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File Health Phys...
(1958)

U. S. Atomic Energy Commission
P. O. Box E
Oak Ridge, Tennessee

Attention: Mr. S. R. Sapirie

Gentlemen:

CLASSIFICATION CANCELLED
DATE 9-16-77
For the U. S. Energy Research
and Development Administration
Sm
Division of Classification *cb*

Subject: The Japanese Dosimetry Program

The tolerance of man to radiation has been established for the most part through a study of the effect of radiation on animals of various sizes and species. In order to obtain full meaning of these data and establish reliable permissible levels of exposure, it is highly desirable to have direct correlation between biological effects in humans and radiation dosimetry. It would be especially important and would yield significant results to normalize the large amount of chronic and acute data that have been collected through radiation exposure of primates with the data available on human exposure even if the normalization must, of necessity, be done only with acute effects. The investigation of the relationship between chronic and acute effects of radiation in primates and the study of the relative effectiveness of neutrons and gamma radiation were initiated a few years ago by a cooperative program between the U. S. Air Force and the Oak Ridge National Laboratory. This study has been continued by the U. S. Air Force at Austin, Texas. The obvious and only source of human data available for such a study is the information collected by the Atomic Bomb Casualty Committee and other on-the-spot studies that could be conducted in Japan. These data are of particular interest in that they provide a means of establishing a direct relationship between numerous biological effects of radiation, e.g., lethality, epilation, sterility, cataract production, leukemia, etc., and the corresponding dose from neutron and gamma radiation. Special incentive and additional motivation are provided at this time to make a careful study of the Japanese data because ORNL has developed methods of dosimetry which enabled us to demonstrate for the first time during the Teapot tests that accurate measurements of neutron and gamma ray dose can be made during weapons tests.

It is our proposal therefore to determine the dose received by the Hiroshima and Nagasaki victims so that these dose values can be correlated with the medical records, shielding, and physical location of the per-

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ADD signature 2/15/95
Single rereview of CCRP-docs
documents was authorized by DOE Office of
Declassification memo of August 22, 1994.

A-00430
Human Studies Project



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March 20, 1956

On October 12, 1955, a preliminary conference was held at Oak Ridge National Laboratory. Those present were Colonel John E. Pickering, U. S. Air Force School of Aviation Medicine; R. A. Charpie, K. Z. Morgan, G. S. Hurst, and R. H. Ritchie, ORNL; and William T. Ham, Jr., Radiation Cataract Committee, National Research Council. At this conference the possibility of employing the data on radiation dosimetry obtained in Operation Teapot to evaluate the doses received in Hiroshima and Nagasaki was discussed. It was pointed out that P. S. Harris of Los Alamos Scientific Laboratory had already made a preliminary examination of the data collected by the Atomic Bomb Casualty Committee in its relationship to the data collected by the ORNL Health Physics Division at the Teapot tests, and that this emphasized the need for a more extensive study. It was decided that:

- 1) It was necessary to examine carefully the data of the Atomic Bomb Casualty Committee that is available in the United States to determine if such a project is justified in terms of the human data available.
- 2) It was considered necessary for a small group of qualified people to go to Japan to collect data and study the situation carefully before a complete evaluation of the Atomic Bomb Casualty Committee data could be accomplished.
- 3) It would be extremely valuable to conduct a test in Nevada using weapons of the Hiroshima and Nagasaki variety and measure the dose of neutrons and gamma radiation in mock-up Japanese dwellings in order to estimate with considerable accuracy the dose received by the Japanese whose biological damage had been studied and whose location at the time of the blast had been determined.
- 4) Through personal discussion with Colonel Pickering and through telephone discussion with Wright Langham of Los Alamos, the Health Physics Division, the U. S. Air Force, the National Research Council, and the Los Alamos Scientific Laboratory came to common agreement that the project should be further pursued and recommended that Charles L. Dunham call a meeting in Washington of all interested parties.
- 5) Dr. Dunham was contacted and showed considerable interest in the project. He suggested, however, that we delay sending a group to Japan until after an inspection group, then in Japan, returned to the United States. This group has since returned.

On February 2, 1956, Dr. Dunham sent his representative, Robert Corsbie, to visit the ORNL Health Physics Division for the purpose of setting up an agenda for the Washington meeting; to review preliminary plans for the trip to Japan; and to discuss mock-up studies of the Japanese weapons to be used in Nevada.

