

Collection	Wet weight (gms)	Wet weight / dry weight	dry weight (gms)	Calcium per sample (gms)	St. Unit.
1320	176.7	5.90	29.77 ± 0.08	20.61 ± 1.85 <sup>0.122</sup>	42 ± 3
9	30.2	5.90	5.179 ± 0.004	3.97 ± 1.99 <sup>0.002</sup>	850 ± 43
54	92.3	92.3	0.328 ± 0.018	49.9 ± 2.7 <sup>0.012</sup>	2200 ± 120
	118.7	118.7	0.0624 ± 0.014	10.5 ± 2.3 <sup>0.013</sup>	460 ± 100
	38.6	38.6	0.081 ± 0.028	5.55 ± 1.40 <sup>0.004</sup>	620 ± 220
	10.3	10.3	0.198 ± 0.095	6.1 ± 2.9 <sup>0.011</sup>	2600 ± 1300
	27.4	27.4	3.06 ± 0.88	267 ± 7.7 <sup>0.0059</sup>	20,400 ± 600
	4.6	4.6	0.068 ± 0.030	6.4 ± 2.8 <sup>0.0046</sup>	620 ± 280
Water				17.7 ± 1.5	(P Ca)

(calculated) R

N<sub>2</sub>O<sub>2</sub>L

AFL

2.06 mg/gm

0.6

3.73

1.36

1.1

3.3

0.093

"

0.447

.622

0.15

0.277

0.14

0.13

~~1.3 x 10<sup>-4</sup>~~

~~5.9 x 10<sup>-2</sup>~~

0.075

.25, .105

0.15

.624

.478

~~3.2~~  
2.2  
~~1.2 x 10<sup>-4</sup>~~

4.5

0.109

# Strontium Units in Ring Lap Diet

G ms. H <sub>2</sub> O	Increase to dry	Total Grams in Sample	mg/cal 9 m	Total mg. 9 m	Total sr/d/m
---------------------------	--------------------	-----------------------------	---------------	------------------	-----------------

176.7	$\frac{20.6}{15.4}$	231	2.00	454.	20.6
-------	---------------------	-----	------	------	------

30.2	$\frac{3.97}{2.34}$	50.	0.093	4.65	3.97
------	---------------------	-----	-------	------	------

92.3	$\frac{49.9}{30.2}$	152.	0.15	22.8	49.9
------	---------------------	------	------	------	------

108.7	$\frac{10.5}{0.96}$	164.	0.14	23.	10.5
-------	---------------------	------	------	-----	------

38.6	$\frac{5.55}{2.12}$	68.6	0.13	8.9	5.55
------	---------------------	------	------	-----	------

10.8	$\frac{6.10}{2.14}$	50.8	0.075	2.31	6.10
------	---------------------	------	-------	------	------

27.4	$\frac{267}{83.7}$	87.3	0.15	13.	267.
------	--------------------	------	------	-----	------

34.6	$\frac{6.4}{2.32}$	94.5	0.11	10.4	6.4
------	--------------------	------	------	------	-----

882.2 gms      569.06370.02

17.7 (wt.)

388.

$$\frac{388}{2.2} \times \frac{1}{0.569} \approx 300 \text{ strontium units}$$

NOT ACCURATE

17.7 (wats)

388.

$$\frac{388}{2.2} \times \frac{1}{0.569} \approx 300 \text{ stantium units}$$

[without pondanus  $\approx$  95 stantium units]

P. ... / A

11 1/2  
27.5

889

573

Calcium Con

Part

HASL

AFL

Arrowroot

.642 ~~ref. (part 1)~~

3.3  
(Pulp + skin)

Bread Fruit

.447

.628

Coconut Milk

.277 ; .474  
(Kobe/1/2)

Green Coconut

Fresh fish cooked

Rip Coconut

.376 ; .250  
(Kobe/1/2)

Pandan us

1.06

4.5 (see)

Rice

Ant of Food stuff

Bangkok April - ~~mg~~  $\mu\text{g}/\text{gm}(\text{wet})$

Data

NRDL

Present Data

#ASL

~~(Present Data)~~

3.73	1.36	1.1
Eniaetok	Sijo	Gejen

2.06

.093

.143  
(Gejen)

