

Date June 5, 1978

To W. J. Bair

410089

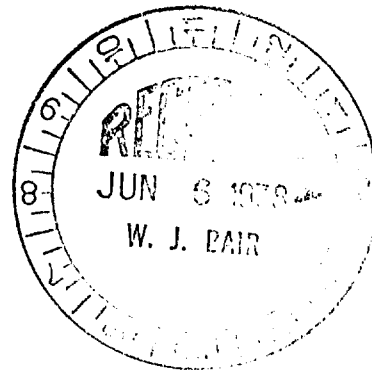
From R. O. Gilbert *R.O. Gilbert*

Subject Enewetak Advisory Group Meeting at Livermore June 7-8, 1978

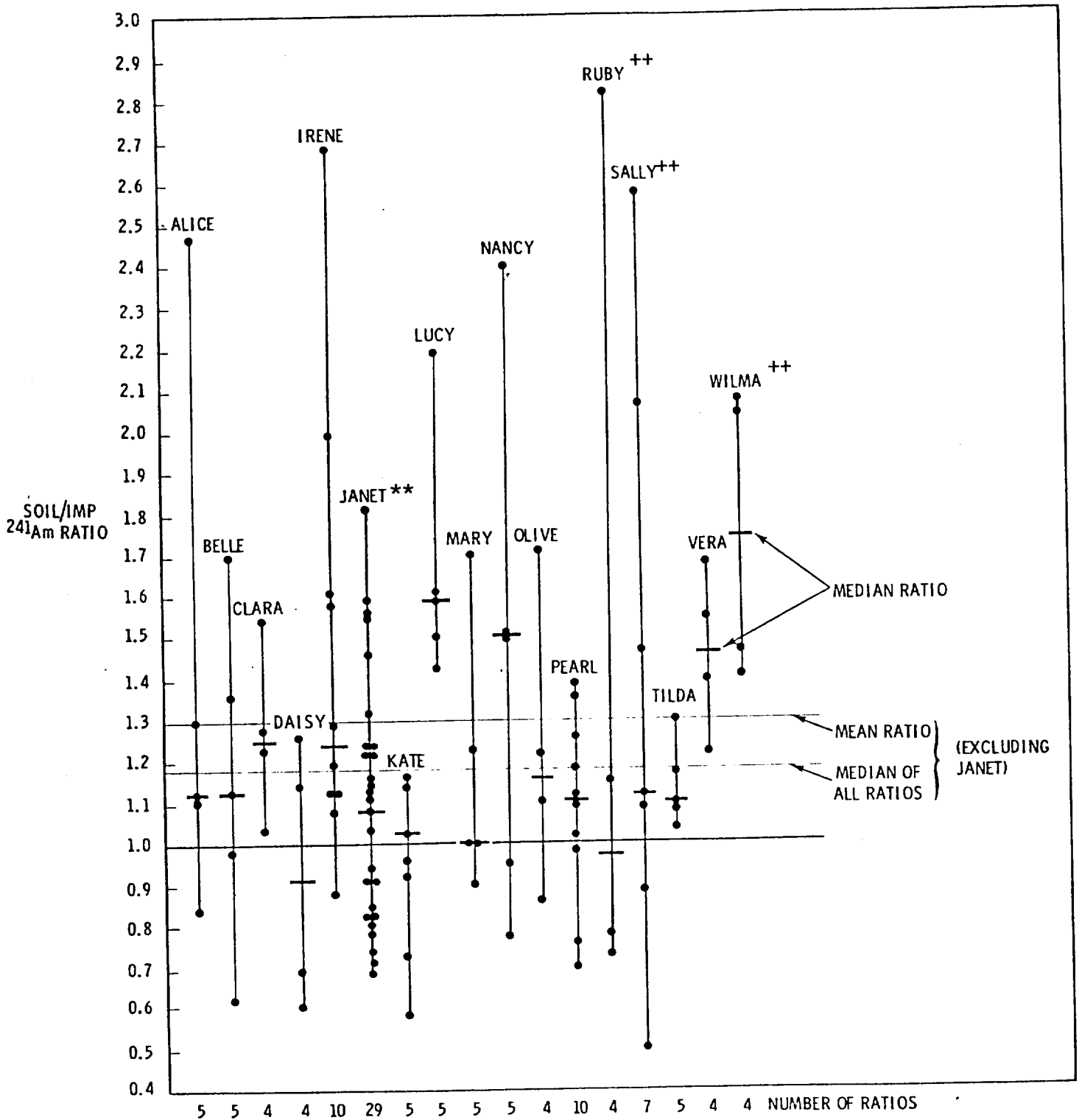
Attached is some material I have prepared for possible discussion at the Livermore meetings. These data relate to (1) soil-IMP relationships, (2) quality control, and (3) profile samples. I will have copies available for distribution as well as viewgraphs on hand if these items come up for discussion.

