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PUBLIC HEALTH SERVICE  
CENTERS FOR DISEASE CONTROL AND PREVENTION  
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

convenes the

WORKING GROUP MEETING

ADVISORY BOARD ON  
RADIATION AND WORKER HEALTH

FERNALD

The verbatim transcript of the Working  
Group Meeting of the Advisory Board on Radiation and  
Worker Health held in Redondo Beach, California, on  
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*STEVEN RAY GREEN AND ASSOCIATES  
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C O N T E N T S  
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WELCOME AND OPENING COMMENTS MR. TED KATZ, DFO	6
INTRODUCTION BY CHAIR MR. BRAD CLAWSON	6
DATA INTEGRITY ISSUE	9
COURT REPORTER'S CERTIFICATE	38

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-- "uh-huh" represents an affirmative response, and "uh-uh" represents a negative response.

-- "\*" denotes a spelling based on phonetics, without reference available.

-- (inaudible)/ (unintelligible) signifies speaker failure, usually failure to use a microphone.

**P A R T I C I P A N T S**

(By Group, in Alphabetical Order)

DESIGNATED FEDERAL OFFICIAL (Acting)

KATZ, Theodore M., M.P.A.

Program Analyst

National Institute for Occupational Safety and Health

Centers for Disease Control and Prevention

Atlanta, Georgia

MEMBERSHIP

1  
2  
3

CLAWSON, Bradley

Senior Operator, Nuclear Fuel Handling

Idaho National Engineering & Environmental Laboratory

GRIFFON, Mark A.

President

Creative Pollution Solutions, Inc.

Salem, New Hampshire

PRESLEY, Robert W.

Special Projects Engineer

BWXT Y12 National Security Complex

Clinton, Tennessee

SCHOFIELD, Phillip

Los Alamos Project on Worker Safety

Los Alamos, New Mexico

ZIEMER, Paul L., Ph.D.

Professor Emeritus

School of Health Sciences

Purdue University

Lafayette, Indiana

IDENTIFIED PARTICIPANTS

BALDRIDGE, SANDRA, PETITIONER  
CHEW, MELTON, CAI  
ELLIOTT, LARRY, NIOSH  
HOFF, JENNIFER, ORAU  
HOWELL, EMILY, HHS  
KOTSCH, JEFF, DOL  
MAKHIJANI, ARJUN, SC&A  
MAURO, JOHN, SC&A  
MORRIS, ROBERT, ORAU  
NETON, JIM, NIOSH  
RAFKY, MICHAEL, HHS  
ROLFES, MARK, NIOSH

## P R O C E E D I N G S

(4:15 p.m.)

1

2

WELCOME AND OPENING COMMENTSMR. TED KATZ, DFO

3

**MR. KATZ:** Is there -- is there anyone on the line, on the phone?

4

5

**MS. BALDRIDGE:** Yes. This is Sandra Baldrige, petitioner, Fernald.

6

7

**MR. KATZ:** Oh, great, Sandra, welcome. And we're -- we're about to start the workgroup -- Fernald workgroup, and I would just ask everyone on the line, while discussion is going on, to please mute your lines. Press star-6 if you don't have a mute button.

10

11

12

13

Brad?

14

INTRODUCTION BY CHAIR

15

**MR. CLAWSON:** Okay, this is the Fernald workgroup. I first apologize for this being such short notice. Sandra, I appreciate you calling in on this. This -- this is to be able to -- we tried very hard to be able to set up a workgroup meeting, and this perta-- this -- the issue that we want to just discuss, and we're only going to discuss one, is a little bit of

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1 data integrity. And earlier this -- this past  
2 month I -- being the work chair, I asked SC&A  
3 if they could give us a sample of what they  
4 wanted to do on this and this is what they're  
5 going to do tonight is show us what they've  
6 got, and this time we'll proceed and I'll turn  
7 this over to -- to you, Hans -- or Arjun,  
8 excuse me.

9 **DR. MAKHIJANI:** I'm actually -- I'm actually  
10 filling in for Hans.

11 **DR. ZIEMER:** It's hard to tell them apart, I  
12 know.

13 **MR. CLAWSON:** Well, you know, you guys all look  
14 alike.

15 **DR. MAKHIJANI:** Now that I don't have any hair,  
16 anyway.

17 **MR. ROLFES:** This is Mark Rolfes. Ted, before  
18 we begin, should we introduce who's around the  
19 table and declare whether there's a conflict of  
20 interest?

21 **MR. KATZ:** Oh, yeah, right, thank you. I'm  
22 falling down on my duties here.

23 **MR. ROLFES:** And people on the phone.

24 **MR. KATZ:** Right, so let's -- let's start with  
25 the -- the Board members, if you would just

1 introduce yourself and whether you have a  
2 conflict or not.

3 **MR. SCHOFIELD:** Phillip Schofield, no conflict.

4 **MR. CLAWSON:** Brad Clawson, Fernald work chair  
5 -- group, no conflict.

