IE:I Form 12
(Jan 75) (Rev)

U.S. NUCLEAR REGULATORY COMMISSION

OFFICE OF INSPECTION AND ENFORCEMENT

REGION I

IE Inspection Report No: 50-219/75-03 Docket No: 50-219

Licensee: Jersey Central Power and Light Co. License No: DPR-16

Madison Avenue at Punch Bowl Road Priority:

Morristown, New Jersey 07960 Category: C

Location: Oyster Creek Station (OC)
Forked River, New Jersey 08731 Safeguards Group:

Type of Licensee: BWR, 640 Mwe

Type of Inspection: Routine, Announced (Independent Measurements)

Dates of Inspection: January 20-23, 1975

Dates of Previous Inspection: January 20-22, 1975

Reporting Inspector: R. J. Everett 2/7/75
R. J. Everett, Radiation Specialist Date

Accompanying Inspectors: _____ Date

_____ Date

_____ Date

_____ Date

Other Accompanying Personnel: _____ Date

Reviewed By: J. P. Stohr 2/7/75
J. P. Stohr, Senior Environmental Scientist Date

B1894

SUMMARY OF FINDINGS

Enforcement Action

None

Licensee Action on Previously Identified Enforcement Action (Independent Measurements)

None

Other Significant Findings

This report summarizes the licensee's performance on verification test samples. 54% of the verification samples were in agreement, 6% in possible agreement and 40% in disagreement. (Details, Paragraph 3)

Unresolved Items

None

Status of Previously Reported Unresolved Items (Independent Measurements)

A. Licensee action not completely effective in eliminating iodine measurement discrepancy. Item continued. (Details, Paragraph 3)

Management Interview

A meeting was held on January 23, 1975 in the office of Mr. J. T. Carroll, Site Superintendent, following the inspection at the site. The following individuals were in attendance:

Mr. R. J. Everett, Radiation Specialist, IE:I
Mr. J. T. Carroll, Site Superintendent, OC
Mr. J. R. Pelrine, Chemical Supervisor, OC

During the meeting the following items were discussed:

A. Iodine Measurements in Gaseous Effluent

The licensee stated that the method of calibration of iodine absorbers would be investigated in order to improve agreement with the reference laboratory. (Details, Paragraph 3)

B. Location of Counting Facilities

The licensee stated that other locations would be investigated that would be more suitable in terms of lower radiation background. (Details, Paragraph 3)

C. Compositing of Liquid Radwaste Samples

The licensee stated that split liquid samples would be counted soon after collection in order to prevent loss of activity during storage and steps would be taken to improve the uncertainties in the composite analysis due to storage of solutions. (Details, Paragraph 3)

D. Laboratory QA/QC Program

The licensee stated that an implementing procedure would be written that would detail the essential elements of their QA/QC Program. The procedure would also detail the licensee's QA efforts in regard to purchased analytical services from outside contractors. (Details, Paragraph 4)

DETAILS

1. Persons Contacted

Mr. J. T. Carroll, Station Superintendent, OC
Mr. E. J. Growney, Technical Engineer, OC
Mr. J. R. Pelrine, Chemical Supervisor, OC
Mr. C. Konta, Chemical Foreman, 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 Services Laboratory, (IHSL). These samples test the licensee's ability to measure radioactive materials in actual effluent samples. Some test standards were also submitted to OC for analysis. Samples taken during the inspection were counted in the IE:I mobile laboratory. The activity of the test standards and IHSL's and IE:I's measurements of effluent samples are referenced to the National Bureau of Standards by laboratory intercomparisons.

3. Results of Verification Test Samples

Since the last Independent Measurements inspection of November 29, 30, 1973, the licensee or his contractor has analyzed 16 samples resulting in 54% agreement, 6% possible agreement and 40% disagreement.* Samples taken during the inspection will be reported in a supplemental inspection report. The samples taken during the inspection and the analyses required are as follows:

a. Stack filter - gamma isotopic and strontium analysis.

b. Iodine absorber - isotopic analyses for iodines.

c. Liquid Radwaste - gross beta, tritium, strontium 89, 90 and gamma isotopic analysis.

d. Offgas (3 each) - gamma isotopic analysis.

e. Reactor water - isotopic analysis for iodines.

