

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

IE Inspection Report No: 50-247/75-05, 50-286/75-09

Docket No: 50-247
50-286

Licensee: Consolidated Edison Company of New York, Inc.
4 Irving Place

License No: DPR-26
CPPR-62

Location: New York, New York 10003
Indian Point Station (IP)
Buchanan, New York 10511

Priority: _____
Category: C/B

Type of Licensee: PWR, 3025 Mwt, 2758 Mwt

Safeguards Group: _____

Type of Inspection: Routine, Announced (Independent Measurements)

Dates of Inspection: April 8, 9, 1975

Dates of Previous Inspection: March 26-28, 1975

Reporting Inspector: R. J. Everett
R. J. Everett, Radiation Specialist

4/18/75
Date

Accompanying Inspectors: NONE

_____ Date

_____ Date

_____ Date

_____ Date

Other Accompanying Personnel: NONE

_____ Date

Reviewed By: J. P. Stobr
J. P. Stobr, Senior Environmental Scientist

4/22/75
Date

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SUMMARY OF FINDINGS

Enforcement Action

A. Items of Noncompliance

None

B. Deviations

1. Contrary to accepted practice, Regulatory Guide 1.39 and ANSI N45.2.3, the area used to store electronic counting equipment and to make radiochemical measurements was not maintained in a clean and orderly manner nor adequate ventilation supplied that would prevent temperature extremes. (Details, Paragraph 7)

Licensee Action on Previously Identified Enforcement Items (Independent Measurements)

None

Unusual Occurrences

None

Other Significant Findings

A. Current Findings

This report summarizes the licensee's performance on capability test samples and his corrective actions on items identified in a previous Independent Measurements inspection.

B. Unresolved Items

None

C. Status of Previous Unresolved Items (Independent Measurements)

None

Management Interview

On April 9, 1975, following the inspection, a meeting was held in the office of Mr. W. Stein, Manager, Nuclear Power Generation Department (IP). The following individuals were in attendance:

Mr. R. J. Everett, Radiation Specialist, NRC, IE:I
Mr. W. Stein, Manager, Nuclear Power Generation Department, IP
Mr. R. Van Wyck, Manager, Nuclear Services, IP
Mr. J. Kelly, Director, Chemistry Department, IP
Mr. R. Hayman, Manager, QA Monitoring and Review, IP

During the meeting the following items were discussed:

A. Results of Capability Test Measurements

The inspector noted the acceptable agreement on the standard tritium sample and the standard particulate filter and had no further questions. The licensee stated that corrective action would be taken on remaining discrepancies. (Details, Paragraph 3)

B. Gas Sampling Improvements

The inspector noted the licensee's new gas container and the modified gas sampling procedure and stated he had no further questions. (Details, Paragraph 4)

C. Health Physics Improvements in Gas Sampling Areas

The inspector noted the initiation of corrective action. The licensee stated that final action on the Unit 3 sampling area would be completed prior to criticality. (Details, Paragraph 5)

D. Laboratory QA/QC Program

The inspector stated that he had reviewed this area and had no further questions. (Details, Paragraph 6)

E. Housekeeping and Temperature Extremes in the Radiation Counting Area

The licensee stated that this area would be reviewed and appropriate action taken to improve conditions in this area.

In a subsequent telephone conversation on April 11, 1975 with Mr. Kelly, the inspector stated that this item was considered a Deviation. (Details, Paragraph 7)

DETAILS

1. Persons Contacted

Mr. W. Stein, Manager, Nuclear Generation Department, IP
Mr. R. W. Van Wyck, Manager, Nuclear Services, IP
Mr. J. Kelly, Director of Chemistry, IP
Mr. R. Hayman, Manager, QA Monitoring and Review, IP
Mr. S. Profeta, Chemistry Supervisor, IP

2. General

The inspection consisted of a review of the licensee's analytical performance on capability test standards submitted by IE:I personnel and verification samples taken by IE:I representatives under the NRC's Independent Measurements Program. These samples test the licensee's capability to measure radioactive material in test standards similar to actual radioactive effluents and in actual effluent samples taken at the facility. The test standards and effluent measurements made by Idaho Health and Safety Lab (IHSL) and by IE:I personnel are referenced directly to the National Bureau of Standards by laboratory intercomparisons.

3. Results of Capability Test Samples

Since the inspection of December 11, 12, 1975, the licensee has analyzed five standard samples which resulted in 70% agreement and 30% disagreement. The types of samples tested and the results of measurements were:

Type of Sample: Standard Particulate Filter, #6, Reference Date 10/28/74

<u>Acceptable</u>	<u>Results in Units of Microcuries</u>	
<u>Radionuclide</u>	<u>NRC Measurement</u>	<u>Licensee Measurement</u>
Sb-125	4.5 \pm .1E-2	4.52 \pm 2% E-2
Cs-134	6.0 \pm .3E-2	6.35 \pm 2% E-2
Ag-110M	2.6 \pm .1E-2	2.86 \pm 2% E-2
Na-22	1.11 \pm .04 E-2	1.24 \pm 4% E-2

Type of Sample: Standard Charcoal "E", Reference Date 8/6/74

<u>Acceptable</u>	<u>Results in Units of Microcuries</u>	
<u>Radionuclide</u>	<u>NRC Measurement</u>	<u>Licensee Measurement</u>
Ba-133 (one-side)	1.18 ± .04E-2	1.07 ± 2% E-2

