

This transcript of the Advisory Board on Radiation and Worker Health, Weldon Spring Work Group, has been reviewed for concerns under the Privacy Act (5 U.S.C. § 552a) and personally identifiable information has been redacted as necessary. The transcript, however, has not been reviewed and certified by the Chair of the Weldon Spring Work Group for accuracy at this time. The reader should be cautioned that this transcript is for information only and is subject to change.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
CENTERS FOR DISEASE CONTROL 1  
NATIONAL INSTITUTE FOR OCCUPATIONAL  
SAFETY AND HEALTH

+ + + + +

ADVISORY BOARD ON RADIATION AND  
WORKER HEALTH

+ + + + +

WORK GROUP ON WELDON SPRING

+ + + + +

MONDAY  
SEPTEMBER 10, 2012

+ + + + +

The Work Group convened telephonically at 1:00 p.m., Richard Lemen, Chairman, presiding.

PRESENT:

RICHARD LEMEN, Chairman  
R. WILLIAM FIELD, Member  
JAMES M. MELIUS, Member

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

This transcript of the Advisory Board on Radiation and Worker Health, Weldon Spring Work Group, has been reviewed for concerns under the Privacy Act (5 U.S.C. § 552a) and personally identifiable information has been redacted as necessary. The transcript, however, has not been reviewed and certified by the Chair of the Weldon Spring Work Group for accuracy at this time. The reader should be cautioned that this transcript is for information only and is subject to change.

ALSO PRESENT:

2

TED KATZ, Designated Federal Official

RON BUCHANAN, SC&A

DAVID HARRISON, ORAU Team

MONICA HARRISON-MAPLES, ORAU Team

STU HINNEFELD, DCAS

KAREN JOHNSON

MARY JOHNSON

JENNY LIN, HHS

TINA TRIPLETT

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

This transcript of the Advisory Board on Radiation and Worker Health, Weldon Spring Work Group, has been reviewed for concerns under the Privacy Act (5 U.S.C. § 552a) and personally identifiable information has been redacted as necessary. The transcript, however, has not been reviewed and certified by the Chair of the Weldon Spring Work Group for accuracy at this time. The reader should be cautioned that this transcript is for information only and is subject to change.

T-A-B-L-E O-F C-O-N-T-E-N-T-S

PAGE 3

Welcome and Introduction  
by Mr. Ted Katz..... 4

Work Group Discussion on Thorium  
Processing (DCAS White Paper)..... 5

Work Group Discussion on Raffinate  
Pits (SC&A memorandum)..... 14

Petitioner Comments ..... 59

Summary and WG Report to the Board ..... 52

Adjourn ..... 58

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

This transcript of the Advisory Board on Radiation and Worker Health, Weldon Spring Work Group, has been reviewed for concerns under the Privacy Act (5 U.S.C. § 552a) and personally identifiable information has been redacted as necessary. The transcript, however, has not been reviewed and certified by the Chair of the Weldon Spring Work Group for accuracy at this time. The reader should be cautioned that this transcript is for information only and is subject to change.

1 P-R-O-C-E-E-D-I-N-G-S 4

2 (1:01 p.m.)

3 MR. KATZ: So Weldon Springs,  
4 specific site, to please speak to conflict of  
5 interest. Let's go with the Chair first.

6 (Roll call.)

7 MR. KATZ: Okay, then. The agenda  
8 for this meeting, Weldon Springs Work Group,  
9 Advisory Board on Radiation and Worker Health  
10 is posted on the NIOSH website, on the Board  
11 meeting page under meetings.

12 And there are two documents also  
13 posted there. A memo from SC&A and a document  
14 on Thorium processing at Weldon Spring from  
15 DCAS. Those are both posted there.

16 Now, Board members should also  
17 have received some background additional  
18 materials related to the drying of the pits,  
19 which is what the memo addresses from SC&A.  
20 But those are not posted. I don't think those  
21 were Privacy Act cleared. And that's it.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 Dick, it's your agenda. 5

2 CHAIRMAN LEMEN: Well, the agenda  
3 starts out with talking about the Thorium  
4 Processing White Paper. I guess this was  
5 prepared by your office, right, Stu?

6 MR. HINNEFELD: Yes, ORAU and us.

7 CHAIRMAN LEMEN: Do you want to  
8 present it? I was not at the last Board  
9 meeting, so I don't know if it was presented  
10 entirely to everyone there. I don't want to  
11 repeat something.

12 MR. HINNEFELD: Well, I'll run  
13 through it a little bit. It is very much the  
14 information that I described verbally at the  
15 last Board meeting.

16 Although I went through it, and  
17 there was nothing in writing for anyone to  
18 follow along with because we had just  
19 assembled, you know, the pieces of information  
20 right before and we didn't really have time to  
21 get a paper together.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1                   So one of the assignments out of  
2                   that meeting was to provide this product that  
3                   summarized the information provided verbally  
4                   at the last Board meeting.

5                   So there's some introductory  
6                   information here about Weldon Springs and the  
7                   kinds of information they process -- the kinds  
8                   of materials they process is overwhelmingly  
9                   natural uranium or normal uranium and then  
10                  some small amount of depleted uranium, some  
11                  small amount of enriched uranium and  
12                  relatively small amount of natural thorium.

13                  The issue that we wanted to  
14                  address with this thorium processing paper  
15                  was, could the thorium process at Weldon  
16                  Springs have been recycled thorium in the  
17                  sense that we use it in this program.

18                  We use the term recycled uranium  
19                  far more frequently than recycled thorium.  
20                  But in the terms that we use it for this  
21                  program, it certainly has the same meaning in

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 both cases.

7

2 It means it's either uranium or  
3 thorium that has been irradiated in a reactor  
4 and then has gone through a recovery process  
5 in order to take out some product of that  
6 irradiation.

7 In the case of thorium, the  
8 product of the irradiation that you're looking  
9 for is uranium-233. So that material has been  
10 stripped out chemically and the thorium has  
11 also been reclaimed and returned back into the  
12 DOE system for, perhaps, additional use.

13 During that chemical separation  
14 process where they remove U-233 and then they  
15 remove the thorium, those chemical  
16 purifications aren't perfectly precise. And  
17 so some amount of contaminant material does  
18 come along in the recycled thorium, or in the  
19 recycled uranium, if you're talking about the  
20 uranium chain.

