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Department of Energy
Washington, D.C. 20545

August 7, 1978

Members of the Enewetak Advisory Group

ADVISORY GROUP MEETING

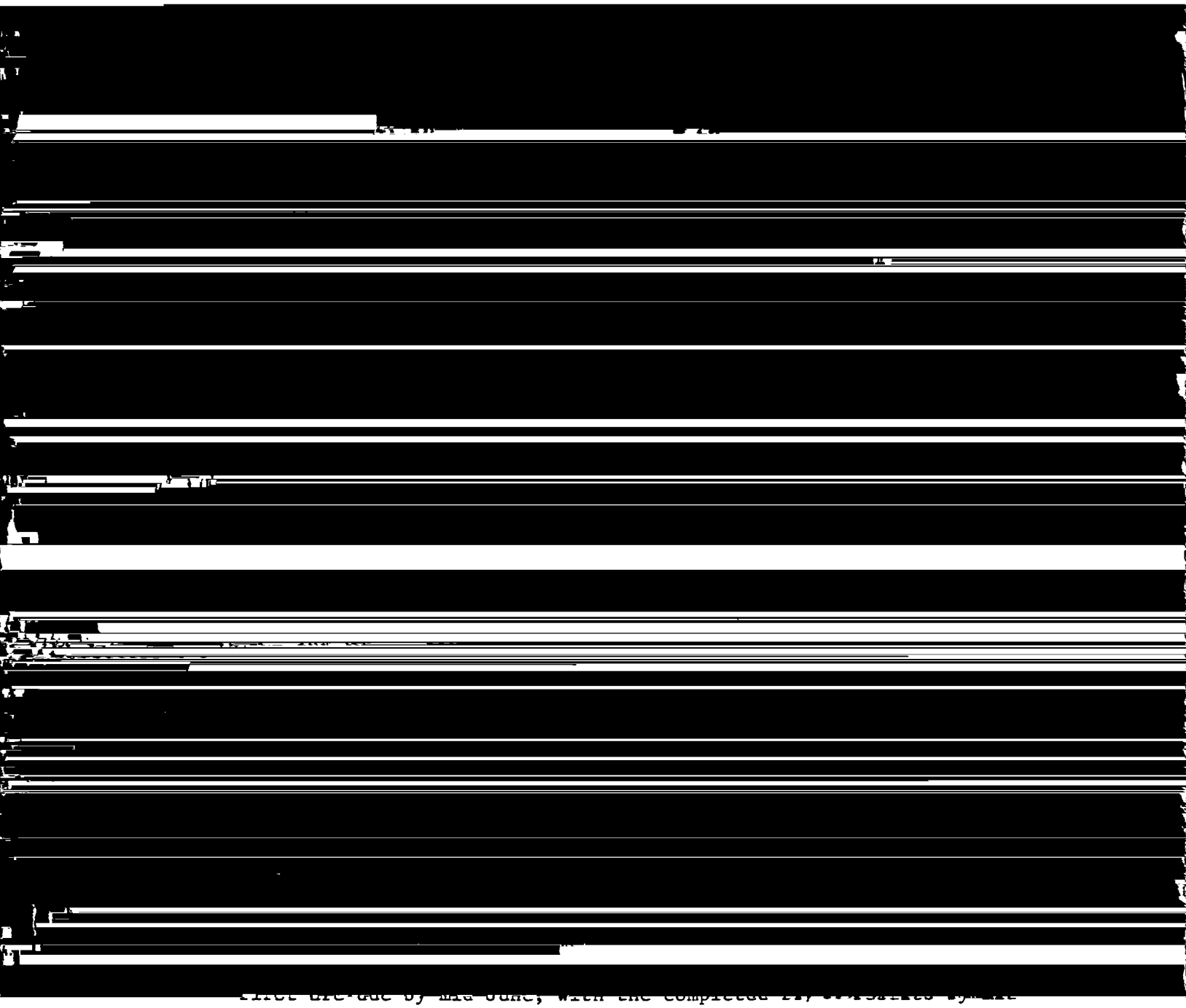
For your information and records, enclosed is a copy of my notes of the Advisory Group's meeting at Livermore on June 7 and 8, 1978. A copy of the letter from Dr. Bair to Mr. Hollister identifying the list of action items previously was sent to you.

