CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9604230014 DOC.DATE: 95/12/31 NOTARIZED: NO DOCKET #
FACIL:50-335 St. Lucie Plant, Unit 1, Florida Power & Light Co. 05000335
50-389 St. Lucie Plant, Unit 2, Florida Power & Light Co. 05000389
AUTH.NAME AUTHOR AFFILIATION
BOHLKE,W.H. Florida Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: "1995 Annual Radiological Environ Operating Rept St. Lucie Plant,Units 1 & 2." W/960412 ltr.

DISTRIBUTION CODE: IE25D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 8
TITLE: Environmental Monitoring Rept (per Tech Specs)

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	PD2-1 LA	3	3	PD2-1 PD	1	1
	NORRIS,J	1	1			
INTERNAL:	ACRS	1	1	FILE CENTER 01	1	1
	NRR/DRPM/PERB	1	1	RGN2 FILE	1	1
EXTERNAL:	LITCO AKERS,D	1	1	NRC PDR	1	1

CATEGORY 1 DOCUMENT

NOTE TO ALL "RIDS" RECIPIENTS:
PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK, ROOM OWFN 5D-5(EXT. 415-2083) TO ELIMINATE YOUR NAME FROM DISTRIBUTION LISTS FOR DOCUMENTS YOU DON'T NEED!

TOTAL NUMBER OF COPIES REQUIRED: LTTR 11 ENCL 11

Florida Power & Light Company, P.O. Box 128, Fort Pierce, FL 34954-0128

FPL

April 12 1996

L-96-96
10 CFR 50.4
10 CFR 50.36

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

RE: St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
Annual Radiological Environmental
Operating Report for Calendar Year 1995

The attached pages update "Attachment C" of the Annual Radiological Environmental Operating Report with the 1995 results from the Interlaboratory Comparison Program. When the report was submitted per our letter L-96-73 dated March 21, 1996, the data was not available.

Should there be any questions on this information, please contact us.

Very truly yours,

W. H. Bohlke
Vice President
St. Lucie Plant

Attachment

WHB/SL

cc: Stewart D. Ebneter, Regional Administrator, Region II, USNRC, Atlanta GA
Senior Resident Inspector, USNRC, St. Lucie Plant

220111

JE25

ATTACHMENT C

RESULTS FROM THE INTERLABORATORY COMPARISON PROGRAM 1995

FLORIDA DEPT. OF HRS - EPA INTERLABORATORY CROSS-CHECK PROGRAM DATA

January through June, 1995

Media	Nuclide	Collection Mon	Day	Yr	EPA Known	Units	Normal. Range	Mean of Analyses	N.D.K.	Action Level
WATER	Alpha	01	27	95	5	pCi/L	0.236	5.00	0.00	
WATER	Beta	01	27	95	5	pCi/L	0.236	7.33	0.81	
WATER	Co-60	06	09	95	40	pCi/L	0.236	39.00	-0.35	
WATER	Zn-65	06	09	95	76	pCi/L	0.517	82.67	1.44	
WATER	Ba-133	06	09	95	79	pCi/L	0.148	74.33	-1.01	
WATER	Cs-134	06	09	95	50	pCi/L	0.000	47.00	-1.04	
WATER	Cs-137	06	09	95	35	pCi/L	0.354	37.67	0.92	
WATER	H-3	03	10	95	7435	pCi/L	0.193	7355.00	-0.19	
WATER	I-131	02	03	95	100	pCi/L	0.118	97.00	-0.52	
WATER	Sr-89	01	13	95	20	pCi/L	0.354	14.33	-1.96	
WATER	Sr-90	01	13	95	15	pCi/L	0.236	10.33	-1.62	

NOTES:

Normal.: Normalized range. As defined in "Environmental Radioactivity Laboratory Intercomparison Studies Program Fiscal Year 1981 - 1982", Environmental Monitoring Systems Laboratory, U. S. Environmental Protection Agency, P. O. Box 93478, Las Vegas, Nevada, 89193-3478. EPA-600/4-81-004, February, 1981.

N.D.K.: Normalized deviation of the mean from the known value, as defined in EPA-600/4-81-004.

NDP: No data provided. No data was provided to EPA for inclusion in their report.

NA: Not available. Report containing this data has not yet been received from EPA, Las Vegas.

