

THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
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

CHAPMAN VALVE SEC

The verbatim transcript of the Working  
Group Meeting of the Advisory Board on Radiation and  
Worker Health held in Cincinnati, Ohio on  
February 23, 2007.

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February 23, 2007

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### TRANSCRIPT LEGEND

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-- (sic) denotes an incorrect usage or pronunciation of a word which is transcribed in its original form as reported.

-- (phonetically) indicates a phonetic spelling of the word if no confirmation of the correct spelling is available.

-- "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.

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

(8:30 a.m.)

1

2

WELCOME AND OPENING COMMENTSDR. LEWIS WADE, DFO

**DR. WADE:** This is Lew Wade, and as always, I have the pleasure of serving as the Designated Federal Official for the Advisory Board. And this is a workgroup meeting of the Advisory Board. This is a workgroup on Chapman Valve SEC. That work group is chaired by Dr. Poston, members Griffon, Clawson, Roessler and Gibson. What I'd like to do is first ask if there are any Board members connected by telephone, be you members of the workgroup or not, I'd like you to identify yourself now. Workgroup -- workgroup or Board members on the call?

**MR. GIBSON:** Lew, this is Mike Gibson.

**DR. WADE:** Hi, Mike. How are you?

**DR. ZIEMER:** Paul Ziemer, Lew.

**DR. WADE:** Good morning, Paul. Thank you for joining us.

**MR. CLAWSON:** Brad Clawson.

**DR. WADE:** Thank you, Brad.

**DR. ROESSLER:** Brad, I -- I blocked him out I think.

**MR. CLAWSON:** Way to go, Gen.

1 **DR. ROESSLER:** This is Gen.

**DR. WADE:** How are you, Gen? How is the weather where you are, Gen?

**DR. ROESSLER:** It's -- it's okay now, but it's supposed to -- we're supposed to get sleet and rain starting mid-afternoon.

**DR. WADE:** Okay. Well, thank you for participating.

Are there any other Board members on the call?

(No responses)

2 So by my count, we now have six Board members  
3 engaged, which is below a quorum, which means that  
4 we can continue. If at -- if another Board member  
5 was to join and we were to learn of that, we would  
6 have to -- to take appropriate steps, but I'm more  
7 than capable of handling such a situation.

I thought what we would do is go around the table here and introduce ourselves and then we'll do some introductions on the line. When we do introduce ourselves, if anyone participating is conflicted on Chapman Valve, but I don't think that is the case, but to hold out that

possibility, please identify. This is Lew Wade, again. I work for NIOSH and serve the Advisory Board.

**DR. POSTON:** John Poston, Texas A&M.

**DR. MAURO:** John Mauro, Sanford Cohen & Associates.

**MR. ELLIOTT:** Larry Elliot, NIOSH.

**MR. ROLFES:** Mark Rolfes, NIOSH.

**DR. MAKHIJANI:** Arjun Makhijani, SC&A.

**MR. GRIFFON:** Mark Griffon, Advisory Board.

**DR. NETON:** Jim Neton, NIOSH.

**MS. HOWELL:** Emily Howell, HHS.

**DR. WADE:** And Ray is with us, working diligently. On the line again, if for the record you would identify yourselves. Working group members?

**MR. CLAWSON:** Brad Clawson.

**MR. GIBSON:** Mike Gibson.

**DR. WADE:** And Gen. Gen, are you still with us?

**DR. ROESSLER:** Sorry, I was on mute. Now I know it works.

**DR. WADE:** Well, good. And we do, too. And other Board members?

(No responses)

Paul, are you with us?

**DR. ZIEMER:** Oh, yeah. I thought you were just asking for workgroup members.

**DR. WADE:** Okay.

**DR. ZIEMER:** Yeah, I'm -- I'm here.

**DR. WADE:** What about members of the NIOSH/ORAU Team on the line?

**MS. BLOOM:** Cindy Bloom is here.

**DR. WADE:** Good morning, Cindy.

**MS. BLOOM:** Good morning.

**MR. STEMPFLEY:** This is Dan Stempfley.

1 **DR. WADE:** Good morning. Other members of the  
2 NIOSH/ORAU Team?

(No responses)

3 Members of the SC&A Team?

4 (No responses)

5 Are there any petitioners, worker, worker  
6 representatives on the line who would like to be  
7 identified?

8 **MS. RIALI:** Mary Ann Riali, Chapman Valve SEC  
9 Petitioner.

10 **DR. WADE:** Good morning. Thank you for joining us.  
11 We appreciate your being here. And again, the  
12 working group operates in a way that -- feel free to  
13 make comment anytime you would like. Again, there's  
14 no public comment period during the working group,

1 but for petitioners or worker or worker  
2 representatives if there's something you need to  
3 say, please feel free to say it. Anyone else  
4 representing workers?

5 **MS. WU:** Well Lew, I don't know if I count, but this  
6 is Portia Wu with Senator Kennedy's Health Committee  
7 staff.

8 **DR. WADE:** You certainly count.

9 **MS. WU:** If I count that way.

10 **DR. WADE:** You certainly count with us. Other  
11 members or representatives of Congress or their  
12 staff on the line?

13 **MS. WU:** I think some of the offices -- other  
14 offices might join a little later.

15 **DR. WADE:** Okay. Thank you very much.

16 **THE COURT REPORTER:** Dr. Wade, I'm sorry. Can I get  
17 clarification on that lady who was a petitioner?

18 **DR. WADE:** Would the petitioner please restate your  
19 name, I'm sorry.

20 **MS. RIALI:** It's Mary Ann Riali.

21 **DR. WADE:** Thank you, Mary Ann. And your voice is  
22 coming through loud and clear so again, please, if  
23 you need to say something, please do.

24 **MS. RIALI:** Thank you.

25 **DR. WADE:** We will be working from a --



1 the working group getting together in this manner.  
2 As you know, Senator Kennedy has expressed some  
3 concern about the pace of response and sent over a  
4 letter to the Board referencing concerns about that.  
5 We obviously hope that this, you know, this is taken  
6 up very quickly, but at the same time, it's very  
7 important to us that all of the technical issues are  
8 explored. I know Dr. Poston raised some in the last  
9 Board meeting. We do feel there are a number of  
10 others and we just think it's important that -- you  
11 obviously are the experts, but that all of the  
12 technical issues are explored, that all the  
13 possibilities for exposure are explored, because  
14 these people have been waiting a very long time, and  
15 we really need to be sure that justice is done. So  
16 we appreciate that and we look forward to following  
17 (unintelligible).

18 **ISSUES MATRIX FOR CHAPMAN VALVE SEC PETITION**

19 **DR. WADE:** Thank you, Portia, very much. If there  
20 are no more introductions to be made, we will be  
21 working from a document that I think has been made  
22 available to anyone who would like it. If not,  
23 please let us know and I think Jason could take it  
24 on to -- to get it to you.

25 It really starts with an issues matrix for Chapman

1 Valve that was prepared by the Board's contractor.  
2 We now have SC&A's finding, and we also have in that  
3 maxtrix, NIOSH's response to SC&A's finding. And I  
4 think that becomes the document that will guide us  
5 through this process.

6 So, is there anyone who need's a copy of that --  
7 those materials?

8 **MR. CLAWSON:** Dr. Wade, this is Brad. Is the matrix  
9 from February 14, 2007?

10 **MR. ROLFES:** That's correct.

11 **DR. WADE:** That's the matrix. And is that the date  
12 of your response -- does that include your response,  
13 Jim?

14 **DR. NETON:** Well, the response was added onto the  
15 matrix earlier this week.

16 **DR. WADE:** Right. So there's a matrix with a  
17 response that's dated February 20<sup>th</sup>.

18 **MR. CLAWSON:** Okay. I'll check through my files,  
19 but maybe --

20 **DR. ZIEMER:** I don't think the February 20<sup>th</sup> date  
21 appears at the -- in the heading. This is Ziemer.

22 **DR. WADE:** Right.

23 **DR. NETON:** The February 14<sup>th</sup> is the one. There  
24 should be a NIOSH response to SC&A findings column  
25 on the version that's labeled February 14<sup>th</sup>. That

1 was a mistake. We should have updated the date.

2 **MR. CLAWSON:** I've got a NIOSH response to SC&A --

3 **DR. NETON:** That's it.

4 **MR. CLAWSON:** Okay. Thank you.

5 **DR. WADE:** Okay. So, thank you. So with that, I'll  
6 turn it over to Dr. Poston and he can chair the  
7 technical deliberations. John.

8 **DR. POSTON:** Okay. Thank you very much, Lew. I  
9 guess the easiest thing to do is start with the  
10 matrix and ask John to discuss the first issue and  
11 we'll hear from NIOSH.

12 **DR. MAURO:** Okay. That will work. The way in which  
13 -- this matrix, by the way, is a little bit  
14 different than the one we've seen before with regard  
15 to site profiles. And the reason I did that is I  
16 felt that in the case of SEC petitions when -- when  
17 it will work, I started off actually identifying my  
18 understanding of what the concerns are by the  
19 petitioners, to try to crystallize it. Because  
20 that's really the starting point, as I see it. And  
21 then I went ahead and took the liberty of -- to  
22 write up based on the NIOSH, the second column,  
23 based on the NIOSH evaluation report and matrix,  
24 exposure matrix, I tried to list some words to  
25 explain my understanding of what I believe to be

1 NIOSH's position regarding the petitioners'  
2 concerns. It's not until we get to the third column  
3 where we start -- where we actually see SC&A's  
4 findings, our position regarding NIOSH's position.  
5 And so finally, the fourth column is NIOSH's  
6 response to our findings. So it's a little bit  
7 different than what we've done before, but I think  
8 it will help track the process. And I'd like to  
9 alert everyone involved that if, you know, if in any  
10 way along these lines if there's any petitioner  
11 concerns, for example, that is not properly captured  
12 here, we certainly are seeking feedback on this to  
13 make sure that it's complete. But with that as an  
14 introduction, I guess we could start moving through  
15 the first item.

16 I will read, the issues are relatively brief, I will  
17 read the petitioners' concern: "The petitioners  
18 claim that the bioassay data are not adequate to  
19 support the dose reconstruction of doses with  
20 sufficient accuracy. They claim that the data are  
21 not representative of the worker exposed population,  
22 were collected without any understanding of the  
23 individuals' exposure histories, and do not assess  
24 exposures from a number of industrial processes such  
25 as cracking furnace, chip incinerator, or possible

1 rolling operations."

2 So, the essence of this -- this concern is that  
3 there are data, those who will have read the -- the  
4 -- the site profile and the evaluation report, there  
5 are external data, there are bioassay data. And  
6 it's NIOSH's position that well, you know, we have a  
7 lot of -- and please, NIOSH and Jim, you know, Mark,  
8 if I'm mischaracterizing in any way, please, you  
9 know, step in. That there are -- there's a lot of  
10 external data, there's a lot of bioassay data. And  
11 on that basis, plus some other data from other  
12 sites, the -- NIOSH's position is that we can work  
13 with that data and reconstruct doses in accordance  
14 with the requirements of part 83.

15 SC&A's findings are -- are that we don't really  
16 entirely agree with that position. Mainly, we  
17 believe that, not so much with regard to external, I  
18 think the external data is quite complete. But with  
19 regard to internal, we have some concerns. And let  
20 me try to create a visual. We've got these  
21 approximate 100 workers that worked there in 1949.  
22 Out of those 100 workers, about 33 were -- had spot  
23 samples. A single urine sample was taken on a given  
24 day and three different time periods. And from  
25 that, a lot could be gleaned, but we also feel that

1           those single samples alone only tell part of the  
2           story.  And I guess our position is -- is -- and  
3           this is what I try to say in the fourth column, is  
4           that I think it's important that that data and the  
5           story that data -- data tells needs to be explored  
6           and I guess, supplemented extensively by an enormous  
7           amount of what I consider to be very, very good data  
8           that's in the literature for other uranium  
9           facilities that performed similar operations at  
10          about the same time where there's lots and lots of  
11          air sampling data, which sort of helps to flush out  
12          the story.

13          And -- and so, I guess, I find our first concern is  
14          that that other data needs to be brought into the --  
15          into the picture.  And -- and the matrix explicitly  
16          address the degree to which those data, such as the  
17          data from Kingsley, which you do reference, and  
18          there's also some data from -- from an NYOO, New  
19          York Operations Report, 1952, that we found that was  
20          very valuable to us.  And we think by bringing that  
21          data in, we start to get a fuller appreciation of  
22          the strengths and limitations of the data that is  
23          used, the Chapman.

24          And so we feel that -- that these -- this part needs  
25          to be explored a little further, the degree to which

1           it's judged to be an SEC posi -- an SEC issue, is  
2           really a matter of the outcome of when you take a  
3           look at that data and what it tells you and whether  
4           or not it tells you that you can, in fact,  
5           reconstruct doses with sufficient accuracy.

6           So, I feel as a whole, right now in the matrix that  
7           could be fleshed out a little better. And that's  
8           item number one. I guess I'll stop at that point.

9           **MR. ROLFES:** I think -- well, we did -- we did hear  
10          that issue about the completeness of data. And in  
11          discussions with former workers, we actually had  
12          heard that. We heard that they were concerned about  
13          the amount of data. So what NIOSH actually did in  
14          response to some of those concerns is to evaluate  
15          some air monitoring data from NUMEC, as well as  
16          another site. And that's later in the matrix. I  
17          apologize. But that is within the technical basis  
18          document, right now. We actually compared some of  
19          the -- some of the intakes from Chapman Valve to  
20          intakes that were incurred at Y-12 and Simonds Saw -  
21          - Simonds Saw and Steel, as well.

22          Let's see, I'd like to point out that we do have  
23          bioassay data for -- for the individuals that were  
24          involved in the operations. And I would just like  
25          to present our response to some of these issues and

1 concerns that were brought up by the petitioner.  
2 And I'll just go ahead and read our response from  
3 the matrix: "The point about the Chapman Valve  
4 bioassay data being insufficient for supporting  
5 internal dose reconstruction is arguable. It's  
6 agreed that there is sufficient data regarding this  
7 uranium process that intake estimates can be made."  
8 And I wanted to explain a little bit about the NIOSH  
9 dose reconstruction process and the claimant  
10 favorable assumptions that go into it. "NIOSH dose  
11 reconstructions using the existing bioassay data  
12 employ layers of claimant favorable decisions."  
13 These include the exposure duration, which NIOSH has  
14 assumed a chronic intake for sixteen months, when we  
15 have documentation that indicates that the actual  
16 processing of materials was much less than sixteen  
17 months. We're using the highest recorded bioassay  
18 results to estimate everyone's intake. Now, if we  
19 were assigning an acute intake, many of these issues  
20 may become more relevant. But I don't feel that  
21 because we're assuming that a person is being  
22 exposed for the entire processing time and NIOSH is  
23 using the highest recorded bioassay results, I  
24 really don't feel that these issues are relevant to  
25 the situation.

1           The -- furthermore, NIOSH is assuming that the  
2           intakes that were incurred by the employees were via  
3           inhalation. Now this intake pathway results in the  
4           highest internal dose. We are also assuming that  
5           the material solubility -- we're choosing, based on  
6           the type of cancer, we're choosing the most claimant  
7           favorable solubility for that cancer, for that  
8           organ. The solubility class, type M or S, depending  
9           on the location of the cancer or organ, we choose  
10          the one that results in the highest internal dose.  
11          Furthermore, we're using 100 percent Uranium-234 to  
12          calculate internal doses. This results in  
13          additional claimant favorable overestimates of the  
14          actual dose incurred from natural uranium because  
15          the alpha energies from U-234 are higher than U-238.  
16          But we have looked into these issues and heard these  
17          issues and done our best to evaluate what we -- what  
18          has been presented to us by former workers, by  
19          interest groups, and we feel that we've got a  
20          scientific basis to estimate intakes in a claimant  
21          favorable manner.

22          **MS. WU:** Excuse me, this is Portia Wu. Could I --  
23          could I just ask a question about this bioassay  
24          data?

25          **DR. POSTON:** Sure.

1           **MS. WU:** We had raised an issue in our congressional  
2 letter last September being concerned, you know,  
3 that the last two samples were in September and  
4 October. But there were very few workers sampled on  
5 each of those occasions, and none of them in our  
6 case, the October case, were production workers.  
7 So, here just to a lay person, can you explain to us  
8 how you think that bioassay data is truly  
9 representative as having to use that highest  
10 supported when you know it's not representative of  
11 the overall workplace.

12           **DR. NETON:** This is -- this is Jim Neton from NIOSH.  
13 We've looked at that, and from the July samples that  
14 were taken in particular, there is a fairly good  
15 distribution of worker types. In fact, there are  
16 bioassay samples taken at, if you look at the -- if  
17 you look at the production issues that John talked  
18 about, these HASL documents and these Hanford  
19 documents that demonstrate how high air  
20 concentrations could be, we have samples of people  
21 at some of the highest airborne generating machines,  
22 like the turret lathe operator, I think the  
23 centerless grinder. Those are real, sort of quote  
24 unquote messy production operations that generate  
25 some of the highest air samples. So we - we have

1 samples from those types of workers and I would  
2 remind you that or suggest that these are not  
3 necessarily spot samples in the sense that that's  
4 the experience that the worker had been exposed to  
5 on that day or even that week. Urine samples tend  
6 to be integrating samples. So, in other words, if  
7 you take a sample in July, it reflects the -- the  
8 way we do the modeling, it reflects the exposure  
9 experience of the worker from the first day of  
10 operations. We'll -- we'll calculate the highest  
11 potential exposure the worker could have had and  
12 still have been excreting that amount of uranium in  
13 his urine on that day. So it's a long-term  
14 integration of the worker's exposure experience.

15 **MS. WU:** I understand that from June, but of course  
16 that -- those samples can't, you know, take in  
17 account any exposure that happened subsequent to  
18 that day. Or July, excuse me. So I was just  
19 wondering about the representativeness of, you know,  
20 obviously activities were going on, and how --

21 **DR. NETON:** Well, we have no evidence that the  
22 production operations ramped up or down after July.  
23 In fact, I think -- I think that the material was --  
24 Mark, help me out here. But --

25 **MR. ROLFES:** Most of the documentation that we've

1           seen indicates that the actual machining operations  
2           occurred from about May until November or December.  
3           However, we do have evidence that the materials were  
4           shipped to the site in 1948, in January. And they  
5           were there possibly on-site following the actual  
6           machining operations until about April, of 1949.  
7           So, the majority of the work occurred during the May  
8           to November time period. Yet, NIOSH has extended  
9           the covered time period, essentially doubled the -  
10          the covered time period for the site.