6 **MR. GRIFFON:** Mark Griffon, no conflict.

7 **DR. ZIEMER:** Paul Ziemer, no conflict.

8 **MR. PRESLEY:** Robert Presley, no conflict.

9 **MR. CHEW:** Mel Chew, ORAU team, document owner,  
10 no conflict.

11 **MR. ROLFES:** Mark Rolfes, NIOSH, no conflict.

12 **MR. KATZ:** Go ahead, SC&A.

13 **DR. MAKHIJANI:** Arjun Makhijani, I've been  
14 declared to have a conflict by  
15 (unintelligible).

16 **DR. MAURO:** John Mauro, SC&A, no conflict.

17 **MR. KATZ:** And is there anyone on the line from  
18 the NIOSH/ORAU team to start with?

19 (No responses)

20 Okay, and then let's ask in the room, too, for  
21 NIOSH and HHS.

22 **MS. HOWELL:** Emily Howell, HHS, no conflict.

23 **DR. NETON:** Jim Neton, conflicted at Fernald.

24 **MR. RAFKY:** Michael Rafky, HHS, no conflict.

25 **MR. ELLIOTT:** Larry Elliott, NIOSH, no

1 conflict.

2 **MR. KATZ:** And just for the record, Jeff Kotsch  
3 is sitting back there but he's a far -- he's  
4 far from the microphone.

5 **MR. KOTSCH:** I'll sit out here. I don't -- no  
6 conflict.

7 **MR. KATZ:** Okay.

8 **MR. MORRIS:** My -- my telephone connection  
9 dropped out a moment ago. This is Bob Morris  
10 with Oak Ridge -- ORAU team, no conflict.

11 **MR. KATZ:** Okay, and anyone else from SC&A or  
12 ORAU on the phone?

13 **MS. HOFF:** Jennifer Hoff with the ORAU team, no  
14 conflict.

15 **MR. KATZ:** Okay. And then finally if just --  
16 if there's anyone else from the public on the  
17 phone who would like to identify themselves.

18 **DR. ZIEMER:** Sandra Baldrige.

19 **MR. KATZ:** We have Sandra Baldrige already.

20 (No responses)

21 Okay, thank you then. You can proceed.

22 **DATA INTEGRITY ISSUE**

23 **DR. MAKHIJANI:** Well, John, this -- this is  
24 really -- I'm filling in for Hans 'cause he was  
25 not here, and unfortunately I'm feeling a

1 little bit hampered since he's responsible for  
2 this job. I -- I worked on this with John  
3 Mauro after Brad asked me to prepare a little  
4 bit more --

5 **UNIDENTIFIED:** Ted, we can't hear him.

6 **DR. MAKHIJANI:** Brad -- Brad Clawson asked me  
7 to prepare a little bit more extensive status  
8 than -- than -- so -- so I'll give you a status  
9 report, mainly focusing on the completeness --

10 **UNIDENTIFIED:** Ted, we can't hear him.

11 **MR. KATZ:** Okay, one second. Let's see what's  
12 going on with the mike. Is yours live?

13 **DR. MAKHIJANI:** Hello? It seems live.

14 **MR. KATZ:** Can you hear him now?

15 **DR. MAKHIJANI:** Can you hear me?

16 **UNIDENTIFIED:** Say something.

17 **DR. MAKHIJANI:** Well, I just did.

18 **UNIDENTIFIED:** Okay, yeah, we hear you.

19 **DR. MAKHIJANI:** Can you hear me?

20 **UNIDENTIFIED:** Yep.

21 **DR. MAKHIJANI:** Okay. All right. The main  
22 thing that I've been responsible for developing  
23 is the investigation -- completeness  
24 investigation, how much data there is, how  
25 complete it is, what the data gaps are in the

1 external and internal monitoring. I worked  
2 with -- and that was delegated to me by John  
3 and Hans, and mainly to develop the plan. I  
4 sent an outline of the plan and what would be  
5 covered by the plan to -- to Brad and I believe  
6 the working group should have -- have it  
7 anyway, in May. We looked at a few cases to  
8 see how much time it would take per case to  
9 compile the data, and there's good news on  
10 that. We have a sampling plan from our  
11 statistician and I -- I can print that out and  
12 have time to put all the Privacy Act notices  
13 and so on on it and distribute it to you all, I  
14 hope by tomorrow, if you like. Or send it  
15 around by e-mail, if you prefer. But I can  
16 give you a summary of what's in it.  
17 The -- the main criteria for the sampling were  
18 -- there were a number of plants at Fernald, so  
19 whether the workers in the various plants are  
20 covered, some job designations and the various  
21 periods. The '50s were separated -- the '50s  
22 and early '60s were separated from the later  
23 periods in order to see whether the early  
24 period was adequately covered. The -- and then  
25 there was the Plant 7, which operated '54 to

1 '57 -- anyway, a short period in -- in the mid-  
2 '50s and then it was closed. And we asked  
3 Harry, our statistician, to see what kind of  
4 over-sampling might be needed in order to catch  
5 that period to make sure that the workers who  
6 worked in Plant 7 were monitored, or what their  
7 monitoring situation was.

