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SUMMARY OF OPERATIONAL PHASES FOR PROJECT 40 410994
OF OPERATION HARDTACK

PROGRAM 40

Radiobiological Survey
U. S. Atomic Energy Commission
Division of Biology and Medicine
Allyn H. Seymour, Program Director

By

Lauren R. Donaldson
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Director

Laboratory of Radiation Biology
University of Washington
Seattle, Washington

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OPERATION HARDTACK
PROJECT 40

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SUMMARY OF OPERATIONAL PHASES FOR PROJECT 40 OF OPERATION HARDTACK

Objectives

To determine, quantitatively and qualitatively, the presence of radioisotopes in the biota at the test site, in the northern Marshalls, eastern Carolines, and other islands as far westward as the Palaus. From these determinations estimates can be made of the geographical distribution of radioactive contaminants on land and in the ocean; of the radioactivity in foods eaten by the natives; of radioactivity in tuna and other fish of the commercial fisheries; of the concentration of specific isotopes by organisms and tissues; of the biological fate of long-lived isotopes (from pre-test collections); of the vertical and horizontal distribution of contaminants in the ocean; and of other relationships. *

Project 40.1 - Pre-test Surveys

Present levels of radiation at Eniwetok and Rongelap Atolls will be determined by thorough surveys of the two areas. Samples of plants, animals, soil and water are to be collected and sent to the laboratories for evaluation of residual radioactivity.

Time schedule: February 9 - March 16, 1958

Support facility: USS Plumas County, LST 1083

(The Rongelap phase of this operation will be carried out with Dr. Robert Conard, Brookhaven National Laboratory, and members of the medical team for studies on the native health program).

* Letter from Dr. A. H. Seymour, U. S. Atomic Energy Commission, Division of Biology and Medicine, to Lt. Col. R. I. Schnittke, Division of Military Application, February 19, 1957.

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Personnel:

Edward Held, group leader

Kelshaw Bonham

Stanley Gessel

Paul Olson

Dale Cole

Gary Baker

Project 40.2 - Test Operation Surveys: Lagoon - Atoll studies.

During the testing program specific projects at Eniwetok Atoll will be evaluated as follows

(a) Plants and animals from the islands proper and from the reef, especially food items, as well as water, plankton and soil samples will be collected and quantitative measurements of radioactivity completed on all samples. A selected portion of the samples will be chosen for analysis of specific isotopes to add to the basic knowledge of trace mineral uptake by the forms in the island-lagoon environment.

(b) Studies on the populations of rats on Janet Island to evaluate the soil-plant-rat-isotope relationship will be undertaken.

Time schedule: April 12 - July 15, 1958

Support facility: Eniwetok Marine Biological Laboratory

Transportation to the local areas by land, water and air is needed.

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Personnel:

A rotation system will be worked out so that a minimum of two and a maximum of four staff members will be at the EMBL at all times during the operations for Project 40. 2.

Kelshaw Bonham

Simeon Cantril

William Champion

Lauren Donaldson

Ronald Eisler

Edward Held

Timothy Joyner

Frank Lowman

Paul Olson

Ralph Palumbo

Donald Weeks

Arthur Welander

Project 40.3 - Oceanographic Surveys

The U. S. Hydrographic Office, Office of Naval Research, and the Laboratory of Radiation Biology will carry out a cooperative program to evaluate the physical and biological aspects of the underwater open-ocean device, Wahoo. Biological measurements will include those for plankton, fish, and water to determine the amount, kinds, and movement

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of radioactive materials.

Time schedule: Pre-shot survey April 20 - April 30, 1958

Post shot survey May 15 - June 4, 1958

Supporting facility: USS Rehobeth

Personnel:

Frank Lowman, group leader

Ralph Palumbo

Arthur Welander

Donald Weeks

Project 40.4 - Pacific Proving Ground Environs Survey

The problems of evaluating the impact of radioactivity resulting from the weapons testing program are not confined to the Pacific Proving Ground but extend to the general area of the western Pacific Ocean. The weather stations operated as a part of the test program increase the facilities for measuring the fallout that may occur, and the support facilities for the weather stations provide a means of transportation for periodic visits for biological sampling.

Time schedule: During the test program and post test period for three (3) weeks.

Support facilities: Eniwetok Marine Biological Laboratory for a base of operations. Weather stations on Ponape, Kusaie, Tarawa, Ugelang, and Rongelap Atolls.

Personnel:

Arthur Welander, in charge

Ronald Eisler

Timothy Joyner

Project 40.5 - Tuna Monitoring Program

The economic importance of the tuna fishing in the western Pacific Ocean dictates the need for a careful study of the possible uptake of radioactive materials by fish entering the commercial fisheries. Sampling of the commercial fishery catches as landed in Japan offers the best means of obtaining the extensive coverage required to sample the area.

Time schedule: May 1 - September 1, 1958

Support facilities: Tuna Fishing Industry

Personnel:

Lauren Donaldson, in charge

Laboratory and field personnel to be selected.

Project 40.6 - Western Pacific Ocean Radiological Survey

Following the completion of the testing program, the region from the Pacific Proving Ground westward to Guam will be surveyed to determine the amount, kinds and extent of radiological contamination of the western Pacific Ocean. The upper (mixed) layer of the

ocean will be sampled at stations on a grid at about 50-mile intervals. Some stations will include water, plankton and fish samples from depths down to 200 meters.

Time schedule: Four days after the last test for a period of about three weeks. The exact time depends upon the extent of the area to be covered and the speed of the survey ship.

Personnel:

Frank Lowman, group leader

Ralph Palumbo

Donald Weeks

Simeon Cantril

William Champion

Project 40.7 - Rongelap Radiation-Ecology Study

The long-range radiation-ecology study of Rongelap Atoll will be continued. Major emphasis will be upon studies of the soil-plant relationship, aquatic bird populations and mineral transport from the sea to the islands, as well as evaluations of the uptake of specific isotopes by plants and animals used by the native people for food.

Time schedule: August 20 - September 10, 1958

Support facilities:

Eniwetok Marine Biological Laboratory

Holmes and Narver vessel LSM-444

Personnel:

Edward Held, in charge

Six senior scientists and graduate student
assistants.