21 So the question was, could this

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 material have been recycled thorium because  
2 there are some documents, I think mainly  
3 environmental EPA-type documents that describe  
4 the activities at Weldon Springs as having  
5 processed recycled thorium.

6 So our own view of that is that  
7 well, the term recycled throughout the  
8 industry does not have this very specific  
9 name, you know, meaning that we use it for,  
10 meaning the material was irradiated and then  
11 recovered.

12 Some other uses of recycle are to  
13 talk about reclaiming scrap or recycling  
14 scrap. And those are materials that, for  
15 instance, they could be a uranium compound if  
16 you're talking about uranium or a thorium  
17 compound if you're talking about thorium that  
18 had been utilized in some fashion.

19 And you've got this material left  
20 over and you want to reclaim the thorium from  
21 it and so you would put it back in. And

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 sometimes you might call that recycling, or  
2 sometimes they call it reprocessing or  
3 reclaiming or recycling.

4 So there were -- that's the  
5 terminology we were trying to sort out, and  
6 the fact that these documents in the '80s who  
7 first said that well, the springs handled  
8 recycled thorium. Could that have meant that  
9 they handled thorium that had been in a  
10 reactor and subsequently then put back in the  
11 system?

12 So in order to find that out, we  
13 wanted to make sure we knew, first of all,  
14 what dates the thorium arrived at Weldon  
15 Spring. And so we found some documents that  
16 give an authoritative and comprehensive  
17 inventory of the processing of all the  
18 materials: natural uranium, depleted, enriched  
19 uranium and thorium at Weldon Springs.

20 And so we recount that information  
21 in the document saying here are the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 inventories they carried year by year. And <sup>10</sup>  
2 from that inventory reporting, it's pretty  
3 clear that the thorium started arriving in  
4 bulk at Weldon Springs in the last half of  
5 1963, which is, of course, fiscal 1964.

6           There was some small amount of  
7 thorium that apparently was there when they  
8 started up, whether they brought it over from  
9 Mallinckrodt or whatever. There was some  
10 amount there, but it appeared to be static,  
11 like it was in storage or in some residue  
12 material that was not apparently processed  
13 because it stayed unchanged, the inventory  
14 stayed unchanged and there weren't any reports  
15 of any of that material being processed in  
16 those inventory reports.

17           So from that, it looked pretty  
18 clear to us that the thorium arrived from '63  
19 through '66, the end of Weldon Springs=  
20 operation, and that's what matches the  
21 inventory report.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1                   We also looked further into the  
2 process that the Department of Energy used to  
3 generate recycled thorium the way we would use  
4 the term. In other words, thorium that was  
5 irradiated in a reactor and then reclaimed  
6 from the product and the other wastes and sent  
7 back into the system. That's what we would  
8 call recycled thorium.

9                   That work went on at Savannah  
10 River in the mid '60s. We found these  
11 documents and we refer to them in our report.

12                  That went on in the mid '60s to irradiate  
13 thorium in order to manufacture U-233, take  
14 out the U-233, and then after the first time  
15 they did it, they also then took out the  
16 thorium from the other waste materials and  
17 sent that recycled thorium to Fernald. That  
18 occurred in, like, '66.

19                  So the time that Weldon Springs  
20 was shutting down was the first time that the  
21 recycled thorium -- the way we use the term --

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 showed up at Fernald. 12

2 And so from that, we concluded  
3 that the thorium that was sent to Weldon  
4 Springs, and it went from Fernald to Weldon  
5 Springs in 1963, could not have been the  
6 recycled thorium that had been in the reactor.

7 We also investigated -- from the  
8 Fernald records, we found a document that gave  
9 an accounting of all the thorium task orders  
10 that Fernald had engaged in.

11 A task order was just that, it was  
12 an order to go do this, whether it was to  
13 manufacture this product and to send it to  
14 this place. And there's a fairly lengthy  
15 appendix on that document.

16 That document was written in the  
17 '80s. The writer, the author went back and  
18 reviewed all their files and found all these  
19 task orders for thorium and put them in these  
20 lists.

21 And you can see in those task

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 orders, they start, the ones that talk about<sup>13</sup>  
2 sending thorium to Weldon Springs start in  
3 late '63 or fiscal '64, and they go then for  
4 about two or three years through '66 to send  
5 thorium down to Weldon Springs.

6 And so that essentially reinforces  
7 the inventory report that we saw from Weldon  
8 Springs. Is there anything I didn't cover  
9 very well or any questions there? Or anything  
10 specifically about the report that we sent  
11 that anyone wants to ask questions about?

12 (No response.)

13 Was I on mute?

14 MEMBER MELIUS: No, this is Jim  
15 Melius. I have, quick, just a comment. I  
16 thought the report was very helpful and I  
17 thought the documentation was reasonably  
18 convincing.

19 CHAIRMAN LEMEN: I would echo  
20 that. I found the report very useful to me in  
21 understanding the situation a little bit

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 better. So thank you for putting it in writing  
2 in a way that I could understand it.

3 MR. HINNEFELD: Well, ORAU had to  
4 write it so I can understand it, so they had  
5 to shoot pretty low.

6 CHAIRMAN LEMEN: So are there any  
7 questions about the White Paper at this time?

8 DR. BUCHANAN: This is Ron  
9 Buchanan of SC&A. I read it, and I've got  
10 some of the documents to verify and I did not  
11 find anything that would show otherwise.

12 So SC&A had no problems with the  
13 use of the term recycled as meaning internally  
14 rather than reactor-irradiated.

15 CHAIRMAN LEMEN: Okay. If there's  
16 nothing other to discuss on this issue, let's  
17 move to the raffinate pits SC&A memorandum.  
18 And I also would like to talk, at this time or  
19 after that, about the NIOSH Response that was  
20 sent to us also. I had some questions on  
21 that, on the raffinate pits. Is that all

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 right with everyone? Hello? 15

2 MR. HINNEFELD: Okay, I guess I'll  
3 start here then, as well.

4 CHAIRMAN LEMEN: Are you going to  
5 address the NIOSH response? Or what are you  
6 going to address?

7 MR. HINNEFELD: Well, how would  
8 you like me to go? I was going to start with  
9 the ORAU report.

10 CHAIRMAN LEMEN: Well, you can do  
11 that and then we'll go to the second part of  
12 it, all right?

13 MR. HINNEFELD: Okay. There's  
14 quite a lot of information in here that talks  
15 about this period.

16 I want to -- just remember this  
17 period we're talking about now from the period  
18 in the interval between the end of operations  
19 which occurred in, like, 1966 and the  
20 beginning of the DOE remediation, which  
21 occurred somewhere in the mid '80s, about 1985

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 or '86 I think is when they started getting  
2 serious with remediating the plant. And  
3 during that time, first of all, from '67  
4 through '85, the Weldon Springs Plant portion  
5 was the property of the Army, and that was  
6 turned over to the Department of the Army.

