

120U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
CENTERS FOR DISEASE CONTROL  
NATIONAL INSTITUTE FOR OCCUPATIONAL  
SAFETY AND HEALTH

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ADVISORY BOARD ON RADIATION AND  
WORKER HEALTH

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KANSAS CITY PLANT WORK GROUP

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TUESDAY  
JANUARY 20, 2015

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The Work Group convened in the Brussels Room of the Cincinnati Airport Marriott, 2395 Progress Drive, Hebron, Kentucky, at 8:30 a.m., Josie Beach, Chair, presiding.

PRESENT:

JOSIE BEACH, Chair  
BRADLEY P. CLAWSON, Member  
JAMES E. LOCKEY, Member  
LORETTA R. VALERIO, Member\*

ALSO PRESENT:

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TED KATZ, Designated Federal Official  
RON BUCHANAN, SC&A\*  
MAURICE COPELAND  
PETE DARNELL, DCAS  
JOE FITZGERALD, SC&A  
JOYCE FRANCIS, ORAU Team\*  
JOSH KINMAN, DCAS\*  
WAYNE KNOX  
JENNY LIN, HHS\*  
JOYCE LIPSZTEIN, SC&A\*  
ARJUN MAKHIJANI, SC&A\*  
JOHN MAURO, SC&A\*  
PAT McCLOSKEY, ORAU Team  
JIM NETON, DCAS  
MUTTY SHARFI, ORAU Team  
MARLON SMITH  
JOHN STIVER, SC&A\*

\*Participating via telephone

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

Issue

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1 (8:42 a.m.)

2 MR. KATZ: All right. Well, let's get  
3 rolling. We may not have our full complement of  
4 Board Members. Someone has an open speaker again  
5 because I can hear myself.

6 So let's begin with roll call. Welcome  
7 everybody in the room and on the line. This is  
8 Advisory Board on Radiation Worker Health, Kansas  
9 City Plant Work Group.

10 Roll call, for all the agency-related  
11 people, please speak to conflict of interest when  
12 we run through the roll call. And let's get  
13 started with Board Members in the room.

14 (Roll call.)

15 MR. KATZ: And we're expecting Dr.  
16 Lockey. He's in the hotel, but not sure where.

17 So the agenda and some materials for the  
18 meetings are posted on the NIOSH website. They're  
19 under the Board section under today's date. So  
20 people on the line you can follow along with some  
21 of the documents that will be discussed during the  
22 discussion by going there.

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1           And, Josie, it's your -- oh, and folks  
2           on the line, please mute your phones except when  
3           you're speaking. It'll improve the audio quality  
4           for everybody. And, Josie, it's your meeting.

5           CHAIR BEACH: All right, thank you.  
6           Like Ted said, there is an agenda posted, however  
7           I'm going to make some modifications to the agenda  
8           this morning. We do have a very full agenda. And  
9           we are going to adjourn at 2:45. So hopefully we  
10          will get through, I would say, 80 percent of our  
11          agenda.

12          We're going to start with Issue Number  
13          13, it's the mag-thorium alloy operations and  
14          exposure potential. If you remember back, the  
15          first White Paper came out August of 2014. SC&A  
16          produced that. And then NIOSH came out with their  
17          White Paper on January 9th of 2015.

18          We're going to go from Issue 13 to Issue  
19          20 and then we're going to go back up to the top  
20          of the agenda with Issue 1 and then work our way  
21          through the rest of the issues in that order.

22          Lunch will be sometime mid-day. We're

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1 going to try and go for about a 45-minute lunch and  
2 then back to work. So, comfort breaks when we need  
3 them, as we can.

4 So, NIOSH, Pete, can you go ahead and  
5 start us off on the mag-thorium?

6 MR. DARNELL: All right, thank you.  
7 NIOSH and ORAU put together a thorium-magnesium  
8 White Paper. Basically, we've gone through the  
9 available monitoring data, SWIMS data, telling us  
10 what materials were onsite when and came up with  
11 a method to bound the doses that were at the Kansas  
12 City Plant.

13 MR. STIVER: Pete, I hate to interrupt,  
14 this is Stiver, I can barely hear you on the line  
15 here.

16 MR. KATZ: Yes, his voice is hush, I'm  
17 going to move the speaker closer.

18 MR. DARNELL: I'm sorry. I'm going to  
19 let Pat talk about it, I'm not --

20 MR. McCLOSKEY: Oh, sure, I'll take it.

21 MR. DARNELL: If you don't mind. I'm  
22 sorry, I'm just not very --

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1 MR. KATZ: It's okay.

2 MR. DARNELL: -- good today.

3 MR. McCLOSKEY: Okay, this is Pat  
4 McCloskey with the ORAU Team. So, when this  
5 petition first qualified in March of 2013 there was  
6 nothing on our books, nothing in the TBD, about  
7 mag-thorium machining at the Kansas City Plant.

8 It was new information that we started  
9 with working on this petition. So we put together  
10 what we knew in the petition and then SC&A came out  
11 with some comments -- in the ER, I should say. And  
12 they came up with some comments in the ER and they  
13 said that operations timeframe, data adequacy and  
14 completeness, dose estimation approach and the  
15 1970 breathing zone sampling need to be validated.

16 I'm reading from our White Paper.  
17 Skipping around in there just hitting the  
18 highlights so we can keep the meeting going.

19 And they also wanted us to verify  
20 offsite mag-thorium fabrication.

21 So I didn't know a lot about mag-thorium  
22 alloys in the summer of 2013 when I started this.

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1 And so I wanted to bring to light some of the stuff  
2 that I found in the SRDB about it.

3 And so it was a new alloy in 1957,  
4 brought to the market by Dow. And they named their  
5 alloys with some annotations, such as HK31.  
6 And each one of those letters in the name has a  
7 meaning. I put this in the paper because there was  
8 some question about the thorium concentration in  
9 the alloys used at the KCP.

10 So the two alloys used at the Kansas  
11 City Plant were HK31A and HM21A. The designators  
12 talk about the nominal concentrations and various  
13 elements in the alloy. H, meaning thorium, and K,  
14 meaning zirconium, and M, meaning manganese. And  
15 those numbers talk about the nominal  
16 concentrations in the alloy.

17 Matter of, I think that's publically  
18 available information. But just thought I'd set  
19 that out there to talk about concentration.

20 Magnesium is used in missile  
21 construction because it's lightweight. And they  
22 added the thorium to the alloy for strengthening

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1 at higher temperatures.

2 So, Dow, with their introduction of the  
3 alloy in 1957, did some testing of the material,  
4 because they knew that there would be work done with  
5 it and they were concerned with safety.

6 They took some air sampling, did some  
7 air monitoring during some hand-sanding of HK31 and  
8 some power disc sanding. And they did not exceed  
9 their permissible limit of 0.1 milligrams per cubic  
10 meter for the hand-sanding. And they did slightly  
11 exceed it for the power sanding. But they weren't  
12 using local exhaust ventilation.

13 That 0.1 milligrams per cubic meter air  
14 concentration deserves a little bit of  
15 elaboration. They would have performed that  
16 sampling and analyzed it with mass spectrometry,  
17 delivering results in a mass per cubic meter of air  
18 format.

19 And if you realize that essentially all  
20 of the weight of thorium -- so the mass spec would  
21 have delivered some results back in saying the  
22 species of thorium is there, but not talking about

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1 the different nuclides.

2 But if you realize that, by weight,  
3 thorium is essentially all thorium-232, and you use  
4 the specific activity of thorium, you can derive  
5 a radioactivity concentration that would be equal  
6 to that of 1.1 E minus 11 microcuries per  
7 milliliter. That's just for reference.

8 So the paper goes on and it talks about  
9 some more studies that Dow did in '56. And it was  
10 a paper titled, "Magnesium-Thorium Alloys --  
11 Industrial Health Experience in Fabrication and  
12 Production." And the report has air samples for  
13 grinding, filing, buffing and sawing  
14 magnesium-thorium with various concentrations of  
15 5.5, 5.4 and 3.3 percent thorium. And the highest  
16 recorded level was 0.53 milligrams per cubic meter  
17 during those operations.

18 There's a White Paper also written by  
19 SC&A back in 2007 where they analyze these same air  
20 sample data at the Dow plant. That paper is "A  
21 Focused Review of Operations and Thorium Exposures  
22 at the Dow Chemical Company -- Madison Plant,"

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1 produced in August of 2007.

2 And they went a little bit further than  
3 we did in our paper and determined that the doses  
4 that you would receive from those type of machine  
5 operations right there would, for the highest  
6 airborne concentration, give 5 millirem per hour.

7 Skipping down a paragraph. Dow put  
8 together a bulletin. Dow Bulletin Number 141-179.  
9 I have a copy of that, that's this one here. They  
10 produced this for their merchandising department  
11 and for engineer end-users, for customers that they  
12 were selling the mag-thorium to, such as Kansas  
13 City Plant.

14 CHAIR BEACH: That's in the SRDB, too,  
15 right?

16 MR. McCLOSKEY: Yes. 39899 is the  
17 SRDB number. Feel free to interrupt me if you ever  
18 have any questions.

19 Okay, so in here there's a few more air  
20 sampling results. They have one for the drumming  
21 of very fine powder at 0.015 milligrams per cubic  
22 meter. And slabs of mag-thorium in heat treat

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1 ovens, with air sample data on that as well.

2 And they have arc welding analyzed in  
3 here. And their conclusion on the arc welding is  
4 that it would be possible to keep the thorium fumes  
5 at acceptable levels using local exhaust. And they  
6 have a picture of the way they would have done that  
7 and analysis.

8 So this is something that would have  
9 been in the hands of Kansas City Plant when they  
10 bought the magnesium-thorium from Dow. And they  
11 incorporated a lot of these same controls into  
12 their work control documents.

13 The exception on this one, the local  
14 exhaust that they have right there at the tack weld,  
15 they say 390 cubic feet per minute, but KCP  
16 specified 400 cfm. Little bit more. Pretty much  
17 everything else is the same.

18 So, still giving some background on  
19 magnesium-thorium. The Air Force published a tech  
20 manual, so we have an independent organization that  
21 looked the processing of mag-thorium alloys. And  
22 they believe that the 0.1 milligrams per cubic

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1 meter air limit was readily met in processing  
2 magnesium-thorium alloys containing up to ten  
3 percent thorium.

4 For example, stirring an alloy melt  
5 with five percent thorium content resulted in 0.002  
6 milligrams per cubic meters. And grinding an  
7 alloy of three percent thorium content gave thorium  
8 contamination of breathing zone ranging from 0.008  
9 to 0.035 milligrams per cubic meter. Separate  
10 organization there.

11 And then in the next paragraph we talk  
12 about the fact that there's an exemption. It would  
13 have been from the AEC, at that time, in 10 CFR 40,  
14 for mag-thorium alloys containing less than four  
15 percent thorium. This is something that Kansas  
16 City Plant was aware of when they were working with  
17 it, that it was a non-licensed material.

18 Then there's a NUREG-1717 that talks  
19 about the exemptions for mag-thorium alloys. And  
20 they also discuss a fire, if it were to happen, what  
21 would be the repercussions of that. They would  
22 suggest an effective dose equivalent to an

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1 individual who is not using respiratory protection  
2 during cleanup after the fire would be one  
3 millirem. Just a data point to consider.

4 So now we're going to start talking  
5 about mag-thorium operations specifically  
6 occurring at the Kansas City Plant.

7 When we first wrote the ER we based the  
8 start date for mag-thorium machining operations at  
9 1957 based on some Dorothy Troxell court documents.  
10 And what it said was that magnesium-thorium alloys  
11 were first handled in the plant in 1957. But it  
12 didn't speak to the nature of that handling  
13 operations.

14 Now given some more time and some more  
15 data capture in October of last year and some more  
16 documents, we were able to better refine what we  
17 believe the start date of the machining operations  
18 to be.

19 And so the first few years, from '57 up  
20 until '61, the magnesium-thorium parts that they  
21 had at the Kansas City Plant were machined offsite  
22 at three different subcontractors. The Sheffield

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1 Corporation, it appears, did the majority of that  
2 machining. And also Twin City Tool Company and the  
3 Ladish Company.

4 So we have reports of Kansas City Plant  
5 safety personnel visiting the facilities and  
6 giving them the Dow safety bulletin to follow to  
7 make sure that they were being safe, and even giving  
8 them some more advice as far as using local exhaust  
9 and wetting controls while they were working.

10 I'm trying not to read this entire thing  
11 for the sake of time, but if anyone would like to  
12 read and visit any specific topic, feel free.

13 MR. DARNELL: Why don't we move ahead  
14 to how we bounded the dose and our assumptions  
15 therein.

16 MR. McCLOSKEY: Okay, let make sure --  
17 sounds good. There's essentially two campaigns of  
18 mag-thorium machining operations at Kansas City  
19 Plant: the campaign that occurred in the '61 to '63  
20 timeframe that we have data on, and then another  
21 campaign that was in the '70s.

22 Okay, I guess I'll jump to the section

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1 titled "SC&A White Paper Conclusions and NIOSH  
2 Responses."

3 So at the end of SC&A's review of our  
4 ER methodology, they boil a lot of their comments  
5 down to, what is it, four or five -- seven basic  
6 comments. And I'll go through those.

7 For the comment number one, 1957 to 1959  
8 period, "it's unclear whether the 9 E minus 11  
9 microcurie per milliliter for the thorium-232  
10 limit, the nature thorium limit or gross alpha  
11 limit. That issue is central for determining  
12 whether a mass loading limit can be used for the  
13 period. Furthermore, there are no data to enable  
14 determination of whether this limit was enforced  
15 and actual air concentrations for thorium-230 Type  
16 2 remained generally below this limit."

17 Our response is, considering the  
18 monitoring equipment available to Kansas City at  
19 the time, the year one concentration limit of 9 E  
20 minus 11 microcurie per milliliter would have been  
21 implemented as a gross alpha limit and supplemented  
22 with the industrial hygiene limit of 0.1 milligram

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1 per cubic meter.

2 NIOSH has continued to research and  
3 discover new information regarding the operations  
4 and now understands that those operations that  
5 began in '57 did not involve machining or an  
6 internal exposure pathway, as described in this  
7 paper, until August 23 of 1961. Therefore, NIOSH  
8 now considers that date as the start of mag-thorium  
9 machine operations for which an internal exposure  
10 bounding method would be necessary.

11 The next SC&A comment. 1958 to 1970  
12 air concentration data that NIOSH referred to are  
13 for DU and not thorium. NIOSH has provided no  
14 evidence that any of these air samples are related  
15 to the mag-thorium processing.

16 And the NIOSH response is mag-thorium  
17 machining ops began at Department 20, also known  
18 as Department 22 or the heavy machining area, in  
19 August 23 of '61, and were only performed in that  
20 department until September 21st of '70 when they  
21 were moved to the model shop, described previously  
22 in this report.

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1           This means the bulk of the available air  
2 monitoring data was obtained in the department  
3 where mag-thorium machining occurred and at the  
4 same time.     Although these six-footer air  
5 monitoring stations were established primarily for  
6 Kansas City principle machining activities, they  
7 would have been analyzed for gross alpha and can  
8 be used to bound thorium exposures.

9           And then I show there an example of some  
10 of the air monitoring results.   They were specific  
11 to say at which machine number the sample was taken  
12 and the types of instruments used.   I provided this  
13 to speak to the idea that it would have been gross  
14 alpha counting at that time.

15           So, moving onto the next comment from  
16 SC&A.   For the period of after '59, it's unclear  
17 whether the limit of 3 E minus 11 microcurie per  
18 milliliter includes thorium-228 and possibly other  
19 decay products of thorium-232.   The limit for  
20 thorium-232, based on the lung as the critical  
21 organ set in NBS 69, was 1 E minus 11 microcurie  
22 per milliliter.   And that was published in 1959.

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1                   Okay, our response. Title 10 CFR Part  
2                   20, Appendix B, dated January '57, with amendments  
3                   dated in '57, '59 and '61, define the occupational  
4                   maximum permissible concentration for air for  
5                   thorium-232 and natural thorium to be 3 E minus 11  
6                   microcuries per milliliter.

7                   The document states, in Section  
8                   20.5(c)(1), a curie of natural thorium, or  
9                   thorium-natural in Appendix B or C, means the sum  
10                  of 3.7 E to the 10th disintegrations per second from  
11                  thorium-232 plus 3.7 E to the 10th disintegrations  
12                  per second from thorium-228.

13                  That information substantiates the  
14                  basis for the 3 E minus 11 microcurie per milliliter  
15                  MPC air limit and makes it clear that thorium-228  
16                  was included in the limit.

17                  NIOSH believes it is clear, from  
18                  reading from safety practice as it was conducted  
19                  in the '60s, that the MPC air value would have been  
20                  interpreted as a gross alpha limit.

21                  Applications of alpha spec to routine  
22                  air sample counting is seldom seen, even now, in

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1 a comprehensive, well-run radiological control  
2 program and it would not have been routinely used  
3 in the '60s.

4 Notice that we have propose to use the  
5 constant  $3 \text{ E minus } 11$  microcurie per milliliter  
6 limit and not the lower value of  $1.1 \text{ E minus } 11$   
7 microcurie per milliliter, which is equivalent to  
8 0.1 milligrams of thorium, like we described  
9 earlier.

10 So, consequently, discussion about how  
11 to covert these airborne concentrations to  
12 airborne mass concentrations is not pertinent to  
13 the bounding dose reconstruction method proposed  
14 by NIOSH.

15 "NIOSH has not provided any air  
16 monitoring data for the '71 to '79 period." That's  
17 the second mag-thorium machining campaign I just  
18 described. And that's right, we have not found  
19 additional air monitoring data for that time  
20 period.

21 They did the negative exposure  
22 assessment at the beginning of the second campaign.

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1 It's the one where it's described in the ER where  
2 they went to each work station in the model shop,  
3 performed some breathing zone sampling, and showed  
4 that they didn't think there was an exposure  
5 potential for all the wet machining and machining  
6 with the ventilation in place. And we're going to  
7 talk about that one a little bit; it's its own  
8 separate issue coming up.

9 So there's that air sample data. And  
10 after that we don't see any routine air monitoring  
11 of the machine ops. So we tried to build a model.  
12 We built a model here, in the absence of that data,  
13 that considered data from their surface  
14 contamination monitoring program as an indication  
15 of their workplace conditions.

16 We modeled the surface contamination  
17 that would have been created from the natural  
18 settling of air concentrations at Kansas City  
19 Plant's prescribed limit and compared the result  
20 to the actual surface contamination data.

21 We took that 3E minus 11 control limit  
22 and assumed a 7.5E minus 4 meters per second

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1 settling rate for 30 days and derived 1,295 dpm per  
2 100 centimeter squared surface contamination  
3 level.

4 By comparison, routine survey records  
5 show the average measured level recorded for  
6 Department 20 general area from 1962 to '69 to be  
7 892 dpm per 100 centimeter squared. And there's  
8 no indication that Kansas City's control of work  
9 or in-plant environmental working condition  
10 degraded in the years after the cessation air  
11 monitoring.

12 And that leaves us confident that  
13 exposures remain bounded with the use of the 3E  
14 minus 11 microcurie per milliliter limit specified  
15 in the ER.

16 All right, next comment. SC&A's next  
17 comment, Number 5. "NIOSH refers to one thorium  
18 machining air concentration test. The test is  
19 inadequate to determine the value that should be  
20 used, even for the year of the test, much less for  
21 any other year."

22 Now, this is that air sampling that

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1 occurred that I described as the negative exposure  
2 assessment at the beginning of the second campaign  
3 where they went to each work station. And I guess  
4 I'll talk about that more here.

5 As discussed previously in the paper,  
6 mag-thorium operations related to Kansas City  
7 Plant's second machining campaign would not have  
8 commenced in the model shop until after receiving  
9 approval from the health services department in  
10 September of '70. From September 18 to October 10,  
11 1970, Mr. Triplett performed a negative exposure  
12 assessment for the industrial hygiene and health  
13 physics department. And the following  
14 information was included in the report of that  
15 assessment.

16 Breathing zone samples were taken with  
17 the Unico 11 portable air sampler. Air flow for  
18 the samples were -- I give all the information about  
19 how the samples were done. And we're basically in  
20 agreement with what SC&A has said in their comment  
21 about the ability of the air monitoring to be  
22 conclusive.

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1           And I'll skip to the next paragraph  
2 there. SC&A concludes from this information, and  
3 NIOSH agrees, that the sensitivity of this test was  
4 not high. SC&A calculated the capability of KCP's  
5 analysis method using worst case background of  
6 three counts per minute and determined thorium-232  
7 plus thorium-228 concentration of 6E minus 11  
8 microcuries per milliliter.

9           NIOSH also agrees that it's evident  
10 from the one hour counts that a considerable amount  
11 of short-lived activity was present in the air.  
12 However, NIOSH accounts for that activity in the  
13 ER by including an additional thorium bounding  
14 model for each employee who performed the work.

15           NIOSH believes that the assessment  
16 Kansas City performed from September 18 to October  
17 10, 1970, prior to their second campaign, is useful  
18 as additional data to support our bounding method,  
19 as well as confirmation of Kansas City Plant's good  
20 work practices.

21           The next issue, Number 6, the issue of  
22 doses from progeny of thorium needs to be

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1 addressed. That's in the SC&A paper.

2 And our response, there's no  
3 indications that chemical separations of thorium  
4 were performed in the Kansas City Plant. And the  
5 radioactive equilibrium between thorium-232 and  
6 228 and their progenies could not have been changed  
7 by the mechanical processes performed at Kansas  
8 City.

9 Due to the long half-life of  
10 thorium-232 and relatively short half-life of  
11 thorium-238, essentially all the mass of the  
12 airborne thorium would have been associated with  
13 thorium-232.

14 Mag-thorium stock material  
15 fabrication, which was done at one of the Dow  
16 Chemical facilities, involved chemical  
17 purification and heating previously refined  
18 thorium-containing materials.

19 Information presented in the August  
20 2007 document produced by SC&A. That's this on  
21 here that we talked about earlier. That's the one  
22 titled "A Focused Review of Operations and Thorium

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1 Exposures at the Dow Chemical Company -- Madison  
2 Plant" shows that mag-thorium material was a new  
3 product in '57. It also shows that the thorium was  
4 procured from a Canadian vendor as pellets, ores  
5 and master alloy which contained a reactively high  
6 concentration of thorium.

7 It's likely that thorium or milling and  
8 other chemical purification processes occurred  
9 prior to metal pellet or master alloy fabrication.  
10 So it's likely that the thorium would have been  
11 triple separated over the course of several years  
12 prior to use at Kansas City.

13 We can use this information to  
14 reasonably bound the degree of this disequilibrium  
15 that would have been associated with material that  
16 was mechanically fabricated in Kansas City.

17 OTIB-76 is a document entitled,  
18 "Guiding Reconstruction of Intakes of Thorium  
19 Resulting from Nuclear Weapons Programs,"  
20 addressed the similar situation involving triple  
21 separated thorium at Fernald. Triple separated  
22 thorium subject to pessimistically chosen

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1 intervals between chemical purification results in  
2 thorium-238 to thorium-232 activity ratio of 0.19.

3 Radium-242, an alpha emitter decay  
4 product of thorium-228, would also exist in the  
5 activity ratio of 0.19. The beta emitters in the  
6 decay chain, radium-228 and actinium-228, would  
7 also be present in the aerosol at an activity ratio  
8 of 0.19.

9 By minimizing the ratio of thorium-228  
10 to thorium-232, the assumed isotopic mixtures  
11 weighted in favor of 232 thorium. And that is a  
12 claimant-favorable assumption because the dose  
13 conversion factors are higher for thorium-232.

14 This information can be used to  
15 interpret a gross alpha air sample taken in a  
16 thorium fabrication area. In keeping with typical  
17 air sample counting protocol, we assume that the  
18 air sample had been stored for a nominal four days  
19 prior to counting to allow short-lived progeny to  
20 decay.

21 Assuming 100 becquerels was detected in  
22 the gross alpha sample, 73 becquerels would have

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1       been associated with thorium-232, 14 becquerels  
2       would be from thorium-228, 14 would be from  
3       radium-224. And we rounded those numbers.

