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LABORATORY OF RADIATION BIOLOGY
SEATTLE, WASHINGTON

403444

KB

FL
AKS

Locality ENIWEITIK MAJURO Date 4 FEB 59

Personnel RICHARDSON, HELD Weather CLEAR

COLE, JOYNER, KIMMEL Water conditions CHOPPY

KENNEDY

Radiation level(s) _____

Operations:

LST ARRIVED AT TENT LATER THAN 23 FEB

7 OF CONARD'S PARTY + COLL PROGRAM DEPARTED

AT 11:30 AM. ARRIVED AT 1:00 PM

ARRIVED ENT ~ 1500.

INMENS Q PAIR IN REC OFFICE, SCHLACKS

DUE IN DATE 4 HRS WEEK.

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September 24 14

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20
air

Locality ELMER - JAWET Date 25 FEB 59

Personnel FR, T.J., JS, RW, Weather Clear, Windy

EH - Water conditions Choppy

Radiation level(s) _____

Operations:

1330 To Jawet. Collected 5 adult, 1 young rat. These were large rats which may not be *R. exulans*. Richardson preparing skin + skull from one. Very few small *Scaevola* seedlings in the area around building + bunkers, all other plants usually found appear typical. Collected ~~at~~ *Cochlospermum* seed + plants, *Sida* leaves, *Messerschmidia* leaves, *Scaevola* leaves, *Triumfetta* leaves, *Iperomea* leaves, *Conocarpus* (no seeds), + low growing plant we can't remember name of. Rat excrement primarily in tubes leading from bunkers. Collected surface + deep soils at three locations in vicinity of larger building + bunkers.

Chopper disabled on Irene while picking up second party. We sat there until ~ 1920. Then returned to second chopper + got back to Elmer 2005.

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706
30

Locality Elmer - Belle - EDNA Date 26 Feb 59

Personnel FR, JK, ... Weather Cloudy

Walt Cheney & Pat Clark
along for photographs
Water conditions ...

Radiation level(s) ...

Operations: EDNA
LEFT Elmer, 1800. Stopped 1/2 hr on Edna.

None of the old plants left - no indication of
transect markers. 4 photos taken from approx.
location of old zero point showing general appearance
of island. The following diverse plants were
seen: Several *Messerschmidia* - largest ~10cm high;
20cm diam; 1 *Iponoe* w/ 6 leaves; many *Triumfetta*
one 40cm diam; 1 *Portulaca*; many clumps
Lepturus up to 30cm diam - one w/ long
runner (100cm long).

BELLE

Arrived ~ 0915 poisoned in vicinity
of large hole - soon after arrival - old Estuaries
almost no kill. Repoisoned large hole at
low tide about 1800 - fair kill (see list
fish below).

PHOTOGRAPHS & LAND PLANT COLLECTIONS

AS FOLLOWS:

Area A. - #1408 stake in place, *BIRD* ^{UNIV.} *Ecto* leaves,
immature fruit, stems.

Near Zero Point - Atypical *Messerschmidia* photos
Ecto + *Ecto* leaves narrower & less dense than usual, drooping
appearance though density not unlike.

General shot of island in H dir
from zero point. Most shrubs have come back

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no

RPO
Ber

Locality _____ Date 26 Feb 59 (cont)
Personnel _____ Weather _____
Water conditions _____

Radiation level(s) _____

Operations:

Tree roots & branches are mostly under 3' high. Island has general green zone.
AREA C - plant 1217 stake is gone but feel sure we found it in relation to coconut stumps & other plants which were found. Photographs Ber & Ecto - leaves & stems collected.

Plant 1412 - no plant or stake found, no ^{living} coconut trees found on island

Plant 1211 - stake down, replaced next to nearest *Portulaca* - 17" diam - photo Ber & Ecto, no sample

Plant 1209 stake down replaced where lying.
" 1206 " " " " " " "

AREA D All stakes down found two bamboo stakes & stake 1319. Replaced latter next to closest *Scaevola*. Photos Ber & Ecto. Leaves & stems sampled, no fruit found.

Photographed ^{within boundaries} Area D as close as we can estimate from the concrete slab.

No sign of *Alouatta* in pot hole - there are fish in the hole.

Eight Fairy Tern eggs & one young found

Algae collected in Area E. Sample have been preserved for identification by RFP. Coconut stumps were observed during

KB
12.3.

