

U.S. NUCLEAR REGULATORY COMMISSION  
REGION III

Report No. 50-255/91016(DRSS)

Docket No. 50-255

License No. DPR-20

Licensee: Consumers Power Company  
212 West Michigan Avenue  
Jackson, MI 49201

Facility Name: Palisades Nuclear Generating Plant

Inspection At: Palisades Site, Covert, MI

Inspection Conducted: August 19-23, 1991 (Onsite)

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

9-11-91  
Date

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

9-11-91  
Date

Inspection Summary

Inspection on August 19-23, 1991 (Report No. 50-255/91016(DRSS))

Areas Inspected: Routine announced inspection of radiological chemistry including confirmatory measurements, quality assurance, and audits (IP 84750); review of an open item (IP 92701); and the radiological environmental monitoring program (REMP) (IP 84750).

Results: Results of the radiological confirmatory measurement program were very good as were interlaboratory crosscheck results. Laboratory quality assurance was good. Licensee management of the REMP has improved and it appeared to be operating satisfactorily. No violations or deviations were identified.

## DETAILS

### 1. Persons Contacted

- <sup>1</sup>D. Andersen, Performance Assessment, CPCo
- <sup>1</sup>P. Donnelly, Director, Safety and Licensing, CPCo
- <sup>1</sup>J. Hagar, Supervisor, Radioactive Material Control, CPCo
- <sup>1</sup>D. Hice, Superintendent, Chemistry, CPCo
- <sup>1</sup>L. Kenaga, Health Physicist, CPCo
- <sup>1</sup>J. Kuemin, Licensing, CPCo
- <sup>1</sup>T. Neal, Radioactive Material Control Administrator, CPCo
- <sup>1</sup>J. Paver, Radiochemistry Supervisor, CPCo
- <sup>1</sup>R. Rice, Operations Manager, CPCo
- <sup>1</sup>W. Roberts, Staff Licensing Engineer, CPCo

The inspector also interviewed other licensee personnel in the course of the inspection.

<sup>1</sup>Denotes those present at the plant exit interview on August 23, 1991.

### 2. Licensee Action on Previous Inspection Findings

(Closed) Open Item No. (50-255/90022-2): Licensee to improve management of the REMP including increased oversight of the REMP contractor, perform quarterly field inspections of the air sampling stations and replace leaking fittings on air samplers. Licensee personnel have implemented a quarterly inspection of the air sampling stations which includes a check of the meter serial number, equipment calibration due date, leak testing of the filter train and overall operating condition. The licensee has improved the oversight of contractor activities through upgraded record keeping and has replaced the fittings on all air sampling stations with stainless steel components. No air inleakage was detected by the inspector during a tour of selected stations.

### 3. Radiological Confirmatory Measurements (IP 84750)

Five samples (primary coolant, primary coolant crud filter, containment air charcoal, offgas, and liquid waste) were analyzed for gamma emitting nuclides by the licensee and in the Region III Mobile Laboratory on site. Comparisons were made with combinations of the licensee's three chemistry detectors. As the licensee's most recent air particulate and charcoal filters had no detectable activity, the primary coolant crud filter was substituted for the air particulate filter and a containment air charcoal filter was substituted for the stack charcoal filter.

Results of the confirmatory measurements were very good. The licensee achieved 49 agreements out of 49 comparisons; four comparisons could not be made due to poor counting statistics (Table 1). Comparison criteria are given in Attachment 1.

A portion of a liquid waste sample will be analyzed for gross beta, H-3, 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 (Open Item 50-255/91016-1).

No violations or deviations were identified.

4. Quality Assurance (IP 84750)

The inspector reviewed the radiochemistry laboratory quality assurance program including physical facilities, laboratory operations and selected procedures. Control charts are maintained for each detector with warning and control limits set at +2 and +3 standard deviations respectively. The licensee participates in a radiochemistry interlaboratory cross-check program with an outside vendor. The results for the past two years were very good with only one disagreement (Tritium) noted.

A trend chart of dose equivalent I-131 in primary coolant for the past three years indicated that levels were well within the T/S limit. The inspector reviewed a selected E-BAR determination which appeared adequate.

