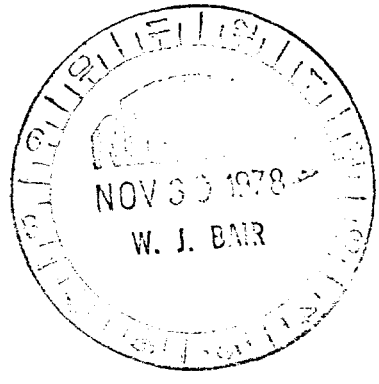
410108

R

E

Department of Energy
Washington, D.C. 20545

November 20, 1978



Dr. William J. Bair
Manager, Biomedical and Environmental
Research
Battelle
Pacific Northwest Laboratory
P. O. Box 999
Richland, Washington 99352

Dear Bill:

For your information and records, enclosed are copies of my notes of the Advisory Group's meetings at Enewetak on August 22-24, 1978, and at Denver on October 3-4, 1978. (I have taken the editorial liberty to modify some of the more colorful language.) Corrections are welcome.

You have already received copies of the following:

(1) A preliminary report to Col. Bauchspies given to him on August 25.

(2) Dr. Bair's letter and report to Hollister dated September 21, 1978. This is the final report following the preliminary report (1) above.

(3) Dr. Bair's letter and report to Hollister dated October 23, 1978, following the Denver meeting.

Sincerely,

Bruce Wachholz/amp

Bruce W. Wachholz, Ph.D.
Division of Policy Analysis
Office of Technology Impacts
Office of Environment

Enclosure:
As stated

Tuesday, August 22, 1978 2:30 PM

Advisory Group members present: Bair, Gilbert, McClellan, Richmond, Templeton, Thompson, Wachholz

Other participants: McCraw, Ray, Still, Sanchez, Bauchspies and staff

Command Briefing by JTG staff.

Command structure doesn't have direct control over operational activities.

Must go through series commanders.

Op plan 600-77 is controlling authority.

Major tasks:

I. Clean-up debris falls in 3 categories:

Contaminated material to crater (red)

Contaminated material to lagoon (yellow)

Leave as is (green)

II. Reduce surface contamination to 40-80-160 criteria.

III. Special activities:

Contaminated bunkers

JTG is sealing some bunkers on Enjebi, rather than removing them (by sealing the entrance to the bunkers, they feel that they are "removing the hazard" such that it is "not a hazard").

Aomon crypt

Pace crater (court order to restore contours)

Plowing experiment

IV. Island Status

Some are ready for certification.

All others in process of being cleaned-up--except one (Walt)

A limiting factor in soil removal is transport across the lagoon.

By 6/1/79 80K yds^3 should be moved (originally estimated at 69K yds^3)

Accelerated schedule is maintained by Navy crews working 12-21 hrs/day and by the use of bulk loading techniques.

Sources of material:

Aomon <40 pCi/gm	10,308 yds^3	
Aomon crypt	12,000 yds^3	
Enjebi <50 pCi/gm	15,000 yds^3	
Enjebi <45 pCi/gm	16,000 yds^3 (additional)	60K yds^3
Boken (subsurface)	1,400 yds^3	
Lujor <160 pCi/gm	2,500 yds^3	

(much of it subsurface)

No 1/4 hectare exceeds these values (on an average)

At the tremie pile soil is screened to remove particles >1-1/2 inches.

A permit to dump Pu-contaminated soil into the crater was given by the Corps of Engineers.

The tremie operation probably will be the limiting operation.

The number of passes needed to reduce soil levels to <40 pCi/g varies according to island.

Enjebi: A single pass is enough.

Aomon: $\geq$4 passes are needed (to obtain a good zero area)

A resurvey is made after every pass.

V. Debris

The early estimate was 7315 yds^3.

To date 16,267 yds^3 has been cleaned-up.

The current estimate is 22,000 yds^3.

VI. At the May 3-4 meeting at DNA-Headquarters the following items were discussed:

1. Convert LCU & LCM for bulk soil hauling.

2. A plan for the Aomon crypt, considering that:

    a) Walls collapse when dug to a depth greater than 6 feet.

    b) Estimates of the depth of the crypt range from 15-30 feet.

    c) Retaining walls will have to be built in order to dig out the crypt.

    d) The channel is 25-30 feet deep.

3. Remove soil >80 pCi/gm from Aomon; this will take it down to <40 pCi/gm.

4. Remove soil from Enjebi--JTG started at the areas of highest concentration.

    Thus far they are down to ~45 pCi/gm.

    They anticipate the removal of a large soil volume in order to get down to 40 pCi/gm.

    What is the practical difference between 40 pCi/gm and 45 pCi/gm?

