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April 14, 1954

AEC 597/44
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ATOMIC ENERGY COMMISSION

CASTLE PLANNING

Note by the Secretary

The attached letter from Dr. W. F. Libby is circulated for the information of the Commission. A meeting to discuss this matter with Drs. Libby and Rabi has been scheduled for 10:45 a.m., Friday, April 16, 1954.

ROY B. SNAPP
Secretary

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GENERAL ADVISORY COMMITTEE
TO THE
U. S. ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

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Vol 3

April 2, 1954

Mr. L. L. Strauss, Chairman
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Mr. Strauss:

The experience on the MIKE shot, which though unexplained, has proven to be a happy one so far, is that most of the debris has never been found. The present contamination of the world by the fission product Strontium-90 appears to correspond to a total of about one megaton of explosion. The fate of the MIKE debris remains a mystery, though more and more evidence indicates that a considerable part of it is in the bottom of the sea. The possibility still remains that a large proportion resides in the highest levels of the atmosphere. However, it appears not yet to have entered the biosphere nor to have been found in human bodies, foods, and foodstuffs.

After careful studies -- Rand Corporation Project Sunshine-Aureole -- one is left at a nearly complete loss when he attempts to predict the effect of changing the base on which one of the large thermonuclear weapons is fired from coral to sea water. The study has only given us greater humility, has made us more dependent than we initially were on experimental observation. A shot such as [redacted] which was fired from a raft over water, may therefore have been subject to a fundamental change in "fall out" conditions. It is our understanding that a minimum of information will be available concerning [redacted] "fall out" in time to bear on the CASTLE series. Therefore we are likely to be unable to deduce in the next few weeks whether water serves better than coral or worse than coral in the sense of removing the lethal fission products and carrying them into the sea before they reach the great continental land masses.

Under these conditions I would recommend that you consider making no further shots on barges over water in the present series. If it is essential to do so, an attempt should be made to place

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the rafts over as shallow water as possible so the greatest approach to coral sub-stratum can be made. Recalling the expected magnitude of the explosions planned, it is possible that [redacted] together with the two proposed raft shots, could increase the Strontium-90 contamination of the world by 20- or 30-fold.

Most respectfully yours, I remain

Sincerely,

/s/

W. F. Libby

Department of Energy
Historian's Office
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