ROG/sp

Attachment



SOIL-IMP RELATIONSHIP



++ IMP values below detection limits.

\*\* No brush present when IMP readings taken.

\* Average of A and B soil composites.

FIGURE 1. Soil\*/IMP <sup>241</sup>Am ratios on Enewetak Atoll Islands after correction for brush attenuation.

FIGURE 2

SOIL/IMP <sup>241</sup>Am RATIOS FOR ALL  
ENEWETAK ATOLL ISLANDS EXCEPT JANET (ENJEBI)

UNCORRECTED FOR  
BRUSH ATTENUATION

STEM	LEAF
.4	
.5	0
.6	248
.7	089
.8	00888
.9	0356
1.0	034468999
1.1	01445567789
1.2	222345789
1.3	001347899
1.4	014457
1.5	11278
1.6	1136
1.7	0157
1.8	7
1.9	34
2.0	57
2.1	9
2.2	6
2.3	3
2.4	7
2.5	6
2.6	2
2.7	
2.8	2
2.9	6

CORRECTED FOR  
BRUSH ATTENUATION

STEM	LEAF
.4	
.5	09
.6	129
.7	03688
.8	4688
.9	05689
1.0	00334488999
1.1	002223334566789
1.2	22236689
1.3	006689
1.4	1257
1.5	0004589
1.6	118
1.7	001
1.8	
1.9	
2.0	0578
2.1	9
2.2	
2.3	
2.4	07
2.5	8
2.6	9
2.7	
2.8	2
2.9	

(Example of how to read:  
the row 1.6|118 above  
represents three ratios  
whose last digits are  
1, 1 and 8; i.e., the  
three ratios are 1.61,  
1.61, and 1.68.)