7 The pit area, which is immediately  
8 adjacent -- it's a fairly small number of  
9 acres immediately adjacent to the plant --  
10 remained DOE's property. And the quarry,  
11 which is four miles down the road, remained  
12 DOE's property.

13 So we're talking about  
14 resuspension from the raffinate pits. But  
15 during that time from, well I'm getting into  
16 my response part here, so I'll stop.

17 But anyway, we're talking about a  
18 period of time here when there was no DOE  
19 activity at anywhere around there. Now the  
20 issue you have there, you have a site with  
21 nobody there is that there is no reason to do

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 any monitoring, or very little reason to do  
2 any monitoring.

3 And so you don't see very much.

4 And there are some references to monitoring  
5 because it appears that the DOE put a little  
6 contract out to National Lead who ran Fernald  
7 and said, hey, we would like you to run down  
8 there and take some environmental samples now  
9 and then.

10 Although there's very little  
11 description that we've encountered of what  
12 kind of environmental program, you know,  
13 monitoring program they were supposed to do.

14 It appeared to be, from what I've  
15 been able to see and what I've found, mainly a  
16 water monitoring program. They would collect,  
17 I think they had some surface water locations  
18 that they were supposed to monitor.

19 And they may have been monitoring  
20 some ground water wells, as well. And at  
21 least one of their reports, and maybe more of

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 their reports, I'm a little unclear right now<sup>18</sup>  
2 in all the details of all the issues I'm  
3 trying to cover, described air sampling being  
4 done and being consistent with background.

5 And I do remember one report  
6 specifically says they took some air samples  
7 and there are no short- or long-lived  
8 radionuclides that can be attributed to Weldon  
9 Springs operations.

10 So you see statements like that,  
11 but you don't really see much description of  
12 the sampling and analysis, at least that I  
13 have not seen. And you don't see actual  
14 results, you know, like our minimum detectable  
15 activity was this and we didn't see that, it  
16 was less than that. So it's a little bit of  
17 an unsatisfying reporting that we had back in  
18 those times.

19 I may want to stop and ask Monica  
20 or David if they want to add more to this  
21 because they've done this work and they're

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 probably a lot more familiar with the various<sup>19</sup>  
2 references during that time than I am.

3 MS. HARRISON-MAPLES: No, I don't  
4 have anything to add unless there's some  
5 questions to what you would say.

6 MR. HINNEFELD: Okay, well we'll  
7 wait for questions, then, if there are any.

8 MS. HARRISON-MAPLES: Okay.

9 MR. HINNEFELD: So during those  
10 times, there don't appear to have been any  
11 people there, any covered people, I should say  
12 that. There were some people working for the  
13 Army and the Army contractors for a couple  
14 years.

15 But there don't seem to be any DOE  
16 people there, or DOE contractor people there.

17 And then until you get into, say the mid '80s  
18 when the DOE started getting serious about  
19 remediating the place, and at which time you  
20 get some environmental monitoring in  
21 preparation for that.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1                   And those documents are referred<sup>20</sup>  
2 to here in the report. There are some results  
3 that are brought out of that report and  
4 tabularized in a certain fashion.

5                   I think some of them were modified  
6 in order to make them indicative of exposures,  
7 like, in the plant proper as opposed to on the  
8 boundary.

9                   So there are some things reported  
10 there, but those reported years started about  
11 '87 and go through somewhere around 2000, the  
12 years when the active remediation was  
13 underway, which included, I'm pretty sure they  
14 dug up and either shipped off or dried and  
15 buried the residues that were in the raffinate  
16 pits during that remediation period, as well  
17 as taking down the buildings and remediating  
18 the ground.

19                  So there was a lot of activity  
20 going on during the period toward the other  
21 years, not the beginning years. But at the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 very beginning, when I read the environmental<sup>al</sup><sub>21</sub>  
2 report, it didn't seem to me that there was  
3 very much going on.

4 It was still pretty quiescent in  
5 '87, which is the first year they put out  
6 fixed air particulate samplers in fixed  
7 locations that ran all the time.

8 And for those results, it seemed  
9 again that they couldn't find results that  
10 exceeded the detection level of their  
11 analysis. They did gross alpha analysis, I  
12 think, on each filter and then they composited  
13 filters to do an isotopic analysis.

14 And either way, I believe they  
15 were lower than the detect line. I may be  
16 wrong on that, but Monica or David maybe could  
17 correct me.

18 So the kind of information, you  
19 know, that you would like to have is just,  
20 you're just not going to have at a site that  
21 is abandoned, that no one is at, because there

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 was no one there to change the filters and  
2 maintain the pumps.

3 But when you do have that  
4 information, right before, you know, at the  
5 start end or before the remediation actually  
6 gets started in '87, also those years are  
7 about the time that the environmental reports  
8 make the observation that during dry weather,  
9 pits one and two dry out.

10 You know, those observations were  
11 also made in, I think the mid '80s or they're  
12 in documents that were written in the mid  
13 '80s. You have these air samples that came to  
14 be, that are essentially background or non-  
15 detectable.

16 So it seems that, if there is an  
17 issue here from airborne, from resuspension,  
18 first of all, doesn't seem a very high dose.  
19 And secondly, there are numbers from '87,  
20 monitoring numbers that you can do a missed  
21 dose calculation from to cover the years in

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 the interstitial period if you need it. 23

2 Now by saying that, I want to get  
3 into my response a little bit, the NIOSH  
4 response where, let's see, I think I sent this  
5 in an email. I'm pulling up my things here as  
6 I talk about them.

7 One of the things I say in there  
8 is during that period, it doesn't seem that  
9 there were any covered employees between '66  
10 or, I guess '67 would have been the start of  
11 the uncovered period, through about '85. I  
12 think '85 is the start of the remediation,  
13 yes, for the plant. October of 1985 is the  
14 start of remediation. So in that period from  
15 '67 through up until October of '85, it would  
16 appear there wouldn't be covered employees  
17 there.

