

HSA:EPH

April 17, 1956

Laboratory Report 56-4

Dr. Willis R. Boss, Assistant Chief
Biology Branch
Division of Biology and Medicine
U. S. Atomic Energy Commission
1901 Constitution Avenue, N. W.
Washington 25, D. C.

Dear Dr. Boss:

We are sending for your information,
a copy of our Laboratory Report 56-4, entitled
"Rongelap Survey, October 1955 - Results of Analy-
ses Performed at HASL". It is a summary of our
analyses of samples received from the University
of Washington, Applied Fisheries Laboratory.

Sincerely yours,

Edward P. Hardy, Jr., Chemist
Analytical Branch
Health and Safety Laboratory

CC: Dr. G. M. Dunning ✓
Dr. L. R. Donaldson

NMB3

61924

During November 1955, HASL received 12 soil, 12 seawater, 8 vegetation, 1 plankton, 2 algae, 6 fish, and 15 coconut samples collected by A. Seymour of the Applied Fisheries Laboratory, University of Washington. This particular set of samples was collected during October 21-23, 1955 on Rongelap, Kabelle, and Labaredj Islands of Rongelap Atoll and Mogiri Island of Alinginae Atoll.

Each sample was analyzed at HASL for total activity and Sr-90. Selected samples were analyzed for normal calcium by the oxalate-permanganate titration method, for reporting values in Sunshine Units. Values are reported as of February 27, 1956 and are presented in three sections:

1. A summary of HASL results including a comparison with data obtained from University of Washington Report No. UWFL-43.
2. A complete tabulation of HASL data with pertinent information given for each sample.
3. Notes covering sources of information, analytical procedures, and standardization and counting techniques used at HASL in processing these samples.

1. SUMMARY OF HASL DATA AND COMPARISON WITH AFL

SOIL

| <u>Area Collected</u> | <u>Depth</u> | <u>Total Activity</u> d/m/g - wet | | <u>Sr-90</u> d/m/g - wet | |
|-----------------------|--------------|--------------------------------------|-------------|-----------------------------|------------|
| | | <u>HASL</u> | <u>AFL</u> | <u>HASL</u> | <u>AFL</u> |
| Kabelle | 0-3" | 6600-15000 | 16000-23000 | 200-510 | N. R. |
| | 3-6" | 300- 620 | 420- 760 | 5- 23 | N. R. |
| Labaredj | 0-3" | 5500- 7500 | 9600-25000 | 190-260 | N. R. |
| | 3-6" | 360- 620 | 230- 550 | 5- 7 | N. R. |
| Rongelap | 0-3" | 3000- 5700 | 3700-45000 | 190-210 | N. R. |
| | 3-6" | 410- 1000 | 800- 1500 | 12- 32 | N. R. |

Total Activity

top 0-3", 6-25 times higher than 3-6" layer (HASL)

Sr-90

top 0-3", 7-50 times higher than 3-6" layer (HASL)

Average % Sr-90 in top soil - 3.9 (HASL)

Average % Sr-90 in bottom soil - 2.3 (HASL)

% Total Activity in top 3"

| | <u>HASL</u> | <u>AFL</u> |
|----------|-------------|------------|
| Kabelle | 96 | 97 |
| Labaredj | 96 | 97 |
| Rongelap | 88 | 89 |

NOTE:

Average Sr-90 found in continental United States soil top 0-2", 0.2 d/m/g (HASL)

SEAWATER

| <u>Area Collected</u> | Total Activity d/m/liter | | Sr-90 d/m/liter | |
|-----------------------|-----------------------------|------------|--------------------|------------|
| | <u>HASL</u> | <u>AFL</u> | <u>HASL</u> | <u>AFL</u> |
| Kabelle | 650 | 300-500 | undet. | N. R. |
| Labaredj | 300 | 300-500 | undet. | N. R. |
| Rongelap | undet. | undet. | undet. | N. R. |
| Mogiri | undet. | undet. | undet. | N. R. |

ALGAE

Rongelap Island

| <u>Location</u> | Total Activity d/m/g - wet | | Sr-90 d/m/g - wet | |
|-----------------|-------------------------------|------------|----------------------|------------|
| | <u>HASL</u> | <u>AFL</u> | <u>HASL</u> | <u>AFL</u> |
| Cistern | 9410 | 8860-23600 | undet. | N. R. |
| Well | 680 | 570- 1880 | ~5 | N. R. |

