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M. W. Boyer, General Manager

March 14, 1952

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Shields Warren, M.D., Director
Division of Biology and Medicine

MONTHLY STATUS AND PROGRESS REPORT

SYMBOL: BMA:EDO

Transmitted herewith is the Monthly Status and Progress ^{Report} for the Division of Biology and Medicine for the month of February, 1952.

Attachment
Report

cc: J. H. Burchard
Division of Finance

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- #1 & #4 - Boyer
- #3 - Burchard
- #4 Laner
- #5,6,7 - Files
- #2- Dr. Bugher & Warren

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JOSE DIAZ	4-15-81
REVIEWED BY	DATE
WILBUR A. STRAUER	4-17-81
REVIEWED BY	DATE

BY: DICK KOOGLE 6-9-87

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SURNAME ▶	<i>Ron</i>	<i>AdJ</i>		<i>JCS</i>	
DATE ▶	3-14-52	3-14-52	3-14-52	3/18/52	

MONTHLY STATUS AND PROGRESS REPORT
DIVISION OF BIOLOGY AND MEDICINE
MONTH OF FEBRUARY 1952

(Note: Activities of the Division are reported in general accordance with the functions of the Division. An exception is made, however, in the case of Weapons Test Activities which cut across all Divisional functions.)

WEAPONS TEST ACTIVITIES.

Monitoring Program of Fall-out. Plans to measure radioactive fall-out during the Tumbler-Mapper tests are nearing completion. In addition to the network of weather stations collecting settled dust throughout the country, it is planned to have in the western half of the country eight mobile teams of two men each and two aircraft furnished by the Air Force. These teams will collect airborne as well as settled dust; particles will also be collected by cascade impactors for classification by size.

In the eastern part of the country, there will be a concentration of stations consistent with the high density of population and industry. As a result of the high activity found during previous tests, additional stations will be in operation surrounding Rochester, New York, which is also the center of the photographic industry.

Test Participation by FCDA. The Federal Civil Defense Administration has requested, by letter of February 8, Commission approval for the attendance of 75 Federal, State and Territorial civil defense officials at one of the Tumbler-Mapper series. Attendance would be on an unclassified basis and the FCDA is to be responsible for the transportation and housing, and direct expenses of its invitees. All individuals present at the operation under this proposal would be subject to AEC health and safety, and security regulations.

This request is being considered jointly with the problem of providing for press attendance on a similar basis. A staff paper consolidating recommendations with respect to attendance by both groups will shortly be submitted to the Commission for consideration.

CIVIL DEFENSE ACTIVITIES.

Tentative Design for AEC Communal Shelter. A tentative design of a communal shelter for Hanford has been prepared by the Civil Defense Liaison group and presented to the AEC Disaster Planning Coordinator. This design is based upon the type of structure tested at Operation Buster, described in the November Progress Report.

The current design, however, provides for revised ramp entrances, making them parallel to the axis of the shelter, blast traps, an emergency exit and vent, and other basic refinements dictated by the Buster test. The

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length has been increased to 50-feet for the accommodation of 50 persons per shelter. Reinforced concrete pipe or corrugated steel pipe will be utilized in construction.

This tentative design, which was reviewed by representatives of PCDA and the Department of Defense, is considered satisfactory if emergency construction is desired, to minimize hazards to personnel from blast, radiation and thermal effects of a 20 KT atomic bomb exploded 2,000 feet distant. However, further shelter tests will have to be conducted to confirm our estimates of the adequacy of the tentative design.

Project East River Meeting. (Unclassified). On February 7, representatives of the National Security Resources Board, Air Force, Air Force Special Weapons Project, Department of Defense, Navy, Rand Corporation, National Fire Protection Association and Stanford Research Institute met in New York to brief project "East River" personnel on the various aspects of atomic warfare.

Mr. H. L. Bowman, consultant to the Division of Biology and Medicine, represented the AEC at this meeting and reported on experience gained from studies made by the U. S. Strategic Bombing Survey in World War II. Mr. Bowman was the Director of the Physical Damage Division of USDBS.