5. A plan for the refill of the Pace crater site.

6. Removal of soil from Runit on a noninterference basis.

7. To stockpile contaminated soil on Runit in 3 piles:

    >1,000 pCi/gm

- 160-1,000 pCi/gm

    <160 pCi/gm

VII. Roger Ray then discussed the status of each of the islands being cleaned-up.

Boken

Nesting sooty terns are holding up work in the area.

Surface contamination levels are highest at the area where there is subsurface contamination.

They expect to get to ~40 pCi/gm.

Subsurface work may be needed.

Other areas of the surface are <40 pCi/gm.

Bair: Have you looked at how much Sr/Cs has been removed after cleanup?

Ray: Have data but haven't analyzed it.

Not doing any Sr-90 work at present.

Enjebi

There is no 1/4 hectare >50 pCi/gm.

Soil volume estimates are pretty soft.

There are subsurface areas at fairly high levels of contamination.

To remove these probably will require the removal of much soil.

Lujor

A good part of the island has been plowed.

Bunkers and debris have been removed.

These activities result in the surface being <40 pCi/gm.

Originally there were areas of high levels.

The island needs a fair amount of evaluation yet, however.

Aomon

The island is essentially below 40 pCi/gm.

There is a small area at the ground zero site, however.

They have gone down to the coral, and the coral itself is not contaminated.

Is there silt in the coral?

Water samples a few yards from the crypt have the same activity levels as water samples taken further away.

There is very little motion or flow out of the crypt at present, as evidenced by dye studies.

In the short-term there should be no threat because of the crypt, although this can't be stated with certainty.

Lojwa

There are no IMP readings yet.

No soil removal will be required.

Data is needed only for the verification of the status of the island.

There is an air monitor on Lojwa, as there are also in all working areas.

There are no TRU/Sr/Cs values from the batch plants, screening plant, or stockpiles.

Richmond and McClellan: Samples of materials in crater should be taken in case they are ever needed for the record; it would require little additional effort.

Ray: Thousands of soil samples have been archived based on their grid location. This procedure has not been changed to make an inventory of the contents of the crater.

Precise readings of the remaining contamination of the islands is what is needed and most useful.

August 22, 1978 7:35

Advisory Group members present: Bair, Gilbert, McClellan, Richmond, Templeton, Thompson, Wachholz.

Others present: Stewart, Still, Ray, Sanchez, Prall, Bauchspies, Martin, McCraw

Bauchspies: Presented demonstration of TV cassette recording capabilities.

Discussed the following day's agenda and itinerary.

Accepted as presented.

Bair: What about a visit to Japtan? There appears to be no obvious benefit to visiting it.

All: Agreed to eliminate Japtan - will fly over instead.

Bauchspies: He described the flight pattern and indicated that the pilots and crews are at our disposal.

Bauchspies: Discussed Bunkers on northern islands.

Radiation levels exceeded expectations - primarily β.

What were the trade offs? Leave as is? Destroy? Other?

Initial readings said bunkers were within ANSI limits for release to the public (600 cpm vs 1000 cpm).

Removed interior of bunkers and sealed the entrance.

Resurveyed - 2 exceeded limits on Boken (Twice ANSI limit).
1 bunker has 2 hot spots - It might be used as typhoon shelter. (?)
1 sealed and covered on Enjebi.

Sanchez: The dose from these bunkers is not worth talking about.

Bair: What isotope is present?

Sanchez: Probably Sr-90, but this has been arrived at by process of elimination, since there is no gamma; we're not too sure.

Ray: JTG & FDC has a recommendation from DOE that indicates that it's not a problem to worry about.

Monroe agrees with this but with two coveats:

1. Get a concrete expert in. (This was done; he says that the building will stand for a very long time.)

2. Obtain evaluation from the Bair Group.

Bauchspies: He doesn't think it's a problem but is following the Admirals order to raise it with the Bair Group to ensure that the Group is satisfied.

Ray: Says he recommended to ignore it.

It is not in excess of soil contamination levels.

If his advise is not acceptable to DNA, then DNA should go to DOE with request to involve the Bair Group. DNA should not go to the group directly.

ments should be archived.

Bair: Suggested deferal of discussion of Thursday's schedule until tomorrow.

Meeting adjourned 8:28 PM.

Thursday, August 24, 1978 10:30 A.M.

Advisory Group members present: Bair, Gilbert, McClellan, Richmond, Templeton, Thompson, Wachholz

Others present: Bauchspies, Sanchez, Norton, Still, McCraw, Prall, Stewart

Bauchspies: Concrete chips from the bunkers were analyzed for radioactivity.

Stewart: Preliminary information is that it is almost entirely ^{90}Sr.

Bauchspies: We will provide the readings from the bunker measurements.

Each of the issues which FCDNA/DOE handed out at the 8/22 briefing was then discussed by Sanchez. (See attached list of issues)

1. Contaminated bunker guidance--resolved per Tuesday's discussions.

2. Aomon crypt: DNA hopes to excavate it.

   Perhaps coffer dams (or series of small coffer dams) can be erected.