PLANKTON

Kabelle-Rongelap

| | Total Activity d/m/g - wet | | Sr-90 d/m/g - wet | |
|--|-------------------------------|------------|----------------------|------------|
| | <u>HASL</u> | <u>AFL</u> | <u>HASL</u> | <u>AFL</u> |
| | 44 | 99-418 | undet. | N. R. |

VEGETATION

Rongelap

| | | Total Activity d/m/g - wet | | Sr-90 d/m/g - wet | |
|---------------|---------------|-------------------------------|------------|----------------------|------------|
| | | <u>HASL</u> | <u>AFL</u> | <u>HASL</u> | <u>AFL</u> |
| <u>Papaya</u> | pulp | 58 | 17-137 | 0.4 | N. R. |
| | pulp and skin | 100 | | 1.0 | N. R. |
| | skin | >20 | | 0.8 | N. R. |
| | seeds | 64 | 37-503 | >0.3 | N. R. |

Morinda

entire 34 14- 73 1.0 N. R.

Arrowroot

corm 102 78-193 3.0 N. R.

Squash

flowers and
leaves 25 20-120 5.0 N. R.

Pandanus

entire 84 76-189 2.0 N. R.

Coconut

| | | | | |
|-------------|------|--------|-------|-------|
| outer husk | 80 | N. R. | 1.0 | N. R. |
| inner shell | 20 | N. R. | 0.2 | N. R. |
| meat | } 40 | 23- 83 | } 0.2 | N. R. |
| milk | | 20-115 | | N. R. |

% Sr-90

| | | |
|------|--------------------------------------|-------------------|
| HASL | $\frac{1}{2}$ - 4% of total activity | } except coconuts |
| AFL | 2 - 5% of total activity | |

COCONUTS - (HASL)

| <u>Island</u> | Total Activity d/m/g - wet | | | Sr-90 d/m/g - wet | | |
|----------------|---------------------------------|------------------------|--------------------------|-----------------------|------------------------|--------------------------|
| | <u>Outer husk</u> | <u>Inner shell</u> | <u>Meat and milk</u> | <u>Outer husk</u> | <u>Inner shell</u> | <u>Meat and milk</u> |
| Kabelle | 80 | 20 | 50 | 0.4 | 0.1 | 0.1 |
| Rongelap | 80 | 20 | 40 | 1.0 | 0.2 | 0.2 |
| Labaredj | 200 | 30 | 80 | 2.0 | 0.4 | 0.4 |
| <u>% Sr-90</u> | Outer husk | | ~1% | | | |
| | Inner shell | | ~1% | | | |
| | Meat and milk | | ~0.1% | | | |
| <u>AFL</u> | - reports 0.1% in meat and milk | | | | | |

COMMERCIAL COCONUTS

| <u>Total Activity</u> | |
|-----------------------|---|
| Inner shell | 2 |
| Meat and milk | 5 |

FISH

| | | Total Activity d/m/g - wet | | Sr-90 d/m/g - wet | | |
|----------|----------|-------------------------------|------------|----------------------|------------|-------|
| | | <u>HASL</u> | <u>AFL</u> | <u>HASL</u> | <u>AFL</u> | |
| Kabelle | Tuna | bone | 31 | N. R. | ~0.2 | N. R. |
| | | muscle | 24 | 40 | undet. | N. R. |
| | | liver | 186 | 1070 | undet. | N. R. |
| Labaredj | Bonito | muscle | 56 | 102 | undet. | N. R. |
| | | bone | 227 | N. R. | undet. | N. R. |
| Rongelap | Goatfish | muscle | 21 | 18-37 | undet. | N. R. |

