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AEC 129/25

May 22, 1950

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JANUARY THROUGH MAY 1950	
Note by the General Manager	

DELETED VERSION ONLY

1. Transmitted herewith for consideration by the Commission on Thursday, May 25, 1950, is the draft of the tenth Progress Report to the Joint Committee, covering the period January through May, 1950. A draft of the Foreword by the Commission will be circulated separately as AEC 129/26 on May 23, 1950.

2. Previous progress reports have been furnished the Joint Committee quarterly, in January, April, July, and October. When the Commission transmitted the last report, January 31, 1950, it indicated that the report would be submitted twice a year thereafter rather than quarterly. This proposal was approved by the Committee (see letter from the Executive Director, March 22, 1950, distributed as AEC 129/24). It was also agreed that the twice-yearly report would be submitted in May and December (rather than April and October) in order to correspond more closely with the period that the Congress is in session and also to avoid being contemporaneous with the public Semiannual Report to the Congress (submitted in January and July).

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CLASSIFICATION CANCELLED BY AUTHORITY OF DOE/OC 4/11/87

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3. Each section of the Progress Report has received the concurrence of the responsible division, including the Divisions of Military Application (Capt. Russell), Production (Bloch), Reactor Development (Hafstad), Research (McDaniel), Biology and Medicine (Derry), Raw Materials (Johnson), and Finance (Noble).

4. The Commission's attention is invited to the fact that the Progress Report makes no reference to three significant developments of the period under review, namely, the Fuchs case, the tripartite discussions by the Combined Policy Committee, and the new proposals concerning the custody of weapon components. These may be covered in the Foreword, if the Commission desires, but they are not covered in the report itself because they either do not concern substantive programs or have not yet reached a conclusive stage.

5. It would be helpful to Mr. Mullenbach if your changes of an editorial nature were written into the draft. This copy will be collected for use in preparing the final draft to be delivered to the Joint Committee on May 31, 1950.

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CARROLL L. WILSON
General Manager

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By authority of U.S. Atomic Energy Commission

Per *J. H. Noble, A. J. W. H.* Date *5/22/50*

Document No. LXXXI-51-24A

ATOMIC ENERGY COMMISSION

DRAFT LETTER TO THE JOINT COMMITTEE
ON ATOMIC ENERGY

1. Transmitted herewith is the ~~TOP SECRET~~ Progress Report of the United States Atomic Energy Commission covering the period - January - May 1950.

2. This is the tenth progress report of the Commission outlining the measures being taken to accomplish major program objectives. These were set forth initially in the Program Goals Report, November 15, 1947, and have been restated from time to time since then.

DOE ARCHIVES

3. With the present report we initiate the first of the series of twice yearly progress reports which will be submitted in May and December, superseding the quarterly reports previously furnished the Committee. As in the case of the quarterly reports, we are transmitting at this time only one copy. Additional copies have been prepared for the Committee's use and will be made available whenever desired.

CLASSIFICATION CANCELLED
BY AUTHORITY OF *C. T. [Signature]*
DATE *JUN 11 1974*

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~~RESTRICTED DATA~~

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By authority of the U.S. Atomic Energy Commission
Per _____ Date _____
Document No. _____

U. S. ATOMIC ENERGY COMMISSION
WASHINGTON, D. C.

PROGRESS REPORT TO THE
JOINT COMMITTEE ON ATOMIC ENERGY

JANUARY THROUGH MAY 1950

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May ____, 1950

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PROGRESS REPORT OF THE
UNITED STATES ATOMIC ENERGY COMMISSION
JANUARY THROUGH MAY 1950

PREPARED FOR THE
JOINT COMMITTEE ON ATOMIC ENERGY
OF THE UNITED STATES CONGRESS
DOE ARCHIVES

Washington, D. C.