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Locality _____ Date 26 Feb 59 (cont)

Personnel _____ Weather _____

Water conditions _____

Radiation level(s) _____

Operations:

almost continuous on north-south axis
in "F" area (cont. from 12/15/58)

One Tern seen collected near Area 5.
Only 11 birds seen on island. For 1054
H. L. H. H. H.

No lammers or sea cucumbers found.
Returned 5 miles ~ 1545.

Birds seen on island were as follows:

- | | |
|---------------------|-----------------------------------|
| 1 Wandering Tattler | 12± Sooty Terns (flying over) |
| 4 Ruddy Turnstones | 35± White Terns (8 eggs, 1 young) |
| 5± Golden Plover | |

Although the vegetation is coming back well-aver-
aging 3 or 4 feet high - it will be several years, I judge,
before there are branches large enough to be suitable
for nesting of species such as White Terns and White-
capped Noddies. In the meantime the small number of
suitable logs or stumps - the majority of which are represented
by the 9 White Tern nests found - will serve as a severe
limiting factor for breeding of the usual most abundant
species, and the White-capped Noddies will probably not breed.

The migrant shorebirds seen - tattler, turnstones,
and plovers, all northern breeders as from Alaska and
Siberia - seem to be finding normal feeding as on the
open ground (of which there is probably more available to
the plovers now than originally!) and beach and reef.

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105
LW

Locality _____ Date 26 Feb 59 (cont.)

Personnel _____ Weather _____

_____ Water conditions _____

Radiation level(s) _____

Operations:

Soil samples taken in Areas A & D 0-20" in 1" increments.
Fish samples collected from zone "F". First poisoning at 1/2 low tide unsuccessful. Spearing productive until low tide, when second poisoning at slack water produced a fair yield. Following families obtained: Serranidae, Pomacentridae, Holocentridae, Fistularidae, Mullidae, Acanthuridae. Only 2 convict surgeon, 2 goat fish. Groupers were mostly *Epinephelus*, one *Variola louti* - T.J.

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Locality Arrived Rongelap 2 Mar AM Date 1 + 2 Mar 59
 Personnel Same as 27 Feb Weather _____
 _____ Water conditions _____

Radiation level(s) _____

Operations:

Met by Neal Morriss, Trust Territory Agricultur-
 alist & most of the council members. Greetings friendly
 & courteous. Conrad talked to Billman, the new magistrate,
 about use of buildings. Billman said ok to go ahead. By this time
 it was time for lunch & we all returned to the ship. In the
 meantime a council meeting was held & the council decided
 that they might not permit the medical examinations.
 A general meeting was called by the council & Conrad
 was requested to be present to answer the questions
 concerning the necessity for the medical examinations.
 In the meantime off loading virtually came to a
 stand-still. The meeting lasted over three hours
 & although it was decided that the examinations could
 proceed, several individuals indicated that they would
 not cooperate. Held was called in for about the last
 hour or half when questions came up about the poisonous
 fish & the matter of the coconut crabs. It turns
 out that the poisonous fish were red snappers caught
 in the northern half of the atoll. Most, if not all,
 finally agreed that radioactivity had nothing to do
 with the poisoning but several were still of the
 opinion that something connected with the events
 of 1954 had some undefined connection with
 the poisoning. This matter is certainly not closed.
 It was also asked, why, if the soil & plants are

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Locality _____ Date 2- Mar. 59 (cont)
Personnel _____ Weather _____
_____ Water conditions _____

Radiation level(s) _____

Operations:

are alright for the people to use, we continue to study them. It was explained that although we expected them to remain satisfactory it is desirable to be certain or that it is also desirable to know what changes, if any, might take place. This can be done only by continuing or periodic sampling, it was explained. Actually there did not seem to be any objection to the biological surveys, but rather an asking of questions for information. This opinion was confirmed by Merriss.

The rest of the group did some exploring around the island, relocating old sites or checking the condition of the lysimeters (several gallons of leachate had collected). Much clearing of new land is going on for coconut planting. It was not possible to get out the gear or really get to work.

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Locality Rongelap Date 8 Mar 59
 Personnel see 27 Feb Weather Clear
 Water conditions good

Radiation level(s)

Operations:

Off loaded ship. Lab established in council house. Tarp & table set up on part of ship for fish dissections. Running salt & fresh water available a few feet from table. Reeper to be used jointly by Med + Biol groups put in operation by Wayman Eicher in tank deck. Lab established trap line, shot 3 rats, observed birds on NE end of Rongelap, shot Frigate bird - wing spread 78 inches. TL made fish collection to main side - gave kill but no could suggest or eat fish. Kim & Kotae assigned by Council to work with us with Buia keeping record of time & acting as interpreter when necessary (Titikus has taken his wife to Kwaj for cancer treatment).