Bruce W. Wachholz, Ph.D.
Division of Policy Analysis

cc: Mr. Hollister

Collections of April 1977: Sent to PNL and HASL for analyses. HASL and PNL reported results to BNL months ago. No report from BNL yet because "results are inconsistent with each other." Should results be sent to the Committee?
(NOTE: Subsequent information suggests that these samples were not controlled samples, and that there are a number of uncertainties in their validity.)

Collections of October-November 1977: The samples were sent to LASL. First results due this week for TRU. All results are due the end of June. (NOTE: LASL is returning results



August. Pu analyses due by mid-August. (NOTE: BNL currently is negotiating with LASL for Pu analyses of samples.)

Healy - What will results mean? No answer.
Who are the controls? No answer.

Prior to 1977 the samples were pooled samples.

A discussion of "clean" collections followed.

[redacted]

Results: 70-75% increase over '77
12 persons > 3 μCi (MPB for Cs)
1 person ∿ 6 μCi (∿ 1 rem/yr)
101 persons counted (over 5 yrs of age)
soil Cs level ∿ 50 pCi/gm

Hollister: Will HASL handle a contract for TRU urinalysis?
"Don't know."

Robison: LFE does sample work

* Should explore and negotiate urinalysis samples via contractor

* Hollister: Will explore options to expedite procedures

Healy: Are fecal samples possible?

Roger Ray - Discussed problems of sample collection of Marshallese women especially.
Cross-contamination

Auxier: Northern Enewetak has Cs levels 10X that of Bikini
Uninhabitable for 240-500 years
Sr and Pu will just make situation worse

Robison: Cs concentrations on Bikini

Enjebi: 16 pCi/gm Cs-137 (up to 180 pCi/gm Cs and 630 pCi/gm Sr - but most removed in TRU cleanup. These values don't address soil depth distribution.)

Irene: 3 pCi/gm Cs-137

*Refer to action issues.

Ray: No input to LLL.
NVOO has central data bank.

* Final survey data should be added to LLL data bank.

Hollister: Asked WJB what's meant by a central data bank?

Bair: Will be 3 banks: Scientific data bank at LLL (not yet in place)
Operational data - NV
13 - atoll survey data bank

Robison: 13-atoll data should go to LLL, not NV. Ray agrees.

* Templeton: Should be a directive to participants to send data to LLL.

* Robison: Should have special forms sent to participants.
Need data, not opinions of reports.

McCraw: What about Conard's medical and environmental data of the past 20 years?

Robison: OK for environmental data but LLL data bank is not set up for medical data.
Should there be one central data bank? HH - Yes.
LLL includes BNL med. data base (duplicate).
LLL includes U. Washington data.

Francis: How will you implement a data bank?
Mechanics vs. policy
Will you pool data before publication?
* There must be agreements regarding the form of the data - and it must be kept current to be useful for decision-making

** Robison: Not much interaction with other scientific groups

Hollister: Publication rights should not be an issue
Is an applied problem area - government has vested interest
* Identify resource needs to get into budget before 1981
Needs coordination

* Bair: Committee will come back to this later

d) Organizational structure and responsibilities (DOE, NV, contractors)

Ray reviewed organizational structure at Enewetak, NVOO, DNA, DOE, etc.

contractors: EG&G - radiation measurements
Eberline - laboratory support
DRI - statistics support
Also DOE, EPA, LASL, LLL, SLA

AF and Navy support

RR discussed data flow chart: integrated project with multi-contractors

* Will archive soil samples (5000-6000) in NV

* Will centralize data in NV

Hollister: Present organizational structure a result of historical development
Originally to be DNA funded
If it had been begun as a DOE-funded project, it might have been done differently
DNA estimates cost > $100 M

Ray: Cost to DOE ∿ $5 M

Auxier: Discussed options available within constraints
What flexibility remains?