May ____, 1950

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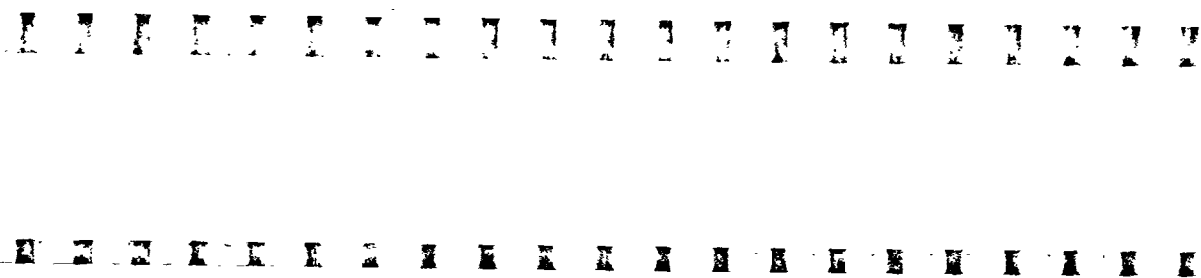
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Rose Marie James
signature

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PART VI

BIOLOGY AND MEDICINE

1. (UNCLASSIFIED). The principal aspects of the Commission's program of biology and medicine to receive emphasis during the next 12 months are:

- a. Civil defense liaison activities, including the development of radiation detection instruments.
- b. Studies to establish permissible levels of exposure and methods of radioactive waste disposal.
- c. Studies of radiation injury and long-term effects of radiation, including the work of the Atomic Bomb Casualty Commission in Japan.
- d. Training of health physicists in radiation protection.
- e. Study of the toxicity and metabolism of carbon 14 and tritium.

Civil Defense Liaison

2. The Commission's program in civil defense was outlined in testimony and statements submitted to the Joint Committee in the open hearing on civil defense matters held March 17, 1950. Progress in significant phases of the program since then is described below.

3. Instructor training courses. The Radiological Monitoring Courses at Brookhaven National Laboratory, at the Atomic Energy Project, University of California at Los Angeles, and at Oak Ridge began in March and April. There were 15 participants in the Brookhaven course, 12 at the University of California, and 21 at Oak Ridge. Similar courses will be given at two additional locations, Reed College, Portland, Oregon, commencing in June, and the Illinois Institute of Technology, Chicago, Illinois, beginning in July.

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4. One-week courses in the Medical Aspects of Atomic Warfare were held at seven locations during March, April and May and had the following participation:

<u>Institution</u>	<u>No. of students</u>
University of Rochester Atomic Energy Project	30
Johns Hopkins University School of Medicine	23
Argonne National Laboratory	25
Western Reserve University School of Medicine	23
University of Utah School of Medicine	8
UCLA Atomic Energy Project	27
University of Alabama	<u>8</u>
Total	144

5. Emergency radiation control program. Organization and training of the emergency monitoring teams continued under the jurisdiction of the Operations Offices. Allocation of stockpile radiation detection instruments to the teams was nearly completed. The Hanford Operations Office was engaged in assembling standard individual kits to be used by the four teams in that area. The New York Operations Office and the Oak Ridge Operations Office reviewed operating plans and manuals for their respective emergency radiation control programs.

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6. Technical information for the NSRB. The third and last report in the series to be abstracted from the Weapons Effect Handbook was forwarded to the National Security Resources Board on April 14, 1950, for use in their civil defense planning program. Radiation Detection Instruments is the subject of this interim report.^{1/}

^{1/} The report was transmitted to the Joint Committee by letter, April 13, 1950.

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Radiation Detection Instruments

7. In January the Radiation Instruments Branch, Division of Biology and Medicine, was transferred from Oak Ridge to its present location at the National Bureau of Standards, Washington, D. C. This move will facilitate general AEC-wide coordination in radiation detection instrumentation and will permit closer work with the Bureau on projects of mutual interest.

8. Contacts were made with 38 industrial concerns for the purpose of obtaining their ideas on the development of a simple, inexpensive radiological safety instrument. As a result of these, 27 proposals ranging from (approximately) \$3,500 to \$50,000 each in cost were received from 15 companies. These proposals suggesting the development of 9 different types of devices are being reviewed, and contractual action on several of the approaches is expected to be initiated.

