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PRELIMINARY STATEMENT OF THE PROPOSED PROGRAM
FOR MARINE SURVEY UNIT, SECTION 19

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PRELIMINARY STATEMENT OF THE PROPOSED PROGRAM
FOR MARINE SURVEY UNIT, SECTION 19

I. Introduction

When the weapons testing program was initiated at Bikini Atoll in the summer of 1946, the Applied Fisheries Laboratory, University of Washington, began exploratory studies on the nature of biological contamination from radioactive materials. These studies have been continued at Bikini, both the field studies and the laboratory work contributing to an understanding of the problems presented.

In 1948 the weapons testing program was shifted to Eniwetok Atoll and the radiation studies of the Laboratory were expanded to include the Eniwetok site.

The results of the studies conducted to date have been summarized in reports by the Applied Fisheries Laboratory. A list of these reports is attached.

The incompleteness of the studies that have been conducted so far is apparent. Field parties have measured the extent of the radiological contamination at the time of the test, then resurveyed the area three months, a year or more later, leaving a gap in the information essential to an understanding of the very nature of the problem.

The changing design of weapons, conditions of detonation, and size of weapons tested make it essential that continued effort be expended to evaluate the biological effect of each variation in the test program.

II. Proposed Program

In the forthcoming tests, the scientists of Marine Survey Unit, Section 19, would attempt to carry out a biological-succession survey of one or more sites near the test area before the test, immediately following the detonation, and almost continually during the biotic-recovery phases after the test.

To carry out this study a location in the atoll near enough to the test site to be contaminated but far enough away to survive the blast is needed. Such a site should be reserved for the marine survey study.

III. Operations

The proposed study would be designed to fit into the test program in such a way that preceding or following tests would not interfere with its completion.

It would seem then that the radiobiological studies before and after the last big shot, either at Bikini or Eniwetok, should be planned with great care to minimize the possibility of contamination from other tests in the samples.

Before the test an inventory of the plant and animal life, previous radiation contamination, physical environment, emergent area, intertidal zone, and adjoining littoral areas would be made.

Immediately following the test, a study of the changes in the fauna and flora would be made as the immediate effects of the test became manifest.

Following the initial destructive phase, repopulation of the selected area would be evaluated.

IV. Sites

The sites selected for the biological succession studies would depend upon the test site and the size of the detonation. The use of the Operation Ivy "Mike Shot" site for a detonation of like magnitude could be evaluated from a study transect on Aaraanbiru Island and the region adjacent to the island.

The site should have a zone of well-vegetated emergent area and reef and lagoon sections containing the life zones typical of the atoll.

A strip at least 1,000 feet wide from the outer reef across the island and extending out into the lagoon to deep water should be reserved for this study.

A second site, such as the area around Mui Island, should be reserved as a "control" area. It is realized that these two sites are not ecologically identical, one being on the upwind

side and the other downwind, but the seasonal and cyclic changes common to the atoll could be evaluated at Mui quite independently of the changes induced by the test program in the northern and eastern sites.

V. Support Required From the Task Group

- A. The usual logistic support of clearance, passports, health examination, basic information on problems of the tests, with access to the physical measurements needed to evaluate the biological problem.
- B. Transportation from the continental United States to the test site and return for personnel and equipment.
- C. Transportation around the test area and to adjacent areas, as needed, to carry out the study. The use of air and surface transport, i.e., an LCM and helicopter as needed.
- D. Living facilities on Parry Island or on ships supporting the Task Group.
- E. Laboratory space at the Eniwetok Marine Biological Laboratory (being completed at Eniwetok for the Atomic Energy Commission Division of Biology and Medicine).
- F. Support facilities for photography in air-mapping of the selected sites.

G. Supplies from the supply department as needed to carry out the operations. These should include office supplies, 10 sacks of cement, supply of breathing air (2,000 pounds pressure), dry ice, supply of ice (10 pounds daily) reefer space, lumber, etc.

VI. Personnel Assigned to Marine Survey, Section 19

A. Field party during the initial phases of the problem would be composed of six (6) professional radiobiologists.

These men would represent the following specialties:

1. Tropical botany and marine algae
2. Marine invertebrates
3. Marine plankton and water chemistry
4. Tropical marine fish
5. Land vertebrates
6. Soils and climatology

B. Following the initial phases of the problem the field party would be reduced to two (2) men. A rotation system would be worked out so that the personnel would be changed every two months.

