401323

October 27, 1976

Dr. Robert A. Conard
Medical Department
Brookhaven National Laboratory
Upton, New York 11973

BEST COPY AVAILABLE

Dear Bob:

I have made a reasonable literature search and have talked to a number of individuals who were involved in the test program concerning possible exposures at Utirik. All of the external exposure data that I can find are contained in the report NYO-4623 (Del.) by Breslin and Cassidy of HASL. Related information and data on strontium-90 levels are contained in Gordon Dunning's 1957 report.

The HASL data are shown on the attached graph. The four sets of measurements do follow a reasonable $T^{-1.2}$ decay and when extrapolated back to one day after the test they agree with the value of 340 mrads/h given in the Dunning report. The exposure can then be estimated by integrating the $T^{-1.2}$ function for the desired periods. All indications point to arrival of the debris about 24 hours after the test. The exposure on the following day would be about 5 rads. The natives were then removed from the island and did not return for 3 months. The integrated exposure after return from 90 days to infinity would be about 17 rads, of this about 5 rads would be delivered in the first year after return.

This integral tends to overestimate the dose since it does not allow for weathering. The only indication that we have for estimating this effect is the data for Rongelap. I have tabulated the dose rates calculated from the $T^{-1.2}$ law and compared those with the values actually measured. This table is attached. It would appear that the overall exposure after the return could be a factor of 5 less than the calculated value.

I believe that these estimates are reasonably good and that they are the best that we could make with the available data. Regards.

Sincerely,

John H. Harley, Director
Health and Safety Laboratory

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cc: W. Burr, BER, w/enc. ✓

[redacted]

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Comparison of Measured and Calculated External Dose Rates (mrad/h) on Rongelap following the March 1, 1954 Nuclear Test

	Actual	$T^{-1.2}$
25 days	39	64
50 days	17	28
300 days	.60	3.2
600 days	.20	1.5

[redacted]

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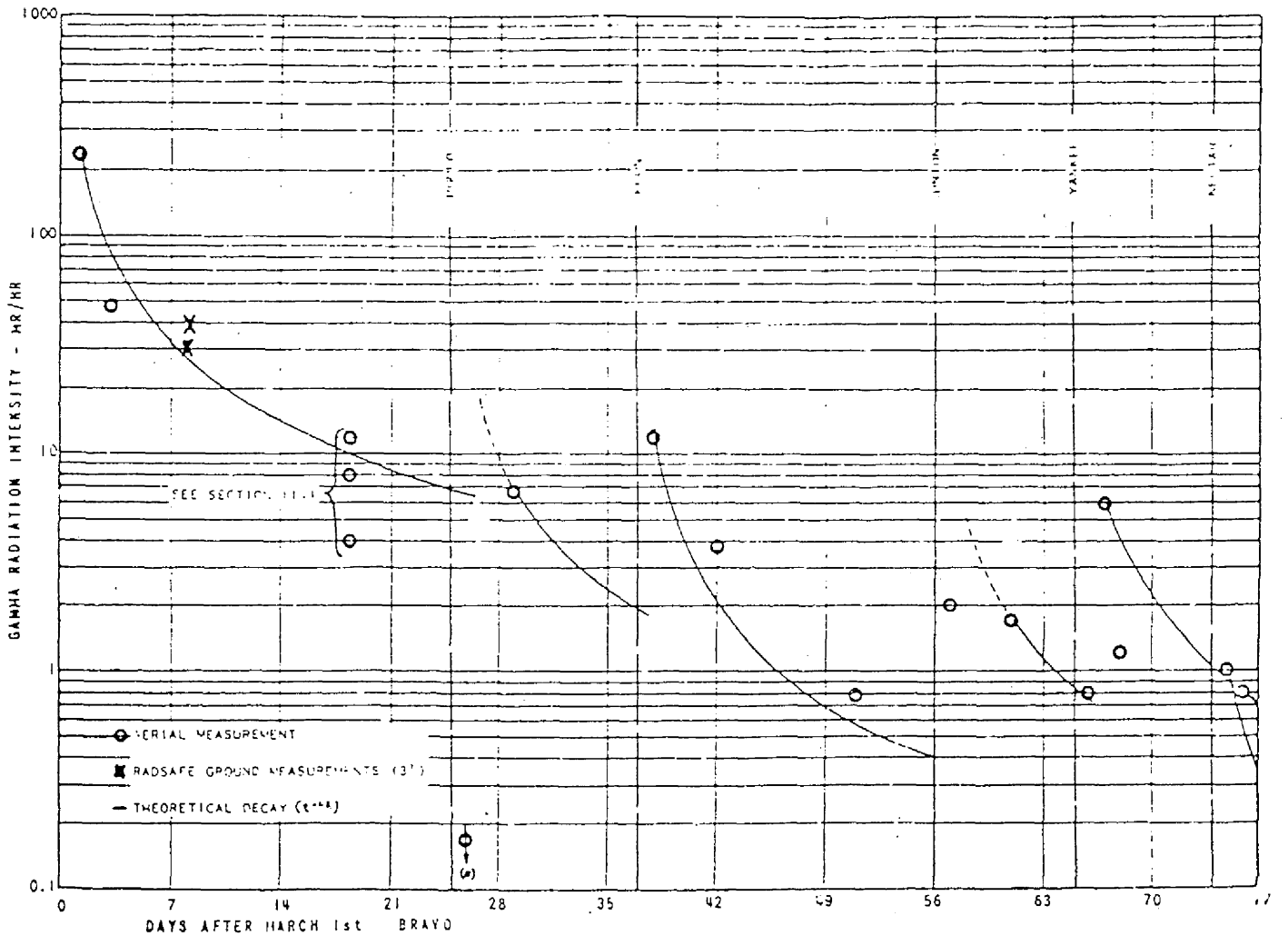
FIG. 33

AERIAL MONITORING MEASUREMENTS - UTIRIK



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