4               The selection of intake method, most  
5       likely inhalation, and material type, slabs of  
6       Class F, M or S, is left to the dose reconstructor  
7       to determine based on a counting scenario for the  
8       affected organ.

9               Okay, comment number 7 from SC&A.  
10       NIOSH needs to determine the various alloy  
11       compositions that were machined and whether  
12       variations of thorium content may have made a  
13       difference in particulate generation during the  
14       machining.

15               There were two alloys machined at  
16       Kansas City: HK31 and HM21. We talked about what  
17       those nomenclatures mean at the beginning of this  
18       paper. Various Kansas City Plant letters and  
19       reports over time have referenced a thorium  
20       concentration range for the mag-thorium alloys  
21       processed at Kansas City. The range is explained  
22       by the specification of nominal values in the

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1 casting of the alloys and the need of some  
2 organizations to specify maximum values of the  
3 concentration.

4 While the fact remains that the only  
5 alloys machined at Kansas City were HK31 and HM21,  
6 with nominal thorium concentrations of three and  
7 two percent, respectively. Alternately, the  
8 thorium content of the machined alloy does not  
9 affect the bounding method due to the method's  
10 dependence on gross alpha air monitoring.

11 Therefore, if an employee machined  
12 mag-thorium with a higher thorium content, the  
13 limit maybe reached sooner, but it would not have  
14 effect the limit enforced.

15 Additional evidence that variation of  
16 thorium content makes no differences in  
17 particulate generation during machining was  
18 demonstrated in the Dow studies described earlier  
19 in the paper where we talked about them machining  
20 three, four and six percent and melting ten percent  
21 thorium. At the start of the work from Dow. And  
22 that's the end of that paper.

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1 CHAIR BEACH: Great. I think because  
2 of the lateness of that paper coming to the Work  
3 Group, and with all the Work Group papers this  
4 meeting, we're going to have just that conversation  
5 and then we'll expect White Papers from SC&A at  
6 post-meeting.

7 MR. McCLOSKEY: It was ambitious with  
8 our October visit to Kansas City.

9 CHAIR BEACH: Yes. Yes, it was. So  
10 I'll go ahead -- if there's any questions for NIOSH  
11 from the Work Group Members? If not, then Joe --

12 MR. FITZGERALD: Yeah, thank you for  
13 that. And I think, as Pat mentioned earlier, our  
14 concerns very early on, you know, you had a  
15 mag-thorium source term for which the thorium was  
16 a very, very small component. And there wasn't any  
17 routine monitoring, but there was good recognition  
18 by the site that they were dealing with something  
19 that was slightly radioactive. So there were, you  
20 know, certainly guidelines and precautions and all  
21 that.

22 Most of our concern, and we listed this,

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1 I think, in the very early Site Profile, and then  
2 later in our review of the evaluation, is simply  
3 to look to at the bounding methods in terms of  
4 aligning, because we don't have the routine data,  
5 aligning the locations with the times with, you  
6 know, what we know as far as characterizing the  
7 material. You know, looking at what samples do  
8 exist and just validating that from a timeframe,  
9 location, all of that kind of marries up. Because,  
10 again, I think, you know, there's an approach that  
11 can be taken. But all that really has to be  
12 validated and be aligned.

13 I think the information that's been  
14 collected has focused this much better than it was  
15 a year ago. I think there's even new information  
16 and revelations in terms of the start date. I  
17 mean, stuff like that has gotten better. So it's  
18 made it easier for us to look at that.

19 Most of our comments -- and I'm going  
20 to give it to our authors. I mean, Joyce, John and  
21 Arjun really wrote the last White Paper. So  
22 certainly they're going to want to talk about the

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1 details. But most of our comments go into this so  
2 called alignment. Just looking at those dates,  
3 looking at, you know, the sources we're talking  
4 about. And then looking at the bounding technique  
5 that's being proposed and just seeing if that all  
6 aligns and makes sense to us, that we understand  
7 it.

8 So some of our questions are, can we  
9 understand how this all works and put us in a  
10 position of being able to tell the Work Group  
11 whether we're comfortable that all this, you know,  
12 in terms of the different phases, different  
13 locations and operations, all works.

14 With that, and with the time  
15 limitation, who wants to start off on the issues?  
16 Joyce or Arjun, John? I guess Joyce has probably  
17 spent the most time.

18 MR. KATZ: And just before Joyce starts  
19 let me just note for the record, Dr. Lockey joined  
20 us at the outset of really the presentation. And  
21 he does not have a conflict for the site.

22 And let me just check in and see, do we

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1 have Dr. Poston on the line yet? Okay. Anyway,  
2 carry on, Joyce. Thanks.

3 DR. MAKHIJANI: This is Arjun, just  
4 briefly before Joyce starts. Let me just say that,  
5 you know, I defer to Joyce on this because she's  
6 been looking in this in more detail recently.

7 CHAIR BEACH: Thanks, Arjun.

8 DR. LIPSZTEIN: Okay, most of our  
9 doubts, as Joe was saying, was looking at the data  
10 and seeing what there is really from the  
11 information that were collected.

12 We now know that the operation started  
13 in August '61. So we don't have to comment  
14 anything before that.

15 And from August '61 until March '63,  
16 NIOSH is applying a limit of the limit for thorium,  
17 which we accept without any further problem.

18 Then we have doubts after '63. Because  
19 there is some information on the paper that NIOSH  
20 gave us that from '63 to '97 there is no information  
21 on magnesium-thorium machining. So the same limit  
22 would be applied from '63 thereon. And the limit

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1 was followed using some air samples and surface  
2 samples from DU.

3 From '63 to '66, there are air samples  
4 in Department 20D, which was the old 22, so there  
5 are air samples and some surface samples taken from  
6 '63 to '66 on Department 20D. If Mg-thorium  
7 machining took place at that time and in that  
8 department, 20D, it's okay to apply the limit.

9 Our problem starts on '66. Because on  
10 '66 the DU machining went down and Department 20D  
11 was cleaned. So there is information that the  
12 Department 20D was cleaned. There is information  
13 that, even in the NIOSH response to the matrix  
14 information, that Department 20D started being  
15 cleaned in '66.

16 There are some information talking  
17 about surface and floor monitoring done in '67, in  
18 which they say it was done in 20D, which was in  
19 process of modification to become an open area.

20 So the air samples and surface samples  
21 that were taken in 20D from '66 to '70, it seems  
22 to us that it was modified to be an open area that

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1 was cleaned. So air samples taken there cannot be  
2 used to prove that the limits were followed. So  
3 I think NIOSH has to find out where this  
4 magnesium-thorium machining took place between '66  
5 and 1970.

6 And then after 1970 the operation moved  
7 to another department. A model shop. So after  
8 '70 there is no data on the model shop. Also we  
9 found some documents that were said that the model  
10 shop in principle was considered not a radiation  
11 area even though the operations from thorium  
12 machining took place in the model shop.

13 And then there is no data at all after  
14 1971 until 1979. So with no data from '71 to '79,  
15 it's very difficult to accept that the limits were  
16 followed when the only air samplings and the  
17 surface contaminations were done in another  
18 department, which was not this one.

19 So that's a summary of our problems.

20 MR. FITZGERALD: I was going to say,  
21 after, you know, the 1966 to '70 timeframe that  
22 Joyce referenced, what we were trying to reconcile

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1 is the commentary that was in your response under  
2 D&D. Where you got in some detail about that  
3 timeframe where apparently the DU was ramping down.  
4 And a lot of the surface samples and what not were  
5 taken from that same period. So it's unclear, you  
6 know, if those samples would be representative if  
7 the DU was going away, so to speak.

8 And it's not clear how quickly it was  
9 going away. It was just indicated that they were  
10 cleaning it up, 20D was being D&D'd. So that  
11 seemed to be a bit of a contradiction and we  
12 couldn't quite reconcile that with what was in the  
13 White Paper.

14 I think the other thing that maybe gave  
15 us a little pause, too, was the correspondence that  
16 was in the SRDB that was collected back in October,  
17 which I wasn't aware of. But, you know, the model  
18 shop was an uncontrolled area. Not even a  
19 radiation zone at that time.

20 And some of the supervisors were  
21 concerned about the fact that they were going to  
22 start out doing the mag-thorium there because it

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1 was an unrestricted area, and were trying to get  
2 it moved back to 20D.

3 And I couldn't find -- you sort of  
4 looking for the later memos that said, okay, we  
5 either made it a restricted area and that's why we  
6 left it in the model shop. You know, it's a little  
7 bit uncertain to me exactly what the outcome was  
8 on that debate, because they were uncomfortable  
9 keeping it there.

10 So apparently the mag-thorium started  
11 in the model shop as an uncontrolled operation.  
12 Meaning that, you know, all workers had access to  
13 the area. They did rope off, I guess, the  
14 machinery, but the area itself was fully  
15 accessible, which is what I think was the concern  
16 of some of the managers, that that wasn't a good  
17 idea.

18 But I didn't see what happened. You  
19 know, did they make it restricted and then left it  
20 there? I would assume that might have been the  
21 case, but there was no paper on that.

22 They didn't move it back to 20D, that

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1 was for sure. So, anyway, that was one  
2 uncertainty.

3 MR. McCLOSKEY: I read that too, Joe.  
4 And my interpretation of that was that those  
5 managers were concerned that we were doing  
6 mag-thorium work in an area that was not a rad area  
7 when we had a rad area already established, and if  
8 there were problem here they'd be best if this were  
9 to occur in our established rad area.

10 I didn't interpret that that the model  
11 shop was ever not controlled or the general  
12 population had free access to it.

13 MR. FITZGERALD: It said unrestricted.  
14 I haven't seen anything else that could elaborate  
15 on that. There's one memorandum that said that  
16 part of the concern was that it was unrestricted.  
17 Which could be interpreted in different ways. I  
18 kind of thought, knowing the terminology, it  
19 sounded like you had more access than you would  
20 normally have if you would have been in 20D as a  
21 rad area.

22 But, you know, it could be something

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1 else. But I'm just throwing it out that I think  
2 that kind of opens up that question, which may be  
3 answerable if one could find a bit more  
4 documentation as to how they resolved that  
5 discussion, as it were.

6 But that gets to Joyce's original  
7 question, which is whether the sample information  
8 would be representative, given the circumstances  
9 of the model shop versus how the samples might have  
10 been taken in October of '70.

11 I think that was the question that she  
12 was posing for the post-'70. '71 to '79. Since  
13 that data comes from October of '70. I'm sorry,  
14 Joyce.

15 DR. LIPSZTEIN: No, that's exactly it.

16 MR. FITZGERALD: So kind of, in a  
17 sense, the early timeframes were fairly  
18 comfortable. I mean, I think there's  
19 characterization data. It's pretty clear the  
20 timeframes. In fact, the start date now is pretty  
21 crisp.

22 A little fuzzy on '63 to '66. Just

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1 mainly because, as you acknowledged, there isn't  
2 a lot of conformation exactly where mag-thorium  
3 stood in that timeframe. That was the question we  
4 posed to Pete, and you as well, by email last week,  
5 was we couldn't quite figure out what you were  
6 saying there. But it sounds like the operations  
7 were there, but it was unclear to what extent things  
8 went on. Except it looked, in '66, mag-thorium  
9 went down and eventually was moved.

10 But we don't really have an issue per  
11 se, either, I guess, in that timeframe. It's only  
12 after '66 where, you know, using surface  
13 contamination information, other validating  
14 information air samples, what have you, DU air  
15 samples, from that latter 1960s period when if, in  
16 fact, DU operations were tailing down as indicated  
17 in the D&D response --

18 MR. McCLOSKEY: The other point I'd  
19 like to add to that is keep in mind that the  
20 mag-thorium machining operations were small scale,  
21 so for documentation to not be available, I mean,  
22 that could be some explanation for that. I mean,

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1 it was just small piecemeal work.

2 The air sampling in the '60', we just  
3 used that as supplemental information to validate  
4 that they kept the mag-thorium machining ops in the  
5 box.

6 MR. FITZGERALD: And within --  
7 certainly well below the criteria that the --

8 MR. SHARFI: We're citing based off the  
9 limit, not --

10 MR. FITZGERALD: 3E to the minus 11.  
11 It was well below 3E to the minus 11. Right.

12 MR. McCLOSKEY: And we continued to use  
13 the 3E minus 11 as a bounding method, from '63, when  
14 the last point of good data on the ops occurring,  
15 up until the second campaign. Because we don't  
16 feel like we have a capital-letter D&D operations  
17 that occurred at the end of '63, the first campaign.

18 MR. FITZGERALD: Yeah, our questions  
19 sort of go to the supplemental information that  
20 says, okay, you know, we don't have a whole lot of  
21 documentations, you're pointing out, through the  
22 '60s. But we want to certainly support the 3E to

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1 the minus 11<sup>th</sup> value going forward. And, you know,  
2 that's why we're looking at surface contamination  
3 level, some air samples.

4 And what we're saying is, well, we're  
5 trying to, as I said earlier, align locations and  
6 dates. And we're having a little trouble after '66  
7 to '70 because, from the response in the D&D issue,  
8 that item, it says they were cleaning up 20D  
9 starting in that timeframe. And so any samples  
10 taken at that time wouldn't necessarily represent  
11 mag-thorium.

12 Although, again, as you're pointing  
13 out, we don't even know what level mag-thorium  
14 operations there were. So there's a lot of kind  
15 of fuzziness there. And we're just raising  
16 questions whether one can use those samples to  
17 supplement or support the criteria. Because it  
18 seems like there's a lot of moving parts going on  
19 as far as operations tailing down on DU in the  
20 '60's. And then, of course, relocation of the  
21 operations in the model shop, which happened in  
22 1970, late '70.

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1                   MR. DARNELL: It almost seems to me  
2                   though that you're asking a different question from  
3                   the way we're using the information. We're  
4                   basically showing in the information that there was  
5                   a robust safety program going on.

6                   They were looking, they were following  
7                   up, they were doing the things that they were  
8                   supposed to do for radiation safety. And when  
9                   we're using the limit with that information, saying  
10                  that, yeah, it gives us a good idea that the limit  
11                  would be the bounding case.

12                  The other thing you have to remember and  
13                  not get so hung up on restricted access versus  
14                  unrestricted access: the guys that were working on  
15                  that project had to have a specific medical  
16                  monitoring and other testing done before anybody  
17                  was allowed to work on that project.

18                  So you wouldn't have unrestricted  
19                  access to the workers doing the project. You would  
20                  have workers that were specifically set up to go  
21                  on that project. They may have some other workers  
22                  around the area. But you would not have them on

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1 the project itself.

2 MR. FITZGERALD: Yeah. Well, that's a  
3 secondary comment. I think the primary comment  
4 was whether the October '70 samples would be  
5 representative for the '71 to '79 timeframe. And  
6 I think we agree that that's kind of a reach.

7 But to go back, just to clarify, all  
8 we're saying is that we don't have, I don't think,  
9 a fundamental problem with the 3E minus 11<sup>th</sup>. But  
10 once you get past '63, we're trying to grab hold  
11 of something that gives us the kind of confidence  
12 that I think you were seeking when you're looking  
13 for supplemental information.

14 And if it's the gross alpha, all we're  
15 pointing out is it's unclear whether the operations  
16 weren't in fact going down in the latter part of  
17 that '60 timeframe and whether or not those samples  
18 would be very representative under those  
19 circumstances.

20 That's kind of the comment, and we've  
21 only had this for a week, but that's kind of the  
22 first thing that comes to our mind, saying, well,

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1 the response in the D&D item seems to be hard to  
2 reconcile with the reliance on those values on this  
3 response, because it just seems like if the  
4 operations were being cleaned up in 20D, then how  
5 representative are those gross alphas?

6 DR. NETON: This is Jim. I guess I'm  
7 finding a little bit more removed from this, but  
8 we don't know that any operations occurred from '66  
9 to '70, is that right?

10 MR. DARNELL: That's correct.

11 DR. NETON: So there's no indication --

12 MR. FITZGERALD: We don't know of any  
13 mag-thorium operations.

14 DR. NETON: -- any mag-thorium  
15 operations occurred between '66 and '70. So right  
16 now we're in a position of proving a negative, that  
17 they didn't occur?

18 MR. FITZGERALD: Well, I don't know.  
19 We need to know if there was mag-thorium.

20 MEMBER CLAWSON: This is Brad. That's  
21 a part of the problem. We have bits and pieces.  
22 And what my issue is, is you have a piece here and

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1 a piece here and you're saying that nothing will  
2 add on there because you can't find it. But we're  
3 seeing history and information about it. So --

4 DR. NETON: I hear you, Brad. I'm just  
5 trying to get it clear. I mean, so you're looking  
6 for some confirmation that the operations didn't  
7 occur, even though they were D&D'd in the area where  
8 they had occurred.

9 So they would have had to move somewhere  
10 else and not be monitored, then no indication of  
11 any documentation that they monitored that  
12 operation, even though they were pretty well  
13 established in monitoring it while it was occurring  
14 previously.

15 That just seems sort of a stretch to me.  
16 I'm not saying it didn't, but I hear what you're  
17 saying and --

18 MR. FITZGERALD: It's just -- you know,  
19 and I sent this comment to Pete last week because  
20 I think we were confused, you know, but we basically  
21 said, are we reading that there weren't any  
22 mag-thorium operations? I think you're response

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1 is we really don't know for sure. The  
2 documentation is so scanty.

3 DR. NETON: Right.

4 MR. FITZGERALD: But the gross alpha  
5 measurements that we have, you know, haven't  
6 changed markedly or wouldn't suggest it's above 3E  
7 to the minus 11<sup>th</sup>.

8 And then we were looking at the D&D and  
9 try to say, well, why would they? Because if  
10 nothing was happening in 20D then they wouldn't --

11 DR. NETON: Well, I agree with you.  
12 But then they would had to have move it somewhere  
13 else and had no --

14 MR. FITZGERALD: No, I understand.

15 DR. NETON: -- so you can't have it both  
16 ways.

17 MR. FITZGERALD: Well, no, we're just  
18 trying to figure out what exactly is the position.  
19 And I think position is we don't really know because  
20 there's not enough documentation to fill in that  
21 hole. And --

22 CHAIR BEACH: Well, what do we know?

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1 We know there was mag-thorium onsite, right? The  
2 inventory says it was there. And we knew they  
3 moved it to the model shop.

4 MR. FITZGERALD: In 1970.

5 CHAIR BEACH: 1970. But between the  
6 '66 and '70, that's where --

7 MR. FITZGERALD: We don't know.

8 DR. NETON: We're saying they're  
9 cleaning up the area where it occurred. It didn't  
10 move to the model shop. And so I have a point --  
11 your question is, Joyce said, where did the  
12 operation occur between '66 and '70?

13 CHAIR BEACH: Sure.

14 DR. NETON: And the possible answer is:  
15 it didn't.

16 CHAIR BEACH: Okay.

17 DR. NETON: And I think, you know, we  
18 understand what you're saying. You write up your  
19 White Paper, you know, we know what you're saying  
20 and we'll respond.

21 MR. DARNELL: But what I'm hearing --  
22 and I just want to make sure I get it right.

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1 Fundamentally you agree with the use of the limit  
2 as the bounding case for the entire period?

3 MR. FITZGERALD: Well, I'm saying we  
4 don't know. Between '66 and '70, who knows?  
5 We're just saying that the samples that were used  
6 as supplemental to say that it was well below, I'm  
7 having some trouble thinking that's your assurance  
8 because -- and I don't disagree. If there were  
9 mag-thorium operations and they were above that  
10 limit, you know, it's just that timeframe is just  
11 not characterized one way or the other. So I don't  
12 know what you can say about it.

13 MR. McCLOSKEY: It's not for the sake  
14 of us asking for information.

15 MR. FITZGERALD: No, no, no. I think  
16 we're point out the obvious. And your answer was  
17 confirming the obvious, that, no, we don't know.  
18 And we're saying, okay, then it seems like we have  
19 to take that value forward and feel confident from  
20 a programmatic standpoint that, you know,  
21 programmatically, it's unlikely that you would  
22 have a spike or something in that four or five year

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1       timeframe.

2                   But there's no way to objectively show,  
3       you know, by samples or anything on that.

4                   MR. DARNELL:   One thing to remember,  
5       though, is prior to that period you have a robust  
6       program that you can see the operations on.  After  
7       that period, you see the same thing with  
8       radiological operations and how industrial hygiene  
9       handled the safety.

10                  MR. FITZGERALD:  Programmatically.  I  
11       can feel comfortable programmatically.  I'm just  
12       trying to figure out if you just took the  
13       supplemental samples out, because, you know, for  
14       whatever reason, we don't know if they tie in or  
15       not.  And we don't know if mag-thorium stopped, I  
16       could programmatically say I can draw a line from  
17       here to there and be okay.

18                  But from sort of the data standpoint,  
19       right now it's difficult because there's just not  
20       any information.  That's all.

21                  MR. DARNELL:  We can go back and look  
22       for some more.

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1 MR. FITZGERALD: Yeah, I know.

2 MR. DARNELL: But I'm getting pretty  
3 fatalistic about looking again. KCP records, it's  
4 just so difficult to find anything.

5 MR. FITZGERALD: I one hundred percent  
6 agree with you having been there and experienced  
7 it. I just want the Work Group, I guess, to  
8 understand that our issue is not one where we have  
9 a positive finding of a problem. We just don't  
10 know and we can't sort of connect the dots on that  
11 time period. That's all.

12 MR. DARNELL: Okay.

13 MR. FITZGERALD: And I don't think  
14 there's a disagreement, it's just that that seems  
15 to be the case. You almost have to take or  
16 interpolate from what happened before to what  
17 happened after and say it's unlikely that it would  
18 have been one exceeding that criterion.

19 But the change of operations on the DU  
20 side, that would have effected the gross alpha  
21 measurements. And everything else would have had  
22 some --

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1 DR. NETON: I agree with you. If the  
2 operations didn't occurred in 20, using the air  
3 samples there, is not a good indication that they  
4 kept the procedures going.

5 But then if it didn't happen in the  
6 model shop either, so now we're going to have to  
7 find some place where they could have occurred in  
8 the building. Maybe it's a process of  
9 elimination. Where else would they have been? I  
10 mean, where else could they have processed  
11 mag-thorium in the Kansas City Plant besides these  
12 two places? And if they didn't, then there's no  
13 --

14 MR. FITZGERALD: And the NMMSS doesn't  
15 help us because I think that didn't begin until '70  
16 or '71. So it doesn't help in the '60's as far as  
17 inventory.

18 DR. NETON: Well, I'm not talking about  
19 inventory. I mean, there could have been an  
20 inventory but it just sat there.

21 MR. FITZGERALD: Yeah.

22 DR. NETON: What I'm saying is if it

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1 didn't happen in 20, it didn't happen in the model  
2 shop, where could it have?

3 MR. FITZGERALD: Right. And I think,  
4 you know, one could rely on programmatic, but I  
5 think before you get that far you might want to see  
6 if there's any -- and I don't disagree, it's a  
7 challenge -- see if there's any information that  
8 would give you some assurance in that timeframe.  
9 That's all.

10 DR. NETON: I think I hear you. We'll  
11 --

12 DR. MAURO: This is John. I know most  
13 of your discussion goes to mapping and location and  
14 concentrations. And there seems to be a degree of  
15 comfort with the 3E to the minus 11.

16 But I want to go back to that shortly,  
17 if it's okay, because I have to say, when I quickly  
18 read through the White Paper, I stumbled a little  
19 bit. And if you could help me out with this, that  
20 would be helpful.

21 The number, the 3E to the minus 11,  
22 that's your gross alpha count. And then you have

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1 a 0.1 milligram per cubic meter. And then you have  
2 this number, this 0.19 ratio between thorium-228  
3 and thorium-232.

4 Now, bear with me for a minute. When  
5 I look at the decay chain, I see that -- you know,  
6 I'm visualizing someone is doing the separation of  
7 thorium, you know, getting pure thorium, triple  
8 separation.