The types of samples collected and analyzed prior to this inspection and the results of measurements were:

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

Type of Sample: Radwaste, 1200 hours, 10-30-74

Acceptable Results in units of microcuries per milliliter

Radionuclide	NRC Measurement	Licensee Measurement
Gross beta	7.2±.2E-6	7.7±1.0E-6
H-3	7.27±.01E-3	8.0±.03E-3
SR-89	4.7±.3E-7	6.1±.05E-7
SR-90	1.0±.4E-8	·.5±.05E-8 (2)
Cr-51	6.5±.9E-6	6.6±.2E-6
Co-60	3.1±.2E-6	1.9±.06E-6 (2)

Not Acceptable

Ce-141	2.8±.3E-6	6.5±.04E-7
Mn-54	3.2±.2E-6	1.3±.03E-6
Fe-59	1.1±.2E-6	5.2±.04E-7

Type of Sample: Stack Filter, 0945 hours, 10-27-74

Acceptable Results in units of microcuries

Radionuclide	NRC Measurement	Licensee Measurement
I-131	3.2±.3E-4	4.4±.8E-4
Ba-140	1.15±.08E-3	1.4±.3E-3

Not Acceptable

Cs-137	8.2±.8E-5	1.5±1.3E-3
Mn-54	5.6±.7E-5	1.2±1.1E-4
Co-60	1.1±.1E-4	Not found

Type of Sample: Stack Charcoal, 0945, 10-27-74

Acceptable Results in units of microcuries

Radionuclide	NRC Measurement	Licensee Measurement
I-131	2.16±.01E-1	2.2±.02E-1

(2) Possible Agreement

Type of Sample: Stack Filter, 1105 hours, 12-3-74

Acceptable Results in units of microcuries

Radionuclide	NRC Measurement	Licensee Measurement
I-131	7.3±.3E-3	6.5±1.6E-3
Ba-140	4.9±.6E-3	4.0±1.0E-3
Cs-137	1.9±.7E-4	4.0±1.5E-4
Co-60	3.8±.8E-4	6.3±2.8E-4
La-140	2.5±.2E-3	5.2±1.2E-3 (2)

Type of Sample: Offgas, 1014 hours, 10-30-74

Acceptable Results in units of microcuries per milliliter

Radionuclide	NRC Measurement	Licensee Measurement
Xe-133	2.5±.5E-2	1.85±.02E-2

Type of Sample: Standard Filter #1, 10-28-74

Acceptable Results in units of microcuries

Radionuclide	NRC Measurement	Licensee Measurement
Sb-125	2.2±.1E-2	2.1±.1E-2
Cs-134	3.1±.7E-2	2.7±.1E-2
Ag-110M	1.34±.08E-2	1.1±.1E-2
Na-22	.57±.04E-2	.53±.05E-2

Type of Sample: Standard Charcoal, (Ba-133), 1-21-75

Acceptable Results in units of microcuries

Radionuclide	NRC Measurement	Licensee Measurement
Ba-133 (H)	2.36±.06E-2	1.5±.2E-2 (2)
Not Acceptable		
Ba-133 (E↑)	1.18±.04E-2	6.4±.9E-3

(2) Possible Agreement

Type of Sample: Liquid Radwaste, 1030 hours, 8-21-74

Acceptable — Results in units of microcuries per milliliter

Radionuclide	NRC Measurement	Licensee Measurement
Gross beta	2.32±.06E-6	1.78±.1E-6
H-3	4.49±.02E-3	5.2±.1E-3

Not Acceptable

Ce-141	1.0±.4E-6	1.5±.1E-7
Co-60	8.3±.9E-7	3.1±.04E-7
Mn-54	5.7±.6E-7	7.1±.3E-8

Type of Sample: Offgas, 1137 hours, 8-21-74

Acceptable — Results in units of microcuries per milliliter

Radionuclide	NRC Measurement	Licensee Measurement
Xe-133	1.11±.08E-2	1.3±.1E-2

Not Acceptable

Xe-133M	1.02±.07E-3	Not reported
Xe-135	5.5±.7E-2	Not reported

Type of Sample: Charcoal Cartridge, 2100 hours, 8-14-74

Not Acceptable — Results in units of microcuries per milliliter

Radionuclide	NRC Measurement	Licensee Measurement
I-131	4.34±.03E-1	2.9±?E-1

Type of Sample: Liquid Radwaste, 1125 hours, 6-7-74

Acceptable — Results in units of microcuries per milliliter

Radionuclide	NRC Measurement	Licensee Measurement
Gross Beta	4.6±.1E-6	6.0±.5E-6
SR-89	4.9±.9E-8	7.2±.9E-8
SR-90	<8XE-9	7.0±.7E-9

Not Acceptable

H-3	1.54±.01E-3	9.2±.2E-4
Cs-137	7.7±.9E-7	7.4±.4E-8
Mn-54	2.6±.1E-6	8.9±.4E-7
Co-60	4.4±.2E-6	3.4±.2E-7

Type of Sample: Standard Charcoal Cartridge, 1-28-74

Not Acceptable Results in units of microcuries

Radionuclide	NRC Measurement	Licensee Measurement
I-131	1.57±.01E-2	1.0±.05E-2

Type of Sample: Standard Particulate Filter, 1-28-74

Acceptable Results in units of microcuries

Radionuclide	NRC Measurement	Licensee Measurement
Co-60	1.27±.2E-2	1.2±.06E-2
Cs-137	6.98±.2E-3	6.6±.4E-3
Ce-144	7.88±.1E-2	6.6±.4E-2