11       **MS. BLOOM:** Actually, there is -- this is Cindy  
12       Bloom, there is evidence that -- or the last film  
13       badge data that we have was dated November 1, 1948,  
14       which seems to indicate that most production type  
15       operations would have been stopped by then.

16       **DR. NETON:** Right. And on top of this, if you look  
17       at what the urine data predicts, what these intakes  
18       could have been at a maximum level based on the  
19       urinary output, the values are very consistent with  
20       what we would expect from these production  
21       operations. That is about sixty -- upwards of sixty  
22       times the maximum allowable air concentration in  
23       air, is what the urine samples -- are assigning  
24       these workers. It's around sixty -- sixty --

25       **MS. WU:** And so then you extrapolate from that that

1           you assume a similar level of exposure all through  
2           November and December --

3           **DR. NETON:** Correct. Correct.

4           **MR. GRIFFON:** Can I go -- can I go back to, Jim,  
5           your earlier point. The July samples you said  
6           represented some of these higher --

7           **DR. NETON:** Uh-huh.

8           **MR. GRIFFON:** -- exposed jobs, centerless grinder  
9           and lathe operator. I don't see that. I see the  
10          one high value in July is from an inspector.

11          **DR. NETON:** Well, I didn't say they were the high  
12          values. I said they were --

13          **MR. GRIFFON:** But they're not even sampled. I don't  
14          see them sampled anyways. Maybe I'm wrong.

15          **DR. NETON:** We have -- does anybody have a copy of  
16          the evaluation report?

17          **MR. GRIFFON:** I'm sorry, actually November.

18          **DR. NETON:** Well, that's even -- even better. In  
19          November, we have -- November 9<sup>th</sup> of '48, we have  
20          samples from a milling machine operator, a  
21          centerless grinder, a turret lathe operator, numbers  
22          of inspectors.

23          **MS. BLOOM:** No. That would be Oct --

24          **DR. NETON:** September.

25          **MS. WU:** November?

1           **MS. BLOOM:** Okay.

2           **DR. NETON:** These were all on September 8<sup>th</sup>, these  
3 samples were taken. So they are approaching towards  
4 the end of the production period. And, in fact,  
5 these samples are not particularly high. In fact,  
6 they are right at the detection limit of the -- of  
7 the measurement technique itself. And, in fact,  
8 there are memos in the file that talk about how HASL  
9 has re-evaluated these records and asserts that, you  
10 know, they -- they continue to be low reflective of  
11 an exposure scenario that would maintain, you know,  
12 according to their -- their plan.

13          **MS. WU:** Is it correct, though, that you don't have  
14 bio -- you've taken bioassay urine samples from  
15 people who had the highest bag levels so we haven't  
16 been able to, you know, cross-reference that, is  
17 that correct? That's what I recall.

18          **DR. NETON:** The highest bag -- you mean the highest  
19 external results?

20          **MS. WU:** Yeah.

21          **DR. NETON:** Well, the highest external results does  
22 not necessarily equate to the highest internal  
23 results. In, for example, people who were  
24 inspecting or whatever materials and were very close  
25 to the uranium itself could have high external gamma

1 readings, but they may have not had in -- very  
2 little internal exposure because they're not, you  
3 know, working with the material machining and  
4 grinding it, lathing, whatever, you know, mechanical  
5 processes that would tend to generate airborne  
6 radioactivity.

7 **DR. MAURO:** Jim, you had mentioned that -- when I  
8 backed out my calculations, I came up with chronic  
9 assumed assumption of 47 MAC.

10 **DR. NETON:** Right.

11 **DR. MAURO:** Your -- you make mention of 60. What  
12 did I do wrong?

13 **DR. NETON:** It has to do with when you -- when you  
14 model IMBA, you put in a daily intake and you can't  
15 take off weekends.

16 **DR. MAURO:** Okay.

17 **DR. NETON:** So, in a sense, when you compress it  
18 back in a five day work week, you end up getting  
19 that extra --

20 **DR. MAURO:** So for the five day work week, you're  
21 saying it's 60, but if you spread out --

22 **DR. NETON:** If you spread it out over seven day; if  
23 you have a seven-day work environment --

24 **DR. MAURO:** Okay. I understand. So during the five  
25 day week the person's working, he's at 60.

1           **DR. NETON:** Right.

2           **DR. MAURO:** And then -- I got it.

3           **DR. NETON:** And the other thing that I -- I point  
4 out that is -- that in the petitioners' concern and  
5 SC&A seemed to agree to this, at least in your write  
6 up, that we did not cover a number of processes  
7 including the cracking furnace and rolling  
8 operations. And I'm not certain that there were  
9 rolling operations and secondly, the cracking  
10 furnace I don't think is relevant for this -- this  
11 investigation. I don't think that the uranium was  
12 put through a cracking furnace to my knowledge.

13          **MR. GRIFFON:** We have no indication --

14          **DR. NETON:** So, the only remaining one is the chip  
15 incinerator, which I'll agree is -- is a potential  
16 for high exposure.

17          **DR. MAURO:** Before we leave that, while we're still  
18 on one.

19          **DR. NETON:** Yes.

20          **DR. MAURO:** The way I was thinking about it is, I  
21 asked myself the question, in effect, the model  
22 you've developed saying listen, we're going to  
23 assume every worker setting aside the fire for a  
24 minute in early June, we're going to assume every  
25 worker is chronically exposed 47 -- 60 MAC or 47 MAC

1 continuously. And I asked myself the question and  
2 is it -- does that -- is it possible, now that I put  
3 myself -- I'm a worker and I show up to work and  
4 I've been working there. And is it possible that on  
5 any given day, if you took a urine sample from me,  
6 that it could be higher than that, because the  
7 highest one was the -- was the .03 milligrams per  
8 liter. And I asked myself on any given day is it  
9 possible one of these hundred people might very well  
10 have had something substantially higher than that.  
11 And my answer is yeah, of course, because we only  
12 did thirty -- thirty-seven out of a hundred. And  
13 these were, you know, basically a one-day sampling.  
14 Granted it is integration, but when I did the  
15 models, you'll notice that if you have an intake, it  
16 does dip down and the lower limit of detection was -  
17 - was 15 MAC. In other words, 15 -- in other words,  
18 .01 milligrams is your low limit of detection, and  
19 that's (unintelligible) 15 MAC.

20 **DR. NETON:** Right.

21 **DR. MAURO:** So, in effect, what happens is the 47  
22 MAC, you know, I guess where I'm going with this is  
23 that I would not be surprised if you in fact -- if  
24 in fact, all 100 workers were sampled once a month,  
25 there would be no doubt in my mind that at least

1           some of them would have probably been higher than  
2           the .03 mite\* or milligrams per cubic liter, but  
3           then I say to myself, but I don't think it's  
4           possible that the same person is going to be at .03  
5           each and every month for the entire work period.  
6           So, quite frankly, I walk away with the -- in a  
7           position where I say is it possible that there --  
8           that there were people that were exposed for the  
9           entire duration which you folks are assuming I  
10          believe is about 70 weeks; we start in January and  
11          go through May. So, you sort of stretched it out,  
12          when in fact really it was probably more like March  
13          through November. So I agree with that. That --  
14          that perhaps may double the quota. And a good way  
15          to think about it is a total number of atoms that  
16          are going to be -- are assumed to be inhaled or  
17          becquerels or picocuries over the time period. Do I  
18          believe from looking at the operations, the records,  
19          that there could have been people that could have  
20          gotten more than that? And I have to say right now,  
21          the way I see it, is there are -- this maybe make it  
22          a little easier for the matrix, because it becomes a  
23          simple concept. Under what circumstances could I  
24          envision that the prime integrated total intake of  
25          uranium for some workers might have been greater

1           than that? All right, that's the way I look at it.  
2           And I say no, except for a couple of situations.  
3           And the two situations are one, this business of the  
4           fire. And there may have been -- and on that, it  
5           might have been multiple fires. We know about one.

6           **DR. NETON:** Let's talk about that separately.  
7           That's another issue.

8           **DR. MAURO:** Let me -- I guess I'm sort of stepping  
9           back and then we can come back to this. But -- so,  
10          I guess I'm in agreement that selecting 47 MAC is --  
11          is a conservative assumption. That it is unlikely  
12          that the same person is going to be chronically  
13          exposed month after month after month. And at the  
14          end, have an average exposure over a whole year --  
15          70 weeks that translates to chronic exposure at 47  
16          MAC.

17          **DR. NETON:** If you look at it, John, I don't want to  
18          cut you off but you raise a good point. You know,  
19          is our exposure bounded. I mean is it a plausibly  
20          bounding analysis? And the total intake predicted  
21          from these machining operations, if you use this 70  
22          MAC or approximately 70 MAC, is 7.2 times 10 to the  
23          sixth picocuries. So, seven microcuries of uranium  
24          in a year and a quarter, basically. Which equates  
25          to over 10 grams of uranium inhalation. The

1 question to ask is, is there a person out there that  
2 we believe at this facility on a part-time basis,  
3 inhaled more than ten grams of uranium in that year  
4 and a quarter. And I would suggest that's probably  
5 not -- not plausible. It's not reasonable to assume  
6 that because if you look at these other operations  
7 that have occurred around this complex, you don't  
8 see those kinds of exposures. In fact, --

9 **MR. GRIFFON:** If it's not plausible, then is this a  
10 plausible upper bound?

11 **DR. NETON:** I mean, is it to go way higher than 10  
12 grams, and I just don't see a way of getting there.

13 **DR. POSTON:** Well, being a naïve member of the  
14 committee, it seems to me that what we're -- what  
15 we're talking about here is getting -- going from  
16 point A to point B, and how you get there. Now,  
17 what John suggests, and Arjun suggests and doing  
18 additional research and using other data from other  
19 facilities and so forth, makes a whole lot of sense.  
20 But what to me the question boils down to: Did  
21 NIOSH use the appropriate assumptions or are these  
22 acceptable assumptions. It's not the way you would  
23 like to see them do it, but to me does this provide,  
24 to be frank, an over-estimate of the potential  
25 exposures of these people, and is that a bounding

1 estimate. And I answered, yeah, we can do it the  
2 way SC&A is suggesting but this is another approach  
3 and I think both of those approaches are going to  
4 give a result which is going to be very  
5 conservative. It's going to be an over-estimate.  
6 It's going to be claimant favorable. I don't see  
7 that --

8 **DR. MAURO:** I walk away with -- there's no doubt the  
9 overwhelming majority of the workers at that  
10 facility are going to be under that intake, that  
11 time integrated intake. My only question is  
12 exploring the possibility that there might have been  
13 some workers, for example, the ones that were -  
14 either weren't monitored or monitored -- you know,  
15 that could have had a larger intake. You see, the  
16 problem we're having is, there's no doubt that your  
17 approach is conservative when you look at the  
18 population in an aggregate of one hundred years.  
19 There's no doubt. But are there some workers that  
20 might have been involved in certain activities where  
21 they could have experienced relatively short-term  
22 high exposures which could have resulted in their  
23 time integrated intake greater than the values  
24 adopted? Now all I've done is say I've went into  
25 the literature and the best study by far is this

1 NYOO report by (unintelligible) and Scott. You've  
2 seen it. And it shows that there are circumstances  
3 that do occur where the short-term intake could have  
4 been fairly high and if you -- now the question  
5 becomes is that enough to say that well, it's  
6 possible that that time integrated intake indeed for  
7 some workers might have been underestimated for  
8 them. And all I'm saying is that needs to be  
9 explored. And that question really has never been  
10 entertained.

11 **DR. NETON:** And you're talking about fires or --

12 **DR. MAURO:** No. I -- I'm talking about quite  
13 frankly the -- the furnace.

14 **DR. POSTON:** That's another issue, though.

15 **DR. MAURO:** Oh, I'm sorry. Yeah.

16 **DR. POSTON:** Well, I don't understand how you answer  
17 that question. You've seen the data.

18 **DR. MAURO:** Yep.

19 **DR. POSTON:** And they've seen the data. And as far  
20 -- and I've looked at the data, and I don't see any  
21 indication that in the Chapman Valve stuff that  
22 would answer that question affirmatively. Now,  
23 maybe what's in these other reports for other  
24 facilities, you can say yes, on this day there was  
25 an over -- exposure or on this day there was an

1 exposure. But I don't see any evidence --

2 **MR. GRIFFON:** You can't decide -- you can't decide  
3 in some cases you're going to rely on external data  
4 and in some cases you're not --

5 **MS. BLOOM:** This is Cindy --

6 **MR. GRIFFON:** -- in some cases, you're not. I mean,  
7 if you know the operation existed, you can't  
8 discount some information from other sites and use  
9 the other one when it makes your argument.

10 **DR. POSTON:** Well, I don't completely agree with  
11 that. I mean, other people -- I mean, people  
12 operated differently in those -- in each one -- time  
13 to get up or -- people operated differently in  
14 different facilities and in some places you didn't  
15 have incidents and other places you did have  
16 incidents.

17 **MR. GRIFFON:** Sure.

18 **DR. POSTON:** Okay. So -- so --

19 **MR. GRIFFON:** How do you decide what other facility  
20 data is relevant and not relevant --

21 **DR. NETON:** Cindy has a comment.

22 **DR. POSTON:** Cindy.

23 **MS. BLOOM:** This is Cindy Bloom again. We did look  
24 at bioassay data from Simonds Saw and Steel during  
25 the same type of period. We looked at the results

1 themselves to see if they were -- the percentiles  
2 were similar. That's in the evaluation report. And  
3 I've also looked at a lot of data from other  
4 facilities. I haven't tabulated that all, but I  
5 think what you'll find is that it's unusual to have  
6 results that are much above 30 micrograms per liter.  
7 Not that they don't exist, but usually it's less  
8 than five percent of the results for -- or around  
9 five percent of the results for a site, give or  
10 take. The other thing is I think that New York  
11 Operations report is a good report to look at, but I  
12 would caution you to be a little bit careful there.  
13 For example, a facility like Harshaw was using type  
14 F material as well, which you expect to see higher  
15 levels in the urine from a facil - from a facility  
16 like that. And I think the ore processing  
17 facilities that you could have higher values. So, I  
18 think you have to make sure you're looking at the  
19 right types of operations and comparing ore  
20 processors to ore processors and uranium metal  
21 handlers to uranium metal handlers.

22 **DR. MAKHIJANI:** I think -- I think it is -- it is  
23 helpful to separate these issues. And the first  
24 item, at least as I, when reviewing John's matrix,  
25 could see that it was about chronic exposures. And

1           in our review of the literature, we tended to agree  
2           that when you look at other facilities the approach  
3           that NIOSH adopted for chronic exposures would be  
4           okay. But when you look at the evaluation report  
5           and when you look at the site profile, I mean,  
6           there's a burden of demonstration that NIOSH has,  
7           that we didn't feel -- I mean -- Cindy says that you  
8           have looked at these, but they are not documented.  
9           And I think given that the sampling did not occur at  
10          the end of operations, but occurred at least a month  
11          -- month -- if it's 30 days before the end of  
12          operations, we've got 30 days of no data.

13       **MS. BLOOM:** Well, no, I don't think that's  
14       necessarily true. I don't think we have an exact  
15       end date for operations there, Arjun.

16       **DR. MAKHIJANI:** Right. Well, the last film badge  
17       was on November 1<sup>st</sup>, so -- I mean, obviously we're  
18       operating on skimpy data which I would argue puts a  
19       greater burden on NIOSH. If you don't know the end  
20       date and the last sample is in September, then that  
21       makes a bigger problem than what you represent  
22       potentially.

23       **MS. BLOOM:** Right. And that's -- that's part of the  
24       reason that we extended the period of exposure past  
25       that for another five or six months, actually.

1           **DR. MAKHIJANI:** There's a bounding way to take into  
2 account the uncertainty for time period, but I don't  
3 think that -- that -- that can -- that can be argued  
4 to compensate for some unknown that you have --

5           **DR. NETON:** (Unintelligible)

6           **DR. MAKHIJANI:** Wait -- wait -- wait a minute. Wait  
7 a minute. The -- the -- what I'm say - what I think  
8 we're saying in the first item is not that the  
9 number for chronic exposures could be a lot higher.  
10 What we're saying is that NIOSH has a burden of  
11 providing the documentation that you've done this  
12 research that seems to correspond to our own reading  
13 of the chronic exposures in uranium operations and  
14 put it on the table in the Chapman context. So we  
15 are not doing things such as the one Cindy  
16 suggested, you know, comparing the wrong types of  
17 operations and so forth.

18           **MR. ROLFES:** Cindy, could you please explain the  
19 documentation that you provided to us that we have  
20 on the X drive, for the advisory board's review?

21           **MS. BLOOM:** I don't know -- did they get the  
22 evaluation report response? Was that available to  
23 them? I was -- I was trying to see if that was --

24           **MR. ROLFES:** I was referring to the comparison of  
25 numbers from NUMEC and BY-12 bioassay data, and

1 such. If you could explain that a little bit --

2 **MS. BLOOM:** Right.

3 **MR. ROLFES:** -- because I think that's what Arjun is  
4 pointing out, that we haven't demonstrated. But I  
5 believe that is documented on the X drive in some  
6 Excel spreadsheets, if you could explain that,  
7 please.

8 **MS. BLOOM:** I -- I -- some of that is on there. I'm  
9 not sure that I have the Y-12 and the Simonds  
10 information in that particular spreadsheet. But the  
11 NUMEC data, we did look at their incinerator  
12 operations. Richard Miller had provided some  
13 documentation that was very good. So, and we looked  
14 at that carefully and looked at the bioassay results  
15 for that. And that comparison is in that  
16 spreadsheet. It's also summarized in the site  
17 profile.

18 **DR. MAKHIJANI:** That -- that is a separate question.  
19 The incinerator, the chip burner and fires. I guess  
20 maybe that's not an acceptable way of proceeding.  
21 What I'm trying --

22 **DR. NETON:** The matrix is --

23 **DR. MAKHIJANI:** We separated those issues and said  
24 for the -- for the routine machining type of  
25 operations that occurred is NIOSH's construct for

1 chronic exposure, does it look okay? And we said  
2 two things. We said that it, for that piece it  
3 looks okay to us. There are these other issues of  
4 the other items. But the documentation, because  
5 you've got deficient data at this site, you need the  
6 documentation for the other sites. And that isn't  
7 what's on the table.