   The material is perhaps 8' down, with a total TRU concentration of 1600 pCi/gm.

DNA plans to remove the debris, at least.

Bauchspies: We need radiological guidance.

DNA/FC is going to the Pacific Ocean Div of the Corps of Engineers for guidance.

The area of the burial crypt is about 250' x 50', and is located 28' from steel pile causeway.

The monument is at the center of the crypt.

Markers are at the corners.

There is some question as to the actual area; perhaps the crypt is as large as 300' x 60'.

Bauchspies and Sanchez: What guidelines can you give; e.g., What material can be left? How do you measure it?

The crypt presumably contains, among other things, cut up pieces of the steel tower from the Kickapoo shot.

Richmond: Where was the tower placed?

Sanchez: Ferrous metal was placed in the crater. Nonferrous metal with readings less than 100 μR/hr. was placed in the lagoon.

3. Soil clean-up criteria - See 4 below.

4. Preciseness of 40-80-160 - Can one be over 40 pCi/gm (e.g., 42, 45, etc.); how flexible are numbers?

5. Cover Lujor - Lujor problem solved after the debris was cleaned-up the surface levels were less than 160 pCi/gm.

In removing debris, was the island effectively plowed?

Stewart: The island has been re-IMPed, but not yet reprofiled. Preliminary surface readings are below 160 pCi/gm.

6. 4th Category if 160 pCi/gm level cannot be met--pertained to Lujor and is now irrelevant.

Are levels between 160- ~300 pCi/gm useful for anything other than quarantine?

See (5) above; Lujor now <160.

7. Surface hot spots - minimum areas, levels - What about individual IMP readings?

What is the minimum area requiring clean-up?

Is it 1/4 hectare?

Should twice the 1/4 hectare average be cleaned-up or not?

8. For subsurface contamination, should DNA use the IMP field of view (~1/16 hectar).

To determine levels $\gtrless$ 160 pCi/gm?
To determine areas to excise where the levels are >160 pCi/gm?

9. Should DNA relate a 6" cut with the 20 cm soil profile technique? Is there a significant difference between a 15 cm versus 20 cm profile?

This is almost a none-problem.

10. Should DNA plow? Under what circumstances? Should hot spots be plowed?

What are trade-offs of resuspension and the inhalation hazard vs depth distribution regarding plant uptake and entrance into the food chain?

Richmond: Keep in mind that the effects of single versus repeated plowing depends upon ultimate land use.

Sanchez: Described DOI planting techniques.

11. Island average vs maximum value - What about the Bramlitt study vs LLL reassessment of dose?

LLL - used island average.

- Bramlitt: Used max. value and island average. Island average is valid.

(Based on live-in with Marshallese.)

(Family has access to coconuts in a single line crossing several hectares.)

How do we meet EPA guidance?

Do we average?

Templeton: LLL indicated at the June meeting that they would take this into account.

12. Clarification of 40-80-160 guidelines--What about Runit?

[illegible] the post-exchange.

The Marshallese (4 districts) voted for federation with U.S. (1981).

2 districts want a closer relationship, but they must do this on their own.

They prefer the benefits, but wish to avoid the taxes and disadvantages.

Adjourn 12:15 P.M.

Thursday, August 24, 1978 1:15 P.M.

Advisory Group members present: Bair, Gilbert, McClellan, Richmond, Templeton, Thompson, Wachholz

Others present: Still

Bair: Request Ray to provide copies of the plowing experiment description.

* This description was written by Jones, Univ. of Hawaii; Ray will get copies of text of report of plowing experiment.

Technical notes 10.0 and 10.1 from ERSP were distributed.

Bair: What should we do this PM about providing advice to Bauchspies?

Thompson: We should say something, e.g., comment on Jody's averaging method.

It was agreed that we would provide DNA with a preliminary report, with qualifications, before we leave. Bair will draft.

It should be pointed out to DNA that this is not a Committee meeting; three members are not present.

Discussion of the points raised by DNA:

1. a) Precise adherence to the ANSI standard is not appropriate in this situation.

   b) There is no point in expending additional effort to reduce the levels of contamination on the bunkers.

   c) Commend DNA for foresight in cleaning bunker for use in storm.

   d) Commend DNA for strenuous effort to remove contaminated material from bunkers.

* e) Do we endorse Ray's advice? McCraw will get a copy of Ray's advice.

   f) Leave anchorblocks as is for future reference unless they are na igational hazard.

2. Thompson: The 40-80-160 pCi/gm guidance was not meant to apply to subsurface concentration levels such as in Aomon crypt.

* General discussion that the Group cannot offer guidance at this time because there is not enough information regarding radionuclides, quantities, etc., and that information data from dye studies should be obtained.