Not Acceptable

SR-89	4.59±.2E-4	$<7.2X10^{-5}$
SR-90	5.95±.2E-4	7.1±.4E-3

Type of Sample: Radwaste, 1430 hours, 11-29-73

Acceptable Results in units of microcuries per milliliter

Radionuclide	NRC Measurement	Licensee Measurement
Gross Beta	4.0±.1E-5	5.2±.3E-5
SR-89	5±1E-8	4.6±.2E-8
SR-90	$<2X10^{-8}$	5.5±.3E-9
Cr-51	2.2±.4E-5	2.7±?E-5
Cs-137	2.0±.3E-6	1.4±?E-6
Co-60	1.8±.01E-5	1.6±?E-5

Not Acceptable

H-3	1.94±.02E-3	9.8±.5E-4
Ce-141	8.8±.5E-6	Not found
Nb-95	2.6±.5E-6	"
Mn-54	1.3±.1E-5	3.4±?E-6
Fe-59	1.9±.6E-6	Not found

Type of Sample: Offgas, 1525 hours, 11-29-73

Acceptable Results in units of microcuries per milliliter

Radionuclide	NRC Measurement	Licensee Measurement
Xe-133	2.64±.02E-2	3.15±?E-2

Type of Sample: Charcoal Cartridge, 1802 hours, 11-21-73

Not Acceptable Results in units of microcuries

Radionuclide	NRC Measurement	Licensee Measurement
I-131	1.59±.01E-1	9.8±?E-2

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

The inspector noted that recalibration and change over to a new Ge(Li) detector did not bring the licensee into agreement with the reference laboratory on the iodine absorber measurement. The licensee is typically low in his measurement. The licensee stated that the discrepancy was probably due to the calibration method and he would check further with their consultant as to the method used. The licensee stated that a temporary calibration from the inspector's two standard charcoal geometries would be used until the matter could be pursued with their consultant.

The inspector noted that the location of the licensee's counting facilities was in a higher than desirable radiation background area, presumably from radwaste storage tanks. The inspector stated that this situation was undesirable in that it could lead to erroneous reporting. The licensee stated that other locations would be investigated that would eliminate this problem.

The inspector stated that licensee measurements on liquid radwaste were highly variable and not in agreement with the reference laboratory. The inspector stated further that the current practice of two weeks storage and a simple transfer to a counting geometry was inadequate in quantitatively transferring the activity. The licensee stated that the liquid test samples would be counted soon after collection without transfer and the problem in storing composite samples for long periods would be investigated.

The licensee stated that they planned to make measurement throughout the plant to evaluate the amount of HT or T_2 tritium in their effluents relative to tritiated water vapor. The inspector stated that the results of these evaluations would be reviewed in the next inspection.

The inspector noted the licensee's corrective action in the following areas and had no further question.

a. Evaluate discrepancies in strontium analysis with the contracting laboratory.

b. Report counting errors on all radiochemical measurements.

c. Development of a self-absorption correction for certain gross beta measurements.

4. Laboratory QA Program

The licensee described his efforts to control the quality of radiochemical analyses on site as well as analyses contracted for. The inspector observed that while these activities were acceptable they were informal in nature and were not documented as a complete and sufficiently detailed program. The licensee stated that a laboratory QA implementing procedure would be prepared which would set down all elements of the QA Program and document a commitment to a certain program.

(No. 1)

INSPECTION PLAN
(Region I Work Form)

Date 1-16-75

To : Stahr
(Senior)

Re : INSPECTION PLAN, Oyster Creek on Jan 20-23, 1975
(Facility or License #) (Dates)

The following areas/items are to be examined during the subject inspection:

1. Outstanding Items: (Reference #s from outstanding items list, or briefly describe)
R-1 thru R-6

2. The areas/items checked on the attached enclosure.

3. Additional areas/items:
mobile gas measurement
routine inspection
State of New Jersey liaison

4. The following inspectors will assist:

	Inspector	Area/Items
a.	B. Wilson, HDQS	all
b.		
c.		

(Senior) JP Stahr

Knuth
(Principal Inspector)

Enclosure:
Standard Insp. Areas

DATE 1-16-75

INSPECTION PLAN

Oyster Creek
(FACILITY)

WASTE MANAGEMENT SYSTEMS - TI 3300
(OPERATIONAL) - Once per year

Insp. Rpt. No. 50-219/75-03 Date (s) Jan 20-23, 1975
Insp. Rpt. No. _____ Date (s) _____
Insp. Rpt. No. _____ Date (s) _____
Insp. Rpt. No. _____ Date (s) _____

INSPECTION ITEMS	Follow-up Required	Completed Insp. Rpt. No.
Analytical Capabilities - Items 4.g(1) - (2)		
(1) Review of the results of the internal QA/QC Program for analytical measurements	Yes	
(2) Conduct Verification test of Lab Capability	Yes	
Items R1-R6 on OIL	Yes	
Mobile Lab Measurements on-site	Yes	
Liaison with State of New Jersey Personnel	No	

Approved _____ (Senior)

_____ (Reporting Inspector)