AFL - Sr-90 undetectable in marine organisms

2. COMPLETE HASL DATA

5002000

SOIL

| H.S.I. No. | Spec. No. | Collection Date | Area Collected | Description | Depth | Beckman MX-5 Reading | | | Total Activity d/m/gram | | Sp-90 d/m/gram | | K Ca based on wet weight | Σ C _a |
|------------|-----------|-----------------|-----------------|---|--------|----------------------|----------|----------|-------------------------|------------------------|------------------------|------------------------|--------------------------|-----------------------|
| | | | | | | Surface | 3" below | 6" below | Wet | Dry | Wet | Dry | | |
| 3152 | A 1 | 10-21-55 | Kabelle Island | Open area - 200 yards from lagoon near mid - island | 0 - 3" | 3.5/12 | | 0.2 /0.9 | 15000 [±] 225 | 16300 [±] 244 | 506 [±] 4.7 | 548 [±] 5.1 | 27 | 552 [±] 7.7 |
| 3183 | A 2 | 10-21-55 | Kabelle Island | Open area - 200 yards from lagoon near mid - island | 3 - 6" | 3.5/12 | | 0.2 /0.9 | 617 [±] 90 | 658 [±] 96 | 22.7 [±] 2.6 | 24.2 [±] 2.8 | | |
| 3184 | A 3 | 10-21-55 | Kabelle Island | Grass area - 20 feet from A 1 and A 2 | 0 - 3" | 2/8 | | 0.2 /0.5 | 6620 [±] 152 | 7950 [±] 182 | 200 [±] 3.3 | 240 [±] 4.0 | 29 | 314 [±] 5.0 |
| 3185 | A 4 | 10-21-55 | Kabelle Island | Grass area - 20 feet from A 1 and A 2 | 3 - 6" | 2/8 | | 0.2 /0.5 | 302 [±] 104 | 329 [±] 113 | 4.7 [±] 0.67 | 5.1 [±] 0.73 | | |
| 3186 | A 5 | 10-21-55 | Labaredj Island | Open area - 100 yards from lagoon (high tide mark in SW part of island) | 0 - 3" | 2/8 | | 0.08/0.5 | 5470 [±] 147 | 5990 [±] 161 | 188 [±] 3.4 | 206 [±] 3.7 | | |
| 3187 | A 6 | 10-21-55 | Labaredj Island | Open area - 100 yards from lagoon (high tide mark in SW part of island) | 3 - 6" | 2/8 | | 0.08/0.5 | 623 [±] 88 | 678 [±] 97 | 6.7 [±] 0.99 | 7.3 [±] 1.1 | 32 | 9.5 [±] 1.4 |
| 3188 | A 7 | 10-21-55 | Labaredj Island | Under a tree 15 feet from A 5 and A 6 | 0 - 3" | 0.6/7.0 | 0.3/1.0 | 0.07/0.5 | 7480 [±] 129 | 9490 [±] 164 | 263 [±] 4.5 | 334 [±] 5.7 | 26 | 460 [±] 7.7 |
| 3189 | A 8 | 10-21-55 | Labaredj Island | Under a tree 15 feet from A 5 and A 6 | 3 - 6" | 0.6/7.0 | 0.3/1.0 | 0.07/0.5 | 356 [±] 70 | 395 [±] 78 | 4.9 [±] 0.47 | 5.4 [±] 0.52 | | |
| 3190 | A 9 | 10-21-55 | Rongelap Island | Grass near well (10 feet W of well) | 0 - 3" | 0.3/0.9 | 0.09/0.3 | 0.05/0.2 | 3000 [±] 74 | 4230 [±] 104 | 187 [±] 2.6 | 264 [±] 3.7 | 30 | 213 [±] 3.9 |
| 3191 | A 10 | 10-22-55 | Rongelap Island | Grass near well (10 feet W of well) | 3 - 6" | 0.3/0.9 | 0.09/0.3 | 0.05/0.2 | 406 [±] 54 | 543 [±] 72 | 11.8 [±] 0.68 | 15.8 [±] 0.91 | 31 | 17.3 [±] 1.1 |
| 3192 | A 11 | 10-22-55 | Rongelap Island | Papaya cluster (near school house) rocky soil | 0 - 3" | 0.3/1.0 | 0.1/0.5 | 0.1 /0.4 | 5700 [±] 69 | 12300 [±] 149 | 212 [±] 3.3 | 457 [±] 7.1 | 24 | 401 [±] 4.3 |
| 3193 | A 12 | 10-22-55 | Rongelap Island | Papaya cluster (near school house) rocky soil | 3 - 6" | 0.3/1.0 | 0.1/0.5 | 0.1 /0.4 | 1040 [±] 75 | 1410 [±] 101 | 32.3 [±] 1.0 | 43.6 [±] 1.4 | 29 | 50.4 [±] 1.5 |