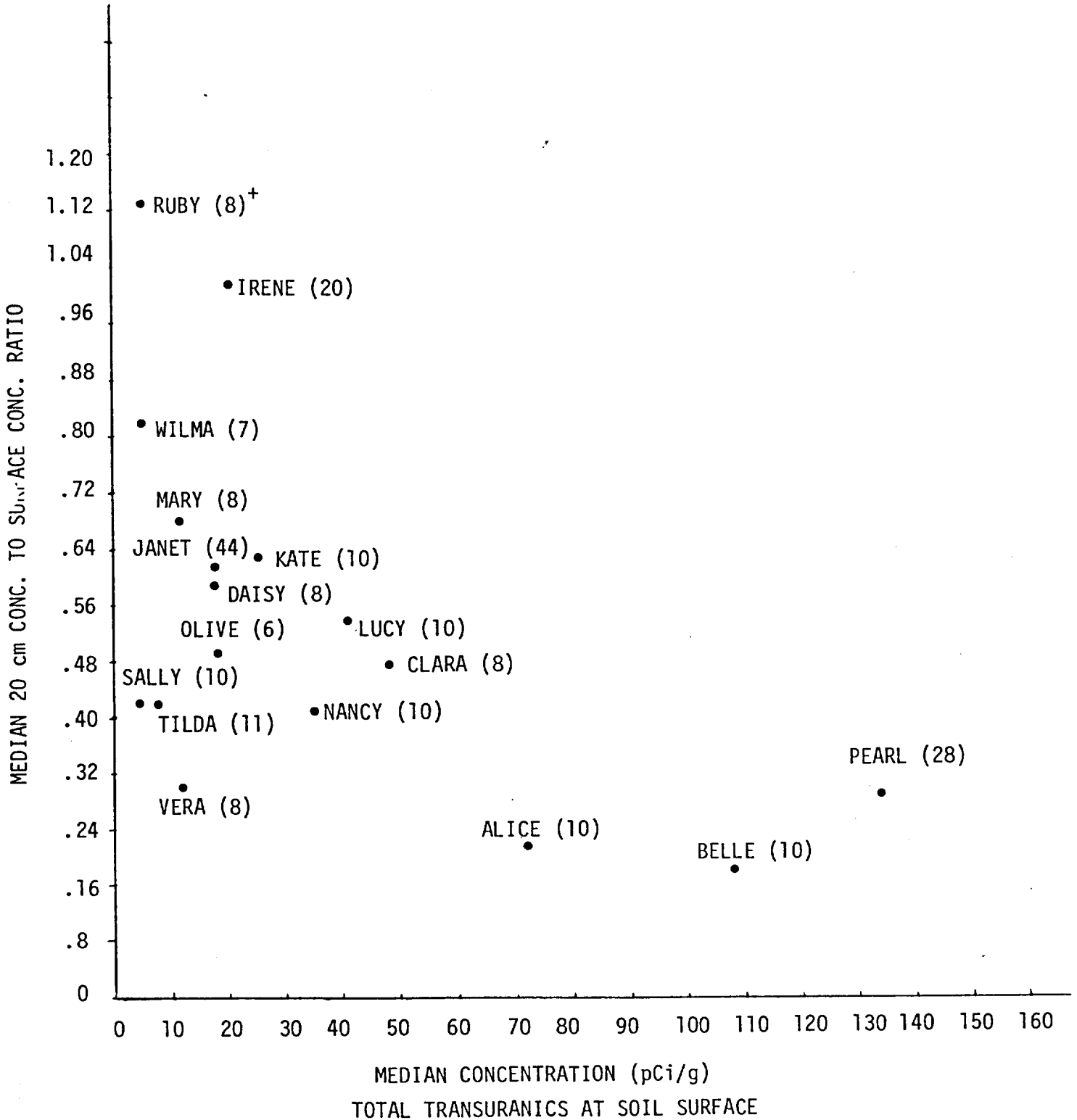
SUMMARY

	UNCORRECTED*	CORRECTED*
n	86	86
MEDIAN RATIO	1.28	1.18
MEAN RATIO	1.40	1.30

\*EXCLUDES JANET

PROFILE INFORMATION

PLOT OF THE MEDIAN (20 cm CONC.)/(SURFACE CONC.) RATIO  
VERSUS THE MEDIAN SURFACE CONC. (TOTAL TRANSURANICS)

