Dr. Bruce W. Wachholz of [redacted] his letter dated 2 Aug 79 that the Defense Nuclear Agency review a copy of your report, "Preliminary Reassessment of the Potential Radiological Doses for Residents Resettling Enewetak Atoll," dated 23 Jul 79. DNA comments on the provided document are attached, Enclosures 1 and 2.

Overall, the document is a quality report, based on sound methodology and reasonably adequate data. The data that are available are good. However, there are several apparent weaknesses which are identified in the attached general and specific comments. Resolution of these items should

[redacted]

Hopefully, our comments will [redacted] most happy to review any subsequent drafts of this document.

Sincerely,

Richard McCoy
MG, USAF, Deputy Dir.

for

R. R. MONROE
Vice Admiral, U. S. Navy
Director

2 Enclosures:
as stated

CY FURN:
Dr. Bruce Wachholz, DoE

[redacted]

b. Page 2: "because of time and budget", food chain is based on evaluation of only about 25 percent of samples collected.

c. Page 2: "we are currently evaluating the data... to determine whether analysis of the other samples will be necessary."

d. Page 3: "evaluating the data for Northwest islands and Runit and subsequent assessments will be done later."

e. Page 3: "data is still unavailable for Pu 241... we know the ratio will vary..."

f. Page 3: "insufficient time to evaluate the diet survey... and uncertainty of the final dose estimates."

g. Page 10: "The draft report will be expanded to include Cs 137 and Co 60..."

h. Page 10: "IMP measurements... on Lujor are not complete."

i. Page 11: "Results for Lojwa are preliminary."

j. Page 15: "preliminary analysis... indicate that the pulmonary deposition would be less than 0.3."

k. Page 46: "not yet available and doses from this source will be refined at a later date."

l. Page 48: "We are currently evaluating the data... to see if... and if so..."

m. Page 48: "until a more thorough analysis can be performed..."

In view of the above, it would be unwise for either the U.S. or Micronesian governments to cite this draft report as a basis for altering cleanup and rehabilitation plans. In the spring 1978, LLL produced a draft dose estimate study which considered transuranic elements only. This study was the basis for DoE recommending that cleanup guidelines be made more stringent and for DNA in turn redirecting its cleanup efforts. Subsequently, LLL reported thei estimates were high by a factor of ten due to arithmetic error. The guideli change had not been necessary.

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questionnaire. But what assurance is there that the dri Enjebi will not turn to squash or some other locally grown vegetable which is as effective in absor ing radionuclides? Or what happens when we know and utilize the uptake of chickens and eggs in lieu of leaves and rat meat? Recommend that where possible these types of questions be addressed in the report.

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for which no estimate is made. If an alternate living pattern were adopted based on the draft report, the people would not appreciate the consequences of picnicking in the northwest or visiting Runit. It is argumentative that Runit should be placed totally off limits, and now the northwest islands may fall in the same category. Recommend dose predictions consider all islands of the Atoll.

3. Page 3, paragraph 3. Enjebi test plot Pu 241/Am 241 ratio is used to predict Am 241 "grow in" for the entire atoll. Tables 30-44 show this assumption increases Am 241 30-year dose predictions by about 40 percent. Table 6 shows the Pu 239/Am 241 ratios ranging from 1.5 to 5.4. Wide variations are also expected for the 241 ratio so that no single ratio should be used. Rather than apply the test plot ratio only, recommend "grow in" dose values be omitted from Tables 30-44 and a general discussion be added explaining potential significance of "grow in". The transuranic dose estimates are low with respect to suburanic estimates; however, in view of the interest in complying with EPA proposed guidance, the "grow in" uncertainty should be eliminated as soon as possible.

21 Aug 79

[redacted] of "natural background" and perhaps explain why the same authors used this component in NVO-140 estimates.

5. Page 5, last sentence. Exponential depth distributions are not necessarily reasonable and frequently soil sample data demonstrates some other distribution which may not be amenable to analytical expression. Thus, about one-third of the NVO-140 profile data fail to show an exponential depth decrease. Tables 2-4 indicate some 2,000 profiles were analyzed as part of the 1979 fission-product survey. Page 8, last paragraph says "more precise data can be obtained if the depth distribution is better known." Recommend the data available be used to test the exponential hypothesis.

6. Page 8, paragraph 2 and page 9, paragraph 1. Cited reference (4) is not a valid reference (incomplete).

7. Page 9, paragraph 3. The minimal detectable activity (MDA) for Am 241 is given in pCi/g whereas that for Co 60 and Cs 137 is given as uR/h. The "pCi/g" is presumed to be over 0-3 cm (page 4, last paragraph) whereas the "uR/h" is at 1 m (page 8, paragraph 2). Recommend the MDA be reported for all 3 nuclides in both units. This might allow assessing importance of Am 241 to exposure rate an sensitivity of in situ versus soil sampling for quantifying suburanic gamma emitters in soil (uR/h is referred to as R/h in various locations).

