

April 19, 1963

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

Dear Dr. Wolfe:

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In response to your suggestion of April 9, we have reviewed the Laboratory's past and present programs in an effort to determine how much of the Laboratory's total effort has been devoted to "crash" programs or to special field expeditions or scientific consultations that were beyond the normal flow of Laboratory inquiry.

The Laboratory, by tradition, has been on call for special services to the Atomic Energy Commission and, in certain cases, to other agencies whose interests parallel those of the Commission. These services have been used consistently and with considerable frequency over the years because the Laboratory, particularly in its Pacific studies, has accumulated an unparalleled familiarity with the environment in which nuclear activities have been conducted. In addition, the Laboratory's specific interest in aquatic studies is unique among Commission-sponsored agencies, and thus its services have been required repeatedly in programs that were planned at the highest levels and which the Laboratory could not have anticipated in its plans for budget and staff. In such instances, the Laboratory has been required to turn from its regularly scheduled investigations to make whatever field studies might currently be required, and it is this combination of experience and flexibility that has been characteristic of the Laboratory's performance.

In reviewing the occasions in which the Laboratory has been requested to perform special missions for the Commission, the "crash" programs have been considered to be those which either were of an emergency nature or involved the Laboratory in ways that could not be anticipated in the preparation of the continuing programs and budgets. It must be recognized that in many

cases, beginning with the very earliest years of the Laboratory's experience, the "crash" programs subsequently became regularly-supported aspects of the total activity. This was true, generally, of the Laboratory's continuing involvement in the nuclear test programs in the Pacific. It was true, specifically, of the Laboratory's work at Rongelap, where an emergency monitoring incident eventually became a long-term bioenvironmental study of interest to the Commission. These developments are attributable to the fact the Laboratory never considered itself merely engaged in monitoring, but rather attempted in every possible instance to meet the immediate needs of the Commission and at the same time to extract from the immediate situation all available information of a basic nature.

The periods and programs in which the Laboratory has been asked, over the years, to provide special services may be summarized as follows:

- 1946 Operation Crossroads: The Laboratory, which for three years had been developing studies of the effects of X-radiation on aquatic biota, was drawn into the Pacific during the first of the nuclear test programs. This occurred at the time the AEC was being created by the Atomic Energy Act of 1946, but this Pacific experience set the pattern for later environmental studies at remote field sites.
- 1947 Bikini Resurvey: The staff was called from laboratory studies to participate in Navy-supported evaluation of Bikini Atoll.
- 1948 Operation Sandstone: Eniwetok Atoll, the site of the 1948 Sandstone test series, was subjected to post-test evaluations. The Laboratory made a new survey of Bikini.
- 1949 Bikini-Eniwetok Surveys: New examinations of the test atolls were made at the request of the Commission. Program emphasis now was shifted almost entirely to the Pacific, and residual work in X-radiation virtually ceased.

- 1950 Eniwetok Survey: Plans were made for a more elaborate examination of the environmental problems, but the pressure of the Korean War forced cancellation of Navy support after program arrangements had been completed by the Laboratory in response to AEC request.
- 1951 Operation Ranger: Four members of the Laboratory staff were sent to the Nevada Proving Ground to work with monitoring staffs there.
- 1952 Operation Ivy: The Laboratory team, at the request of the Commission, conducted biological studies at Eniwetok before and after test Mike, the first thermonuclear detonation.
- 1954 Operation Castle: Because nuclear test programs in the Pacific had come to be expectable parts of the Laboratory's effort, elaborate preparations were made in 1954 for biological studies to be conducted before and after a thermonuclear test shot scheduled at Bikini on March 1. The erratic fallout from this shot, which seriously contaminated Rongelap Atoll, immediately involved the Laboratory in emergency monitoring conducted at the expense of the projected studies and led to a series of subsequent evaluations which continued periodically for almost three years.
- Consultations with the Japanese: The 1954 fallout, by contaminating a Japanese fishing vessel in the vicinity of Rongelap, induced a "tuna panic" in Japan and led to serious disruption of the Japanese political and economic balances. In consequence, the Director of the Laboratory was one of two persons sent to Japan at the express request of the State Department and the Atomic Energy Commission to consult with the Japanese, to evaluate the Japanese problem, and to represent the United States in a tense international situation.
- 1955 First Ocean Survey: The Japanese, anxious to determine the extent of contamination from United States tests, conducted an ocean survey westward from the

Marshall Islands between May and July, 1954. When a similar United States survey was conducted early in 1955 aboard the U. S. Coast Guard cutter, Roger B. Taney, the Laboratory participated in the organization of the cruise and was represented on the scientific team.

- 1956 Operation Redwing: At the request of the Commission, the Laboratory organized and conducted surveys of the ocean during and after the nuclear test series of 1956. These surveys, made aboard the U.S.S. Walton and the U.S. S. Marsh, were activities beyond the Laboratory's normal studies and represented the first occasion in which the United States attempted to document the levels of radioactivity placed in the ocean by nuclear tests.
- 1957 Rongelap Repatriation: After 1954, the Laboratory had been continually involved in the assessment of the Rongelap contamination. The Laboratory conducted the assessments on which it was determined that Rongelap was safe for a resumption of human habitation, and members of the staff were among the consultants involved in the preparation of Rongelap for the return of the native population.
- 1958 Operation Hardtack: The depth of the Laboratory's emergency experience at Rongelap suggested that studies of the atoll be continued as a formal program providing, for the first time in history, a complete documentation of the biological developments at a place subjected only one time to a heavy, but sublethal, dose of radioactivity. Such a program was organized early in 1958, but meantime the Laboratory was asked by the Commission to conduct new ocean surveys in connection with the 1958 nuclear test series, Operation Hardtack. It was on certification by the Laboratory, in August, 1958, that contamination was at minimum levels that Joint Task Force Seven ordered the disestablishment of the proving ground danger area and brought to a close the nuclear tests in the Marshalls.