9 Which tells me -- and you tell me if I'm  
10 wrong, please -- that that means you're going to  
11 have equal amounts of thorium-232 and thorium-228.  
12 Both of which are pure alphas. The thorium-228 has  
13 a 1.9 year half-life. So here I am confronted with  
14 what I believe would be, if you take the gross  
15 alpha, you could argue that, well, you know, it's  
16 coming both from those two radionuclides.

17 But then the thorium-228 has a string  
18 of short-lived progeny, several of which have  
19 alphas. So in a funny sort of way, when you look  
20 at a gross alpha count, I say to myself, well,  
21 you're probably -- and the gross alpha count is from  
22 this triple-separated thorium that then machined,

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1 and you're counting that, it seems to that you're  
2 counting all the alphas, which are one, two, three,  
3 four, five, six, seven alphas that are coming.  
4 Because they're all going to be there.

5 If you have separated thorium and, you  
6 know, have equals amounts of inactivity of  
7 thorium-228 and thorium-232. And then I hear the  
8 0.19 number. Why would there be a 0.19 on initial  
9 purification?

10 I could see at some time the thorium-228  
11 is going to decay away before it starts to grow in  
12 again. And I have to say, maybe I'm showing  
13 naivete in my knowledge of health physics, but  
14 there's something about the whole description of  
15 this that just left me uncomfortable. Can anyone  
16 help me out?

17 DR. LIPSZTEIN: John, I don't know --  
18 this was just a way to do a claimant-favorable dose  
19 calculation. That's what NIOSH says. And  
20 actually I think this was a response to us asking  
21 about the progeny of thorium that needs to be  
22 addressed. And the response was that NIOSH would

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1 use this 0.19 in order to be claimant-favorable  
2 when calculating the doses.

3 Actually, we have some problems with  
4 this because not for all organs the dose conversion  
5 factors for thorium-232 is higher than the dose  
6 conversion factors for thorium-228. But I think  
7 this is more -- it's not an SEC problem, it's  
8 something we have to discuss.

9 And if NIOSH wants to be  
10 claimant-favorable, they could choose which ratio  
11 is more claimant-favorable for the organ of the  
12 cancer type.

13 For example, the thorium-232 is a  
14 factor lower than the dose conversions factor for  
15 thorium-238. But the counter is for bone surface.

16 DR. MAURO: Excellent. You know, you  
17 brought me right where I wanted to go. So you're  
18 being conservative by disregarding the alphas from  
19 the short-lived progeny. And basically  
20 attributing all the alphas to some mix of 232 and  
21 228. And I agree with that. That's  
22 claimant-favorable.

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1 DR. NETON: Right, John. This came  
2 out -- and I wasn't involved, because I'm  
3 conflicted. But I know at the Fernald this triple  
4 separated thing came out as an issue. Actually,  
5 triple separated is a TIB now on this whole thing.

6 And, you know, it's the most  
7 claimant-favorable approach, as Joyce was saying,  
8 for most organs. Except maybe the lung where if  
9 you had a lot -- it wouldn't be any more than 100  
10 percent equilibrium, but you would have a higher  
11 dose to the lung. But I think for a systemic organs  
12 the triple separate gives you the highest organ  
13 dose.

14 DR. MAURO: Okay. But -- no, good.  
15 Now, the only, I guess, circumstance, the 0.19  
16 sounds to me that it would be claimant-favorable  
17 for lung.

18 DR. NETON: No.

19 DR. MAURO: No?

20 DR. NETON: No, I think, if you look at  
21 it, if you have a lot more thorium-228 activity --

22 DR. MAURO: Yeah, I'm not sure which is

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1 the limiting organ.

2 DR. NETON: Yeah, we can look at that.  
3 Like Joyce says, it's calculable depending on the  
4 exposure scenario.

5 DR. MAURO: Good.

6 DR. NETON: But I don't think a one  
7 hundred percent triple separated will give you the  
8 highest dose to all organs. She's right.

9 DR. MAURO: Okay. I completely agree  
10 that this is not an SEC issue. It's just how are  
11 we going to deal with the data for different  
12 cancers.

13 DR. NETON: It's interpretation.  
14 Right.

15 DR. MAURO: And what I'm hearing is  
16 you're going to use the assumption regarding what  
17 does that gross alpha mean in a way that will  
18 maximize the dose for that claimant, depending on  
19 the cancer he's dealing with.

20 CHAIR BEACH: Hey, John, can I cut in  
21 here?

22 DR. MAURO: Sure.

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1 CHAIR BEACH: Can you do this, I mean,  
2 I know it's important, but maybe offline? We've  
3 just got a limited time here with the Work Group.

4 DR. MAURO: Sure, no. I just wanted to  
5 bring this on the table. We'll resolve this later.

6 CHAIR BEACH: Sure.

7 DR. MAURO: When we write up our  
8 material.

9 CHAIR BEACH: Okay.

10 DR. NETON: Yeah, we'll look at your  
11 write-up when it comes out and respond to that.

12 CHAIR BEACH: So are there any  
13 questions? Loretta, Work Group Members,  
14 questions for NIOSH or SC&A at this point?

15 MEMBER CLAWSON: How many -- I'm having  
16 a hard time understanding how many actual samples  
17 we have to be able to tie this period together. I  
18 just know --

19 CHAIR BEACH: Are you talking the early  
20 period or the whole?

21 MEMBER CLAWSON: The whole period.  
22 Over the whole period, how many samples do we

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1 actually have?

2 MR. McCLOSKEY: Air samples?

3 MEMBER CLAWSON: Yeah. Of all this.  
4 Because I'm just looking at a few that I've been  
5 able to find and I'm just trying to understand how  
6 we're bridging this gap there. I know that we've  
7 got a big blank spot in the middle, but how are we  
8 getting from one end to the other?

9 MR. McCLOSKEY: The ER talks about air  
10 monitoring that occurred in heavy machining area,  
11 Department 20. And so this is our fixed filter air  
12 sampling that would have been at all these stations  
13 around that area. And that goes from 1958 to 1971.

14 MEMBER CLAWSON: Okay. How many  
15 samples would have there have been? How many total  
16 do you think there is?

17 MR. McCLOSKEY: Oh boy, there are  
18 hundreds.

19 MEMBER CLAWSON: Hundreds of them?

20 MR. McCLOSKEY: Yes.

21 MR. FITZGERALD: Using gross alpha.

22 MEMBER CLAWSON: Using gross alpha,

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1       okay.

2                   MR. McCLOSKEY:   So what you should be  
3       hearing there is the first mag-thorium machining  
4       campaign starts '61.   Our first routine general  
5       air monitoring starts in '58 in that area where  
6       they're machining.   Okay.   So there are arms  
7       around that machining work with air monitoring.

8                   Okay, and so we talked about this D&D  
9       that occurred in, don't quote me, I think we're  
10      using the year '66, when the DU didn't completely  
11      disappear, they were down to just a few pieces that  
12      they were working on.   And the air monitoring  
13      continue in that area up until '71.

14                  And so we wouldn't expect the  
15      mag-thorium machining work, after we've seen the  
16      documentation of it from the first campaign, to  
17      have gotten larger, right?   And then when we get  
18      to 1970, the mag-thorium machining ops move to the  
19      model shop.

20                  Just have the one air sample done as a  
21      negative exposure assessment at the beginning of  
22      that op with breathing zone monitoring in each work

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1 station. And that's it. If that answers your  
2 question for air sampling.

3 MEMBER CLAWSON: Okay, yeah. It does.  
4 Okay, I'm good right now.

5 CHAIR BEACH: Any other Work Group  
6 Members' questions? Maurice, do you have any  
7 questions or comments?

8 MR. COPELAND: Yes.

9 CHAIR BEACH: On this issue?

10 MR. COPELAND: Yes.

11 CHAIR BEACH: Okay.

12 MR. COPELAND: With all of what you're  
13 doing, where is the medical monitoring running in  
14 tandem with your air sampling and all? You know,  
15 we took physicals at that plant.

16 Not only did we take physicals, we had  
17 people that were going out on disability retirement  
18 for respiratory problems and stuff like that.  
19 Where was the medical monitoring going along --  
20 where's the medical monitoring of the personnel  
21 going along with all of this?

22 They have physicals there in the plant

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1 and we also have disability retirements of  
2 managerial personnel and the workers. So since  
3 we're concerned with the exposure rate, where is  
4 the data on the physical, the actual physical  
5 exposure rate of the people and the illness that  
6 they're coming down with and suffering from?

7 MR. DARNELL: We don't actually look at  
8 occupational illnesses, so we have to set that part  
9 aside.

10 MR. COPELAND: You're saying you don't  
11 actually?

12 MR. DARNELL: We don't actually look at  
13 occupational illnesses. We only look at the  
14 radiation-related things. So we have to set that  
15 part of your question aside.

16 But to answer your question for the  
17 radiation aspects and for medical monitoring, on  
18 our last trip to the Kansas City Plant we went into,  
19 oh, hundreds of medical records for individual  
20 workers to look specifically for the data that  
21 you're asking about.

22 And that is where it's located. It's

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1 within the employees' medical records, is where  
2 that is located.

3 MR. COPELAND: Right. So all of that is  
4 going into your -- I don't hear it though, I don't  
5 hear it here, but, okay, another thing.

6 MR. DARNELL: So are you asking are we  
7 using that in our dose reconstruction?

8 MR. COPELAND: Yes.

9 MR. DARNELL: We use exposure data from  
10 that in our dose reconstructions.

11 MR. COPELAND: And the illnesses that  
12 --

13 MR. DARNELL: Illnesses don't -- we  
14 cannot make any relationship between the different  
15 illnesses the worker got and the radiation  
16 exposure.

17 MR. COPELAND: So the illness --

18 MR. DARNELL: All we can look at is the  
19 radiation exposure.

20 MR. COPELAND: Okay.

21 MR. DARNELL: And we use that data.

22 MR. COPELAND: The illnesses related

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1 to the elements aren't counted?

2 MR. SHARFI: There's a Part B that just  
3 deals with cancer induced from radiation, a Part  
4 E that's illness related to occupational exposure.

5 MR. COPELAND: Right.

6 MR. SHARFI: This is specific just to  
7 the Part B of the cancers related to radiation  
8 exposure. So we're not -- this part itself is not  
9 covering the decision making on illness related  
10 exposures to general exposure. That would be  
11 covered under Part E. Is that what you're asking?

12 MR. DARNELL: If you're asking about  
13 chemical toxicity of the materials, that would be  
14 covered under the Part E of the program.

15 MR. COPELAND: I know that I don't know  
16 much about this, but the elements that you're  
17 dealing with are radioactive, right?

18 MR. DARNELL: Yes.

19 MR. COPELAND: And there are certain  
20 illnesses that come from exposures to these things.

21 CHAIR BEACH: Yes.

22 MR. COPELAND: And that deals with the

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1 SEC, right?

2 CHAIR BEACH: Yes. Some of the  
3 questions you're asking will be covered in other  
4 items on our agenda.

5 MR. COPELAND: Okay.

6 CHAIR BEACH: So we will get into some  
7 of those topics on how they correlate.

8 MR. COPELAND: Okay. And the  
9 operations done, an operation that you're talking,  
10 the thorium operation, the mag-thorium operations,  
11 the engineering process, it seems like you can't  
12 find certain things?

13 Certain things are done -- what we do  
14 is we work by engineering process controls. It  
15 should be found in the engineering process control.  
16 It seems like what's missing here is information  
17 that you can get directly from the engineers that  
18 worked in the plant. Like the period of time the  
19 certain thorium operations were done that seem to  
20 be missing here.

21 We still got those engineers walking  
22 around out here that they should be able to direct

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1 you to their engineering process controls and the  
2 work that was actually being done.

3 MR. McCLOSKEY: Is that the title of a  
4 document? Would I find a document that says,  
5 "engineering process controls?"

6 MR. COPELAND: Right.

7 MR. McCLOSKEY: Okay.

8 CHAIR BEACH: See, through the  
9 interview process that's what we were looking for.  
10 We didn't find any specifics for that time period  
11 through our interviews. And when we go to look for  
12 documents, it's -- we've been there, what, three  
13 times now looking for documents. And it's  
14 difficult.

15 MR. COPELAND: Some of those engineers  
16 are still around. I gave you all names. I've been  
17 giving you all names for years.

18 CHAIR BEACH: Yes.

19 MR. COPELAND: And it don't seem like  
20 we're interviewing those people, because you could  
21 get that.

22 CHAIR BEACH: We are trying to. Okay?

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1 We're not done by any means. Anything else on this  
2 topic, mag-thorium, that you have?

3 MR. COPELAND: Yeah, I have one. The  
4 operations of sanding and grinding these  
5 materials. Also the protection of the personnel  
6 doing it. Those engineering process controls, the  
7 PPE, how you protect the people, the exposure rates  
8 and what we wore, what was specifically done to  
9 protect the people.

10 And this has to do with the exposure  
11 rate. What did we do? What uniforms did we wear?  
12 Did we wear plastic suits, did we -- you know, I  
13 don't hear any of that. So, you know, that's all.  
14 I just wanted to throw that out so that everyone  
15 could hear.

16 MR. McCLOSKEY: We have copies of the  
17 prescribed PPE and the controls used for the  
18 mag-thorium machining. We have five or six  
19 iterations of those controls, revisions of them.  
20 They first started with the Dow safety bulletin.  
21 They incorporated largely all of these sorts of  
22 controls that I spoke about earlier.

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1 MR. COPELAND: Yeah.

2 MR. McCLOSKEY: The first revision of  
3 them would use these. And they even reference them  
4 in the back of their controls.

5 And those controls specify  
6 contamination limits on materials that have to not  
7 be exceeded and airborne limits. That's where we  
8 got our 3E minus 11 control limit from.

9 So we have copies of those. I'm glad  
10 to show you some that I have during the next break.

11 MR. COPELAND: And that would be in  
12 also the engineering process controls because  
13 that's the way we work, step by step. We do not  
14 deviate. You use a blue eraser, use a blue eraser.  
15 It tells you step by step. Put your gloves on first  
16 before you do this.

17 MR. McCLOSKEY: Good.

18 MR. COPELAND: I want to see that.  
19 Because I did it. And it wasn't done. Okay.

20 MR. DARNELL: That's actually a very  
21 good question, but I think these discussions we're  
22 kind of one step above that. We're not looking at

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1 that, we're looking at, worst case, what the doses  
2 would be and what the highest boundary of that dose  
3 would be. So we actually don't take protective  
4 clothing into account.

5 MR. SHARFI: We're assuming your  
6 protective clothing fails.

7 MR. COPELAND: I'm sorry?

8 MR. SHARFI: We're assuming the  
9 protective nature fails and that you got a full  
10 exposure from the loss of the PPE.

11 MR. DARNELL: Right.

12 CHAIR BEACH: A lot of that's in the  
13 background documents where you'll read it and it'll  
14 say they were wearing plastic suits, eye glasses.

15 MR. COPELAND: That's written by the  
16 engineers?

17 CHAIR BEACH: Yes. But it's --

18 MR. COPELAND: I want to see that.

19 CHAIR BEACH: But they're saying you  
20 didn't have anything on and this is what you're dose  
21 was.

22 MR. DARNELL: It doesn't matter what

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1 the engineers said. If they told you you had to  
2 wear a plastic suit with an airline respiratory and  
3 the whole bit, that was for your safety then. We  
4 assume that you didn't wear any of it. You walked  
5 right up and took a straw and went, sniff. That's  
6 what we assume.

7 MR. COPELAND: Okay.

8 MR. DARNELL: The absolute worst case.  
9 So all that other stuff that you're worrying about  
10 doesn't really matter.

11 CHAIR BEACH: Exactly.

12 MR. DARNELL: Because we're not using  
13 it anyways.

14 MR. COPELAND: Okay.

15 MR. DARNELL: We described it in our  
16 documents, but we don't use it.

17 CHAIR BEACH: Okay, so let's wrap up  
18 and talk about actions. What I have is SC&A's  
19 action is to write their concern or their issues  
20 into a White Paper for the Work Group.

21 And also continue to look for  
22 operations during that 1966-1970 timeframe.

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1 That's an ongoing for NIOSH action. I'm assuming  
2 we're not finished with that.

3 MR. DARNELL: No.

4 CHAIR BEACH: Anything else on actions  
5 for this 13, mag-thorium?

6 MEMBER LOCKEY: What was going to be  
7 for after '70? Is there any action after '70?

8 CHAIR BEACH: No, I believe that SC&A  
9 --

10 DR. NETON: Well, SC&A's going to  
11 comment on that in their report, their White Paper.

12 MR. FITZGERALD: We'll include that.  
13 But I think our comment is -- and I'm not sure  
14 there's a big disagreement. We have the one  
15 October '70 negative exposure assessment. That  
16 one set of samples, breathing zone samples. And  
17 we're questioning how that can be applied to the  
18 model shop given, you know, the change in location  
19 and the admitted inaccuracies involved with that  
20 particular test.

21 That's always been kind of a standing  
22 question we've had, which is you got one sampling

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1 and you don't have any more sampling after that.

2 MEMBER LOCKEY: I understand that, so

3 --

4 MR. FITZGERALD: So we're questioning  
5 whether that can be applied.

6 MEMBER LOCKEY: Well, I understand the  
7 question. How is NIOSH going to --

8 DR. NETON: We can't react to it until  
9 I see it in writing.

10 MEMBER LOCKEY: I'm sorry?

11 DR. NETON: I'd like to see the report  
12 and see exactly, you know, how they did couch it.  
13 I mean, we're not going to --

14 MEMBER LOCKEY: If there's just one  
15 sampling data, are you going to go back and look  
16 for additional data or --

17 DR. NETON: No, no. We'll respond to  
18 the White Paper when it comes out.

19 MEMBER LOCKEY: I'm just curious --

20 MR. FITZGERALD: I thought the White  
21 Paper we've got actually came up with several more  
22 information we had before.

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1 DR. NETON: The fact is that there are  
2 a lot of other engineer -- there's a lot of  
3 engineering documents out there that show it's very  
4 hard to get large concentrations of airborne  
5 thorium when 98 percent of the material's inert.  
6 It's magnesium. So you generate some very large  
7 dust clouds before you get to the point where you  
8 start seeing 3 times E to the minus 11.

9 It's that sort of common sense approach  
10 that you got to start going back to when you start  
11 saying, you have a negative exposure assessment,  
12 they're not seeing anything, they did all this  
13 stuff. There's studies done by Dow back in the  
14 '50's that shows if you grind it, you weld it, you  
15 do all this stuff, there's not much in the air.

16 Like I said, if you have 98 percent of  
17 a material is inert material, only two percent is  
18 radioactive. It gives you some cushion.

19 MEMBER LOCKEY: The dust is going to be  
20 huge.

21 DR. NETON: You get huge doses.

22 CHAIR BEACH: So they'll include '70 to

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1 '79 in their White Paper for --

2 DR. NETON: Yes. That would be our  
3 kind of response.

4 CHAIR BEACH: Okay.

5 MEMBER LOCKEY: I just wanted to know  
6 what you're going through.

7 MR. FITZGERALD: Yeah, I think, you  
8 know, based on this dialogue, clearly there's the  
9 two timeframes that we'll comment on. I think  
10 we're okay with the early timeframes and we're okay  
11 with the thorium progeny.

12 So we're trying to narrow this thing  
13 down to really questions revolving around those two  
14 time periods. And we'll lay that out and, you  
15 know, try to get that to you as soon as possible.

16 MR. DARNELL: Thanks.

17 CHAIR BEACH: Okay. All right, so the  
18 next item is 20. How does the Work Group feel? Do  
19 you guys need a comfort break?

20 MEMBER CLAWSON: We need a break.

21 CHAIR BEACH: Okay. So try to do a  
22 quick five minute break. That work? Five to

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1 seven.

2 (Whereupon, the above-entitled matter  
3 went off the record at 10:05 a.m. and resumed at  
4 10:15 a.m.)

5 MR. KATZ: Okay, we're back. Let me  
6 just check on the line and see, do we still have  
7 you, Loretta?

8 MEMBER VALERIO: Yes, I'm still here.

9 MR. KATZ: Super. And, John Poston,  
10 have you joined us? Okay, then. Carry on.

11 CHAIR BEACH: Okay. So the next item  
12 on our agenda that we're going to go to is Issue  
13 20, the tritium exposure potential. And I'm going  
14 to let NIOSH jump right into that one.

15 MR. McCLOSKEY: Is that my cue, Pete?

16 CHAIR BEACH: That's the new one.

17 MR. DARNELL: Yes, if you don't mind.  
18 I just don't have the voice.

19 MR. McCLOSKEY: Oh, no problem. So  
20 Issue 20 was something we added --

21 CHAIR BEACH: In June.

22 MR. McCLOSKEY: Yeah, June. So we

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1 found -- I forget when the first document surfaced  
2 showing that we had tritium issues there, but in  
3 June we decided that there was something more to  
4 look at.

5 I'm reading from -- I'm going to try  
6 to read less of this White Paper than I did of the  
7 last paper just to keep things moving a bit quicker.  
8 I'll just touch on the highlights from it. And if  
9 anyone wants to delve into something any deeper,  
10 please let me know so we can talk about it.

11 So, the second page of the White Paper,  
12 our first indication that tritium was being --  
13 well, I'll even go back a bit further. I'll read  
14 the introduction. Operations at Kansas City that  
15 involved working with tritium and nickel-63 were  
16 remitted in the scope.

17 Two production tasks are known to  
18 involved tritium. One is the use of luminescent  
19 paint to fill engraved markings on a high/low  
20 switch plate. And a second operation involved  
21 manufacturing instrumentation for tritium  
22 analysis in urine and water.

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1           As part of that second operation there  
2 was a nickel-63 plating operation associated with  
3 the manufacturing of instrumentation for tritium  
4 analysis work.

5           That nickel-63 information is probably  
6 new to a lot of people. We were just emailed  
7 documents on that December 15, 2014. It's when we  
8 first learned of it. Kansas City Plant found it  
9 and realized that they had not told us about it and  
10 sent it over to us.

11           So now we're going to talk about the use  
12 of tritium as a phosphor on the high/low switch  
13 plates. So the first use of it occurred February  
14 8, 1963. And that's in a memo from an industrial  
15 hygienist and he states that the activated phosphor  
16 is associated with negligible radiation exposure  
17 and a non-specified ADC study on the topic is cited.

18           So that's our first notice of it  
19 occurring. Let's see. And there's some  
20 communications back and forth between Kansas City  
21 Plant, another Bendix facility, and U.S. Radium  
22 Corporation. And they talk about acceptable

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1       contamination levels that the Kansas City Plant  
2       would allow for these parts to be received at their  
3       facility.     As a non-nuclear facility, they  
4       couldn't accept contamination levels at their  
5       site, so they had a visit.

6                 Let's see here.     And they performed  
7       some decontamination tests on three batches and  
8       showed increasing contamination levels over a  
9       one-week period and showed that the contamination  
10      levels were, let's see, increased from zero to 1500  
11      background detected counts per minute over that  
12      period.

13                I'm trying not to read it all and just  
14      hit the high points.

15                MR. DARNELL:   Any questions on any of  
16      the background information?   We're going to jump  
17      to the bounding scenario.   Okay.

18                CHAIR BEACH:    So let's be clear.  
19      There's two separate operations?

20                MR. McCLOSKEY:   Yes.

21                MR. DARNELL:    Yes.

22                CHAIR BEACH:    Okay.    And that Ni-63,

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1 that is associated with the first one, the  
2 luminescent paint? Or is that separate?

3 MR. DARNELL: It's associated with the  
4 tritium monitor that they were building.

5 MR. McCLOSKEY: The second application  
6 was the one associated with --

7 CHAIR BEACH: The second one, okay.

8 MR. McCLOSKEY: So now we're talking  
9 about, you know, the use of this luminescent paint  
10 on a switch.

11 CHAIR BEACH: Okay.

12 MR. McCLOSKEY: Okay. I'm trying to  
13 skip ahead.

14 CHAIR BEACH: I'm just wondering if you  
15 can just describe what they were doing and maybe  
16 like kind of give an overview of it. I don't know  
17 what the rest of the Work Group needs, and we've  
18 all read the White Paper.