8 Of course the number -- number of people you  
9 sample depends on the level of precision with  
10 which you want the result, and that level of  
11 precision depends on -- mainly on two things,  
12 the number of workers and also the frequency  
13 with which they were monitored. So you need  
14 fewer workers if they were monitored weekly and  
15 more if they were monitored monthly, and even  
16 more if they were monitored annually, so -- or  
17 for the same number of workers, the precision  
18 for annual monitored workers goes down. So for  
19 a fixed level of precision, you need to monitor  
20 more -- sample more workers if they were  
21 annually monitored. Alternatively, for a given  
22 level of sampling, you sample 20 workers,  
23 you'll get less precision for those who were  
24 annually monitored rather than -- because you  
25 have fewer -- fewer datapoints, basically.

1 Harry developed two -- and I'll -- I'll  
2 circulate the sampling plan and you all can  
3 comment on it. I'll circulate it in hard copy  
4 and soft copy, if you'd like. He developed two  
5 options. The first option would involve  
6 precision levels of three percent, six percent  
7 and 20 percent, or weekly, monthly and annual  
8 monitoring, respectively, and -- and fulfill  
9 all the other criteria of over-sampling for  
10 Plant 7 and job types and so on. And that  
11 involves examining the data for 275 workers.  
12 Now that seems like a lot of workers. Mostly  
13 the data has been compiled electronically, and  
14 our trial indicates that it would take one or  
15 two hours per worker to download and compile  
16 all the data, so it's not a lot of time per --  
17 per worker.

18 Then the -- if you want a higher level of  
19 precision, two, four and 15 percent for the  
20 weekly, monthly and annual, the -- the number  
21 of workers goes up drastically, about -- almost  
22 -- more than double that, 600 workers. And  
23 this does have the strati-- stratification for  
24 the periods and jobs and plants, so the reason  
25 that there are so many workers involved is that

1 the samples are very stratified.

2 **MR. GRIFFON:** What was the first option you  
3 said?

4 **DR. MAKHIJANI:** 275. So this sampling would  
5 address both internal and external dose. So  
6 that's -- that's sort of the largest work item  
7 that is outstanding that we've talked about the  
8 working group considering authorization for it,  
9 and so we've only proceeded to the point of  
10 developing the plan, being able to give you an  
11 idea of what it will take to complete it.  
12 If -- if there are workers in the '50s who are  
13 not in the electronic database, I think for  
14 those workers it's going to take somewhat --  
15 somewhat more time to compile it. It'd be more  
16 like NTS, several hours for -- four hours --  
17 four hours -- about four hours per record,  
18 although I'd more like one or one and a half.  
19 Okay, so that's the first item, are there any  
20 questions about that? I can go through the  
21 list and we can discuss, or we can discuss one  
22 by one. How do you want --

23 **MR. GRIFFON:** Is that the only item?

24 **DR. MAKHIJANI:** Well, there -- there -- that's  
25 the only data completeness item for which --

1           **MR. GRIFFON:** (Off microphone) (Unintelligible)

2           **DR. MAKHIJANI:** I -- I also -- okay, that's  
3 fine. I also went through the matrix and -- to  
4 see what other items --

5           **MR. CLAWSON:** (Off microphone) (Unintelligible)

6           **DR. MAKHIJANI:** You -- you just want to focus  
7 on that? That's fine.

8           **DR. MAURO:** Could -- could I bring up a concern  
9 that you spoke about briefly, and that -- if  
10 you recall, one of the really important issues  
11 that emerged in our original review was the  
12 reconstructing internal doses from thorium.  
13 Okay? And -- because of a lack of bio--  
14 adequate bioassay data during a particular time  
15 --

16           **DR. MAKHIJANI:** Well, there was no bio-- no in  
17 vivo or bioassay data in the first period, up  
18 to '68, I -- right, Jim?

19           **DR. NETON:** Right.

20           **DR. MAURO:** Now -- and -- but, during one of  
21 our workgroup meetings NIOSH pointed out that  
22 they -- they were able to get (unintelligible)  
23 --

24           **UNIDENTIFIED:** You cannot be heard.

25           **DR. MAURO:** During -- during -- is that better?

1 Can you hear me now?

2 During one of our workgroup meetings NIOSH  
3 pointed out that they were able to gain access  
4 to a large number, I believe somewhere on the  
5 order of 100 boxes of -- of records which were  
6 time-weighted air sampling data, and I think  
7 our sampling plan, as laid out right now, does  
8 not address that subject. And I guess it's a  
9 subject I posed to the workgroup whether or not  
10 that aspect of our sampling plan nee-- well,  
11 does our sampling plan need to be augmented to  
12 look at some sample of that data to see the  
13 degree to -- because it's my understanding that  
14 that is going to be the main tool or resource  
15 to be used to reconstruct internal doses to  
16 thorium.