18 The people that worked there  
19 during up through about '69 were contractors  
20 for the Army and maybe some Army personnel  
21 because when they took the plant back from

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 Weldon Springs, they did intend to use it ~~to~~<sup>to</sup>  
2 make a defoliant.

3 And so they spent some effort  
4 trying to decontaminate it. Those contract  
5 employees would be contractors to the  
6 Department of Army. And our program is only  
7 allowed to deal with contractors or employees  
8 of the Department of Energy.

9 So it's, first of all, doesn't  
10 seem like there's anybody there. And if there  
11 is, if we find out later on that, hey, I'm  
12 wrong, there were some DOE people or DOE  
13 contractors here who spent a significant  
14 amount of time there, that we would have these  
15 monitoring data in 1987 that we think, in this  
16 case, would be suitable to use for that  
17 interstitial period because of, first of all,  
18 the quiescent nature of the site and secondly  
19 because of the several intermittent mentions  
20 from reports in that intervening period about  
21 people saying air samples were not

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 distinguishable from background. 25

2 As unsatisfying as that kind of  
3 air sampling report is, it is an indication  
4 that some samples were taken and kind of were  
5 consistent then with the ones collected in  
6 '87.

7 So that's all I can think of to  
8 say right now. If you have questions or  
9 comments, maybe David and Monica and I can  
10 answer them.

11 CHAIRMAN LEMEN: Can I ask for  
12 questions now by anyone? Jim, do you have  
13 any?

14 MEMBER MELIUS: Yes, I had to get  
15 my mute button turned off. I've only add, and  
16 this has come up in another site is that, I  
17 mean, I sort of agree with your points as to  
18 I would just add that, you know, should we  
19 find somebody that would be eligible during  
20 that time period, I think then we need to look  
21 at what activities they were doing at the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 site. 26

2 It's hard to do a hypothetical.  
3 You don't know, you know, it's a big  
4 difference between somebody who was a security  
5 guard observing the site and someone actually  
6 doing various kinds of activities at the site.

7 And I think it's just hard to tell  
8 whether you can reconstruct or not  
9 reconstruct, you know, on a hypothetical  
10 person.

11 MR. HINNEFELD: Right, I remember  
12 you making that point on another site.

13 MEMBER MELIUS: Yes. But at the  
14 same time, I don't think that changes, you  
15 know -- your bottom line is that we don't  
16 believe anybody was working at the site.

17 You don't have anybody in the, so  
18 it's sort of a moot point, you know, until we  
19 have an actual person there, or people that  
20 are eligible for the program.

21 CHAIRMAN LEMEN: Are there any

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 other questions by others? 27

2 MEMBER FIELD: Yes, this is Bill  
3 Field. I'm on the call, I'm sorry, I got in  
4 late.

5 CHAIRMAN LEMEN: It's okay.

6 MEMBER FIELD: I don't have any  
7 additional questions.

8 CHAIRMAN LEMEN: Okay.

9 DR. BUCHANAN: This is Ron  
10 Buchanan, SC&A. And I would like to bring --  
11 and I think that Stu's group did a good job in  
12 looking into this. However, I would like to  
13 bring up the point that this SEC and this Work  
14 Group is concerned with the years '57 through  
15 '67.

16 And in reading this, I would like  
17 Stu or one of your colleagues, would you  
18 summarize that period? This is what we're  
19 more interested in as pit one and two dried  
20 out here in '57 to '67.

21 MR. HINNEFELD: Well, to be

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 honest, since the observations were from the <sup>28</sup>  
2 mid '80s, I've been focusing on that  
3 interstitial period.

4 I can say that during the  
5 operation of the plant, when there are people  
6 there and the raffinate pits are being  
7 utilized and you have people out there at the  
8 raffinate pits, my experience at Fernald would  
9 indicate that employees make particular effort  
10 to keep water on the raffinate pits and make  
11 sure the raffinates are covered by water.

12 But that's from my experience  
13 somewhere else. And I did not do any research  
14 in that period because of the data of the  
15 observations. I don't know if Monica and  
16 David did or not.

17 MS. HARRISON-MAPLES: This is  
18 Monica. I wasn't really prepared for this  
19 question, so I don't have specific reference  
20 ID numbers for you. But when we did the  
21 investigations into the raffinate pits, all of

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 the documentation we had up until this late<sup>29</sup>  
2 report in 1989 specifically stated that the  
3 raffinate pits were covered in liquid,  
4 especially pits one and two.

5 We didn't see anything indicating  
6 any drying out of the pits until the '80s.

7 CHAIRMAN LEMEN: And did you see  
8 that any of the pits dried out completely so  
9 there wasn't any water on any of them in the  
10 1980's?

11 MS. HARRISON-MAPLES: We didn't  
12 see anything that indicated there wasn't any  
13 water. There was one or two reports in the  
14 '80s that said that the edges of the pits were  
15 drying out and that there was a possible  
16 concern about blowing or drying out at that  
17 point.

18 We went back and we looked at  
19 rainfall data and everything else, and you  
20 know, we don't have any indication of any  
21 drying until that time.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 MS. TRIPLETT: This is Tina<sup>30</sup>  
2 Triplett. Can I make a comment?

3 CHAIRMAN LEMEN: Yes.

4 MS. TRIPLETT: I have another  
5 document that states, it's a report from 1990  
6 from DOE and it specifically states between  
7 1966 and 1986, the surface water evaporated  
8 from pits one and two during several summers.

9 CHAIRMAN LEMEN: Did they say  
10 which summers, or did they give that data?

11 MS. TRIPLETT: It says from those  
12 years. It just says from '66 to '86. So our  
13 point is, the potential was there for them to  
14 dry out. That's the whole point of this  
15 discussion.

16 The potential was there. There's  
17 additional documents that I also have that  
18 state that, during dry summer, these pits have  
19 become dry, exposing the bottom sediments. So  
20 the potential was there, that's my point.

21 MS. HARRISON-MAPLES: Could you

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 restate the years you've just mentioned? You<sup>31</sup>  
2 said from '66?

3 MS. TRIPLETT: Well between '66  
4 and 1986. And this is a DOE document from  
5 July 1990.

6 CHAIRMAN LEMEN: And there are no  
7 specific dates and in what NIOSH and ORAU  
8 looked at, did you find any? You found  
9 nothing, I guess, that would indicate that  
10 they dried out?