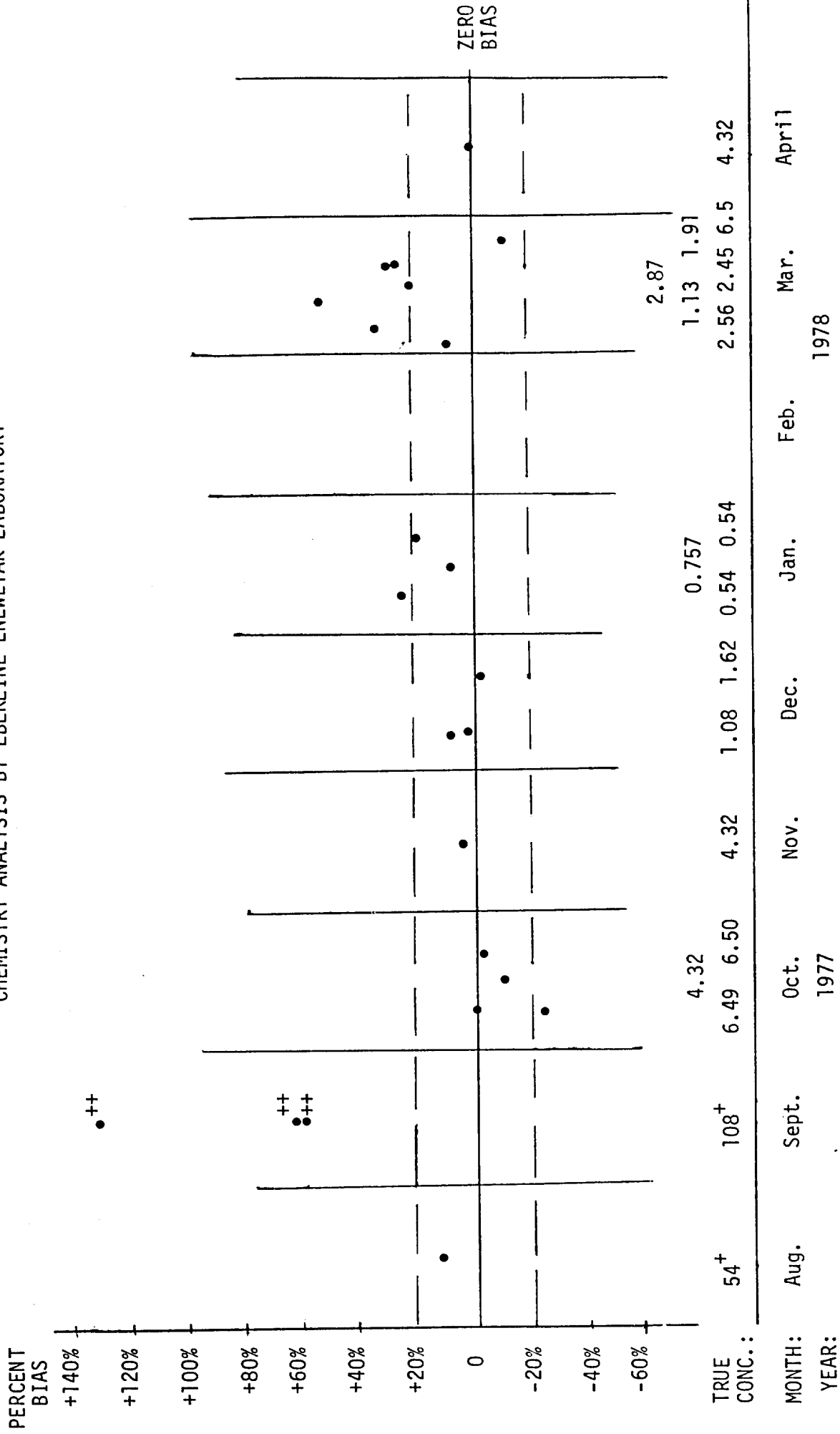


<sup>+</sup>No. of samples

QUALITY CONTROL

FIGURE 3

PERCENT DEVIATION FROM <sup>239</sup>Pu SPIKED SOIL SAMPLES. WET  
CHEMISTRY ANALYSIS BY EBERLINE ENEWETAK LABORATORY

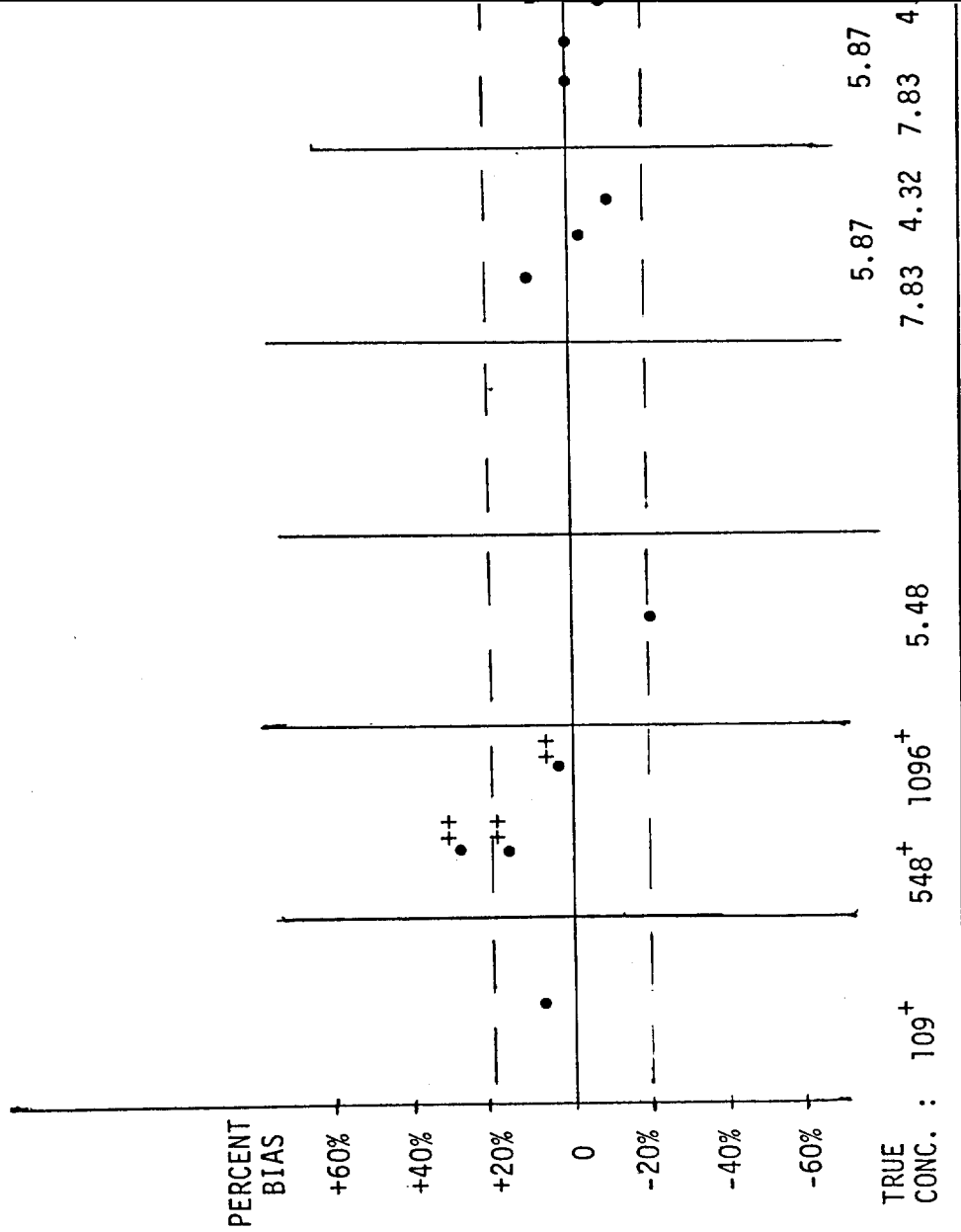


<sup>+</sup>pCi Total. All other values are pCi/g dry (Enewetak Island) soil.

<sup>++</sup>Samples not ball-milled.

FIGURE 4

PERCENT DEVIATION FROM  $^{241}\text{Am}$  SPIKED SOIL SAM  
CHEMISTRY ANALYSIS BY EBERLINE ENEWETAK I



TRUE CONC. : 109<sup>+</sup> 548<sup>+</sup> 1096<sup>+</sup> 5.48 7.83 4.32 5.87 5.87

MONTH : Aug. Sept. Oct. Nov. Dec. Jan.

YEAR : 1977

<sup>+</sup> pCi Total. All other values are pCi/g dry (Enewetak Island) soil.

<sup>++</sup> Sample not ball-milled.



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TABLE 1. Duplicate analyses (two 5-gram aliquots) from Enewetak Atoll soil field samples.<sup>++</sup>