Hollister: "Freedom" is in land use, not freedom in resources

Templeton: What are OES organizations and contractors?

— Hollister: OES supports the four contractors through a unified 189 prepared by NV. Have 3 189's - not restricted to radiol. support of Enewetak:

Nat. Greenhouse
U. Washington
Bill Robison (on dose estimation)

* Ask Comm. how project should be managed.

Have not yet developed a program or management plan for 13-atoll survey; it is in the process of being developed.

Watters: BER supports
LLL garden projects - Robison
Enjebi
Eneu
Resuspension
Data survey

[redacted]

[for cleanup it is currently being assumed that IMP = soil (1:1)]
Correcting for brush does not necessarily correct for the difference

Church: Remeasured islands show higher IMP readings (more realistic)
IMPS are consistent
Are using corrected values for clean-up decisions.

* What is the standard calibration frequency?

* Healy requested a report on methods of calibration -

Am-241 source placed in an area to determine angular response
EG&G did theoretical calibration
Concerned if there is no ground flat source calibration
For calibration: should move point source around and use absorbers

Church: No report ever prepared re calibration

** The Committee requested a report from Hollister and Hollister requested a report from NVOO on calibration procedures.

* Church: Will send Comm. a set of data re calibration.
(An EG&G report does not exist.)

Recent info - Gilbert:

1. IMP correction for brush attenuation
2. Soil profile data (0-3, 10-13, 20-23)
3. Quality control info
   Enewetak Lab (Eberline)
   Procedures
4. Statistical procedures - data processing - objectives
   (DOE/ERSP procedure # 3)
5. Madaline Barns' M.S. thesis - a record of design
   Statistical design aspects of Enewetak cleanup
6. Kriging results - all islands
7. List of procedures
8. Techniques

Soil samples may not be too accurate
Discussion of statistical design of survey
Real time analyses of uncertainties, IMP vs. wet chemistry, grid size, etc.

Watters: BER coordination studies
Conard vs. other studies
No problem in coordinating ship time, etc.

g) Inventory of all Enewetak projects (Marshall Islands)

* Bair requested a list of projects conducted by OES, NVOO, and BER - with abstract attachment and $ (189). Hollister will provide.

Ray Summarized the Marshall Islands programs

1. Support to cleanup and resettlement
2. Environmental surveillance (all Marshall Islands)
3. Medical survey and management
4. Research related to resettlement
5. Research related to other DOE interests (marine env. studies, assessment for dose, etc.)
6. Support of non-DOE interests (MPML, research vessel)

* Healy: Committee needs someone to keep track of and stay current with up-to-date information.

* Templeton: Where is the monthly report he previously requested?

Hollister: Write to Hollister for any requests.

3. Robison

Discussed test plots and plantings on Enewetak and Eneu
Resuspension study on Bikini - 10 sampling stations

Assessment of doses

[redacted]

previously 4×10^{-5}
new data $\bar{x} = 7.0 \times 10^{-5}$ (2.0×10^{-5} - 2.3×10^{-4})
fruit vs. soil at root zone of tree
number and location of coconut samples:
Eneu (4)
Bikini (2)
Relle (1)
Daisy (1)
Tilda (1)
Concentration ratios (and number of samples):

	dry wgt	wet wgt	Old value (used in dose assessment)
coconut (9)	7×10^{-5}	3.5×10^{-5}	4×10^{-3}
breadfruit (4)	4×10^{-5}	1.2×10^{-5}	? $\times 10^{-3}$
pandana (1)	9.8×10^{-5}	3.3×10^{-5}	3×10^{-3}
banana (2)	8.7×10^{-5}	2.6×10^{-5}	8×10^{-4}

more data to come in few weeks
will be major reassessment of dose projections

Diet

for coconut meat previously used 100 gm/d : best current est. 1300 gm/d
for coconut milk previously used 300 gm/d : best current est. 1500 gm/d
for breadfruit previously used 150 gm/d : best current est. 1350 gm/d