9. Six projects for the development of simple, inexpensive radiation detection instruments were being carried on by instrument experts at various AEC laboratories:

a. An ionization chamber instrument about the size of a photographic light meter was developed by the Oak Ridge National Laboratory.

DOE ARCHIVES

b. The New York Operations Office developed an inexpensive Geiger counter dose rate meter capable of measuring up to 100 roentgens per hour of gamma radiation. This device is being production-engineered by an industrial concern, and it is anticipated that the instrument can be produced in quantity for less than \$15 each.

c. A dose-rate meter employing a quartz fiber electrometer is being developed at Argonne National Laboratories.

d. Brookhaven National Laboratory completed preliminary studies on portable scintillation counters and further development work will be done.

e. The Atomic Energy Project at the University of California at Los Angeles developed a color-changing device for measuring radiation, consisting of a number of capsules containing liquids which change color at predetermined total exposures.

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[REDACTED]

f. A liquid dosimeter is being developed at the University of Rochester's AEC facilities. The electrical conductivity of the liquid changes upon exposure to radiation, and the change is measured with an ohmmeter-type attachment calibrated in roentgens per hour.

10. In addition to these projects, the AEC sponsored a research program at the Naval Radiological Defense Laboratory to investigate several approaches to the civil defense instrument problem. The AEC is also sponsoring the further industrial development of an electrostatic dosimeter invented by Dr. C. C. Lauritsen of the California Institute of Technology.

11. Close coordination is being maintained with the military and other governmental agencies regarding these projects to assure that duplication of effort is avoided. (End of UNCLASSIFIED section).

Toxicity of Carbon 14, Tritium, and Neutrons ([REDACTED])

12. Carbon 14 and tritium. With the increasing research use of tritium and carbon 14, and the prospective hazards of handling production quantities of tritium, more complete information is needed on the toxicity and metabolism of these materials and their effects on plants and animals. Work is being initiated as rapidly as possible on the biological effects of carbon 14 and tritium on both plants and animals with special attention being given to mammalian species.

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13. Neutron toxicity. The prospective operation of the Experimental Breeder Reactor and the Materials Testing Reactor at the Reactor Testing Station, more information is needed on the biological effects of neutrons so that these and other reactors may be operated without great risk. Information on the permissible exposure to neutrons is of special importance to development of submarines and aircraft powered by reactors. Research was initi-

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[REDACTED]

ated on the biological effects of neutrons on animals with the view that the information thus obtained may be extrapolated to man.

14. Biomedical program for future tests. In preparation for the 1951 weapon tests, an experimental animal colony was established on the Island of Japan. A breeding colony of rats, mice, dogs, and pigs was being maintained to produce animals adapted to the environmental conditions of the test. Experiments were designed to provide information on mid-lethal doses, pathological, hematological and biochemical effects, thermal radiation injury, and biological dosimetry using various species. (End of [REDACTED] section).

Radiation Injury and Long-Term Effects (UNCLASSIFIED)

15. Radiation cataract studies. An intensive ophthalmological program was initiated following the survey completed in November, 1949, by Dr. David G. Cogan of Harvard Medical School to determine what, if any, late ocular effects resulted from the atomic bombings in Japan. Thus far, 40 definite cases of radiation cataract and 40 probable ones have been discovered out of 800 individuals examined. Further data with respect to the incidence of radiation cataract should be forthcoming by the end of the year.

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16. Lifetime effects of radiation. Much of the work to date on the effects of radiation on mammals has covered only a short period of the total life span. Investigations have now been started with dogs to study the lifetime effects of radiation. The work will include daily exposures over the life span of the animals and radiation at weekly intervals. Information will be obtained on longevity, work capacity, reproductive capacity, and biochemical, hematological, and other physiological effects.

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17. Atomic Bomb Casualty Commission. A thorough review is currently being made by the AEC and the National Research Council concerning present activities and future plans for the Atomic Bomb Casualty Commission operating in Japan. A special consideration is the need for securing promptly the data made available thus far in order to guide present civilian defense planning in the United States.