3. See (4) below.

4. Reaffirmation of original guidance--the 40pCi/gm guidance should be the goal.

5. No longer a problem.

6. See (4) above.

7. When IMP readings (based upon 90% of a 25 meter square area) exceed 40 pCi/gm (or 80 or 160), the area should be cleaned-up.

Separation of the oil and meal of the Bikini coconuts will start next week at Majuro.

Although the oil is an important product, it is the meal that provides the profit margin.

Bair: Can you obtain the data and be specific in how we can help?

Please put specific request in writing.

It's difficult to deal with the issue at this meeting.

The item should be on the agenda for the next meeting.

McCraw: Will provide whatever information is available.

Considerable discussion took place on the subject of subsurface contamination.

Is it necessary to define subsurface (e.g., anything below a certain depth, perhaps beyond the depth of an IMP reading)?

What numbers apply for cleanup criteria for subsurface radiological contamination?

Can we provide at least broad guidance?

Should we defer to the operations plan?

Should surface criteria apply also to subsurface contamination?

Core samples should be analyzed.

Should criteria be a function of depth? of area?

Should core samples be averaged?

General opinions include:

Investigate only when portions of a profile sample exceed 160 pCi/gm.

Cover area (2 meters radius?) from the sample location.

Four core samples should be taken to the depth of the 160 pCi/gm sample.

Apply 40-80-160 pCi/gm guidance to average concentrations of transuranics in the core samples.

Bair: Will attempt to word the above opinions.

Bair and Wachholz agreed to draft a preliminary response, with appropriate qualifications, to Bauchspies which will address the major issues raised by DNA/JTG.

October 3, 1978 1:20 PM

Advisory Group members present: Bair, Gilbert, Healy, McClellan, Thompson, Wachholz (Bill Templeton arrived at 4:20)

Others present: Madeline Barnes, McCraw

There was a discussion of the issue of ocean dumping per Richmond's comments at the Livermore meeting and in his letter to Bair.

The history of the decision was reviewed and the positions taken by DNA, EPA and AEC/ERDA/DOE.

DOE never advocated nor formally agreed to crater option.

Bair: What type of precedent does this set regarding other islands (i.e., Bikini)?

A discussion by McCraw of his recent trip pertaining to the 13 atoll survey was added to the agenda.

The Coconut Issue

Hollister/Deal/McCraw counseled not to plant coconuts in northern islands.

OES would like a committee opinion.

McCraw: DNA feels obligated to plant coconut trees as identified in the EIS.

40,000 trees total

13,000 on the southern islands

DNA wants to do this while logistical support is still there.

DOI wants it done while DNA is out there.

Kate thru Wilma (NW quadrant) are to be planted also (Case 3 of the EIS).

McClellan: What is the Cs level at Bikini?

McCraw: The following are comparisons of Bikini and other islands:

	^{137}Cs	^{90}Sr	Coconut Cs
Bikini	43 pCi/g	76 pCi/g	250-300 pCi/g
Enue	2.9	4.1	6-48.5
Kate	24	67	
Lucy	11	32	
Percy	0.94	13	
Pearl	19	62	
Ursala (Lojwa)	1.7	6.8	
David (Japtan)	.21	.41	
Southern Islands	.14	.52	
Leroy	3.2	11	

Bikini People

	Whole-Body μCi-^{137}Cs
1967	.1
1977	1
1978	
12 people	>3
Highest individual	6½
Average (~100 people)	≤1 (~0.9)

(3μCi = .5 rad/yr -- exposure limit for the individual)

(See the July 11 letter from McCraw)

BNL is predicting body burdens of 20-22 μCi ^{137}Cs if the people remain on Bikini and reach equilibrium.

Under these conditions the exposure level may be as much as 7 rad/yr.

Healy: What about ^{90}Sr? (0.2 μCi ^{90}Sr = 6 rad = 30 rem)
(0.2 μCi ^{90}Sr is the exposure limit for the individual)

McCraw:

Bikini

pCi/g

	Cs	Sr
Coconut (5 trees)	584	.66
Papaya	545	
Breadfruit	119	
Coconut fluid	133	

Enue

Coconut (12 trees)	44. (12-97)	.065
Squash	142	
Watermelon	27.5	
Coconut fluid	17.5	

Healy: Do the people expect to go back in 1982?

McClellan: They're there now. Plant a coconut and they'll go back.

Discussion

It's difficult to accept the statement that the natives will respect the quarantine of one or more islands.

Comparative risks must be considered.

Will the U.S. ultimately have to remove people again?

McClellan: Who made decision to remove Bikinians?

ERDA in 1978 advised that people (130-150) be removed.

Gilbert: Will the people be followed radiologically after their removal when they are on a new diet?

McCraw: We were not able to get a data point before the people were removed.

Ray was directed to count people after they were removed.

Ray may be moving slowly.