.15

.14

.13

.25	.105
Eniaetok	Gejen

.075

.624	.478
Eniaetok	K

.15

.11

# Survey Meter Readings at Rongelap Atoll

Feb. - Mar. 1958

<u>Rongelap Island</u>		Values expressed in millireps per hour*			
<u>Area</u>	Shield:	<u>3' above ground</u>		<u>1" above ground</u>	
		closed	open	closed	open
<u>Southwest edge of village near road</u>					
Under <u>Morinda</u> , over dead leaves		.02	.2	.1	.6
Open area over sedge		.03	.18	.04	.2
Under coconut trees 6' from road		.02	.2	.09	.6
Open area over grass		.03	.15	.04	.2
Under <u>Pandanus</u> over dead leaves		.03	.16	.08	.6
<u>Southwest edge of village, seaward side</u>					
Above high tide line		.03	.15	.04	.4
At high tide line		.01	.15	.015	.08
Intertidal zone		.01	.18	.01	.10
<u>3.1 miles west of Magistrate's house</u>					
In coconut grove 25' south of road		.05	.35	.07	.7
In coconut grove 100' south of road		.04	.35	.08	.6
<u>West end of island about 0.1 miles east of road end</u>					
15' south of road over open area		.03	.3	.08	.7
10' north of road over <u>Scaevola</u>		.03	.2	.05	.2
60' north of road over sand and <u>Wedalia</u> vines		.03	.25	.08	.5

\* With a Beckman MX-5

See also  
 EPB - General

Rongelap Island (continued)

<u>Area</u>	Shield:	3' above ground		1" above ground	
		<u>closed</u>	<u>open</u>	<u>closed</u>	<u>open</u>
<u>North edge of village</u>					
Under coconut trees		.03	.15	.08	.6
Open area, grass		.03	.2	.08	.7
Area of soil profile #1		.03	.2	.07	.7
Under <u>Pandanus</u>		.04	.2	.08	.6
Under <u>Messerschmidia</u>		.03	.15	.07	.6
	Average	.029	.21	.064	.48

Kabelle Island

<u>Area</u>				
Center of Island under <u>Pisonia</u>	.1	.6	.4	1.0-1.5
Under <u>Pisonia</u>	.1	.6	.15	.7
Under <u>Pisonia</u> , over guano on <u>Boerhavia</u>				1.1

Proceeding from lagoon shore toward seaward shore across center of island

Just above high tide line	.1	.5	.2	1
About 40 yds. from shore, open area	.3	1.4	.7	3
About 100 yds. from shore, <u>Pisonia</u> and coconut trees	.2	.8	.4	1.5
About 100 yds. from shore, mound under coconut trees	.3	1.1	.5	2
About 200 yds. from shore, under <u>Pisonia</u>	.13	.8	.8	1.0



Kabelle Island (continued)

Area	Shield	3' above ground		1" above ground	
		closed	open	closed	open
About 200 yds. from shore, sandy area		.1	.8	.35	1.3
About 175 yds. from shore, under <u>Pisonia</u> & <u>Scaevola</u> over sand		.25	.6	.3	1.2
About 400 yds. from shore, <u>Scaevola</u> thicket, over dead leaves		.13	.6	.2	1.0
About 400 yds. from shore, <u>Scaevola</u> thicket, over sand cover with black lichen or algal growth		.13	.8	.4	1.4
<u>Proceeding from seaward shore toward lagoon shore across center of island</u>					
High tide line, over sand		.03	.4	.04	.4
10 yds. from shore in <u>Scaevola</u> thicket, over leaves		.07	.5	.08	.6
same area with leaves brushed away				.2	1.0
adjacent leaves, within arm's reach				.08	.7
same area as above with leaves brushed away				.2	.9
30 yds. from shore under <u>Messerschmidia</u>		.09	.6	.11	.7
same area with leaves brushed away, over humus				.3	1.3
same area with leaves and humus brushed away				.4	1.4
same area over sand 1.3" below soil surface				.05	.35
	Average	.14	.72	.29	1.1

DOE 208-1011

Kabelle Island (continued)

Note: Attempts were made to measure radiation from various portions of plants, bird nests, etc., but it was found that differences in readings with relation to distance above ground masked any other differences that might exist:

Readings with shield open:

1" above ground	2.0
2' " "	.8
3' " "	.6
4' " "	.4
7' " "	.25

Enia etok Island

<u>Area</u>	<u>3' above ground</u>		<u>1" above ground</u>	
	<u>closed</u>	<u>open</u>	<u>closed</u>	<u>open</u>
Readings taken across center of island at widest portion from lagoon shore to seaward shore.				
Near first house under coconut trees	.1	.6	.3	1.0
Pile of humus and ashes	.08	.5	.2	.9
Under <u>Pandanus</u> over dead leaves	.06	.6	.3	1.4
Under coconut trees	.07	.6	.2	1.1
Coconut grove about 1/3 way across island	.07	.6	.2	1.1
Pile of coconut husks	.08	.17*	.08*	.25*
Open area with interspersed patches of grass and dried black lichen or algal growth	.15	.8	.3	1.2

\* These values were double checked and found to be correct.