No violations or deviations were identified.

5. Audits (IP 84750)

The inspector reviewed Audit Report No: QA-91-20, conducted July 22-26, 1991, of the chemistry area including laboratory QA, bulk chemical control, corrosion control, chemistry data trending and software control. The audit was sufficiently detailed and appeared to be performance oriented. Actions on previous findings reviewed by the audit team appeared to be adequate.

No violations or deviations were identified.

6. Radiological Environmental Monitoring Program (REMP)(IP 84750)

The inspector reviewed the REMP, including the 1990 Annual Environmental Report, toured air sampling stations and reviewed selected procedures. The Annual REMP Report appeared to comply with T/S requirements. All of the required samples were collected and analyzed, except as noted in the report. The results do not indicate a significant contribution to the environment due to plant operation.

The air samplers observed were operating satisfactorily, both with respect to vacuum and flow. Deficiencies noted in the previous report (Section 2) had been corrected. Filter information was properly documented and the quarterly review of the air samplers had been performed. Overall, the REMP appeared to be operating satisfactorily.

No violations or deviations 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. An open item disclosed during the inspection is discussed in Section 3.

8. Exit Interview

The scope and findings of the inspection were reviewed with licensee representatives (Section 1) at the conclusion of the inspection on August 23, 1991. The inspector discussed the results of the confirmatory measurement program, observations of the quality control program and improvements in the REMP.

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, Third Quarter, 1991
2. Attachment 1, Criteria for Comparing  
Analytical Measurements (Radiological)

TABLE 1

## U.S. NUCLEAR REGULATORY COMMISSION

## REGION III

FACILITY: PALISADES

FOR THE 3RD QUARTER OF 1991

SAMPLE	NUCLIDE	NRC VAL.	NRC ERR.	LIC.VAL.	LIC.ERR.	RATIO	RESOL.	RESULT
RCS	I-131	6.26E-03	2.39E-04	5.85E-03	1.63E-04	0.93	26.2	A
DET #2	I-132	2.83E-02	3.18E-04	2.75E-02	2.60E-04	0.97	89.0	A
	I-133	2.82E-02	2.59E-04	2.59E-02	2.10E-04	0.92	108.9	A
	I-134	4.53E-02	6.99E-04	4.10E-02	8.10E-04	0.91	64.8	A
	I-135	3.96E-02	9.74E-04	3.49E-02	8.30E-02	0.88	40.7	A
	RB-88	1.27E-01	1.06E-02	1.14E-01	9.90E-03	0.90	12.0	A
	Y-88	2.07E-03	1.73E-04	1.90E-03	1.65E-04	0.92	12.0	A
	NB-95	9.26E-04	1.57E-04	8.27E-04	1.24E-04	0.89	5.9	A
	RU-106	2.35E-02	1.84E-03	2.26E-02	1.33E-02	0.96	12.8	A
	CS-138	5.03E-02	1.62E-03	4.67E-02	9.80E-04	0.93	31.0	A
	BA-139	3.82E-03	8.47E-04	2.88E-03	4.86E-04	0.75	4.5	A
	CE-139	4.64E-04	1.03E-04	5.00E-04	8.40E-05	1.08	4.5	A
	NA-24	2.79E-02	3.68E-04	2.59E-02	2.70E-04	0.93	75.8	A
	CS-137	5.25E-04	1.46E-04	6.09E-04	1.22E-04	1.16	3.6	N
RCS	NA-24	2.90E-02	5.60E-04	2.62E-02	6.40E-04	0.90	51.8	A
DET.#1	I-131	6.35E-03	1.17E-04	5.84E-03	1.25E-04	0.92	54.3	A
	I-133	2.97E-02	3.10E-04	2.69E-02	3.50E-04	0.91	95.8	A
	I-135	4.39E-02	3.58E-03	3.68E-02	3.79E-03	0.84	12.3	A
	MO-99	6.14E-04	5.27E-05	4.97E-04	6.67E-05	0.81	11.7	A
	CS-134	5.05E-04	4.15E-05	4.34E-04	4.80E-05	0.86	12.2	A
	CS-137	9.25E-04	7.02E-05	6.17E-04	7.65E-05	0.67	13.2	A
RCS	NA-24	2.90E-02	5.60E-04	2.67E-02	5.80E-04	0.92	51.8	A
DET.#3	I-131	6.35E-03	1.17E-04	5.75E-03	1.06E-04	0.91	54.3	A
	I-133	2.97E-02	3.10E-04	2.67E-02	3.00E-04	0.90	95.8	A
	I-135	4.39E-02	3.58E-03	3.67E-02	3.19E-03	0.84	12.3	A
	MO-99	6.14E-04	5.27E-05	5.09E-04	2.70E-05	0.83	11.7	A
	CS-134	5.05E-04	4.15E-05	4.04E-04	4.57E-05	0.80	12.2	A
	CS-137	9.25E-04	7.02E-05	7.34E-04	7.33E-05	0.79	13.2	A