C. To aid the professional staff provided by the Atomic Energy Commission, under contract AT(45-1)540, the services of a labor pool are needed. From one to six men from this pool, as needed, should be provided.

VII. Time Schedule

A. Preshot--two weeks

This period of operations is to be devoted to assembly of equipment, selection of exact test strips, mapping the area, and collecting the samples for background determination.

B. Postshot--two months

This period is to be used for a study of the initial succession of changes that follow the test.

C. Follow-up phase--six to eight months

This period will provide for continued study by a reduced staff of the recovery and repopulation of the test site.

VIII. Budget

- A. The basic support for the program is to be provided by the Atomic Energy Commission through their contract with the University of Washington. This contract will provide for the salaries, expenses, insurance, etc. for the personnel. Specialized equipment needed for the study will also be furnished by this contract.

- B. Support services will be supplied by the Task Group. These services will be essentially the same as those listed in Section V. "Support Required From the Task Group."

Bikini and Eniwetok Reports of the Applied Fisheries Laboratory

- Donaldson, L.R. The evaluation of the effects of atomic energy (bombs) on aquatic organisms, (1946).
- Donaldson, L.R. et al. Radiobiological studies Bikini Atoll June 12 to August 14, 1946, (Preliminary report) S-001 - Appendix XIV, (1946) (Secret)
- Donaldson, L.R. Radiobiological resurvey of Bikini Atoll during the summer of 1947. UWFL-7 (1947)
- Donaldson, L.R. Preliminary outline of a program for the second radiobiological resurvey of Bikini Atoll during the summer of 1948 to be sponsored by the Atomic Energy Commission and the United States Navy. UWFL-10 (1948)
- Donaldson, L.R. et al. Concentration of active materials by hydroids in the Bikini Lagoon during the summer of 1947. UWFL-11 (1948)
- Applied Fisheries Laboratory Bikini radiobiological resurvey of 1948. UWFL-16 (1949)
- Donaldson, L.R.
Seymour, A.H.
Donaldson, J.R. Radiological analysis of biological samples collected at Eniwetok May 16, 1948. UWFL-18 (1949)
- Applied Fisheries Laboratory Eniwetok radiological resurvey July 1948. UWFL-19 (1949)
- Applied Fisheries Laboratory Proposed program of study of radiation biology at Bikini and Eniwetok during the summer of 1949. UWFL-20 (1949)
- Donaldson, L.R. Suggestion for program of radiological resurvey of the Bikini-Eniwetok area during July and August of 1950. UWFL-22 (1950)
- Applied Fisheries Laboratory Radiobiological survey of Bikini, Eniwetok, and Likiep Atolls - July-August 1949. UWFL-23 (1950)

- Hines, N.O. Bikini report. The Scientific Monthly, Vol. LXXII, No. 2, pp. 102-113, (1951)
- Applied Fisheries Laboratory The need for continuation of studies of radiation contamination of biotic forms at the Bikini and Eniwetok testing grounds. UWFL-28 (1952)
- Applied Fisheries Laboratory Biological monitoring program for Eniwetok prepared for the Bio-Medical Test Planning and Screening Committee. UWFL-30 (1952)
- Biddulph, O. and Cory, R. The relationship between Ca^{45} , total calcium and fission product radioactivity in plants of Portulaca oleracea growing in the vicinity of the atom bomb test sites on Eniwetok Atoll. UWFL-31 (1952)
- Applied Fisheries Laboratory Suggested programs for the biological monitoring of Eniwetok Atoll before and after the testing program with a resurvey of Bikini Atoll. UWFL-32 (1952)
- Biddulph, S. and Biddulph, O. A description of tumors on Ipomoea tuba from the A-bomb test sites on Eniwetok Atoll. Appendix to UWFL-23 (AECD 3446) (1953)
- Applied Fisheries Laboratory Radiobiological studies at Eniwetok Atoll before and following the Mike Shot of the November 1952 testing program. UWFL-33 (1953) (Confidential)
- Applied Fisheries Laboratory Work in progress and planned for the Fiscal Year 1954 at the Applied Fisheries Laboratory, University of Washington. UWFL-34 (Section III) (1953)

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