SEAWATER

| <u>HASL No.</u> | <u>Spec. No.</u> | <u>Area Collected</u> | <u>Collection date</u> | <u>Total Activity d/m/l</u> | <u>Sr-90 d/m/l</u> |
|-----------------|------------------|-----------------------|------------------------|-----------------------------|--------------------|
| 3194 | A | A-1 | Kabelle Is. | 290 \pm 65 | (-0.75) \pm 10.6 |
| | B | A-1 | Kabelle Is. | 750 \pm 70 | 6.55 \pm 12.2 |
| | C | A-1 | Kabelle Is. | 850 \pm 72 | 14.6 \pm 12.6 |
| 3195 | A | A-2 | Labaredj Is. | 450 \pm 66 | (-3.98) \pm 11.9 |
| | B | A-2 | Labaredj Is. | 300 \pm 66 | (-2.90) \pm 10.7 |
| | C | A-2 | Labaredj Is. | 190 \pm 65 | (-1.45) \pm 12.0 |
| 3196 | A | A-3 | Rongelap Is. | 56 \pm 61 | (-1.25) \pm 12.1 |
| | B | A-3 | Rongelap Is. | 36 \pm 64 | 5.48 \pm 9.58 |
| | C | A-3 | Rongelap Is. | 66 \pm 64 | (-2.25) \pm 10.7 |
| 3197 | A | A-4 | Mogiri Is. | 56 \pm 65 | (-0.20) \pm 11.6 |
| | B | A-4 | Mogiri Is. | (-25) \pm 66 | 25.1 \pm 12.4 |
| | C | A-4 | Mogiri Is. | 60 \pm 66 | 12.7 \pm 11.1 |

5002002

VEGETATION

| H.3L No. | Specimen No. | Organism | Tissue | Area Collected | Collection Date | Remarks | Total Activity d/m/gram | | Sr-90 d/m/gram | | % Ca Based on Net Weight | Σ. Σ. |
|----------------|-----------------|-----------|----------------------------|--------------------|--------------------|--|----------------------------|----------------------|------------------------|------------------------|--------------------------------|----------------------|
| | | | | | | | Wet | Dry | Wet | Dry | | |
| 3175 | A 35-39 | Papaya | pulp | Rongelap Island | 10-22-55 | 5 fruits - village area, skin and seeds removed: dried at 95°C | 58.2 [±] 0.6 | 415 [±] 4.3 | 0.43 [±] 0.02 | 3.07 [±] 0.14 | 0.022 | 888 ± 41 |
| 3172 | A 40-42 | Papaya | pulp and seed | Rongelap Island | 10-22-55 | Halves from 3 fruits, village area: seeds removed: dried at 95°C | 105 ±1.0 | 740 [±] 7.0 | 1.23 [±] 0.06 | 8.64 [±] 0.39 | 0.037 | 1511 ± 74 |
| 3170 | A 35-39 | Papaya | skin | Rongelap Island | 10-22-55 | Peeled from 5 fruits, village area: dried at 95°C | 21.0 [±] 0.5 | 146 [±] 1.5 | 0.86 [±] 0.07 | 5.96 [±] 0.48 | 0.070 | 559 ± 45 |
| 3173 | A 35-42 | Papaya | seeds | Rongelap Island | 10-22-55 | 8 fruits, village area: dried at 95°C | 63.9 [±] 1.0 | 345 [±] 5.4 | 0.32 [±] 0.04 | 1.75 [±] 0.25 | 0.169 | 85.9 [±] 11 |
| 3177 | A 62-64 | Horinda | entire | Rongelap Island | 10-22-55 | 3 fruits, village area: dried at 95°C | 33.8 [±] 1.9 | 278 [±] 7.5 | 1.12 [±] 0.08 | 9.22 [±] 0.67 | 0.065 | 783 ± 56 |
| 3171 | A 67-71 | Arrowroot | corn | Rongelap Island | 10-22-55 | Peeled tubers, skin removed, village area: ashed at 550°C | 102 ±1.1 | | 3.61 [±] 0.32 | | 0.030 | 5469 ± 485 |
| 3168 | A 143 | Squash | leaves and flow- ers | Rongelap Island | 10-22-55 | Village area, plant in blossom but no fruit: dried at 95°C | 24 ±1.0 | 307 [±] 13 | 5.72 [±] 0.43 | 71.5 ±4.27 | | |
| 3213 - 3217 | A 45-49 | Pandanus | entire | Rongelap Island | 10-22-55 | Part of 5 fruits from 5 trees, village area | 84.4 [±] 0.6 | | 2.57 [±] 0.07 | | 0.136 | 859 ± 33 |

