[redacted]

SUMMARY OF OPERATIONS ON CONTRACT NO. W-28-094-eng-33

FOR THE MONTH OF FEBRUARY 1948.

I. The basic program of the Applied Fisheries Laboratory, of measuring the effect of X-rays upon aquatic organisms, was continued.

Sections I and II*

The young chinook salmon (F_2 generation) produced from the 1947 spawning of **adults** from irradiated and control stock have continued to develop and are now actively feeding. Mortalities continue to be recorded and all fish that die are preserved for future study.

The mortalities in the 15 lots continue about as before; the differences between irradiated and control stock, however, have slightly decreased. Omitting lots numbered 13 and 14, which were slightly "green" when spawned, comparison of the "t" test of the cumulative percentage mortality through February 1948 of the eggs and fry from the 6 females of irradiated stock with eggs and from the 7 control females, gave a value between the 6 and 7 percent levels, which is not quite significant.

Section XI-a

Rainbow brood stock of the same ancestry as those used for the rainbow irradiation tests (Sections XI-a, XI-b, and XI-c) are starting to spawn. This is a portion of the stock being used at Hanford Engineering Works, 146 Building for absorption studies. This stock is being used as a control unit for the absorption studies, carried on at Hanford Engineering Works.

Section XI-b

The young fish in this experiment (F_2 generation) from irradiated parents continue to develop. Arrangements are being made to continue the

* Section numbers refer to the Project Chronology Chart, revised January 9, 1947.

[redacted]

[redacted]

study of this material through to their reproduction and the production of the next generation (F_3) in the spring of 1949.

II. X-ray amphipod studies.

The studies started January 15 and 16, 1948 when six groups containing 20 ± amphipods each were exposed to X-rays. The six doses were 150 r, 900 r, 6,400 r, 16,000 r, 32,000 r and 82,000 r. Six similar lots were used as controls.

At the end of February all of the amphipods subjected to 82,000 r, 32,000 r, and 6,400 r had died and a single specimen of the original 20 in the 16,000 r group survived. Mortalities were low in the 150 r (5%) and 900 r (21%) groups. Mortalities of the control groups ranged from 5% to 52% with an average of 24%.

Newly hatched young were found in numbers in the control groups, but among the irradiated groups, only the lowest (150 r) group showed reproduction.

It is assumed from this preliminary experiment that the 100% lethal dose is less than 10,000 r, and that more than 900 r inhibits reproduction. Another experiment is planned to determine lethal and inhibitory dosages more exactly.

III. Study of the Bikini material collected during the summers of 1946 and 1947 continued. Radioautograph work with whole mounts and sectioned material has presented a number of problems. Further exploration of these techniques is essential if they are to be useful with this material.

Recounting of some of the material is underway and supplementary reports are being prepared on special problems of absorption.

Food chain studies using Bikini "mud" are in progress.

IV. The mutual exchange of material and information between the Applied Fisheries Laboratory and the Hanford Engineering Works continues to function effectively.

[redacted]

[redacted]

Dr. Raymond B. Allen, President of the University of Washington and Dr. Lauren R. Donaldson visited the Hanford Engineering Works on February 16 and 17 to discuss the relationship of the University to the Hanford Engineering Works and visit some of the facilities.

A conference was held at Richland with Dr. John Bowers, Assistant to Director of Division of Biology and Medicine, Washington D. C. Work in progress was reviewed and the 146 Building visited to inspect the plant and discuss the problems under investigation.

Lauren R. Donaldson
Director of Contract
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