	Month	Analysis 1	Analysis 2	Percent Relative Variability <sup>+</sup> (%)
<sup>239</sup> Pu	Sept.	pCi/g	pCi/g	
		3.1	3.4	6.5
		4.5	4.7	3.1
		12	14	10.9
	Oct.	21.6	28.8	20.2
		5.1	6.1	12.6
		6.0	6.0	0.0
		11.7	8.9	27.2
		12.7	13.0	1.6
		17.9	18.2	1.2
		19.4	21.6	7.6
		21.1	21.8	2.3
	March and April	0.58	0.62	4.7
		0.62	0.73	11.5
		2.35	1.97	12.4
		16.86	13.39	16.2
		22.95	31.42	22.0
		29.56	27.15	6.0
		38.23	36.82	2.7
		119.2	116.2	1.8
				Median = 6.0%
				Range: 0.0 to 27.2%
<sup>238</sup> Pu	March and April	0.01	0.02	47.1
		0.03	0.05	35.4
		0.20	0.18	7.4
		1.89	1.57	13.1
		2.66	1.96	21.4
		4.00	3.53	8.8
		4.09	4.07	0.3
		6.66	8.82	19.7
				Range: 0.3 to 47.1%

<sup>+</sup>100(s/ $\bar{x}$ )

<sup>++</sup>From Eberline Quality Assurance Reports for September 1977 through April 1978 transmitted to R. O. Gilbert in letters from Mike Ortiz (Eberline) dated April 21 and May 15, 1978.

