

UNIVERSITY OF WASHINGTON
LABORATORY OF RADIATION BIOLOGY
FISHERIES CENTER
SEATTLE 5, WASHINGTON

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June 4, 1963

*From
Box # 3108
Job # 7238 R*

Dr. John N. Wolfe, Chief
Environmental Sciences Branch
Division of Biology and Medicine
U. S. Atomic Energy Commission
Washington 25, D.C.

Dear John:

Enclosed is the tentative schedule for the coming Rongelap trip. The dates given are based around the time the ship will be available.

Assuming that air support from Kwajalein will be as requested, I suggest that a short visit could be accomplished by meeting the UF-2 flight from Kwajalein to Rongelap of August 25 and leaving Rongelap with the group at Kabelle Islet on August 28.

This schedule would permit a brief visit of Rongelap Islet, including the main village, an overall view of the lagoon from the air and from shipboard, observation of shipboard activities, and a good look at Kabelle Islet.

A more interesting and informative visit would include visiting Gejen, Naen, and Lomuial Islets (see enclosed map). This would require either a longer visit or a request for additional air support from Kwajalein.

We keep hoping that you might change your mind and come to Rongelap in person, but we certainly will welcome whomever you send.

On the chance that you might be subject to temptation, the accompanying photos have been sent.

Best regards,



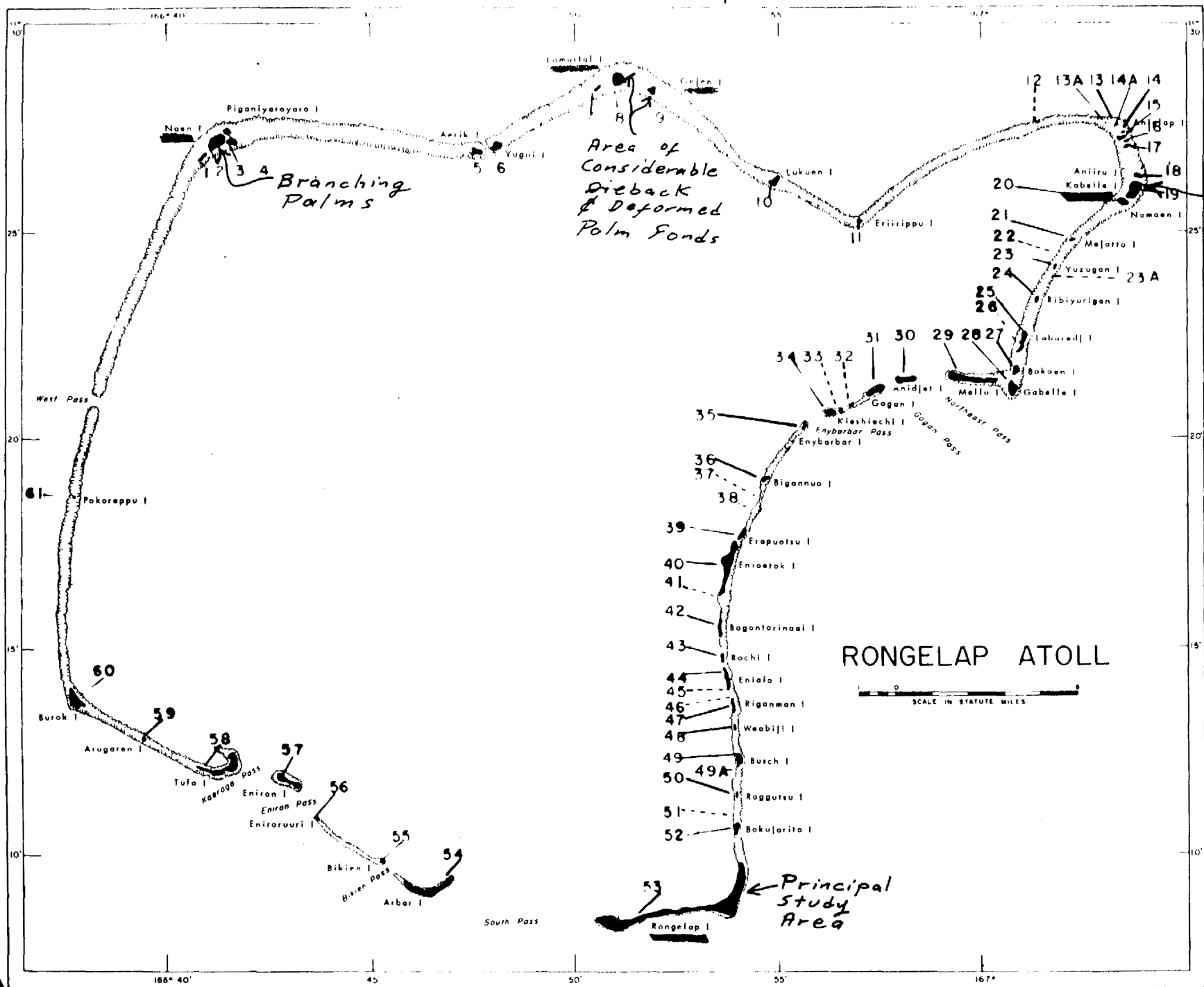
Edward E. Held
Associate Research Professor