Health Physics Training

18. The second group of 21 fellows training in health physics at Oak Ridge and the University of Rochester will complete the regular courses in September, 1950. An additional three fellows were offered an opportunity to take broader training in radiation biophysics, and two are now studying at the University of Minnesota and one at California Institute of Technology. As an extension of this plan, the Advisory Committee for Biology and Medicine recommended that the AEC establish approximately 20 fellowships for predoctoral training in biophysics. After the National Research Council withdrew from administration of the AEC predoctoral fellowship program, administration of a national program was undertaken by the Oak Ridge Institute of Nuclear Studies. Arrangements were instituted with Vanderbilt University for its participation in the Oak Ridge part of the program. Graduate credit is offered for course work at both training centers (Rochester-Brookhaven and Oak Ridge-Vanderbilt), and provision is made for selected fellows to take master's degrees upon an extension of the fellowships. From among 194 applicants 40 fellowships were awarded by the Fellowship Committee, composed of representatives from Rochester and Vanderbilt Universities, Oak Ridge National Laboratory, Oak Ridge Institute of Nuclear Studies, and the AEC. This group will begin their training in the fall of 1950.

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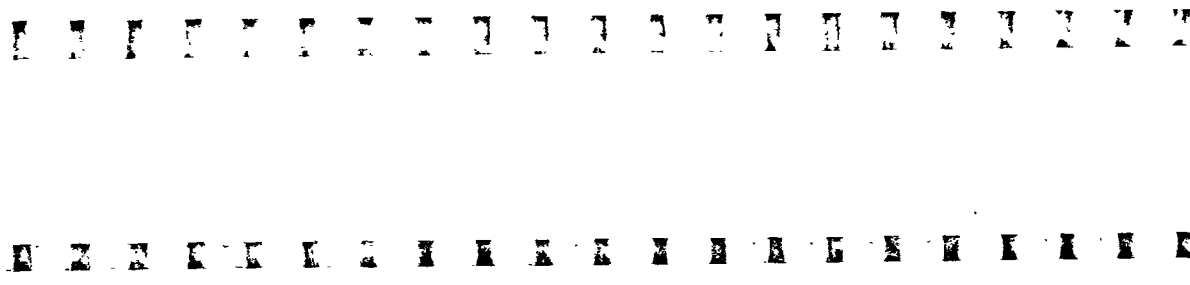
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APPENDIX "D"

RESEARCH PROPOSALS APPROVED BY THE DIVISION OF BIOLOGY AND MEDICINE, JANUARY THRU APRIL, 1950

(Institution, investigator, subject of research, and amount^{1/})

I - MEDICINE

- | | |
|--|---|
| Boston University (Dr. Brenton R. Lutz) - The effect of irradiation on the functions of small blood vessels of the hamster and the frog - \$30,000 | Colorado, University of (Dr. Paul M. Dean) - A study of the relationships between chemical structure, physical characteristics, and biological activity in the intermediate metabolism of nucleic acid derivatives - \$25,540 ^{2/} |
| California, University of (Dr. Herman Becks) - Metabolism of radioactive fluorine (dental)- \$5,700 | Colorado, University of (Dr. John R. Lacher and Dr. Jos. D. Park) - The infrared absorption spectra of nucleic acids, amino acids, and related compounds - \$7,850 ^{2/} |
| California, University of - Civil defense instructor courses in radiological monitoring and medical aspects - \$10,000* | Columbia University - Barnard College (Dr. Aubrey Gordman) - Biological effects of radiation from excessive amounts of radioiodine - \$6,372 ^{2/} |
| Chicago, University of (Dr. H. S. Anker) - Investigations of the mechanics of antibody synthesis by the tracer technique - \$4,300 | Columbia University - College of Physicians and Surgeons (Dr. David Nachmansohn) - Effect of exposure to radioactive material and to X-ray irradiation on nerve tissue - \$10,962 ^{2/} |
| Chicago, University of (Dr. C. P. Miller) - Bacteriological aspects of radiation sickness - \$33,450 ^{2/} | Duke University (Dr. Philip Handler) - Training program - \$13,550 |
| Chicago, University of (Dr. Walter L. Palmer) - A Study of the carcinogenic effect of irradiation therapy in peptic ulcer - \$10,841 | Duke University (Dr. Philip Handler) - Metabolic studies using isotopes - \$14,170 |
| Children's Medical Center, Boston, Mass. (Dr. M. H. Wittenberg) - Effects of radiation therapy during infancy and childhood on the growth of the spine - \$3,000 | Duke University (Dr. J. S. Harris) - Studies of electrolyte and fluid balance in health and disease - \$6,631 ^{2/} |

^{1/}Amount shown is subject to contract negotiation (except as indicated by an asterisk).