TABLE 2. Duplicate analyses (two 5-gram aliquots) from Enewetak Atoll soil field samples. ++

	Month	Analysis 1	Analysis 2	Percent Relative Variability <sup>+</sup> (%)
Gamma 241Am		pCi/g	pCi/g	
	Sept.	1.1	1.1	0.0
		1.6	1.2	15.7
		9.2	8.1	9.0
		13	13	0.0
		33	30	6.7
		35	30	10.9
		44	40	6.7
	Oct.	3.0	3.0	0.0
		3.1	2.8	7.2
		3.3	3.5	4.2
		8.6	8.7	0.8
	March and April	<MDA	0.25	-
		<MDA	<MDA	-
		1.72	1.77	2.0
		5.46	5.35	1.4
		14.25	15.45	<u>5.7</u>
				Median = 4.9%
				Range: 0.0 to 15.7%
	Chemistry 241Am	Oct.	3.3	2.4
6.5			7.7	12.0
15.2			15.6	<u>1.8</u>
			Median = 12.0%	
Gross Alpha	Oct.	5	25	94.3
		10	21	50.2
		16	28	38.6
		34	16	<u>50.9</u>
			Median = 50.5%	
Beta	Oct.	24	32	20.2
		72	62	10.6
		137	132	2.6
		345	363	<u>3.6</u>
			Median = 7.1%	

<sup>+</sup>100(s/ $\bar{x}$ )

++ From Eberline Quality Assurance Reports for September 1977 through April 1978 transmitted to R. O. Gilbert in letters from Mike Ortiz (Eberline) dated April 21 and May 15, 1978.

TABLE 3. Analyses on blank soil samples taken from Enewetak Island.<sup>+</sup>

	Month	Amount of Spike Added	Observed (pCi/g) $\pm$ Counting Error ( $2\sigma$ )
<sup>239</sup> Pu	Oct.	0.0	0.08 $\pm$ 36%
		0.0	0.04 $\pm$ 42%
		0.0	0.15 $\pm$ 25%
	Nov.	0.0	0.04
	March	0.0	0.28 $\pm$ 25%
		0.0	0.25 $\pm$ 25%
		0.0	0.11 $\pm$ 32%
		0.0	0.24 $\pm$ 26%
		0.0	0.65 $\pm$ 46%
	April	0.0	0.05 $\pm$ 45%
			Median = 0.13 Range: 0.04 to 0.65 pCi/g
<sup>238</sup> Pu	March	0.0	0.02 $\pm$ 52%
		0.0	0.04 $\pm$ 58%
		0.0	0.02 $\pm$ 71%
		0.0	0.03 $\pm$ 67%
	April	0.0	0.03 $\pm$ 61%
Gamma <sup>241</sup> Am	Oct.	0.0	<0.10
		0.0	0.08 $\pm$ 131%
		0.0	0.15 $\pm$ 213%
	Nov.	0.0	<0.10
	March	0.0	<MDA
		0.0	<MDA
		0.0	<MDA
Chemistry <sup>241</sup> Am	Oct.	0.0	0.04 $\pm$ 100%
	March	0.0	0.02 $\pm$ 200%
		0.0	0.53 $\pm$ 82%
		0.0	0.03 $\pm$ 100%
		0.0	0.04 $\pm$ 115%
April	0.0	0.07 $\pm$ 67%	

<sup>+</sup>From Eberline Quality Assurance Reports for September 1977 through April 1978 as transmitted to R. O. Gilbert in letters from Mike Ortiz (Eberline) dated April 21 and May 15, 1978.

REPOSITORY PNNL  
COLLECTION Marshall Islands  
BOX No. 5686  
FOLDER Enewetak June-July 1978

DOCUMENT DOES NOT CONTAIN ECI

Reviewed by R. Schuelke Date 4/30/97