Type of Sample: Standard Charcoal (H-3), Reference Date 10/28/74

<u>Not Acceptable</u>	<u>Results in Units of Microcuries</u>	
<u>Radionuclide</u>	<u>NRC Measurement</u>	<u>Licensee Measurement</u>
Ba-133 (uniform)	2.54 ± .01 E-2	2.0 ± 3% E-2

Type of Sample: Standard Liquid, HSL-4, Reference Date 1/6/75

<u>Acceptable</u>	<u>Results in Units of Microcuries per ml</u>	
<u>Radionuclide</u>	<u>NRC Measurement</u>	<u>Licensee Measurement</u>
H-3	7.97 ± .09 E-3	9.0 ± .3 E-3
Co-57	4.27 ± .01 E-2	3.71 ± .6% E-2 (1)
Co-60	2.91 ± .04 E-3	3.06 ± 5% E-2 (1)
Cs-137	4.63 ± .04 E-3	4.84 ± 3% E-3 (1)

Type of Sample: Standard Liquid, HSL-4, Reference Date 1/6/75

<u>Not Acceptable</u>	<u>Results in Units of Microcuries per ml</u>	
<u>Radionuclide</u>	<u>NRC Measurement</u>	<u>Licensee Measurement</u>
Co-57	4.27 ± .01 E-2	5.76 ± .06 E-2 (2)
Co-60	2.91 ± .04 E-3	4.07 ± .2 E-3 (2)
Cs-137	4.63 ± .04 E-3	6.7 ± .2 E-3 (2)

(1) Planchet Geometry

(2) 500 Ml Geometry

The inspector noted that the licensee's tritium measurement on the standard liquid sample (HSL-4) was in agreement with the reference laboratory and had no further questions. The licensee's gamma isotopic analysis on the standard liquid sample was in agreement using a planchet geometry but in disagreement using a 500 ml geometry. The licensee stated that this apparent error in calibration would be investigated and a corrective factor of 1.4 would be applied to this geometry until the error can be found. The inspector stated that this action would be verified at the next inspection.

The inspector noted also that the licensee's measurements on charcoal samples resulted in agreement on the sample with activity on one side and disagreement on the sample with uniformly distributed activity. Several alternate methods were discussed that would enable the licensee to make accurate measurements of iodine activities of any distribution. The licensee stated that one of these methods would be selected and implemented. The inspector stated that this procedure would be reviewed at the next inspection.

The inspector determined that the above discrepancies would not, in themselves, cause the licensee to exceed any regulatory limit.

4. Gas Sampling and Analysis

The inspector reviewed the licensee's modified gas sampling procedure and a new gas sampling container. With some minor modifications to the procedure, the inspector had no further questions. The inspector emphasized that the glass container should not be exposed to more than 2-3 psi overpressure and should be tested with air at these pressures to qualify the container and test for leaks. The licensee stated that this would be done.

The inspector stated that the use of a liquid standard for gas calibrations will result in an over prediction of true gas concentrations and inquired as to the use of attenuation corrections or the availability of gas standards. The licensee stated that his contacts with NBS indicate that gas standards would be available in summer or fall of 1975. The inspector stated that with the use of available Xe-133 and KR-85 gas standards and attenuation corrections of liquid efficiencies at other energies, a good calibration curve can be obtained.

5. Health Physics Improvements in the Gas Sampling Areas

The inspector reviewed the design change proposed to ventilate the sampling area in Unit 3. Sample lines will be relocated to the present hood which will provide exhaust ventilation in case of gas leakage. The licensee stated that this relocation would be accomplished prior to Unit 3 criticality. To control the gas sampling area for Unit 2, a chemical hood will be installed near the present sampling location. The inspector emphasized the need for good capture velocity in both hoods and gas pressure regulation from the decay tank down to about 3 psi at the sampling point. The licensee stated that this would be done.

6. Laboratory and Contractor QA/QC Program

The inspector reviewed the licensee's QA implementing procedure which was designed to describe in some details the measures that will be taken to control the quality of radiochemical analyses at the site as well as those analyses contracted for. With some modifications, the inspector had no further questions on this area. The licensee stated that this program will be instituted in April, 1975 covering the radiochemical program. The inspector inquired as to QA coverage of all chemical analyses at the site. The licensee stated that this could be done in the future, depending upon manpower and experiences with the present program.

The inspector reviewed the results of an audit performed by the Chemical Supervisor of the level of skill and training of the personnel assigned to the radiochemical unit. This audit was to determine understanding of procedures and techniques in performing a gamma isotopic analysis. The audit revealed that the technicians tested reported analyses in agreement with the reference value, and possessed sufficient understanding of present procedures. The licensee stated that this Audit Program will continue, involving all technicians and procedures as part of Table I of their QA implementing procedure.

The inspector reviewed the Audit Program of the Corporate QA Program and determined that audits had been conducted of the laboratory unit within the past year, with no items of deficiency found.

7. Housekeeping and Environmental Control in the Radiochemical Counting Area

The inspector observed that the counting area was not in a clean and orderly condition, was subject to temperature extremes and was limited in work space as presently arranged. The inspector inquired as to permanence of the particular area and the licensee's plans to maintain the area in a proper manner. The licensee responded that a final decision had not been made on the present location but the situation would be critically reviewed and within the limitation of capital funds, the area would be temperature regulated and maintained in a proper manner. Alternate locations would be considered which would also allow proper environmental and radiochemical control.

The inspector stated, in a subsequent telephone conversation of April 11, 1975, that this item was considered a Deviation.

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>	
		<u>RATIO= NRC REFERENCE VALUE</u>	
		<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.