17 **MR. GRIFFON:** I mean my feeling is we treat  
18 that as a separate -- it's a separate finding,  
19 it's a separate set of data and we need to look  
20 at that and consider it, but consider it as  
21 it's used in a coworker model and not as part  
22 of this data completeness sampling, so I would  
23 say keep them separate. That -- that's just my  
24 opinion. I mean -- first I've heard of it  
25 here, but...

1           **DR. MAKHIJANI:** Mark -- Mark, it would be  
2           separate. I went back, just in preparation for  
3           this -- this afternoon and looked at my notes  
4           from the matrix, and it is -- it is a separate  
5           item in the matrix. There are a number of  
6           items in the matrix that are still remaining to  
7           be discussed and -- and this is one of them. I  
8           don't know that we've had any follow-up on this  
9           item after NIOSH proposed and presented the  
10          data, which -- which appear to be quite  
11          extensive -- at least to my memory.

12          **DR. NETON:** (Off microphone) Mark  
13          (unintelligible) address that.

14          **MR. ROLFES:** We -- we had developed a  
15          methodology to assign intakes of thorium based  
16          on the daily weighted exposure reports which we  
17          had recovered. That information is undergoing  
18          internal peer review in OCAS, so as soon as  
19          that's available, that will be put onto the O  
20          drive as well for the Advisory Board's review.

21          **MR. GRIFFON:** (Off microphone) I'd say let's  
22          treat that as a (unintelligible). Can I --  
23          sorry.

24          (On microphone) Can I just ask -- this -- I  
25          think really what we want to achieve here is if

1 we can task SC&A with doing this data  
2 completeness review, but before we even -- I  
3 think we sh-- the workgroup should discuss this  
4 and not, you know, hear NIOSH's input and  
5 others, but I -- can you, Arjun, tell me a  
6 little bit more about the 275 option, how -- if  
7 you -- I don't know if you can like -- maybe --  
8 it would probably be helpful to look at the  
9 document, but to see the -- how it's stratified  
10 and how many -- you know, what -- what are your  
11 strata, maybe, and -- and --

12 **DR. MAKHIJANI:** (Off microphone) Each -- each  
13 stratum really contains (unintelligible) -- (on  
14 microphone) each stratum contains 25 worker  
15 years, and then -- and the strata are periods,  
16 job types and plants. And of course it depends  
17 on how many -- how many workers depends on how  
18 long averagely (sic) they worked, but -- but  
19 you would sample 25 worker years from each  
20 stratum and the number of workers is kind of  
21 derived from that.

22 The -- that doesn't add up to 275 workers  
23 actually. Then you have to go back and see  
24 what the over-sampling has to be to cover the  
25 short period things like Plant 7 and so on. So

1           it's a fairly complex exercise and I really --  
2           I guess I should have tried to e-mail this out  
3           this afternoon from my room, but I don't know,  
4           I think (unintelligible). But I can do that  
5           tonight. I can send it to the working group  
6           tonight.

7           **MR. CLAWSON:** Okay. Well, at the end of all  
8           this, when we get -- if -- if we decided to go  
9           with this route with this 270 workers, what is  
10          the end result that we were going to have to be  
11          able to -- to -- to bound this, I guess you  
12          could say.

13          **DR. MAKHIJANI:** Well, the -- well -- well, the  
14          end result is going -- you're going to have a  
15          fairly fine-grained look at how complete the  
16          monitoring was for internal and external for  
17          various groups of workers, how solid the  
18          coworker model that will be based on this for  
19          various periods would be, and whether in  
20          certain periods or -- the -- the gaps are so  
21          large that, you know, you can't construct a  
22          reasonable model. Now we should be able to  
23          catch things like, for instance, extremity  
24          monitoring, frequency, what periods you had  
25          extremity monitoring for external dose. We

1           should be able to catch how many people were  
2           monitored for the in vivo after the in vivo  
3           started for thorium. Of course you don't have  
4           any thorium monitoring in the early period, so  
5           for that you won't be able to tell anything.  
6           But we would be able to tell for the -- any  
7           gross alpha -- no, for the fluorometric uranium  
8           monitoring that was done in the '50s.

9           **MR. ROLFES:** Arjun, this is Mark. I did want  
10          to interject, there are some data prior to 1968  
11          for thorium in vivo monitoring that was done  
12          off-site. There were some individuals that  
13          were sent to the Wright-Patterson Air Force  
14          Base and subject to in vivo counts there, and  
15          also to the Y-12 facility. Furthermore, there  
16          were some individuals that were sent to the  
17          University of Rochester and they were given  
18          some thoron lung counts -- excuse me, thoron  
19          breath tests, and also I believe a -- an in  
20          vivo count there, and that documentation has  
21          been placed on the O drive as well, so --

22          **MR. CLAWSON:** That is correct, Mark, but one of  
23          the questions on that, and I believe we got  
24          into this in the workgroup, too -- some of  
25          these weren't actually workers. They were

1           actually supervisors that they could tell had  
2           to go there. There was -- there was different  
3           -- and I think this is -- this is part of our  
4           issue that we got into, and with this strata  
5           like this we're going to be able to kind of  
6           represent this a little bit better manner, if  
7           I'm not -- not mistaken.