100-100000

Eniaetok Island (continued)

<u>Area</u>	<u>3' above ground</u>		<u>1" above ground</u>	
	<u>closed</u>	<u>open</u>	<u>closed</u>	<u>open</u>
Open area just above high tide line, over sand	.05	.5	.1	.8
Open area just above high tide line, over algae	.05	.5	.15	1.1
At high tide line	.015	.15	.02	.25
Intertidal zone, beach pavement	.01	.11	.02	.04
Average	.067	.47	.17	.83

**MEMO ROUTE SLIP**

Form AEC-93 (Rev. May 14, 1947)

See me about this.  
Note and return.

For concurrence.  
For signature.

For action.  
For information.

TO (Name and unit) <i>Mr. Blanning</i>	INITIALS  DATE	REMARKS <i>Aug 04 1959</i>
TO (Name and unit)	INITIALS  DATE	REMARKS
TO (Name and unit)	INITIALS  DATE	REMARKS
FROM (Name and unit) <i>John Wolfe</i>	REMARKS	
PHONE NO. <i>5003</i>	DATE <i>8/1/59</i>	REMARKS

02-11-1954  
10:00 AM  
10:00 AM

10:00 AM  
10:00 AM

10:00 AM

DOE 11111111

Food  
Sr 90

		DATA ON PORTION OF SAMPLE RECEIVED AT HASL						DATA ON TOTAL SAMPLE		
HASL Number	Sample	Grams rec'd. at HASL Measured	d/m Sr <sup>90</sup> in HASL Sample Measured	d/m Sr <sup>90</sup> per gram (wet weight) Calculated	mg Ca per gram Measured	mg Ca in HASL Sample Calculated	S. U. Calculated	Total g Sample	Total Sr <sup>90</sup> in* Sample (d/m) Calculated	Total mg* Ca
8603	Arrowroot	176.7	15.4 ± 1.4	0.087 ± .006	2.06	365	19 ± 2	236.7	20.6 ± 1.8	487
8604	Bread	30.2	2.39 ± 1.2	0.079 ± .040	0.093	3	390 ± 21	50.2	3.97 ± 2.0	5
8605	Coconut Milk	92.3	30.2 ± 1.6	0.328 ± .018	0.15	14	1000 ± 55	152.3	49.9 ± 2.7	23
8606	Green Coconut	108.7	6.96 ± 1.5	0.064 ± .014	0.14	15	210 ± 45	168.7	10.5 ± 2.3	24
8607	Cooked Fish	38.6	3.12 ± 1.1	0.081 ± .028	0.13	5	280 ± 100	68.6	5.55 ± 1.9	9
8608	Ripe Coconut	10.8	2.14 ± 1.0	0.198 ± .095	0.075	1	1200 ± 590	30.8	6.10 ± 2.9	2
8609	Pandanus	27.4	83.7 ± 2.4	3.06 ± .088	0.15	4	9300 ± 270	87.4	267.0 ± 7.7	13
8610	Rice	34.6	2.34 ± 1.0	0.068 ± .030	0.11	4	340 ± 130	94.6	6.4 ± 2.8	10
8611	Water	(500 ml.)	17.7 ± 1.5	---	--	--	---	--	---	--
TOTAL								889.3	370	573

\* Calculated to entire sample including amount not sent to HASL.

Errors expressed are one standard deviation of counting and do not include possible chemical errors.

**Office Memorandum • UNITED STATES GOVERNMENT**

TO : G. M. Dunning, Chief, Radiation Effects of Weapons Branch, Division of Biology & Medicine  
*I. E. Wallen, pas* DATE: May 1, 1959

FROM : I. E. Wallen, Aquatic Biologist, Environmental Sciences Branch, Division of Biology & Medicine

SUBJECT: ADDITIONAL RONGELAP DATA

SYMBOL: BMES:IEW

Following a telephone conversation with Dr. Held of the University of Washington on April 15 we sent you some data concerning strontium-90 levels at Rongelap Atoll. We have now received 3 tables of data on radioactivity in Pandanus which fit as pages 82a, 82b and 82c in your data book. Copies are enclosed for your retention.

