

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

IE Inspection Report No: 50-219/75-16 Docket No: 50-219
Licensee: Jersey Central Power and Light Company License No: DPR-16
Madison Avenue at Punch Bowl Road Priority: --
Morristown, New Jersey 07960 Category: C
Safeguards Group: _____
Location: Oyster Creek Station (OC), Forked River, NJ 08731

Type of Licensee: BWR, 640 MWe

Type of Inspection: Routine, Announced (Independent Measurements)

Dates of Inspection: May 29-30, 1975

Dates of Previous Inspection: May 21-22, 1975

Reporting Inspector: R. J. Everett 6/12/75
R. J. Everett, Radiation Specialist DATE

Accompanying Inspectors: _____ DATE

_____ DATE

_____ DATE

Other Accompanying Personnel: _____ DATE

Reviewed By: J. P. Stohr 6/16/75
J. P. Stohr, Senior Environmental Scientist DATE

B/808

SUMMARY OF FINDINGS

Enforcement Action

A. Items of Noncompliance

1. Violations

None

2. Infractions

None

3. Deficiencies

None

B. Deviations

None

Licensee Action on Previously Identified Enforcement Items (Independent Measurements)

None applicable.

Design Changes

None applicable.

Unusual Occurrences

None

Other Significant Findings

A. Current Findings

1. General

This report summarizes the licensee's performance on verification test samples. 70% of the licensee's measurements were in agreement, 23% possible agreement and 7% disagreement. (Details, Paragraph 3)

2. Acceptable Areas (No items of noncompliance were noted)
 - a. Liquid rad waste compositing procedure. (Details, Paragraph 4)
 3. Unresolved Items

None
 4. Infractions and Deficiencies Identified by Licensee
 - a. Infractions

None
 - b. Deficiencies

None
- B. Status of Previously Reported Unresolved Items (Independent Measurements)
1. Reference RO Report No. 50-219/73-19 and IE Report No. 50-219/75-03 Licensee is now in agreement with the reference laboratory on iodine measurements of charcoal samples. This item is considered resolved. (Details, Paragraph 3)

Management Interview

The following individuals attended the management interview at the conclusion of the inspection:

Mr. J. T. Carroll, Station Superintendent, OC
Mr. E. J. Gowney, Technical Engineer, OC
Mr. J. R. Pelrine, Chemical Supervisor, OC
Mr. R. J. Everett, Radiation Specialist, IE:I

During the meeting the following items were discussed:

A. Iodine Measurements of Gaseous Effluent

The inspector stated that the iodine test sample submitted during the inspection was in agreement with the reference laboratory. The licensee stated that a counting method would be developed that would enable accurate measurement of iodines of any distribution on the charcoal. (Details, Paragraph 3)

B. Compositing of Liquid Radwaste Samples

The inspector stated that a review was made of the licensee's modified radwaste compositing procedure and that he had no further questions on this matter. (Details, Paragraph 4)

C. Location of Counting Facilities*

The licensee stated that plans now call for a new structure south of the plant that would house the counting laboratory and other plant functions. (Details, Paragraph 4)

D. Laboratory QA/QC Program

The inspector noted that the licensee's laboratory QA/QC implementing procedure was essentially complete and had no further questions. The licensee stated that as portions of the program are written and approved, implementation would follow with final program completion by the end of 1975. (Details, Paragraph 5)

*Telephone conversation with J. T. Carroll on June 4, 1975.

DETAILS

1. Persons Contacted

Mr. J. T. Carroll, Station Superintendent, OC
Mr. E. J. Gowney, Technical Engineer, OC
Mr. E. J. Pelrine, Chemical Supervisor, OC
Mr. C. Konta, Chemical Foreman, OC
Mr. R. Dube, Site QA Engineer, OC

2. General

The inspection consisted of a review of the licensee's performance on verification test samples collected by IE:I personnel and analyzed by the NRC's reference laboratory, Idaho Health and Safety Laboratory, (IHSL) and the IE:I Mobile Measurements Vehicle. These samples test the licensee's capability to measure radioactive material in actual effluent samples. Some test standards were also submitted to OC for analysis. The activity of the test standards and IHSL's measurements of effluent samples are referenced to the National Bureau of Standards by laboratory intercomparisons.