BNL will do the counting.

BNL will try to count 25-30 people.

Gilbert: How will the people be selected?

McCraw: They will be volunteers.

Keep in mind that the people will be scattered over several islands.

Healy: What will you learn by counting 25-30 people?

McCraw: We should obtain the highest body burden level.

Healy and Thompson: This might have been valuable if it has been done before as well as after they left, but now?

Healy: If the BNL Cs body burden estimates are correct, you must eliminate everything >5-6 pCi/gm, exclusive of foods or other sources of ^{90}Sr.

McClellan: How did you get there?

Healy: $3\mu Ci \approx 5$ rad/yr

BNL estimates up to a 20-22 μCi body burden.

21/3 = 7 body burdens

43 pCi/gm (soil on Bikini)/7= $\sim$6

McCraw: What about copra?

Healy: This is a political, not a technical, issue.

What is the implication of not planting coconuts?

Thompson: Sr doesn't look to be a problem in coconuts.

But BNL estimates ^{90}Sr to be a major cause of exposure in people.

Bair: Surely there must be more data on Sr in other foods.

Healy: Are the watermelon values for wet or dry weight?

McCraw: Dry weight.

Healy: There must be a source of Sr-90 that is unknown if the coconut content is low and body burdens are high.

Wachholz: We don't know the basis of the BNL extimates.

McCraw: Discussed the BNL draft report.

Healy: Is LLL getting Pu, Am, Cs, Sr, data from coconuts?

(No answer)

Healy: What do the coconut ^{137}Cs concentrations average?

McCraw: For 12 coconut trees the average ranged from 12-97.

Bair: Look at Enewetak:

1) The people are there already.

2) When DNA leaves they'll go to the other islands.

3) If there are any foodstuffs on the northern islands they'll go get them.

McCraw: They eat coconut in the fields and take them home.

4) There are two problems:

a) The hazard due to $\sim$20 μCi ^{137}Cs,

b) The disruption and publicity of people's lives; is this the greatest hazard?

McCraw: The potential hazard of alcohol from coconuts hasn't been considered.

[redacted] were permitted to [redacted] planting [redacted]
high + Cs + Sr levels)?

The estimated exposures still were <0.25 rem/yr (planning criteria).

Considering the economic advantage and the low exposures, coconut planting was permitted on northern islands.

Now, the dose estimation was much too low as a result of the Bikini experience.

Also, what is marketable coconut under the circumstances?

Healy: To what extent would Enewetak coconuts be diluted by other coconuts at Majaro?

McCraw: Handed out earlier calculations and discussions (May 1970) regarding Bikini.

A discussion of the marketability of copra followed.

Wachholz: Will the people move back to the northern islands as soon as DNA leaves?

McCraw: Probably.

Healy: At the last meeting in Livermore, Ray assured us that natives will not observe restrictions.

Are we being asked to endorse the DOE letter to Admiral Munroe?

McCraw: DOE must also address the commercial issue.

Healy: Discussed Federal Radiation Council guidance.

Should we say that if it can't be eaten locally it shouldn't be exported?

[illegible] clean up [illegible] [illegible] [illegible]

Cs dropoff is exponential and is similar to that of Am.

The TRU cleanup amounts to about 1 Curie/10,000 yds^3.

Healy: Who's tracking Cs?

McCraw: LLL will do the dose assessment after the clean-up is complete.

Healy: The Cs levels and potential effects must be calculated as you go along.

Wachholz: What happens if DNA pulls out and LLL subsequently calculates excessive doses?

Healy: DOE should collect the data and USE it before DNA leaves.

McCraw: We are.

Healy: Who?

Barnes: No one is measuring Sr.

McCraw: No one told us to measure Sr.

Thompson: But are all of the samples saved?

Barnes: Yes.

McCraw: If you are recommending additional dollars and effort for Sr studies, fine.

Healy: One person or group should examine ALL of the data to make dose estimates.

McCraw: LLL is getting $50K for dose assessments. This does not include sampling.

Bair: LLL looked at:

alternate islands

alternate living patterns

impact of copra on world market

- impact on the people as copra is withdrawn from the world market

McClellan: Do we advise Dr. Liverman or EV?

Bair: ASEV

McClellan: I compared the planning and planting recommendation with soil values.

3 islands - no measurements -- all NO (i.e., do not plant coconuts).

Janet & Yvonne (NO)

Boken (NO)

YES's

Southern islands	.14 pCi/gm ^{137}Cs	.52 pCi/gm ^{90}Sr
Elmer, Fred, David	.21 pCi/gm ^{137}Cs	.41 pCi/gm ^{90}Sr

NO's

Lojwa	1.7 pCi/gm ^{137}Cs	6.8 pCi/gm ^{90}Sr

others all higher

McClellan: Now let's back up -

Despite millions of dollars, the impact and dose assessment is the cornerstone of effort and the criteria of success. A complete dose assessment is desperately needed. The dose for coconuts must be placed in framework of TOTAL integrated dose assessment. It has NOT been done. Any decision regarding the northern islands is premature.