^{2/}Contract renewal.

*Represents continued support by AEC, heretofore supported jointly with ONR.

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[REDACTED]

Duke University (Dr. Paul J. Kramer) - A study of the factors affecting the absorption of radioactive phosphorus by mycorrhizal and non-mycorrhizal roots of pine - \$2,970 2/

Harvard University - Beth Israel Hospital (Dr. H. L. Blumgart) - The use of iodine-131 in the treatment of heart diseases and follow-up studies on the biological effects of radiation - \$25,000 2/

Harvard University (Dr. W. B. Castle) - Destruction of red blood cells in hemolytic anemia - \$14,605 2/

Harvard University, Pondville hospital (Dr. Olive Gates) - Effects of radiation on development of rat embryos - \$16,260 2/

Harvard University (Dr. R. F. Sognnaes) - Metabolism of the teeth - \$14,500 2/

Haskins Laboratories, Inc., New York City (Dr. S. H. Hutner) - The microbiological assay of nucleic acid constituents produced by radiation \$10,000*

Illinois, University of (Dr. A. C. Ivy) - Irradiation of gastric mucosa - \$4,400*

Johns Hopkins University (Dr. P. H. Long, Director) - Course in the medical hazards of atomic warfare for teacher-trainers - \$2,557*

Kansas, University of (Dr. Robert Stowell) - Cytochemical, microchemical, and biophysical study of tumors and effects of radiation upon cells - \$36,000 2/

Massachusetts General Hospital (Dr. J. R. Means) - Effects of radioactive iodine on biology of the thyroid gland - \$27,405 2/

Massachusetts Memorial Hospital and Boston University School of Medicine (Dr. J. R. Ross and Dr. F. J. Ingelfinger) - Studies of the effect of radiation upon the structure and function of the gastrointestinal tract; and fundamental studies of the blood elements and blood forming organs - \$50,000

Meharry Medical College (Dr. P. F. Hahn) - Use of radioactive gold in treatment of tumors - \$73,000* 2/

Memorial Hospital, New York City (Dr. C. P. Rhodes et al) - Investigation of the biological effects of radiation and related biochemical studies - \$257,000 2/

Michigan, University of (Dr. F. B. Bethall) - Study of Biological effects of irradiation - \$202,500*

Minnesota, University of (Dr. W. D. Armstrong) - Effect of ionizing radiation on electrolyte and water metabolism - \$47,174

Minnesota, University of (Dr. G. E. Moore) - The study of methods and instruments to improve the localization of radioactive materials in the body; with special reference to the diagnosis of brain tumors - \$22,713 2/

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Minnesota, University of (Dr. Samuel Schwartz) - Synthesis of hemoglobin in bone marrow and maturation and multiplication of blood cells - \$20,738

Minnesota, University of (Dr. C. J. Watson) - The influence of radiation and chemically induced bone marrow injury upon porphyrin injury - \$18,630

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Montefiore Hospital, New York City and Polytechnic Institute of Brooklyn (Dr. Daniel Lazzio and Dr. Kurt G. Stern) - The relationship of stable and radioactive lanthanum to nucleic acid synthesis in normal and neoplastic tissue - \$30,000

New England Deaconess Hospital, Boston, Mass., (Drs. S. P. Hicks, M. W. Holt, S. O. Sommers, E. H. Thompson and S. W. Warren, Scientific Advisor) - Acute radiation injury - \$15,400 plus overhead.

