UNCLASSIFIED

ORNL
Central Files Number
56-8-86

OAK RIDGE NATIONAL LABORATORY
PROPOSAL FOR
MAMMALIAN RESEARCH ON INJURY AND
PROTECTION FACILITIES

**DO NOT
PHOTOCOPY**

OAK RIDGE NATIONAL LABORATORY
OPERATED BY
UNION CARBIDE NUCLEAR COMPANY
A Division of Union Carbide and Carbon Corporation

POST OFFICE BOX P • OAK RIDGE, TENNESSEE

UNCLASSIFIED

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency Thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

UNCLASSIFIED

I

ORNL
Central Files Number
CF- 56-8-86

LEGAL NOTICE

This report was prepared as an account of Government sponsored work. Neither the United States, nor the Commission, nor any person acting on behalf of the Commission:

A. Makes any warranty or representation, express or implied, with respect to the accuracy, completeness, or usefulness of the information contained in this report, or that the use of any information, apparatus, method, or process disclosed in this report may not infringe privately owned rights; or

B. Assumes any liabilities with respect to the use of, or for damages resulting from the use of any information, apparatus, method, or process disclosed in this report.

As used in the above, "person acting on behalf of the Commission" includes any employee or contractor of the Commission to the extent that such employee or contractor prepares, handles or distributes, or provides access to, any information pursuant to his employment or contract with the Commission.

OAK RIDGE NATIONAL LABORATORY
PROPOSAL FOR
MAMMALIAN RADIATION INJURY AND
PROTECTION FACILITIES

DATE ISSUED

AUG 20 1956

Photostat Price \$ 3.30
Microfilm Price \$ 2.40
Available from the
Office of Technical Services
Department of Commerce
Washington 25, D. C.

OAK RIDGE NATIONAL LABORATORY
Operated by
UNION CARBIDE NUCLEAR COMPANY
A Division of Union Carbide and Carbon Corporation
Post Office Box P
Oak Ridge, Tennessee

584 001

UNCLASSIFIED

II

CONTENTS

Brief Review of Need for Mammalian Radiation Injury and Protection Facilities	1
Present Facilities.....	2
Brief Description and Cost Estimate	9

584 002

CF-56-8-86

BRIEF REVIEW OF NEED FOR MAMMALIAN RADIATION INJURY AND PROTECTION FACILITIES

Recent biological research on the nature of injury caused by radiation and on the methods for reducing radiation injury or for accelerating recovery has yielded very promising results. This important work of the Oak Ridge National Laboratory is hampered at present by a lack of space for animal colonies, for study and treatment of the animals, and for the equipment, feed, and materials required in conjunction with keeping and experimentally studying mouse colonies.

A particular difficulty created by the present animal facilities, and arising from the crowding of experimental animals and the intermingling of strains and species within a single room, is the greatly increased possibility of epidemic infection, which might destroy the entire animal colony. Because loss of the present stock of experimental animals would require not only replacement of these animals but also repetition of much of the experimental work already performed, the hazard of epidemic infection in the mouse colonies is considered to be particularly severe. The proposed new facilities will provide many small animal rooms to permit the desired segregation of experimental animals, as well as providing separate areas for breeding stock animals and isolation rooms for quarantining newly received animals.

The increasing emphasis placed on the mammalian radiation injury and protection studies made it necessary to expand the mouse colonies to provide more experimental animals, but expansion has been severely limited by the lack of suitable space. As a consequence, experimental animals and equipment are now being kept in several widely separated locations in the Biology Research Building 9207 and in two other buildings located reasonably close by. It has therefore become necessary to provide consolidated and enlarged animal space and related facilities. The availability of these facilities will play an important role in assuring continued progress of biological research in these important fields.

PRESENT FACILITIES

Animal Farm, First Floor, Y-12 Building 9207. This room houses the breeding colony for rats of C and D strains used in mammalian radiation injury and protection studies. The picture shows that the racks holding the cages are too close to one another, which interferes with proper cleaning, inspection, and handling of the animals. It is usually necessary to move one or two racks in order to gain access to the cages. On the laboratory table in the rear of the room is shown a rabbit cage. The crowding together of animals of different strains and species, especially in the breeding colony, is particularly undesirable because it increases the risk of cross-infection and cross-contamination of pedigree lines. More individual rooms and fewer cages per room are needed to overcome crowding and intermingling of different strains and species.