Healy: We also need more information pertaining to copra for answers.

Thompson: How meaningful are calculations? Look at Bikini.

Healy: Use the Bikini data.

Thompson: Intuitively we know that the northern islands are as bad as Bikini.

If 0.5 rem/y is to be applied (which is the radiation exposure limit for this situation),--

McClellan: But what number should be used?

Healy: A higher authority should make that decision.

McClellan: Should we use 0.6 rem/yr for the number, or should 0.5 be an average, or 1, or what?

There followed a general discussion on available relevant information.

Thompson: Numbers in people are much more relevant than calculations from sample collections.

Healy: We need more questions--

Is Sr there? How much? How serious is it?

McClellan: ASEV should spend $2-3 million/yr for 1-3 years to do an adequate and defensible job.

The LLL effort is totally inadequate.

McCraw: We don't know anything about Sr, but the bone marrow dose probably is higher than the bone marrow dose due to Cs levels.

Thompson: We don't know how valid the Sr data are.

McCraw: The BNL data show:

By 1978 Whole-Body Counts

Cs μCi	Sr μCi
2.3	1.6
3.9	6.7
1.3	3.15
3.8	7.5
5.9	9.4
1.17	.61
3.07	5.5

By telecon 10/4 it was established that the BNL Sr estimates are based on a single 24 hr. urine sample taken on island.

Healy: The specifics may not be exact but the values are indicative of the problem.

How valid are the values?

Apparently there was no accounting for body size or weight.

Wachholz: At a previous meeting there was a recommendation to review the BNL program.

Healy: This is needed.

McClellan: What is BNL expected to do?

McCraw: Survey people (counting) and sites.

McClellan: We need to know what's going on at BNL.

Healy: We need a strong recommendation to point out to Hal that a TOTAL integrated effort is needed.

McClellan: I thoroughly agree.

When did LLL and BNL last talk to each other?

McCraw: They don't.

Wachholz: They apparently don't work with each other or, for that matter, eve trust each other with data, privileged information, and such.

Healy: What about the integrated data base for $50K?

McClellan: Washington is doing an inadequate job of running this program.

No one is running it.

Healy: We should respond to their needs and lay out the concerns, but get it on the record.

McClellan: Should we speak directly to ASEV?

Healy: Let's address the copra before broadening the discussion to the management issue.

Bair: I sent 8 items in the last letter. Should I concentrate on one at a time?

McClellan: The program is based on legacy rather than current analysis of the needs. An integrated effort should be made available to EV.

Healy: Should we suggest to Hal that Bair should accompnay Joe when he briefs Clusen?

McClellan: Bair and I may talk to him at ANL.

McCraw: Catlin initiated OES involvement in the Marshall Islands and got the first dollars for Marshall Islands programs.

McClellan: Let's come back to the main issue.

Healy: Send a very strong letter to Hollister rather than go over his head.

McClellan: Don't continue to endorse present practices.

It's her problem.

You can't rely on DOE staff to tell her that her staff is doing a rotten job.

The group should meet without McCraw or Wachholz present.

Healy: DNA is worried about records at Enewetak.

There is no quality control at the lab out at Enewetak. (The manager, chemist, etc. belong to Eberline, while the lab staff are Air Force and Navy personnel.)

DOE will not referee the Eberline lab.

The method of data reporting is terrible.

Bair: Let's come back to us.

Thompson will draft response to coconut trees.

Subsurface Contamination

Bair: Background--

Backhoe diggings found high levels below the surface.

The questions relate to areas accidentally stumbled upon.

Healy: How much higher than the guidance are the subsurface levels?

Barnes: Boken - about 100 times higher (~3,800 pCi/g), but this is in a small volume.

Enjebi - about 10 times higher (~100 pCi/g), although there are places up to ~270 pCi/gm at depths of 40-100 cm.

We're stymid by the limitations of the Op Plan.

Discussion of operational problems of identifying areas and degrees of subsurface levels. (These are better defined on Boken than on Enjebi.)

Soil values are erratic which exacerbates the subsurface problem, and makes putting confidence on values extremely difficult.

Wachholz: If the Op Plan could be changed, how would you change it?

Barnes: Except for 1 area, we have prospected only in areas already suspect, such as ground zero areas and suspected burial areas (e.g., Enjebi has both).

If the Op plan could allow defining a boundary instead of determining concentration it would be a big help. Guidance is needed to determine:

1) criteria of what is high enough to consider it high (160 pCi/gm), and

2) what distance defines boundary.

This issue should be recast from an estimation problem to a "define the boundary" problem.

Healy: Has this been suggested to DNA?