11 MS. HARRISON-MAPLES: We had  
12 documents that specifically said that they  
13 were not dry. But I can't pull up the SRDB  
14 number right in front of me at this moment.

15 CHAIRMAN LEMEN: Have you looked  
16 at the DOE document that Tina was talking  
17 about?

18 MS. HARRISON-MAPLES: Yes, I have.

19 CHAIRMAN LEMEN: And you can't  
20 gather from it any more information?

21 MS. HARRISON-MAPLES: No. It

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 specifically states to the potential for <sup>32</sup>  
2 drying out.

3 CHAIRMAN LEMEN: So all we have is  
4 potential and no records that would  
5 substantiate that?

6 MS. HARRISON-MAPLES: That would  
7 be correct. Those are the years, as Stu  
8 mentioned, that DOE wasn't occupying the site  
9 any longer.

10 So I think the report speaks to  
11 the potential for drying out primarily because  
12 there was no more raffinate being pumped into  
13 the pits at that point, and there wasn't  
14 continuous occupation to be sure that water  
15 was kept on.

16 There were some documents that we  
17 saw up until that point where there was  
18 contracts where they were supposed to keep  
19 water on the pits during the operational  
20 years.

21 CHAIRMAN LEMEN: That's all it

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 said? Just keep water on the pits? 33

2 MS. HARRISON-MAPLES: Yes, they  
3 weren't allowed to let them dry out.

4 MS. TRIPLETT: We would like to  
5 see copies of those, if you have them, because  
6 I don't ever recall seeing that in the FOIA  
7 request.

8 MS. HARRISON-MAPLES: Yes, the  
9 same documentation that talks about the  
10 contract for security also briefly mentioned  
11 that they were to be kept moist.

12 MS. TRIPLETT: Yes, I'm just  
13 requesting to see that documentation because  
14 we don't have it.

15 MS. HARRISON-MAPLES: I  
16 understand. I'll be sure and look up that  
17 number for you. I believe you've received it  
18 in FOIA, but it might have been something you  
19 missed. And I'll look it up and make sure  
20 that you have access to that.

21 MS. TRIPLETT: Okay, that would be

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 great.

34

2 CHAIRMAN LEMEN: Are there any  
3 other comments on this?

4 MEMBER FIELD: Dick, this is Bill.  
5 I just had a question. It seems like, from  
6 precipitation, that if you just relied on the  
7 precipitation, it looks like there was very  
8 little precipitation right before the covered  
9 period, if I'm reading the graph correctly.

10 CHAIRMAN LEMEN: Correct.

11 MEMBER FIELD: So during that time  
12 period, I think it's very important to try to  
13 figure out whether or not there was water  
14 added or the process totally relied on this  
15 precipitation.

16 But what I've just heard, it  
17 sounds like during the covered period, that  
18 there was additional water placed on in  
19 periods where there was less rainfall.

20 That's my take from what I'm  
21 hearing. Is that correct?

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 MR. HINNEFELD: Well Bill, this is <sup>35</sup>  
2 Stu Hinnefeld and it would be my expectation  
3 that that would be part of the operation of  
4 the pits is that you keep water in pits  
5 because my expectations, be it based on my  
6 experience, where at Fernald that was  
7 expected.

8 You know, there would be water  
9 would be kept on the pits. And there was a  
10 group who was responsible for doing that when  
11 the place was occupied and all these people  
12 working around there.

13 So it would be my expectation that  
14 they would do that. I think probably we would  
15 have to do some research into whether we can  
16 find that or not because I don't think we  
17 really researched the '57 through '67, or '57  
18 through '66 period about, you know, the status  
19 of the pits drying out.

20 MEMBER FIELD: Right.

21 MR. HINNEFELD: Pits three and

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 four didn't exist for the first part of that<sup>36</sup>  
2 period. They were built later on. And all  
3 the accounts I saw that pits three and four  
4 always had water on them, or free-bore above  
5 the raffinates before you got to the top.

6 So the water was deeper on top.  
7 And so all those things I've seen have always  
8 said three and four always had water. One and  
9 two, at times, could have dried out.

10 MEMBER FIELD: Right, right.

11 MR. HINNEFELD: So we would have  
12 to go back and look at the operating period to  
13 see if we can find anything that talks about  
14 the treatment of the pits during that period  
15 and whether they were kept wet or not.

16 CHAIRMAN LEMEN: Where would you  
17 go to look for that? I mean, do you have some  
18 source that you think might be productive?

19 MR. HINNEFELD: Well, we have a  
20 lot of documents from Weldon Springs. I don't  
21 know that that's been a part of our research

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 yet, and I don't know what we have in terms of  
2 operational information.

3 You know, you're almost now  
4 getting sort of into an operational era. And  
5 in trying to think in my mind, would it have  
6 mattered if they had dried out because, based  
7 on what are we doing based on, or I would have  
8 to go back and look and see what we're doing  
9 for dose reconstruction during the covered  
10 period that may address something like that.

11 So we already have all this  
12 information handy, and I'm just not ready,  
13 familiar with it because I hadn't prepared for  
14 that question today.

15 CHAIRMAN LEMEN: I guess I'm a  
16 little bit lost as to where your intent would  
17 be to go at this point in time.

18 MR. HINNEFELD: Well, to find out  
19 what we can. You know, there's a couple  
20 things. One is do we find out anything about,  
21 you know, how the pits were operated during

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 the operational period. 38

2 Now we're talking about the  
3 operational period of the plant. How were the  
4 pits operated? If we can find out anything  
5 about that.

6 And then I just need to refresh my  
7 memory about what do we say in the existing  
8 Site Profile about potential exposures of  
9 raffinate pits because theoretically we should  
10 have that issue covered in our existing Site  
11 Profile because if there is a potential for  
12 exposure from the raffinate pits, we would  
13 have to have a way to deal with that.

14 And if we feel like there's not a  
15 potential for exposure from the raffinate  
16 pits, then we should be able to say why we  
17 reached that conclusion.

18 MS. KAREN JOHNSON: This is Karen.  
19 I have a question.

20 CHAIRMAN LEMEN: Yes.

21 MS. KAREN JOHNSON: Stu, you

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 stated something that kind of hit on something<sup>39</sup>  
2 for me because all along, we've heard  
3 different things about how much data there is  
4 for Weldon Springs.

