MINUTES

Fortieth Meeting of the General Advisory Committee
to the U. S. Atomic Energy Commission

May 27, 28, and 29, 1954
Washington, D. C.

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Fall-out Problem

At 2:10 p.m., Dr. J. C. Bugher and Capt. W. L. Guthrie of the AEC; Gen. A. R. Luedecke, Dr. H. S. Scoville, Col. H. H. Kaesser, and Capt. R. H. Maynard of the AFSWP; and Dr. Lester Machta of the Weather Bureau entered. Gen. Fields, Dr. Graves, Dr. Mark, and Dr. Fine remained for the discussion. In addition to the Committee, the Acting Secretary and Mr. Tomei were also present.

Dr. Scoville described the general fall-out pattern DELETED DELELETED From available data it appears that in an area of over 5,000 squar miles of ocean, a dose of 500 r would have been obtained in the first 50 hours from shot-time; and in an area of over 1,000 square miles, a dose of 2,000 r would have been obtained in the first 50 hours. It was pointed out that the natives on the island of Rongerik received 150 r before being evacuated.

Dr. Scoville said that from the radiochemistry data obtained DELETED DELETED From the intensity and pattern of the fall-out, he estimated that DELETED DELETED fell out from the explosion. Dr. Bugher confirmed that DELETED of the activity fell out.

Dr. Bugher then mentioned that the particles which fell out on the Japanese ships were about 300-350 microns in size. Dr. Graves said the particles from the barge shots were 10-50 microns in size, and more soluble than the particles from the other shots. The smaller particles fall slower, and therefore the 500 r area is smaller and the 200 r area larger from the barge shots.

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Dr. Scoville said that the fall-out extrapolated from the Nevada shots very well. Dr. Machta observed that DELETED fall-out had been obtained in Nevada on the much smaller tests.

Capt. Maynard then described the wind structure at minus two hours, minus one hour, and at DELETEDshot-time. Generally, at shot time the wind was 35 knots WSW from 0 to 55,000 feet, and 40 knots East from 65,000 to 95,000 feet. Capt. Maynard pointed out that this sharp reversal of wind favored heavy fall-out from 65,000 feet and below on small areas.

Dr. Graves said that DELETEDwas fired on a dry day, and that small clouds were condensed over a region of about 100 miles. On the second DELETED shot a rather large cloud was generated. He estimated that the DELETED cloud rose to about 110,000 feet.

After a short discussion it was agreed that extrapolation from known data indicated there would have been no significant fall-out if the DELETED fireball had not reached the ground. Dr. Graves advised that the DELETED

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Dr. Graves informed the Committee that about 2,000,000 tons of coral went up DELETED and that much of the material came back a calcium carbonate. There was considerable discussion of the scavenging action of such material. It was generally agreed that a great deal more study was involved before the mechanism of the fall-out was understood fully.

Mechanism of Fall-out

Capt. Maynard advised the Committee that since rain normally fell from clouds much lower than 10,000-15,000 feet, DELETED DELETED He said that there was no

Bad Weather Shots

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The Chairman inquired whether lethality were the best criterion of damage. Dr. von Neumann thought that forced evacuation of an area was a very important consideration.

Dr. Fisk suggested that the Committee point out their interest in fall-out studies from both offensive and defensive points of view. The Committee agreed that the staff seemed to have considered the problem very well, but that these studies on fall-out, dosage, rates of decay, etc., should continue.

The members agreed with Mr. Whitman's suggestion that the Committee should recommend that the Commission get out some authoritative information on the fall-out problem as soon as possible. All agreed that an incorrect statement could cause trouble but that periodic public statements on fall-out effects, similar to Mr. Strauss' statement on the CASTLE tests, would be very helpful.

The Committee then considered several aspects of the world-wide long-range fall-out problem. Dr. von Neumann mentioned that the Sunshine studies indicated that about 10,000 megatons seemed to be the limit with a concept of "tolerance" that may be too strict.

Dr. Wigner pointed out that radioactive strontium absorbed by plants soon finds its way into the life cycle of animals and men, and that a total of three or four kilograms of Pu, incorporated into the bodies of men, would give every living person a lethal dose. Dr. von Neumann remarked that strontium seemed to seek out humans but that plutonium did not; Dr. Rabi pointed out that we could not form conclusions on the basis of the Rongerik natives but that the entire ecological problem had to be faced. He suggested that studies be stepped up in this field.

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Dr. Rabi announced that the Reactor Subcommittee would meet at

Next GAC Meeting

the Argonne National Laboratory on July 7, 8, and 9, 1954; and that the 41st Meeting of the GAC would be held at Sandia and Los Alamos on July 12 13, and 14, 1954. He invited the Commissioners and General Manager to meet with the GAC at that time if they found it convenient. (Appendix B, page 5)

Whereupon the business of the 40th Meeting of the GAC having been completed, the meeting was adjourned at 12:45 p.m.

P. W. McDaniel
Acting Secretary

Attachments (2)

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