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October 28, 1946

Commander G. Vaux
Navy Department
Room 3434
Washington, D. C.

Dear Commander Vaux:

I am enclosing a short discussion of the measurements made here during the Bikini tests and the original and one copy of the graphs showing the results. If you wish, you may have copies of the original made for your report. I would appreciate it if you would return it to me whenever you find it convenient.

Should you desire any additional details of the experiment, please feel free to ask me for them.

Sincerely yours,

John DeWire
Research Associate

JDW:jt
Enclosures 2

A Remote Observation on the Bikini Tests

During the recent Bikini tests, measurements were obtained on the background of radiation at Ithaca, New York. A Geiger counter and associated recording equipment was set up on the next-to-the-top floor of the Physics Laboratory at Cornell University. The counter was run continuously, and readings on the accumulated number of counts were taken periodically, on the average about two readings per day. The experiment was set up rather hurriedly, and no provision for checking the calibration of the counter with a standard source was made.

The counter was one which had been designed and constructed by Rossi and Greisen for cosmic ray measurements. The active volume was 4 cm in diameter and 19 cm long. The plateau exhibited about a 4 per cent rise per 100 volts. The high voltage supply and scaling circuit were of the type used at the Los Alamos laboratories; their operation seemed to be very reliable during the observation period.

The results of the measurements are plotted in the accompanying graphs. In both graphs the counting rate is plotted as a function of the time measured from the time of the "Able" shot. The unit of counting rate is 64 counts per minute. The upper graph is a plot of all the data; the lower one is an expanded plot of the behavior immediately after the "Able" shot. Professor Greisen has pointed out that the background in this laboratory is roughly twice the normal cosmic ray background.

Hence the increase in radiation after the "Able" shot relative to cosmic ray background is twice that shown in the graph.

While it is felt that the effect observed after "Able" is real, the details of time dependence of the counting rate cannot be taken too seriously, owing to the crudeness of the experimental technique. The behavior of the counting rate after "Baker" follows qualitatively the cosmic ray intensity pattern observed by Dr. Scott Forbush at the Carnegie Institution in Washington. His ionization chamber was covered by a considerable quantity of lead and would not be expected to respond to radiation of the type given off by fission products. During this period two other Geiger counters were operated at some distance from the laboratory by Dr. C. P. Baker. His results showed the same general behavior as that shown in the graph.

From these observations it would seem reasonable to conclude that at a distance of 7000 miles in the direction of the prevailing winds it was possible to detect the effects of an atomic bomb exploded in the air, but no effect from a similar bomb exploded under water was observed.

J. W. DeWire

October 25, 1946

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