ALGAE

| | | | | | | | | | | | | |
|------|-------|--|--|--------------------|----------|--|----------------------|------------------------|------------------------|------------------------|--|--|
| 3164 | A 109 | | | Rongelap Island | 10-22-55 | From cistern in village, species undefined: dried at 95°C | 9411 [±] 60 | 48440 [±] 425 | 9.73 [±] 9.35 | 70.0 [±] 67.3 | | |
| 3166 | A 110 | | | Rongelap Island | 10-22-55 | From well in village (taken from sides below water level) species undefined: dried at 95°C | 683 [±] 13 | 2140 [±] 72 | 6.90 [±] 2.14 | 37.7 [±] 11.7 | | |

5002003

COCONUTS

| HISL No. | Specimen No. | Area Collected | Collection Date | Remarks | Total Activity | | | d/w/gram - wet | | | % Ca Based on Wet Weight | | |
|----------|--------------|----------------|-----------------|---|-----------------------|------------------------|-----------------------|---------------------------|---------------------------|---------------------------|--------------------------|-------------|---------------|
| | | | | | Outer Husk | Inner Shell | Meat and Milk | Outer Husk | Inner Shell | Meat and Milk | Outer Husk | Inner Shell | Meat and Milk |
| 3198 | A 30 | Kabelle Is. | 10-21-55 | VARIOUS AREAS OF THE ISLAND | 84.0 [±] 3.3 | 15.8 [±] 0.7 | 54.5 [±] 2.3 | 1.2 [±] 0.34 | 0.60 [±] 0.19 | 0.06 [±] 0.33 | | | |
| 3199 | A 31 | Kabelle Is. | 10-21-55 | | 56.6 [±] 2.7 | 39.5 [±] 1.6 | 60.3 [±] 2.6 | 0.11 [±] 0.31 | 0.07 [±] 0.04 | (-0.24) [±] 0.18 | 0.038 | 0.058 | 0.013 |
| 3200 | A 32 | Kabelle Is. | 10-21-55 | | 66.3 [±] 2.9 | 12.7 [±] 1.1 | 37.1 [±] 1.6 | 0.09 [±] 0.06 | (-0.09) [±] 0.08 | (0.03) [±] 0.14 | | | |
| 3201 | A 33 | Kabelle Is. | 10-21-55 | | 69.6 [±] 3.1 | 20.4 [±] 1.95 | 45.5 [±] 1.9 | 0.12 [±] 0.05 | 0.03 [±] 0.06 | (-0.07) [±] 0.14 | | | |
| 3202 | A 34 | Kabelle Is. | 10-21-55 | | 127 [±] 5.5 | 32.0 [±] 1.5 | 55.2 [±] 2.4 | 0.66 [±] 0.25 | 0.14 [±] 0.08 | 0.28 [±] 0.23 | | | |
| 3203 | A 35 | Labaredj Is. | 10-21-55 | TREES NORTHERN END OF ISLAND | 141 [±] 6.0 | 20.9 [±] 0.9 | 59.2 [±] 2.5 | 1.3 [±] 0.14 | 0.28 [±] 0.11 | (0.35) [±] 0.32 | | | |
| 3204 | A 36 | Labaredj Is. | 10-21-55 | | 318 [±] 13 | 26.1 [±] 1.1 | 177 [±] 7.1 | 4.8 [±] 0.30 | 0.89 [±] 0.16 | 0.10 [±] 0.34 | 0.062 | 0.019 | 0.011 |
| 3205 | A 37 | Labaredj Is. | 10-21-55 | | 182 [±] 7.6 | 31.1 [±] 1.3 | 61.3 [±] 2.6 | 1.3 [±] 0.16 | 0.17 [±] 0.07 | 0.10 [±] 0.18 | | | |
| 3206 | A 38 | Labaredj Is. | 10-21-55 | | 220 [±] 9.2 | 41.2 [±] 1.7 | 63.1 [±] 2.7 | 1.0 [±] 0.29 | 0.19 [±] 0.12 | 0.56 [±] 0.22 | | | |
| 3207 | A 39 | Labaredj Is. | 10-21-55 | | 143 [±] 6.2 | 23.4 [±] 1.1 | 54.0 [±] 2.3 | 1.5 [±] 0.14 | 0.33 [±] 0.11 | 0.32 [±] 0.30 | | | |
| 3208 | A 40 | Rongelap Is. | 10-22-55 | ONE COCONUT FROM EACH OF FIVE (5) VILLAGES AREA | 254 [±] 11 | 46.3 [±] 1.9 | 81.2 [±] 3.3 | 3.5 [±] 0.24 | 0.51 [±] 0.13 | 0.22 [±] 0.20 | | | |
| 3209 | A 41 | Rongelap Is. | 10-22-55 | | 49.4 [±] 2.2 | 4.0 [±] 0.2 | 55.2 [±] 2.2 | 0.39 [±] 0.10 | 0.09 [±] 0.07 | (-0.07) [±] 0.10 | 0.053 | 0.078 | 0.007 |
| 3210 | A 42 | Rongelap Is. | 10-22-55 | | 87.4 [±] 3.9 | 34.6 [±] 1.4 | 24.0 [±] 1.0 | (-0.19) [±] 0.20 | 0.21 [±] 0.09 | 0.44 [±] 0.21 | | | |
| 3211 | A 43 | Rongelap Is. | 10-22-55 | | 73.2 [±] 3.3 | 9.5 [±] 0.5 | 33.3 [±] 1.5 | 0.70 [±] 0.21 | 0.31 [±] 0.13 | 0.57 [±] 0.42 | | | |
| 3212 | A 44 | Rongelap Is. | 10-22-55 | | 84.3 [±] 3.5 | 5.3 [±] 0.3 | 20.3 [±] 1.0 | 0.75 [±] 0.17 | 0.07 [±] 0.10 | 0.09 [±] 0.23 | | | |
| | | | | | | | | | | | | | |