19 MR. McCLOSKEY: Okay. So the  
20 application of the paint occurred at another  
21 facility. And the parts, the switch plates, were  
22 brought to the Kansas City Plant and handled there,

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1 so they wanted assurance that there was no removal  
2 contamination once it got to the Kansas City Plant.

3 CHAIR BEACH: Okay.

4 MR. McCLOSKEY: So the first part of  
5 this is the discussion about, you know, how do we  
6 survey for tritium in, you know, the early 1960s?  
7 What methods are available, what should be used?  
8 So we get some Sandia health physicists involved  
9 because they were considered the experts on that  
10 at the time, and all that's documented in there.

11 Okay. And they landed on the liquid  
12 simulation-type of monitoring that would be best  
13 for contamination surveys. The work was done in  
14 Department 212, the receipt of this work. Okay.

15 CHAIR BEACH: And the dates you have  
16 here on Page 4, you've got four sets and the number  
17 received, that's the sum total of the operation,  
18 that you know of, is that correct?

19 MR. McCLOSKEY: Yes.

20 CHAIR BEACH: So essentially we're  
21 talking about 1965 is when that work took place?

22 MR. McCLOSKEY: Well, let's read the

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1 bounding scenario. The exposure bounding  
2 scenario from tritium on high/low switch plates,  
3 in this scenario, exposure to tritium associated  
4 with the radio-luminescent high/low plates is  
5 estimated based on the period in which we know the  
6 switch plates were used. We assume that exposure  
7 occurred continuously between '63 and '68.

8 Okay. They had a formal method for  
9 controlling employee access to the work area using  
10 security guards, medical screenings, and  
11 qualifications.

12 In this bounding scenario, only those  
13 workers who received, inspected, installed,  
14 tested, and packaged the switch plates may have  
15 been exposed to tritium that was incorporated into  
16 the zinc sulfide simulator.

17 Okay, now we have a change that we need  
18 to make to this document for this next sentence.  
19 We now believe that the chemical form of the tritium  
20 was an organic compound, okay. And that is a memo  
21 by [identifying information redacted] earlier in  
22 this document where he says it was an organic

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1 compound. And so that's going to cause us to  
2 change this bounding scenario slightly. But we're  
3 going to use the rest of this as it stands, and I'll  
4 explain a little bit --

5 MR. FITZGERALD: Do you have the SRDB  
6 on that already or no?

7 MR. McCLOSKEY: On which one?

8 MR. FITZGERALD: On the organic  
9 compound.

10 MR. DARNELL: No.

11 MR. FITZGERALD: Okay.

12 MR. DARNELL: That just came in last  
13 night.

14 MR. FITZGERALD: All right.

15 MR. DARNELL: It's hot off the press,  
16 so we're going to change to the organically bound  
17 tritium, and you'll SRDB references when those get  
18 uploaded.

19 MR. FITZGERALD: All right, thanks.

20 MR. McCLOSKEY: Well let's see --

21 MR. SHARFI: The [identifying  
22 information redacted], isn't that the 128438

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1 letter?

2 CHAIR BEACH: Yeah, we saw that.

3 MR. McCLOSKEY: Let's see, on July 1<sup>st</sup>,  
4 1965, a memo written by [identifying information  
5 redacted] regarding high/low switch plates used in  
6 the MC 1931 cable assembly, SRDB 137154. So look  
7 at that one.

8 The memo stated that the tritium  
9 phosphor filled the engraved letters so that they  
10 could be read in the dark and that the phosphor was  
11 a tritiated organic compound. So make note of  
12 that.

13 Okay. We know that the surface  
14 contamination on the intact switch plates  
15 increased as a function of time. This suggested  
16 that tritium gas was disassociating from the  
17 chemical matrix and diffusing to the surface.

18 At the surface, the tritium would most  
19 likely exist as water or hydration on the switch  
20 plate. You know, that's the not case now. It's  
21 going to be an organic compound. Soon the chemical  
22 form makes this tritium readily available for skin

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1 absorption.

2 So that's going to be a more  
3 claimant-favorable form of translocation through  
4 the skin, so we're going to continue to use that  
5 even though we're going to switch to an organic dose  
6 conversion factor later.

7 Okay. And then we're going to talk  
8 about the number of exposures that could've  
9 occurred over this time period. We know that from  
10 a February '66 trip report recapping the order  
11 status from the prior year that 500 units were  
12 ordered and 181 were shipped prior to the report  
13 date.

14 We also know from swipe test records  
15 that 330 switch plates or components were received  
16 in four batches in '65. That suggests two  
17 different orders for switch plates were made in  
18 '65, and we can use that information regarding the  
19 number of items received to estimate what chronic  
20 exposure would've occurred daily to estimate that  
21 nominally three switch plates per day would've been  
22 handled.

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1           Data collected in '65 from 110 swipes  
2 used to assess contamination level on the switch  
3 plates was fitted to a log-normal distribution and  
4 that data was found to have a geometric mean of  
5 4,246 dpm per 100 centimeters squared and a  
6 geometric standard deviation of 2.32.

7           The upper 95th percentile value of the  
8 excretion is 16,900 dpm per 100 centimeters squared  
9 and we assume that value for the contamination  
10 level in the bounding exposure scenario.

11           We do not the size of the switch  
12 plates, but we'll assume they're two-sided and  
13 nominally 100 centimeters squared on each side for  
14 a total of 200 centimeters squared.

15           And each switch plate had 33,800 dpm  
16 distributed over the entire surface. We assume  
17 that each switch plate was handled enough for all  
18 surface contamination to be transferred to the  
19 worker's skin where it was completely absorbed.  
20 That would not be the case with an organically bound  
21 tritium, but we're going to continue to use that  
22 for claimant-favorability.

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1           And for a worker handling three switch  
2 plates each day, the bounding intake rate of the  
3 tritium through the skin would be 101,400 dpm, and  
4 that bounding intake would've been chronic through  
5 the years, for the period 1963 to 1968.

6           If we use an ICRP-68 dose conversation  
7 factor of 4.19 E minus 9 rem per becquerel, the  
8 worker dose would be -- oh, what did I say that would  
9 be? It now becomes 1.77 millirem per year.

10           You know, this paper was based on it  
11 being tritiated water, and we came to a dose of 0.76  
12 millirem per year and we upped that to 1.77. So  
13 that's the first tritium operation of the phosphor  
14 applied to high/low switch plates.

15           CHAIR BEACH:     Okay.     So in the  
16 scenario that you created, the scenario of the  
17 spill, only the workers who received, inspected,  
18 and installed, how do you know which workers did  
19 that?

20           MR. DARNELL:     It's in their medical  
21 records.

22           CHAIR BEACH:     And we have their medical

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1 records for every person to know that that would  
2 be covered?

3 MR. DARNELL: Well, we would have  
4 medical records for every claimant. We have  
5 searched medical records for other people. How  
6 many was that? We got through maybe --

7 MR. SHARFI: They do provide them as  
8 part as of a request for records. The medical  
9 records are scanned and provided to us.

10 (Simultaneous speaking.)

11 MR. DARNELL: Oh, it's written very  
12 plainly on the card, mag thorium evaluation, or DU,  
13 or Department 20, so --

14 CHAIR BEACH: Of the known workers?

15 MR. DARNELL: On the cards that we  
16 received.

17 MR. FITZGERALD: Were any cards found  
18 with tritium?

19 MR. DARNELL: That would --

20 (Simultaneous speaking.)

21 MR. DARNELL: I don't remember.

22 MR. SHARFI: I don't know if they

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1 listed specifically tritium, but you could look,  
2 they did list departments.

3 MR. FITZGERALD: Well, do we know the  
4 actual work location for these activities?

5 MR. SHARFI: Yeah.

6 MR. DARNELL: Yeah, it's in there.

7 MR. McCLOSKEY: Department 212.

8 CHAIR BEACH: 212.

9 MR. FITZGERALD: 212 for both or --

10 MR. McCLOSKEY: For the next one, for  
11 the tritium and water and air monitors that's going  
12 to be in the chem labs. So, no, not the same  
13 department for both tritium activities.

14 CHAIR BEACH: Okay, so 212 for this  
15 one.

16 MR. FITZGERALD: So it's been  
17 confirmed both places, the chem lab for the second  
18 and the 212 for the first one?

19 MR. McCLOSKEY: Yes.

20 CHAIR BEACH: Any other questions for  
21 this first activity before we move on to the next?

22 MR. DARNELL: Yeah, Mutty just brought

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1 up a good point. The dose is a little less than  
2 two millirem per year --

3 CHAIR BEACH: I understand that. Yes,  
4 we realize it's a small dose.

5 MR. SHARFI: It would probably be just  
6 as easy just to give to everybody and not worry  
7 about it.

8 CHAIR BEACH: Okay. Okay, so if you  
9 want to go with the next one, tritium water.

10 MR. McCLOSKEY: Okay. Next they are  
11 making some radiation detection instruments used  
12 for the military to monitor, you know, during the  
13 Cold War, if there was a nuclear detonation they  
14 would have wanted the ability to monitor for  
15 tritium in both urine and in air that they were  
16 breathing. So Bendix, or the Kansas City Plant, was  
17 making some instruments. Let's see.

18 MR. DARNELL: What page are you on?

19 MR. McCLOSKEY: Oh, there it is, Page  
20 8. Okay. There's evidence that tritium air  
21 instruments and urine monitors designed by Sandia  
22 were manufactured by Bendix at Kansas City over an

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1 extended period.

2 The manufacturing involved the use of  
3 tritiated water as a calibration standard.  
4 Radioactive nickel-63 was plated on a component of  
5 one of the in-air instrument models and that is  
6 going to be talked about separately.

7 The manufacturing of these instruments  
8 began in '59 and four monitoring kits were produced  
9 in 1960. And the manufacturing of this equipment  
10 continued in campaigns through the 1970s.

11 The manufacturing effort was not in  
12 response to tritium used programmatically at  
13 Kansas City, rather it was done under contract to  
14 Sandia. And they were used by military  
15 organizations in the United States during nuclear  
16 testing.

17 Okay. I'm skipping ahead to Page 9.  
18 By 1972 the tritium in-air monitor Bendix/Sandia  
19 Model T446 and the tritium urinalysis model T449  
20 was available, as documented in instrumentation  
21 for an environmental monitoring published by  
22 Lawrence Berkeley Laboratory. Okay. So we're

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1 trying to show that these would've been used into  
2 the '70s there.

3 The next paragraph, no evidence was  
4 found indicating that tritium gas or tritiated  
5 water vapor was used at the Kansas City Plant in  
6 direct association with the ion chamber  
7 production.

8 Tritium in-air monitors do not  
9 necessarily require tritium gas or water vapor to  
10 be available during the manufacturing process.  
11 These monitors are based on ion chamber technology,  
12 and I won't go into all that.

13 CHAIR BEACH: On that same page, I  
14 guess I'll ask you a question now. Initially in  
15 1959 the bottles were received and inspected  
16 without opening and then stored under that  
17 ventilation until they were sold.

18 MR. McCLOSKEY: Right.

19 CHAIR BEACH: That was just in a  
20 document, that SRDB? I tried to get to most of  
21 these SRDBs but I didn't get to that one.

22 MR. McCLOSKEY: Yeah, that's where we

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1 found that.

2 CHAIR BEACH: It just basically  
3 explains that that's where they were stored?

4 MR. McCLOSKEY: Mm-hmm.

5 CHAIR BEACH: Okay.

6 MR. McCLOSKEY: I think I brought that  
7 one with me if you want to look at it.

8 CHAIR BEACH: Okay.

9 MR. McCLOSKEY: That would have been the  
10 chemistry department's. Okay. Let's go to the  
11 exposure bounding scenario on Page 10. In this  
12 scenario, exposure to the tritiated standard  
13 solution while handling and using the solution to  
14 test and calibrate the Model T329 urinalysis test  
15 kit and the tritium urinalysis model T449 is  
16 defined.

17 Initially in '59 small size bottles of  
18 standard solution, approximately 400 milliliters  
19 of the 250 microcuries per liter, were purchased  
20 from Sandia and stored under ventilation until they  
21 were used or packaged for shipment with the  
22 completed urinalysis kit.

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1           Although we do not know when the change  
2           occurred, we know that by 1964 the standardized  
3           tritiated water was purchased in one-gallon size  
4           units and repackaged at Kansas City into 400  
5           milliliter bottles.     So they were doing a  
6           decanting operation.

7           In '64 we have records of two shipments  
8           of eight gallons of standardized tritiated water  
9           for a total of 16 gallons and a 400 milliliter  
10          bottle of the calibration standard solution was  
11          shipped with each urinalysis kit.

12          Decanting the gallon-sized units into  
13          400 milliliter bottles would've resulted in 150  
14          bottles of standard solution.   Based on this, it's  
15          reasonable to assume that approximately 150  
16          decanting operations occurred in '64.

17          To ensure claimant-favorability we  
18          assume that some part of the decanting operation  
19          occurred every workday, for a 250-day work year,  
20          beginning in 1959 and ending in '75 in Kansas City  
21          Plant's chemistry lab.

22          Based on the care that went into the

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1 procurement process and cautionary notes about  
2 handling that were included in the purchase order,  
3 we assumed that the chemistry technicians that  
4 handled the tritiated water would've been careful  
5 with it due to its value and hazardous nature.

6 We know that the unopened bottles  
7 procured in '59 were stored under ventilation when  
8 not used, so we believe it is reasonable to assume  
9 that any process associated with the standard  
10 tritiated water, including decanting from one  
11 bottle to another, would've taken place under a  
12 ventilated enclosure, such as a fume hood.

13 CHAIR BEACH: But we found no  
14 documentation, procedures, or anything to-date,  
15 correct?

16 MR. McCLOSKEY: No.

17 CHAIR BEACH: Okay.

18 MR. McCLOSKEY: No, we don't have a  
19 document that describes the work in the fume hood,  
20 the decanting.

21 MEMBER LOCKEY: I'm sorry, say that  
22 again.

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1                   MR. McCLOSKEY:     We don't have a  
2 document that describes the work of the decanting  
3 and the fume hood.

4                   MEMBER LOCKEY:    Okay.

5                   CHAIR BEACH:    Well, or even it wasn't  
6 a fume hood, you're assuming it was.

7                   MR. McCLOSKEY:     Yes, since it was  
8 stored --

9                   MR. DARNELL:     We have a historical  
10 basis for doing that.    What we've seen in the  
11 record is that they did this stuff under fume hoods  
12 or under local ventilation with established  
13 controls.

14                   I mean, I don't think it's a far reach  
15 to say that if we stored it in the hood, and that  
16 was very specific that it was stored in the hood  
17 --

18                   MR. FITZGERALD:     It's a founded  
19 assumption, because I think it's based on a  
20 programmatic --

21                   CHAIR BEACH:     Yeah.    Okay.    I just  
22 want to be clear.

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1 MR. DARNELL: Sure, I understand.

2 MR. McCLOSKEY: Reading from Page 11,  
3 although decanting could've occurred on a single  
4 day soon after a shipment was received, we could  
5 postulate a scenario in which each unit's small  
6 bottle is filled in a separate operation.

7 For our bounding scenario we assume a  
8 small unreported spill of one milliliter of  
9 tritiated water occurred during each decanting  
10 operation.

11 Spilled water spread over a 100  
12 centimeter squared area of the impervious floor of  
13 the fume hood, most of the water would've  
14 evaporated into the fume hood exhaust air and  
15 removed from the air. Some small fraction of the  
16 contaminated water would've exchanged and  
17 equilibrated with the water of hydration absorbed  
18 on the metallic fume hood surface.

19 The absorbed water would've persisted  
20 as a source of removable surface contamination, and  
21 the thickness of the water is a parameter that will  
22 be a function of the surface characteristics.

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1           A 1948 literature review provides  
2 insight into the thickness of a water layer  
3 absorbed on a glass surface. A glass wall exposed  
4 to air saturated with vapor had an absorbed film  
5 thickness of 1300 angstrom. We used this as a  
6 starting point in making the assumption that is  
7 almost certainly maximizing and favorable to the  
8 claimant that the hydration water thickness on the  
9 glove box floor is a factor of 100 times thicker  
10 than absorbed on the glass wall.

11           With this assumption the water of  
12 hydration thickness would be 1.33 times 10 to the  
13 minus 3 centimeters and the volume of water  
14 retained on the 100 centimeter squared area would  
15 be 0.13 cubic centimeters, which we round to 0.1  
16 cubic centimeters. Thus the volume of retained  
17 tritiated water would be 0.1 milliliter.

18           The activity in 0.1 milliliter of  
19 standardized tritiated water is 25 nanocuries, or  
20 56,000 dpm. A fully efficient wipe test of that  
21 area where the spill occurred would yield removable  
22 contamination of 56,000 dpm.

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1           The bounding scenario with tritium  
2           contamination is completely transferred to the  
3           skin of the hand of the chemistry technician, each  
4           day that amount of contamination.

5           So, to summarize it, we assume that 100  
6           centimeters squared of the same chemistry  
7           technician's skin is contaminated with 56,000 dpm  
8           of tritiated water on a daily basis and that  
9           activity has been completely absorbed as tritiated  
10          water through the skin, into the blood. And if we  
11          use the ICRP dose conversion factor the worker dose  
12          would be 1.68 minus 6 rem per day, or 4.2 E minus  
13          4 rem per year.

14           MR. DARNELL: Questions?

15           CHAIR BEACH: Anybody, questions?  
16           Okay.

17           MR. DARNELL: Mr. Copeland, we're  
18           discussing the tritium White Paper right now.

19           MR. FITZGERALD: Well, just to  
20           respond, you know, this was just a reference in a  
21           weekly activity report this past summer and it's  
22           come a long ways in terms of just characterizing

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1 a operation that we didn't have much information  
2 on. So I think, you know, it's certainly a  
3 yeoman's job of just putting this together.

4 Clarification. The only, and I think  
5 I read this right, the only hard data we still have  
6 is the smear sample beta for the high/low plates?  
7 I mean, actual measured data.

8 MR. DARNELL: Well, we also have the  
9 activity levels in the gallons of water that came  
10 --

11 MR. SHARFI: The concentration.

12 MR. McCLOSKEY: We have certified  
13 concentrations of the Sandia-provided --

14 MR. FITZGERALD: Of the  
15 Sandia-provided, so we have that.

16 (Simultaneous speaking.)

17 MR. FITZGERALD: Okay. So that's not  
18 a reference standard, that's actual from Sandia of  
19 water.

20 CHAIR BEACH: And that's referenced in  
21 that SRDB --

22 MR. FITZGERALD: Right.

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1 CHAIR BEACH: Okay.

2 MR. DARNELL: And the workplace  
3 measurements that we have are in there.

4 MR. FITZGERALD: Yeah, I think our only  
5 comment, and, you know, not surprisingly, I think,  
6 obviously, in this particular case we would have  
7 to make a number of assumptions in order to come  
8 up with some kind of exposure.

9 And, you know, because, again, the  
10 actual monitoring that you would like to have had  
11 wasn't done, or we haven't found it yet. But  
12 certainly the dose involved would be very, very low  
13 and that's the context of the analysis.

14 So, you know, and Jim and I were just  
15 talking about this before this session. You know,  
16 this question of balancing the leeway on the  
17 bounding analyses and the assumptions that would  
18 have to go into that is balanced against the dose  
19 that you're talking about. And before this  
20 meeting we had the same conversation, at least with  
21 Josie, just trying to figure out, you know, it's  
22 a judgment call based on, you know, the leeway on

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1 the assumptions and the kind of doses that one is  
2 working with, since we're talking about tritium in  
3 this particular case, and whether the  
4 characterization is sufficient to give you  
5 confidence that it bounds it at that low level.

6 From a technical standpoint, I don't  
7 think we could offer, based on the documentation  
8 that was uncovered to date, any better way,  
9 necessarily, of how to come up with a bounding  
10 analysis. But it sort of still leaves you in a  
11 situation where I think the Work Group will have  
12 to consider, you know, the assumptions,  
13 particularly with the instrument. The high/low I  
14 have maybe less of an issue because you actually  
15 have some contamination smears, so you really have  
16 some hard numbers.

17 On the instrumentation, all we could  
18 find was they bottled this stuff, and because of  
19 programmatic history we presume they bottled it  
20 under a hood so the ventilation would've been  
21 there.

22 But beyond that, you have to assume, as

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1 NIOSH I think has done, that, you know, if you had  
2 a conservative estimate on the amount of spillage  
3 and the potential for absorption in the skin you  
4 could, you know, come up with a rather extreme level  
5 of uptake which still would result in only  
6 single-digit millirems per year.

7           So, again, it's sort of a keep that in  
8 context. Could you do better? Only if we could  
9 find actual hard data that we haven't found yet.  
10 Would it make a difference? I don't think so based  
11 on what we've seen so far.

12           So, again, it may be less a technical  
13 question than a question of, is this sufficient  
14 information to get confidence that, you know,  
15 there's a way to bound this and the level is going  
16 to be rather low, relatively low in terms of the  
17 potential dose?

18           And I think, as Mutty has pointed out,  
19 you have different ways you could deal with that  
20 dose. You could certainly make an argument to give  
21 it to everybody. I think you would have difficulty  
22 identifying a cohort in this case. I didn't see

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1 any way, in the weeklies or anywhere else, where  
2 it said, you know, "X, Y, Z were involved."

3 MR. DARNELL: The only place it would  
4 be if you could actually find the words tritium in  
5 the medical records, and you may not get there.

6 MR. FITZGERALD: You may not get there.  
7 I don't know if they would see this as something  
8 that it could actually point to as being something  
9 that was worth pointing to in the medical records.

10 So, again, it's sort of a little fuzzy  
11 on that. But I think, for the Work Group's  
12 benefit, I think that's where we're at. You could  
13 look for, hopefully, more hard data on the tritium  
14 operations and you may or may not find it. So far  
15 we have not.

16 CHAIR BEACH: One of the comments I  
17 have is we found this almost by mistake just looking  
18 through records. So once we found the tritium  
19 water, Joe found it on weeklies just thumbing  
20 through some microfilm or fiche, right?

21 MR. FITZGERALD: Microfilm, yeah.

22 CHAIR BEACH: Microfilm. So looking

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1 for this then NIOSH found a couple other things,  
2 so it leads to me to wonder what else is out there  
3 that we just haven't discovered. And I know it's  
4 a totally open-ended question and there's no answer  
5 to it, but there is just maybe a lot more we don't  
6 -- or a few things we still don't know, so on this  
7 one I agree with --

8 MR. DARNELL: I don't disagree with you  
9 at all, but it's a folly to sit here and think about  
10 --

11 CHAIR BEACH: I understand. I know  
12 we've worked hard on it, I'm not saying we haven't,  
13 but --

14 MR. FITZGERALD: The tree has been  
15 shaken quite a bit.

16 CHAIR BEACH: It has been, yeah.

17 MR. FITZGERALD: But so far, this is  
18 what's fallen out that's not been identified  
19 before.

20 CHAIR BEACH: Yeah.

21 MR. DARNELL: Yeah, and I think we all  
22 realize that if we do find something --

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1 CHAIR BEACH: Yes, we will, I agree. I  
2 probably shouldn't have even brought that up, but  
3 it just was something I was thinking about.  
4 Anymore questions?

5 MEMBER LOCKEY: You said tritium  
6 wasn't mentioned on the work cards, right? The  
7 department was mentioned --

8 CHAIR BEACH: The medical.

9 MR. SHARFI: I don't remember seeing  
10 the tritium on the medical cards. Thorium was  
11 specifically identified, but, you know, the  
12 department --

13 (Simultaneous speaking.)

14 MR. SHARFI: So if they worked specific  
15 departments a lot of times you would see that  
16 department saying they worked under this  
17 department. But I don't remember seeing an actual  
18 tritium listed.

19 MR. FITZGERALD: And what makes it even  
20 more interesting, in the 1964 weekly activity  
21 report where they referenced the tritium bottling  
22 that was going into this instrumentation activity,

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1 they did indicate that Sandia was sending them some  
2 guidance on doing routine bioassays for tritium,  
3 which kind of made us feel like, uh, okay, we  
4 haven't seen that.