Enclosure:  
As stated above

NOT RECORDED

3730 Invertebrate Fauna Summary Table

Sta. no.	Date collected	Number samples	No. of specimens	Specimens	Total specimens
Kongelap	January, 1955	1	114		114
Kongelap	October, 1955	1	113		113
Longeing (Greenland)	July, 1956	1	112	170	282
Kongelap	July, 1957	1	111	1056	1167
Kongelap	March, 1958	1	0		0
Kabelle	March, 1958	1			0
Kongelap	March, 1958	1			0

Note: Three fruit samples, one each from Kongelap, Kabelle, and Longeing are now in process and the results will be available later.

NOT RECORDED



Strontium<sup>90</sup> in Pandanus Samples Collected at Rongelap Atoll - March, 1958

Island	Sample	Sr <sup>90</sup> d/m per gram <sup>2)</sup> dried sample	Sr <sup>90</sup> d/m per gram wet sample	Per gram <sup>3)</sup> wet sample mg Ca	Strontium units
Rongelap	Leaves # 14	69± 4	19± 1	3.88± .07	2295
	Leaves # 31	40± 1	11± 1.5	4.00± 0	1253
	Leaves # 36	62± 4	17± 1	3.86± .02	2053
	Leaves # 94	51± 3	14± 1	3.00± 0	2132
	Fruit # 88 <sup>1)</sup>	0	0	2.44± .13	0
Kabelle	Leaves # 65	177± 40	49± 10	6.87± 0.61	3239
	Leaves # 75	25± 2	7± 1	3.54± .01	896
	Fruit # 88 <sup>1)</sup>	0	0	2.96± .05	0
Eniaetok	Leaves #104	62± 3	17± 1	5.69± .03	1367
	Leaves #114A	107± 4	30± 1	3.38± .09	3457
	Fruit #107 <sup>1)</sup>	0	0	2.33± .01	0
	Fruit #114B <sup>1)</sup>	0	0	4.51± .05	0

- 1) Limit of detectability of Sr<sup>90</sup> in these fruit samples is 2 d/m/g dried sample.
- 2) Errors given for activity values are obtained from counting error.
- 3) Error given for calcium values are standard deviations for replicate analyses.

Strontium<sup>90</sup> in Pandanus Samples collected at Rongelap Atoll - August, 1958

Island	Sample	Sr <sup>90</sup> d/m per gram <sup>4</sup> ) dried sample	Sr <sup>90</sup> d/m per gram wet sample	Ca mg per gram <sup>4</sup> ) wet sample	Strontium units
Rongelap	Leaves # 1	103 <sup>±3</sup>	29 <sup>±1</sup>	3.84 <sup>±.03</sup>	3406
	Leaves # 2	78 <sup>±2</sup>	22 <sup>±1</sup>	4.95 <sup>±.22</sup>	1966
	Leaves # 3	66 <sup>±2</sup>	18 <sup>±1</sup>	3.07 <sup>±.11</sup>	2715
	Leaves # 8	38 <sup>±2</sup>	11 <sup>±1</sup>	2.85 <sup>± 0</sup>	1667
	Trunk <sup>2)</sup> Borings # 2	0	0	3.68 <sup>± 0</sup>	0
	Fruit #22 <sup>1)</sup>				
Kabelle	Leaves # 7	74 <sup>±4</sup>	21 <sup>±1</sup>	3.26 <sup>±.01</sup>	2869
	Branch # 7	28 <sup>±1</sup>	-	(3) 11.54 <sup>±.83</sup>	1101
	Bark # 7	102 <sup>±4</sup>	-	(3) 6.25 <sup>±.03</sup>	7360
	Fruit # 7 <sup>1)</sup>				
Eniaetok	Leaves #10	55 <sup>±2</sup>	15 <sup>±0.5</sup>	4.56 <sup>±.11</sup>	1524
	Leaves #11	91 <sup>±4</sup>	25 <sup>±1</sup>	4.37 <sup>±.06</sup>	2611
	Fruit #10 <sup>1)</sup>				

- 1) These fruit samples are now being processed and the results will be available later.
- 2) Limit of detectibility of Sr<sup>90</sup> in this sample is 46 d/m/g dried sample.
- 3) These results are in mg of calcium per gram dried sample. Wet sample weights are not available for these samples.
- 4) Errors for activity values are determined from counting error.
- 5) Errors for calcium values are standard deviations for replicate analyses.

NOV 1958