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EEH:pmo
Enclosures

P.S. Thanks for the reference.

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MOUGELAP BIOENVIRONMENTAL RESURVEY
August 1963

General Description and Background

The August 1963 bioenvironmental resurvey of Mougelap Atoll is a continuation of surveys initiated in 1958 to monitor current amounts of radionuclides in foods and to evaluate the cycling or redistribution of radionuclides at Mougelap.

Mougelap is uniquely suitable for the latter studies since it was contaminated only once with radioactive fallout to a significant degree. The initial contamination occurred in March 1954 following the detonation of a thermonuclear device at Bikini Atoll, 80 miles to the west. The levels of radiation were sufficiently high to necessitate evacuation of the residents. They were not returned until June 1957.

Present levels of radiation at the southern islets of Mougelap Atoll are comparable to those present at uncontaminated atolls. External radiation levels at the northern islets are slightly above background levels.

Radionuclide content of food items is within permissible levels with the exception of the coconut crab, *Birgus latro*, which concentrates strontium-90. Other significant radionuclides in the foods at this time are cesium-137 and zinc-65.

The soils still contain all of the relatively long-lived radionuclides originally deposited. These remain concentrated in the top inch of soil, but small amounts are moving to depths of 30 inches or more. The marine organisms contain fewer radionuclides of which zinc-65 and cobalt-60 appear to be moving in the food web while strontium-90, cerium-144 and Europium 155 are bound in the calcareous portions of organisms and the bottom sediments.

Since these studies involve specialists in several disciplines, the work schedule is necessarily a compromise between the demands of any one facet of the program and the overall studies. The ship is essential in providing, first, a vehicle from which to collect marine organisms and secondly in

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providing an onsite laboratory for the preparation of samples for chemical and radiometric analyses in the home laboratory.

The proposed schedule, outlined in the accompanying table and in Figure 1, is an attempt to provide essential laboratory time for the shore parties while providing as much time as possible for the marine, and more particularly, for the plankton sampling program. The latter will be done on a 24-hour schedule. Most of the sample preparation will be done in the evening. It will be essential to keep the drying ovens in operation on a 24-hour basis.

The shore party will arrive at Rongelap by air about one week prior to the ship's arrival. They will depend on the local sailboat for transportation to and from Eniwetok and Neobiji Islets. Observations will be made of previously established plots and trees, some of which have been fertilized with both macro- and trace-elements. Foliage and soils from some of these plots will also be collected. Food items will be collected from previously marked areas when possible. Special attention will be given to collecting soil cores and wood samples which pilot studies have shown to be promising for determining the distribution of the radionuclides by a combination of autoradiographic, radiochemical and gamma ray spectrometric analyses. Upon arrival of the ship there will be a backlog of samples to be processed. These will be oven dried, packed in chests, or stored in the reefers as soon as possible after arrival of the ship.