8           **DR. MAKHIJANI:** That's correct.

9           **MR. ROLFES:** That is correct, Brad. There was,  
10          for example, in one case I believe a supervisor  
11          was sent as a control, as a background subject  
12          as well, so --

13          **MR. CLAWSON:** Okay. Also, too, and correct me  
14          if I'm wrong, Mark, but a lot of this we --  
15          we're coming up with a lot of different  
16          radionuclides that were going to be covered and  
17          so forth like this, and in our earlier  
18          workgroup to be able to take care of that we  
19          were going to use the urine data, if they  
20          showed up any uranium in their urine data, then  
21          we were going to assign these other isotopes.  
22          Was this...

23          **MR. ROLFES:** I -- I think that's a slightly  
24          separate issue. For example, what we would do  
25          for reconstructing uranium intakes, we would

1 use bioassay data -- for example, urinalysis  
2 data -- first. Then we would assume that the  
3 individual, from 1961 forward -- I believe we  
4 may be changing that, but we would assume that  
5 the individual was exposed to recycled uranium  
6 and we would add in intakes of plutonium-239,  
7 neptunium-237 and technetium-99 based on ratios  
8 that were documented in the recycled uranium  
9 mixtures that were received at Fernald, so...

10 **MR. CLAWSON:** Okay. Well, I guess, you know,  
11 bottom line --

12 **DR. MAKHIJANI:** Yeah, just a comment on what  
13 Mark just said in terms of a few workers. I  
14 don't know how many there were, but if there  
15 were very few we would not expect this sampling  
16 plan to reflect that because that would  
17 essentially require -- you know, pick up a few  
18 workers would essentially require 100 percent  
19 coverage. You're not looking for that. If you  
20 want to look at that data you just have to pull  
21 those records and look at them -- look at them  
22 specifically and see what you can make of them.

23 **MR. CLAWSON:** Is -- and I guess this is more  
24 asked of John or so forth like this, is this  
25 kind of the same strata type system that we

1           were doing at Nevada Test Site?

2           **DR. MAURO:** Exactly. We see, for -- that this

3           approach to in effect ask ourselves the

4           question are there sufficient data within each

5           strata, and every site -- and this becomes a

6           matter of understanding what took place at the

7           site at a given time. And in theory what we're

8           really saying is for -- for each group of

9           workers -- and we did this at Nevada Test Site

10          and we're doing it here -- do we have

11          sufficient data to build a coworker model for

12          that strata. So -- in other words, you -- you

13          ask yourself, okay, we have a -- we have a

14          group of workers that in theory were doing this

15          type of job at this point in time and were --

16          were exposed -- let's say the inhalation of two

17          percent enriched uranium. And -- and in

18          theory, though perhaps they were not all

19          bioassayed every month, they may -- we -- if we

20          were to sample that -- take -- let's say we

21          take 20 worker years of data from that

22          population of workers, that strata, and we get

23          back the results and we have a table for that

24          strata, here are the results. And -- now that

25          would in effect speak to us. Yes, you have --

1           you get a -- a distribution from which you  
2           could pick off the upper 95th percentile and  
3           feel confident that that upper 95th percentile  
4           is a claimant-favorable assignment to workers  
5           in that strata who perhaps were not complete  
6           monitored. So the -- to answer your questions,  
7           this philosophy is -- is exactly the same  
8           philosophy that we're trying to impose and use  
9           on every SEC petition review, and I think it  
10          goes to the heart of an SEC petition review,  
11          unlike the site profiles where you're asking  
12          questions of -- really of -- of science on is  
13          this the best scientific way to deal with the  
14          problem as opposed to do you have the data to  
15          even apply -- if you don't have the data, you  
16          know, you -- you can't reconstruct the doses.  
17          So -- so I guess the answer to your question is  
18          yes, we are trying to come up with a consistent  
19          strategy, and I call it the strata approach  
20          where the first step in the process is once we  
21          have an appreciation for the complexity of the  
22          site, and I think we have that appreciation,  
23          then we design -- we -- I -- we break up the  
24          site and the workers and the time periods into  
25          strata. And the purpose of this meeting today

1 is to discuss whether or not we did a good job  
2 in creating the strata that we feel cuts across  
3 all the different time periods and categories  
4 of workers that need to be reviewed to give us  
5 the assurance that when we're done, yes, there  
6 is sufficient data in each strata so that we  
7 can construct bounding exposures for -- for  
8 each member of that strata.