5 Yes, we have a lot of documents.  
6 Not much of it's for the operational period.  
7 Is that the case, there's not a lot of  
8 documentation for the operations?

9 MR. HINNEFELD: No, what I meant  
10 to say was the kind of information that you  
11 would find that would, for instance, be  
12 evidence that there was an intent to keep  
13 water on the pits, that would be sort of an  
14 operating procedure, maybe.

15 You know, I'm not exactly sure  
16 what Weldon Springs would write during their  
17 operational period to tell people, keep water  
18 on the pits. You know, they may have just  
19 told the water treatment guys, keep water on  
20 the pits.

21 And so I'm not 100 percent sure

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 that you're going to see, you know, not being<sup>49</sup>  
2 able to think of what they would have written  
3 to tell people to do that. I don't know what  
4 we'll be able to find in our research.

5 I didn't mean to say that we don't  
6 have much information from the operational  
7 period. That's not what I meant to say.

8 What I meant to say was I don't  
9 know what kind of document they would have  
10 written, whether it would be an operational  
11 standard, you know, like a standard operating  
12 procedure or something like that, what they  
13 would have written that would have said that.

14 And since I don't know what they  
15 would have written to say that, I don't know  
16 how successful we'll be in finding something  
17 that would have said that. But we do have a  
18 lot of documents from the operational period.

19 CHAIRMAN LEMEN: Hasn't NIOSH gone  
20 through all of the documents for the  
21 operational period at this time?

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 MR. HINNEFELD: Well, yes. Dick<sup>41</sup>  
2 I think we probably have. And we must have  
3 done something on the Site Profile for that  
4 period of time. I don't know, Monica or  
5 David, anything come to mind with you guys?

6 MS. HARRISON-MAPLES: Dave, you  
7 want to speak to that?

8 MR. HARRISON: I'm sorry, I was  
9 looking at another document under the waste.  
10 Let's see what's going on. Waste assessment,  
11 characterization of the raffinate pits,  
12 raffinate pits. And I was looking for  
13 physically if there's anything in there about  
14 periods of time when the water in the pits may  
15 have evaporated, so forth. So I really didn't  
16 hear what you said, I apologize.

17 MS. HARRISON-MAPLES: The question  
18 had to do with the current TBD and how we  
19 address potential exposures from the raffinate  
20 pits during the operational period.

21 MR. HARRISON: Well, I can tell

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 you that there's going to be some TBD up for<sup>42</sup>  
2 revision involving uranium decay products and  
3 impurities, their ratio to thorium-230 from  
4 raffinate pits.

5 CHAIRMAN LEMEN: Were those  
6 addressed in the --

7 MR. HARRISON: No, it's pending a  
8 revision to the internal TBD.

9 MS. HARRISON-MAPLES: But the  
10 current TBD does address the raffinate pits  
11 and exposure currently. And what are the  
12 methodologies that we use in it right now is  
13 the question that Stu was asking.

14 CHAIRMAN LEMEN: I guess my  
15 concern is that, is there any likelihood that  
16 more information would show up than what you  
17 have already looked at that would answer this  
18 question? And is it worth the time to  
19 continue doing this if you can assure us that  
20 this is not going to be productive? Did you  
21 understand what I was saying? Does that make

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 sense?

43

2 MR. HARRISON: No.

3 MS. HARRISON-MAPLES: Not exactly.

4 CHAIRMAN LEMEN: Well, I guess I'm  
5 saying, how much more should we be looking.  
6 Can we come to some conclusions now, or are we  
7 going to have to refer this to more looking  
8 through files. I hate to do that.

9 DR. BUCHANAN: This is Ron  
10 Buchanan at SC&A. I would just like to  
11 interject that according to the TBD, our  
12 present TBD for Weldon Springs, that the  
13 environmental dose is determined 95 percent by  
14 an experiment conducted handling some uranium  
15 ore in 1959, I think, one of their peak years.

16 And that only five percent of that  
17 intake of thorium and uranium, given on page  
18 17, I believe it is, of the TBD comes from  
19 environmental samples.

20 And so, you know, we have to  
21 balance what difference would it make if the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 pits dried out occasionally and the material<sup>44</sup>  
2 added to the environment as opposed to what  
3 environmental dose would be assigned the way  
4 it is now.

5 And I would also like, this kind  
6 of runs into my talk, but it's relevant for  
7 our conclusions, is that the main reason in my  
8 July 9th paper that we sent out to the Work  
9 Group addressing the drying out of the pits, I  
10 said in there, pits one and two might be  
11 important for environmental reasons if they  
12 dried out.

13 And what we were discussing at  
14 that time was mainly this, was thorium-230  
15 processed from the raffinate to concentrate it  
16 and I guess, you know, for processing  
17 purposes.

18 And also was there any recycled  
19 material in the pits? And so those were the  
20 two main issues with those drying out because  
21 you would loose your ratio of uranium to

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 thorium. 45

2 And so, but in my memos that we  
3 have issued, we've concluded, one, is that  
4 they did not recycle the raffinate for  
5 thorium-230 removal, and as we've discussed,  
6 the recycle term did not apply as irradiated  
7 thorium.

8 And so the main issue here is you  
9 have two pits that are the older pits that may  
10 have dried out. And that's the question. If  
11 they didn't dry out, then you don't have to  
12 worry about increasing the thorium to uranium  
13 ratio in the environmental data.

14 But on the other hand, we're using  
15 a hopper experiment in '59 using uranium ore  
16 concentrate which had a five percent, in the  
17 five percent thorium to uranium ratio.

18 And that's where 95 percent of the  
19 data is coming from because it's much larger  
20 than any of the filter samples they got around  
21 the environment.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1                   And so I guess, at this point ~~we~~  
2                   have to ask ourself if the pits one and two  
3                   did occasionally dry out in the years '57 to  
4                   '67, would it add significant to the five  
5                   percent of the environmental dose assignment?