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Locality Rongelap Date 4 Mar 59
Personnel see 27 Feb Weather clear
Water conditions _____

Radiation level(s) _____

Operations:

TJ & J.K. collected fish seaward reef.
J.K. checked vegetation for salt spray. Initial
points established along village transect. Leeches
collected. Pit 1 resampled both by horizons
& by one inch increments. 16 rats total to
date from shooting & trap line. Arrangements made
for Copra, Pandanus (many fruit on island but all
green), Papaya (few available, promised 3 or 4),
Tacca. No breadfruit available.

Early morning fishing trip ~~made~~ ^{caught}
4 or 5 groupers.

P.M. got gear together for trip
to Kabelle by chopper (VU-1 400 lb
pay load, two trips to carry 4 men & gear).

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Locality Rongelap, Kabelle Date 5 Mar 59
Personnel See 27 Feb Weather _____
Water conditions _____

Radiation level(s) _____

Operations: Note! 3 HIRAN men have been stationed at Kabelle since October - they have disturbed nothing.

FR, DC, RK + FH to Kabelle by chopper. Collected guano, 5 Fairy Terns. More birds nesting now than in August although there are some White capped Noddy terns. 5 coconut crabs dug out all males, one had softer than usual carapace although the rest of the skeleton appeared to be as hard as usual (bled the crabs PM - part of blood taken for radiochemistry, part given to Barry Blumberg, NIH for protein analysis). Leeches collected at pits 4 + 6. Pit 4 resampled both by horizons of 1 inch increments. RK + FH checked soil & vegetation types on N half of island. Well water samples taken & water levels measured at previously established well points. Water definitely saltier to taste than last August. Soils are extremely dry (samples taken for moisture determinations).

JK + TJ surveyed on Rongelap I using Japanese bench mark in front of village as zero point. This is a granite marker set in concrete & is marked on the hydrographic Office maps as "observation point". Late evening poisoning of seaward reef tide pools with Kinetin + Kinetac. Then landed at Kabelle for growth studies.

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Locality Rongerua Date 6 Mar 59

Personnel see 27 Feb. Weather _____

Water conditions _____

Radiation level(s) _____

Operations:

Well water taken from well point at pit 22. Decomposition study, set out 6 screened boxes at pit 24. Boxes 1+2 Scaevola leaves, Boxes 3+4 Messerschmidia leaves, Boxes 5+6 Cordia (Kona) leaves. Tacca collected from village transect area. Resurveyed village transect using Redds compass & alidade compass not functioning & compass previously borrowed from ship proved to be erratic. Soils mapping in vicinity of village. Weather station rewired. More localities collected & some plates also in poor condition. Fish dissected & prepared. Planning to bring in Jack, 2-line mackerel, dogfish, etc. F.R. Walked length of island from S.E. tip (AEC weather station) to ship - saw crested terns, reef herons (white), in addition to birds previously seen. The herons were inland about 150'. No nests found anywhere along the length of the island. Moisture determinations made at lab. Walker's fertilizer plots observed - no visually obvious differences. Natives have removed 2 or 3 of the Tacca clumps. Mike says this was due to misunderstanding. Rain gauges set out in lysimeter areas 2+4 to measure interception variability.

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Locality Range Is. Date 7 March 59
Personnel SEE 27 Feb Weather light showers
Water conditions _____

Radiation level(s) _____

Operations:

NOTE: records on catches from daily trawling
trips being recorded in separate notebook by Tim.

Scarcia & Mucosa seedlings at
S end of island photographed & remeasured. Unable
to locate marked Scarcia at pit 21. Tensiometer
installed at pit 22 & first readings taken. Moisture
samples weighed & dried. Grass collected from
K fertilizer plots near pit 22. Soil survey
continued E & S of village. New pit dug near
road east end of village. First collection south
part of Island, lagoon side. Survey of elevations &
reference points continued. FR to Busche & Bokujarito
by skiff (motor gave up & had to row back 5 miles in
cross wind). One of the ~~boat~~ ship's crew who has his own
small boat about 1/2 mile along S. side. White terns
& Common noddies are nesting in numbers on Busche
but are not using the Pisonia trees sufficiently to
markedly fertilize soil.