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On February 23, 1956, a meeting was held in Dr. Dunham's office to discuss the above proposals. Representatives of the U. S. Air Force School of Medicine, the Los Alamos Scientific Laboratory, the Atomic Bomb Casualty Committee, the National Research Council, Radiation Cataract Committee, the Oak Ridge National Laboratory, the AEC Division of Biology and Medicine, and the Brookhaven National Laboratory were present. The following action was taken:

- 1) It was unanimously agreed that the project is worth-while.
- 2) In the opinion of Dr. Keith Cannan, Chairman of the NRC Division of Medical Sciences, and a member of the Atomic Bomb Casualty Committee, the project is quite feasible because the distance, shielding, and medical records of a large number of persons exposed in Japan are reliable. Dr. Cannan and Dr. R. W. Miller, also of the NRC Division of Medical Sciences, advised further pursuit of the problem.
- 3) Cannan, Miller, and Corsbie advised that the most expeditious manner of pursuing the project is to send a team of representatives to Japan to study the problems firsthand.

We propose that the Health Physics Division of the Oak Ridge National Laboratory participate in this project of determining the dose received by the Japanese victims. Our most important contribution in conjunction with the U. S. Air Force will be to determine the neutron and gamma ray dose received. We further recommend that two members of the Health Physics Division, G. S. Hurst and R. H. Ritchie, be cleared to join the team of investigators going to Japan for appraisal of the Atomic Bomb Casualty Committee's records. They have had extensive experience in radiation dosimetry and are highly qualified to participate in this mission. Your approval of their foreign travel as outlined on the attachments is therefore requested.

If the Atomic Bomb Casualty Committee's records are valid and sufficiently extensive, and if other necessary data are available, we would then propose that a future weapons test program in Nevada include weapons simulating those used at Hiroshima and Nagasaki. In the over-all program, shielding, distance, weapons yield, and type will have to be reconstructed. Certain compromises will have to be made in simulating conditions which existed at Hiroshima and Nagasaki, but there is a limit to such compromises if data are to be obtained from a Nevada mock-up experiment which will extend our knowledge significantly beyond that we now have from the Teapot tests. In any case, it would seem wise, as a first step, to send the team of investigators to Japan to collect data and examine them in relation to the Teapot data before any decisions are made concerning a mock-up program in Nevada. Should it be decided to proceed with such a mock-up program it is highly probable that the U. S. Air Force would participate in radiation dosimetry and in providing primates for exposure at selected positions.

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In order to pursue the Nevada program we would need the following:

- 1) Fifty grams of Np²³⁷ to be used as threshold detectors. It will be extremely difficult to procure this quantity of Np²³⁷ for tests in 1957.
- 2) Fifty kilograms of elemental B¹⁰ to be used as threshold detector shielding against thermal neutrons.
- 3) A \$100,000 supplement to the ORNL Health Physics operating budget during FY-57 or FY-58, depending on the time required to start the program.

At present the Oak Ridge National Laboratory does not assume any responsibility for procurement of the weapons or for conducting this proposed Nevada program.

Yours very truly,

UNION CARBIDE NUCLEAR COMPANY



Clark E. Center
Vice President

CEC:AMW:KZM:cbc

cc: R. A. Charpie
K. Z. Morgan (2)
A. M. Weinberg (2)
E. A. Bagley
L. P. Riordan
Hezz Stringfield



Attachments

FOREIGN TRAVEL - R. H. RITCHIE

Full Name: Rufus Haynes Ritchie

Date of Birth: September 24, 1924

Place of Birth: Blue Diamond, Kentucky

Residence Address: 114 Orange Lane, Oak Ridge, Tennessee

Connection with AEC: Assistant Chief, Radiation Dosimetry Section, Health
Physics Division, Oak Ridge National Laboratory

Business Address: Oak Ridge National Laboratory, Post Office Box P,
Oak Ridge, Tennessee

Access to Classified Information: Secret

Q Clearance No. OR-6133

Countries to be Visited: Japan

Proposed Itinerary:

- April 14 - Leave San Francisco via plane
- April 16 - Arrive Tokyo
- April 17-25 - Tokyo, Hiroshima, and Nagasaki, working as a
member of the Atomic Bomb Casualty Committee
team
- April 26 - Leave Tokyo via plane
- April 27 - Arrive San Francisco