New York University - Bellevue Medical Center (Dr. Marion B. Sulzberger) - Skin changes produced by low voltage roentgen ray irradiation - \$6,480 2/

North Carolina, University of (Dr. J. C. Andrews and Dr. M. K. Berkut) - Tracer studies and irradiation in dental metabolism - \$4,500*

North Carolina, University of (Dr. Arthur Roe) - Carbon 14 research - \$4,300* 2/

North Carolina, University of (Dr. C. D. Van Cleave and Dr. C. T. Kaylor) - Radioautographic study of distribution and retention of beryllium in the rat - \$18,533 2/

Northwestern University (Dr. John G. Bellows) - Studies on radiation cataract - \$24,000

Ohio State University (Dr. J. L. Morton) - Physical and medical principles in the therapeutic use of radiocobalt 60 - \$25,000

Oklahoma, University of (Dr. S. H. Wender) - Isolation and identification of flavonoid pigments of use in the control of radiation injury - \$12,000*

Oregon University of, Medical School (Dr. E. S. West) - Studies on metabolism - \$17,604 2/

Pittsburgh, University of (Dr. Campbell Moses and Dr. A. J. Allen) - Effects of neutrons from a cyclotron on mammals, with particular reference to the development of cataracts - \$16,537*

Rice Institute, Houston Texas (Dr. Roy V. Talmage) - Studies of the influence of adrenocortical and other hormones on electrolyte balance - \$17,400 2/

Tennessee, University of (Dr. Edward F. Williams, Jr.) - Calcium metabolism - \$3,000

Tennessee, University of (Drs. J. L. Wood and D. H. Sprunt) - The uptake of radioactive sulfur by the lungs of mice infected with swine influenza - \$5,200

Tennessee, University of (Dr. Lester Van Middlesworth) - (a) Determination of the effects of anoxia on the thyroid gland (b) Study of the metabolism of radioactive methionine in tissues during normal metabolism, in tissues undergoing repair and in radiation tumor - \$4,350

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Tennessee, University of (Drs. D. S. Carroll, Jos. Cara and D. H. Sprunt) - Study of the use of radioactive ruthenium in the treatment of superficial lesions - \$3,985 2/

Trudeau Foundation (Saranac Lab.) Saranac, New York (Dr. Arthur J. Vorwald) - The influence of cortisone upon chronic inflammatory - disease of the lung - \$2,000

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Tufts College, Medford, Mass. (Dr. David Rapport) - The effect of radiations on reactions associated with growth - \$16,200 2/

Washington University - St. Louis (Dr. Gilbert B. Forbes) - Investigations of electrolyte balance and thyroid metabolism - \$8,320

Tulane University (Dr. G. E. Burch) - Study of the turnover rate of chlorine under controlled dietary and therapeutic conditions in patients with congestive heart failure and in control subjects - \$3,600*

Washington University - St. Louis (Dr. David Lipkin) - The Chemistry of nucleic acids, nucleosides nucleotides and related organic phosphorus compounds - \$17,600 2/

Utah, University of - Basic training course of physicians, nurses, and dentists on the medical aspects of atomic warfare - \$1,500*

Worcester Foundation for Experimental Biology, Inc., Shrewsbury, Mass. (Dr. H. Hoagland and Dr. G. Pincus) - An investigation of the effects of radiation on the biosynthesis and metabolism of adrenocortical steroids - \$68,000

Wake Forest College - Bowman Gray School of Med. (Dr. Geo. T. Harrell - Distribution and turnover of sodium and potassium in acute infections - \$12,831

Wake Forest College - Bowman Gray School of Med. (Dr. Camillo Artom) - Formation of tissue phospholipides - \$10,590

Wake Forest College - Bowman Gray School of Med. (Drs. G. T. Harrell, C. Artom, D. Cayer) - Toxicity of radiation as related to previous damage and the functional capacity of an organ; the effect of P32 and X-rays on liver and marrow - \$5,975 2/

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Washington, University of (Dr. Clement A. Finch) - Studies on iron metabolism - \$17,800 2/

Washington University - St. Louis, Mo. (Dr. Willard M. Allen) - Use of gamma ray as a therapeutic agent of carcinoma - \$11,124

Note: Each of the above projects is for Unclassified work.

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