.48E-03	3.39E-04	0.86	23.3	A
	CD-109	1.54E-01	1.90E-03	1.41E-01	1.34E-02	0.92	81.1	A
	SN-113	1.44E-03	1.51E-04	1.73E-03	2.80E-04	1.24	9.5	A
	CS-137	5.31E-02	4.37E-04	4.88E-02	3.39E-03	0.92	121.5	A
	CE-139	1.45E-03	5.78E-05	1.47E-03	1.71E-04	1.01	25.1	A
RCS	NA-24	8.73E-06	1.09E-06	8.59E-06	1.11E-06	0.98	8.0	A
CRUD	CR-51	8.84E-05	3.00E-06	1.00E-04	8.60E-06	1.13	29.5	A
DET TP10	MN-54	3.42E-04	1.78E-06	3.54E-04	2.61E-05	1.04	192.1	A
	FE-59	7.90E-05	2.10E-06	7.82E-05	4.05E-06	0.99	37.6	A
	CO-58	2.57E-05	8.02E-07	2.70E-05	2.24E-06	1.05	32.0	A
	CO-60	3.73E-04	2.03E-06	3.78E-04	1.82E-05	1.01	183.7	A
	AS-76	4.28E-06	1.63E-06	1.07E-05	2.93E-06	2.50	2.6	N
	W-187	2.52E-05	3.90E-06	3.49E-05	5.78E-06	1.38	6.5	A
	NB-95	1.70E-06	5.07E-07	1.44E-06	6.73E-07	0.85	3.4	N
	SB-122	4.27E-06	7.77E-07	4.52E-06	1.07E-06	1.06	5.5	A
	SB-124	2.31E-06	5.39E-07	2.77E-06	4.78E-07	1.20	4.3	A
	CE-144	1.31E-05	1.26E-06	1.63E-05	2.89E-06	1.24	10.4	A
RCS	NA-24	8.73E-06	1.09E-06	8.48E-06	1.47E-06	0.97	8.0	A
CRUD	CR-51	8.84E-05	3.00E-06	8.92E-05	9.17E-06	1.01	29.5	A
DET TP51	MN-54	3.42E-04	1.78E-06	3.60E-04	2.51E-05	1.05	192.1	A
	FE-59	7.90E-05	2.10E-06	7.90E-05	4.50E-06	1.00	37.6	A
	CO-58	2.57E-05	8.02E-07	2.88E-05	2.32E-06	1.12	32.0	A
	CO-60	3.73E-04	2.03E-06	3.90E-04	2.11E-05	1.05	183.7	A
	AS-76	4.28E-06	1.63E-06	7.90E-06	2.48E-06	1.85	2.6	N
	W-187	2.52E-05	3.90E-06	3.79E-05	7.00E-06	1.50	6.5	A
	NB-95	1.70E-06	5.07E-07	0.00E+00	0.00E+00		3.4	N
	SB-122	4.27E-06	7.77E-07	2.90E-06	1.07E-06	0.62	5.5	A
	SB-124	2.31E-06	5.39E-07	2.47E-06	5.48E-07	1.07	4.3	A
	CE-144	1.31E-05	1.26E-06	1.18E-05	2.50E-06	0.90	10.4	A

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 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	NO COMPARISON
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.