5 So, you know, there's a gap there in  
6 terms of if that guidance was sought from Sandia  
7 but didn't get followed through, or if it got  
8 followed through and the bioassay information is  
9 somewhere but we haven't found it yet.

10 To me, that's a bit of a gap, you know.  
11 It seemed like they were cognizant of the fact that  
12 they should be doing monitoring for this and asked  
13 for guidance, but we didn't find any bioassay  
14 records, nor did we find any further correspondence  
15 on that particular question. So that was a little  
16 bit of, you know, a head-scratcher.

17 Certainly the site was aware of the fact  
18 that they probably should've monitored for it, and  
19 actually was going to do it, it looks like. So I'll  
20 leave that with the Work Group, that we are kind  
21 of looking for one or the other, some information  
22 on what happened after that, and did not find it.

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1 CHAIR BEACH: And I have the weeklies  
2 here if anybody wanted -- I didn't know if anybody  
3 else had not seen it and wanted to look at it.

4 Questions, any other questions?  
5 Loretta, do you have any questions on this topic?

6 MEMBER VALERIO: Actually I do, and I'm  
7 going back to my notes. On Page 3 in the memo it  
8 discusses the problems with handling the tritium.  
9 And I'm going back to that, give me just one second  
10 and I'll get there. And then it talks about -- it  
11 just seems as though there was a lot of  
12 communication back and forth between all the  
13 entities involved about the safe handling and  
14 requirements, but when you read through this it's  
15 a little confusing.

16 So on Page 3, the paragraph that starts  
17 on "May 28th, 1965," the last sentence discusses  
18 that Kansas City was faced with handling problems.  
19 Do you see where I'm at?

20 MR. DARNELL: Yes.

21 MEMBER VALERIO: Okay, so then I'm  
22 going to go down to Page 6 now. And this could be

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1 the, you know, two separate campaigns. They talk  
2 about the work rules, you know, the requirements.  
3 And this goes back to do they know who handled it,  
4 do they know, you know, from the time it was  
5 received at the plant, through the whole process,  
6 do they have anything in the requirements that  
7 says, you know, this group of workers would have  
8 handled it, this group of workers would've shipped  
9 it, transported it, anything like that?

10 MR. DARNELL: There's pretty much a  
11 standard site requirement. You had to have the  
12 training, medical monitoring, and whatever other  
13 requirements were deemed necessary to work on any  
14 specific project. So the workers on this project  
15 would've had to have had medical monitoring,  
16 radiological training and so on to be allowed to  
17 work on it.

18 The thing is, is we don't have a list  
19 of who was assigned to do what things. So you kind  
20 of have to go search to see if a worker was either  
21 in the correct area and had correct training and  
22 monitoring, or the tritium was actually listed on

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1 his medical records showing that he would have the  
2 correct training and monitoring. So we kind of had  
3 part of it, but not all of what you're looking for.

4 MEMBER VALERIO: I was breaking up, you  
5 were breaking up a little bit. Can you repeat the  
6 last part of that please?

7 MR. DARNELL: Basically, because of  
8 the site requirements for having radiological  
9 training and medical monitoring for any project  
10 onsite we know that the workers involved with the  
11 tritium work would've had to have the same.

12 We know where to go look for the  
13 information, we just don't know which workers were  
14 the ones assigned. There's no master list of who  
15 was doing what project. You have to go  
16 individually into medical records to find out. So  
17 for individual claimants we would be able to find  
18 out.

19 DR. NETON: This is Jim, and I think we  
20 discussed that the dose was so low that we would  
21 probably just assign this to every claimant and not  
22 try to establish who handled it with the claimants.

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1 CHAIR BEACH: Right.

2 DR. NETON: Because it's in the  
3 millirem range.

4 MR. DARNELL: That's true.

5 (Simultaneous speaking.)

6 CHAIR BEACH: Okay.

7 MEMBER LOCKEY: Jim, how many people  
8 worked in the lab, do you have any idea?

9 DR. NETON: I don't know.

10 MR. McCLOSKEY: It maxed out during the  
11 Reagan Administration at 8,000.

12 MR. SHARFI: Onsite.

13 MEMBER LOCKEY: No, in the lab.

14 MR. McCLOSKEY: Oh.

15 MEMBER LOCKEY: That's a hell of a big  
16 lab if it's got 8,000.

17 (Simultaneous speaking.)

18 MR. DARNELL: We don't have a number  
19 for maximum --

20 MEMBER LOCKEY: Well, I mean, was it a  
21 big lab, small lab? I'm just trying to get a handle  
22 on what --

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1 DR. NETON: Probably small. I mean,  
2 based the number of plates that they handled, at  
3 least in '65, I'd say it's a pretty small operation  
4 for the people that handled tritium.

5 MR. DARNELL: The operation itself,  
6 but the laboratory was actually fairly large.  
7 They were involved in almost every project.

8 DR. NETON: Right, right, but we're  
9 talking about how many people we're going to assign  
10 tritium dose versus how many actually handled it.  
11 Again, you know, you're talking a millirem a year  
12 --

13 MEMBER LOCKEY: It doesn't make any  
14 difference, but I'm just trying to get --

15 DR. NETON: It doesn't make any  
16 difference in anybody's dose reconstruction.

17 MEMBER LOCKEY: And what about in  
18 Department 212, how many people worked in  
19 Department 212?

20 MR. SHARFI: I don't think we had  
21 numbers on per department.

22 MR. McCLOSKEY: I mean, I'm not going

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1 to say we can't find that, but I don't know.

2 MEMBER LOCKEY: Okay, thanks.

3 MR. DARNELL: I don't know how much  
4 help it would actually give us to know those  
5 numbers.

6 MEMBER LOCKEY: Well, I'm just trying  
7 to figure out the number you're going to  
8 extrapolate to the whole workforce. You don't  
9 have any -- I was trying to get a ratio there.

10 DR. NETON: Yeah, again, you know, and  
11 if this were, you know, a rem-type range, 500  
12 millirem or 600 millirem, you might be a little more  
13 concerned. But, you know, talking about a  
14 millirem, and we've done that analysis already  
15 basically showing if you change any dose  
16 reconstruction by 100 millirem it doesn't move  
17 anybody's PC one way or the other.

18 CHAIR BEACH: And we've done that work.  
19 Pat, did you want to go into the nickel?

20 MR. McCLOSKEY: Sure.

21 (Simultaneous speaking.)

22 MR. FITZGERALD: I was going to say,

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1 before you finish this, what's the sense of the Work  
2 Group? As far as direction, I mean, it's pretty  
3 important to us?

4 CHAIR BEACH: Well, I had listed as an  
5 action that they owe the change with the organic.  
6 And then SC&A would develop a White Paper. Or are  
7 you looking for --

8 MR. FITZGERALD: Well, I'm not sure the  
9 White Paper is going to say anything much different  
10 than that we've said at the table today.

11 CHAIR BEACH: Yeah.

12 MR. FITZGERALD: And I'm not sure we're  
13 that far apart, from the discussion. It's just  
14 sort of a question of, given the context of the dose  
15 involved, what leeway does one have on the bounding  
16 analyses, granted there's a lot of assumptions  
17 there.

18 The wild card in the deck is whether we  
19 would find any additional information, but in the  
20 end would that make any difference anyway? That's  
21 the kind of a thing we're up against. We could look  
22 for more documents, but in the end if it doesn't

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1 move the needle any -- so that's kind of where we're  
2 at. And that's kind of a judgment call as to  
3 whether we want to try to find more documents that  
4 would make it a little bit more objective, or is  
5 this enough to give confidence that --

6 MR. DARNELL: Well, if I could make a  
7 suggestion? We're going to have to go back down  
8 to look for thorium stuff. While we're looking for  
9 thorium we'll do a minor search for tritium to see  
10 if we can find anything and just say that's our last  
11 effort.

12 CHAIR BEACH: Yes.

13 MR. DARNELL: And just go with that  
14 mindset --

15 MR. FITZGERALD: Finding the Golden  
16 Grail of the weekly activity reports.

17 MR. DARNELL: Yes.

18 MR. FITZGERALD: Which is -- the  
19 original intent was to find more weeklies which  
20 would describe this and we did not.

21 CHAIR BEACH: Right. Well, and then I  
22 think the Work Group is going to have to think about

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1 if they're comfortable with that scenario.  
2 There's no bounding information, but the dose is  
3 low, and are we going to be okay with that?

4 There's no way to know who was exposed,  
5 how much they were exposed, we don't know if it was  
6 in a hood or not in a hood, we don't know if there  
7 was a gallon spilled or -- I mean, you can come up  
8 with some good estimates --

9 MR. DARNELL: One thing you need to  
10 recognize is the one milliliter spill assumption.  
11 As far as costs go for the plant, that would've been  
12 a huge loss for the plant.

13 CHAIR BEACH: Huge, yeah.

14 MR. DARNELL: So you know it was not  
15 that high for that long.

16 CHAIR BEACH: And I'm not saying I  
17 don't agree with everything, I'm just saying we  
18 need to decide as a Work Group are we comfortable  
19 with that and assign the dose. So that's the only  
20 comment I had.

21 MR. FITZGERALD: I think that sounds  
22 like a reasonable course. If we're going to go

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1 down there anyway we'll take one last look and see  
2 if we can improve the document.

3 MR. DARNELL: Now, we've got a set of  
4 documents that are basically waiting on us. I hope  
5 I'm not mixing it up with INL, but we had asked for  
6 four tiers of documents and I think we have Tier  
7 3 and 4 waiting on us down there to go look at.

8 CHAIR BEACH: Okay.

9 MR. DARNELL: So we should be able to  
10 move in quickly to look.

11 CHAIR BEACH: Sure. And I appreciate  
12 the work that's gone into this, I'm not discounting  
13 that at all, but as a Work Group I just want us to  
14 think about that for the next meeting. Once we've  
15 looked at whatever is left at Kansas City we're  
16 going to have decide as a Work Group where we're  
17 going to go and if we're comfortable with that.

18 MR. DARNELL: Sure.

19 CHAIR BEACH: It's assumptions.

20 MEMBER CLAWSON: It's all assumptions  
21 and there's no -- I'm not saying that you guys  
22 haven't done due diligence or anything else like

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1 that --

2 MR. DARNELL: I'm going to write that  
3 down.

4 (Laughter.)

5 MEMBER CLAWSON: No, I hope that you  
6 guys always understand. We know what you're up  
7 against, but we also have due diligence to the  
8 claimants to make sure that we are representing  
9 what's best.

10 I'd just like a little bit more time to  
11 be able to feed through this because the amount of  
12 documents and stuff and we just by luck have found  
13 some of this stuff.

14 CHAIR BEACH: Mm-hmm.

15 MR. DARNELL: That is definitely true.

16 CHAIR BEACH: And I appreciate that.  
17 Maurice, do you have anything on tritium or what  
18 the topic is at this point, anything to add?

19 MR. COPELAND: No. The only thing I  
20 had to say was, and it may help you in some  
21 situation, talking about the lab. I was a  
22 supervisor at a lab, that was my lab.

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1                   MR. DARNELL: Do you know about how  
2 many people were assigned there?

3                   MR. COPELAND: No, but you should be  
4 able to find it through ES&H, the same department,  
5 through environmental health and safety, the same  
6 department that we were attached to, by talking to  
7 [identifying information redacted] the director  
8 and those people. It's very easy.

9                   And, yes, I was the supervisor in the  
10 lab. I was the one that closed it up when we closed  
11 the lab down. I was the one that cleaned it up,  
12 myself, no workers, no one was allowed in.  
13 I and another supervisor disposed of the equipment  
14 and cleaned the lab up personally.

15                   CHAIR BEACH: What years?

16                   MR. COPELAND: Ninety --

17                   MR. DARNELL: Right before the move?

18                   MR. COPELAND: Huh?

19                   MR. DARNELL: Right before the move to  
20 the new building?

21                   MR. COPELAND: No. No, we closed that  
22 lab before I retired in 2000.

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1 CHAIR BEACH: Okay.

2 MR. COPELAND: And I closed the lab in  
3 ninety --

4 CHAIR BEACH: So, late '90s?

5 MR. COPELAND: Yeah.

6 MR. DARNELL: Which lab are you talking  
7 about?

8 MR. COPELAND: The model shop lab.

9 MR. DARNELL: Okay, we're talking  
10 about the big chem lab.

11 MR. COPELAND: The chemical lab?

12 MR. DARNELL: Yeah, the chemistry lab.

13 MR. COPELAND: I thought this was the  
14 lab that was attached to the model shop.

15 MR. DARNELL: Yeah, that's why I was  
16 kind of sitting here thinking it didn't shut down.  
17 No, we're talking about two different things.

18 MR. COPELAND: This lab was pretty  
19 secure. People that worked in this lab, to show  
20 you, I was a supervisor. I did not know who the  
21 people were that worked in the lab. My man  
22 [identifying information redacted], his name was

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1 [identifying information redacted], I had no  
2 employees, model shop employees that were assigned  
3 to the lab.

4 The only thing I saw was overseeing  
5 cleaning up. And I wasn't a maintenance guy, I was  
6 the model shop supervisor.

7 MR. DARNELL: Sure.

8 MR. COPELAND: Cleaning it up, getting  
9 all the equipment out. It's pretty secure what  
10 went on in there.

11 CHAIR BEACH: All right. Well, let's  
12 go ahead and just finish out the rest of your report  
13 on the nickel.

14 MR. McCLOSKEY: Okay, sure. I think  
15 Brad and you guys were saying some of this  
16 information it seems like we got by luck.

17 Another thing we have working for us is  
18 Kansas City Plant employees currently are going  
19 through their records and they know, they're  
20 familiar with us, they know about our visits and  
21 their need to dig things out, and the nickel-63 came  
22 about because of that.

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1 I guess the health physicist there  
2 tripped upon this when he was doing some follow-up  
3 work for us. So in December, December 15th, 2014,  
4 not too long ago, he emailed us everything he had  
5 and everything that we now have. So from this  
6 section of the paper forward is just everything  
7 that we got right before Christmas.

8 So the nickel-63 plating operations run  
9 right alongside with the tritium in-air and  
10 in-urine monitoring operations. The nickel-63  
11 was plated on small one-inch plates and placed  
12 inside the monitors as a check source. So, you  
13 know, your machine daily gets checked to see if it's  
14 responding to a beta so that when you need it, it  
15 works. Just something a lot of technicians do with  
16 all the radiation detection devices.

17 So we don't have a lot on it, but I'll  
18 just skip ahead to Page 12 there toward the bottom.  
19 The nickel-63 plating operations occurred in the  
20 small volume plating bath of the finishes  
21 development facility. And we have maps of those  
22 and they're reflected on the maps on the wall, as

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1 well, where that occurred.

2 On the next page you can see some of the  
3 work controls that were specified for the nickel-63  
4 plating, pretty similar to the work controls we saw  
5 with, you know, any of the other nuclides that they  
6 were working with there.

7 And then, in summary, I'll go to the  
8 bottom, records show that both management and  
9 health and safety staff took careful interest in  
10 the procurement and use of the nickel-63 and  
11 material during plating ops.

12 Nickel-63 was handled in liquid form  
13 until it was essentially immobilized in the form  
14 of a durable and metallic nickel plating. The  
15 radiologic hazard was evaluating and judged  
16 negligible, similar to the general hazards of  
17 plating.

18 Other than waste management, spill  
19 response and material labeling, no special  
20 controls or personal dosimetry were required.  
21 NIOSH believes the workers exposure of nickel-63  
22 was appropriately judged to have been negligibly

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1 small and the exposure will be plausibly bounded  
2 after the issuance of this paper for purposes of  
3 dose reconstruction.

4 And we just didn't have the time to get  
5 something out to you guys on nickel-63, so we'll  
6 do that next.

7 CHAIR BEACH: Okay. Anybody have any  
8 questions on that?

9 MR. FITZGERALD: No. I think for that  
10 overall issue, obviously, we'll keep it open. I  
11 don't think we'll provide a written response  
12 pending looking for more information. So we'll  
13 keep that pending.

14 CHAIR BEACH: Okay, so at this point  
15 SC&A is not going to write up any --

16 MR. FITZGERALD: Not for this, no.  
17 We'll look for more --

18 CHAIR BEACH: No paperwork on either  
19 one of them.

20 MR. FITZGERALD: For?

21 CHAIR BEACH: For tritium or nickel.

22 MR. FITZGERALD: No, no. Right, we'll

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1 wait and make sure that we've had the opportunity  
2 to get whatever additional information is  
3 available and we'll see where it comes out.

4 CHAIR BEACH: Okay. All right. And  
5 then you'll update your paperwork for the organic  
6 compound and then let the Work Group know what SRDB  
7 number that is?

8 MR. FITZGERALD: Yeah.

9 CHAIR BEACH: Okay.

10 MR. McCLOSKEY: SRDB number for?

11 CHAIR BEACH: For the organic compound  
12 information that you just received.

13 MR. McCLOSKEY: Okay.

14 CHAIR BEACH: I think you said there  
15 was an SRDB associated with it.

16 MR. McCLOSKEY: Okay.

17 CHAIR BEACH: Or I'm assuming it'll be  
18 -- it'll be in the paper, yeah.

19 MR. McCLOSKEY: The [identifying  
20 information redacted] memo, yeah.

21 CHAIR BEACH: Yeah, the [identifying  
22 information redacted] memo. Okay, anything?

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1                   MEMBER LOCKEY: I got the impression  
2 they weren't going to change any, even though it  
3 was organic. Is that true?

4                   CHAIR BEACH: No.

5                   MR. SHARFI: The dose conversion  
6 factor changed.

7                   MEMBER LOCKEY: What's that?

8                   MR. SHARFI: The dose conversion  
9 factor changed.

10                  MEMBER LOCKEY: Oh, it does change?  
11 It will change?

12                  MR. SHARFI: Yeah, because the  
13 original assessment was like if it was 0.7 millirem  
14 and then -- on the plates.

15                  MEMBER LOCKEY: Okay.

16                  CHAIR BEACH: So it'll go up a little  
17 bit.

18                  MR. FITZGERALD: A factor of two,  
19 maybe, or something like that. Two and a half.

20                  CHAIR BEACH: Yeah.

21                  MR. McCLOSKEY: So it'll be like a two  
22 or three sentences change. You know, we say

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1 translocation of the tritium through the skin as  
2 a water is assumed to be 100 percent. We're going  
3 to add to that saying, you know, it would be much  
4 slower as an organic compound.

5 DR. NETON: I think there's a little  
6 more justification as to why we believe it's an  
7 organic material.

8 MR. McCLOSKEY: Yeah, we have that,  
9 too.

10 DR. NETON: Because there's that one  
11 reference to organic, but I think I saw on your note  
12 that there's some backup material that talked about  
13 it was tung oil and this kind of stuff.

14 MR. McCLOSKEY: Yes, I'll just  
15 elaborate --

16 DR. NETON: Elaborate a little bit on  
17 why we believe this --

18 MR. McCLOSKEY: Yeah, we'll put the  
19 [identifying information redacted] thing out there  
20 where he says it's organically bound and then we'll  
21 follow that up with some NRC, or some patent  
22 information.

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1 CHAIR BEACH: Okay, so site visit to  
2 look for more information and then NIOSH's White  
3 Paper. SC&A will just review at this point and no  
4 White Paper to be sent out. Okay, anything else  
5 on that?

6 MR. FITZGERALD: Yeah. We, again,  
7 don't have any technical issues.

8 CHAIR BEACH: Right. I understand  
9 that. We're very clear on that.

10 Okay, so let's go back to the start of  
11 the agenda. What time is it?

12 (Simultaneous speaking.)

13 CHAIR BEACH: Okay, we have time.  
14 Data completeness and adequacy, Issue 1, we're  
15 going to go ahead and -- I said action was NIOSH  
16 provide the QA/QC. Did you want them to go ahead  
17 and speak to that or did you want to?

18 MR. FITZGERALD: Well, I can, you know,  
19 summarize this. We've kind of had them carrying  
20 them the ball for the first couple of hours.

21 I think the response was that Kansas  
22 City could not locate that QA/QC methodology

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1 information. We were hoping to have that as a  
2 means to corroborate the fact that they had done  
3 that when they transferred the recorded data to the  
4 electronic database. And they recalled doing  
5 that, but they just couldn't find documentation.

6 And I think in the most recent response,  
7 NIOSH notes that they have the raw data, of course  
8 they do, the original raw data records which will  
9 always be available as backup.

10 And I guess my first question is, is  
11 NIOSH relying on the raw data records or the  
12 electronic records as far as a coworker model? I  
13 mean, I would assume you're basing that on the  
14 electronic records?

15 MR. McCLOSKEY: When there's a DR, we  
16 need to do a DR, we go get the raw data. That's  
17 what I'm told goes on.

18 MR. FITZGERALD: You go to the raw  
19 data?

20 MR. McCLOSKEY: Yes.

21 MR. SHARFI: From the actual DR.

22 MR. FITZGERALD: Okay.

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1                   MR. McCLOSKEY:     Yes.     But for a  
2     coworker, when we revise a TBD, I guess we'd want  
3     to first validate the database we would use on it.

4                   MR. FITZGERALD:     Yeah, the only  
5     question we raised originally, and we did this for  
6     every SEC, was just to validate the raw data, which  
7     I think has been done in terms of looking at the  
8     legibility, all those issues, that's behind us.

9                   And the only question we had left was  
10    did anybody look at when the electronic database  
11    was put together making sure that that was  
12    transferred accurately and adequately? And since  
13    the site can't really corroborate that other than  
14    by recollection, the Work Group would have to  
15    consider, you know, what assurance would be  
16    reasonable.

17                  In this case, what we've done in the  
18    past, there's a precedent, we've done some limited  
19    sampling just to, you know, provide some assurance  
20    that, you know, we can't find any reason to see any  
21    transfer problems as far as accuracy in terms of  
22    the raw data going to the electronic database.

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1           This would affect -- it sounds like it  
2           only affects the coworker models that you rely on  
3           the data for dose reconstruction, so the Work Group  
4           I think would have to consider that, what level of  
5           assurance do you want to have that the electronic  
6           database reflects accurately the raw data? And I  
7           thought, you know, we're comfortable, if the site  
8           could account for the fact they did that. And they  
9           thought they had done it, but we can't find that,  
10          they can't find that documentation. So the  
11          question is what does the Work Group want to do on  
12          that?

13                   CHAIR BEACH:    What percentage of a  
14          sample would you need?

15                   MR. FITZGERALD:   That's always the  
16          question.

17                   CHAIR BEACH:    Yes, it is the question.

18                   MR.       FITZGERALD:            You     know,  
19          statistically or subjectively. Subjectively you  
20          could do a small sample; statistically might be,  
21          you know, whatever the statistics say.

22                   But in this case we haven't had any

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1 evidence of a problem with transfer. This is not  
2 because we had some issues.

3 CHAIR BEACH: Right, I understand  
4 that.

5 MR. FITZGERALD: It's just because it  
6 hasn't -- there isn't any way to corroborate this.

7 CHAIR BEACH: I think it would give us  
8 some assurance and put this one to bed.

9 MEMBER CLAWSON: Have you talked to Bob  
10 Barton on this?

11 MR. FITZGERALD: We haven't talked to  
12 anybody. I mean, it's sort of we were hoping to  
13 see that the site had done it. But they can't come  
14 up with anything so now we're just saying, okay,  
15 what do you want to do?

16 I'm not proposing that you do a  
17 statistically pure approach, but, you know, is  
18 there any way to provide that assurance?

19 DR. NETON: I kind of lost the train of  
20 thought here for a second, but did I hear that we  
21 have the raw data that comes to us in the dose  
22 reconstruction?

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1 MR. DARNELL: Yes.

2 MR. McCLOSKEY: We have that  
3 available. If we wanted to get it, we can go get  
4 it.

5 DR. NETON: And we have an electronic  
6 database?

7 MR. FITZGERALD: Yes.

8 CHAIR BEACH: Yeah, the question is --

9 DR. NETON: Why can't we just take and  
10 balance and look and see, the data that we've been  
11 getting, is it in the database?