Barnes: I'm not in a position to do so.

Bair: Would the Army be amenable?

Barnes: Probably.

Healy: The objective really is to locate the problem and get rid of it.

Don't mess around with averages.

Thompson: The answer is simple:

Dig it up on Boken;

Leave it on Enjebi.

But this must be worded carefully.

Barnes: There are two areas near the surface on Enjebi.

Thompson: How do you word it carefully?

Healy: The group has reviewed the issue of subsurface contamination and concluded that Op Plan is not operable for these situations:

The material on Boken should be removed,

The material on Enjebi should be left as is except to remove the asphalt.

McCraw: Add that it's a very site specific problem and that we don't have enough information.

Templeton: The Op Plan was written before the specific situations arose.

Thompson: The Op Plan is good for generic issues, but specific issue should be addressed on a case-by-case basis.

Templeton: What do the DOE field people say?

McCraw: Nothing.

*Bair: Requested Healy to work with Barnes to draft a recommendation to solve these problems and to address these problems and to address the generic issue.

Templeton: Why do we have to address these things instead of DOE field people addressing them?

Barnes: ERPS makes judgments based solely on the Op Plan.

Templeton: That's okay, but they should raise these matters to DOE.

Healy: The DOE person in charge probably is perturbed at the Army.

The Farm

Bair: The farm is extremely important but it appears to be inadequate.

McClellan: Definitely.

Templeton: If they get soil and fruit samples, fine.

The problem is that Holmes and Narver did not look out for the farm.

Gilbert: What's wrong with the farm?

Bair: I thought it was an experimental plot which would provide much data.

McClellan: It seemed more like a "happening" rather than a planned activity.

I expected 25-100 coconut palms.

Templeton: Will it provide enough data?

Bair: That's the question.

Thompson: Is it possible to get information from there?

Bair: It appears not to have been cared for.

Templeton: I agree, for example, water, burlap, etc.

Thompson: Should the Marine Lab care for it?

Healy: The dose assessment is the critical issue.

We can ask whether it will provide the appropriate information, but who's defining what information is needed?

Templeton: On Enjebi instead of on Eneu.

Bair: We should be helpful to Watters with our comments.

together.

Thompson: It's a political, not a scientific, issue.

Bair: Should we write ASEV?

McClellan: I think that it can be done diplomatically.

It's a problem bigger than OES, BER, NV, etc., and can only be addressed by EV.

McCraw: No one can show a DOE obligation in the Marshall Islands, but there are agreements for Bikini and Enewetak.

Bair: What is the authority for the 13 atoll survey?

McCraw: A court order?

A discussion followed regarding funding of the 13-atoll survey: sampling, sample analysis, dose assessment, etc.

McCraw: $2.9 million has been budgeted but has not yet been found.

Templeton: Expressed concern over possible conflicts of priorities regarding the survey vs Enewetak.

Wachholz: What are the relative priorities?

McCraw: LLL is not doing assessments regarding Enewetak until after the clean-up is completed.

* Templeton: We should ask LLL for a revised dose assessment.

Healy: Sr and Cs and time lapse concerns haven't been addressed.

Templeton: When will samples be analyzed for Sr and Cs?

McCraw: They are not scheduled.

* Healy: We should see a complete plan for all of the islands at our next meeting:

Who is doing what?

When things will be done.

All of the problems are interrelated, and it goes back to McClellan's concern regarding DOE management.

Templeton: Who advised the Bikinians to return?

(Burger, Totter, John Harley, Paul Tompkins, Conard)

When DNA pulls out the Enewetak people and the Congress will ask why the people can't return with restrictions.

Healy: No one person is responsible and knows all aspects of the situation.

*Two letters should be written:

(1) Address McClellan's concern about management.

(2) Address the adequacy of the data base and planning activities.

Barnes: The Desert Research Institute has some of the data base.

Bair: We recommended at the Livermore meeting to integrate the data base.

* We also recommended a review of all of the activities of the Marshall Island participants after January.

Who's working on it?

(No response)

Chet Francis' review of the plowing experiment.

Everyone anticipated the plowing experiment except Ray.

Deep plowing won't be easy, but it can be done.

Deep plowing has never been shown to increase plant uptake.

There is a dramatic reduction in Am-241 surface levels (e.g., 15-37 pCi/gm) going from 0 to 5 cm depth of soil. Corresponding IMP readings are 5-18 pCi/gm.

A discussion of the application of this to dose assessment followed.

Pu and other TRU elements are a non-problem via plant uptake.

The real problem is Cs and Sr.

already too late for plowing.

Some 8-12 other islands have hot areas which should be plowed.

McClellan: That may be right, but the data are inadequate, especially regarding Sr and Cs.

Francis: Agricultural islands are a different story with ~160 pCi/gm to put underneath the surface.

McClellan: This all comes back to an inadequate integrated program.