3. Results of Verification Test Samples

This report summarizes the licensee's performance on verification test samples collected in the IE:I Mobile Lab Visit of January 20-23, 1975. The eight samples measured resulted in 70% agreement, 23% possible agreement and 7% disagreement.* The types of samples collected and the results of measurements were:

Type of Sample: Radwaste, 12-4-74

Acceptable Results in Urts of Microcuries Per Milliliter

<u>Radionuclide</u>	<u>NRC Measurement</u>	<u>Licensee Measurement</u>	
Gross beta	1.38 ± .04 E-6	3.5 ± 1.0 E-6	(1)
H-3	1.12 ± .01 E-2	1.2 ± .02 E-2	
SR-89	2.4 ± .2 E-7	3.6 ± .1 E-7	
SR-90	7. ± 2 E-9	1.4 ± .05 E-8	
Ce-141	2.9 ± .9 E-7	3.4 ± .1 E-7	
Co-60	3.6 ± .5 E-7	2.8 ± .4 E-7	
Cr-51	2.7 ± .6 E-6	1.6 ± .08 E-6	

*See attachment 1 to this report for a description of the criteria used to evaluate differences between analytical results. ,

(1) Possible Agreement

Type of Sample: Radwaste, 1330 hours, 1-21-75

Acceptable Results in units of Microcuries Per Milliliter

<u>Radionuclide</u>	<u>NRC Measurement</u>	<u>Licensee Measurement</u>
Gross beta	2.83 ± .03 E-4	4.2 ± .1 E-4 (1)
H-3	1.20 ± .01 E-2	1.0 ± .001 E-2
Sr-89	1.01 ± .04 E-5	1.0 ± .03 E-5
Sr-90	1.07 ± .05 E-6	1.2 ± .02 E-6
Mn-54	5.35 ± .1 E-5	7.3 ± .5 E-5 (1)
Co-60	1.64 ± .02 E-4	2.0 ± .1 E-4
Cs-137	1.46 ± .02 E-4	1.4 ± .07 E-4
Ba-140	8.0 ± .6 E-6	7.0 ± 2. E-6
I-131	9.99 ± .1 E-5	9.3 ± .4 E-5
Cs-134	6.89 ± .1 E-5	6.7 ± .4 E-5

Type of Sample: Offgas, 0957, 12-4-74

Acceptable Results in Units of Microcuries Per Milliliter

<u>Radionuclide</u>	<u>NRC Measurement</u>	<u>Licensee Measurement</u>
Xe-133	3.51 ± .09 E-2	2.9 ± .1 E-2
Xe-135	1.9 ± .4 E-1	1.6 ± .1 E-1

Type of Sample: Offgas, 1509 hours, 1-22-75

Acceptable Results in units of Microcuries Per Milliliter

<u>Radionuclide</u>	<u>NRC Measurement</u>	<u>Licensee Measurement</u>
Xe-133	4.3 ± .1 E-2	3.5 ± .05 E-2
Kr-87	2.1 ± .03 E-1	2.0 ± .04 E-1
Kr-88	11.5 ± .5 E-2	9.0 ± .02 E-2
Xe-135	2.23 ± .01 E-1	1.8 ± .04 E-1 (1)
Xe-133M	3.7 ± .2 E-3	1.9 ± .25 E-3 (1)
Xe-135M	1.02 ± .02 <	5.6 ± .1 E-1

Type of Sample: Charcoal Cartridge, 0840 hours, 1-20-75

Not Acceptable Results in units of Microcuries

<u>Radionuclide</u>	<u>NRC Measurement</u>	<u>Licensee Measurement</u>
I-131	.450 ± .002	.34 ± .1
I-133	.430 ± .006	.31 ± .1

(1) Possible Agreement

Type of Sample: Standard Charcoal, reference date 8-6-74, Sample "B"

<u>Acceptable</u>	<u>Results in Units of Microcuries</u>	
<u>Radionuclide</u>	<u>NRC Measurements</u>	<u>Licensee Measurements</u>
Ba-133	1.18 ± .04 E-2	1.13 ± ? E-2

Type of Sample: Standard Charcoal, reference date 10-28-74, Sample "H4"