Reduce Table 12 (of Dose Assessment) by ∿ x 10 (factor of 11.6 should be 1.16)
Total dose reduction decreased by a factor of 3
Look at Am as class W rather than class Y compound
Look at Am ingrowth as factor of 2

Is it realistic to assume that 30 cm depth soil activities average ∿ 1/2 of surface?

ratio of 30 cm/2 cm ~ 55% - 65%
reasonable to use a factor of 2

Raises question of whether or not surface cleanup is adequate

* Change: concentration ratio; diet, Am ingrowth; Am class W instead of Y; - revise dose assessment
result in low Pu doses; higher doses due to Cs/Sr

Items to be resolved this mtg for Hollister

Ray: DNA now interprets advice to mean that clean-up of everything > 400 pCi/gm is replaced by cleanup of everything > 160 pCi/gm

* Assuming areas > 400 are guaranteed, what is land use classification if levels are > 160 pCi/gm and < 400 pCi/gm?

* What is an action level for subsurface removal?
Of depth, volume, extent, etc.?
—Is it a function?

* What is the meaning of a Departmental sign-off?

June 8, 1978

Roger Ray - Report on DNA meeting held early in May

Consensus Decisions

Runit:	no major effort
Aoman:	priority 1
Boken:	priority 2
Enjebi:	priority 1
Lujor:	priority 2

Other topics discussed

1) plowing

Simple soil mixing will not be adequate
Chet Francis is going out as advisor
Discussion re mixing, "plowing", depth, organic content, H_2O content, etc.
May not be very effective
DNA interest in plowing:

1) driven by availability of plow
2) substitute for soil removal

Auxier and Church:

No indication that resuspension is a problem even in military work areas.

* Request air monitoring data from DNA

quality (e.g., detection limits)
characteristics (e.g., air volumes, times)
locations

* DOE should request info from DNA

** Comm. suggest that air monitoring data be exchanged as requested between LLL, DNA, OES, NVOO, etc. (Initially Robison will discuss data with DNA informally.)

* Bair should send DNA briefing material to Committee

2) Aoman burial site (360 x 85 ft)

Discussion of alternatives
Discussion of H_2O movement via dye studies
Essentially it's moving the burial ground to Runit
Located in a swampy area between two causeways
Would involve 27,000 yds^3 of resources
Is it worth it?

What land use is possible between 160 - 400 pCi/gm?

Hollister: suggestions: Make every effort to meet 160, if a bit over, OK

* Church will provide soil volumes based on 160 pCi/gm over half-hectare areas

** Comm. suggested that DOE request EPA exemption re ocean disposal of material in burial pit

"natural" leach rate
initiate engineered release
worth effort economically
environmentally
engineering
permits more efficient use of available resources
results in a discontinuity of the record?
(remove the burial ground material > 400 pCi/g)

* Templeton requests copy of McCraw memo re EPA position on ocean dumping

* Copies of letter from JLL to Johnson re ocean dumping also requested.

Robison - Noshkin

Address GI absorption values and ranges and resultant dose calculations

* Want absorption values from Committee

* Committee recommends use of revised ICRP values with a footnote

* Should Am-241 be a class W for inhalation?

* Committee recommends use of class W for inhaled Am-241

Healy - discussion of GI transfer coefficient based primarily on rat data

5×10^{-5} to bone for Pu
1×10^{-5} to liver for Pu
0.01% to skeleton for Am (1×10^{-4})
0.005% to liver for Am (5×10^{-5})

Thompson: ICRP adopted

5×10^{-4} for trans-Pu
10^{-4} for sol Pu
10^{-5} for insol Pu

Discussion and info re 13-atoll survey

[redacted]

Also, DOE should provide a comparative dose assessment with and without removal of the material, and provide an accident analysis and consequent dose assessments.

