

Official

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Carolina Power and Light Company
ATTN: Mr. Lynn W. Eury
Executive Vice President
Power Supply
P. O. Box 1551
Raleigh, NC 27602

Gentlemen:

SUBJECT: DOCKET NOs. 50-325 AND 50-324, CONFIRMATORY MEASUREMENT RESULTS,
SUPPLEMENT TO NRC INSPECTION REPORT NO. 88-44

As part of the NRC Confirmatory Measurements Program, spiked liquid samples were sent on January 9, 1989, to your Brunswick facility for selected radiochemical analyses. We are in receipt of your analytical results transmitted to us by your letter dated March 8, 1989, and subsequent to verification of your values as per our conversation by telephone on March 28, 1989, the following comparison of your results to the known values are presented in Enclosure 1 for your information. The acceptance criteria for the comparisons are listed in Enclosure 2.

In our review of these data all comparative results were in agreement. These data should be reviewed in greater detail by cognizant staff members for any significant trends in the data among successive years in which samples have been analyzed by your facility.

These results and any results from previous years pertaining to these analyses will be discussed at future NRC inspections.

Sincerely,

~~Original Signed By~~
D. M. Collins

Douglas M. Collins, Chief
Emergency Preparedness and
Radiological Protection Branch
Division of Radiation Safety
and Safeguards

Enclosures:

1. Confirmatory Measurement Comparisons
2. Criteria for Comparing Analytical Measurements

cc w/encls:

R. B. Starkey, Jr., Manager
Brunswick Nuclear Project
J. L. Harness, Plant General Manager
State of North Carolina

bcc w/encls:

NRC Resident Inspector
Document Control Desk

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ENCLOSURE 1

CONFIRMATORY MEASUREMENT COMPARISONS OF H-3, FE-55, SR-89, AND SR-90 ANALYSES
FOR BRUNSWICK NUCLEAR PLANT ON JANUARY 9, 1989

<u>Isotope</u>	<u>Licensee</u> (<u>uCi/ml</u>)	<u>NRC</u> (<u>uCi/ml</u>)	<u>Resolution</u>	<u>Ratio</u> (<u>Licensee/NRC</u>)	<u>Comparison</u>
H-3	2.41 E-5	2.38±0.07 E-5	34	1.01	Agreement
Fe-55	2.33 E-5	2.57±0.08 E-5	32	0.91	Agreement
Sr-89	9.90 E-5	1.02±0.03 E-4	34	0.97	Agreement
Sr-90	5.14 E-6	5.50±0.22 E-6	25	0.93	Agreement

ENCLOSURE 2

Criteria for Comparing Analytical Measurements

This enclosure 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 comparison ratio limits denoting agreement or disagreement between licensee and NRC results are variable. This variability is a function of the NRC's value relative to its associated uncertainty, referred to in this program as "Resolution"¹. As Resolution increases, the range of acceptable differences between the NRC and licensee values should be more restrictive. Conversely, poorer agreement between NRC and licensee values must be considered acceptable as the resolution decreases.

For comparison purposes, a ratio² of the licensee value to the NRC value for each individual nuclide is computed. This ratio is then evaluated for agreement based on the calculated resolution. The corresponding resolution and calculated ratios which denote agreement are listed in the Table below. Values outside of the agreement ratios for a selected nuclide are considered in disagreement.

$$^1\text{Resolution} = \frac{\text{NRC Reference Value for a Particular Nuclide}}{\text{Associated Uncertainty for the Value}}$$

$$^2\text{Comparison Ratio} = \frac{\text{Licensee Value}}{\text{NRC Reference Value}}$$

TABLE

Confirmatory Measurements Acceptance Criteria
Resolutions vs. Comparison Ratio

<u>Resolution</u>	<u>Comparison Ratio for Agreement</u>
<4	0.4 - 2.5
4 - 7	0.5 - 0.2
8 - 15	0.6 - 1.66
16 - 50	0.75 - 1.33
51 - 200	0.80 - 1.25
>200	0.85 - 1.18