8 **DR. POSTON:** It's not clear to me that what you've  
9 written here says what you just said.

10 **DR. MAURO:** It's in the full text. Let me help out  
11 here.

12 We like the 47 MAC. We think the 47 MAC places an  
13 upper bound on chronic exposures. Now, we looked at  
14 a lot of data from a lot of different reports, what  
15 the concentrations were, some people, how they vary  
16 as a function of time. Because these exposures were  
17 not just flat, these were constant -- they were up  
18 and down. And we looked at lots of data showing  
19 that and there's no doubt in my mind that from the  
20 point of view of what you would call day to day  
21 operations chronic exposure, even taking into  
22 consideration the possibility there might have been  
23 some rolling operations. Our position is that the  
24 47 MAC is a good number. It's bounding and -- but  
25 we -- now, so, in other words, I think the only

1           thing --

2           **MR. GRIFFON:** Let me just say for the record, I'm  
3           not sure I'm there yet. I agree it's a high number;  
4           I'm not sure it's a good number. How we got there  
5           is what I'm interested in. There's a lot of  
6           questions.

7           **DR. MAURO:** Our position is we like the 47 MAC for  
8           chronic exposure. What we felt was missing in the  
9           report was a better development of why it's a good  
10          number. There's a -- there's a lot of mis --  
11          there's a lot of material that's in the literature,  
12          and I especially felt that not getting into the data  
13          that's in this report that I'm holding in my hand  
14          called "Study of Atmospheric Contamination in the  
15          Metalmel\* Plant Building," this is for Hanford; it's  
16          an incredibly good document. And it tells a story  
17          that I believe supports the 47 MAC. And I think  
18          that similarly a lot of the work in Kingsley --

19          **DR. NETON:** Well, we've got two choices here though,  
20          John. We -- we -- here we have a site where we have  
21          bioassay data. We tried to use it to the best  
22          extent possible. And we believe that it's fairly  
23          representative of -- of the workers' experience, 30  
24          micrograms. Now, if you discount that then the only  
25          alternative you have then is developing an exposure

1 model based on air concentrations. How do you meld  
2 those two?

3 **DR. MAURO:** No.

4 **DR. NETON:** How do you meld those two?

5 **DR. MAURO:** I -- I think you can't.

6 **MR. GRIFFON:** And you don't have any site-specific  
7 air monitoring data.

8 **DR. MAURO:** No. No. You use both. You say listen,  
9 here's the model. And the way I looked at it is,  
10 you -- you've built a model around 30 -- well, a 40,  
11 I guess, bioassay samples.

12 **DR. NETON:** Right.

13 **DR. MAURO:** And on that basis, you came up with a  
14 matrix. And I said -- but when I asked myself do I  
15 like this matrix, do I think it does -- places a  
16 plausible upper bound, namely using the .03  
17 milligram per cubic meter as if everyone was  
18 chronically at that level all the time, I had to  
19 convince myself of that, because I realized that you  
20 only did 30 percent of the workers. So, there's 60  
21 percent you missed.

22 **DR. NETON:** That's a pretty good percentage.

23 **DR. MAURO:** Yeah, I know. But that means --  
24 No. No. Think of it like this. Your philosophy  
25 was I'm going to pick the highest number of the

1 workers that I have samples for, other than the  
2 fire. And I'm going to go with that. And if it  
3 turned out you had a hundred, I guarantee one of  
4 them would be higher than .03. You know, it's going  
5 to happen.

6 **DR. NETON:** Well, certainly. But --

7 **DR. MAURO:** Right. I'm not done. Let me -- let me  
8 finish. So what I'm saying to convince myself that  
9 that was a good number, I went ahead and I really  
10 pored over the -- the other literature. And I walk  
11 away convinced that yes, 47 MAC's a good number. So  
12 all I'm saying is that I think that -- that by  
13 representing that those 33 samples alone allow you  
14 to say we've got a robust, complete story to tell  
15 and we can hang our hat on that, I don't agree with  
16 that. I think that you ended up in the right place  
17 using that data, but to support that conclusion, you  
18 needed to go and review and demonstrate that there  
19 are lots of other data out there that demonstrate  
20 that that judgment was, in fact, valid. That's the  
21 first point that was made.

22 **DR. POSTON:** So what's the path forward here?

23 **MS. BLOOM:** John, just -- just to simplify. Is --  
24 are you saying that if we -- you're looking for  
25 added information in the site profile that says we

1           have looked at these Simonds bioassay results, we've  
2           looked at bioassay results at other sites and they  
3           also indeed support the assumptions?

4           **DR. MAURO:** And -- and air -- and lots of air  
5           sampling data. And I think that when you  
6           collectively look at all of this together, then a  
7           story emerges that says you're bullet proof.

8           **MS. BLOOM:** Right -- but we -- but we looked at -- I  
9           guess, we -- you know, it is in the site profile  
10          that we looked at the Y-12 and the Simonds intakes,  
11          calculated intake rates calculated for that site  
12          which are related in Simonds case to both  
13          consideration of the air sampling data and  
14          consideration of the bioassay data. We looked at Y-  
15          12, which is based on co-worker models, which gets  
16          you back to bioassay. And we can mention those in  
17          the site profile, but that information is out there.  
18          It's partially addressed in an evaluation report.  
19          To me, it sounds like you're just saying you want  
20          some -- some more words added to the site profile.  
21          You're not looking for changes unless for some --  
22          you know, I can't imagine that we would find data  
23          that would indicate that -- that our values should  
24          be higher at this point.

25          **DR. MAURO:** I -- I agree. I -- but I also say that

1 I think the Simonds and the Y-12, as being sort of  
2 surrogate information or supplemental information,  
3 is no where near as powerful and as complete and  
4 relevant as are the data that's in this report by  
5 Adley, Gill and Scott. The Adley, Gill and Scott  
6 report is right on target for your facility, for  
7 Chapman. And --

8 **MS. BLOOM:** You said it's a metal melting facility?

9 **DR. MAURO:** Yeah. And had a whole separate oper --

10 **MS. BLOOM:** That sounds different though.

11 **DR. MAURO:** No. It was a metal melting facility and  
12 it had a whole separate operation that was just  
13 dedicated to storing, milling, lathing, chip  
14 burning, and they have an extensive analysis of the  
15 data. And I -- and I spent a lot of time looking at  
16 that data, and that data convinced me -- Yeah. That  
17 data convinced me that the approach that you folks  
18 have been taking from a chronic exposure point of  
19 view is valid.

20 **MS. BLOOM:** You're just saying we should look at  
21 this other information -- this other reference and  
22 incorporate that information into the site profile,  
23 correct?

24 **DR. MAURO:** Yeah. And also convince yourself.

25 **DR. WADE:** I think what SC&A is saying is you need

1 to prepare a story, supported by data of various  
2 types, and you're pointing out some, that support  
3 your conclusions relative to chronic. And that's  
4 what they are saying. We need to hear from Mark.

5 **MR. GRIFFON:** Go ahead, Cindy. Cindy wanted to say  
6 something.

7 **MS. BLOOM:** No. I just -- I just wanted to -- I  
8 guess I feel I've looked at a lot of data. I've  
9 provided a lot of write ups of data and so I'm just  
10 hearing that even though you all looked at other  
11 data that you feel that there's not enough  
12 supporting information although you've confirmed  
13 what NIOSH and the ORAU Team have already done.

14 **DR. MAURO:** That's how I see it. Yes.

15 **DR. NETON:** Cindy, this is Jim. I don't think you  
16 have seen this Adley, Gill and Scott publication or  
17 document. And it -- it is pretty good. I mean,  
18 I've looked through this; John brought this up  
19 earlier --

20 **MS. BLOOM:** No. And I'm not -- I'm not saying that  
21 it shouldn't be looked at. I just -- I just want to  
22 confirm that we're just --

23 **DR. NETON:** Right.

24 **MS. BLOOM:** We're -- we're not -- at this point,  
25 there's not a process of numbers need to be tweaked

1 but there's a processing supporting information  
2 needs to be strengthened.

3 **DR. WADE:** And that process -- the -- the numbers  
4 need to be looked at critically. And, you know, it  
5 could be that there could be something found.

6 **MS. BLOOM:** Right. And I understand that, too. But  
7 from what John says, he doesn't feel that that's an  
8 issue at this point.

9 **DR. MAURO:** That's where I come down. That doesn't  
10 necessarily mean --

11 **MS. BLOOM:** That doesn't mean that Mark comes down  
12 in that same place.

13 **DR. NETON:** Not all of the information in this  
14 Adley, Gill and Scott document are completely  
15 relevant. I mean there are melting operations.  
16 There are some very different operations that were  
17 conducted here. But there are some similarities.

18 **MS. BLOOM:** Is that in the -- is that on the  
19 terminal server?

20 **DR. NETON:** I believe it is. Mark you put it on  
21 there? Mark Rolfes?

22 I can provide you a copy of this one.

23 **MS. BLOOM:** Could you spell the first last name of  
24 that?

25 **MR. ROLFES:** If we referenced it in the SEC

1 evaluation report then it should be --

2 **DR. NETON:** It's not referenced. This came to light  
3 during SC&A's review. And I provided you a copy, I  
4 thought we asked to get it out there on the O drive.

5 **MR. GRIFFON:** It's not there.

6 **DR. NETON:** It's not there?

7 **DR. MAURO:** No, I looked for it the other day, so --

8 **DR. NETON:** All right. We need to put it out there.

9 **MR. GRIFFON:** Can we get it in a sub-folder so we  
10 know where it is --

11 **DR. POSTON:** So, are we coming to a resolution on  
12 this first issue?

13 **DR. NETON:** I think we understand what their  
14 position is and that -- essentially what I'm hearing  
15 is that we need to balance our analysis, primarily  
16 against this document among others. And to  
17 strengthen our position that the -- it's kind of an  
18 odd situation to say that the urine data match what  
19 we'd expect from the air concentrations.

20 **MR. GRIFFON:** Can I -- Can I -- just two comments.  
21 One thing that John brought up I think which is  
22 important is the site-specific idea versus using  
23 other uranium facility data. And I think, as we  
24 move on here it seems like we're relying less and  
25 less on -- it seems like we're relying on none of

1 the Chapman Valve data.

2 **MR. GRIFFON:** You have -- you have one data.  
3 Urinalysis is one thing you're hanging your hat on.

4 **DR. NETON:** We took the highest observed value of  
5 (unintelligible).

6 **MR. GRIFFON:** I understand.

7 I have a question which Cindy can follow up on but I  
8 think that it's one that you said in September, you  
9 represented these as some of the highest machining  
10 operations, but I think this centerless grinder was  
11 actually a lathe operator. And they are much lower  
12 exposures.

13 **MR. ROLFES:** We had milling machine operator,  
14 centerless grinder, turret lathe operators.

15 **MR. GRIFFON:** Right. Right. So I'm following up  
16 the guy's name, centerless grinder, and I look under  
17 film badge reports and he's listed as a turret lathe  
18 operator. It's a mistake, but either way,  
19 centerless grinding is a lot higher potential  
20 airborne exposure than the lathe operation according  
21 to your own document and the attachment.

22 **DR. MAURO:** It's here. The centerless grinder, the  
23 lathe operator, every --

24 **DR. NETON:** We know what those concentrations are.

25 **DR. MAURO:** We know what they are. And that's why I

1           agreed with the petitioners. I read the  
2           petitioners' concern, they said listen, the data,  
3           the urine data alone and some supplemental data from  
4           Simonds Saw and from Y-12, they were -- they were  
5           uncomfortable with that. They said we don't think  
6           that really locks it up. And I agreed with that. I  
7           -- I was not comfortable. So I said listen, let me  
8           go and look at this further. And then that's when I  
9           read Kingsley and I read Adley, Gill and Scott. I  
10          did a whole bunch of calculations and I said the  
11          numbers are good. But it wasn't until I did that,  
12          that I convinced myself that your numbers are good.  
13          **MR. GRIFFON:** Well, and then the other -- the other  
14          thing I was going to say is the other thing that I  
15          think in site profile or in any support of the  
16          argument here, I think it wasn't clear to me, it may  
17          be very clear to Cindy, but it wasn't clear to me,  
18          that we're comparing apples -- you're comparing  
19          apples and apples. We have a Y-12 cohort worker  
20          data from '47 through '53 or whatever the time  
21          period was, being compared to Chapman Valve. You  
22          know, Y-12 had a lot of different stuff going on and  
23          you're making a comparison there I think -- I think  
24          that -- that has some problems. I think people are  
25          going to say Y -- we're not Y, this is nothing like

1 Y-12. You know, why are we making this comparison,  
2 because the numbers look the same? I don't --

3 **MS. BLOOM:** No. I think -- you have -- you have --  
4 Y-12 is a uranium metal handling facility that did a  
5 huge variety of activities there. And certainly the  
6 machining of the metals was probably a small part of  
7 their work but that was an available data set there,  
8 where it probably does include exposures from work  
9 groups that would be thought to have higher and  
10 lower exposures. Except that Y-12 was known to have  
11 you know, they built up their uranium contamination  
12 in the background which when you look at these  
13 sites, that tends to be a significant exposure  
14 pathway for workers. So I -- I don't think that  
15 it's a poor choice. It was a readily available  
16 choice in that time period. And I'm certainly  
17 willing to look at more information. We also -- Jim  
18 Neton has provided the information on the different  
19 air concentrations from machining operations and  
20 we've looked at that, too. I'm glad to look at any  
21 piece of data that we have to -- to -- to see if  
22 these numbers are indeed reasonable. And I - and I  
23 believe they are upper estimates of -- of intakes  
24 that might have occurred at Chapman Valve during  
25 this period.

1           **DR. POSTON:** So can we resolve this by -- by asking  
2           to look at this Adley report and provide better  
3           documentation of how you got to where you are, would  
4           that be reasonable?

5           **DR. WADE:** You need to tell a story. Yeah. Tell a  
6           story in which you include the validation process.

7           **DR. POSTON:** Sort of a validation of process?

8           **DR. NETON:** Uh-huh.

9           **DR. POSTON:** Is that reasonable?

10          **DR. NETON:** Yeah. We can -- we can do that.

11          **MR. GRIFFON:** And Cindy, if you have this other  
12          Simonds analysis and Y-12 analysis that you've done,  
13          I think that would be --

14          **DR. WADE:** All of it should be --

15          **MR. GRIFFON:** I don't think you need to recreate it,  
16          but if it can be provided to us.

17          **DR. NETON:** Now, we've also included in the eval --  
18          in the site profile is the analysis that we did  
19          against the HASL --

20          **DR. MAURO:** Kingsley?

21          **DR. NETON:** Yeah. Kingsley report which summarized  
22          their experience across the complex, not just at one  
23          facility of machining, grinding, abrasive operations  
24          and Cindy, I think that's appendix B in the site  
25          profile where it does that comparison. And I

1 thought it gave us a fairly good comfort level that  
2 we were certainly in the right order here.

3 **DR. WADE:** There's a story to be told with a number  
4 of facets and I think you should tell it and then  
5 share that back with the workgroup.

6 **DR. NETON:** We can do that.

7 **DR. POSTON:** Is there a need to discuss issue two  
8 and three in somewhat -- in great detail since there  
9 seems to be concerns?

10 **DR. WADE:** Why don't we touch on it for the record  
11 and move past it.

12 **DR. POSTON:** You want to talk about it right quick?

13 **ISSUE TWO**

14 **DR. MAURO:** Okay. Yes. Again, I will read the  
15 petitioners' expressed concern real quickly. Number  
16 two. We're on page two of the matrix. The  
17 petitioners' expressed concern that NIOSH concedes  
18 that they have no documentation about why bioassay  
19 samples were collected and that most of the data  
20 were below the limit of detection. It appears that  
21 the petitioners are concerned that the bioassay  
22 program was poorly designed and did not detect  
23 intakes for the more highly exposed individuals.  
24 NIOSH response was NIOSH explains that it was  
25 standard practice at the time for urine samples to

1           be collected in order to assess exposure conditions  
2           at the site. In addition, NIOSH states that  
3           although the exact selection criteria regarding who  
4           should be included in the bioassay program are not  
5           stipulated in any of the records, it was standard  
6           practice for AEC to want to know what were the worst  
7           case exposures so that they could determine where  
8           additional controls might be needed. SC&A agrees  
9           with that response, that -- with NIOSH's response as  
10          it applies to chronic exposures to workers at the  
11          facility. So, for the record, that's our position  
12          on this matter.

13         **MR. ROLFES:** Thank you.

14         **MR. GRIFFON:** Can I ask -- I mean, I'm just curious.  
15         You know, I mentioned already that I think there  
16         were three machines sampling here representing this  
17         as a machining operation. So I know there were 40  
18         samples. But there's also this job title of helper  
19         that I think in some of the values, but I'm not sure  
20         if -- this is a question, if for the September --  
21         I'm sorry, June 11<sup>th</sup> samples, if it was known that  
22         they were follow-up samples from the fire or if it  
23         was kind of implied or is that a -- was that  
24         documented in the hard copy records? I didn't see  
25         it --

1           **MR. ROLFES:** Yeah. We have a letter indicating  
2           that. I can read that if you would like.

3           **MR. GRIFFON:** Okay.

4           **DR. NETON:** It turns out that the people involved,  
5           there were two people with the highest samples.  
6           They were not really fighting the fire. They were  
7           involved in the clean-up operations.

8           **MR. GRIFFON:** Right. Right.

9           **DR. NETON:** And that's a slightly different take on  
10          that. They weren't the fire fighters themselves.

11          **MR. GRIFFON:** Right. Right.

12          **DR. NETON:** That was the .07/.08 milligrams.

13          **MR. GRIFFON:** I guess that was my question was it  
14          was documented that they were cleanup from the fire?

15          **DR. NETON:** Yes. It's in the letter that --

16          **MR. GRIFFON:** 'Cause also the -- you know, these --  
17          it seems to me that these helpers, a lot of times at  
18          the facilities, the helpers are the machine helpers  
19          and they get some of the dirty jobs and they might  
20          have been some of the higher internal exposed. You  
21          know, from normal operations.

22          **DR. NETON:** Right. In fact, the highest sample we  
23          used was -- was an inspector.