Meeting of Enewetak Advisory Group

June 7, 1978

Action Items

1. Bikini Urine Samples

   a) Committee requests report and current status of analysis of Bikini urine samples for transuranic elements for each of the sample periods: April, 1977, Oct.-Nov., 1977, April, 1978. When will the analysis be complete and the data available?

   b) Information also is requested on identification of control groups.

   c) Hollister will explore alternatives for expediting procedures.

2. Data Banks

   a) The Committee is concerned that there is inadequate interaction among the several groups of scientists working in the Marshall Islands.

   b) The Committee will recommend whether or not data banks should be established (e.g., LLL, BNL, NVOO, Headquarters - encouragement and coordination).

3. Management

   a) Hollister solicited the Committee's opinions regarding the Enewetak survey and resettlement program, and the 13-atoll survey.

   b) The Committee expressed concern that no one is integrating and assessing the entire Pacific effort.

4. IMPS

   a) The Committee expressed concern over the methods of calibration regarding the IMP detectors.

   b) The Committee requested of Hollister a report on (a) above.

   c) Church will send the Committee whatever data is available regarding (a) above.

5. Inventory

   a) The Committee requested an itemized inventory of all projects conducted by DOE in the Marshall Islands. Supplemental appendices should include brief abstracts (~200 words) of each project (or equivalent description) and the level of funding.

   b) Hollister will provide (a) above.

6. Requested Information

   The Committee should communicate with Hollister for any information or documents requested (e.g., periodic reports).

7. Dose Assessment

   Robison will revise the dose assessments taking into account revised concentration ratios of plutonium in foodstuffs, revised estimates of diet compositions, ingrowth of Am-241, and categorization of Am-241 as a class W compound.

8. Requests to Committee

   a) What are land use restrictions, if any, between contamination levels of 160 pCi/g - 400 pCi/g?

   b) What are "action levels" for subsurface contamination? (e.g., a function of depth, volume, etc.?)

   c) What is the meaning of a Departmental sign-off regarding certification?

Additions and corrections are welcome.

[redacted]

b) If desirable, the Committee should request data from DNA, including

quality (e.g., detection limits)
characteristics (e.g., air volume, times)
locations
activities

2) Bair should send DNA briefing material to Committee

3) Church will provide island soil volumes based on 160 pCi/gm over half-hectare areas

4) Committee should consider wisdom of requesting an EPA exemption re ocean dumping of material in burial pit

5) Documents to the Committee

a) McCraw memo re EPA position on ocean dumping
b) Copy of DNA minutes of DNA-EPA-ERDA meeting re ocean dumping
c) Letter from Liverman to Johnson re ocean dumping

6) GI absorption

a) Committee advised Robison to use revised ICRP values, with footnotes
b) PNL will assist Robison in writing appropriate material

7) Committee recommended to Robison that Am-241 be considered as a class W material

8) Committee requests raw BNL whole body counting data (and any analyzed material) from Rongelap, Utirik and Bikini

8a) Every effort should be made, within the resources available, to meet the Advisory Group's guidelines.

9) 13-atoll survey

a) Hollister requests Committee views on plan for 13-atoll survey prior to approval and consideration for funding

[redacted]

12) [redacted] JWH, CRR, ROM)

13) Healy requests copies of up-to-date info re IMP surveys and profiles

ENEWETAK ADVISORY GROUP
MEETING AT LAWRENCE LIVERMORE LABORATORY
JUNE 7-8, 1978

Participants

Advisory Group

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Chester R. Richmond
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Other

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REPOSITORY PNNL

COLLECTION Marshall Islands

BOX No. 5686

FOLDER Enewetak Aug. 1978

DOCUMENT **DOES NOT** CONTAIN ECI

Reviewed by ~~J~~ K Schuette Date 9/30/97