



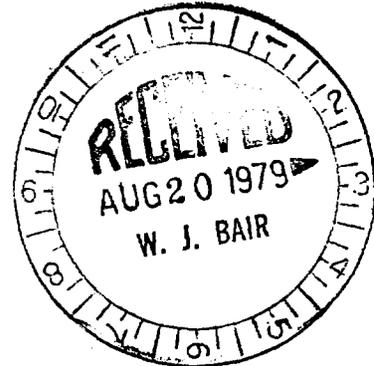
## LOS ALAMOS SCIENTIFIC LABORATORY

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In reply refer to: HH-70  
Mail stop: 400

August 14, 1979

Dr. W. L. Robison  
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Dear Bill:

I have put together some detailed comments on your latest draft of the Enewetak doses. Overall, I think that you have done an excellent job in the short time available. However, I find the computer printouts in the appendix (aside from external dose) less than useful because the living condition is not specified. I find, for example, five separate tables labeled "living conditions - Janet". Each one has different numbers and the correspondence to the numbers in the tables in the report is poor. I would suggest a definitive label for each fastened so that it will stay with the document.

Detailed comments follow.

1. pp. 4, 8, 9, 10, 11. Throughout we find the term R/h. I would guess that on pp. 4,  $\mu\text{R/h}$  is meant but cannot say about the others.
2. pp. 9, 3rd parag., 2nd line.  $3\sigma$ .
3. pp. 10, lines 5 & 6. I cannot find Tainel (Percy) on your map of the atoll.
4. pp. 10, 2nd parag. Perhaps Dick Gilbert could tell me why you include the average using the MDA instead of the actual measured value. This does bias the results.
5. pp. 11, 2nd parag. Is the difference in levels between the west tip of Aomon and the rest of the islands large or small? I am concerned with the probable establishment of wato's that could affect the dose to individuals.

the conversion factor is derived for should be given and the difference for other organs of interest should be stated. (See comment 26.)

7. pp. 11, last parag., pp. 12, 1st parag. I have some concern with these beta dose rates. The results are given at 1 cm depth in tissue. However, the presumed sensitive cells are much closer to the surface than this so that the beta dose could be considerably higher. I would use the generally assumed depth of 7 mg/cm<sup>2</sup>. The beta dose varies greatly with height so that the dose at 1 m is not representative of that close to the ground or the dose received by sitting or squatting. While it may make little difference, I believe that we should make the best and most realistic estimate possible of the skin dose and dose to the lens of the eye.
8. pp. 14, last parag. A little more discussion on the personnel samplers would be in order. From Table 5, I estimate about 10<sup>-3</sup> dis/min per m<sup>3</sup> in the air. Thus, a sample of 100-1000 m<sup>3</sup> would be needed to get a positive indication. This is more air than any personnel sampler that I have seen would draw.

Which data in Table 5 are from these personnel samplers?

9. pp. 15, lines 1 and 2. It is not clear to me how one gets an enhancement factor of 1.54 for "normal conditions" from the data in Table 5. Are there other data not given? If so they should be included and the derivation of these values made explicit.

In Table 5 under the heading "at Roadside", it is not clear to me how the individual survived at a breathing rate of 0.023 m<sup>3</sup>/h.

10. pp. 15, 1st parag. How was the breathing rate of 20 m<sup>3</sup>/day partitioned between "normal" and "high activity" conditions?



TO: W. L. Robison

-3-

DATE: August 14, 1979

11. pp. 15, 3rd parag. Where did the respirable fractions of 0.19 and 0.24 in Table 5 come from? Are these comparable to the value of 0.3 used for calculation?
12. pp. 16, 1st parag. The drinking water is referred to Table 7, 8 and 9. Here we find assumptions that the cistern drinking water is the same as that for Bikini or Kwajelein. Is there any justification for these assumptions?
13. pp. 17, 1st sentence. This sentence is not complete.
14. pp. 20, last parag. As I indicated on the phone, I believe the word "famine" to be completely non-descriptive of the situation of no imported foods. Even if it is an accurate translation, it implies a condition that does not exist, at least at the present, because there will be ample food in the lagoon and on the islands once the crops are of a sufficient size.
15. pp. 21, 1st parag. The coining of the term "subsistence food" to describe foods adds confusion to the discussion and implies that this is a "subsistence" diet. However, if one looks at the diets, a considerable amount of local food is included even under "normal" conditions. I would drop this term with its implication and refer simply to local foods. Note that the diet figures do not really support your statement that imported foods are preferred over local foods. About the same amounts of local foods are eaten in either condition.
16. pp. 21. Has any consideration been given to the fact that this survey was made for Ujelang, a much smaller atoll? What is the justification that the consumption of local foods and types of local foods will be the same on Enewetak? Shouldn't this at least be mentioned as a possibility?
17. pp. 28, last parag. No information is given on how the child dose was calculated. This would include body weights, GI uptake and method of calculating dose to bone marrow in the immature skeleton.
18. pp. 31 & 32,  $^{137}\text{Cs}$  and  $^{60}\text{Co}$ . The uptake from the GI tract that was used should be given for each of these.



TO: W. L. Robison

-4-

DATE: August 14, 1979

19. pp. 32, Inhalation. I am puzzled by the statement that the dose is calculated only for the pulmonary compartment? Weren't the doses to bone and liver calculated? For Class W, the combination of NP and TB must be done carefully because the fraction absorbed is different for the two.
20. pp. 33, Results, lines 7-10. I am not clear as to how the buildup of dose from ingestion of <sup>90</sup>Sr affects the wholebody dose. Was a whole body dose calculated for <sup>90</sup>Sr? If so, what does it mean?
21. pp. 48, 1st parag. Shouldn't you acknowledge the 630 day half-life in a Marshallese woman mentioned on pp. 32?
22. pp. 48. In the discussion of probabilities you have largely considered island averages. How about the question of people living on a wato. Wouldn't this serve to minimize the independence of these values and possibly result in a higher fraction of high doses?
23. pp. 49, 1st parag. As I read the preceeding material, 3 $\bar{X}$  seems to be about 95-96% of the people. Thus, with 200 people returning to Enjebi there would be 8-10 people above this value. While characterized as a "very small fraction" in this report, it means that future monitoring efforts have a 5% chance per person of values above the limit. Can this be handled?
24. Table 30 et al. You have never told us how the bone marrow doses from the transuranic nuclides were calculated. They are sizeable in comparison to those from <sup>90</sup>Sr so that the calculational method is of importance.
25. Fig. 1. Shouldn't you indicate on this map the islands that are no longer there because of the tests? I thought that Enjebi was spelled with a j.
26. Appendix B. The value of 0.82 used for the conversion from absorbed dose in air to absorbed dose in the body is specific for the gonads. It would be well to quote values for other organ systems.



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-5-

DATE: August 14, 1979

27. Appendix E (I think). What is GIT? How does one calculate a whole body dose from plutonium and americium? This should be described in the text along with an explanation of what it means.

Sincerely yours,

J. W. Healy

JWH:dl

xc: W. J. Bair, BNWL, Richland, WA ←  
B. Wachholz, DOE/HQ, Washington, DC

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BOX No. 5686  
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Reviewed by B. Schuetz Date 4/30/97

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