6                   CHAIRMAN LEMEN:   Does anyone have  
7                   a comment?  Bill?

8                   MEMBER MELIUS:       This is Jim  
9                   Melius.  I have a comment or a question.

10                  CHAIRMAN LEMEN:    You're cutting  
11                  out.  Jim?

12                  MEMBER MELIUS:    Can you hear me  
13                  now?

14                  CHAIRMAN LEMEN:    That's better.

15                  MEMBER MELIUS:    Yes.  My question  
16                  is would Ron's July 9th memo -- in there you  
17                  reference a, I believe it's a 1977 NL  
18                  operational document regarding, I mean you  
19                  quoted, there at least in your summary that  
20                  basically they would be trying to keep it, you  
21                  know, again I think it just references,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 underscores what Stu Hinnefeld was saying ~~is~~<sup>47</sup>  
2 that at least the intent was always to keep  
3 those moist and that, I think the NLO document  
4 indicates that the nature of the materials in  
5 those pits would help to prevent the drying  
6 out, at least during that earlier period, at  
7 least through NLO's experience through '77.  
8 Is that an accurate summary of that, Ron?

9 DR. BUCHANAN: Yes, that's  
10 correct. That's a statement where it said  
11 that they didn't dry out and the '88 or '85  
12 statement that said they had the potential to  
13 dry out during the hot summertime.

14 So, you know, well, you got ten  
15 years since the closure of the plant when NLO  
16 made that statement and you got another ten  
17 years when they started the remedial action  
18 that they make the other statement.

19 CHAIRMAN LEMEN: And as Ron was  
20 talking about the five percent is, there is an  
21 increase in the amount of environmental

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 exposure from the raffinate pits. How much<sup>48</sup>  
2 difference will that make? Do you have any  
3 ideas on that?

4 DR. BUCHANAN: This is Ron with  
5 SC&A. No, I don't. See, the issue is that  
6 when you receive the ore concentrate, you  
7 have, say, 95 percent uranium mass and  
8 contamination of normal thorium-230 in with  
9 it.

10 And then that goes through the  
11 process stream. And it's fairly well related,  
12 the ratio remains fairly constant until you  
13 put it out into a pit, it would dry out and  
14 then it would have a different chemistry to  
15 blow around.

16 And so the thorium, I don't know  
17 how you would address how much dose the  
18 thorium to uranium would be in the dust. You  
19 know, like I say as far as my calculations go,  
20 show that the environmental samples make up  
21 about five percent of the total dose assigned

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 from environmental assignments. 49

2 So no, I don't have a, you know,  
3 order of magnitude estimate of that. You  
4 know, just my first feeling would be a small  
5 one. If you doubled it or tripled it, it  
6 would be a small amount.

7 CHAIRMAN LEMEN: Would it affect  
8 any of those covered to the point that it  
9 would change their status?

10 DR. BUCHANAN: Well, you're saying  
11 that five percent of five percent. You're  
12 assigning five percent thorium of five percent  
13 thorium. And so if you increased that and  
14 assigned it all as thorium, you would only  
15 increase your dose assignment about five  
16 percent.

17 So you know, I would hate to make  
18 a blanket statement, but I would say it would  
19 be down pretty low.

20 MEMBER MELIUS: This is Jim  
21 Melius. It certainly would seem to me it

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 would be a manageable issue in terms of dose<sup>50</sup>  
2 reconstruction.

3 DR. BUCHANAN: Well, one thing you  
4 do is just assign it all as thorium, assign  
5 your air samples all as thorium and then you  
6 would maximize your dose. Or you could,  
7 depending on the cancer, you could assign it  
8 all as uranium and see what the PoC is and you  
9 could assign it all as thorium and see what  
10 the PoC is because they did air samples using  
11 gross alpha.

12 So if you assign it all as thorium  
13 or if you assign it all as uranium and took  
14 the largest PoC for that particular cancer,  
15 then it wouldn't be an SEC issue.

16 MR. HINNEFELD: And Stu Hinnefeld  
17 here. Let's recall, we're looking at the  
18 environmental component of the dose. Now  
19 we're talking about the operational period  
20 when there were, you know, far higher doses  
21 from what we would call the operational doses.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1                   The internal doses from the people<sup>51</sup>  
2                   working with uranium would almost certainly be  
3                   quite a lot higher than the environmental  
4                   doses.

5                   So you're talking about, you know,  
6                   the environmental dose is a relatively small  
7                   component of the dose reconstruction during  
8                   the operational period.

9                   DR. BUCHANAN:   And this would only  
10                  be for people that weren't bioassayed.

11                  MR. HINNEFELD:   And this would  
12                  only be people who didn't have bioassay.

13                  CHAIRMAN LEMEN:   And what number  
14                  of people, approximately, would that cover?

15                  MR. HINNEFELD:   I don't know how  
16                  many it is, but I believe we have bioassay  
17                  from the majority of the people from Weldon  
18                  Spring.

19                  DR. BUCHANAN:   I think it ran  
20                  about 84 percent.   I did a limited 25, I  
21                  looked at the operational group.  And they had

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 a consistent bioassay of around 84 percent, <sup>80</sup>  
2 to 85 percent.

3 Now I didn't look at the others  
4 such as, you know, people that wouldn't be  
5 expected to be bioassayed, I didn't do a study  
6 on that.

7 CHAIRMAN LEMEN: Maybe I can ask  
8 the petitioners what their feelings are at  
9 this point and encourage this discussion.  
10 Tina?

11 MS. TRIPLETT: I don't know,  
12 really, what to say. If the potential's  
13 there, the potential's there. I don't know.  
14 You know, they're claiming there's document  
15 that say they didn't and we have several that  
16 state they do. So I don't know what to say.

17 CHAIRMAN LEMEN: Karen or Mary?

18 MS. KAREN JOHNSON: I'm kind of in  
19 the same position. From what I gather, really  
20 no matter what, it's probably not going to  
21 affect dose that greatly anyway.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 MR. HINNEFELD: That would seem to ~~to~~<sup>53</sup>  
2 be the case.

3 MS. KAREN JOHNSON: Okay.

4 MR. HINNEFELD: That would seem to  
5 be the case.

6 MS. KAREN JOHNSON: I don't really  
7 have anything further, then.

8 CHAIRMAN LEMEN: Jim, do you have  
9 anything further to say about that?

10 MEMBER MELIUS: No, I don't know  
11 if Ron has additional information to present?

12 CHAIRMAN LEMEN: Did you, Ron?

13 DR. BUCHANAN: No, I kind of got  
14 into what I was going to present.

15 MEMBER MELIUS: Okay, that's what  
16 I sort of thought, but I wanted to make sure.

17 DR. BUCHANAN: Yes.

18 CHAIRMAN LEMEN: Bill, did you  
19 have anything --

20 DR. BUCHANAN: The pits are what  
21 concern, especially if they've gone and

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 reprocessed thorium-230 or have recycled<sup>54</sup>  
2 thorium. But other than that, I can't really  
3 add additional information since they didn't  
4 do that.

