MRA-7 Redwing

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UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

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AUG 7 1956

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MEMORANDUM for Mr. Strauss
Mr. Murray
Dr. Libby
Mr. Vance
Mr. Fields

Subject: REDWING FALLOUT PROGRAM

In view of the desire of the Commission to obtain an early analysis of the REDWING Fallout Program results, and the general interest in world-wide fallout at this time, the following review of the REDWING Fallout Program is furnished for your information.

LIST OF PROJECTS

2.61: Rocket Sampling of Fall-out at Early Times and High Altitude
2.62: Fall-out Contours by Oceanographic Analysis
2.63: Characterization of Fall-out
2.64: Early Aerial Survey
2.65: Land Fall-out Studies
2.66: Early Cloud Penetration

PHILOSOPHY

The fallout program represented a much larger effort than has been allotted to fall-out in previous test operations. The increased effort to establish the fall-out contours was based on the results of Operation CASTLE, in which the magnitude of the fall-out hazard was clearly indicated. The measurements in Operation REDWING were designed to establish reliable values for the areas affected, and to assist in the construction of a realistic model of the phenomena which will permit reliable extrapolation to different weapons, burst heights, and surface conditions.

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DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW
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OBJECTIVE

The fall-out program was intended to document the hazard from air and surface bursts. This documentation included the initial and final distribution of activity, the time history of accumulation, and the physical and chemical nature of the active material.

PROJECT SUMMARY

2.61: The initial distribution of activity was measured, using data telemetered from rockets fired through several parts of the cloud and stem as soon as the cloud stabilized and a few minutes later. The rockets were timed so that they penetrated the various portions of the cloud and stem at the same time. The later set of measurements were designed to give information on changes with time.

2.62: The radiation intensity in the ocean downwind from the detonation was mapped, and depth profiles were also made to allow determination of the amount of contamination that had fallen on the surface. The YAGs furnished calibration check points for this survey.

2.63: The time history of accumulation was determined at a number of significant downwind locations with both moored and floating stations. These stations also collected samples for physical and chemical studies.

2.64: Aircraft were equipped with radiation detection instruments, and flew over the fall-out area at an altitude of 200 to 400 feet to obtain a preliminary outline of the contour pattern.

2.65: The activity deposited on land areas was measured to establish the final distribution, the time history of accumulation, and the influence of the base surge. The land stations also collected samples for physical and chemical analysis. The dose rate at 3 feet above the surface of the islands and lagoon of the shot atoll was measured by a probe lowered from a hovering helicopter.

2.66: The hazard to personnel in the cloud was studied by measurements of the radiation intensity in the cloud at early times, using manned aircraft. Measurements were also made of residual contamination on the aircraft, and samples were obtained.

[redacted]

PRIORITY

The data gathered by the many sub-projects must be correlated in order to obtain the complete analysis, since the results of each will be used in the interpretation of the data from the others. Hence no order of relative priority has been indicated but an effort was made to reach all objectives in order to complete the project satisfactorily.

SHOT PARTICIPATION

Each of the above projects, except 2.61, participated in the following five shots:

[redacted]

DOE 6.1(a)

However, it is hoped that an approximation of the relationship may be obtained.

* Early estimate from rad-chem data

REPORTS AND BRIEFING

Armed Forces Special Weapons Project, which has technical control over the several agencies that are collecting and analyzing the REDWING fall-out data, is planning a briefing for interested agencies on preliminary results of the entire REDWING effects program during the latter part of this month or early September. Also, the Interim Test Reports covering

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the effects projects should be completed and distributed within the next six weeks. We have informed the Chief, Armed Forces Special Weapons Project, that the Commission has expressed a strong desire to obtain an analysis of the REDWING fallout data as early as practicable, the analysis to include, in addition to the standard fallout data presentation, the following:

a. An estimate of the amount of close-in fall-out as contrasted with that rising to high altitude and distributed over a long period of time, and

b. The variation of (a) above with positioning of the shot, i.e., in the air, on a barge, or on land.

Armed Forces Special Weapons Project agreed that an effort would be made to include the above information in the fallout analysis. In addition, Armed Forces Special Weapons Project will expedite distribution of the Interim Test Reports to the Atomic Energy Commission and will arrange a separate briefing on the preliminary results of the REDWING fallout program, to be given to the Commission possibly in the last half of September.

WORLD WIDE FALL-OUT PROGRAM

The continuing world wide fall-out program, which was established by the Division of Biology and Medicine and is administered by the New York Operations Office, participated in Operation REDWING through about 160 stations which collected samples using gummed paper, air sampling, and/or rain water monitoring. About half of the stations are in the United States and half are outside the United States. The samples were collected and are being analyzed by New York Operations Office. Biology and Medicine is making arrangements to include in the Commission briefing the preliminary results of the world-wide program.

Alfred D. Starbird
Brigadier General, USA
Director of Military Application

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