24          **MR. GRIFFON:** Inspector.

25          **DR. NETON:** Yeah. Which is kind of -- kind of

1 interesting in itself, but --

2 **MR. GRIFFON:** Yeah.

3 **DR. NETON:** You got to remember. We were using  
4 these as chronic exposure values over the entire  
5 period of operation.

6 **MR. GRIFFON:** No, I --

7 **DR. NETON:** .03 could have been a sample taken two  
8 days after a guy was jostling with a couple of  
9 ingots, and you know, uranium's got a lot of  
10 surface, you know, material on it. But, you know,  
11 just because the inspector had a .03 doesn't mean  
12 that he was chronically exposed to get that .03  
13 after ten continuous months of exposure. That's why  
14 we believe getting this 60 - 70 MAC is a very  
15 claimant favorable position.

16 **MS. BLOOM:** (Unintelligible) particular individuals,  
17 excuse me, by October 7<sup>th</sup> -- on his October 7<sup>th</sup>  
18 value, he's one of the few people that had a second  
19 sample, had a .01 result.

20 **DR. NETON:** Right. And we ignored that. We just  
21 said this guy got .03 and it was a chronic exposure.  
22 We ignored the fact that it wasn't really .03 and we  
23 just picked the highest value and went with it.

24 **MR. GRIFFON:** Right.

25 **DR. NETON:** This is where we feel like, you know, we

1 really --

2 **MR. GRIFFON:** Right. No. I'm getting at the -- the  
3 number of production workers that were sampled more  
4 so than the values and whether they seem like --

5 **DR. NETON:** But I think, Mark, the basic message  
6 here is all the values are low.

7 **MR. GRIFFON:** Yeah.

8 **DR. NETON:** They're all very low consistent with a  
9 low level exposure operation. Whether it's a  
10 production worker or a shop floor people or  
11 inspectors. They're all below .03 micrograms --  
12 milligrams per cubic meter.

13 **MR. GRIFFON:** I don't disagree with that, I'm just  
14 saying the sampling seems pretty sparse, you know,  
15 the number of samples --

16 **DR. NETON:** Here we go again. I mean, are you  
17 suggesting they particularly ignored the people that  
18 had higher potential exposure?

19 **MR. GRIFFON:** No. I don't have evidence of that, so  
20 --

21 **DR. NETON:** Right. So how do you -- I mean, what  
22 leads you to believe that, that these are not  
23 representative of the general workers' exposures in  
24 the facility?

25 **MR. GRIFFON:** I think I could turn that question

1           around. Burden of proof is not necessarily on me.  
2           I would say what led you to believe that other than  
3           the fact --

4           **DR. MAURO:** To answer your question --

5           **DR. WADE:** We're back to the point where --

6           **MR. GRIFFON:** We're back to the other documents.

7           **DR. WADE:** We've got that covered.

8           **MR. GRIFFON:** But I think the only reason this is  
9           important is because I think at some point there's a  
10          strong reliance on other facility data and very  
11          little reliance on the site specific data. I think  
12          we have another potential policy question or issue  
13          arising.

14          **DR. POSTON:** Wouldn't -- wouldn't the actions on,  
15          even though there's concurrence here from NIOSH,  
16          wouldn't the actions associated with issue one boil  
17          over into issue two and remove some of this concern?  
18          That's the documentation of bioassay samples and so  
19          forth.

20          **MR. GRIFFON:** I think you're probably right.

21          **DR. WADE:** I would hope.

22          **MR. GRIFFON:** Yeah. I think you're right.

23          **DR. WADE:** I think it is a major issue that has been  
24          identified and now we have a path forward.

25          **DR. POSTON:** Can we move on, then?

1           **MR. GRIFFON:** Yes.

2           **DR. POSTON:** Anything else? John.

3           **ISSUE THREE**

4           **DR. MAURO:** Okay. We're going to move on to number  
5 three.

6           **DR. POSTON:** Yes, sir.

7           **DR. MAURO:** On page two. I will read a summary of  
8 the petitioners' concern. The petitioners claim  
9 that there is insufficient bioassay data with which  
10 to estimate a plausible upper bound dose. That  
11 process information is too limited to characterize  
12 exposures. And there is only one day of air  
13 monitoring data. As such, it is not feasible to  
14 estimate dose with sufficient accuracy. To  
15 summarize NIOSH's response to that claim, NIOSH  
16 states in summary, NIOSH disagrees with these claims  
17 because the bioassay program was consistent with  
18 such programs at that time. And that enough is  
19 known about Chapman Valve production to estimate  
20 doses with sufficient accuracy. NIOSH also states  
21 that air-monitoring data were not used to  
22 reconstruct doses and, as a result, the fact that  
23 the amount of the air monitoring data is extremely  
24 limited is not a significant issue. Finally, NIOSH  
25 summarizes the basic approach used to develop the

1 exposure matrix and explains that those assumptions  
2 are compatible with experience at Y-12 at that time.  
3 SC&A's bottom line is that we -- we concur with  
4 NIOSH's position except that we feel that -- it goes  
5 back to item number one --

6 **MR. GRIFFON:** Yeah.

7 **DR. MAURO:** I say yes to that with the proviso, but  
8 you must take that together with a great deal of  
9 data collected from many uranium facilities at that  
10 time. And only then can you make that statement.  
11 So, this really is part and parcel to number one,  
12 again.

13 **MR. GRIFFON:** Yeah.

14 **DR. POSTON:** Any need to discuss it further or --

15 **MR. GRIFFON:** It's rehashing the same --

16 **DR. MAURO:** Yeah. Yeah.

17 **DR. POSTON:** Okay. Great. So we'll move on to  
18 number four.

19 **ISSUE FOUR**

20 **MR. GRIFFON:** We're moving right along.

21 **DR. MAURO:** Number four, I think number four --

22 **DR. POSTON:** I am not against progress.

23 **DR. MAURO:** Number four I think is a place --

24 **MR. GRIFFON:** We have to talk more and make this  
25 trip worth it.

1           **DR. MAURO:** We're about to get to the stuff that  
2 really (unintelligible) here. And that's number  
3 four is the beginning of that. Okay, again,  
4 petitioners claim that since the actual date of the  
5 fire is not known, the actual uranium intakes  
6 associated with the May/June 1948 fire cannot be  
7 estimated. NIOSH response to this concern restates  
8 the quotes taken from historical records that a fire  
9 occurred in early June and that the exposure matrix  
10 takes the exposures associated with the fire into  
11 consideration using the urine bioassay data  
12 collected on June 11, 1948, from seven workers that  
13 were involved in putting out the fire and cleaning  
14 up following the fire.

15 We agree with the petitioners in this regard. We  
16 believe -- and this goes to one of our major  
17 findings, and I'll just explain it conceptually and  
18 then I'll -- I guess I'll ask Mark -- the way I  
19 looked at it was something very simple. You took a  
20 urine sample on June 11, and on that basis you back  
21 calculated well what did the person have to take in  
22 on June 10<sup>th</sup> to give you that urine sample on June  
23 11<sup>th</sup>. And you got a number and that's the chronic --  
24 and that's the acute exposure, you're assuming those  
25 workers --

1           **MS. BLOOM:** John, can I stop you right there,  
2 because that's not what we did.

3           **DR. MAURO:** Okay.

4           **MS. BLOOM:** We actually took that high sample on  
5 June 11<sup>th</sup> and then we used the .03 and we fit an  
6 acute and a chronic intake together.

7           **DR. MAURO:** Yes. And I --

8           **MS. BLOOM:** We looked at June 1<sup>st</sup>, we looked at June  
9 2<sup>nd</sup>, we looked at June 3<sup>rd</sup>. We changed all the date  
10 -- I went through all the dates there and I picked  
11 the, for the co-worker model, I picked the date that  
12 gave the highest total intake for the co-worker  
13 model. There's no evidence that co-workers were  
14 involved in the fire. If you look at -- at the  
15 letter from Chapman, it says, "These are the workers  
16 involved in the fire and the clean up". It doesn't  
17 say these are some of the workers. And so I assumed  
18 that most of the people would not have been directly  
19 involved in the fire, but giving the benefit of the  
20 doubt for the co-worker model, I modeled it all as  
21 one exposed group with the same bioassay data. And  
22 when I do that the highest intake that you can get,  
23 assuming that the fire occurred in June, which is  
24 supported by that Chapman letter and the AEC letter,  
25 is that assuming the intake occurred on June 10<sup>th</sup>.

1           And that's because as you increase that acute  
2           intake, you lower the chronic intake.

3           **DR. MAURO:** Okay. See, I took it from a different  
4           perspect -- very interesting. I took it from a  
5           different perspective and because it was not that  
6           apparent to me when I read the material. I just  
7           assumed we got these hundred workers working in the  
8           plant, okay, and they're all being assumed to be  
9           chronically exposed at a level that is 47 MAC, or 60  
10          MAC during the week. Okay. And that's a baseline.  
11          We're going to give everybody that. And then a fire  
12          occurs sometime between June 1<sup>st</sup> and June 10<sup>th</sup> and so  
13          beside the chronic exposure, now we're going to hit  
14          -- that they were living with all along, now we're  
15          going to hit them with acute intake. And when I did  
16          that, and I modeled it, I said okay, let me see on  
17          that assumption that their baseline's already at  
18          this chronic intake, then I'm going to hit them with  
19          this acute on June 10<sup>th</sup>, superimpose it on top of the  
20          baseline and I nail the activity in the urine. In  
21          other words I got, you know, --

22          **MS. BLOOM:** When you only have one point, you have  
23          to.

24          **DR. MAURO:** Well, I took -- I got the .08, right.  
25          Right. I mean I said, okay. There it is.

1 I mean, that's what I did. I said oh, okay.  
2 There's a .08. Now -- so I thought I got it right.  
3 Then I said to myself what would have happened if  
4 really the person really wasn't exposed on June 10<sup>th</sup>,  
5 but was exposed on June 1<sup>st</sup>. I come up with a number  
6 for the acute intake that would give you .08, that  
7 is 50 times higher. But then I did one more thing.  
8 I said what kind of dust loading is that, and it's  
9 500 milligrams per cubic meter. So I sort of went  
10 around the circle. I said, well, first of all, I  
11 don't like the June 10<sup>th</sup> assumption because it could  
12 have been, you know, June 8, 7, 6, 5, 1. But then I  
13 said but wait a minute. If I go all the way back to  
14 June 1<sup>st</sup>, in order for that to happen, the dust  
15 loading, the fire fighter and the workers had to  
16 experience, is 500 milligrams per cubic meter per  
17 eight hours. And I said well, that can't happen.  
18 People can't live in that. So I went around -- I  
19 went around the circle. Now -- so, that's where I  
20 came out. It's as simple as that. And so I walk  
21 away with the feeling that well I don't necessarily  
22 believe that the -- my scenario works because of the  
23 500 milligram per cubic meter dust loading doesn't  
24 seem to be plausible. But at the same time, it  
25 seems to me the June 10<sup>th</sup> assumption, as when the

1 intake occurred is not claimant favorable,  
2 necessarily. And then I went another step. Bear  
3 with me as that -- but in the end, the total intake  
4 from the fire is only 1.5 percent of the total time  
5 integrated intake of the 70 weeks. So is this --  
6 you know, am I making a big deal out of something  
7 that's really not that important, because you know,  
8 --

9 **DR. MAKHIJANI:** Somehow, I think, John, the numbers  
10 in your report don't reflect what you just said. I  
11 think -- I'd want to refer to the report.

12 **DR. MAURO:** Yeah, sure.

13 **DR. POSTON:** Can you speak up a little, Arjun? I  
14 can't hear you.

15 **DR. MAKHIJANI:** I'm trying to find the numbers that  
16 -- that are in the report that SC&A filed. And I  
17 don't think they correspond to what John just said,  
18 but I don't have -- I don't -- I haven't brought up  
19 the numbers yet.

20 **DR. MAURO:** Okay.

21 **DR. MAKHIJANI:** I think on page 39 of the report --  
22 no. I'm sorry. I am not finding the right place,  
23 so I'll just try to find it and then interrupt.

24 **DR. POSTON:** But didn't -- didn't I hear Cindy say  
25 that she has -- she went all the way back to June

1 1<sup>st</sup>?

2 **DR. MAURO:** Yeah, that's what --

3 **DR. POSTON:** And did each day?

4 **DR. MAURO:** Yeah. You see, I think conceptually the  
5 difference in what I did and what you did and could  
6 we do that again and explain to me, in other words  
7 conceptually; I laid in this baseline that was  
8 there.

9 **DR. NETON:** That's what we're doing.

10 **DR. MAURO:** Right. And then you -- you say, I'm  
11 going to -- now I'm going to hit them with this  
12 acute intake.

13 **DR. NETON:** Right. And what could be the biggest  
14 acute intake and still be below .08 --

15 **DR. MAURO:** .08.

16 **DR. NETON:** On that day.

17 **DR. MAURO:** Right. Now, I could get .08 by giving  
18 this guy 50 times more acute intake on June 1<sup>st</sup>.

19 **MS. BLOOM:** No, what I -- what I did was I used that  
20 .03, as well.

21 **DR. NETON:** As the baseline, right?

22 **MS. BLOOM:** Because it's a co-worker model. So,  
23 I've got an acute intake to account for that early  
24 sample .08 and then you look at the .03.

25 **DR. MAURO:** Right. Right. Right.

1           **MS. BLOOM:** And you've got two sample points, so any  
2           date is truly going to fit. So any of those are  
3           valid from a fitting technique, because there's no  
4           way you can't fit two points between a line. You  
5           just, you know, it --

6           **DR. MAURO:** Right. It's pretty easy.

7           **MS. BLOOM:** It defines your line. So, what I did  
8           was then looked at the total intake from all those  
9           scenarios. Because I also went back and looked at  
10          the periods of time when workers were at the site  
11          and most workers were at the -- were at the site for  
12          the whole period. So I said well, to maximize  
13          exposure from this co-worker model, not from just a  
14          fire scenario, which the dose reconstructors could  
15          take into account on an individual basis, which is  
16          noted in the site profile that this co-worker model  
17          then would define the -- what could happen to co-  
18          workers who weren't directly into -- involved in the  
19          fire. And the largest exposure that comes from that  
20          scenario is when you place that acute intake on June  
21          10<sup>th</sup>.

22          **DR. MAKHIJANI:** Let me -- I think -- I think that  
23          may not be the right scenario from an individual  
24          point of view although it's okay --

25          **MS. BLOOM:** I agree for an individual point of view,

1           which is why the site profile says for those people  
2           where there's indication that they were involved in  
3           the fire. And really there's only that group of  
4           seven that you need to look at their data and  
5           determine the best scenario, knowing that the fire  
6           occurred anywhere between June 1<sup>st</sup> and June 10<sup>th</sup>.

7           **DR. MAKHIJANI:** Yes. But then if you -- if you  
8           leave -- if you assume that the person that cleaned  
9           up wasn't involved in the chronic exposure, they  
10          were a helper who was brought in and then their  
11          urinalysis was done, if you assume a June 1 fire,  
12          you'd get a much higher intake, I think.

13          **DR. MAURO:** Than adding everything up.

14          **DR. MAKHIJANI:** You could. I'm not sure, but I  
15          think you could get a much higher intake. And I'm  
16          trying to find that number --

17          **DR. NETON:** Do you assume you had a chronic  
18          exposure, as well?

19          **DR. MAKHIJANI:** No.

20          **DR. NETON:** See, that's where you've got to --  
21          you've got to look. I don't know if you go back to  
22          June 1<sup>st</sup>. If it's an acute intake only, and no  
23          chronic exposure, is that higher than the chronic  
24          total exposure assigned to the worker. I thought we  
25          did that analysis. What Cindy's saying is, if you

1 know that the guy was involved in this fire, because  
2 we have the names of the people, if you know the  
3 names of these people, then we would treat them  
4 separately and model them as Arjun suggested.

5 They're not built into the general co-worker model  
6 then because we know they were involved in a fire.

7 **DR. MAURO:** Okay. I think maybe it's -- I think  
8 we're talking by each other. Maybe I didn't quite  
9 understand. I thought, you know, the way you were  
10 going to reconstruct doses for individual workers,  
11 you're going to estima -- you say, is this person --  
12 is this person involved in fighting the fire. And  
13 if he was then that means that this person was  
14 chronically exposed plus got the fire. And you're  
15 saying you're not doing it that way.

16 **DR. NETON:** Cindy, help me out here.

17 **MS. BLOOM:** For -- for an individual who has data  
18 missing, for one of the firefighters who has data.

19 **DR. NETON:** That's correct.

20 **MS. BLOOM:** Right. I would say that if there's only  
21 the information associated with that one point, then  
22 you would do an acute intake for that fire. And  
23 look to see if that was higher than the co-worker  
24 model.

25 **DR. NETON:** Right.

1           **MS. BLOOM:** Now, most of the workers there, you  
2 would use the .01 for the acute intake. Not the  
3 .08.

4           **DR. MAKHIJANI:** Just for the record, the number --  
5 the number in the SC&A report is that if you have a  
6 June 1 fire by itself, the acute intake is 3.7  
7 microcuries. And the chronic intake alone is just  
8 those five microcuries. So -- so the acute intake  
9 is less.

10          **DR. POSTON:** What page?

11          **DR. MAKHIJANI:** This is on page 30.

12          **DR. NETON:** So the chronic intake would give him a  
13 higher level?

14          **DR. MAKHIJANI:** That's right. So, I just wanted -  
15 just wanted to say that for the record, because I  
16 just could not remember the numbers. But it wasn't  
17 1.5 percent. So, I just -- I was sure of that. So.

18          **DR. MAURO:** I'll have to say, I'm not up to where  
19 you are. I'm not quite following the story. When I  
20 went through the numbers, the -- the intake that you  
21 folks -- the way I understand it, the intake  
22 associated with the fire, the numbers that are  
23 actually in your look-up table, the certain number  
24 of picocuries or becquerels that are assumed to be  
25 taken in acutely are on that day, June 10<sup>th</sup>. A

1           certain number. Now, then I said to myself, how  
2           much is that and how does that compare to the total  
3           number of picocuries taken in by everyone including  
4           the firefighters over the 70-week period. And the  
5           contribution of the fire intake to the total intake  
6           is an extremely small percentage. I came up with  
7           1.5 percent and so -- see, so you have to understand  
8           how my thinking went, given the way I was thinking  
9           about the scenario. I was saying, well, it looks  
10          like they've underestimated the intake from the fire  
11          because you assumed June 10.