9 **MR. GRIFFON:** And I guess I -- I thought we  
10 would have those in front of us today, and I  
11 know this was last minute to expect this, so  
12 you had -- no, no, that's fine, that's fine.

13 **DR. ZIEMER:** Yeah, I don't think we can answer  
14 that question without having something to --

15 **MR. GRIFFON:** Right, we need to look at the  
16 document and may-- I'm -- I'm wondering and  
17 asking Paul, maybe -- can we still schedule a  
18 conference call of our workgroup 'cause I know  
19 we're sort of limited on what -- face-to-face  
20 meetings beyond a certain date here, so I don't  
21 know if we can follow-up with this. Once --  
22 once SC&A sends this document around, can we do  
23 a conference call.

24 **DR. ZIEMER:** I think a conference call could be  
25 scheduled, could it not, Ted?

1           **MR. KATZ:** Absolutely.

2           **MR. GRIFFON:** Yeah.

3           **DR. ZIEMER:** As long as we're not traveling?

4           **MR. KATZ:** Right.

5           **MR. GRIFFON:** So I -- I would recommend that we  
6           consider a date for a conference call, after we  
7           have a little time to look at -- at the plan,  
8           and then -- just to address this issue or -- or  
9           -- well, I don't know if Brad wants to have a  
10          full workgroup meeting on a conference call,  
11          but --

12          **MR. CLAWSON:** No, I --

13          **MR. GRIFFON:** -- I would say at least to  
14          address this.

15          **MR. CLAWSON:** I would like to be able to  
16          address this because this has kind of been  
17          done, but -- but I agree with Mark, we -- I  
18          wanted to be able to -- I -- I kind of  
19          understood we were going to have a little more  
20          something to look at, and I know this was spur  
21          of the moment. That -- that was my fault. But  
22          to be able to look at this because between the  
23          270 and 600 people, that -- you know, that's --  
24          that's -- like I said, that was a little more  
25          than what I wanted to be able -- but I wanted

1 to be able to see what this -- this data had.  
2 Now this has not passed any Privacy Act or  
3 anything else like that. Correct?

4 **DR. MAKHIJANI:** No. No, we have not -- we have  
5 not sent this for any Privacy Act review, but  
6 we can certainly send it to you. So --

7 **MR. CLAWSON:** Okay.

8 **DR. MAKHIJANI:** -- the -- now the -- the  
9 different strata are defined in the May 5th  
10 memo that I sent you.

11 **MR. CLAWSON:** Right.

12 **DR. MAKHIJANI:** Now you should -- you all have  
13 that, and I can remind you of what those are.

14 **DR. ZIEMER:** Was that -- was that a document or  
15 just an e-mail memo?

16 **MR. CLAWSON:** An e-mail.

17 **DR. MAKHIJANI:** No, no, it was a -- it was a  
18 Word -- it was a Word document sent as an e-  
19 mail attachment to Brad in early May. I don't  
20 know the date that I sent it. The date on my  
21 document is May 12th, but I think I sent it a  
22 week -- I prepared it, then revised it, and I  
23 sent it maybe a week later. I can dig up the  
24 date.

25 **MR. GRIFFON:** I think we need to look at that

1 along with the spreadsheet you're going to send  
2 and consider the numbers alongside the strata.  
3 That makes more sense for me to look at it that  
4 way, so...

5 **DR. MAKHIJANI:** What -- what I might do is,  
6 since -- the -- these two documents I am  
7 familiar with. I was at a little bit -- it was  
8 a little bit more difficult for me to fill in  
9 Hans's shoes since I have not been tracking  
10 those issues, but this -- this is something  
11 that I've been responsible for, along with  
12 John, and I could -- I could easily have these  
13 two pieces of paper on your table at 8:30 in  
14 the morning when you start, so if you want to  
15 look at them and -- and proceed at this  
16 meeting, you know, I can -- I can certainly do  
17 that. Yeah, you need a phone call, okay. Then  
18 I'll just -- then I'll just e-mail both of  
19 these pieces of paper to you -- you know.

20 **MR. GRIFFON:** That's fine.

21 **MR. CLAWSON:** Okay.

22 **DR. MAKHIJANI:** Before I leave.

23 **MR. GRIFFON:** (Off microphone) And we'll just  
24 (unintelligible) -- I don't know if you  
25 (unintelligible) (on microphone) check with

1           dates now while we're all sitting here if we --  
2           or you want to do it by -- by e-mail, it's up  
3           to you.

4           **MR. CLAWSON:** Well, I -- I'd rather see what  
5           everybody's time's -- the problem I had with  
6           the -- the last -- trying to set up the  
7           workgroup meeting, I'd -- I'd prefer to hear of  
8           what would be the most convenient for -- for  
9           everybody here for a phone call.

10          **MR. GRIFFON:** I think it might be a little  
11          different for phone calls versus traveling to  
12          Cincinnati, so we might have a little better  
13          luck, hopefully.

14          **DR. ZIEMER:** Well, and this might only take an  
15          hour or two.