<u>Acceptable</u>	<u>Results in Units of Microcuries</u>	
<u>Radionuclide</u>	<u>NRC Measurements</u>	<u>Licensee Measurements</u>
Ba-133	7.61 ± .01 E-2	5.9 ± ? E-2 (1)

Type of Sample: Charcoal Cartridge, 0945, 12/3/74

<u>Acceptable</u>	<u>Results in Units of Microcuries</u>	
<u>Radionuclide</u>	<u>NRC Measurements</u>	<u>Licensee Measurements</u>
I-131	4.1 ± .01 E-1	3.3 ± .03 E-1 (1)

The inspector noted that the licensee's effluent release were generally a few percent of Tech Spec limits, and any analytical discrepancies in themselves, would not have caused the licensee to exceed any regulatory limit.

The inspector noted that the iodine sample submitted during the inspection and analyzed by the licensee was in agreement with the reference laboratory. The inspector reviewed the measurement stepwise and inquired as to why previous iodine measurements, over the past year were low by a factor of 1.6 - 1.8 and the current measurement was in agreement using the same efficiency factor. The licensee stated that it was possible the wrong side of the cartridge was counted in the past. The inspector reviewed nuclear constants used in the measurement and noted that repeated counts during the night indicated spectrometer reliability. The inspector stated that the matter appeared to be a problem of counting procedure rather than calibrations. The licensee stated that in the future, the counting procedure would require a measurement on each side of the cartridge. The two results would then be averaged. This procedure would eliminate the problem of counting the wrong side and would also allow accurate measurement of iodine of any distribution on the cartridge, if a calibration for a uniform distribution is used. The inspector stated that several iodine cartridge samples would be collected over the next few months to verify this procedure.

(1) Possible Agreement

The inspector reviewed the results of measurements on all samples from the last inspection and stated that with the exception of iodine measurements, no other action was indicated. Measurements in the category of possible agreement will be followed in subsequent inspections.

4. Radiochemical Practices

The inspector reviewed a modified liquid radwaste compositing procedure. The inspector noted the requirement to add hydrochloric acid and sodium bisulfite to these solution to prevent losses of radioactivity during storage. The inspector had no further questions.

The inspector inquired as to plans to relocate the counting facilities, now located in a higher than desirable radiation background area. The licensee responded that a new structure, south of the plant, was planned; pending approval of capital funds. The building would provide a permanent, regulated structure for the counting lab as well as other office space. The inspector stated that progress on this structure would be followed in subsequent inspections.

5. Laboratory QA/QC Program

The inspector reviewed a draft of the licensee's laboratory QA implementing procedure and stated that except for the modifications outlined the procedure appears to cover the essential elements of a laboratory QA Program. The inspector asked when the procedure would be completed and the full program initiated. The licensee stated sub-categories of the implementing procedure and detailed procedures covering tests and measurements were about 50% completed and anticipated completion and implementation of the program by the end of the year. The inspector reviewed the OC QA Manual and verified that the chemistry unit was on the audit list and necessary inspection procedures were specified. The inspector noted that the chemistry unit has never been audited by the site or corporate QA staff and inquired as to their schedule for this inspection. The licensee responded that with present priorities, a early 1976 audit appeared certain. The inspector stated that the checklist for this inspection and the findings would be reviewed after completion.

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 judgement limits are variable in relation to the comparison of the NRC Reference Laboratory's value to its associated 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 must be considered acceptable as the resolution decreases.

<u>Resolution</u>	<u>Agreement</u>	<u>LICENSEE VALUE</u>	
		RATIO= NRC REFERENCE VALUE	
		<u>Possible Agreement A</u>	<u>Possible Agreement B</u>
<3	0.4 - 2.5	0.3 - 3.0	No Comparison
4 - 7	0.5 - 2.0	0.4 - 2.5	0.3 - 3.0
8 - 15	0.6 - 1.66	0.5 - 2.0	0.4 - 2.5
16 - 50	0.75 - 1.33	0.6 - 1.66	0.5 - 2.0
51 - 200	0.80 - 1.25	0.75 - 1.33	0.6 - 1.66
>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.

89Sr and 90Sr Determinations.

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