12         **DR. MAKHIJANI:** Oh. I see what you're saying.

13         **DR. MAURO:** You see what I'm getting? It looks like  
14          --

15         **MS. BLOOM:** Wait. But that's because we considered  
16          the model as a whole. It wasn't considered a -- as  
17          a separate. I don't think it's reasonable to  
18          separate them out and -- and you know, I guess I'm  
19          here to serve so that's my technical opinion that  
20          the data all go together and so you can't pick one  
21          point out of the data and use it that way. But --  
22          but if you want to that --

23         **DR. MAURO:** I just want to make sure I understand  
24          this now. So when you're reconstructing the doses,  
25          see I misunderstood something, very profoundly,

1           unfortunately. I thought you were not going to use  
2           the data from any of the workers. You were just  
3           going to say was this worker involved in the fire or  
4           not? And you had two questions you asked the worker  
5           and that's all you needed to know. Was he involved  
6           with the fire or not, and what organ was the  
7           problem. And then you simply go ahead to your look-  
8           up table. If you know it's a systemic organ, then  
9           you go with type M. If you know it's the lungs, you  
10          go with type S. If the person was involved in the  
11          fire, you give them the intake associated with the  
12          fire, you know, the acute intake of the fire, plus  
13          the chronic intake for the rest of the year. And I  
14          didn't -- but you're saying no. You're not doing  
15          that. You're actually going to use the real data  
16          for real people to reconstruct the doses?

17         **MR. GRIFFON:** To the extent they're identified.

18         **DR. MAURO:** See, I didn't know you were going to do  
19          that.

20         **DR. NETON:** And we have their names.

21         **DR. MAURO:** Yeah, I know. But so, so when -- so  
22          when this particular claimant shows up, you're going  
23          to use his urine data to reconstruct his dose with  
24          his (unintelligible) and not the scenario I just  
25          described.

1           **DR. NETON:** Right.

2           **DR. MAURO:** Okay. I did not understand that.

3           **DR. POSTON:** So where does that leave us?

4           **DR. MAURO:** I have to go back and convince myself  
5 that that's right.

6           **MR. GRIFFON:** I think to help convince him, Cindy,  
7 you know, you have these IMBA runs. I'm convinced  
8 on this one, by the way, just for the record. But I  
9 think the IMBA runs might make it a lot easier. I  
10 mean, I recalculated and got very close. But I  
11 think if you've got these IMBA results and the IMBA  
12 runs themselves, it might save SC&A a lot of time.  
13 They can just look at how you did it and --

14          **DR. WADE:** So is that a path forward? Can we  
15 provide the IMBA runs to SC&A?

16          **MS. BLOOM:** Do we want them just posted in that  
17 advisory board?

18          **DR. NETON:** Yes. Your AB document review --

19          **DR. MAURO:** That'll work.

20          **DR. WADE:** So, they actually do post them. John,  
21 you think about it and you let us know.

22          **MR. ROLFES:** I believe the sample dose  
23 reconstructions that are there, as well, have some  
24 IMBA runs that demonstrate this, so --

25          **DR. NETON:** We'll put the specific ones that Cindy

1 did out there.

2 **MR. ELLIOTT:** In other words, you've shown an  
3 example of somebody who worked in the fire?

4 **MR. GRIFFON:** Yeah, yeah.

5 **DR. WADE:** Okay. So its post IMBA runs --

6 **MS. BLOOM:** Jim, do you want me to send you those  
7 first --

8 **DR. NETON:** Yeah.

9 **MS. BLOOM:** -- and have you (unintelligible)?

10 **DR. NETON:** That'd be good, Cindy. I'll take a look  
11 at them and I know where to -- where to put them.

12 **MR. GRIFFON:** Yeah, because I think the examples  
13 actually might -- they just use the final values  
14 from the TBD. They don't really show --

15 **DR. NETON:** Cindy, send them to me. We'll chat, and  
16 then I'll put them out there.

17 **MS. BLOOM:** Okay.

18 **DR. WADE:** So, John. You'll look at that and you'll  
19 look at the sample dose reconstructions and the --

20 **DR. MAURO:** I'll have to say it's a different  
21 construct.

22 **DR. NETON:** It still doesn't address this other  
23 issue of just the fires, in general. I mean, that's  
24 --

25 **DR. MAKHIJANI:** It's a separate issue.

1           **DR. NETON:** Yeah. Because the petition --

2           **MR. ELLIOTT:** Isn't it number eight?

3           The petitioners express concern that there may have  
4           been numerous fires at the facility. Is that what  
5           you're talking about?

6           **DR. NETON:** Yeah.

7           **DR. WADE:** I think it's there.

8           **DR. NETON:** All right. We'll talk about -- I think  
9           in number four, SC&A's response kind of went beyond  
10          what the petitioners stated in number four, because  
11          they're talking about there were multiple fires and  
12          stuff.

13          **DR. MAURO:** Yeah.

14          **DR. NETON:** We'll talk about it later.

15          **DR. WADE:** Now we have a path forward on four.

16          **DR. POSTON:** So are we ready to move on to five,  
17          now?

18          **DR. MAURO:** Yeah. Let's see. I will read --

19          **DR. POSTON:** We keep going like this, Mark can buy  
20          us all lunch.

21          **DR. WADE:** He can buy us lunch anyway.

22          **MR. GRIFFON:** Better check my wallet.

23          **ISSUE FIVE**

24          **DR. MAURO:** Okay. Up to number five. I will read  
25          the petitioners' concern. The petitioners express

1 concern that enriched uranium may have been machined  
2 at Chapman Valve. This concern is based on an  
3 airborne dust measurement taken in the 1990's, as  
4 part of the site remediation program. I'm not going  
5 to read the other sections because I think that  
6 conceptually it's easier to talk about it. We  
7 believe that it's real. There is a real measurement  
8 out there that shows enriched uranium. However, we  
9 do not believe it is applicable to the time period  
10 of interest. That is, we believe that somehow  
11 enriched uranium may have showed up at that site  
12 because of activities that may have gone on before  
13 the time period of interest and the reason we say  
14 that is that we found out that there was a lot of  
15 things going on during World War II. At -- and post  
16 World War II, prior to the period of interest where  
17 it was possible that some enriched uranium may have  
18 found its way there. And it sounds like -- and you  
19 know we were talking about that at the meeting,  
20 sounds like certain activities may have taken place.  
21 We -- so we feel that that it's a real question, you  
22 know, where did this stuff come from? And it's  
23 probably something that is worthy of following up  
24 on. For example, they make reference to the Dean  
25 Street operation where they were testing manifolds.

1 I didn't know what a manifold was, but John informed  
2 me that it might very well have been the enrichment  
3 activity, chambers -- that were being tested and  
4 being sent back from Oak Ridge to Chapman to test  
5 the pressure integrity. And I could envision that  
6 when that happens, some perhaps small amounts of  
7 enriched uranium may have found its way into the  
8 milieu. So we walk away from this saying that for  
9 the reasons given by NIOSH, we agree that the  
10 enriched uranium is not an issue for the period of  
11 performance covered by the SEC petition. And that's  
12 where we come out at -- and please, Arjun if you  
13 feel --

14 **DR. MAKHIJANI:** Could I just add a little bit to  
15 that?

16 **DR. MAURO:** Sure.

17 **DR. MAKHIJANI:** The interviewee gave some very  
18 specific information. The interviewee was a worker  
19 in that period associated with the Dean Street  
20 facility. And gave very, very specific -- names of  
21 people who visited, letters that were written to  
22 those folks, the type of materials that were  
23 purchased to clean out these manifolds, you know,  
24 and that purchase orders were written. So it's not  
25 just a statement of recall. I checked the Manhattan

1 project history to see that the right contractor was  
2 identified and it was. So there was some extremely  
3 clear recall there. And there was also a recall  
4 that things were being sent, not just that there was  
5 a contract that we know for Chapman Valve for  
6 manufacture of valves but that things were being  
7 sent back for cleaning, repair and testing. And  
8 while it was not at the Dean -- while the sample was  
9 at the main site, there is also a mechanism sited  
10 for possible contamination of the main site, which  
11 is the manifolds that were first shipped to the main  
12 site of Chapman Valve by train and transferred to --  
13 by truck to the -- so there was some activity  
14 potentially involving enriched uranium contaminated  
15 equipment that was train shipped to the Dean Street  
16 site. So that -- that last piece I think is a very  
17 important connecting point. And one of the things  
18 we've suggested in our report to resolve this issue,  
19 is you could always sample the Dean Street site.

20 **DR. POSTON:** Is it still there?

21 **DR. MAKHIJANI:** No. I mean, I don't think the  
22 facility is there, but the site may still be there.

23 **DR. POSTON:** Well, I don't disagree with what you've  
24 said up until the sampling of the site.

25 **DR. MAKHIJANI:** Okay.

1           **DR. POSTON:** Based on my visiting the site, I think  
2           it would be a waste of time, for the following  
3           reasons, that site is just a dump.

4           **DR. MAKHIJANI:** No. No. We did not visit the Dean  
5           Street site.

6           **DR. POSTON:** Oh. I thought you were talking about  
7           the site where we were.

8           **DR. MAKHIJANI:** No. No. We did not and I do not  
9           know the condition of the Dean Street site. I don't  
10          know if it would be --

11          **DR. POSTON:** And if you want to sample the Dean  
12          Street site, my recollection of what the individual  
13          told us was that those manifolds were transferred  
14          from the train to the truck. So they actually never  
15          went in the facility as far as I'm concerned.

16          **DR. MAKHIJANI:** That's right.

17          **DR. POSTON:** And was therefore, you know, not to say  
18          that it shouldn't be considered, but in terms of  
19          what we're talking about here, I don't think this is  
20          relevant. But it is something that probably needs  
21          to be looked at.

22          **DR. MAKHIJANI:** No. No. We agree with that, that  
23          it's not within the purview of this particular site  
24          profile or petition. But it's a -- it's definitely  
25          a material issue that has come up and there is a

1 sample that is part of the analysis and it was a  
2 suggestion that maybe we could just assume two  
3 percent enrichment at some point and we -- I  
4 personally don't feel that that's an appropriate  
5 response to the two percent sample.

6 **DR. NETON:** Well, I mean, we were speaking in those  
7 terms of, you know, to get to the SEC process, said  
8 well, if it was two percent we just multiply it by  
9 2. I mean, that's possible. I think this is the  
10 type of issue that we would turn over to the  
11 Department of Labor, Department of Energy, as new  
12 information as we always do when we uncover this  
13 type of stuff. Let them run it through the process  
14 and determine if it needs to be added as a separate  
15 facility or an adjunct to the Chapman Valve facility  
16 or the Dean Street. It seems like it's an off-site  
17 location --

18 **MR. GRIFFON:** Right.

19 **DR. NETON:** That would not be currently covered  
20 under the Chapman Valve.

21 **DR. POSTON:** Right.

22 **MR. GRIFFON:** It's the sample that brings us to this  
23 point. Is that the facility that we're talking  
24 about, you know?

25 **MR. ELLIOTT:** My sample comes from Chapman Valve --

1           **DR. NETON:** Right.

2           **MR. GRIFFON:** -- not at Dean Street.

3           **MR. ELLIOTT:** But there's this concept being played  
4 out here that maybe the Dean Street facility  
5 contributed to that contamination at Chapman.  
6 But the Dean Street facility is not a covered  
7 facility --

8           **MR. GRIFFON:** Right.

9           **MR. ELLIOTT:** So we need to turn that over to DOE  
10 and DOL and let them sort that out.

11          **DR. POSTON:** Interestingly, I can come up with a  
12 scenario. Since the stuff is coming from Oak Ridge,  
13 it's being refurbished, tested, and sent back, that  
14 there could be some contamination at that address.  
15 A low enrichment based on where it came from that --

16          **DR. NETON:** My recollection was that sample was  
17 taken at the loading dock.

18          **MR. ROLFES:** Yeah. Correct. It --

19          **MR. CLAWSON:** John, this is Brad Clawson.

20          **DR. POSTON:** Hey, Brad.

21          **MR. CLAWSON:** Hey. I just -- I'm trying to -- I'm  
22 trying to follow the -- follow the logic here and so  
23 forth like this. But I'm trying to understand how  
24 Dean Street falls into the Chapman Valve. Is it  
25 actually part of the process or is it part of the

1           SEC or is -- I'm just trying -- I'm having a hard  
2           time understanding what Dean Street has to do with  
3           Chapman Valve.

4           **DR. POSTON:** Yeah. The short answer is no, but John  
5           Mauro wants to --

6           **DR. MAURO:** Well, it's -- see, what we found out was  
7           that -- and this happened during the discussions  
8           that the train shipment of these manifolds from Oak  
9           Ridge to Chapman Valve went by way of this very same  
10          building and location. That is the railroad spur  
11          that brought in the -- the same uranium bars for  
12          milling and showed up on the railroad spur, also  
13          brought the manifolds. Now, the manifolds don't  
14          have nothing to do with the Chapman Valve operation,  
15          building 23 that we're talking about. Had nothing  
16          to do with it. It just so happened that that's when  
17          they brought it in, they unloaded it there at the  
18          loading dock and then from there, they picked them  
19          up and brought them to Dean Street to do the testing  
20          that was necessary. And the scenario that we  
21          envision is that that may be in the process of the  
22          train shipment, some small amounts of residual  
23          enriched uranium that may have been contained in the  
24          -- or left over in the manifolds may be the reason  
25          why there was local, some local elevated levels of

1 enriched uranium found, which has nothing to do with  
2 the Chapman Valve operation itself. In addition, we  
3 believe that -- so all of the uranium that we're  
4 talking about that's in Chapman Valve as exposures,  
5 the inhalations, the external exposure, we believe  
6 that that's all natural uranium for the very good  
7 reasons given by NIOSH. And we could conceive of  
8 the way in which that may have -- that one sample or  
9 two samples could have occurred had nothing to do  
10 with the Chapman Valve operations. In addition, we  
11 also go to the next step and say, well, even prior  
12 to the time period of interest for this SEC petition  
13 there were things going on, AEC related activities,  
14 that also could have contributed to that sample.  
15 That -- the Chapman Valve having this residual  
16 activity, so where I'm going with this is I think  
17 there's an abundance of evidence that it's unlikely  
18 that enriched uranium was routinely handled by any  
19 means at Chapman Valve as part of the contract  
20 activities that Chapman Valve was involved in, in  
21 uranium milling for the time period of interest. So  
22 we basically agree that it is not an SEC issue for  
23 this particular petition, but it's something worthy  
24 of interest.

25 **MR. CLAWSON:** Okay. And I understand that because

1 we've seen in many sites that yeah, they had a basic  
2 job to be able to do, but also other small things  
3 fell into it. And I understand that, but in reading  
4 interviews and stuff like that, we -- we came up  
5 with one enriched sample and it was near the  
6 crackling furnace in building 23.

7 **MR. ROLFES:** No. That's incorrect.

8 **MS. BLOOM:** It's actually near the chip -- it's  
9 actually near the chip-burning furnace. It's not  
10 near the cracking furnace.

11 **MR. ROLFES:** Let me clarify that, please. Because  
12 the chip-burning furnace was actually in the most  
13 southwest portion of the restricted area, this  
14 sample in 31 was taken a little bit north of the  
15 dock and so it's not really close to the chip-  
16 burning furnace. There's a number of -- probably  
17 maybe 30 or 40 feet between the two, so --

18 **MS. BLOOM:** Did you look at the -- okay.

19 **DR. WADE:** Portia, did you have a question?

20 **MS. WU:** Yes, I did. I appreciate this. I  
21 apologize I'm going to have to get off to go to  
22 something for my boss. But, you know, we have been  
23 concerned about the enriched uranium presence and we  
24 have noted that in numerous congressional letters.  
25 I guess I'm not a hundred percent sure how you know,

1 given the presence as was just noted of, you know,  
2 near the furnace, and you know, it seems like there  
3 was some processes that potentially took place with  
4 the enriched uranium why it, you know, it seems like  
5 it's potentially being discounted for purposes of  
6 the final SEC evaluation.

7 **DR. POSTON:** I think Mark just stated that it was  
8 not associated with the furnace, it was outside of  
9 the area.

10 **DR. NETON:** Right. I think it was an outside sample  
11 on the loading dock itself.

12 **MR. ROLFES:** Well, let me get the maps here, but it  
13 was actually right inside the facility, right next  
14 to the dock door I believe. That's what I refer to  
15 it as.

16 **MS. BLOOM:** Right. It was right north of the dock  
17 door right near the edge of the --

18 **MR. ROLFES:** Correct.

19 **MS. BLOOM:** The left wall.

20 **MS. WU:** Well, you know, I guess I understand  
21 there's been a lot of back and forth on this and on  
22 the phone it's a little bit hard to potentially keep  
23 track of who all is speaking when, but you know, we  
24 appreciate that you have thoroughly explored this  
25 issue is important as well as the, you know, before

1 about the bounding of doses from the incinerators.  
2 Can I ask, you know, is there an informal record of  
3 this meeting that will be shared because the courts  
4 may --

5 **DR. WADE:** Yes. There's a court reporter here and a  
6 record is being kept and will be shared and made  
7 public.

8 **MS. WU:** That'd be great. I'd be happy to share  
9 that with the other offices and obviously if there  
10 are any more thoughts, we'll be sure to include  
11 them. (Unintelligible) be so kind as to send around  
12 a note to our office about the time when you're  
13 going to wrap up so (unintelligible).

14 **DR. WADE:** Okay. Thank you.

15 **MS. WU:** And I'll have someone from my office  
16 listening the rest of the time, but they probably  
17 won't be able to comment.

18 **DR. MAKHIJANI:** This enriched uranium sample was a  
19 dust sample, it wasn't a (unintelligible) sample.

20 **MR. ROLFES:** That's correct.

21 **MR. GRIFFON:** It was dust on the floor.

22 **MS. BLOOM:** It was dust and debris.

23 **MR. ROLFES:** It was not in the air. It was not an  
24 air sample.

25 **DR. MAKHIJANI:** Yes.

1           **DR. POSTON:** So am I hearing correctly then that the  
2           action here is to refer this issue to DOL and DOE?

3           **MR. GRIFFON:** Yes.