COMMERCIAL COCONUTS

| | | | | |
|------|-------------|---------------|----------------------|----------------------|
| 3311 | Puerto Rico | February 1956 | 1.2 [±] 0.2 | 5.1 [±] 1.0 |
| 3312 | Puerto Rico | February 1956 | 8.0 [±] 0.2 | 5.3 [±] 1.0 |
| 3313 | Puerto Rico | February 1956 | 1.9 [±] 0.2 | 5.8 [±] 1.0 |

5002004

FISH

| HASL No. | Specimen No. | Organism | Tissue | Area Collected | Collection Date | Remarks | d/m/gram Total Activity | | d/m/gram Sr-90 | | % Ca Based On Wet Weight |
|----------|--------------|----------------|----------|------------------|-----------------|---|-------------------------|------------|----------------|---------------|--------------------------|
| | | | | | | | Wet | Dry | Wet | Dry | |
| 3176 | A 165 | Dog-tooth Tuna | bone | Kabelle-Labaredj | 10-21-55 | Caught half-way between Kabelle and Labaredj Islands in Rongelap Lagoon. Total weight: 44 lbs. Bone includes some connective tissue. Not possible to remove all tissue. | 31 ±35 | 86 ±95 | 0.17 ±0.07 | 0.48 ±0.20 | 11.3 |
| 3179 | A 165 | Dog-tooth Tuna | muscle ✓ | Kabelle-Labaredj | 10-21-55 | Dried at 95°C + shared with U of W: NYOO samples plated into 5 bags. | 24.4 ± 1.0 | 111 ± 4.5 | (0.01) ±0.04 | (-0.05) ±0.18 | 0.0017 |
| 3167 | A 165 | Dog-tooth Tuna | Liver | Kabelle-Labaredj | 10-21-55 | Dried at 95°C + shared with U of W. | 186 ± 2.5 | 1483 ±20 | 0.10 ±0.41 | 0.83 ±3.3 | 0.0028 |
| 3174 | A 64 | Bonito | muscle ✓ | Labaredj Island | 10-21-55 | 1 fish dried at 95°C. | 56.3 ± 1.0 | 269 ± 4.8 | 0.019 ±0.11 | 0.089 ±0.53 | 0.023 |
| 3165 | A 64 | Bonito | bone | Labaredj Island | 10-21-55 | Backbone boiled to remove meat. Wet weight given is that after boiling. | 227 ±78 | 269 ±87 | (-0.28) ±0.90 | (-0.33) ±1.06 | 18.0 |
| 3169 | A 112-116 | Goatfish | muscle ✓ | Rongelap Island | 10-22-55 | Part sample of 5 fish; dried at 95°C. | 21.1 ± 1.8 | 89.6 ± 7.7 | 0.082 ±0.12 | 0.35 ±0.51 | |