RESEARCH ACTIVITIES

Studies of Sub-Human Primates. () The AEC and the National Cancer Institute under the guidance of the Committee on Radiation Studies of the National Cancer Advisory Council have been jointly sponsoring studies on sub-human primates. A meeting to report on the progress of these studies was held on February 27-28, 1952 at the Ohio State University Medical School, Columbus, Ohio. Dr. C. L. Dunham, AEC representative on the joint program, attended the meeting along with a group of NCI grantees and AEC contractor representatives engaged in the studies.

Material on the normal physiology and behavior patterns of the Rhesus monkey has been assembled for the benefit of the researchers in this field. Though a complete Lethal Dose curve has not been run, it would appear that the LD 50 for the Rhesus monkey will fall somewhere between 600 and 700 r for the given time intensity of the sources used, which is probably not very far from what would be expected in man from similar sources. Information was further exchanged on the method of care for these animals in laboratories.

This work is of importance to the NCI from the standpoint of carcinogenesis; to the AEC from the standpoint of biological effects of ionizing radiation; and to those interested in nuclear propelled aircraft from the standpoint of the effects of moderate doses of whole body radiation on performance and critical discrimination.

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Biomedical Program Directors Meeting. ([REDACTED] The Biomedical Program Directors of AEC met at Brookhaven National Laboratory on February 14 and 15, 1952.

The session opened with a classified symposium on tritium toxicity. Research reports from AEC laboratories were presented on physiological and toxicological studies of tritium in laboratory animals and in man. It appears that the major portion of all tritium water present as vapor in inspired air is rapidly taken up by the membranes of the lung. Tritium water absorption through the skin of man occurs at about the same rate that water normally is lost outward through the skin, which is reasonably rapid.

The biological half-time of tritium water in the body fluids of human beings ranges from 9 to 14 days on a normal water intake. Research at Los Alamos has shown that this half-time can be reduced to 2-1/2 days or less, by high water intake; this method leads to a possible means of treatment of accidentally exposed personnel. It was calculated that without treatment, about three milligrams of pure tritium water would be an approximate lethal dose to man.

Since all organic biological compounds contain hydrogen, tritium as a potential research tool is of major interest to biologists. Synthesis with tritium may be easier than with C-14, and there may be less stringent restrictions in its use in the research laboratory. Another factor is that tritium is inexpensive and available in large quantities. The cost of tritium is approximately 10 cents per millicurie as compared to \$37 per millicurie for C-14.

Following the tritium report, papers were given on the physiological and genetic effects of x-irradiation on plants, bacteria, and animals.

INDUSTRIAL HEALTH

Conference of Radioactive Measurements of Freight Shipments (Unclassified).

This conference was held at the New York Operations Office on January 30-31, 1952. Attending were representatives of the Washington Division of Biology and Medicine; the New York, St. Louis and Cleveland Offices of AEC; and the following companies: Middlesex National Lead, United Lead, Harshaw, Mallinckrodt, and Vitro.

The purpose of the conference was to study the problems associated with shipments of radioactive materials. The topics discussed included: (1) a thorough understanding of the need for decontamination of vehicles used in transportation of radioactive materials; (2) a uniform policy of decontamination methods and subsequent monitoring procedures; and (3) recommendations for interpretation of ICC regulations to effect more uniform and realistic policies.

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The recommendations drafted as a result of the conference are being submitted to appropriate Washington AEC offices and to the ICC for concurrence.

GENERAL

Brookhaven Master Construction Plan, (Unclassified). The BNL is in the process of preparing a Master Plan for BNL construction which will project the estimated requirements for facilities through approximately 1960. The AEC Area Manager has advised that a draft staff paper on the Master Plan is in preparation and will be submitted to the Division of Biology and Medicine, as Laboratory Coordinator, for review by interested Washington Division. The plan will then be presented to the Commission for consideration.

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