Japanese Tuna Monitoring: To provide a broad view of the degree of possible contamination of Pacific tuna (because the question still worried the Japanese), the Laboratory made arrangements with a member of a Japanese laboratory to ship to Seattle samples of tuna brought to Japan by Japanese fishing vessels working in various parts of the Pacific area. This arrangement provided an international concurrent approach to the analysis of tuna, but it was a program apart from the Laboratory's normal radiobiological interests.

Waste Disposal: Because of its experience in aquatic studies, the Laboratory was represented in deliberations of the Committee on Oceanography of the NAS-NRC Subcommittee to consider the problem of low-level radioactive wastes in the Pacific off the North American coast.

Studies of Biological Effects: The Laboratory was represented by the Director in the National Academy of Sciences study of the biological effects of radiation, the Director of the Laboratory sitting with the Committee on the Effects of Atomic Radiation on Oceanography and Fisheries.

1959 Institutes on Radiation Biology: At the request of the National Science Foundation and the Commission, the Laboratory organized in 1959 summer and in-service institutes in radiation biology for college and high school teachers. The development of these institutes, although a welcome assignment, required diversion of staff time to administrative and instructional duties for which the Laboratory had to make special preparation and which have been continued in subsequent years at some cost in diffusion of staff effort.

Project Chariot: The Laboratory was called into consultation in 1958 when Project Chariot was being set up under the Plowshare Program. By 1959, the Chariot Committee, organized as a policy and advisory group, had become in fact an operating committee in which the Laboratory representative occupied a key position. The Laboratory involvement in this program continued until the publication of final reports in 1963.

1961 Congressional Testimony: The Director and the Associate Director of the Laboratory were called by congressional committees to present statements which required extensive sorting and assembling of scientific data. The Director appeared before the Senate Interstate and Foreign Commerce Committee in hearings on the Marine Sciences and Research Act of 1961. The Associate Director appeared before the Subcommittee on Research, Development, and Radiation of the Joint Committee on Atomic Energy.

International Consultation: The Director was named a member of the International Commission on Radiation Protection, serving with Committee V, on the handling of radioactive isotopes and disposal of radioactive wastes. In this capacity, he attended meetings abroad.

Hydra Program: At the request of the Commission the Laboratory assigned a key staff member to conduct biological samplings and analyses in an underwater experiment involving the use of radioisotopes conducted near San Clemente Island by the Naval Radiological Defense Laboratory.

1962 Operation Dominic: The Laboratory was asked by the Commission to conduct extensive sampling of food items during the 1962 test program at Christmas Island, and for this the Laboratory virtually had to drop all other programs. The scientific staff was increased by the addition of a number of persons brought from other laboratories and during the summer continuous sampling operations were conducted at Christmas Island, Johnston Island, and at various off-site islands in the South Central Pacific. Three ocean cruises were made by Laboratory personnel aboard the U. S. Fish & Wildlife Service vessel, the Charles H. Gilbert. When a special situation occurred at Johnston Island, the Laboratory was

involved in radiobiological analyses that were continuing in 1963.

Consultations with the Japanese: Upon the resumption of nuclear testing by the United States, the Japanese again indicated anxiety concerning the possible contamination of ocean resources. At the request of the Commission, in a program coordinated by the U. S. Department of State, senior members of the Laboratory staff went to Honolulu in August to offer assistance to members of a research party aboard a Japanese survey vessel, the Shoyo Maru. Laboratory personnel made extensive preparations and prepared a report for the Commission on their return.

1963 Rufus Program: Members of the Laboratory staff, at the request of the Commission, participated in site evaluations for the Rufus program and in the drafting of site evaluation reports.

The programs listed above are those which represented, at the times they were instituted, demands of a special nature made by official agencies (usually the Commission) because of the Laboratory's experience and readiness to perform these missions. It is true that, during the periods of nuclear testing in the Pacific, the Laboratory's association with the testing programs became expected and accepted. Nevertheless, there never was a test series in which the demands on the Laboratory could be predicted, and even the efforts to maintain continuing studies at the test sites frequently were altered or diverted by a new program requirement. In addition to the special demands, however, the Laboratory also, throughout the years, has been a participant in numberless professional and University-associated activities to which it found it necessary to respond because of its place in the University structure. Thus, beyond the "crash" requirements of official interest, members of the Laboratory staff have participated in local, state, or national activities of significance, and have felt to a unique degree the continuing pressure of public interest and the need to respond in ways that reached beyond the scientific obligations and entered the fields of public information, public relations, and public service.

Dr. John N. Wolfe

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Any summary such as this requires interpretation. We trust, however, that these notes will suggest the diversity of the Laboratory's responses to Commission needs over a period of some sixteen years.

Sincerely,

Lauren R. Donaldson
Director

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