PLANKTON

| | | | | | | | | | | | |
|------|---------|--|--|------------------|-------------|--|------------|---------|------------|------------|--|
| 3173 | A 2 - 5 | | | Kabelle-Rongelap | 10-21,22-55 | A 2-5 pooled after removing samples for U. of W. - AFL - Sample A 2 and A 3 off Kabelle Island, 10-21-55; and A 4 and A 5 off Rongelap Island, 10-24-55. ~ 20 gms wet weight in pooled sample, of which ~ 80% is from samples A 4 and A 5. | 43.1 ± 1.0 | 663 ±17 | 0.19 ±0.89 | 2.97 ±13.7 | |
|------|---------|--|--|------------------|-------------|--|------------|---------|------------|------------|--|

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3. NOTES

SOIL

1. Spec. No., Collection date, Area collected, Description, Depth, Backman readings - information supplied by A. Seymour.
2. Beckman readings in mr/hr taken 1" above ground - shield closed/shield open. Background - 0.05 mr/hr.
3. "Wet" refers to weight of soil as received at HASL.
4. "Dry" refers to soil aliquot dried at 100°C for eight hours.
5. Procedure:
 - a. Soil aliquot ashed at 550°C for 8 hours, then dissolved in HNO₃. Solution aliquot plated directly on glass planchet for beta counting. Standardized against 0.2 gram K₂CO₃, mounted in similar manner.
 - b. Self-absorption correction applied in each case: based on self-absorption of activity in two top soils.
6. Sr-90 - suitable aliquot taken from solution of dissolved soil.
7. Error term associated with each result is one Poisson standard deviation.

SEAWATER

1. Spec. No., Area collected, Collection date - information supplied by A. Seymour.
2. All islands in Rongelap Atoll except Mogiri, which is part of Alinginae Atoll.
3. All water collections made in lagoons except Mogiri, where collection was made from anchorage.
4. The total activity result was obtained by precipitating carbonate from a 200 ml. aliquot, mounting on 2" plastic disc and

beta counting under 2" tube.

- a. Standardized with K-40 (3 gms K_2CO_3 mounted in similar manner) where 3 gms $K_2CO_3 \equiv 2955$ d/m.
 - b. A self-absorption factor of 2 was applied to each result (See fig. 6 - Troll Report).
 - c. Assumptions:
 1. 18 month old pile produced f.p.'s simulate these conditions.
 2. Ca content of these waters and those sampled on Troll - constant.
5. Sr-90 analyses performed on 400 ml aliquot.
 6. Error term associated with each result - one Poisson standard deviation.

VEGETATION

1. Spec. No., Organism, Tissue, Area collected, Remarks, - information supplied by A. Seymour.
2. "Wet" refers to wet weight given by A. Seymour, except in case of Pandanus, which was received in wet state at HASL.
3. Samples dried at 95°C by A. Seymour wherever a result is given, except for Algae, which were dried at HASL.
4. In all cases except Arrowroot, sample wet ashed at HASL.
5. Total activity results: based on direct plating of aliquot in glass planchet and beta counting. Standardized against 0.2 g K_2CO_3 , mounted in similar manner.

Self-absorption correction factor applied in each case: based on self-absorption of activity in Papaya pulp and Cistern algae.

6. Aliquot taken for Sr-90: represented 10-20 gms wet material.
7. Error term associated with each result is one Poisson standard deviation.

COCONUTS

1. Spec. No., Area collected, Tissue, Remarks, - information supplied by A. Seymour.
2. "Wet" refers to weight as received at HASL. Samples were not dried but ashed at 550°C for 8 hours.
3. For total activity measurement a 0.2 gm aliquot of ash was beta counted in a plastic planchet and standardized against 0.2 gms K_2CO_3 , similarly prepared.
4. No self-absorption correction applied.
5. Aliquot of dissolved ash analyzed for Sr-90.

FISH

1. Spec. No., Organism, Tissue, Area collected, Collection date, Remarks - information supplied by A. Seymour.
2. "Wet" refers to wet weight given by A. Seymour.
3. Samples were dried at 95°C by A. Seymour except in case of Plankton, which was received in formalin.
4. In all cases except bone, sample was wet ashed at HASL. Bone was ashed at 550°C then dissolved.
5. For total activity - aliquot plated on glass planchet and beta counted. Standardized against 0.2 gms K_2CO_3 mounted in similar manner. Self-absorption correction factor applied in each case: based on self-absorption of activity in tuna muscle and bonito bone.
6. Aliquot taken for Sr-90: represented 10-20 gms wet material.

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