12 CHAIR BEACH: That's what we were  
13 talking about, just doing a sampling of that.

14 DR. NETON: Yeah. I would say, yeah,  
15 that makes sense.

16 MEMBER CLAWSON: Well, if you  
17 remember, Jim, we've got into this before, and  
18 that's why I brought up Bob Barton on this, because  
19 we had the similar situation in one of my other  
20 sites and he just did a sampling of it to assure  
21 that we --

22 (Simultaneous speaking.)

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1 DR. NETON: How many claims do we have  
2 from Kansas City? I mean, I don't know.

3 MR. KNOX: Six hundred fifty-one.

4 DR. NETON: So we presumably have 651  
5 sets of raw data. Well, not all of them are going  
6 to have data, but that's a pretty good sample size.

7 CHAIR BEACH: And out of those -- yeah.

8 DR. NETON: If we sampled 20, 30  
9 percent, I don't something in that number.

10 CHAIR BEACH: So is that something  
11 NIOSH could do?

12 DR. NETON: Yeah, I think so.

13 CHAIR BEACH: A percentage. And then  
14 SC&A could look at that?

15 DR. NETON: Yeah, I think it's  
16 incumbent upon us to validate --

17 CHAIR BEACH: Okay.

18 DR. NETON: If we're going to do a  
19 coworker model, though, let's talk about that. Is  
20 that --

21 CHAIR BEACH: That's our next topic,  
22 yeah.

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1 MR. DARNELL: We had 721 total claims.

2 DR. NETON: Right.

3 MR. DARNELL: And nine have been pulled  
4 and --

5 DR. NETON: If we plan on doing a  
6 coworker model then we're going to have to do that.  
7 That's already written into the guide, is, you  
8 know, that's the first step almost is to be able  
9 to document that the database that you have  
10 actually helps you out.

11 MEMBER LOCKEY: I understand why you  
12 want to do it, but what are you going to accept?  
13 A priority, you probably should establish your --

14 DR. NETON: Well, it's hard to define  
15 that. You know, we've done things such as looking  
16 as monthly reports and comparing and making sure,  
17 you know, these months they said they picked, they  
18 collected 600 samples and this database had 600  
19 samples in that month, those are some methods we've  
20 used.

21 But as far as picking some raw, pure,  
22 statistical value, I don't think you really can do

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1 that.

2 MEMBER LOCKEY: I guess what I'm asking  
3 was, if you do this analysis, which I think you  
4 should do, what's acceptable and what's not  
5 acceptable? You're going to have to deal with that  
6 at the end.

7 DR. NETON: Well, I think if we develop  
8 a plan we would put that in there, but I don't think  
9 I'm prepared at this point what the plan would be.  
10 But you're right.

11 MEMBER LOCKEY: A priori you should  
12 come up with a plan.

13 DR. NETON: Yes, a priori, you have to  
14 establish what you're going to look at and what you  
15 got, I agree with that.

16 MEMBER LOCKEY: Okay.

17 MR. FITZGERALD: And it does come back  
18 to whether you're going to have a coworker model  
19 or not, right?

20 DR. NETON: Yeah, and if you don't have  
21 a coworker model then it doesn't matter.

22 MR. FITZGERALD: It goes away.

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1 DR. NETON: Yeah, it goes away. I  
2 would imagine we probably will have a coworker  
3 model because I'm sure a few sites would say that  
4 everybody was monitored, and --

5 CHAIR BEACH: Right, right. Okay, so  
6 for --

7 DR. NETON: But I agree, we're going to  
8 have to do that.

9 CHAIR BEACH: So for this one, then,  
10 the action is on NIOSH, and we're saying a 30  
11 percent sampling or is that sufficient?

12 DR. NETON: Let's not put a number on  
13 it right now. We'll put it on our plan, we'll do  
14 an evaluation plan and everything.

15 CHAIR BEACH: Okay.

16 MEMBER CLAWSON: And not to tell you  
17 guys, I was just going to say before you go into  
18 it, could you just kind of let us know --

19 DR. NETON: Exactly. Because I don't  
20 want to go down this path and develop this elaborate  
21 analysis and then someone say, well, that's, you  
22 know, not --

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1 (Simultaneous speaking.)

2 MR. DARNELL: -- and as things come  
3 along I'll be sending it out to the Work Group.

4 MEMBER CLAWSON: There's no question  
5 on that, it's just sometimes things have changed,  
6 you may have passed a little bit with other sites,  
7 which I just want to make sure we're kind of all  
8 on board so we kind of know where we're getting to.

9 DR. NETON: Yeah, no problem. I think  
10 we'll provide you a plan.

11 CHAIR BEACH: So you'll provide us with  
12 a plan of the limited sampling of the records  
13 between the raw database and the electronic  
14 database.

15 DR. NETON: Right. Because I worry  
16 that what happens if we go in there 650 claimants  
17 and we have four people with bioassay? What does  
18 that mean?

19 CHAIR BEACH: And once that plan is in  
20 place then we can say, yea, go for it.

21 DR. NETON: Yes.

22 MR. SHARFI: You're just saying

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1 looking at the claim data that we have, verifying  
2 that that claim data is in the database.

3 DR. NETON: Well, let's look at it and  
4 see how useful it will be and if there's a lot of  
5 them in there, yeah, then we'll develop a plan to  
6 cross-compare.

7 MR. SHARFI: Okay.

8 DR. NETON: And we've done this before.  
9 I have to go back and look at some --

10 MR. SHARFI: No, no, I just want to make  
11 sure I understand what we were saying we're going  
12 to do.

13 CHAIR BEACH: Mutty, can you say it  
14 again because I thought it sounded different than  
15 what I was saying, of what the plan would entail?

16 MR. SHARFI: That we were going to look  
17 at our NIOSH claim pool and see, the people that  
18 actually had bioassay, does that bioassay  
19 corroborate in our database?

20 CHAIR BEACH: Okay, between the raw  
21 data and the electronic? Okay, perfect.  
22 Anything else on the first one?

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1                   MR. KATZ:    Yes, just for the record  
2 Wayne Knox has joined us.  He joined us about five  
3 minutes ago, two minutes ago.  Welcome, Wayne.

4                   MR. KNOX:    Oh, thank you.

5                   CHAIR BEACH:   Okay, anything else on  
6 one?  So we know what's happening there.  The next  
7 topic is Issue 2, coworker internal dose modeling.  
8 And the action, did you want to speak to that again?

9                   MR. FITZGERALD:   Yeah, let me just tee  
10 that up.

11                   CHAIR BEACH:   Okay.

12                   MR. FITZGERALD:   This was on worker  
13 location job category in the coworker model.  And  
14 I would propose to the Work Group that we combine  
15 two and three.  Actually, three was held in  
16 abeyance.

17                   CHAIR BEACH:   Yes.

18                   MR. FITZGERALD:   It was the chronic  
19 versus acute issue, and I think we decided that  
20 there wasn't an issue with chronic versus acute.  
21 It was accommodated by the model, you know, the  
22 models involved, including TBD-6000, anyway.

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1           But there certainly was a question on  
2 coverage in context with the coworker model, which  
3 is really Issue 2. So I would propose just  
4 combining two and three, making it a little  
5 cleaner, rather than have that separate acute one.

6           MR. DARNELL: I do have one question  
7 for Issues 2 and 3. They're not used in the ER,  
8 so is that something that the Working Group wants  
9 to pursue as part of the Evaluation Report or table  
10 it back to the TBD once we start working on the TBD?

11           CHAIR BEACH: Well, I know three was  
12 tabled to the TBD, so that goes back to -- I guess  
13 we should have the discussion on two, is that going  
14 to be the same case there?

15           MR. DARNELL: To me, it's fairly clear  
16 that --

17           MR. FITZGERALD: Yes, I think the  
18 question for the Work Group, is there agreement  
19 that it's a TBD issue? It went back to the coverage  
20 question I think, Brad, that you raised at the last  
21 Work Group meeting, and whether or not the coworker  
22 model would in fact encompass the right workers,

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1 or the workers that were in fact potentially  
2 exposed. That was kind of the hook point and I --

3 MR. DARNELL: But then again you've got  
4 to remember that that's a Technical Basis Document  
5 and the ER doesn't use that at all here.

6 CHAIR BEACH: Right, yeah.

7 MR. DARNELL: So, you know, while I  
8 think it's a very valid question and something that  
9 needs to be looked at, I just think that this is  
10 not the right venue.

11 CHAIR BEACH: Well, and that's why we  
12 need to clear the table and decide, yes, that we  
13 agree it's a TBD issue and we'll couple it with 3  
14 and it gets put in abeyance. Is that the thought  
15 process, Ted?

16 MR. KATZ: Sure. Not in abeyance,  
17 it's just tabled.

18 CHAIR BEACH: Well, like this one.

19 MR. DARNELL: We close it out for this  
20 Work Group --

21 CHAIR BEACH: For this and it moves to  
22 the other --

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1                   MR. FITZGERALD: Well, just so the Work  
2 Group acts on it because I think it was carried over  
3 from the last Work Group meeting, not closed.

4                   MR. DARNELL: Correct.

5                   CHAIR BEACH: Okay. So on June 10th we  
6 were looking for additional bioassay records and  
7 --

8                   MR. FITZGERALD: Medical records.

9                   CHAIR BEACH: And do you just want to  
10 speak to that, because I know you went down  
11 specifically --

12                   MR. McCLOSKEY: Yeah, we generated a  
13 list of names that we sent over to Kansas City and  
14 said we want to see their medical records. We got  
15 those names from looking at the access lists for  
16 the model shop for Project Royal.

17                   Project Royal is the natural uranium  
18 machine operations that occurred in 1951 and '52.  
19 The reason we decided to this was because they  
20 uncovered some records, Kansas City did, where we  
21 didn't think we had.

22                   The first thing we do with this, even

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1 what you guys did a long time ago, is give us all  
2 your internal monitoring records, and they said we  
3 had them all and then subsequently they found more.

4 So we found a new method to go look for  
5 them and Mutty sat in that room in October and we  
6 put in a lot of hours looking through all of those  
7 names and we generated 164 new medical examination  
8 and hospital cards that we put in the SRBD.

9 So that'll help build our case in the  
10 TBD going forward.

11 MEMBER CLAWSON: Now, out of that list,  
12 and, Mutty, we were both down there at the same  
13 time, but when I left we kind of had a gap in there,  
14 too.

15 You've taken a list of names of the  
16 claimants that you have and you were trying to tie  
17 the medical records to their name, correct?

18 MR. DARNELL: It was a list of names of  
19 people that had access to these projects, not  
20 claimants.

21 MEMBER CLAWSON: Okay.

22 MR. DARNELL: So some of them could've

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1       been claimants, some of them were not claimants,  
2       and we looked for them all.

3               MEMBER CLAWSON:    What did we come up  
4       with percentage-wise?  Did we find them all or did  
5       we just, 30 percent, 50s?

6               MR. McCLOSKEY:    So they handed us over  
7       all of the files for all of the employees that we  
8       asked for.  I mean, we got a high percentage of the  
9       names of the people that we asked for.  There might  
10       have been a few that were missing.

11              And then now you're asking what  
12       percentage of those had internal monitoring  
13       records?

14              MEMBER CLAWSON:   Well, first of all, I  
15       wanted to find out did we -- we gave them all these  
16       names and you said we got a high percentage, what  
17       would that high percentage be?  Would it be --

18              MR. DARNELL:       We don't have that  
19       actually with us.

20              MR. SHARFI:        Yeah, I don't know if I  
21       have it either.

22              MEMBER CLAWSON:    Well, I was just

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1 wondering.

2 MR. SHARFI: Every box they gave me I  
3 got through.

4 MEMBER CLAWSON: Right, but I was just  
5 wondering, because at one time, you know, you were  
6 telling us that we were getting a lot of good  
7 records, but if we had like 100 names I was just  
8 wondering if we got --

9 MR. DARNELL: We didn't bring that data  
10 with us. We can't answer your question.

11 MEMBER CLAWSON: Okay.

12 MR. DARNELL: Do you want us to dig that  
13 up for you?

14 MEMBER CLAWSON: No. I was just  
15 trying to get a feel for how good they were, and  
16 then, also, I wanted to see how good the medical  
17 records were as far as being able to tie them to  
18 internal data.

19 MR. DARNELL: It's specific to data  
20 itself. We didn't find a lot of medical data in  
21 the medical records.

22 MR. SHARFI: Bioassay data.

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1 MR. DARNELL: Yes, bioassay data in the  
2 medical records, thank you. What we found were the  
3 requirements to do all that stuff, but not the  
4 specific data itself.

5 So what we thought we were going to be  
6 able to find in those records we were not able to  
7 find.

8 MEMBER CLAWSON: Okay.

9 DR. NETON: Requirements to do what,  
10 take bioassay samples?

11 MR. DARNELL: Yes, the way the medical  
12 --

13 MR. SHARFI: Medical classified a type  
14 of worker, then the ES&H actually recorded the  
15 bioassay, other than the Project Royal, which we  
16 found that those bioassays were actually in the  
17 medical files, not in the health records, the ES&H  
18 records.

19 So we were finding the urinalysis for  
20 the uranium for the Project Royal in the medical  
21 records.

22 DR. NETON: And that's where we

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1 normally get them?

2 MR. SHARFI: No, that's what drew us to  
3 the medical records, was we found a situation where  
4 they had a -- they're through LANL, I believe, AND  
5 they did the bioassay.

6 DR. NETON: So that was the early time  
7 when LANL was doing the bioassay?

8 MR. SHARFI: Yes.

9 MR. DARNELL: Yes, but we didn't find  
10 the corresponding to be true with other workers on  
11 known radioactive projects, finding their bioassay  
12 data on those cards.

13 We found the requirements for the  
14 medical monitoring program that went with that, but  
15 not the actual data.

16 DR. NETON: Do we get the medical  
17 records when we do a dose reconstruction?

18 MR. SHARFI: They scan them. Well,  
19 when I talked to -- they actually scan it, both the  
20 medical, the S&As, the external, they scan  
21 everything and they provide it.

22 DR. NETON: So if there were bioassay

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1 date on this we would get it if it was only in the  
2 medical record?

3 MR. DARNELL: Correct.

4 MR. SHARFI: Yes, those we should get.

5 DR. NETON: Okay.

6 MR. DARNELL: But we did a very limited  
7 scope. We looked at a set of cards. You get a  
8 whole medical record, we looked at the cards  
9 looking for the data and we didn't find it specific  
10 to those cards, except the Project Royal.

11 MR. SHARFI: Those were the only  
12 bioassay that we saw on the cards, or in the medical  
13 files.

14 MR. DARNELL: Yes.

15 CHAIR BEACH: So, for the Work Group,  
16 do we agree that this is likely a TBD issue and can  
17 be coupled with three and taken off the SEC matrix?

18 MEMBER LOCKEY: I agree.

19 CHAIR BEACH: Okay. Loretta, how  
20 about you?

21 MEMBER VALERIO: I agree. I'm fine  
22 with that.

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1 CHAIR BEACH: Okay. Brad?

2 MEMBER CLAWSON: I don't, but that's  
3 just a personal thing, so I'll go with the Work  
4 Group on this.

5 CHAIR BEACH: Okay. So I agree with  
6 that also and the SC&A's recommendation is clear  
7 and we'll add that with 3. In one case, yeah. So  
8 no action required here and this does not go away,  
9 it's just going to move to the TBD.

10 MR. KATZ: It's postponed.

11 CHAIR BEACH: Which we do have a matrix  
12 for that.

13 MR. DARNELL: Yes, ma'am.

14 CHAIR BEACH: Okay.

15 MR. KATZ: Who is the keeper of that  
16 matrix?

17 CHAIR BEACH: I think Joe is.

18 MR. FITZGERALD: Yeah, I have the TBD  
19 issues. I haven't looked at it lately, but we'll  
20 start, I'll start updating that.

21 MR. KATZ: And, Joe, can I just check,  
22 are we putting this on the Board Review System,

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1 since we have that capacity now for Work Groups,  
2 because I think we really should be here, too.

3 MR. FITZGERALD: That's a good point.  
4 How do I -- well, we can talk --

5 CHAIR BEACH: We can talk offline.

6 MR. KATZ: Yeah, Steve Marschke's the  
7 one to chat with.

8 MR. FITZGERALD: All right.

9 MR. KATZ: He can guide you. But I think  
10 it would be great to put this stuff there. It's  
11 makes everybody's job easier down the road.

12 MR. FITZGERALD: All right.

13 CHAIR BEACH: That's a great idea.  
14 Make a note of that.

15 MR. KATZ: And give me a call if you  
16 have any issues with it and I'll help out.

17 CHAIR BEACH: Steve Marschke is the  
18 one, you're right.

19 So Issue 3 is in abeyance pending  
20 further discussion for TBD. Issue 4 we closed on  
21 June 10th, as well as Issue 5.

22 That moves us to Issue 6. This one I

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1 think we should be able to deal with relatively  
2 quickly. It was dealing with the DU ballast, that  
3 was the last action of the Work Group that we gave  
4 to NIOSH to get some more information on that.

5 If you remember, the DU ballast we found  
6 on a SWIMS data report and we wanted to know more  
7 about it. So did you want to just tell us what you  
8 found?

9 MR. DARNELL: Basically we looked and  
10 the indications that we have and information from  
11 the plant was these were parts that were machined  
12 offsite sent onsite basically to use as ballast  
13 weight to make the assemblies that they were  
14 putting together weighed correctly and balanced  
15 correctly.

16 Almost no exposure to the workforce.  
17 There's really nothing here that we can add --

18 CHAIR BEACH: The ballasts are all  
19 sealed, right?

20 MR. DARNELL: Yeah.

21 CHAIR BEACH: Okay.

22 MEMBER CLAWSON: Well, wait a minute.

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1 The ballasts was for a GTA so they'd go out there  
2 and drop it so you'd have the right balance and  
3 everything else.

4 MR. DARNELL: Right.

5 MEMBER CLAWSON: But that was depleted  
6 uranium, correct?

7 MR. DARNELL: Yeah, that's what we're  
8 talking about.

9 MEMBER CLAWSON: Okay. And that's  
10 great because once that's machined it starts to  
11 corrode. We've already been through this on --

12 MR. FITZGERALD: But that's the  
13 unalloyed version.

14 MEMBER CLAWSON: So this was a sealed  
15 depleted uranium source?

16 MR. DARNELL: As far as we know, it was  
17 some --

18 (Simultaneous speaking.)

19 MR. FITZGERALD: I don't think we have  
20 a corrosion issue in this type of case.

21 MEMBER CLAWSON: Okay. That's what I  
22 was wanting to get to, because especially after

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1 they drop it down and it does its thing that's --

2 MR. DARNELL: But that doesn't have  
3 anything to do with Kansas City. Kansas City  
4 installs these parts in the telemetry unit, it's  
5 sent someplace else, whatever testing is done, this  
6 stuff that's sent back is supposed to be free from  
7 contamination, from other discussions that we've  
8 had on that.

9 MR. FITZGERALD: Yeah, our concern was  
10 whether it was fabricated or handled onsite in  
11 terms of grinding or anything, and we have  
12 established it was not.

13 MEMBER CLAWSON: Okay.

14 CHAIR BEACH: Yeah.

15 MR. FITZGERALD: So we're okay with  
16 that. And we're satisfied there wasn't any other  
17 depleted uranium source terms. I think the  
18 ballast item stood out as the one that wasn't  
19 covered by the --

20 MR. DARNELL: That was really the only  
21 question, a source term, and then we found that it's  
22 not a source term.

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1 CHAIR BEACH: Yeah, and I think you ran  
2 that down and I think SC&A's happy with that. I  
3 read the reports and I recommend closing this item  
4 as well, if everybody agrees. Loretta?

5 MEMBER VALERIO: I agree.

6 CHAIR BEACH: Okay. So on that we'll  
7 close Item 6.

8 Now, I think the next item is going to  
9 take some time, so I'm proposing that we stop for  
10 lunch. Is everybody okay with that? How much  
11 time do we need, an hour?

12 MR. KATZ: For what?

13 CHAIR BEACH: For lunch.

14 MR. KATZ: They're slow here, so if  
15 you're eating at the restaurant here it's just hard  
16 to get it done quickly.

17 CHAIR BEACH: Yeah, I would say we go  
18 from 11:30, which it's close to that, to 12:30.

19 MR. KATZ: Yeah.

20 CHAIR BEACH: Take a lunch break. Okay.  
21 So let's go off the air.

22 MR. KATZ: Okay. So thanks everyone.

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1 We'll be back online at 12:30.

2 (Whereupon, the above-entitled matter  
3 went off the record at 11:33 a.m. and resumed at  
4 12:31 p.m.)

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A-F-T-E-R-N-O-O-N S-E-S-S-I-O-N

21

(12:31 p.m.)

22

CHAIR BEACH: All right, so we'll just

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1 carry on. We are going to talk about Issue 7, which  
2 is the radioactive waste handling, storage and  
3 transportation.

4 NIOSH didn't give us a White Paper, but  
5 there is a lengthy response in the matrix. So if  
6 you have a copy of the matrix, that is there. And,  
7 Pat, are you going to go ahead and take that?

8 MR. McCLOSKEY: I'll be happy to.

9 CHAIR BEACH: Okay, great.

10 MR. McCLOSKEY: So there were  
11 documents that we wanted to go find during our  
12 October site visit, SWIMS records, basically that  
13 stands for Site Waste Information Management  
14 System, that's an acronym.

15 So we did get a lot of good information  
16 there, maybe not as many of the documents as we were  
17 hoping to find, but we learned more about their  
18 waste management practices there.

19 It helped corroborate some stories that  
20 we had heard in interviews about the Red X Lot, that  
21 lot outside, where they kept some of the waste prior  
22 to it being shipped. And it gave us a map and

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1 showed us what it looked like.

2 And we had some of their waste  
3 management plans that talked about how little waste  
4 was actually shipped, a lot of years where there  
5 was none at all.

6 Let's see, the records indicate that  
7 Kansas City's routine waste generation was minimal  
8 and the waste shipments were typically made every  
9 two years.

10 There were some years where shipments  
11 weren't necessary, but there were some years at the  
12 close of the primary DU machining operations where  
13 there were some bigger shipments like you would  
14 expect.

15 We have records of 122 drums, 55-gallon  
16 drums, being shipped in 1963 and another separate  
17 shipment of another 127 drums being shipped. So  
18 there's some indications of some large shipments  
19 when you would expect them, but for the most part  
20 there were not a lot of waste, radioactive waste  
21 created.

22 I think we talked last time about those

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1 pictures that you guys found in your December visit  
2 of the back of the truck where they had some leaking  
3 drums and you wanted to hear more about that.

4 That report is available in SRDB Number  
5 123835. I don't have that listed here, but there's  
6 a big rundown there if you want to go --

7 CHAIR BEACH: What was the number  
8 again?

9 MR. McCLOSKEY: 123835. So they think  
10 some of those drums leaked in transport from Kansas  
11 City to Los Alamos. But there's good survey data  
12 in that SRDB, in that document, and there is a  
13 corrective action that took place afterwards. And  
14 that's the only indication that I saw of drums in  
15 shipment, or waste in shipment, being found  
16 leaking.

17 So as part of that review, we did not  
18 discover any new information that suggests that  
19 Kansas City's waste generating disposition  
20 activities presented exposure pathways that were  
21 not bounded by our methodology.

22 So any questions on waste management?

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1                   MR. FITZGERALD:     Well, if I can  
2 comment?

3                   CHAIR BEACH:    Yes.

4                   MR. FITZGERALD:     This came up  
5 originally because of that one instance where they  
6 did find contamination at Los Alamos, in '62, and  
7 that was the genesis of trying to figure out, well,  
8 does that somehow exemplify some broader question  
9 on how waste was handled and could you go back to  
10 Kansas City, the originator of the waste, and find  
11 similar issues when they packaged and handled  
12 waste, in terms of any contamination?

13                   And I agree, we went back and looked at  
14 all the records and did not find any other instances  
15 reported. And Los Alamos was pretty worked up  
16 apparently with the contamination they had from  
17 that one shipment and there was a corrective action  
18 that was pretty stringent. And I think Kansas City  
19 was on warning that they had to, you know, tighten  
20 up their operation.