5 CHAIRMAN LEMEN: I guess I would  
6 have to ask Jim what do we usually do in a  
7 situation like this? I've not been in a  
8 situation like this before.

9 MEMBER MELIUS: Well, I mean, I  
10 think we would ask NIOSH to see what they can  
11 clarify between now and the meeting next week.  
12 And let's see if there's any significant  
13 additional information or uncertainty that  
14 comes up.

15 But I really am having trouble  
16 seeing how it would affect the SEC  
17 determination.

18 CHAIRMAN LEMEN: Me, too. That's  
19 why I'm in a quandary.

20 MEMBER MELIUS: Well, I mean, I  
21 think normally our response would be to, or

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 approach would be to go ahead. We don't<sup>5</sup>  
2 believe, it doesn't appear to be an SEC issue,  
3 and from this particular issue. And so we  
4 would go ahead and present it.

5 I mean, it's something that at  
6 least needs to be clarified in the sense of  
7 people checking references. But I'm not even  
8 sure that's necessary before next week.

9 CHAIRMAN LEMEN: I'm not sure how  
10 much they can do before next week that would  
11 really be helpful to us.

12 MEMBER MELIUS: Yes, well I don't  
13 think it's something that we should delay.

14 CHAIRMAN LEMEN: I don't, either.

15 MEMBER MELIUS: Yes.

16 CHAIRMAN LEMEN: So I think we  
17 should proceed with this as if we were going  
18 to go ahead. And Bill Field, as a Board  
19 member, do you have --

20 MEMBER FIELD: Yes, I guess I  
21 agree with Jim. You know, I think the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 discussion was very helpful, but I don't see<sup>56</sup>  
2 this as an SEC issue.

3 CHAIRMAN LEMEN: So can we close  
4 this out for the time being and ask NIOSH to  
5 see if they find anything? But assuming, I'm  
6 presuming they don't and we would go ahead as  
7 planned and close this out. Is that what you  
8 would do, Jim?

9 MEMBER MELIUS: Yes.

10 CHAIRMAN LEMEN: If I hear no  
11 objections to that, I guess that will be what  
12 we will do. We'll ask NIOSH, if you do come  
13 up with anything before we present this at the  
14 Board meeting, please get in touch with me or  
15 Bill or Jim and so we'll know about it.

16 But otherwise, I think we would  
17 proceed as if we were going to close this out.

18 MEMBER MELIUS: Okay.

19 MR. HINNEFELD: And we will try to  
20 come up with sort of a coherent position here  
21 about, you know, looking back at the exposure

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 during that time and, like, Ron was talking<sup>57</sup>  
2 about, where they were generated from and try  
3 to put together just a couple coherent  
4 paragraphs about where we think the question  
5 takes us during that period.

6 CHAIRMAN LEMEN: And you'll  
7 provide that to the three Board members?

8 MR. HINNEFELD: I will send it to  
9 the Work Group and to Ted and to Ron.

10 MEMBER MELIUS: What I would  
11 suggest, I also think it would be helpful if  
12 you could give a brief update for the Board  
13 meeting next week on these two issues.

14 And then I would suggest the third  
15 issue that be, that it's already been  
16 presented but I think it would be helpful to  
17 have it, you know, remind people of it because  
18 it's something that we've had concerns about  
19 before is the radon issue.

20 MR. HINNEFELD: Okay.

21 MEMBER MELIUS: So at least that

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 information's before the Board at the, you<sup>58</sup>  
2 know, time they're considering this because I  
3 think that was sort of the third sort of  
4 outstanding issue that was being --

5 MR. HINNEFELD: Right, and that  
6 presentation I gave in Santa Fe.

7 MEMBER MELIUS: Right. And just a  
8 brief update on that would be --

9 MR. HINNEFELD: Okay, I'll present  
10 it more briefly.

11 MEMBER MELIUS: And I don't recall  
12 in Santa Fe if there were any sort of leftover  
13 questions or uncertainties, but you might want  
14 to take a quick look at the transcript and see  
15 if there were any questions that might be  
16 helpful to address.

17 MR. HINNEFELD: All right.

18 CHAIRMAN LEMEN: Are there any  
19 other comments by anyone on the phone at this  
20 time?

21 MR. KATZ: This is Ted, Dick. I

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 just wanted to check, so we're going to have  
2 Stu, someone has a phone line open and it's  
3 giving an echo to this. But so Stu is going  
4 to give a presentation on some of these  
5 matters.

6 Do you, Dick, intend to speak for  
7 the Work Group? I assume you do, but I have  
8 you on for saying something. But do you need  
9 help with a presentation, or you think it  
10 would be brief or you don't need slides or  
11 what do you need?

12 CHAIRMAN LEMEN: I would like some  
13 help with a presentation, but I think the  
14 presentation should be Stu first. I can  
15 introduce it, and then Stu, and then I can  
16 finalize it.

17 MR. KATZ: Well, what I'm asking,  
18 though, it sounds like Stu is sort of covering  
19 the waterfront. What is it that you want Ron  
20 to help you with?

21 CHAIRMAN LEMEN: I'm not sure that

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Ron needs to do anything. I think I'm<sup>60</sup>  
2 speaking more to Stu and him covering it also.

3 MR. KATZ: Okay, so then you're  
4 saying that you, yourself won't really have a  
5 formal presentation, is that correct?

6 CHAIRMAN LEMEN: That's correct.

7 MR. KATZ: Okay, all right. I  
8 just wanted to be clear about that, thanks.

9 CHAIRMAN LEMEN: I mean, I would  
10 introduce the discussion.

11 MR. KATZ: Understood, understood.

12 CHAIRMAN LEMEN: But that's it.  
13 Are there any other comments, petitioners, one  
14 last time?

15 MS. KAREN JOHNSON: I think I'm  
16 good. This is Karen.

17 CHAIRMAN LEMEN: All right. Tina?

18 MS. TRIPLETT: This is Tina. No,  
19 no questions. Yes, I'm good.

20 CHAIRMAN LEMEN: Okay. I guess  
21 with that, we'll close the meeting unless

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