FLORIDA DEPT. OF HRS - EPA INTERLABORATORY CROSS-CHECK PROGRAM DATA

July through December, 1995

Media	Nuclide	Collection Mon	Day	Yr	EPA Known	Units	Normal. Range	Mean of Analyses	N.D.K.	Action Level
FILTER	Alpha	08	25	95	25	pCi/Fil	0.141	28.30	0.91	
FILTER	Beta	08	25	95	86.6	pCi/Fil	0.396	79.57	-1.22	
FILTER	Cs-137	08	25	95	25	pCi/Fil	0.000	28.00	1.04	
FILTER	Sr-90	08	25	95	30	pCi/Fil	0.709	21.33	-3.00	1
MILK	I-131	09	29	95	99	pCi/L	0.295	98.67	-0.06	
MILK	Cs-137	09	29	95	50	pCi/L	0.000	53.00	1.04	
MILK	K	09	29	95	1654	mg/L	0.306	1687.33	0.70	
MILK	Sr-89	09	29	95	20	pCi/L	0.945	12.00	-2.77	
MILK	Sr-90	09	29	95	15	pCi/L	0.945	16.00	0.35	
WATER	Alpha	07	21	95	27.5	pCi/L	0.231	23.33	-1.05	
WATER	Alpha	10	27	95	51.2	pCi/L	0.120	24.90	-3.56	2
WATER	Beta	07	21	95	19.4	pCi/L	0.567	23.60	1.45	
WATER	Beta	10	27	95	24.8	pCi/L	1.413	32.97	2.83	
WATER	Co-60	11	03	95	60	pCi/L	0.236	60.33	0.12	
WATER	Zn-65	11	03	95	125	pCi/L	0.409	134.67	1.29	
WATER	Ba-133	11	03	95	99	pCi/L	0.059	92.67	-1.10	
WATER	Cs-134	11	03	95	40	pCi/L	0.118	37.33	-0.92	
WATER	Cs-137	11	03	95	49	pCi/L	0.354	54.00	1.73	
WATER	H-3	08	04	95	4872	pCi/L			NDP	
WATER	I-131	10	06	95	148	pCi/L	0.039	148.67	0.08	
WATER	Sr-89	07	14	95	20	pCi/L	0.591	8.00	-4.16	3
WATER	Sr-90	07	14	95	8	pCi/L	0.118	9.33	0.46	

NOTES:

Normal.: Normalized range. As defined in "Environmental Radioactivity Laboratory Intercomparison Studies Program Fiscal Year 1981 - 1982", Environmental Monitoring Systems Laboratory, U. S. Environmental Protection Agency, P. O. Box 93478, Las Vegas, Nevada, 89193-3478. EPA-600/4-81-004, February, 1981.

N.D.K.: Normalized deviation of the mean from the known value, as defined in EPA-600/4-81-004.

NDP: No data provided. No data was provided to EPA for inclusion in their report.

NA: Not available. Report containing this data has not yet been received from EPA, Las Vegas.

ACTION LEVEL:

(1) Cause: Chemical recoveries too low and inconsistent.
Corrective Action: Try to improve recovery and consistency.

(2) Cause: Please see attached note from EPA.
Corrective Action: Try EPA's suggestions.

(3) Cause: Insufficient number of counts on sample.
Corrective Action: Count samples more time.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NATIONAL EXPOSURE RESEARCH LABORATORY
P.O. BOX 93478 • LAS VEGAS, NV 89193-3478

OFFICE OF
RESEARCH AND DEVELOPMENT

A note regarding the Gross Alpha portion of the October 27, 1995 Gross Alpha-Beta in Water Performance Evaluation Study:

Both the July 1995 and October 1995 Gross Alpha-Beta in Water Performance Evaluation (PE) Studies showed a significant difference between the grand average and the known value for the gross alpha. This strongly implies there is bias in the method. Our research indicates that matrix differences between the salt solids used to prepare the calibration curve and the salts in the sample are the source of the bias.

The attached figure illustrates the changes in efficiency due to salt composition and nuclide energy. The bottom curve was prepared with serial dilutions of laboratory tap water. Laboratory tap water is also used to add variable amounts of dissolved solids to the PE gross alpha/beta study samples. The second curve was prepared with serial dilutions of sodium sulfate solution. The top curve was prepared the same way as the second curve except that Am-241 was used as the alpha emitter. All the usual precautions apply. The curves reflect the efficiencies for our counter; the curves in the figure are illustrative only; and lastly, results for your laboratory may be different than shown in the figure.

At zero mass all the curves converge to the extent that the bias would not be noticeable in a PE study. As the mass of solids increases, the difference between the two Th-230 curves becomes pronounced. For sample masses between 30 and 40 mg, typical range for a 200 mL sample of the July 1995 or October 1995 study, the difference is between 50 to 70 percent.

To address the bias, we are recommending the procedure used in our laboratory. To a volume of sample equal to that used for analysis (100-150 mL) add 120 pCi of Th-230. Acidify the sample with 20-40 mL of concentrated nitric acid and evaporate by the procedure attached to the PE study report sheet. The volume of PE sample provided is sufficient to prepare triplicate 150 mL samples and duplicate spiked samples. Count the spikes until approximately 1600 counts above background are acquired to a maximum of 200 minutes. Background in this case will be that of the PE samples. Subtract the average count rate of the triplicate samples from the average count rate of the spikes and calculate the efficiency. Use this efficiency to calculate the concentration of gross alpha in the PE sample.

