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AUTH.NAME AUTHOR AFFILIATION
COLLINS,D.M. Region 2, Ofc of the Director
RECIP.NAME RECIPIENT AFFILIATION
EURY,L.W. Carolina Power & Light Co.

SUBJECT: Forwards confirmatory measurements results re Insp Rept 50-400/89-01.Data should be reviewed in greater detail.

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NOTES:Application for permit renewal filed. 05000400

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MAY 3 0 1989

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 NO. 50-400, CONFIRMATORY MEASUREMENT RESULTS, SUPPLEMENT TO NRC INSPECTION REPORT NO. 89-01

As part of the NRC Confirmatory Measurements Program, spiked liquid samples were sent on January 9, 1989, to your Harris facility for selected radiochemical analyses. We are in receipt of your analytical results transmitted to us by your letter dated March 16, 1989, and subsequent to the verification of your values as per our conversation by telephone on May 25, 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,

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: (See page 2)

IE06

cc w/encls:
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Harris Nuclear Project
D. L. Tibbitts, Director
Regulatory Compliance
C. S. Hinnant, Plant General Manager
State of North Carolina

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NRC Resident Inspector
A. Upchurch, Chairman, Triangle J
Council of Governments
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ENCLOSURE 1

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

Isotope	Licensee (uCi/ml)	NRC (uCi/ml)	Resolution	Ratio (Licensee/NRC)	Comparison
H-3	2.20 E-5	2.66±0.08 E-5	33	0.83	Agreement
Fe-55	2.63 E-5	2.88±0.09 E-5	32	0.91	Agreement
Sr-89	1.12 E-4	1.14±0.03 E-4	38	0.98	Agreement
Sr-90	5.85 E-6	6.17±0.25 E-6	25	0.95	Agreement

ENCLOSURE 2

CRITERIA FOR COMPARISONS OF ANALYTICAL MEASUREMENTS

This enclosure provides the NRC's criteria for the comparison of results of analytical radioactivity measurements. These criteria are based on empirical relationships which combines prior experience in comparing radioactivity analyses, the measurement of the statistically random process of radioactive emission, and levels of agreement in radioactivity measurements acceptable to the NRC.

In these criteria, the "Comparison Ratio Limits"[1] denoting agreement or disagreement between licensee and NRC results are variable. This variability is a function of the ratio of the NRC's analytical value relative to its associated statistical and analytical uncertainty, referred to in this program as "Resolution"[2]. As the numerical value of "Resolution" increases, the range of acceptable variations or differences between the NRC and licensee analytical becomes smaller or more restrictive. Conversely, as the value of "Resolution" decreases, a wider and less restrictive variation or difference between the NRC and licensee analytical values is considered acceptable.

For comparison purposes, a ratio between the licensee's analytical value and the NRC's analytical value is computed for each radionuclide present in a given sample. The computed ratios are then evaluated for agreement or disagreement based on "Resolution." The corresponding values for "Resolution" and the "Comparison Ratio Limits" are listed in the Table below. Ratio values which are either above or below the "Comparison Ratio Limits" are considered to be in disagreement, while ratio values within or encompassed by the "Comparison Ratio Limits" are considered to be in agreement.

TABLE

NRC Confirmatory Measurements Acceptance Criteria
Resolution vs. Comparison Ratio Limits

Resolution	Comparison Ratio Limits for Agreement
<4	0.4 - 2.5
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

[1]Comparison Ratio = $\frac{\text{Licensee Value}}{\text{NRC Reference Value}}$

[2]Resolution = $\frac{\text{NRC Reference Value}}{\text{Associated Uncertainty}}$