4           **DR. POSTON:** And consider that it's not part of this  
5           SEC petition?

6           **MR. GRIFFON:** I'm convinced with John's call. I'm  
7           convinced that it wasn't part of this contract  
8           during the specified time period. I guess my  
9           question is you know --

10          **MS. BLOOM:** The only other thing that I think is  
11          important to note is that if this occurred  
12          beforehand then we would include consideration of  
13          that exposure before the covered period, it includes  
14          consideration of that radiation exposure in -- in  
15          the covered period as I understand it. But if it  
16          was from a DoD type operation after the covered  
17          period, then I'm not sure it's an issue.

18          **DR. WADE:** Let's let Mark finish his point.

19          **MR. GRIFFON:** I mean, I think there's an hypothesis  
20          that it might have been an earlier operation, which  
21          is outside the designated time period which I think  
22          (unintelligible) well that's DOL instead of the  
23          whatever street, complex it was.

24          **DR. WADE:** Dean Street.

25          **MR. GRIFFON:** Dean Street. But, you know, I could

1           also see it's an area where other contracts were  
2           going on during the time period. I think that's  
3           unlikely because it seems like you've searched that  
4           out and it looks like this was the contract  
5           (unintelligible) but subsequent to that and you  
6           know, if it was -- if there were DoD operations I  
7           think it might make an argument that this wasn't --  
8           you know, that's not relevant to our decision but it  
9           might explain why you have a sample there as well,  
10          so that might be worth pursuing if there was some  
11          mention of some documentation that there were DoD  
12          operations after this or contracts, and if they did  
13          involve enriched uranium then they might have at  
14          least been an hypothesis for why this stuff was --

15       **DR. NETON:** That would be harder to get than you  
16       think, though.

17       **MR. GRIFFON:** Yeah, yeah. It's true. I thought of  
18       that.

19       **DR. NETON:** I hear what you're saying, you know,  
20       we'll turn this over to the Department of Labor and  
21       Energy for review. And then we won't drop it, you  
22       know, if there's any information we come across, but  
23       you know we've not found anything here to supplement  
24       this.

25       **MR. ELLIOTT:** In your looking at the information, do

1           you know what time frame the manifold transfer  
2           happened?

3           **DR. MAKHIJANI:** Yes, '43 to '46, early '46. The  
4           information that we got was you know, amazingly  
5           clear.

6           **MR. ELLIOTT:** Uh-huh.

7           **DR. MAKHIJANI:** And --

8           **MR. ELLIOTT:** So we need to turn that over to DOL  
9           and DOE because at risk here is a facility that's  
10          not been listed. It's not recognized as a covered  
11          facility.

12          **DR. MAKHIJANI:** And that's not to say there might  
13          not have been other things, but we have -- we have  
14          some very specific and in my opinion, very credible  
15          information that checked out from other sources to  
16          the extent that I could check it just in finalizing  
17          the interview information. So I think -- I think it  
18          is kind of important to have a record.

19          **DR. POSTON:** Arjun, do you have documentation that  
20          it says '43, that doesn't seem reasonable to me.

21          **DR. MAKHIJANI:** No. The --

22          **DR. POSTON:** You said '43. The first reactor was  
23          December of 1942, and the X-10 reactor wasn't even  
24          built then and gaseous diffusion wasn't built then  
25          so I just --

1           **DR. MAKHIJANI:** It is not about the reactor, it's  
2           about the electromagnetic separation --

3           **DR. POSTON:** I understand completely, but I'm  
4           telling you the dates of when things were built at  
5           Oak Ridge. And I don't think '43's a reasonable  
6           date.

7           **DR. MAKHIJANI:** I --

8           **DR. POSTON:** I'm asking you if they have  
9           documentation for that and that's all I'm asking.

10          **DR. MAKHIJANI:** I may be wrong about this, but I  
11          believe that the electromagnetic separation work  
12          began sometime in '43. I may be wrong, maybe.

13          **DR. POSTON:** Well, I'm just asking if you have  
14          documentation for it, that's all I'm asking.

15          **DR. MAKHIJANI:** Well, yes, I did check the Manhattan  
16          Project history. Now, I might -- I might be  
17          mistaken in my recall as to what I found there.

18          **DR. POSTON:** Well, I'm more interested in when the -  
19          - when the manifolds were shipped back --

20          **DR. MAKHIJANI:** Oh. That specific date I have not  
21          checked or found any shipping record of transactions  
22          --

23          **DR. POSTON:** Because that's relevant to what we're  
24          talking about.

25          **DR. MAKHIJANI:** No. No.

1           **DR. POSTON:** When the electromagnetic thing, race  
2 tracks, were built is not relevant.

3           **DR. NETON:** Right. The magnetic separation would  
4 not be relevant to the manifold.

5           **DR. POSTON:** No. It would be. It could be.

6           **DR. MAKHIJANI:** I think that -- let me just say for  
7 the record what I did. There was some pretty  
8 specific descriptions of what happened during war  
9 time and stuff that came from Oak Ridge. And that  
10 it stopped a few months after the Hiroshima bomb was  
11 dropped. That was the information from the  
12 interviewee that was quite specific about the things  
13 that were done there, the people, people from Oak  
14 Ridge and from Stone and Webster. So, I looked at  
15 the dates for when Stone and Webster went to Oak  
16 Ridge, when the electromagnetic separation process  
17 was started. I tried to find -- I actually bought a  
18 book about Chapman Valve, I believe, or Stone and  
19 Webster, I can't remember. I tried to find more  
20 detailed information and went through some  
21 literature but I could not find information about  
22 the manifolds being shipped. I believe there's  
23 enough on the table to pursue it outside of this  
24 particular --

25           (Multiple speakers spoke simultaneously.)

1           **DR. MAKHIJANI:** I don't think there's a disagreement  
2           there.

3           **DR. POSTON:** Okay. Do we need more or can we move  
4           on?

5           **MR. GRIFFON:** The only other item I was going say on  
6           the -- there was a -- there was two Oak Ridge  
7           reports, survey reports. And these are the M-31  
8           samples --

9           **DR. POSTON:** Right. Right.

10          **MR. GRIFFON:** And VS-1. And my guess is that the VS  
11          samples were verification samples after  
12          decommissioning. And I wonder if there's any --  
13          anymore data and it might -- I think that Cindy and  
14          others have probably pursued this, but is there data  
15          that was kept from that D&D project other than these  
16          reports that we have, you know, support data, not  
17          only assay, but also manifested, if this stuff was  
18          packaged up and shipped. If they had S and M  
19          material, you'd see it manifested differently than -  
20          - than if it was just all natural.

21          **DR. NETON:** I've looked for that type of stuff and  
22          we've not -- I actually tried to obtain the original  
23          laboratory analyses of those samples. My thought  
24          was that that might not -- may be within the  
25          uncertainty of the measurement itself, but it might

1 not be two percent or X. It might just come out. I  
2 couldn't find them.

3 **DR. POSTON:** Well, projects normally kept very  
4 detailed -- at least the ones that I'm familiar  
5 with, kept fairly detailed logs.

And so I don't know --

**MR. GRIFFON:** This is not an ancient project. It  
was in the '90's, so I thought we might be able  
to drum up some of these records.

**DR. MAKHIJANI:** There is a second sample that  
NIOSH has said is consistent with un-enriched  
uranium. Not in the matrix, but in our report we  
did take issue with that and say that we don't  
think it is consistent with un-enriched uranium  
but consistent with slightly enriched uranium  
because we have the uncertainty -- uncertainty  
bounds for that, confident bounds for that  
particular sample, 1996.

**DR. NETON:** Yeah. You don't know how they did  
the analysis though.

**DR. MAKHIJANI:** Oh, no. We don't -- we don't --

**MS. BLOOM:** There may be some description in  
there, but I also think those second samples were  
very close to background in most instances.

**DR. NETON:** That was my recollection.

**DR. MAKHIJANI:** Well, fourteen picocuries of U-238, which would not be background.

**DR. NETON:** No. No.

**MR. GRIFFON:** And Cindy, what do we know about this?

**MS. BLOOM:** For the U-235 measurements, I mean, you're hard-pressed to measure at the levels it was measuring in radium-226 is also a confounder in the U-235 channel. And they were using gamma stack. I don't recall if it was sodium iodide or jelly at this point.

**DR. NETON:** That even questions it further. If they're using a gamma stack of sodium iodide --

**MR. GRIFFON:** Sodium iodide, yeah.

**MS. BLOOM:** It may have been jelly, I can't recall.

**MR. GRIFFON:** Cindy, did the -- in the NIOSH response here, it says it is known that Chapman Valve also performed work for DoD. Do you have documents already that describe that work or --

**MS. BLOOM:** No. I don't have particulars.

**MR. GRIFFON:** Through interviews, okay.

**MR. ROLFES:** We do have indication. That newspaper article that was provided, Cindy, early on, we do have documentation of the large valves

that were produced under contract with DoD. And I have a picture of one here, I believe. Let's see --

**DR. NETON:** Arjun's right. If it talks about military personnel showing up during this time period with the Dean Street facility which kind of --

**DR. MAKHIJANI:** Well, there was -- the Manhattan Project was military-type personnel.

**MS. BLOOM:** Right. But later they also did, I think if you read in some of their literature and you talk to the people there and particularly I think Mary Ann could probably speak on it better, but I think they did work for all sorts of government agencies and companies. They were one of the top of the line companies out there in valve manufacturing.

**MR. GRIFFON:** Well, it's possible. I'd be surprised if there's not more supporting data to go with the Oak Ridge reports that can be drummed up. I don't know, maybe it's a dead-end. Maybe you've already gone down that path and there's nowhere else to take it, but that might shed some light on the -- on the question.

**DR. WADE:** So NIOSH is going to continue to look

for -- is that the action?

**DR. NETON:** Yeah. I just wonder is that -- is that relevant for our SEC evaluation right now though? I mean, I guess that's a good thing to do.

**MR. GRIFFON:** The only relevance I would see is if you found more data that said, you know, if we have -- if you start seeing manifests where they're assigning dose and then get percentages of U-235 to the weigh shipments, then you say well, wait a second, more of this was at the Chapman facility than Dean Street. Although, they may just say worst case, we'll just assume that 2.16 percent.

**DR. NETON:** I just don't know how that's going to play out.

**DR. MAURO:** You see, the idea that the doses would double --

**MR. GRIFFON:** Yeah. I don't care about that. I just think what are we missing in operations. That's more my --

**DR. MAURO:** Yeah. And I -- although this is really more a -- I guess I would say a policy decision, if we -- right now, what I'm hearing is that there's general consensus that it's unlikely

that there is enriched uranium as an issue as it applies to this particular petition for the time period of interest. However, in the event that we're wrong, that maybe it could be something of substance during this time period of interest, then we're in a position where if you assume that the stuff was enriched the doses go up by a factor of two.

**MR. ROLFES:** I'd like to be cautious about that statement because of the current way that we're calculating doses, we're using 100 percent U-234 for dose calculations, so --

**DR. NETON:** It might make a small difference. I think what happened, we had the wrong exposure model. If this enriched uranium is related to these valves or these manifolds, then you know, we've got an exposure model that deals with machining uranium slugs.

**DR. MAURO:** Right.

**DR. NETON:** Which by all accounts, they were not enriched when they were sent to --

**DR. MAURO:** It has nothing to do with it.

**DR. NETON:** It has nothing to do with machining uranium slugs. It's a totally different exposure scenario.

I would prefer to keep that separate, and you know --

**DR. NETON:** Yeah. I'm not so much interested in how it affects the dose because I think it has minimal effects on the dose, but whether we're missing an operation before or after or during that time period, you know.

**DR. NETON:** Right, but again --

**MR. GRIFFON:** But I think it's unlikely during that time period.

**DR. NETON:** Right. But if we don't set the time frame, we can certainly find the information, pass it on --

**DR. WADE:** We should pass on what we have. We should look, by this discussion, for additional information and pass it on. And then Larry, if you would just copy the workgroup of your communications, then I think the workgroup --

**DR. POSTON:** So are we ready for number six?

**DR. WADE:** Number six.

**DR. POSTON:** All right. Let's take a ten-minute break. How about that Ray?

(Whereupon, a break was taken from 10:38 a.m. until 10:52 a.m.)

**DR. WADE:** I think some people on the phone would

like to get a sense of when we're going to be done so they can hear the wrap up. I think it's likely that we'll wrap up about 12:30.

That gives a half an hour an issue. So I'm just going to say that to people.

We're getting back ready to begin. Jason, are you on the line?

**MR. BROEHM:** Yes, I am.

**DR. WADE:** Right now, the consensus opinion of the workgroup is that we could be to summary at about 12:30. Now, again --

**MR. BROEHM:** So you're concluding the meeting at 12:30?

**DR. WADE:** Well, just offering the summary of what happened at 12:30.

**MR. BROEHM:** Okay.

**DR. WADE:** That could change again. You never know. We have three issues. The workgroup has shown great discipline. We're giving ourselves a half an hour or so an issue. But, you know, with apologies if we're wrong, but I wanted to give everyone a sense of what the time line looked like.

**MR. BROEHM:** Okay.

**DR. WADE:** Thank you.

**MR. BROEHM:** I can share that with congressional staff by email right now. I'm going to have to break away for a meeting from about 11:00 to 11:45, but I plan to return to the call after that.

**DR. WADE:** Okay. Well, that's our target although sometimes we miss our targets.

**MR. BROEHM:** Thanks.

**DR. WADE:** Okay. Thank you.

#### ISSUE 6

**DR. POSTON:** All right. I guess we're back in session and we're going on to issue number six.

**DR. MAURO:** Yes. Issue number six on page five of the matrix. The petitioners' concern in summary. The petitioners express concern that the site profile does not take into consideration other industrial processes that may have taken place at Chapman Valve such as use of a cracking furnace, chip incinerator, or possible rolling operations.

NIOSH's response: NIOSH response to these concerns is that the site profile does take into consideration the fact that there was a chip burner at the facility and cites data collected at the burner's exhaust location. In addition,

NIOSH states that the bioassay data upon which the exposure matrix is based captures any exposures that may have been associated with the chip burner. With respect to possible rolling operations, NIOSH states that there is no documented evidence that rolling operations took place at Chapman Valve. NIOSH further states that, even if rolling operations took place, the bioassay data would have captured such exposures. SC&A's position regarding this is that we are concerned with this particular issue. We do not feel that NIOSH's response to this issue is, in fact, compelling. We're -- and the concern has to do with the possibility that there could have been some workers that -- they even could have been monitored workers but also certainly workers who were not experienced bioassays that could have had amongst their responsibilities cleaning out, loading and cleaning out the chip burner. The reason this is important is that we have data on the levels of dust loading associated with cleaning out chip burners without any controls. That is if you had a facility where there's very little controls over how you do that, the exposures could be substantial, high enough that

they, in theory, could actually add to some degree the total integrated intake that a person would get. For example, if a person were chronically exposed throughout the order of 47 MAC throughout his 70 weeks of working, but in addition, occasionally had a responsibility to help clean out the furnace, in theory, according to the literature that we reviewed, there could have been a substantial acute short-term intake associated with each such operation. And we believe that it's important that this issue be explored and quantified to the extent possible by NIOSH. I would say that one of the source documents that will help in addressing that issue is specifically the study I mentioned earlier by Adley, Gill and Scott. I'd just like to point the Board's and NIOSH to that particular document where they do have data related to the concentrations, airborne concentrations of uranium, associated with just that operation and the duration of time that workers who performed that operation spent each day so that in my mind that gives you a hook into that particular exposure scenario. And I think it would be very productive to look into that further.

**MS. BLOOM:** John, when I read this comment, both in the SC&A report and in the matrix here, I got the sense that you all had missed the analysis of the NUMEC data. The NUMEC incineration operations on page 17 of the site profile.

**DR. MAURO:** That's possible, yeah. Could you give me just a quick run down on that one? I very well may have.

**MS. BLOOM:** Basically, there were some measurements from incinerator operations at NUMEC in 1966 and 1967. NUMEC was working with both normal and enriched uranium. It typically handled higher enrichments at NUMEC, but there was an introductory letter to the report that indicated there were essentially no controls associated with this particular operation, that there was a real problem with it. And there were bioassays from the workers involved, as well as air concentration measurements. And we went through those and we looked at those and compared them to the derived information for the exposure analysis for Chapman and found that the data appeared consistent with the estimates that we've made. With that, I think there would have been more active -- more, these workers were probably

more dedicated to the operation at NUMEC, although incineration of chips doesn't appear to be a full-time job anywhere.

**DR. MAURO:** I'm sorry. The NUMEC write up that you just described is located where?

**MS. BLOOM:** On page 17 of the site profile. It starts with "during the February 14, 2005, worker outreach program meeting". And that's where Richard Miller provided the reference on the NUMEC report.

**DR. MAURO:** Yes.

**DR. MAKHIJANI:** Cindy, I did look at that. You know, it may be that there were no or minimal controls, but it is from a very different period of operations and possibly with different equipment. I mean, NUMEC, if I remember correctly, was a factory that was built in the late -- mid to late '50's. It was built in a different period and you were talking about 1948 which -- and there was generally some kind of a break if you look at you know, there were a couple of breaks in the history of how things were done. One seems to have been in the late '40's, early '50's. Another seems to have been in the late '50's, early '60's, so that, you

know, from the mid '60's on things were done differently.

**MS. BLOOM:** Arjun, in general, I would probably agree with that. I think if you look at this particular report it doesn't appear that things were done very differently at NUMEC in this particular period. It seems like a not very well controlled operation.

**DR. MAKHIJANI:** Yes. The specific thing that John and I discussed and the concern that I had from looking at other operations was that you have short duration, very high dust loadings for particular tasks, especially loading or unloading incinerators. So if you look at the Harrison and Kingsley document that you referred to in the context of Rocky Flats and even here, I think, the -- if you look at just opening the door of a gas furnace in which rods were being heated, admittedly from a different --

(Whereupon, multiple speakers spoke simultaneously.)

**DR. MAKHIJANI:** But I'm saying that -- I'm not saying that that number should be applied here. All I'm trying to say is that in this type of operation, you can get very diff -- when you're

heating up uranium or some uranium is burning on the surface of rods or you're actually burning uranium, that dust can be quite concentrated when you are opening the doors and handling that ash. And I think -- and I think that reference to one NUMEC facility from the mid '60's, doesn't, in my opinion, address the issue of what happened to that person that was shoveling the ash out of the incinerator. It's a question.