584
005

Isolation Room, First Floor, Building 9207. This photograph illustrates the marked shortage of space for isolating newly received animals for observation during quarantine. Because of limited space, cages containing rats are in close proximity to those housing mice, and animals received in different shipments are together. Proper handling and segregation of these potentially infected animals are greatly hampered, as shown.

584 006

Overcrowded Mouse Colony, Fourth Floor, Y-12 Building 9207. Stock animals in cages on the racks at left are too close to irradiated experimental animals (LAF₁ mice) on the racks at right. Crowding of racks interferes with efficient handling, inspection, and cleaning, as evidenced by the racks having to be moved before the mice next to the wall can be reached. Under such conditions the intermingling at close quarters of stock animals and irradiated experimental animals increases the danger of epidemic infection. Since the effects of exposure to radiation are often manifested in actual infections or in much greater susceptibility to infection, the hazards of epidemic infections are especially severe. The most serious threat is that the entire colony might be wiped out, making it necessary to start over on much of the experimental program.

Equipment Storage Area, Y-12 Building 9769. This photograph illustrates the present space for storing most of the animal cages and equipment for mammalian radiation injury and protection studies. The building in which it is located (9769) is situated on a hill approximately 200 yards from Building 9207, where the major portion of the existing animal farm and laboratories is located. Building 9207 also provides the only space now available for housing large animals such as dogs; however, the lack of air-conditioning and the shortage of space make it highly undesirable for animal quarters. The transportation of equipment to and from the storage area entails undue time and effort and the use of a truck. Furthermore, the personnel and the equipment are exposed to the elements in the process. A storage area near the animal rooms is provided in the proposed facilities.

Irradiation Facility, Y-12 Building 9743-2, North and West Sides. Formerly a guard building, this structure has been converted to a radiation facility for continuous exposure of mice. It contains a neutron source (Po-Be) at one end, separated by a concrete shield from a gamma-ray source (cobalt-60) located at the other end. Its isolation from other buildings makes it an ideal location for the radiation sources; however, because of the high radiation field, it is not suitable for housing animals used in other experiments.

8

Present Condition of Sixth Floor, BT Section, Y-12 Building 9207. This area, already stripped of its former process equipment, will house the proposed Mammalian Radiation Injury and Protection Facilities. The installation of partitions, ceilings services, and an air-conditioning system will make this area very well suited for the uses planned. Construction of the type proposed in an existing building is the most economical method of providing the required facilities.

BRIEF DESCRIPTION AND COST ESTIMATE

The proposed Mammalian Radiation and Protection Facilities will be installed in a vacant space on the presently unused sixth floor of the BT Section of Biology Research Building 9207. Partitions and hung ceilings will be constructed of wire laths supported by steel channels and covered with plaster. This type of insect-proof construction has been used successfully in other Oak Ridge National Laboratory animal facilities to provide rooms that could be easily and thoroughly cleaned and to avoid cracks and other breeding places which might make pest control a problem. The entire area will be devoted to animal rooms and associated laboratory, equipment, and storage rooms. It is not planned that offices will be provided in this area or that any personnel will be assigned full time to the sixth floor; consequently no rest rooms or other personnel facilities will be added. An existing rest room will be left, however.

SUMMARY OF COST ESTIMATE

	Contractor	UCNC	Total
1. Engineering, design, and inspection	\$ 29,250	\$ 9,750	\$ 39,000
2. Construction costs			
Land rights	0	0	0
Improvements to land	0	0	0
Building	359,355	0	359,355
Other structures (9764-4)	15,295	0	15,295
Utilities	0	0	0
Equipment	20,795	0	20,795
Removal less salvage	0	0	0
Contingencies (10% of 1 and 2)	40,305	250	40,555
Total	\$465,000	\$10,000	\$475,000

Mammalian Radiation Injury and Protection Facilities; Y-12 Building 9207, Sixth Floor.

PLOT PLAN - MAMMALIAN RADIATION INJURY AND PROTECTION FACILITIES

534 013