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Locality Rongelap Date 8 March 59
Personnel See 27 Feb Weather light showers all afternoon
total about 0.1 in.
Water conditions _____

Radiation level(s) _____

Operations:

AM - cut about $\frac{1}{2}$ of trail in straight line at pit 1 transect. Elevation & reference point survey continued. Add checks in sample preparation in lab. All put in readiness for arrival of UN committee. Reid made tour of west end of island to rough in soil types. P.M. - usually Sunday routine swimming, walking around the island, beach at tea break.

Notified by Mariss that all hands must stay aboard ship until departure of UN committee tomorrow. No medical examinations to take place. Said V.W. group could continue working but should stay out of village area. Requested Conrad & Gold be present at meeting with UN committee.

RES

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Locality Rouge Lap - Gogon Date 9 March 1959
Personnel see 27 Feb Weather _____
Water conditions _____

Radiation level(s) _____

Operations:

Richardson & Dale to Gogon (near NE pass) by
chopper to examine the mature Pisonia forest
there. Soils appear to be essentially the same as
at Kabelle Pisonia areas. Trees are 70'-80' tall.
Greater concentration of breeding terns than on Kabelle.
Numerous coconut crabs - 4 seen in the open. Only
2 unproductive coconut palms on the island.

Soil survey transect west of village completed.
6 pits in transect locating A₁ horizons on beach
ridge - ran elevations. Survey for reference points
& elevations continued. ~~Reef fish~~ Reef fish collected

VN committee meeting attended by Conard,
Lassiter (ships captain), Morriss, & Held. Visiting delegation
made up of one representative each from Nationalist
China (Mr. Kiang, chairman of committee), Burma, Belgium,
Italy, & Mr. Neas, DISTAD Marshall's, de Young,
Trust Territory Biogeologist, Mr. MacKenzie, District
Agriculturalist. Details of meeting in letter to
Donaldson.

Day pretty thoroughly disrupted, especially
for medical group.

30 rats to date.

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Locality Rongelap - Kabelle Date 10 Mar 1959
Personnel see 27 Feb Weather _____
Water conditions _____

Radiation level(s) _____

Operations:

F.R., R.K., DG to Kabelle. Re-measured trees in wash area + on south Kabelle. Took additional well water at pit 4. Located general areas for soil map. Collected samples for Walker at pit 4. Near verticals taken from chopper with speed graphic. Sea cucumbers collected for KB. More guano collected. Further attempts at estimating population size & amount of guano production in nesting areas. 3 Noddies collected. Rongelap - completed pit 1 clearing of straight trail + side trail to each soil pit. Continued elevation & reference marker survey. Prepared fish samples.

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Locality Rongelap Date 11 MAR 59
Personnel See 27 Feb Weather _____
Water conditions _____

Radiation level(s) _____

Operations:

Took survey meter readings in village area with MX-5 + Scintillation Survey Meter Model SM-3A Ser. No. D98 REC cot No. SRX-5 Nuclear Research Corp., Philadelphia, PA. Fromer from Radsig, Funafuti; latter from Canard. Readings listed on Rongelap sheets with previous readings. Scintillation meter more consistent & easier to read than MX-5. Composite soil sample collected. Random soil samples from fertilizer plots collected. Pit 1 foliage samples collected for comparison with August collection. Rough mapping of soils in eastern part of island. Tensiometers checked. Elevation of reference point survey continued. Fish poisoning lagoon opposite village. Made arrangements to collect Dekra (coconut sap) from 5 trees.

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Locality Rongelap - Kabelle Date 13 Mar 1958

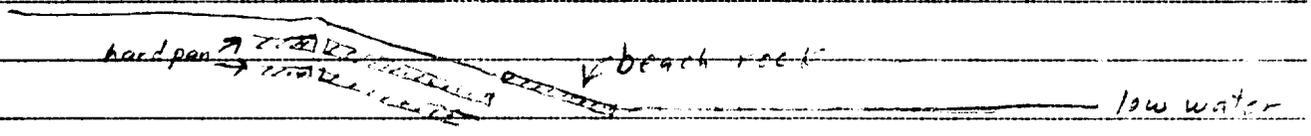
Personnel see 27 Feb Weather _____

Water conditions _____

Radiation level(s) _____

Operations:

DC & EH to Kabelle. Resampling of foliage in Pit 6 area. Sundry meter readings & composite soil sample taken. Lysimeters checked. Trench dug from beach rock to high point on island following hard ~~pan~~ pan - details & measurements recorded in field book profile approximately:



Borrowed K-20 camera from ship & took aerial photos of Rongelap I. also with 35mm color. Soil mapping continued. Fish collected & prepared. Samples ready to date packed.