We need Cs and Sr values for the islands.

If this program is important, why can't the necessary resources (PNL, ORNL, etc.) be mobilized.

Bair: What do we need to offer guidance on plowing?

[illegible]

Barnes: The agriculture islands are in the 50-70 pCi/g range.

Templeton: Perhaps plowing should be done before DNA leaves.

Perhaps subsurface soil may be higher than surface.

Barnes: Except for Lujor all of the agricultural islands are below 80 pCi/gm.

In fact, all of the islands except Lujor are below the guidance limits.

Templeton: The trade-off is that we reduce long-term TRU in exchange for an increased delay in the return of the natives due to Sr and Cs.

McClellan: We don't really know about these crops in this soil despite Francis' statement that plowing experiments never increased uptake.

DOE is managing piecemeal and not as a total program:

Inadequate data base,

Efforts are unfocused,

They are not doing a first-rate job,

They are not using the data which is available.

Francis: No decision should be made at this time regarding plowing.

Bair: We should identify Sr and Cs data as needed for decisions.

Templeton: When will we get the revised LLL dose estimates?

Thompson: Dose is not the criteria; we have to do what is practicable.

McCraw: DNA wants to clean-up Runit.

Are we saying that other islands should be further reduced instead of cleaning-up Runit?

Thompson: What is the situation on Runit?

Barnes: Discussed the TRU levels on Runit.

The JTG is in the talking stage about cleaning-up Runit.

The question will come; What should we do on Runit and where?

Templeton: Don't send the question to this Group.

Healy: DOE knows this is coming. Is anything being done to pull the data together and identifying and preparing alternatives?

McClellan and Templeton: The problem is EV.
Let's say it clearly for LAST time.

Templeton: We should have a BNL review.

Wachholz: What is happening to the Aomon crypt?

(No one knows.)

* Francis: Will talk with Robison to revise the dose assessment.

McClellan: Carefully specify the assumptions.

Templeton: The assessment should be done with and without plowing.

McClellan: Clearly identify the input, parameters and assumptions.

Thompson: He read his statement regarding planting coconut and a discussion followed.

Healy: What about the certification issue?

What is being done to prepare for this?

McCraw: The certificate (a) says that the criteria are met, and (b) determines island usage.

Healy-Templeton-McClellan: Who determines when the people return?

What's being done to reach this decision?

Templeton: Whatever needs to be done should be done NOW before DNA pulls out!

Send comments to Hollister.

Add to Thompson's comments.

Spell out concerns over the lack of a long range plan.

Healy: Discussed his comments regarding subsurface contamination.

* To Hollister: Send the Group's concerns to Hollister regarding the long range management plan.

He should return it to the Group with his comments.

He should take it up the management chain.

* To Clusen: Generic concerns should be identified and discussed.

McClellan and Templeton: Discussed role and issues of the Farm.

Thompson: The data from Bikini is much more relevant than the Farm; at Bikini there are coconuts, other plants, people counts, etc.

McClellan: It all goes back to DOE management.

There followed a discussion of the use and purpose of the farm and of the Bikini data.

McCraw: The farm is estimated to provide guidance within 5 years on how long it may be before the people might return to Enjebi.

The 5 years are now up.

Bair: We must adjourn.

Templeton: What about all the other items that should be discussed?

We need more than a 12 hour meeting.

We are not a technical committee, we're an advisory group.

ISSUES

BAIR COMMITTEE

FCDNA PROBLEMS

(271553ZJUL78)

1 CONTAMINATED BUNKER GUIDANCE
2 AOMON CRYPT
3 SOIL CLEAN-UP CRITERIA

(011505ZAUG78)

4 PRECISENESS OF 40-80-160?
5 COVER LUJOR?
6 4TH CATAGORY IF CAN'T MEET 160?
7 SURFACE HOT SPOTS - MIN AREA, LEVELS
8 SUBSURFACE CONTAMINATION 160 OR HIGHER 1/16 HA?
9 CHANGE SOIL PROFILING TO EACH 15CM VICE 20CM
10 PLOWING ADVISABILITY

(172107ZAUG78)

11 ISLAND AVERAGE VS MAX VALUE
12 CLARIFICATION OF 40-80-160 GUIDELINES

DOE PROBLEMS (ISSUES)

(102200ZAUG78)

1 ENJEBI CLEAN-UP
2 PLOWING EXPERIMENT
3 AOMON CRYPT
4 QUALITY CONTROL OF SAMPLING PROCEDURES
5 DOE IMP & LAB OPERATIONS
6 EXCISING OF SOIL

REPOSITORY PNNL

COLLECTION Marshall Islands

BOX No. 5686

FOLDER Enewetak Nov-Dec 1978

DOCUMENT **DOES NOT** CONTAIN ECI

Reviewed by P.K. Schuette Date 4/30/97