**MS. BLOOM:** Well, and I think the other part though is that chips were burned at all the uranium metal handling facilities. This was not a unique operation to Chapman. So I do believe that the co-worker data from the other studies is representative of what happened to Chapman -- at Chapman with the chip burning. You know, this isn't a unique operation.

**DR. MAURO:** Could I put on the record a piece of information that I think would be helpful. Again, in the Adley report, they actually have a section talking about oxide -- they call it oxide operations. And it's actually data associated with loading and unloading trays in the chip burners. Exactly the thing we're talking about. Turns out they observed that during -- now during

the loading and unloading operation, they measured about 1,030 MAC. But that's only during the operation, okay. Then they also say that kind of operation only takes place at about .4 hours per day. That's at this facility, now. This is this Hanford facility. So what happens is if one would say okay, yes. There are these short periods of time, taking the Hanford values -- this Adley report is the Hanford facility, at face value, we don't know the degree to which it applies of course at Chapman but just for the sake of this discussion, let's just say does this give us any insight. What this says is that, okay, you get this concentration of 1,030 MAC occurring while this operation's going on, but the operation only takes place .4 hours per day. So if you come up -- if you're looking to get average it out, well, what would the average daily -- in other words if you average it out --

**DR. NETON:** Time weighted average.

**DR. MAURO:** Time weighted average. You come up with -- well, that's all he did. That he got no other exposure, now. If he did that and got no other exposure the rest of the day, which is unlikely, but it turns out to be 51 MAC, okay.

Now, what does this mean? That means -- that means when he did that operation, you know, that day, okay.

**MS. BLOOM:** 1,030 times .4 hours?

**DR. MAURO:** Yeah, .4 divided by 8, in other words --

**MS. BLOOM:** Oh. Okay.

**DR. MAURO:** So, in other words --

**MS. BLOOM:** So it's an hourly weighted --

**DR. MAURO:** Right.

**MS. BLOOM:** Not a daily weighted.

**DR. MAURO:** Right. So what we're saying is now, with this kind of information, now there's this and there's other places, all of which is really not in the report, you see. Now, I think by exploring this again, and painting a picture of these are the kinds of exposures, the kinds of numbers Arjun made reference to whereby some statement could be made as to the applicability or lack thereof of that particular data, these data here and how does this play out with respect to this particular exposure matrix. How, you know, and if it turns out that now, I'm not quite sure from reading this report, whether this happened every day. That is, in other words,

every day was -- did a person spend, you know, perform this operation or was it much more limited than that. You know, and I think by telling that story, well, we could find out whether or not the exposure matrix as currently constructed deals with incinerator operations properly.

**DR. POSTON:** So we're back to issue one.

**MR. GRIFFON:** One. Yeah.

**DR. NETON:** I don't disagree with this.

1 We could do a better job on bounding the chip burner  
2 exposure, particularly since we don't have a  
3 bioassay sample labeled chip burner.

**DR. WADE:** So NIOSH will consider many data sources. Again, this is a complex-wide process, but including the Adley, Gill and Scott report and will look at what that informs us relative to the validity of the current exposure matrix and if any changes are in order.

**DR. POSTON:** Can we also address the rolling operation? I haven't seen, heard or any indication that there's such a thing. But SC&A agrees with the petitioner so did you see something that we didn't see?

**MR. GRIFFON:** Other than that, I don't have

anything. Just a memo that says it's to find out information of the operation. And I think Cindy cited this in the site profile, as well. But this says there's one AEC memo, Williams to Kelly, date illegible, that indicates that Chapman Valve may have also conducted rolling operations in uranium metal. I haven't seen -- I don't know if you have that memo. Yeah.

**DR. POSTON:** And we didn't hear anything from the interviewees when we talked to them about it.

**MS. BLOOM:** And we looked through all the Tatty\* reports and there's no mention of rolling in any of the Tatty reports. There was no -- nobody recalled anything about rolling when we talked to them at the February 14, 2005, meeting. I didn't see anything in the new -- the most recent worker outreach meeting.

**MR. GRIFFON:** Were they asked about rolling operations?

**MS. BLOOM:** Pardon?

**MR. GRIFFON:** Cindy, were they asked about rolling operations?

**MS. BLOOM:** They were asked -- if you read through those it may not have been a specific question, but they asked people what they did.

**MR. GRIFFON:** Yeah.

**MS. BLOOM:** And or what was going on or what was a concern or so the specific question wasn't there.

**MR. ELLIOTT:** Do we know if Chapman Valve had a rolling mill operation that would have been taken advantage of by the AEC?

**MS. BLOOM:** I haven't seen anything that indicated that. I think we -- my recollections for the February meeting and I'm not sure that it's in the minutes, is that the subject did come up. Again, I think Mary Ann might be able to shed more light on it, but I don't believe we found anything indicating that rolling was part of the operations or heard anything.

**DR. MAKHIJANI:** Cindy, is the interview documentation on the O drive from 2005?

**MS. BLOOM:** Yes.

**MR. ROLFES:** Yes, it is. It's on the website, as well.

**DR. MAKHIJANI:** Oh, okay.

**MR. ROLFES:** It's on the website. I'm not sure if it's on the O drive, but it is on the website.

**DR. NETON:** In conjunction with Bethlehem Steel, we've gone through some extensive reviews of

rolling operation records from AEC activities and I've never seen Chapman Valve mentioned in any source of rolling.

**MS. BLOOM:** Right. And I've looked through a bunch of the AEC monthly reports, as well, and it wasn't mentioned.

**DR. NETON:** I mean, you've got a pretty good listing of all the facilities and it's not mentioned in any of them.

**DR. MAKHIJANI:** That I think is a good argument because AEC did do -- and I will say that I have seen many of these reports that we went over. And there were periodic surveys maybe a couple times a year even, in which every facility that was doing this kind of work was surveyed or at least their production was mentioned, their operations were discussed. And so if it's not in that, I think, and did not come up in the interviews and it certainly didn't come up in our interviews --

**DR. NETON:** No.

**DR. MAKHIJANI:** That there wouldn't be, at least in my opinion, wouldn't be a basis to make that an issue.

**MR. GRIFFON:** On top of which I don't think the

exposures would be read. I mean, maybe a little different but --

(Whereupon, multiple speakers spoke simultaneously.)

**DR. WADE:** Go ahead, please. You wanted to speak, the petitioner wanted to speak.

**MS. RIALI:** Yes. This is MaryAnn Riali speaking. Cindy, I'm referring to your meeting that we had in February about the rolling. I believe at that time, in our archives there was a memo in regard to possible rolling done at Chapman Valve. I have a copy of it and I believe I gave a copy to Dr. Poston.

**MS. BLOOM:** But that's that Williams letter, isn't that correct?

**MS. RIALI:** I'm not sure. I'm looking for it.

**MR. GRIFFON:** If you have that Williams letter that would be interesting because I haven't seen it.

**MS. BLOOM:** Is that the AEC memo?

**MS. RIALI:** Right, right, right.

**MR. GRIFFON:** Oh. The reference is the Williams memo.

**DR. NETON:** Right. We have a copy of that particular document.

**MS. BLOOM:** Right. And that's all we found that mentions rolling. There was -- I didn't hear from anybody at the meeting and maybe I missed it, but I don't believe anybody indicated that they were familiar with a rolling operation at Chapman.

**MS. RIALI:** No. I don't. And I don't know if it was -- if it took place before, before 1947, again.

**MS. BLOOM:** Uh-huh.

**MS. RIALI:** Yeah, with the other situation about the manifolds.

**MS. BLOOM:** Right.

**DR. WADE:** Okay.

**MS. BLOOM:** So that sounds like if -- if information becomes available while folks are looking for -- turning this over to DOL and DOE -  
-

**MS. RIALI:** Uh-huh. Uh-huh.

**MS. BLOOM:** Then certainly that would be considered.

**MS. RIALI:** Right.

**MS. BLOOM:** But I think again, the -- as we've discussed before, that doesn't really change the exposure results.

**DR. WADE:** Just for my record keeping, you're saying the sense that NIOSH needs to present the focused argument on this issue, or is the argument already on the record?

**DR. NETON:** I think it's in.

It's addressed in the site profile why we don't include rolling operations, I believe.

**DR. WADE:** Arjun?

**DR. MAKHIJANI:** Yeah. I would agree with that. I just have a question about this latest thing that Mary brought up in regard to the letter that -- that Larry is going to send DOL. Are you going to mention it that this may -- that this memo might be tracked down and may have occurred at other times since that's come up for other things. That may be something that the DOE or DOL might need.

**MR. ELLIOTT:** We will ask -- I will ask them to confirm the activities that prescribed Chapman Valve as a covered facility. Right now, that only goes to this uranium milling, not rolling. And so I'll question whether or not rolling was done, as well as the Dean Street interaction.

**DR. MAURO:** And it's important that we get this down because according to everything I've read,

rolling operations have a greater potential to generate airborne activity than milling operations.

**DR. NETON:** It may be in a different time period, too. We might mention that in the letter, that - - you know, we're not sure, but there are indications that it may have occurred. It could be a different time frame.

**DR. MAKHIJANI:** That's what I would -- that's what I was thinking. So that it kind of -- from what we've been able to tell, it doesn't belong like the enrichment, it doesn't belong in there.

**DR. WADE:** So this will be added to the NIOSH DOL DOE action.

#### ISSUE 7

**DR. POSTON:** Ready to move on.

**DR. MAURO:** Number seven. Petitioners express concern that there's only one day of uranium air samples and that one set of -- and that one set of samples shows that there were elevated levels of uranium throughout the facility.

NIOSH's response in the evaluation report:

"NIOSH agrees with the petitioners' statements and concerns, but explains that the limited air sampling data were not used for dose

reconstruction."

SC&A concurs with this. We -- we -- our review of the work done by NIOSH shows that -- that in no way was that data used for dose reconstruction. There is one thing that they do do, is they demonstrate that the air sampling data that is there, which is very limited to two samples, I believe, collected in May, show that their -- the model, the matrix is reasonable and bounding. Quite frankly, I wouldn't even use that data for that purpose. I think that data is -- does not really offer very much value in terms of where it was taken and its representativeness. So to me, the air sampling data is of -- really of no use to this particular dose reconstruction, and appropriately so NIOSH is not using it.

**DR. POSTON:** Any discussion on that?

**MR. GRIFFON:** I just want a clarification that the petitioners reference a set of elevated -- I don't even know how it's written there, but a set of samples --

**MS. BLOOM:** Mark, I'm having a hard time hearing you.

**MR. GRIFFON:** I'm sorry. The petitioners reference a set of samples showing elevated

readings. Is this other samples such as the group sample and things like that that were more process samples or what?

**MS. BLOOM:** There were two sets of samples. There was one on May 4<sup>th</sup> from the furnace outlet and up near the roof from the outlet. And then there are samples taken in the work place at an inspection bench, a packing bench, a workbench, the washroom and the lunchroom. So there were just those two dates that the samples were collected. One was basically associated with the furnace and the other date it was associated with the work place.

**MR. GRIFFON:** And those second set of samples are the ones you discuss in section 3.1.2 I think it is.

**MS. BLOOM:** I'd have to look back at that. I know I looked at both of them in terms of considering their applicability to intake --

**DR. NETON:** Yes. 3.1.2. They're not particularly high.

**MR. GRIFFON:** Right. They're also early in the project, too, which you discuss also.

**DR. MAURO:** In May, right?

**MR. GRIFFON:** Yeah. So I think no further

discussion on that one.

**MS. BLOOM:** It was more just a reality check and to point out that there was that information there. I think our goal is to try and let the reader know all the information that we've -- you know, in some cases we can't let everybody know of all the information we looked at or we'd have thousand page toms, but -- or tomes, but -- toms may be more like it.

**DR. POSTON:** Sometimes they're like toms, right.

**DR. WADE:** Probably feels like toms.

**MS. BLOOM:** When you read it, but we try to put enough information there that you know that you could go back and look at something to see that we've interpreted things in a reasonable way.

**DR. POSTON:** Any other questions, comments on seven? Move on. I don't think we're going to finish early because this next issue is the --

**DR. MAURO:** Fires.

**DR. POSTON:** -- possible fires. That might take awhile.

### ISSUE 8

**DR. MAURO:** Okay. Number eight. Petitioners express concern that there may have been numerous fires at the facility that NIOSH has not taken

into consideration.

NIOSH's response: "NIOSH explains that the records only indicate one significant fire in early June that is taken into consideration in the exposure matrix. They also explain that the assumptions used in the exposure matrix for chronic exposure account for the possibility that other fires may have occurred, because, if the bioassay results were in fact associated with incidents, the approach used by NIOSH over-estimates the exposures."

SC&A'S position on this matter is well, it goes back to the discussion that we had originally, is SC&A believes that the method adopted in the exposure matrix to model the acute exposures associated with the fire is not claimant favorable. That's our opening statement and of course, that's a subject that we talked about earlier and we're going to revisit that -- that particular issue, because of a misunderstanding on our part regarding how in fact (unintelligible). Let's move on to the second sentence in our response. "However, we believe that there is a tractable problem since an earliest feasible date," again that goes back to

the -- so let's move on to the next sentence. Bear with me, please. "As regards other fires, SC&A interviews did not reveal information about other fires, but none of the workers interviewed worked in the relevant departments full time. The issue of other fires merits further investigation." The bottom line is our understanding is that fires of this nature did occur, based on a review of the literature, quite often at facilities like this. However, the evidence to date that we have as best we've looked at it for Chapman Valve, the only fire of any significance that was recollected by the folks we talked to, was this fire that occurred in early June. And I guess the question before us is: Is it appropriate -- to what degree do we need to explore the possibility that there could have been more than one fire. And how -- whether that's a reasonable thing to do and -- and how does one go about addressing that particular issue in the matrix, if in fact that was the case. So I guess that's where we stand.

**MS. BLOOM:** John, we have done newspaper research to see if we could find something. We've talked to claimants. We've looked through the

documentation and we can't find anything that indicates that there were additional significant fires. And I use that wording because I think that maybe there might be things that occurred, you know, under the radar. But I also think that uranium -- small puffs of uranium are not unusual in this kind of situation. But I think that because they had that June fire, that they were probably particularly sensitive to issues of uranium burnings at that point. And my sense is that they would have been extra careful at this particular facility.

**DR. NETON:** In fact, the chip furnace was there to minimize the risk of fires, right?

**MS. BLOOM:** Right.

**DR. NETON:** I mean, the whole purpose of oxidizing uranium is to --

**DR. MAURO:** Get it out of there.

**DR. NETON:** Get it burnt before it burns, essentially, if you think about it that way, so there were precautions to take to minimize fires.

**MS. RIALI:** Dr. Mauro?

**DR. MAURO:** Yes.

**MS. RIALI:** It's Mary Ann.

**DR. MAURO:** Yes. Hi, Mary Ann.

**MS. RIALI:** I believe that Darlene Ryan, when we discussed at our interview that day that she was going to see if she could get together some information on the fires through the fire department. I haven't talked with her on it, but I will get back to you with it if I have more information from her.

**MS. RYAN:** Mary Ann? Mary Ann?

**MS. RIALI:** Yes. Go ahead, Darlene.

**MS. RYAN:** Okay. I have been looking and I'm still going through some old books and archives here. However, they like Monsanto, have their own or had their own fire department which was (unintelligible) to a lot which is probably the reason that we do not have documentation of a lot of those fires. I have that books (sic) at home and I will continue to look through it because now I'm during the years before '48. But like I said, they did have their own fire department, which was used to take care of those things.

1 **MR. ROLFES:** It's important to note also that the  
2 interviews that we went and spoke with one of the  
3 former fire fighters from Chapman Valve. A  
4 gentleman that SC&A and myself and John Poston, we  
5 attended an interview session, I guess, at this

1 gentleman's house and we had interviewed this  
2 gentleman -- yes, and the petitioners, as well. We  
3 spoke with this individual and he didn't recall any  
4 fires that were occurring inside of the building 23.  
5 He did say, however, that there were some other  
6 fires in other buildings on site, which is  
7 definitely expected for a steel mill type operation.  
8 And he mentioned, you know, that there were some  
9 fires that occurred in possibly building 100. There  
10 were some fires that occurred in the laboratory, as  
11 well. But we had no indication that there were any  
12 other fires in building 23, in the restricted areas.

**DR. MAKHIJANI:** No. Before --

**COURT REPORTER:** Excuse me, Dr. Makhijani, before we get too far. Darlene, could I get your last name, please. This is the court reporter.

**MS. RYAN:** Darlene Ryan, R-Y-A-N.

**COURT REPORTER:** Thank you.

**MS. RYAN:** You're welcome.

**DR. MAKHIJANI:** I think there's a little bit of an issue that needs to be characterized a little bit more precisely in light of the comment that Ms. Ryan just made. That the person we interviewed was not a Chapman Valve fireman or employee.

**MS. RYAN:** Thank you.

**DR. MAKHIJANI:** The person we interviewed was a fireman in the fire department and they responded only when they were called. And they presumably were called for big fires that couldn't be controlled by whatever was happening on site. And so, this person did have a pretty clear recollection of fires in building 100 and in the 1940's, but you know, some recollections -- he did not remember the June 11, 1948 fire, either, and we know that that happened. So, I -- I think that it doesn't address the question that was raised by Ms. Ryan. Is that if there were fires that were handled locally which we feel would be smaller fires than the ones that occurred on June 11<sup>th</sup>, what data do we have about that? To my knowledge we don't have data about that.

**DR. WADE:** Darlene, thank you very much for your efforts. And we appreciate what you're doing. Is there any way any of us can help you in your efforts?

**MS. RYAN:** Well, I have these books that are very, very large that I've been bringing back and I did have some smaller little fires. I did send that, it's the area around there. Nothing stating building 23, but I am still going

through. I'm going prior to that June '48 date now and seeing if I can find anything. But I also worked for the fire department and I know in the past that even Monsanto has had fires and they've -- they have their own fire department. And unless it's something real big, it was not being reported. And that goes back to 1984 when I first started here. So, I'm sure that in '48, there was even less restriction about having to call the local authority on any fire. So therefore, Chapman Valve was taking care of probably a lot of their own fires at that time. And I'm going through as many records as I can here, but we can't even find a lot of data on the big fire. So, I don't know if these records were somewhere else or if they just never had records here, because of the fact that the Springfield Fire Department did not respond.