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Locality Rongelap Date 14 Mar 1959
 Personnel See 27 Feb Weather _____
 _____ Water conditions _____

Radiation level(s) _____

Operations:

Packing. Additional soil wrapping.
 permanent pipes put in at reference
 points - painted orange, ~~labeled~~ numbered
 serially from bench marks. Generator
 centered out - jury rigged power for freezer
 with Maynard Fische. but we are
 without oven for the last few soups.
 Big party ashore with ship's crew
 and entire village.

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ROBERT LEE

7-4-59

The 24-hour run was completed at 1750 when the last set of samples which was collected at 1350, was filtered.

Water samples were collected for C^{14} & pigment analysis every four hours beginning at 1345 the previous day. Also two beach readings were made & water samples were collected at each — i.e. surface, $\frac{2}{3}$ beach depth, & at beach depth.

Number of filtered C^{14} samples (on ^{millipore} filter pads) collected that far — 72
Number of pigment samples — 20

COPIES
SERIES

EH.
8-18-59
Hickam
JL
8/21/59

me RR
JF PC
PRO
AW #5
JB

Dear Joanne:

Holmes and Narver would like to be informed of the flight on which to expect the other members of our party, Ed, Dick, Stan, Ole, Anikouchine, and Behan, so that they can meet them at the airport. Could you inform them of this as soon as you know, please?

H. & N. could be addressed at 1210 S. Queen or at Hickam Field, or as you wish.

They were rather put out at our ^(Conny, Reid, & I) unexpected arrival. We leave tomorrow morning at 8.

Would you please enter \$1.50 on my expense account for limousine fare from the Olympic ^{SEATAC} to the airport on 8-17-59?

Thank you.

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Locality Seattle, Hickam, Eniwetok Date 8-17 to 8-21-59
Personnel Mahnken, Kenady, Bonham Weather _____
Joyner, & Kimmel Water conditions _____

Radiation level(s) _____

Operations:

Mahnken, Kenady & Bonham left SeaTac on Pan Am #895 2205 on 8-17-59; arrived Honolulu 8-18-59 at 0715; taken by Geo. Sakoda of Holmes & Narver to Hickam. Met Tim Joyner & Jim Kimmel at Internat. Airport. Consulted R.W. Hiatt on availability of microscopes at EMBL to take on Rongelap trip.

Departed Hickam 8-20-59, 1140; arr. Eniwetok 8-21-59, 2040.

Briefing at Fred announced that cameras & binoculars are permitted on Fred.

Met Dr. van der Schalie in Honolulu, also Capt. Fosse and Omsted, all on flight to Ent. with us.

From Fred we 5 & van der Schalie were flown by helicopter to Parry where Bldg 122 was assigned to our group, including v.d.S.

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Locality Parry Date 8-22-59 Sat.
Personnel Kimmel, Kenady, Joyner Weather Fair
Mahnken, & Bonham Water conditions 15 mph.

Radiation level(s)

Operations:

Inspected boxes at J4 warehouse and removed to lab box of 36 buckets & sun ray screen for Walker's soil & corn expt's, 2 1/2-meter hoops; Kenady got lumber for screen frames. Joyner got primacord & wire.

Set up Janet copter trip with M-boat & Wep to carry back 700 lbs of sifted soil on Monday.

Manken, Kenady, & Bonham took plankton tows in Deep Entrance to compare with David, 1500-1630, using 1-meter, old net; examined & photographed a few organisms in evening.

RECEIVED

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Recd. 1-2-59

AHS
FOL
RP
DS
9/17/59

Locality Parry Date 8-23-59 Sunday
Personnel Mahnken, Kenady, Bonham Weather Rainy
Kimmel, & Joyner Water conditions 15-20 mph

Radiation level(s)

Operations:

Preparation of sun-ray screen shelter for Walker's corn expt. Consulted with Fosse & Willis on arrangement of winches & platforms. Lent Fosse proposed plan of work for Rongelap, belonging to Mahnken. Sent letter & logs to Lab, Seattle.

Mahnken, Kenady, & Bonham visited Fred PX for shoes (feld) & cameras.

Kimmel, Joyner, Schlacks, & shell-hunted using glass-bottom boat and aqua-lungs.

K.B. developed yesterday's photo-micrographs, using solutions from Geo. Bernier (also changing bag).

Preparation of equipment for tomorrow's trip to Vanet.

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