16          **MR. GRIFFON:** Yeah, this should be -- just this  
17          one issue, yeah.

18          **MR. CLAWSON:** And that's -- and I want to make  
19          that clear up front. This is the only issue  
20          that I want to be able to address at this time  
21          because I want to be able to get processing on  
22          this so that when -- when we are able to start  
23          workgroups again that -- that this has been  
24          taken care of and so forth.

25          **DR. MAKHIJANI:** Sorry, Brad, I just wasn't

1 clear about that.

2 **MR. CLAWSON:** No problem -- no, it's my fault.

3 **DR. ZIEMER:** So how far has SC&A gone? Have  
4 you simply defined the strata and that's it so  
5 far?

6 **DR. MAURO:** And also the feasibility of  
7 implementing it. For example, the one hour per  
8 sample was -- okay, we've come up with the  
9 strata, the number of samples, how much time  
10 will it take per sample; can we do it? And the  
11 answer's yes, and I think this is --

12 **DR. ZIEMER:** And Brad is saying okay, how --  
13 how much of this chunk do you want to have them  
14 do initially. Is that right, Brad?

15 **MR. CLAWSON:** Yes, when -- when I was contacted  
16 about this and so forth and I'd seen this a  
17 little bit with the Nevada Test Site or so  
18 forth like that, as the workgroup chair I felt  
19 that I could ask them to give us a basis of --  
20 of what -- what it was going to be, what --  
21 what the strata was going to be like, but as a  
22 workgroup we all have to approve what we want  
23 to be able to do. And I wanted to see what --  
24 you know, basically what -- what we were going  
25 to get, and that's kind of where we're at now.

1           And so I -- I guess I'd like to entertain the  
2           option of what would work best for somebody on  
3           a phone call or so forth like that of a -- of a  
4           date and probably set apart a -- an hour or so  
5           to be able to do this. Is ther-- is there any  
6           area that would be better for some of you?

7           **MR. ROLFES:** I'll work to make myself  
8           available. I will be out of town towards the  
9           end of September, I believe, so...

10          **MR. GRIFFON:** I would think we could do this  
11          the end of next week maybe -- if we can find a  
12          time maybe we can try to do it the end of next  
13          week 'cause I --

14          **MR. CLAWSON:** What -- what does next --

15          **MR. GRIFFON:** Yeah.

16          **MR. CLAWSON:** -- next Friday -- is Fridays bad  
17          or...

18          **MR. PRESLEY:** How about Thursday?

19          **DR. ZIEMER:** I -- I can't do a conference call  
20          on Friday. I'm tied up all day.

21          **MR. CLAWSON:** Okay.

22          **MR. PRESLEY:** Me, too.

23          **MR. CLAWSON:** You, too?

24          **DR. ZIEMER:** Actually all next week is --  
25          really, for me is not good. Well, I --

1           actually I -- no, I'm traveling on Wednesday.

2           **MR. CLAWSON:** Well, let's -- no, I don't want  
3           to push into anybody. Let's look at -- I don't  
4           have a calendar with me.

5           **MR. GRIFFON:** What about the week of the 15th?  
6           Can -- can we -- Arjun's asking if we can just  
7           get dates -- he doesn't have his calendar and  
8           maybe we can get with you tomorrow morning and  
9           give our dates --

10          **MR. CLAWSON:** Yeah.

11          **MR. GRIFFON:** -- in writing to you and you can  
12          come up with something.

13          **MR. PRESLEY:** 15th, 16, 17th and 18th I'm --

14          **DR. ZIEMER:** Those are good?

15          **MR. PRESLEY:** -- those are --

16          **DR. ZIEMER:** Those are good for me.

17          **MR. PRESLEY:** -- an hour at work, no problem.

18          **DR. ZIEMER:** Okay, those --

19          **MR. GRIFFON:** That week's good for me, too.

20          **DR. ZIEMER:** -- are good for me.

21          **MR. CLAWSON:** Okay, because we're going to be  
22          dealing with --

23          **DR. ZIEMER:** 19th is bad.

24          **MR. CLAWSON:** -- eastern time, I really can't  
25          do it before 10:00 o'clock 'cause that's about

1 8:00 o'clock my time and I have to get some of  
2 my pre-jobs and everything else like that, so  
3 if -- if we just kind of plan like on a 10:00  
4 o'clock and if you'll get me the date --

5 **MR. PRESLEY:** 10:00 o'clock is fine with me.

6 **MR. CLAWSON:** -- if you get me the dates or so  
7 forth like that by tomorrow, then we'll set up  
8 a --

9 **MR. PRESLEY:** Any -- any time that week's fine  
10 with me.

11 **MR. CLAWSON:** Okay.

12 **MR. GRIFFON:** Focus on the 15th, 16th, 17th,  
13 18th for those, yeah.

14 **MR. ROLFES:** To the best of my knowledge, I  
15 should be available that week as well, so...

16 **MR. GRIFFON:** Okay, we'll get something.

