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M. W. Boyer, General Manager

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June 16, 1952

Shields Warren, Director, Division of Biology and Medicine

MONTHLY STATUS AND PROGRESS REPORT, MAY 1952 -
DIVISION OF BIOLOGY AND MEDICINE

SYMBOL: EMA:RON

Transmitted herewith is the Monthly Status and Progress Report for
this Division covering the month of May 1952.

Enclosure:
Report

CC: J. H. Burchard

O'NEILL:emr

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ORGANIZATION & MANAGEMENT

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OFFICE	Admin.	Exec. Off.	Deputy Director	Director
SURNAME	O'Neill	Brown	Dr. Bugher	Dr. Warren
DATE	6/16/52	6/6/52	out of town	6/16

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MONTHLY STATUS AND PROGRESS REPORT

Division of Biology and Medicine

MONTH OF JAN, 1952

Weapons Test Activities

Structures Test Planning and Screening Committee. ()
The fourth meeting of the Committee was held on May 22 with representatives of Federal Civil Defense Administration, Public Buildings Service, Armed Forces Special Weapons Project, Sandia Laboratory and Ballistics Research Laboratory (Army Ordnance Corps) present. In addition to AEG members and invitees from the Divisions of Biology and Medicine, Construction and Supply, Reactor Development, and Organization and Personnel. Specific proposals of the civil agencies concerned with obtaining civil effects information from AEG continental atomic test operations were discussed. Those fall into the following categories: services and utility equipment experiments; vehicle experiments; communal and family type shelter experiments; and buildings and special tests.

Recommendations were made by the committee in connection with several of the proposals and are being implemented.

Test Structures Proposal. () Following staff discussions with Federal Civil Defense Administration, an official request has been made to AEG to include four test structures in the presently planned atomic test series to be held in the spring of 1953 at the Nevada Proving Ground. These structures are designed to furnish scientific and technical data on a variety of typical curtain walls and interior office partitions. As reimbursement to the Commission in connection with architect-engineering services, access roads, construction costs and camp site charges, the PCDA proposes to transfer to AEG funds in the amount of \$450,000.

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~~Class~~ DeGases Activities

ABC Communal Shelter. ~~_____~~ The urgency of completing construction of the proposed communal shelters at Hanford at an early date has been emphasized. In order to provide the best functional design for the construction, discussions were held with representatives of the Ballistics Research Laboratory of the Army Ordnance Corps at Aberdeen, Maryland. A series of model shock tube tests have been planned to determine the best configuration of shelter entrance to minimize entering blast pressures. Arrangements will be made to accelerate the planning for immediate construction at Hanford as these data are developed.

Research Activities

Radiation and Mutation Rates per Gene. (UNCLASSIFIED) In order to add to the field of knowledge of the effects of radiation on future generations, genetically determined stocks of the fly, *Drosophila*, are being developed in an AEC-supported study at Indiana University. A record of the rates of mutation of single genes will be made following radiation of the flies at increasing dose levels. As a result of the study, precise data on the genetic effects of radiation in animals more resistant than the mouse to radiation will be available for comparison with data being collected on the mouse at Oak Ridge. Similar studies on the genetic effects of neutron irradiation will also be undertaken at Indiana University.

Gamma for Mapping Isotope Distributions. (UNCLASSIFIED)
A camera which will map the distribution of radioactive isotopes in the body has been developed by the AEC-University of California group at Berkeley. The device is similar in principle to a pin-hole camera and utilizes several crystals as scintillation counters in the relative position of the photographic plate. It is presently being used to map metastases of thyroid cancer after injection of radioactive iodine in the body.