**DR. WADE:** Well, thank you again for your efforts. If we can help, please.

**MS. RYAN:** Thank you.

**MR. GRIFFON:** It's clear to me that this was the major one since they brought in outside fire help. And I would, you know, notwithstanding my other comments on the representativeness of the

bioassay data, I would think the smaller common little fires that they put out at the station are covered by the (unintelligible).

**DR. MAURO:** The 47 MAC.

**MR. GRIFFON:** But notwithstanding my earlier concerns about the representativeness of your analysis data. I think if that model works, then it's going to bound the other.

**DR. NETON:** I was going to make the same point.

**MR. GRIFFON:** I think we've had this before. Yeah.

**DR. NETON:** Yeah. We've had 40 something samples here and are they detecting anything way out of the ordinary in these workers? Yeah, there could have been a sub-population I suppose exposed. But, you know, we don't see it and we can look at some fire scenarios. I'm looking at this famous Adley report now. There's a -- there's a sample they took one foot above a bucket of burning metal there and it's 120 MAC. You've got a bounding -- I mean, we can -- we can maybe piece together some of this additional information about uranium concentrations around fires and try to piece that in with the bioassay that demonstrates these exposures are somewhere in the

40 to 70 MAC calculated range. Yeah. We just wouldn't expect it to be much higher than what we're assigning based on, you know, comparison of some of the literature values as well as the bioassays.

I mean, essentially what we end up doing here is validating the exposure model to independent (unintelligible).

**DR. MAURO:** I don't think we have a problem with that at all.

**DR. POSTON:** Do we move on to the last item?

**MR. GRIFFON:** I added one on. But I don't think it's a lengthy one.

**DR. POSTON:** Okay. So this one's --

**MR. GRIFFON:** I had a question and this was raised I think by the petitioners, maybe not. I know it came up as a comment, was this question of the film badge -- and I think it was raised earlier in some of the conversations earlier. The question of the film badge using -- Was an assessment done to look at this question of high badge readings for some people and they didn't have any urinalysis (unintelligible). Jim, you offered the opinion, which I don't necessarily disagree with it, I'm just asking, you know, was

that assessed and --

**DR. NETON:** I tried to do that independently awhile -- a long time ago when this all first started and I didn't take it to the final Nth degree, but I couldn't find any real correlation between exposure -- external exposure and internal monitoring. It just doesn't necessarily go hand in hand in the uranium facility, just as we've seen in Y-12 and other facilities.

**DR. MAURO:** To add to that also, I've looked very closely at the external dosimetry data which is -- we need to talk about today.

**MR. GRIFFON:** Right.

**DR. MAURO:** But I think that it has relevance now that you bring it up. When you look at the data -- the approach that was taken was most of the workers were badged, and we know that maybe a few weren't. But the vast majority were. And what was done was each week they had all this group of badges, they had all the data that came in which was both penetrating and surface and insufficient (ph). Then they said, okay. We're going to take the high for that week, we're going to take the highest reading that we observed from that week and assign it to all the workers for that week.

Now, I said, okay. Let me look at that. And as it turns out, the highest value in one of the weeks in penetrating, I believe it was two millirem per hour as being the -- per hour. In other words, the weekly dose is there. What does that mean as the average external exposure and two millirem per hour turns out to be the highest dosage you get when standing one foot away from an infinite slab of natural uranium. So that, in other words, so there was obviously one person who spent an awful lot of time up close and personal to what would be effectively considered to be an infinite slab of pure uranium. Now, the question you raise is that and I know there was some concern that well, I mean, would there be a correlate -- that is wouldn't that person who is doing -- whoever got that dose rate, is it plausible that he was also a person that should have gotten a very high inhalation exposure. Now, and I'm trying to visualize it. And this is where experienced people with these types of mill operations -- would a person be involved in grinding operations and sanding operations, the various operations that would generate a lot of airborne dust, would he be in a setting where

he'd be for all intents and purposes up close and personal about a foot away to what would be considered to be an effectively infinite slab of uranium or is it more likely he'd be close to a vot\* where he's lathing or sanding? So, my first reaction was that -- that there are -- there -- you wouldn't expect a couple. Mainly, the person with the highest external exposure would necessarily also be the highest person with internal exposure. Not that it's to be ruled out, but just thinking about the nature of the operations. I would more likely have expected a person that was involved in let's say handling large quantities of metal, whereby you were packaging and shipping --

**DR. NETON:** Inspectors.

**DR. MAURO:** Inspectors. Where they were dealing with the product that came in and the product that went out. Because then you're dealing with large volumes of materials, up close and personal, but you're not involved in generating lots and lots of dust. That -- now, again, this is speaking from just reading this material, certainly not from firsthand knowledge. That sensibility that I get may or may not be valid.

I would like to hear feedback from folks who may be familiar with this personally, hands on. Some of the -- because we did not have this conversation at the meeting when we visited with the claimants and petitioners. So, whether or not this sensibility that both Jim and I share is, in fact, a reasonable one certainly worthy of posing that question to the people who were involved in these activities.

Arjun, do you have a sense on this?

**DR. MAKHIJANI:** I think the specific context in which some of this came up was -- and I'm recalling conversations that may not be precise, but was in the context of a job description of a brusher. A brusher. Somebody who is up close and personal in terms of external dose, but who also is suspending dust --

**DR. MAURO:** Uh-huh.

**DR. MAKHIJANI:** By the nature of their operations. The job that they're doing, and I think the -- if I remember the Harrison and Kingsley report, it actually has mention of a brusher --

**DR. MAURO:** Uh-huh.

**DR. MAKHIJANI:** And suspended dust so, I think it

that it does -- it would be useful, to kind of roll this in that specific issue since it has been raised more than once into this review with that specific job description in mind. In my opinion, it does bear some looking at.

**DR. MAURO:** Let me take a run at this. Let's postulate for a moment that yes, there could be a scenario where a brusher would be being exposed to elevated dust levels and simultaneously up close and personal to a relatively large amount of uranium. Not a single bar, but maybe a lot of bars, a lot of uranium. Now, so really the question is: is 47-MAC or 60-MAC, a number that one would expect that bounds -- that bounds the exposure. And the answer is yes.

**DR. NETON:** Isn't that what we're doing with all these analyses, bouncing it against any air concentrations to make sure that the urine data samples that we have is representative --

**DR. MAKHIJANI:** No. There was no urine data samples for a brusher.

**DR. NETON:** That's my point, Arjun. We agreed to go back and look at the (unintelligible) report. Go back to number one. Are our bounding analyses appropriate, given what we know about air

concentrations at the plants.

**MR. GRIFFON:** Let me be clear. I don't think it's a new item. I brought it up for the record, because it's brought by the petitioners and we need to discuss it.

**DR. MAURO:** When all is said and done, what we're saying is we've identified a number of scenarios. Whether it's brushing or the fire, where there's chip, where there's grinding, milling, that are all activities that generate relatively high levels of dust for relatively short periods of time. And the question becomes, does a chronic exposure to 47-MAC, because that sort of covers all sins, so to speak. That is it's so conservative that the time integrated exposure that you get from making that assumption is going to catch all this. And I think that that story is really not told.

**DR. NETON:** We're back to that. Number one. Just for the record here, I did look at the -- originally there was an issuance of 80 film badges to workers on January 4, 1948. I've got the issuance log here, by name with badge number. And I went and looked to see, you know, did they really take urine samples on the right people.

And 40 -- 35 out of the 80 people that were originally issued film badges had urine samples here. So, there was an intent here, at least to measure population that was badged. This wasn't just sort of -- sort of on the fly. You know, anybody came in. So, we've got 43.7 percent of the people that were issued badges, at least in January of '48, have a urine sample at least one time. So, it gave me a pretty good feeling that at least they were trying to get some sort of representativeness of the sampling.

**MS. RYAN:** May I interject some points?

**DR. WADE:** Certainly.

**MS. RYAN:** Okay. Has anybody taken the most common thing into consideration, that everybody's body chemistry is different? I have asthma. I have a sister that is COPD. We both catch colds very easily. You may be in the same room with them or same household, but if your immune system is higher than mine, you're not going to get as sick as I will. I mean, everybody's body chemistry is different. You could smoke 40 years and never get cancer. I can smoke for five years and get cancer. Does body chemistry come into this play at all?

**DR. NETON:** Well, this is Jim Neton from NIOSH. Not specifically. The science just isn't there to do that on a case-by-case basis. But I will point out that the law as is written allows for the uncertainty to be put about all these estimates, and a decision is made at the 99th percentile of the uncertainty. So, there is some allowance made for our lack of knowledge, but we don't have the science to specifically address it.

**COURT REPORTER:** Dr. Neton, just to make sure. Was that Ms. Riali?

**DR. WADE:** Who asked the question about the difference in body chemistry?

**MS. RYAN:** Darlene Ryan.

**COURT REPORTER:** Oh, Ms. Ryan.

**MS. RYAN:** Only because I know. I get sick very easily because I have asthma, and my co-worker may never be out of work because -- and we're both in the same environment, but I'm just saying body chemistry has to play into it somewhere.

**DR. WADE:** Right. And I think the answer is that there's not sufficient data for that to happen, but it's attempted to be dealt with through the assignment of uncertainty around these different

distributions.

**MS. RYAN:** Thank you.

**DR. WADE:** Thank you.

**DR. NETON:** I'm not sure if we have an action item now as a result of this discussion?

**DR. POSTON:** Is there anything else we need to discuss? We have time.

**DR. WADE:** Well, I think after we do our summary then I think the next step's how do we proceed and what's the time frame and what's the date.

**DR. POSTON:** Looks to me like there's going to be another sort of round of a workgroup meeting before we can do anything.

**DR. NETON:** Right.

**DR. POSTON:** Because there's things that we need to know before we can --

#### SUMMARY

**DR. WADE:** Well, I think there's a list of things that need to be followed up on, some by NIOSH, some by SC&A. We need to get a sense of -- now I can summarize that John or you, it's up to you.

**DR. POSTON:** I've got my list; I'll just check --

**DR. WADE:** Tell me if I'm wrong. Okay. I'm going to just go down the issues.

On issue one, and then we covered two and three

and then we discussed it a number of other times. That NIOSH is going to prepare a document concerning the experience at other facilities that can be used to demonstrate that the NIOSH approach to chronic exposure is a plausible upper limit. This write-up should take into account all relative information, but particularly the Adley, Gill, Scott report. So that's number one.

**MS. BLOOM:** Could you spell that first name for me, please?

**DR. WADE:** I spelled it A-D-L-E-Y.

**DR. MAURO:** Correct.

**MS. BLOOM:** Thank you.

**DR. POSTON:** I had a note here. Does that -- is it reasonable to expect this to be available so we can discuss it in the April Board call?

**DR. NETON:** I think we could give you an update. I'd have to rely on Cindy and Mark to help.

**MS. BLOOM:** Is that in mid-April or early April?

**DR. WADE:** There's a Board call on April 5<sup>th</sup>. That doesn't mean that the workgroup can't meet at another time.

**MS. BLOOM:** Okay.

**DR. NETON:** Yeah. I just wonder if it wouldn't be more beneficial to have the workgroup meet to

discuss it before we broach it onto the general Board?

**DR. WADE:** Okay.

**DR. POSTON:** So, we'd need to discuss it before -  
- what's the next meeting, May?

**DR. WADE:** May. I think our target needs to be to have the work group report out in May in sufficient detail. Maybe that's not going to happen, but I think that should be a target we have in mind. So, therefore, I would think a workgroup meeting at some point to consider this and give opportunity for additional follow-up, if necessary, before May.

**MR. GRIFFON:** Late April.

**DR. NETON:** I think April. Yeah. It's got to be in April sometime.

**DR. WADE:** Okay. The second issue relative to issue number four is that NIOSH is going to post the IMBA runs that relate to workers exposed to fire, and that SC&A will look at this along with the sample DR's that are posted. And then SC&A will re-evaluate its response to number four. On number five. NIOSH will notify DOL and DOE of information learned concerning the Dean Street facility, also rolling operations. NIOSH needs

to look at what it's learned that goes to the issue of the need to consider other facilities as being covered facilities. And then NIOSH is going to share that communication with the workgroup, so the workgroup can be aware of the completeness of the NIOSH response.

Relative to number six: NIOSH will provide an analysis of the chip burner facilities at other facilities and include information in the Adley, Gill and Scott report. This is now a corollary of number one, but it relates here to the chip burner. And it's going to the issue of does the information learned at those other facilities validate or raise question about the exposure matrix that NIOSH is using.

And number eight. The very nice Darlene Ryan is going to continue looking for documentation of fires and will share with the workgroup information she learns. And triggered by that, the workgroup will respond. And again, Darlene, we can't thank you enough for your efforts.

**MS. RYAN:** You're welcome.

**DR. WADE:** NIOSH is also going to consider the development of bounding fire scenarios. Again, based upon consideration of the Adley, et al

report. This is again, a corollary of number one.

And I think those are the issues that I captured. So the question then becomes if the workgroup is going to receive work product, consider that work product, and then meet to determine if additional work is necessary prior to a Board meeting, when's the optimum time to do that? Given the fact that questions always lead to other questions, I would like to leave enough time for a workgroup to get together and then to be a subsequent meeting if needed. So, what do you great minds need to get your work done?

**MS. RYAN:** I have one question for you, if I may.

**DR. WADE:** Surely.

**MS. RYAN:** This is Darlene Ryan, again. I received a letter as a close out interview with 60 days to get it back to them. Now, you're talking about a -- did you say April meeting, April 5<sup>th</sup> and then May? Why would I be sending something back when we're still working on this petition and they're requesting from me, that I send my paper work, sign it off that this is a closeout?

**MR. ELLIOTT:** What you -- this is Larry Elliott.

What you have before you is a draft dose reconstruction report and you're offered a close out interview to explain the content of that report answering questions you might have separate from our -- the deliberations on this SEC petition. This goes to your claim, not your petition.

**MS. RYAN:** Okay. It has nothing to do -- I just thought it was strange I got that before this was settled.

**MR. ELLIOTT:** And certainly if you don't send it back to us within the 60 days, you'll get another letter giving you another 14 days grace and if you still feel you need more time, you just simply ask for more time.

**MS. RYAN:** Okay. Thank you.

**DR. WADE:** Thank you, Darlene.

**MS. RYAN:** You're welcome.

**DR. WADE:** So, Dr. Poston, then the question is when. It's up to you guys.

**DR. POSTON:** It sounds to me like what I'm hearing from them is mid-April, mid-April at the earliest.

**DR. NETON:** When is the Board meeting in May, like what date?

**MR. ELLIOTT:** The 2<sup>nd</sup> through the 4<sup>th</sup>.

**DR. NETON:** The 2<sup>nd</sup> through the 4<sup>th</sup>, so it's got to be earlier in April. I would say that. The second full week of April, maybe? The 9th, that week?

**DR. POSTON:** Didn't you pick a date?

**DR. WADE:** Have we got a date?

**DR. NETON:** Cindy, you're going to be working on this, I mean. I don't sense that there's a tone being generated here. I mean, there are some pages and documents we need to review, but are you comfortable we can get something out by early April?

**MS. BLOOM:** I think so. As I think about what was said, you know, my sense is that the information I'm going to look at is not the whole world which --

**DR. NETON:** Right.

**MS. BLOOM:** -- would be a very different answer but I think April is probably very reasonable given that you all will provide me with the Adley reference.

**DR. NETON:** Yeah.

**MS. BLOOM:** And then I'll look at other sites where we've collected data and put that together

to see if there's any other information. And you all will be helping out in terms of looking at higher scenario -- I don't know if you have additional information. I ran across something the other day.

**DR. POSTON:** Yeah. We need to -- so, we're looking at a two day meeting, April 10<sup>th</sup> for this working group and April 11<sup>th</sup> for your working group --

And it'll be here. The best thing is face to face. I personally like face to face.

**MR. ELLIOTT:** And we appreciate you having them here so that staff -- we do understand your travel constraints, but it helps our staff if we can hold this in Cincinnati, these work group meetings back to back like they are.

**DR. POSTON:** Okay. So, it's a done deal unless we -- I don't know, Gen, Brad, you guys are --

**DR. ROESSLER:** What is the done deal? I didn't get the deal.

**DR. POSTON:** April 10<sup>th</sup>.

**DR. ROESSLER:** Sounds good to me.

**DR. POSTON:** Okay. Brad, are you still there?

**MR. CLAWSON:** Yeah, I am. I'll put it on my calendar. I'll tell my boss that I'll be back to

work, but we also were working on a couple of other work groups, too, that Nevada Test Site and stuff. And if we can -- if we can kind of group them into that -- that time frame, it sure makes it nicer for us that are traveling.

**DR. WADE:** I'll try, Brad. I mean, I think there's a cluster going to happen the last week in March, and now we're developing a second cluster.

**DR. POSTON:** You just want to come here and stay the whole week.

**DR. WADE:** Also, use your -- use your judgment, but telephone participation is fine.

**MR. CLAWSON:** And I understand that, but yeah, we'll shoot for that, for the 10<sup>th</sup> then?

**DR. POSTON:** Right.

**DR. WADE:** And Mike is on the call as well.

**DR. POSTON:** Mike, how about you?

**MR. GIBSON:** The 10<sup>th</sup> should be okay.

**DR. POSTON:** Okay.

**DR. ROESSLER:** Somebody said something about a two day, but you mean just the one day for the workgroup.

**DR. WADE:** It's the one day on Chapman Valve. The Board has other work and there'll be other

work that will happen on the 11<sup>th</sup> that doesn't relate to Chapman Valve. We certainly welcome your participation in that, but Chapman Valve will be on the 10<sup>th</sup>.

**DR. ROESSLER:** Okay.

**DR. WADE:** And we'll get out notification to you and let you know.

**DR. POSTON:** Anything else we need to discuss? Are we going to hang around to do a briefing or -  
-

**DR. WADE:** Well, with apologies for being done early, but I again, thank all of the workgroup members and petitioners and interested parties for making the time. I think it was a very productive meeting. I think we're on a path to getting the people's done work right -- the people's work done right.

**DR. POSTON:** Thanks for everyone, also.

**DR. WADE:** Okay. We're adjourned.

(Whereupon, the meeting adjourned at 11:48  
a.m.)

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**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 February 23, 2007; 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 2nd day of June, 2007.

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