21                   Los Alamos did not want to receive  
22 anything that had any evidence of contamination.

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1 And there was a number of memos on Kansas City's  
2 part which, you know, put methods in place and QA  
3 in place to make sure that didn't reoccur. And I  
4 think they took it pretty seriously and no other  
5 instances that we could find.

6 The only thing I would say we differ  
7 from the response is you acknowledged in the '60s  
8 there were, you know, more shipments. We found  
9 that pretty much throughout the '60s, from about  
10 '61 through upwards to the late '60s and maybe even  
11 1970, in sort of tracking the DU timeframe, where  
12 we had hundreds of drums per year, sometimes every  
13 month you had almost 100 drums going to Los Alamos.  
14 And turns out, toward the low-level landfill,  
15 Kansas City was one of the major contributors  
16 during that timeframe, both classified waste as  
17 well as, you know, sort of standard laboratory rad  
18 waste.

19 So it was a fairly large scale drumming  
20 operation and shipping operation and it involved  
21 depleted uranium, laboratory waste, and on one  
22 occasion a thorium-232 oxide was mentioned, but

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1 basically it was DU and laboratory waste.

2 And, again, that one instance was the  
3 only instance that was highlighted by Los Alamos,  
4 who was tracking it from their end, and Kansas City  
5 from their end, so as far as contamination it seemed  
6 that that was the one instance that was identified.

7 The only thing that I would I guess  
8 mention is that given the scale of the drumming  
9 operation, you know, it was hundreds of drums,  
10 55-gallon, 30-gallon, 20-gallon containers from  
11 that 10-year period. We're almost sort of  
12 backdooring this because of that one instance at  
13 Los Alamos. I don't know if we found anything that  
14 spoke to any monitoring of the actual drumming  
15 operation.

16 We knew where it took place, I forget  
17 the name of the location, but they would move the  
18 drums stacks -- test pit or something. They'd move  
19 the drums there and they would be held there until  
20 they had enough drums for a shipment and they would  
21 ship them out.

22 What I was kind of interested in was any

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1 monitoring that would've taken place while they  
2 staged the waste at Kansas City before it got  
3 shipped.

4 It gives me some confidence, the fact  
5 that they put in these QA controls after the '62  
6 incident, that it be unlikely they would've had  
7 much in the way of contamination. They were afraid  
8 to have those go to Los Alamos, so there was a lot  
9 of concern about that.

10 So from a programmatic standpoint, it  
11 looked like they were much more stringent after '62  
12 in taking a look at the waste making sure there was  
13 not contamination, but we couldn't find any data.

14 You know, you would think they would've  
15 done smears, they would've done some monitoring,  
16 to assure themselves before the shipments were  
17 made, but I don't think we've seen that yet.

18 So that's the missing piece on this  
19 whole thing. Otherwise, I'd say the waste issue  
20 is really a 1961 through '70 issue, and as you were  
21 saying, Pat, it's pretty much intermittent, if at  
22 all.

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1           It was mostly the DU turnings and some  
2 laboratory waste that figured in the '60s, and then  
3 after that it was pretty intermittent.

4           MR. DARNELL: Well, the one thing we  
5 have to remember is this, like all the other  
6 projects onsite, you had to be medically monitored,  
7 radiologically monitored and the whole bit.

8           I don't see this as any different than  
9 working on the machining part of the DU project.  
10 Those guys were doing that DU project, they would  
11 carry the waste through the end.

12           So I wouldn't necessarily expect to see  
13 dosimetry badges that said "waste," you know, that  
14 they were associated with a waste operation. I  
15 would expect that the project workers be part of  
16 the people that took care of this waste.

17           MR. FITZGERALD: I am just commenting  
18 that I know we did a lot of looking. Well, I don't  
19 think we've actually uncovered the monitoring  
20 information on how they actually monitored those  
21 shipments going out.

22           I see more on the other end where Los

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1 Alamos was checking on their end, rather than  
2 Kansas City --

3 (Simultaneous speaking.)

4 MR. FITZGERALD: I almost think that  
5 that information may reside somewhere.

6 MR. McCLOSKEY: Now, this document I  
7 just gave you all the number for a minute ago, and  
8 I'm sure you've read it, it's the one with the  
9 pictures of the --

10 MEMBER CLAWSON: Trailer?

11 MR. McCLOSKEY: Yeah. There's rad  
12 levels on all 127 drums in the one shipment and 122  
13 on the other and they're all mostly under two  
14 millirem per hour readings. It would be like a  
15 DOT-required rad survey before you ship it. So we  
16 have that. But I think, aren't you asking for like  
17 routine contamination surveys --

18 MR. FITZGERALD: I'm just wondering,  
19 you know, they apparently did put a program in  
20 place, the QA requirements were written about, but,  
21 like some other issues, we just didn't find any  
22 records of what the results were.

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1 I think indirectly the fact that Los  
2 Alamos was happy thereafter, I didn't see any  
3 correspondence that strikes me that, you know, I  
4 don't think they got anything that was crapped up  
5 after '62.

6 So, you know, from that basis I think  
7 there is some comfort level. But given the scale  
8 of, again, a fairly intense program of shipping  
9 lots of drums, hundreds of drums, in that  
10 timeframe, that seems to be the only thing that,  
11 you know, is missing, is just any record on the  
12 Kansas City side of how they managed the staging  
13 area, whether they, you know, did any contamination  
14 control, what the results were.

15 The only thing I found was the QA  
16 process they were proposing to put in place because  
17 of Los Alamos's complaints. So that's one element  
18 on Kansas City's side I found.

19 And as you were saying, there's some  
20 DOT, I guess, I'm not sure if records, but for that  
21 one instance they had some exposure data for the  
22 drums, right?

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1                   MR. McCLOSKEY: Yes, a serial number of  
2 the drum. Drum X, Y, Z, has this millirem per hour.

3                   MR. FITZGERALD: But that was just for  
4 that shipment, right?

5                   MR. McCLOSKEY: For two shipments in  
6 that SRDB document, they're all provided.

7                   MR. FITZGERALD: Right.

8                   MR. McCLOSKEY: So, I mean, I'd look  
9 further, but if you saw frequent shipments  
10 throughout the '60s I would expect to see the same  
11 information.

12                   MR. FITZGERALD: Right. I thought  
13 SWIMS would provide a lot more than it did. I don't  
14 know if we have all the SWIMS or not, but I don't  
15 think we got all the SWIMS, I think we got some of  
16 them.

17                   CHAIR BEACH: Did you find any  
18 inventories or anything for anything of these,  
19 anybody?

20                   MR. FITZGERALD: No. The only thing I  
21 found was numbers of drums, size of drums, some  
22 information on what was in the drums. And even

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1 this was incomplete, because in '62 you had a  
2 January shipment and an April shipment, but, you  
3 know, that was the first half of the year. It's  
4 unclear what happened after that.

5 '64, May had 160 drums. August, 112  
6 drums. 1965, 111 drums for one shipment. '66, 240  
7 drums in one shipment. '67, 124 drums in one  
8 shipment. 1968, 187 drums on two shipments. And  
9 '69, two truckloads of classified rad waste.  
10 Whatever that means, two truckloads. And '70 was  
11 two truckloads. So, you know.

12 MR. McCLOSKEY: I found some  
13 descriptions of inventory for drums, and that was  
14 part of the thorium issue that we're going to come  
15 up to. We'll talk about the thorium that was in  
16 there.

17 But for the 1960s, you know, all of it  
18 was classified, and the best I can see it was solid  
19 or liquid, you know.

20 CHAIR BEACH: Yeah. So it sounds like  
21 there's more work that needs to be done here. I  
22 guess I'm curious of where --

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1                   MR. DARNELL: And I'm trying to figure  
2 out what work needs to be done. You know, we've  
3 got to look at it from the dose consequence. You  
4 know, how much dose, the workers, and have we  
5 bounded that dose.

6                   CHAIR BEACH: True.

7                   MR. DARNELL: My thought is, if we're  
8 going to look for anything, the only thing we really  
9 actually need to see is who was handling the waste.

10                   If it were the people that were  
11 generating the waste and part of that project,  
12 we're covered, because we already have that  
13 monitoring. We already know what's going on with  
14 those folks.

15                   If there was a separate group ,we need  
16 to find out about the separate group. But right  
17 now ,from all indications that we have, it would've  
18 been the folks that generated the waste.  
19 They're already a part of the program. We've  
20 already bounded their dose. There is no more work  
21 to do.

22                   CHAIR BEACH: Well, there seems to be

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1 a discrepancy between what NIOSH is saying was  
2 happening in the waste world and what SC&A has come  
3 up with. So, to me, that goes back to the projects  
4 and what was being done and the volumes of waste  
5 being --

6 MR. DARNELL: But I don't care how much  
7 waste is being generated if I've got the workers'  
8 doses bounded --

9 CHAIR BEACH: But we don't, so, for  
10 that waste.

11 MR. DARNELL: Well, that's the only  
12 question that we have to ask.

13 CHAIR BEACH: Right.

14 MR. DARNELL: Not what was going on  
15 with the waste or how much was being generated or  
16 which project was leading which. If the project  
17 personnel were the ones handling the waste, which  
18 that's every indication that we have from the site,  
19 then that's what we need to nail down, to me, and  
20 that's just my opinion. I throw that out for that  
21 table, but --

22 DR. NETON: So you have interviews or

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1 documents that suggest that the people that were  
2 machining the uranium were the same ones that  
3 drummed the waste then?

4 MR. DARNELL: As far as the way the  
5 projects were set up, yes.

6 MR. FITZGERALD: Yeah, I would tend to  
7 agree that they were putting the shavings in the  
8 drums. As far as beyond that point, it's unclear,  
9 you know, who was actually moving the waste to the  
10 staging areas and then putting them into trucks.

11 MEMBER CLAWSON: Well, and then this  
12 gets into another point, and this is when you start  
13 to get into the classified waste. That's a whole  
14 different set of people there.

15 MR. DARNELL: Now, you're making an  
16 assumption that it's a whole different group of  
17 people.

18 MEMBER CLAWSON: Wait. I think I can  
19 make an assumption because you're making an  
20 assumption.

21 MR. DARNELL: No, we've got  
22 programmatic data that shows that's the way they've

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1 handled these things. We've got to nail it down  
2 to make sure that that is the way they handled it  
3 this time.

4 MEMBER CLAWSON: Got to nail it down.  
5 So until it's nailed down it's an assumption,  
6 bottom line. And this is why with our Issue 2 that  
7 I said that I had reservations on it before you  
8 could put the people where it was at, because when  
9 we get into the metal shavings, the uranium  
10 machining, I can understand that, but when we get  
11 into these other classified ones, I have a hard time  
12 really saying that we have captured all the people  
13 per the program. Because there were many  
14 different ones going on and it could've been a lot  
15 of different aspects of it.

16 And my personal opinion is we need to  
17 be able to put our hands around this a little bit  
18 better, because the machining part of it, okay,  
19 when we get into classified waste, no.

20 You know, you've even got the other  
21 incidences of how they got rid of radioactive  
22 clothing and so forth, and that ended up getting

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1 changed around because of an incident that happened  
2 there.

3 So I think, personally, that we need to,  
4 there is a little bit more there to be able to do.  
5 And I understand what you say about, well, if we've  
6 got all these people there, it's a programmatic  
7 bull, and so we're covered by it, but I don't think  
8 so.

9 MEMBER LOCKEY: Can I ask for a couple  
10 clarifications? So, everything went to Los  
11 Alamos, right, all of the drums?

12 MR. FITZGERALD: All of the  
13 classified, the laboratory waste, and the DU  
14 shavings all went to Los Alamos, the low-level  
15 landfill there.

16 MEMBER LOCKEY: And the incident in  
17 '62, it was Los Alamos receiving something that was  
18 leaking or contaminated, correct?

19 MR. FITZGERALD: Right.

20 MEMBER LOCKEY: So what was the  
21 communication, do we have communication in  
22 response? They must've gotten back to Kansas City

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1 --

2 MR. FITZGERALD: They went back and  
3 forth and Los Alamos, you know, brought this to  
4 Kansas City's attention, insisted that Kansas City  
5 take action. Kansas City took action, put new  
6 procedures in place, practices, and they went back  
7 to Los Alamos.

8 MEMBER LOCKEY: I understand that, but  
9 did Kansas City have any response to that  
10 particular incident as to when it got its status?

11 MR. FITZGERALD: They just put new  
12 procedures in place, but there wasn't any  
13 documentation that actually showed results per se,  
14 okay? What we didn't find was any more complaints  
15 or concerns expressed by Los Alamos.

16 MEMBER LOCKEY: I understand that.  
17 Los Alamos received the contamination and they were  
18 in communication with Kansas City.

19 MR. FITZGERALD: Right.

20 MEMBER LOCKEY: Did Kansas City in any  
21 way explain themselves, when that shipment went  
22 out, what the status of it was?

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1 MR. FITZGERALD: Yeah, actually that  
2 was in there, where they were saying that the tops  
3 weren't necessarily always seated well and there  
4 were some leakage off the top of the drum, the seam  
5 of the lid on the drum wasn't secured and there was  
6 leakage at the top.

7 MEMBER LOCKEY: These were Kansas  
8 City's statements?

9 MR. FITZGERALD: Kansas City  
10 investigated and established that there was some  
11 weaknesses in their program, one of which was  
12 assuring the QA process, securing that the lids  
13 were on top of the drums adequately, that was one  
14 issue.

15 MEMBER LOCKEY: Using more absorbent.

16 MR. FITZGERALD: Yeah.

17 MR. McCLOSKEY: They upped the level of  
18 absorbent they put into liquids after that.

19 MEMBER LOCKEY: So the leakage did not  
20 occur --

21 (Simultaneous speaking.)

22 MR. KATZ: Can you hold one second?

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1 Excuse me --

2 MEMBER LOCKEY: -- it wasn't sealed  
3 right before it was shipped?

4 MR. FITZGERALD: It was sealing as well  
5 as not enough absorbent in the drum to secure or  
6 stabilize the liquid.

7 MEMBER LOCKEY: I got you.

8 (Simultaneous speaking.)

9 MR. KATZ: Okay, can you hold a second,  
10 please? On the line, somebody is not muted on the  
11 line, and while it's not really in the way of our  
12 conversation here, it's certainly getting in the  
13 way of other people on the line being able to hear.  
14 So anyone who's on this line should have their phone  
15 muted. If you don't have a mute button press \*6  
16 to mute your phone. Much thanks.

17 MR. FITZGERALD: And, Jim, it wasn't  
18 anything exotic, it was just really kind of  
19 standard QA type of things you would do when  
20 shipping waste. And they just weren't as tightly  
21 procedurized as they should've been and they went  
22 back and really, you know, applied these new

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1 procedures and they had to check these after they  
2 secured the lids.

3 And what I was kind of looking for,  
4 along those lines, was any evidence that they, you  
5 know, recorded, yeah, okay, we okay we checked  
6 these drums before the drums were shipped. And the  
7 presumption is they did because, again, the  
8 procedures call for it but there's not much in --

9 DR. NETON: It seems like these  
10 procedures they put in place really didn't  
11 necessarily affect the worker exposure that were  
12 doing the drumming. These were shipment  
13 transportation, so you're not --

14 MR. FITZGERALD: Right.

15 DR. NETON: It's not like they said,  
16 well, my gosh, your workers need to be using remote  
17 loaders or --

18 MR. FITZGERALD: No.

19 (Simultaneous speaking.)

20 DR. NETON: So it's really not a worker  
21 exposure change there at all.

22 MR. FITZGERALD: No.

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1 CHAIR BEACH: Other than, up to that  
2 point, that was the first indication that they had  
3 a contamination issue on the outside of the  
4 containers.

5 DR. NETON: Right, but it seems like it  
6 got contaminated during transit.

7 CHAIR BEACH: Possibly, yeah.

8 MR. FITZGERALD: Well, originally we  
9 were backtracking it to see if it was in transit  
10 or whether it was actually problems at the site.

11 DR. NETON: Right.

12 MR. FITZGERALD: But as it turns out  
13 from the documents and records we couldn't see any  
14 problem at the site.

15 DR. NETON: Right.

16 MR. FITZGERALD: So the idea was, okay,  
17 well, when they loaded these drums and handled them  
18 as they were being shipped somehow some of this  
19 started getting out, or in transit.

20 DR. NETON: Right.

21 MR. DARNELL: I think it's pretty close  
22 to an idea that it was in transit when --

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1 (Simultaneous speaking.)

2 DR. NETON: That leaves us Brad's  
3 issue, though. I'd like to talk about this special  
4 nuclear material --

5 MR. DARNELL: Yeah, I want to make sure  
6 I understand exactly what you're looking for, Brad.

7 DR. NETON: Now, their operations  
8 there --

9 MEMBER CLAWSON: The shipment that  
10 they're talking about right there is depleted  
11 uranium shavings and that changed that.

12 DR. NETON: Right.

13 MEMBER CLAWSON: But then we've got the  
14 classified, those classified for certain products  
15 that are in there and so forth like that, which are  
16 totally different than the uranium ones were.

17 DR. NETON: Okay.

18 MEMBER CLAWSON: I'm sitting here, we  
19 have, because of this incident, we have monitoring  
20 data for all of those drums and stuff, so we know  
21 that.

22 CHAIR BEACH: Well, no, we don't.

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1 (Simultaneous speaking.)

2 CHAIR BEACH: He said we need to see if  
3 we have the monitoring data and who did the waste.  
4 So we don't know for sure if the people that  
5 actually were doing the machining were also  
6 handling waste, that's something we need to track  
7 down.

8 MR. DARNELL: But the people  
9 themselves should have been monitored the way the  
10 programs were set up. As far as monitoring of the  
11 drums, I don't think we have any of that data at  
12 all.

13 DR. NETON: So let me ask this  
14 question. I know this is classified information,  
15 but is this material different than the source  
16 materials that we've been talking about this  
17 morning?

18 MEMBER CLAWSON: Yes.

19 DR. NETON: So it's another source term  
20 --

21 MR. DARNELL: The radionuclide isn't.  
22 What radionuclide are you, we don't have --

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1 MR. FITZGERALD: It's just form.

2 (Simultaneous speaking.)

3 DR. NETON: So it's a chemical form of  
4 the same materials we've been talking about? Okay.  
5 So then I think we do need to go back and research  
6 what Pete talked about, which is to see if the  
7 people that were working with this material were  
8 also the ones that packaged the waste for this --

9 MR. FITZGERALD: Yeah, I think that's  
10 fine. I think that's where we're at, just making  
11 sure that there's not an exposure potential that's  
12 not covered.

13 MR. DARNELL: Or a group we've missed.

14 MR. FITZGERALD: A group we've missed.

15 MR. DARNELL: If there's waste  
16 handlers we definitely need to capture what the  
17 exposure --

18 DR. NETON: Right. If there's a waste  
19 processing team out there and --

20 MR. FITZGERALD: Well, what gave me  
21 pause was is sort of the description that you  
22 provided. It seemed to suggest it was

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1 intermittent or not at all, but in the '60s I would  
2 say no. I would think it's much more active in the  
3 '60s.

4 And there you might actually have some  
5 exposure if it were a different group of people.

6 MR. DARNELL: I don't think we're  
7 talking about it being a large plant exposure in  
8 terms of where the waste was stored and how that  
9 was basically separated. What we're talking about  
10 is the folks that handled the drums.

11 (Simultaneous speaking.)

12 MEMBER CLAWSON: Yeah, that's fine,  
13 but I just want to caution us because I really  
14 haven't seen a site yet that we've been able to  
15 place people in their jobs and select them down to  
16 just, you know, being able to say, oh, yeah, we've  
17 got this all covered. I don't think we've seen a  
18 site yet that we've been able to really make sure.

19 MR. DARNELL: Well, we've got access  
20 lists already on who was assigned to what project  
21 and --

22 MEMBER CLAWSON: Pete, and I can blow

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1 that right out the water because it's like Area 20  
2 for the machining of the uranium. We've already  
3 come to find out that, yes, the people that were  
4 doing the machining were fine, the QA, the  
5 engineering, they didn't need that access.

6 MR. DARNELL: I don't agree with you  
7 though, Brad, I'm sorry.

8 MEMBER CLAWSON: Well, and that's  
9 fine, but I just wanted you to know when push comes  
10 to shove it'll be there because there's already  
11 been documentation of that and the changes to it.  
12 So I just want caution us on that.

13 MR. COPELAND: Could I help you out a  
14 little bit on that? Those people --

15 CHAIR BEACH: Hang on just a sec. Does  
16 anybody else with the Work Group have questions or  
17 comments on this?

18 MR. DARNELL: I'm actually curious  
19 what documentation Brad is talking about, so I can  
20 --

21 CHAIR BEACH: Okay. So we'll get to  
22 you, Maurice, hold on to that. And I did add it

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1 for the site visit as though we need to continue  
2 looking for waste records for the '60s and waste  
3 handlers.

4 MR. DARNELL: Yeah, sure.

5 MEMBER CLAWSON: Part of the  
6 documentation that came in to this was from the  
7 quality assurance department in one of their  
8 reports that they were going in there, because the  
9 parts that were being machined and run were going  
10 into there and the comment was was that only people  
11 that have access badges, with these certain badges,  
12 could go in there. Well, the quality assurance  
13 people didn't.

14 And then there was the building they  
15 were adding on at I believe it was the north end  
16 of Area 20, to be able to give a bigger area to be  
17 able to put the product for them to be able to test  
18 and to be able to check these parts.

19 So from my aspect of saying that we have  
20 all these access controls and only those people can  
21 go in there, I say that's not so.

22 DR. NETON Yeah.

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1                   MEMBER CLAWSON:   And the engineering  
2                   of going in there and doing ventilation upgrades  
3                   and looking at this, I'm sure that the people that  
4                   were on the project had access.

5                   We've talked about the badges for Area  
6                   20 and so forth, but the other departments that  
7                   supported them, I don't think that we really can  
8                   say that.

9                   (Simultaneous speaking.)

10                  MR. DARNELL:     What we saw in the  
11                  medical records when we went and looked, those  
12                  various support people that you're saying you don't  
13                  think had the training, had the training.  That's  
14                  what is listed in their medical records.

15                  DR. NETON:     I don't think that we  
16                  decided yet.  I think we've agreed that we're going  
17                  to pursue a coworker model here.  We're going to  
18                  go look at the data to see.

19                  So I think -- I'm not convinced that  
20                  everybody that needed to be monitored was  
21                  monitored.  I agree, you could never prove that  
22                  people like maintenance folks didn't go in there

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1 and stuff even though the supposedly had access  
2 control. But that's what the coworker models are  
3 for.

4 MEMBER CLAWSON: Right.

5 DR. NETON: And I think we're going to  
6 pursue that, at least we're going to pursue the  
7 option, when we go back and look at the electronic  
8 database and match it up with the records we have.

9 So I don't think we're saying that, you  
10 know, no one else is going to get dose but just the  
11 monitored workers. So I think that's okay.

12 The key question here, though, is were  
13 the people that were monitored the same people that  
14 actually handled the waste. If there's a  
15 different group out there that handled waste that  
16 weren't monitored then we could have a problem.  
17 That's what I think we're saying.

18 MR. DARNELL: I feel like I'm missing  
19 something and I want to make sure that I have the  
20 right information so that Brad can be happy with  
21 what he's hearing, and I'm not understanding is all  
22 I'm saying. I just don't understand where you're

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1 coming from with this, so that's why I am asking.

2 MEMBER CLAWSON: And that's fine. For  
3 you to tell me that everybody was monitored that  
4 should've been monitored, I don't agree.

5 MR. DARNELL: Well, I don't think I'm  
6 actually saying that.

7 CHAIR BEACH: I don't think he -- he  
8 said that we need to go, he thinks they know who  
9 was involved, but we need to go and make sure that  
10 the other areas are covered, meaning the waste  
11 workers --

12 MR. FITZGERALD: Meaning, you know,  
13 the DU workers were bioassayed, routinely  
14 bioassayed.

15 CHAIR BEACH: Yeah.

16 MR. FITZGERALD: If they were the same  
17 workers that handled the waste, we have the records  
18 then. If they're not, then we may not have those  
19 records. And so that's pretty much the --

20 CHAIR BEACH: Yes, so we're going to look  
21 for more --

22 MR. DARNELL: And the other thing is,

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1 the way it's supposed to happen and the real world  
2 of how it happened, we all know are two different  
3 things, and I understand that.