SAMPLE	NUCLIDE	NRC VAL.	NRC ERR.	LIC.VAL.	LIC.ERR.	RATIO	RESOL.	RESULT
RCS CRUD	NA-24	3.20E-05	2.39E-06	3.92E-05	2.56E-06	1.22	13.4	A
FILTER	CR-51	1.15E-04	5.63E-06	1.21E-04	5.50E-06	1.05	20.4	A
DET.#1	CO-58	1.19E-04	1.82E-06	1.43E-04	2.10E-06	1.20	65.4	A
	CO-60	5.59E-06	5.92E-07	4.58E-06	6.37E-07	0.82	9.4	A
	I-131	5.09E-06	5.38E-07	5.55E-06	6.36E-07	1.09	9.5	A
	I-133	2.12E-05	1.82E-06	2.59E-05	2.10E-06	1.22	11.6	A
	ZR-95	4.95E-06	7.87E-07	5.40E-06	9.95E-07	1.09	6.3	A
	ZR-97	7.67E-06	1.23E-06	8.16E-06	1.32E-06	1.06	6.2	A
	NB-95	4.69E-06	5.07E-07	5.83E-06	7.76E-07	1.24	9.3	A
	MO-99	2.17E-06	1.68E-07	3.51E-06	3.58E-07	1.62	12.9	A
	TE-132	2.43E-06	4.09E-07	1.48E-06	3.76E-07	0.61	5.9	A
	CS-134	2.46E-06	6.59E-07	3.37E-06	7.63E-07	1.37	3.7	N
	CS-137	3.78E-06	5.19E-07	5.14E-06	6.68E-07	1.36	7.3	A
CHARCOAL	I-131	6.30E-10	9.18E-11	6.20E-10	4.87E-11	0.98	6.9	A
FILTER	I-133	4.86E-10	1.51E-10	1.83E-10	6.06E-11	0.38	3.2	N
DET #3								
RADWASTE	CO-60	1.38E-06	9.48E-08	1.36E-06	1.98E-07	0.99	14.6	A
DET #1	CS-137	1.62E-06	9.19E-08	1.65E-06	1.55E-07	1.02	17.6	A
RADWASTE	CO-60	1.38E-06	9.48E-08	1.38E-06	1.14E-07	1.00	14.6	A
DET #2	CS-137	1.62E-06	9.19E-08	1.54E-06	1.35E-07	0.95	17.6	A
OFF-GAS	KR-85	1.47E-03	3.91E-04	2.08E-03	2.23E-04	1.41	3.8	N
DET.#2	KR-85M	1.21E-05	2.50E-06	9.97E-06	1.19E-06	0.82	4.8	A
COUNT #2	XE-131M	5.50E-04	4.70E-05	4.73E-04	2.85E-05	0.86	11.7	A
	XE-133	1.55E-02	4.23E-05	1.54E-02	4.00E-05	0.99	366.4	A
	XE-133M	8.09E-05	1.25E-05	8.60E-05	6.77E-06	1.06	6.5	A
	XE-135	9.65E-05	3.23E-06	9.17E-05	2.09E-06	0.95	29.9	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.

<u>RESOLUTION</u>	<u>RATIO = LICENSEE VALUE/NRC REFERENCE VALUE</u>
	<u>Agreement</u>
<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.