



Department of Energy
Washington, D.C. 20545

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Dear Ed:

During your December visit we agreed to detail what is needed in the next round of dose estimates for Bikini. As you know, it is our commitment to conduct a program of radiological follow-up and to periodically reassess radiological conditions at Bikini. LLL dose estimates along with the Brookhaven, PNL, whole body measurements are the end products of this followup. These measurements and predictions are key elements in developing advice for Department of the Interior, DOI, and Department of Defense, DOD. With the recent evacuation of Bikini Island last August, the next question is whether or not Eneu Island can be used as a village island and still maintain exposures of residents within the acceptable standards. Past data has not provided any optimism on the answer to this question. DOI is anxiously awaiting the new information. We are committed to providing this information and subsequent advice to DOI by the end of January 1979.


We have listed and enclosed suggested options relative to the assessment of Eneu as a village island. Any suggestions you have would be most welcome. We would of course be pleased to discuss this with you and Bill Robison.

Sincerely,

BEST COPY AVAILABLE

L. Joe Deal, Assistant Director
Division of Operational
and Environmental Safety

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STAFF COMMENTS

It is expected that the results of dose estimates for use of Eneu as a village island will depend to a considerable degree on the assumptions regarding land use and diet. The task of providing additional advice to DOI is further complicated by observing that while we have a chance to correct past mistakes, the problem of limiting exposures in an atoll environment is more difficult than recognized earlier.

Though the residency limitations of the return to Bikini Atoll were never well understood by the Bikinians and any understanding they may have had has been further dimmed by time, the fact is that the AEC recommendation to President Johnson for their return to the atoll and the subsequent plans for cleanup and rehabilitation of the atoll, were based primarily upon radiological considerations. First, that the U.S. radiation protection standards for exposures of individuals will be used to determine what is "safe."* Second, that any restrictions to limit exposures be simple and easily understood by the Bikinians, and three, that all involved parties maintain a spirit of cooperation to achieve the goal of the Bikinians again living in safety on their atoll. These parties include the people, their advisors, the Trust Territory Government, and agencies of the Federal Government.

In addition, past judgements and recommendations have been based on dose estimates using the average contamination level of land and food as opposed to "worst case" conditions. We believe this approach is still valid.

*There is no documentation that a numerical balance or trade-off was made between the benefits of the Bikinians return and the risks of radiation exposure. As stated in 1968, the predicted exposures "do not offer a significant threat to health and safety." In our strict application of Federal radiation standards for a similar decision to return the Enewetakese to their atoll, EPA considered the numerical values of these standards as upper limits.



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Since then, however, we have learned that:

1. The restrictions on the location of the first village and of food crops were not followed.
2. The precautions the people needed to take to keep exposures down were neither simple to understand nor easy to apply.
3. The effort to provide alternate foods to reduce use of locally grown foods, (to keep radiation standards from being exceeded) was not successful.
4. The level of the people's understanding of precautions needed to reduce and control exposures is not well known but in view of their actions we assume it is very poor. If food is locally grown and available it will be eaten by some persons in spite of restrictions against its use.
5. The consumption of certain locally grown foods will be determined in part by local conditions. For instance, the amount of coconut milk used may be influenced by the adequacy of fresh water supplies (where there is a shortage of water, people will drink more coconut milk). Storm damage can place coconuts or other terrestrial grown foods in short supply thereby changing the diet, kind (source), and amount of food consumed.

As for the intended purpose and use of the next round of Bikini dose estimates, these will be used as the basis for advice on whether or not the Bikini people should return to live on Eneu Island. Predicted doses, expressed as the highest annual whole body and bone marrow doses for individuals and 30-year whole body doses for the population, from all contributing radionuclides, will be evaluated using current radiation standards. As at Enewetak, 50 percent of annual and 80 percent of 30-year standards will be used in evaluating resettlement options. Doses from transuranium elements will be compared with the 1 mRad/yr to lung and 3 mRad/yr to bone as presented in EPA's proposed guidelines. If the radiological data base is adequate it would be most helpful to have dose estimates for the three options listed below. Among these, results for option I are essential to providing additional advice to DOI. Therefore option I should be given highest priority.

- I. Live on Eneu Island - all food grown on Eneu plus fish from lagoon:
 - a. plus imported food


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- b. no imported food
 - c. no imported food plus water shortage
- II. Live on Eneu Island - all food grown on Eneu except not all coconut from Eneu (plus imported food):
- a. 10 percent Bikini Island coconut and coconut milk
 - b. 50 percent Bikini Island coconut and coconut milk.
- III. Live on Bikini Island - all food grown on Bikini plus fish from lagoon (plus imported food).

The age group in the population receiving the highest annual dose should be used. Average values should be used for external radiation levels (by island) as well as for contamination levels of items of the diet. The diet used for previous Bikini estimates should be updated for these predictions where needed. The aerial radiological survey data from the Bikini portion of the Northern Marshalls survey should be used.

If for Options I, II, and III above there are any significant differences in the dietary intake within the population that could cause a few individuals (as opposed to consideration of differences among age groups) to receive higher doses, these should be evaluated. Annual whole body and bone marrow doses (in the highest year) for such individuals would be predicted.

Finally, the exposure history for those who have already lived on Bikini Island must not be overlooked. In calculating 30-year exposures for all three options, this past exposure must be included. Since the standard applies to the average exposure of a population, it is suggested that an average value be developed for those who lived on Bikini Island. This value will be included in all 30-year dose estimates.