An alternate procedure. After counting the triplicates, redissolve/reslurry the solids of two of the samples in the planchet with dilute nitric acid (3-6M). Add the spike, mix well, redry and count the spikes. This technique, though simple on the surface, requires sufficient care so as not to lose sample volume, and that the Th-230 is thoroughly incorporated into the dissolved salts. We recommend this only for laboratories with a high degree of confidence in the analyst's ability to prepare the spikes by this technique.

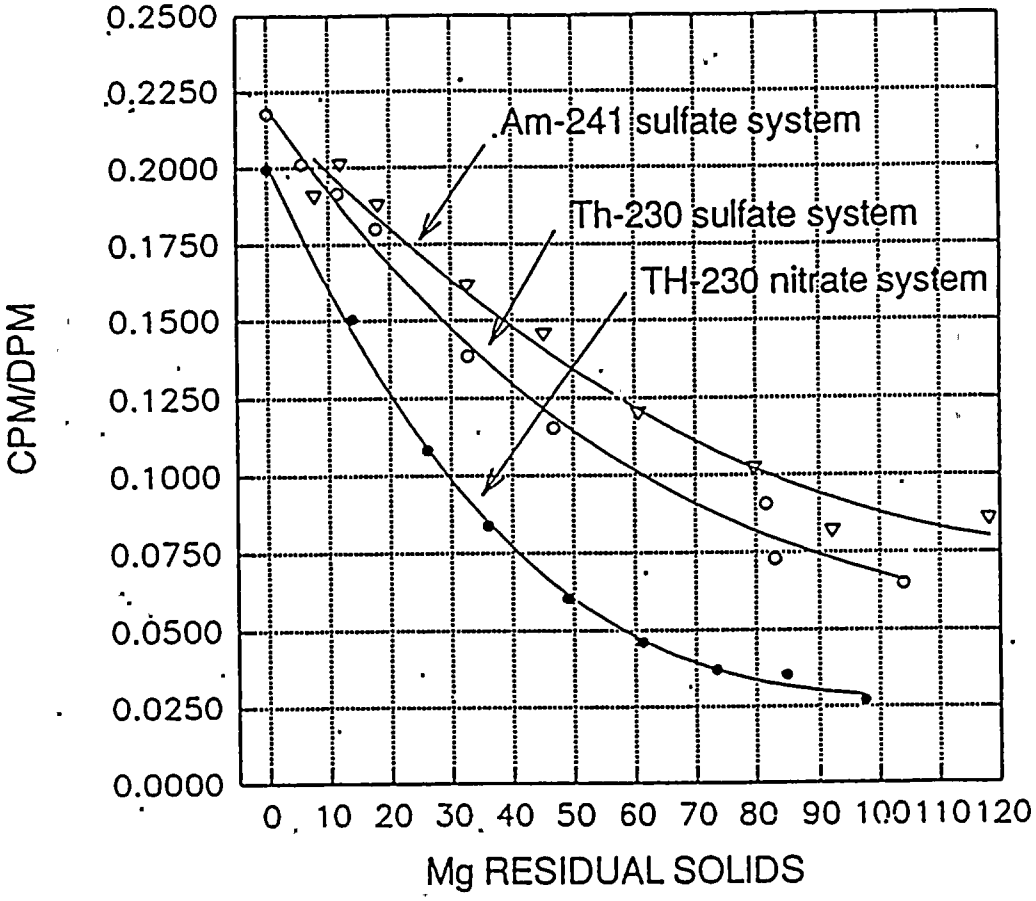
You may use more or less spiked activity if you choose. The recommended activity of the spike and the maximum count time were determined to provide 5 percent precision at 95 percent confidence for the spike at an efficiency as low as 3 percent. For higher efficiencies the count time will be much shorter than 200 minutes. Additionally, we recommend several practice runs to gain experience with the technique you choose.

So, why not send out our laboratory tap water and have the participating laboratories prepare a curve? The tap water supplied to our laboratory varies in dissolved salt composition. This was observed during our verification of the July 1995 PE sample. Our QC samples showed a 40 percent bias when samples and spikes were quantified using a calibration curve. Repeat measurements demonstrated the bias was consistent and not due to analyst error. Therefore, preparing a curve with water from our laboratory does not guarantee that the bias will be eliminated.

Collectively these procedures are single point calibration techniques and are not prohibited by the approved methods. The curve concept was introduced in recognition of the variable dissolved solids of water in given geographical areas.

If you have any questions or comments please call Stephen Pia at 702 798-2102.

ALPHA ATTENUATION CURVES
FOR
RADQA TENNELEC GP COUNTER



EQUATION: $Y = A_0 + A_1X + A_2X^2 + A_3X^3$

	Th-230 sulfate	Th-230 nitrate
A_0	0.2199	0.2016
A_1	-2.914E-3	-4.495E-3
A_2	1.8422E-5	3.918E-5
A_3	-4.4449E-8	-1.154E-7