There are three reasons for anchoring in the Northeast Pass off Nallu the following day. First, more information is needed to assess the movement of planktonic community in and out of the lagoon. This will require around the clock operation of the plankton pump. The second reason is to troll for pelagic fish in one of the better fishing areas in the lagoon. It is hoped that sample collection, in this case, can be combined with recreational fishing by the ship's personnel. Third, Nallu Islet differs in soils and dominant vegetation from other islets in the atoll. The shore party will make limited collections here and will spend much of the time aboard the ship processing samples.

Kabellie Islet is one of the principal study areas. Most of the samples collected previously should be processed by

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the time the ship moves to Kabelle, thus freeing the ship to make plankton hauls outside the lagoon, again to aid in assessing the vertical movement and relative importance of oceanic plankters in the lagoon. If necessary, one member of the shore party will remain aboard to finish processing samples.

On the fourth day at Rongelap the ship will return to Kabelle and will remain there until the morning of the sixth day. By the afternoon of the fourth day samples from Kabelle and neighboring Namooa will be ready for processing aboard ship and additional samples will be collected while the ship is at anchor. During this time the plankton pump will be operated for a 24-hour period with the intake lowered and raised to varying depths perhaps as often as every 15 minutes and at least each hour. These collections should confirm or deny conclusions reached on the plankton community in this area based on previous observations. Plankton nets will also be towed from a skiff in the channel north of Kabelle to determine which organisms are coming in over the reef. Reef fish and invertebrates will be collected in this area.

Necessary sampling over a period of years in the Kabelle area alone may have had an impact on the biota. Therefore, it would be desirable if any recreation parties from the ship limit their activities to islands south of Namooa I. and north of Anirua I.

On the morning of the sixth day at Rongelap the ship will move to a convenient anchorage off Lowailal and Gejen Islets. Again a 24-hour plankton station will be made. These islets and Nam I., which will be visited the following day, received approximately ten times as much radiation as did Rongelap Islet. The islets also have relatively poor soils and aberrant plants, the origins of which has been the subject of controversy. In addition to repetition of sampling done here in the past, special efforts will be made to collect samples suitable for analysis by autoradiography.

Activities at and near Nam I. on the seventh day at Rongelap essentially will repeat those of the previous day with the exception of a reef-fish collection.

The overnight lagoon plankton collections off West Pass on the eighth day will be particularly important in providing information for the reevaluation of conclusions that have been reached concerning the horizontal distribution of copepods in the lagoon. It has been estimated that about one-fourth of the water leaving the lagoon flows through West Pass. Durak I.

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has been chosen for shore collections since it is comparable with Rongelap I. as to levels of radioactivity, soil types and vegetation yet is uninhabited and relatively undisturbed by human activity.

The following day the shore party will board the ship off Burek. The ship then will proceed to anchor off Rongelap I. Collections from Burek will be processed while part of the shore party visits Jabwan at the west end of Rongelap I. to record the growth of tagged plants that have been under observation since 1958. The remainder of the scientific party will engage in a reef-fish collection and will conduct preliminary experiments in collecting benthic plankton associated with coral heads. On this day, Sunday, it is suggested that the ship's personnel take the opportunity to visit Rongelap Village. In the interests of "public relations," those who have time might challenge the Rongelapese to a softball game. They are excellent ball players and always enjoy a good game, but they are chronically short of equipment.

This day will be the last for collection of samples other than plankton. The following day the ship will proceed to Kabelle I. hauling a midwater trawl enroute through the swept channel in the lagoon. After dropping the shore party at Kabelle Islet, the ship will leave the lagoon through the Northeast Pass and spend the remainder of that day and night pumping and midwater trawling east, south and west of the atoll.