17 **MR. CLAWSON:** Okay. Well, then we'll proceed -  
18 - we'll proceed with that. And Arjun, you'll  
19 make sure that everybody gets it. Okay?

20 **DR. MAKHIJANI:** I think it should be.

21 **MS. BALDRIDGE:** Brad?

22 **MR. CLAWSON:** Yes, Sandra.

23 **MS. BALDRIDGE:** I have a question. At the last  
24 meeting there was discussion about establishing  
25 a time line on thorium for 1955 and 1966 for

1 the general plant area and 1960 for Plant 6. I  
2 didn't know how far into the development of  
3 that and review of the records that process is,  
4 and I was wondering if, for Plant 6, it could  
5 be changed from 1960 to 1961 since I'm not  
6 aware of when in 1960 the thorium processing  
7 began in Plant 6. And I think that it needs to  
8 reflect this full 12-month process, which 1961  
9 would.

10 **MR. CLAWSON:** I -- I guess I'd have to refer  
11 this to -- to Mark.

12 **MR. ROLFES:** Sandra, this is Mark. I'd have to  
13 take a look back at the records. We do have  
14 some documentation -- I believe you had  
15 provided some documentation to us as well.  
16 There was some burning of thorium sludge that  
17 occurred in a modified furnace in Plant 6 --

18 **MS. BALDRIDGE:** Right.

19 **MR. ROLFES:** -- and we do have dates and air  
20 sampling data associated with that operation.  
21 We would make sure that we would account for  
22 all exposures that were incurred, whether they  
23 were only for a month or for a full year, so  
24 that information would be included to its  
25 fullest extent in our revised Technical Basis

1 Document.

2 **MS. BALDRIDGE:** Okay.

3 **MR. KATZ:** Brad, back on the date question,  
4 15th, 16th -- if we could consider 15th, 16th  
5 or 18th, but the 17th -- all of the legal staff  
6 are -- are committed that day --

7 **MR. CLAWSON:** Okay.

8 **MR. KATZ:** -- so that -- that wouldn't be a  
9 good day.

10 **MR. CLAWSON:** I've -- I've got a question. The  
11 15th is what, a Monday?

12 **MR. PRESLEY:** Monday.

13 **MR. CLAWSON:** Would that -- would that work for  
14 everybody? Let's -- let's shoot for 10:00  
15 o'clock on --

16 **DR. ZIEMER:** You need to check with Arjun,  
17 though.

18 **MR. GRIFFON:** But we could tentatively set it.

19 **MR. CLAWSON:** Let's tentatively set it up for  
20 September 15th, 10:00 -- 10:00 a.m. Eastern  
21 time, and Arjun, you'll make sure that all of  
22 us have --

23 **DR. MAKHIJANI:** I'll let you know --

24 **MR. CLAWSON:** Okay.

25 **DR. MAKHIJANI:** -- tomorrow morning.

1           **MR. CLAWSON:** Okay. If that --

2           **MR. KATZ:** Brad, do we want an hour, or how  
3 much time do you want 'cause we need to use  
4 that -- give that information.

5           **MR. CLAWSON:** I -- I would give us at least two  
6 hours --

7           **MR. KATZ:** Okay.

8           **MR. CLAWSON:** -- just in -- just in case. If  
9 it ends sooner, then that's fine, but I would  
10 rather it go longer.

11          **DR. ZIEMER:** 10:00 a.m. Eastern time?

12          **MR. KATZ:** Yes.

13          **MR. CLAWSON:** Yes. If there's no further  
14 questions or -- how about other members of the  
15 Board, do they have a question of -- of what  
16 we're trying to build here and so forth? Phil?

17          **MR. SCHOFIELD:** No. No. I --

18          **MR. CLAWSON:** Robert?

19          **MR. SCHOFIELD:** -- agree with what we're doing.

20          **MR. CLAWSON:** Okay. And we'll -- we'll get  
21 this sent out to the rest of the members of the  
22 -- well, to the working group and also to  
23 NIOSH, so you kind of know.

24                           Okay, that should be it. Thank you for calling  
25 in, Sandra.

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**MS. BALDRIDGE:** Thank you.

**MR. ROLFES:** Thank you.

(Whereupon, the meeting was adjourned at 4:50  
p.m.)

1

**CERTIFICATE OF COURT REPORTER****STATE OF GEORGIA****COUNTY OF FULTON**

I, Steven Ray Green, Certified Merit Court Reporter, do hereby certify that I reported the above and foregoing on the day of Sept. 3, 2008; and it is a true and accurate transcript of the testimony captioned herein.

I further certify that I am neither kin nor counsel to any of the parties herein, nor have any interest in the cause named herein.

WITNESS my hand and official seal this the 30th day of September, 2008.

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**STEVEN RAY GREEN, CCR, CVR-CM, PNSC****CERTIFIED MERIT COURT REPORTER****CERTIFICATE NUMBER: A-2102**