Study of Tree Disease by Radioactive Isotopes. (UNCLASSIFIED)
The method by which infected trees are killed is a difficult process to determine and therefore limits the use of control measures for prevention of disease-killing organisms in trees. Study of the rate of movement of radioactive isotopes in normal oak trees as compared to oak trees infected by oak wilt disease is being conducted at the AEC-University of Wisconsin project. Isotopes can be detected easily

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in the tree by means of radioautographs and can be used in concentrations which are not toxic. The mode of action of the Oak Wilt disease has thus been traced, and it is believed that trees are killed in the following way: The water and mineral nutrients move from the roots to the leaves in xylem vessels in the stems. The xylem vessels are tubes made from rows of cells, but these cells are dead in all the stems. However, these dead xylem cells are surrounded by small live Ray Cells. Recently, investigations on this project have discovered that when a tree is infected with the Oak Wilt disease, the Ray Cells grow prolifically and get into the xylem vessels and plug them up through uncontrolled growth. As these vessels are plugged, the life flow of minerals and water in the tree is retarded and as the symptoms progress the tree dies of starvation.

Industrial Health

1. Health Physics

Investigation of Radon and Radon Decay Products. (UNCLASSIFIED)

In the interest of reducing health hazards incidental to mining operations, an AEC-supported survey will be conducted by the U.S. Public Health Service in several western states. The survey will include some 300 uranium mines which will be examined by three teams of two men each. The principal objectives of the study are:

- a. To sample the radon content of the air in the various mines;
- b. To sample the radon decay products carried by the dust in the air of these mines; and
- c. To correlate concentrations of radon and radon decay products with ventilation and other related conditions of operation.

2. Industrial Medicine

Meeting of Industrial Physicians. (UNCLASSIFIED) The spring meeting of the AEC industrial physicians was held at Rochester, N.Y. on May 15-16. Attendance included physicians from 14 AEC installations and the following physicians from Canada and England:

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Dr. Ernest H. Denton, AEC Project, Chalk River, Canada; Dr. Katherine Williams, Atomic Energy Research Establishment, Harwell, England; and Dr. Andrew S. McLean, Division of Atomic Energy (Production), Capenhurst (near Chester), England.

Mutual problems encountered by the various industrial medical departments were discussed. Items of particular interest were: survey of need for industrial physicians in AEC program; health examination on test personnel; transmittal of medical data of visiting personnel to office headquarters; audiometric surveys; treatments of NaK burns; chronic beryllium poisoning; white-cell counts; toxic effects of lithium and tributylphosphate; design of first-aid decontamination facilities; fellowship program in industrial medicine and industrial hygiene.

3. Radiation Instruments

Visit of Chalk River Personnel. (UNCLASSIFIED)

Mr. John Hardwick (Chief, Electronics Branch), Atomic Energy Project, Chalk River, Canada, visited the Radiation Instruments Branch on May 8. Previously, he was given a comprehensive review of the status of American civil defense instrumentation by the Federal Civil Defense Administration. Members of the branch and a representative of the Civil Defense Liaison Branch briefed him on the relative responsibilities of the AEC and FCDA which is in contrast to the situation in both England and Canada where the Atomic Energy Projects have been assigned the full responsibility of developing monitoring instrumentation. Mr. Hardwick emphasized that his interest was primarily directed towards designs which would minimize both circuitry and battery complements with the result in increased stability and freedom from maintenance.

General

Isotopes for Cancer Program. (UNCLASSIFIED) The Commission recently announced a change effective July 1, 1952 in the program of free distribution of isotopes for cancer. Previously, radio-isotopes for cancer research and therapy were available free of production costs—only transportation and handling costs being charged to the users. Under the new policy, a charge of 20 per cent of production costs will be made. This change affects only the price and not the availability of isotopes; production will continue to meet all demands.

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The Advisory Committee for Biology and Medicine and the Advisory Committee on Isotope Distribution have agreed that a charge of 20 per cent of catalog prices would not hamper advances in this field, and would help indicate the future demand in relation to other cancer research and therapy tools.

During the remainder of the fiscal year, ending June 30, 1952, the Commission will make radioisotopes available for cancer studies without charge for production costs.

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