Early the following morning the ship will depart for Eniwetok. In the meantime, the shore party at Kabelle will complete observations and measurements and will be picked up by aircraft to rejoin the ship at Eniwetok. There the samples will be packed for shipment to the home laboratory in Seattle.

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TENTATIVE SCHEDULE FOR RONGELAP BIOLOGICAL RESURVEY

August - September, 1963

Date of 180° W	Date of 180° W	Day No.	Shore Party (6 men)	Advance Ship Party (2 men)	Ship Party (4 men)	Ship Movements	Day No.
SUN Aug			Lv Seattle P.M. Arr Hono P.M.	Lv Seattle P.M. Arr Hono P.M.			
MON Aug			Hono Booking	Hono Booking			
TUE Aug			Lv Hono (Prob. P.M.)	Lv Hono (Prob. P.M.)			
WED Aug	THU 8 Aug		Arr Kwaj (Prob. A.M.)	Arr Eniwetok (Prob. A.M.)			
THU Aug	FRI 9 Aug	1	Kwaj-Rongelap I. Via UF-2.	Eniwetok Prepare to outfit ship.			
FRI Aug	SAT 10 Aug	2	Rongelap I.	Eniwetok	Lv Seattle P.M. Arr Hono P.M.		
SAT 0 Aug	SUN 11 Aug	3	Rongelap I.	Eniwetok Henry I. time permitting.	Hono Booking		
SUN Aug	MON 12 Aug	4	Rongelap I.	Eniwetok	Lv Hono (Prob. P.M.)		
MON 2 Aug	TUE 13 Aug	5	To Weobiji I. and Eniaetok I. via sailboat.	Eniwetok	Arr Eniwetok (Prob. A.M.)		
TUE 3 Aug	WED 14 Aug	6	Eniaetok I.	Eniwetok Board ship P.M.			
WED 4 Aug	THU 15 Aug	7	Return to Rongelap I. A.M.	Enroute Eniwetok-Rongelap	Depart Eniwetok for Rongelap ~ 0800.		1

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TENTATIVE SCHEDULE (Continued)

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Date of 180°	Date W of 180°	Day No.	Shore Party (6 men)	Advance Ship Party (2 men)	Ship Party (4 men)	Ship Movements	Day No.
THU 15 Aug	FRI 16 Aug	8	Rongelap I. Load and prepare samples aboard.		Obtain surface plankton samples on last hour's approach to Rongelap I. and inside pass.	Arr Rongelap I. ~ 1400. Anchor off village.	2
FRI 16 Aug	SAT 17 Aug	9	Mellu I. Sleep aboard.		Plankton pumping in pass. Trolling in pass.	Proceed to N.E. Pass. Anchor in pass.	3
SAT 17 Aug	SUN 18 Aug	10	Kabelle I. Sleep ashore.		Plankton pumping and mid-water trawl hauls.	A.M. Proceed to Kabelle I. Drop off shore party. Go out through N.E. Pass for night plankton hauls.	4
SUN 18 Aug	MON 19 Aug	11	Kabelle I. Board ship 1700. Prepare samples aboard, Sleep aboard.		24 hour plankton station.	A.M. Enter N.E. Pass Return to Kabelle I. Anchor.	5
MON 19 Aug	TUE 20 Aug	12	Kabelle I. Go ashore 0700. Board ship 1700. Sleep aboard.		Plankton hauls from skiff in interisland channel. Fish collection.	Remain at Kabelle I.	6
TUE 20 Aug	WED 21 Aug	13	Lomuila I.-Gejen I. Sleep aboard.		24 hour plankton station.	A.M. to Lomuila I. Anchor off Lomuila I.	7
WED 21 Aug	THU 22 Aug	14	Naen I. Sleep aboard		24 hour plankton station.	A.M. to Naen I. Anchor off Naen.	8

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TENTATIVE SCHEDULE (Continued)