8. Page 9, paragraph 3. MDA is claimed to vary from location to location but on page 10, paragraph 3, it is claimed to be single-valued over the entire atoll. Which is correct? If the former is correct, which seems reasonable, then recommend re-evaluating data in Table 4 and discussion on page 10-11.

9. Page 10, paragraph 3. DRI is indicated as determining mean concentrations from in situ data. Transuranic concentrations reported to the CJTG were derive from Am 241 data and are given as "nonconfident data" and "70 percent confident data" based on "krigging." The confident data were used to guide cleanup actio and determine "certification" of each island. A review of Table 4 indicates the nonconfident data is used in the draft dose study. Since confident data are used to govern cleanup and cleanup is to reduce dose, it would seem that the same data should be used to predict dose. Recommend an explanation be given as to why one set of data is used to cleanup/certify islands and another set is used to estimate dose.

10. Table 4, as cited on page 10. A spot comparison of data in Table 4 with that forwarded to CJTG shows differences; e.g. "N" is 25 vs 24 for Clara and 71 vs 64 for Alice. The average Am 241 for Kate is given as 6.09 pCi/g whereas the ERSP Tech Note shows it to be 9.46 using confident data and 8.17 using nonconfident data. Recommend any changes to data given CJTG be corrected and a check on arithmetic of Tables 2-4. Additionally, Pear is omitted entirely from the study and data for Pearl was reported to CJTG.

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statistical correlation of the transfer coefficient for rat muscle and leaves, and an assumption that edible pork and chicken (domestic meat) are equivalent to rat meat. Thus, clarify if the 0.51 pCi/g is based on the correlation appr or the actual rat analyses. The correlation approach suffers, among other reasons, because the data are not "paired" and they are based on 0-15 cm soil sample data which may not be the same as used in the present study.

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extending to 60 cm and soil samples were taken to 60 cm, then why not determine CR to 60 cm depth? Rather than be consistent, the reference would seem to indicate inconsistency. More importantly, why use the same depth for all plants? Some justification is needed on why squash roots draw nutrients from the same depth as tree roots.

21. Page 23, last sentence first paragraph. To explain that results are not precise because that would involve "detailed weighing" is unacceptable. If weighing is needed, then get the Ujelang school teacher to weigh the 21 food items.

22. Page 24, paragraph 2, Table 25. Breadfruit and pandanus daily intakes for adult males total 15.5 grams whereas the NVO-140 dose estimates are based on daily intakes of 350 g. Intakes of these items at Rongelap and Uterik total 487 g according to Table 25. Dose from these two items is the primary reason that the Enewetak people are guided against any residence on Enjebi in the EIS. (See AEC Task Group Report Tables 1-4.) If the reduced intakes had been assumed in 1974, the people could have moved back to Enjebi perhaps without any cleanup. This factor clearly demonstrates the importance of diet as stated on page 49, paragraph 2. Moreover, it highlights the uncertainty in all estimates. Recommend the impact of breadfruit and pandanus intakes on dose estimates be highlighted in the study so that people who utilize the study will understand the shaky foundation on which the estimates are based.

23. Page 25, paragraph 2. Coconut consumption for Enewetak people is argued to be 0.5 nuts per day. The FC DNA-H&N "Coconut Study" of 20 Nov 78 shows that for a population of 700, and trees producing 100 nuts per year, the number of trees required for a subsistence of 0.5 nuts/day is 1,277. In other words, the entire Atoll subsistence requirements could be met by planting trees on the single island of Vera and any trees on other islands could serve for income (if the world market will purchase Enewetak coconut). The "coconut study" would indicate 20,000 trees over subsistence requirements will provide $100,000 income. Thus, coconut tree planting could be reduced by about one-half from that mentioned in the EIS and the people will meet their subsistence requirements as well as receive more income than originally anticipated. Clearly, the "coconut tree planting problem" has gone away. If you believe the low dose estimates of this study, then you believe there is no need to plant excessive trees, or if you believe more trees are needed, then you do not believe the dose estimates.

24. Page 26, paragraph 1b, page 27, paragraph 2b and 3b. Living patterns are claimed to account for time on and coconuts from islands Kate through Wilma; however, no data is shown for Pearl and Rumit in Tables 2, 3, 4, 6. Recommend explanation of method for accounting for contributions from these two islands. Also, explain method for treating a group of islands, e.g. weighted by area, weighted by fraction of cocomut harvest, equal weights, etc.

25. Page 30, paragraph 1. Include in Table 27 the actual reference man weights which are used to avoid confusion since International Commission on Radiation Protection (ICRP) 23 gives several weights under bone, lung, etc,

26. Page 31, last paragraph. Implies that the old ICRP metabolic are being used. New ICRP 30 calculations must be checked to see if values change significantly for Cs 137 and Co 60.

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The emphasis of paragraph 2 in fact should be that no [redacted] can insure residents will receive doses less than the guidelines.

REPOSITORY PNNL

COLLECTION Marshall Islands

BOX No. 5686

FOLDER Enewetak Presentation to PNL Management

DOCUMENT DOES NOT CONTAIN ECI

Reviewed by K Schuette Date 4/30/97

DOES NOT