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Date of 180°	Date of 180°	Day No.	Shore Party (6 men)	Advance Ship Party (2 men)	Ship Party (4 men)	Ship Movements	Day No.
THU 22 Aug	FRI 23 Aug	15	Burok I. Sleep ashore.		Plankton pumping Naen I. to Burok I. and at anchor	A.M. to Burok I. Drop shore party. Return to West Pass. Anchor as close to pass as possible.	9
FRI 23 Aug	SAT 24 AUG	16	Open Sleep aboard.		Open	A.M. to Burok I. Pick up shore party. Proceed to Rongelap I. (May have to wait until afternoon for proper light).	10
SAT 24 Aug	SUN 25 Aug	17	Jabwan I (Sailboat Lv for Kabelle I.)		Open	Remain at Rongelap. (Softball game, Rongelapese vs. crew and scientific party).	11
SUN 25 Aug	MON 26 Aug	18	Rongelap I. and Kabelle I. UF-2 pick-up 2 men and samples at Rongelap I. Fly to Kwajalein.		Midwater trawl hauls, plankton pumping.	A.M. Proceed to Kabelle I. Midwater trawl haul enroute. Drop shore party. Go out through N.E. Pass. Plankton hauls east, south and west of Atoll.	12
MON 26 Aug	TUE 27 Aug	19	Kabelle I.		Enroute Eniwetok.	~ 0600 Proceed to Eniwetok.	13
TUE 27 Aug	WED 28 Aug	20	Kabelle I. Island 13		Eniwetok Off load.	Arr Eniwetok	14

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TENTATIVE SCHEDULE.(Continued)

Date of 180°	Date W of 180°	Day No.	Shore Party (6 men)	Advance Ship Party (2 men)	Ship Party (4 men)	Ship Movements	Day No.
WED 28 Aug	THU 29 Aug	21	Pick up at Kabelle I. by UF-2. Proceed to Eniwetok.	Sample preparation. Packing.			
THU 29 Aug	FRI 30 Aug			Packing.			
FRI 30 Aug	SAT 31 Aug			Lv Eniwetok			
SAT 31 Aug				Arr Hono			
SUN 1 Sept				Lv Hono			
MON 2 Sept				Arr Seattle			

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LIST OF PERSONNEL

	<u>Specialty</u>
Dr. Kalschov (NMI) Busham*	Invertebrate Zoology
Mr. Richard F. Billings	Soils
Dr. Lauren R. Donaldson*	Fisheries
Dr. Thomas S. English*	Oceanography
Dr. Stanley P. Gessel	Soils
Dr. Edward S. Heis*	Invertebrate Zoology
Mr. Conrad V.W. Mahalan*	Biological Oceanography
Mr. James H. Nishitani	Botany
Dr. Ralph F. Palumbo	Algae
Dr. Richard B. Walker	Plant Physiology
To be filled	Entomology
To be filled*	Productivity
Trust Territory Representative*	

* Indicates ship passengers from Eniwetok to Nongalap.

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AIR SUPPORT REQUESTED
(Approximate Dates)

1. Transportation between Seattle and Honolulu will be by commercial carrier and will be provided by the University of Washington.

2. **MARS**

6 Aug.	Honolulu-Kwajalein	6 men	600 lbs. equipment and supplies
	Honolulu-Eniwetok	2 men	600 lbs. equipment and supplies
11 Aug.	Honolulu-Eniwetok	4 men	300 lbs. equipment and supplies
26 Aug.	Kwajalein-Honolulu	2 men	200 lbs. samples
30 Aug.	Eniwetok-Honolulu	10 men	800 lbs. samples

3. **UF-2**

8 Aug.	Kwajalein-Rongelap I., Rongelap Atoll	6 men	600 lbs. equipment and supplies
25 Aug.	Rongelap I., Rongelap Atoll-Kwajalein	2 men	200 lbs. samples
28 Aug.	Kaballe I., Rongelap Atoll-Eniwetok	6 men	300 lbs. equipment and samples

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