4 I just know that the site was set out  
5 to work one way and that's the path I have to follow.  
6 And then we've got the coworker model when you get  
7 to the TBD to capture those folks that may not have  
8 fit in the mold that we have going for the ER right  
9 now. So am I catching, getting what you need?

10 MEMBER CLAWSON: Yes.

11 MR. DARNELL: Okay.

12 MEMBER CLAWSON: Yes, you are. And  
13 see I have to go back to what we found and some of  
14 the areas programmatically it looks very good to  
15 say that this is how we did it. But in all reality  
16 the way, as you already said, the way it was done  
17 differs, and that's why I'm coming back to you.

18 I just want to make sure that when we  
19 make an assumption like what we are, that we're able  
20 to back it up. And, you know, you're right, we'll  
21 see with that, but I don't think that you're ever  
22 going to see something that says these people took

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1 this waste and moved it to here and be able to put  
2 your hand on exactly who took care of that.

3 It may have sat in Area 20 for a little  
4 while till somebody else could take care of it. We  
5 don't have that good of information, in my eyes,  
6 to be able to say that, really.

7 CHAIR BEACH: Okay. We do have some  
8 information that says that it did sit in Area 20  
9 with a lid on it until it was full and then it was  
10 moved out.

11 MEMBER CLAWSON: Right.

12 CHAIR BEACH: But we don't know if they  
13 let five gather or one gather, I don't remember that  
14 level of detail.

15 MEMBER CLAWSON: And we don't know who  
16 got it from there back to the engine storage.

17 CHAIR BEACH: Yeah, correct. Okay.  
18 So I think we're all circling around the same thing.

19 Maurice, did you have something to add  
20 to this discussions?

21 MR. COPELAND: Yeah. And when you're  
22 looking, I want to help you. I want to help you

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1 pinpoint who the people were that were doing that.

2 And you will find out that they have a  
3 program at Honeywell, AlliedSignal at that time,  
4 that disqualified all of those people that had been  
5 doing that job for 20 or 30 years because they  
6 weren't able to read and get training. And they  
7 started a training program and it should be very  
8 easy for you to find that out.

9 Those people were disqualified and some  
10 were put into custodian positions and they started  
11 a new position called waste management and  
12 hazardous waste management.

13 CHAIR BEACH: What was it called before  
14 that, before they disqualified all of them, do you  
15 remember?

16 MR. COPELAND: Well, it was waste --

17 MR. FITZGERALD: Handlers?

18 MR. COPELAND: Handlers, yeah.

19 CHAIR BEACH: Waste handlers, okay.

20 MR. COPELAND: Waste handlers. And  
21 those people were disqualified, put into reading  
22 programs --

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1 CHAIR BEACH: What year was that, can  
2 you give me an idea?

3 MR. COPELAND: It was in the '80s.

4 CHAIR BEACH: Okay.

5 MR. COPELAND: In the '80s sometime.

6 CHAIR BEACH: Okay.

7 MR. COPELAND: So these people had been  
8 doing that job for years, 20, 30 years, and they  
9 find out they were incompetent, couldn't read, and  
10 so that would help you. And you said that you  
11 interviewed people, well, you ought to have some  
12 names.

13 MR. McCLOSKEY: [Identifying  
14 information redacted] was the manager.

15 MR. COPELAND: I know [identifying  
16 information redacted].

17 MR. McCLOSKEY: Yeah. He was one of  
18 our best resources for waste --

19 MR. DARNELL: Yeah, our main resource  
20 for finding out information about this.

21 MR. COPELAND: He was what?

22 MR. McCLOSKEY: He was one of our best

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1 resources for waste management.

2 MR. COPELAND: And what was his title?

3 MR. McCLOSKEY: Manager of -- I'm not  
4 positive what his title was.

5 MR. COPELAND: Yes, but the actual  
6 workers, [identifying information redacted], I  
7 forget [identifying information redacted] last  
8 name, but they've got the roster there.

9 CHAIR BEACH: Can you tell me, do you  
10 know how many workers we're talking about? Was  
11 there five, ten?

12 MR. COPELAND: It was a gang.

13 CHAIR BEACH: And that was their only  
14 job?

15 MR. COPELAND: In that waste  
16 management group, may have been 20, 30 guys.

17 CHAIR BEACH: Okay.

18 MR. COPELAND: Because they handled  
19 all the waste in the whole plant.

20 CHAIR BEACH: Okay.

21 MR. COPELAND: The skidwash people,  
22 they handled the barrels, the staging area of where

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1       you put the barrels, where the barrels were stacked  
2       outside.

3                   MR. McCLOSKEY:   Red X Lot.

4                   MR. COPELAND:     Outside.     And for  
5       months and years, I mean we had barrels running over  
6       the place, we had all around the plant, we had  
7       barrels all around the plant --

8                   MR. DARNELL:       We haven't heard  
9       anything at all --

10                  MR. COPELAND:    Huh?

11                  MR. DARNELL:     We have not heard  
12       anything at all about a group of waste handlers.

13                  MR. COPELAND:    You didn't?

14                  CHAIR BEACH:   No, Wayne brought it up  
15       before. He mentioned it.

16                  MR. COPELAND:    Yeah, I think they heard  
17       it before because I mentioned it in meetings that  
18       we had back in 2004.

19                  MR. DARNELL:     I just don't remember it,  
20       sorry.

21                  CHAIR BEACH:    It might not have been  
22       one of your interviews, but, yeah, I remember him

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1 bringing it up.

2 MR. SHARFI: They do have bioassay for  
3 handlers. There is a category and we do have --

4 CHAIR BEACH: Waste, yeah.

5 MR. COPELAND: Yes, the supervisor was  
6 [identifying information redacted], that's one of  
7 the supervisors, [identifying information  
8 redacted]. [Identifying information redacted].

9 MR. McCLOSKEY: Say that first name  
10 again?

11 MR. COPELAND: [Identifying  
12 information redacted]

13 MR. DARNELL: In Table 13 of the TBD  
14 there's 145 bioassay results for people called  
15 handlers: handlers, laborers, helpers in that  
16 group.

17 MR. COPELAND: Those are different  
18 groups. Helpers were machinist people, those were  
19 people that worked in the machine shop.

20 MR. DARNELL: Well, in our table we put  
21 them altogether, handlers, laborers, and helpers.

22 MEMBER LOCKEY: What's the date on

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1 that?

2 MR. DARNELL: This is from '59 to 1970.

3 MEMBER LOCKEY: '59 to '70.

4 MR. McCLOSKEY: Table what?

5 MR. DARNELL: Table 13.

6 (Simultaneous speaking.)

7 MR. KNOX: I think they were also  
8 involved in this waste reclamation, the same group  
9 of people.

10 CHAIR BEACH: Okay. So can we agree  
11 that there's more work that needs to be done in  
12 trying to nail this down?

13 MR. DARNELL: Yes.

14 CHAIR BEACH: And then if we're ready,  
15 any questions, Jim? Loretta, how about you?

16 MEMBER VALERIO: I think that there's  
17 a lot more clarification that we need as to who was  
18 handling this, what building were these, you know,  
19 was it Department 20?

20 CHAIR BEACH: Yeah.

21 MEMBER VALERIO: Was that ever  
22 deconned were there -- there's just too many

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1 unknowns, I'm not comfortable with this. I think  
2 we need a lot more clarification on this, on who  
3 was handling the waste.

4 CHAIR BEACH: Agreed. Okay, so it  
5 sounds like we're going to -- so, actions I have  
6 is just to go in and look at more waste records.  
7 As far as SC&A, do you need anything from SC&A on  
8 what they found that varies from what you guys found  
9 if there's a discrepancy?

10 MR. FITZGERALD: No, it states it in  
11 the SRDB. It's just waste inventory from the '60s,  
12 it's all there.

13 CHAIR BEACH: Okay. I'm just  
14 clarifying if we needed anything.

15 MR. DARNELL: I just wanted to make  
16 sure that I meet what the expectation is. I wasn't  
17 really going so much to look at waste records, but  
18 personnel handling, who was touching the stuff.

19 MR. FITZGERALD: As long as we're in  
20 agreement that the '60s were a fairly active period  
21 of shipments. That's the only thing I didn't quite  
22 get in the description that was provided. Other

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1 than that, yeah.

2 MR. DARNELL: Okay. So we will be  
3 going back to look for who handled it and find this  
4 group.

5 CHAIR BEACH: The waste gang in the  
6 1960s.

7 DR. NETON: It sounds like we also need  
8 to look at the bioassay database because it appears  
9 that waste handlers were monitored.

10 MR. DARNELL: Right. We've got that  
11 in the TBD already.

12 CHAIR BEACH: Okay.

13 MR. FITZGERALD: I guess it only gets  
14 touchy if they're not in that cohort, because then  
15 you'd have to decide if you were going to  
16 extrapolate that data or not, you know, it gets a  
17 little --

18 MR. KNOX: If you want to put  
19 [identifying information redacted] on this,  
20 [identifying information redacted] could, he is  
21 the one --

22 MR. DARNELL: Could you say the last

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1 name again?

2 CHAIR BEACH: [Identifying  
3 information redacted].

4 MR. KNOX: [Identifying information  
5 redacted].

6 MR. SHARFI: He was a waste handler?

7 MR. KNOX: Yeah, and was involved in  
8 the waste reclamation also. And [identifying  
9 information redacted] was there.

10 DR. NETON: We got him.

11 MR. COPELAND: It should be very easy  
12 to find the roster of those people that worked in  
13 that group. I mean, they had all the  
14 classifications --

15 MR. DARNELL: I wish I could say that  
16 you are right.

17 MR. COPELAND: Go through the union.  
18 They have the roster of every paid number and what  
19 their occupations were.

20 MR. DARNELL: Well, we have had a time  
21 finding documents.

22 CHAIR BEACH: All right. So let's

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1 move on to Number 8. I am going to push a little,  
2 because I know we're not going to get through this  
3 and I want to give you guys a few minutes to talk  
4 about petitioner's issues at the very end.

5 So Number 8 is our metal tritides  
6 exposure potential, and Joe has agreed to kick that  
7 off for us.

8 MR. FITZGERALD: Yeah, this will be  
9 roughly brief. We originally noted the degree to  
10 which metal tritides, particularly at KCP -- and  
11 it would've been a potential source, exposure  
12 source -- really hadn't been defined as well as it  
13 needed to be. And we had some interviews back last  
14 year that indicated there were several types of  
15 metal tritides that were likely handled with, you  
16 know, limited evidence of leakage.

17 There was a couple of incidents, but  
18 after the additional research we did onsite it  
19 became pretty clear, that unlike Mound, unlike Los  
20 Alamos, metal tritides came to Kansas City  
21 universally as sealed components, okay, and that's  
22 the key thing as compared with other SECs.

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1           And they had acceptance criteria and,  
2           you know, with the many, many field containers  
3           there were maybe a couple, two or three instances,  
4           where those acceptance criteria exceeded. And  
5           we're not talking about a very high level of  
6           contamination, and I think 100 dpm per 100 square  
7           centimeters was typical. No evidence of uptake.  
8           And there were a couple of situations in '87 and  
9           '90 where they in fact heightened their procedures  
10          based on feedback from Sandia and the design  
11          laboratories trying to make sure that these  
12          acceptance criteria were met.

13                 So I guess where we came, we originally  
14          were concerned that it wasn't characterized as much  
15          as we'd like to see in the ERs. The research didn't  
16          show that there was any recurring issues if there  
17          were acceptance criteria in place, that these were  
18          sealed components and that if there were any  
19          contamination it was intermittent, maybe a couple  
20          of times in the history of the handling.

21                 So without really any exposure  
22          potential consequence, we recommend closure to the

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1 Work Group on this particular one. You know, we've  
2 been on metal tritides for five or six years, so  
3 we certainly, I think, are pretty familiar with  
4 when we have a pathway of concern, and I don't see  
5 one here.

6 MR. DARNELL: You know, reluctantly,  
7 NIOSH agrees that we should close this.

8 (Laughter.)

9 MR. FITZGERALD: Does the Work Group  
10 have any questions on that one?

11 CHAIR BEACH: I don't.

12 MR. FITZGERALD: Okay.

13 CHAIR BEACH: There was one incident,  
14 right, that we know of?

15 MR. FITZGERALD: Well, there was one  
16 erbium tritide release that was investigated. The  
17 rest of them, a couple of times the acceptance  
18 criteria were exceeded, but there wasn't any major  
19 release.

20 CHAIR BEACH: Loretta, do you have any  
21 questions on Number 8?

22 MEMBER VALERIO: No.

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1 CHAIR BEACH: And you agree with  
2 closure?

3 MEMBER VALERIO: Yes.

4 CHAIR BEACH: Brad?

5 MEMBER CLAWSON: Yes.

6 CHAIR BEACH: Jim?

7 MEMBER LOCKEY: Yes.

8 CHAIR BEACH: Okay. I agree with that  
9 also, so we'll close Number 8.

10 MR. FITZGERALD: I could suggest  
11 something for the Work Group. Issue 9, 10, 11,  
12 12, had to do with external dosimetry, or external  
13 exposure issues that we raised which were the  
14 subject of a technical conference call that was  
15 held last year and I thought it was a pretty good  
16 call and if people don't mind I'd like to get Ron  
17 Buchanan just to walk the Work Group through that.

18 CHAIR BEACH: Before you do that --

19 MR. FITZGERALD: Yes?

20 CHAIR BEACH: -- any issues on tritides  
21 from the petitioners? I don't think it was on your  
22 list, but Number 10 I wasn't sure.

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1                   No, okay. Thank you. Go ahead.

2                   MR. FITZGERALD: So I was just going to  
3 have -- Ron, are you on the phone?

4                   DR. BUCHANAN: Yes, I am.

5                   MR. FITZGERALD: Yes, if you could walk  
6 through maybe the issue, what was the exchange on  
7 the conference call and where we've come out  
8 starting with Item 9.

9                   DR. BUCHANAN: Okay. Nine, ten, 11,  
10 and 12, like Joe said, has to do with external  
11 exposures and nine was concerned with coworker, it  
12 started out as external coworker and what that  
13 boiled down to was that we found that in 1969 the  
14 records were all zeros for external exposure.

15                   And so we looked around to see was this  
16 reasonable or not or was something missing and what  
17 we have arrived at to date is the fact that it  
18 appears that from what we can find out, and we  
19 worked with the present SRO at Kansas City and such  
20 to see if he could find any records for '69 that  
21 showed any positive doses and so far we have not  
22 found any.

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1                   Now we have to look at this in the light  
2 that Kansas City normally had a lot of zero doses.  
3 If you had say 500 dosimeters you might have 50 with  
4 some positive dose, a small amount of dose on it.

5                   So we did not find any evidence that  
6 showed one way or the other that '69 was missing  
7 any data. Now NIOSH did send out a recent  
8 reference number that showed zeros for '69 and that  
9 was the Reference Number 137215, Page 19, and that  
10 was just for a couple of departments though, that  
11 was not the whole plant.

12                   So that was an interoffice memo that  
13 wanted to know the doses for '59 through '72 or  
14 something for Department 20 and some other  
15 departments, and it did show '69 as being zero, but  
16 it also showed other years as being zero, which we  
17 know there is some positive doses according to the  
18 TBD in other years.

19                   So at this point what we have found is  
20 nothing concrete one way or the other that '69  
21 should be all zeros and so that's where we're at  
22 on that.

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1           So it's kind of up to the Work Group  
2 whether they'll pursue it further, or we really  
3 don't know what to pursue further. SC&A doesn't,  
4 and I don't know if NIOSH does, and so we kind of  
5 open that up to the Work Group to discuss the fact  
6 that 1969 shows all zeros on the external dosimetry  
7 section.

8           And if NIOSH wishes to input anything  
9 in there that, I welcome them to put in there, talk  
10 on it.

11           CHAIR BEACH: Okay.

12           MR. McCLOSKEY: The only thing that I  
13 heard the RSO say while we were there is that, you  
14 know, they were involved with some  
15 inter-comparison studies and there's a small  
16 chance that when they were sending their records  
17 out they sent the originals and didn't get them  
18 back, but I did a search for inter-comparison  
19 studies from that timeframe and found nothing, and  
20 even if I did I mean I don't know that it would say,  
21 well I don't know what it would say, but, no, I don't  
22 really have anything more to add to that other than

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1 that.

2 MR. COPELAND: Did it do --

3 (Simultaneous speaking.)

4 DR. NETON: This is Jim, I'm wondering  
5 if --

6 DR. BUCHANAN: Okay. I guess that,  
7 you know, we kind of defer to the Work Group on  
8 whether they feel that '69 should be investigated  
9 further and we don't, I don't know what we'd  
10 suggest.

11 One suggestion is that, if you look at  
12 the years around it, '68 and '70, you'll find some  
13 small positive doses. That could be, you know,  
14 assigned to '69, except there isn't any indication  
15 that there would be large doses in '69, but, you  
16 know, that's up to the Work Group what they'd like  
17 to pursue from here.

18 CHAIR BEACH: Okay. And, Ron, Jim was  
19 going to make a comment.

20 DR. BUCHANAN: Okay.

21 DR. NETON: Yes, I would just, I didn't  
22 know if this was specific to 1969 but I was going

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1 to suggest that, you know, we talked about the  
2 completeness of the data earlier on Number 2 I think  
3 it was.

4 CHAIR BEACH: Yes.

5 DR. NETON: And we need to go back and  
6 compare the raw data with the time database, and  
7 I think we were talking about internal at that time,  
8 but it might be something we could do in parallel  
9 and do some sort of a validation as best we could  
10 with the external results, the electronic database  
11 at the same time.

12 CHAIR BEACH: That was for one, but so  
13 basically validating and verifying the records?

14 DR. NETON: Well, you know, if we at  
15 least see, if we had the records, we had the raw  
16 records, we compared, and they are in the database,  
17 and there are no positive values in the raw data  
18 that show up as zeros in the regular database.

19 I mean it wouldn't be definitive, but  
20 it would certainly be one more thing to look at.

21 CHAIR BEACH: Right. Well and then it  
22 would be up to -- I know, Ron, you made a suggestion

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1 about other doses from other years, but that would  
2 be up to NIOSH to say this is how they're going to  
3 do it and then --

4 MR. DARNELL: That is the actually  
5 current approach. We used 1968 for 1969, since  
6 it's the higher of '68 versus '70.

7 So we actually used the higher of the  
8 years around it to bound the dose for 1969.

9 CHAIR BEACH: Okay. So that's  
10 already, so that suggestion, Ron, that you made is  
11 already being done, or it sounds like that's how  
12 you're doing it.

13 MR. DARNELL: It's currently in the  
14 TBD.

15 CHAIR BEACH: Okay. So is everybody  
16 in agreement with that, to kind of add nine to what  
17 we discussed on one?

18 DR. NETON: Yes, and I think we're  
19 probably going to do that anyway, so we may as well  
20 formalize that.

21 MR. DARNELL: So we're going to combine  
22 them or add them?

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1 CHAIR BEACH: No, not combine them, but  
2 --

3 DR. NETON: No, no, no.

4 MR. DARNELL: Okay.

5 CHAIR BEACH: -- the same verification  
6 of the, the same process we're going to do.

7 MR. DARNELL: Okay, yes.

8 DR. NETON: Okay, but I wouldn't say  
9 it's a definitive analysis, but it's certainly  
10 another piece of the, weigh the evidence sort of  
11 thing.

12 CHAIR BEACH: Well, and we're going to  
13 probably find that on all of these externals, that  
14 we're going to have to do that, so okay. Everybody  
15 okay with that suggestion and in agreement?

16 (Simultaneous speaking.)

17 MR. DARNELL: Was that for '69 alone or  
18 for the whole --

19 DR. NETON: No, it would be for the same  
20 years we're doing for, the same analysis we're  
21 doing for the internal.

22 MR. DARNELL: Okay.

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1 DR. NETON: I mean the records should  
2 be there. It shouldn't be that hard to pull out  
3 the internal records as well.

4 MR. DARNELL: Right.

5 DR. NETON: I mean external records,  
6 and crosswalk them. It's easy for me to say that.

7 CHAIR BEACH: Easy for you to say  
8 you're going to have them do it, yes.

9 DR. NETON: I don't have to --

10 CHAIR BEACH: That's okay, that's how  
11 you get things done. Okay. So, Ron, if you're  
12 ready go ahead and go to ten.

13 DR. BUCHANAN: Okay. Issue Number 10  
14 was non-penetrating dose and this was more of a  
15 clarification that it was being done correctly.

16 Prior to 64, the handwritten records at  
17 the Kansas City Plant, had several columns, and it  
18 wasn't clear which column the DRs were using, they  
19 had the rad, a roentgen, and a rem, and some of the  
20 later ones had a beta rad.

21 And so I wanted to clarify that and we  
22 had a phone call in July of last year to do that

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1 and we learned from NIOSH that they weren't using  
2 it correctly, that the rads was the total dose, the  
3 roentgen was the deep dose, and the rem dose column  
4 was not being used, and that is correct and that  
5 the non-penetrating was the rad minus the roentgen.

6 And so the nomenclature wasn't clear on  
7 there on their handwritten cards and so we  
8 clarified what they were using and we agreed that  
9 that was being used correctly and they will make  
10 a clarification in the TBD that that's the way it  
11 should be used so there won't be any controversy  
12 since there is a column listed as rem.

13 If they did use the rem column it would  
14 be an overestimate because it's the sum of the rads  
15 and roentgens and I don't why Kansas City did that  
16 in the early years, but, anyway, it's not to be used  
17 in DR.

18 And so if that clarification is made in  
19 the TBD we have no further issue with that.

20 CHAIR BEACH: Okay. So what you're  
21 suggesting is this becomes a TBD issue with a  
22 clarification needed on those columns?

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1 DR. BUCHANAN: Yes.

2 CHAIR BEACH: Okay. How does the rest  
3 of the Work Group feel, or, NIOSH, I guess we'll  
4 let you --

5 MR. DARNELL: Reluctantly once again  
6 we agree.

7 CHAIR BEACH: You were involved in that  
8 phone call that discussed this.

9 MR. DARNELL: Yes.

10 CHAIR BEACH: I know I had a chance to  
11 listen in but wasn't available. Brad, anything on  
12 that for you, do you agree with that?

13 MEMBER CLAWSON: No, I agree with it.

14 CHAIR BEACH: Loretta?

15 MEMBER VALERIO: I agree.

16 CHAIR BEACH: Okay. So we're going to  
17 move that over to --- we're going to close it on  
18 the SEC and we'll leave it over to the matrix for  
19 the TBD issues, which Joe is now handling.

20 Okay. So, Ron, if you're ready go  
21 ahead and walk us through 11.

22 DR. BUCHANAN: Okay. Eleven and 12

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1 are both to do with neutron dosimetry and, of  
2 course, we brought up the regular concerns about  
3 neutrons at the Kansas City Plant about using NTA  
4 film and their response to the neutron field plus  
5 the TBD and the DR both quoted a ratio of 1:1 using  
6 the NP method where you take the photon dose and  
7 you assign it with a neutron dose.

8 Well that was very claimant-favorable,  
9 we felt that there wasn't any real technical basis  
10 behind that and that OTIB-24 wasn't applicable in  
11 this case and so NIOSH readdressed the neutron  
12 issue and have removed the use of OTIB-24 and the  
13 use of N/P value of one and had went to looking at  
14 what the actual NTA film results were.

15 Now the reason that we can probably use  
16 the NTA film results in that situation, as opposed  
17 to some of the other sites that we discussed the  
18 NTA film at, is that Kansas City used a high energy  
19 neutron generator, DT reaction, which generates 14  
20 MeV neutrons, which are high energy, and also to  
21 use some PuBe sources, which generate about 4-1/2  
22 meV, and they did not have a lot of heavy reactor

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1 shielding and stuff like you'd find around reactors  
2 or heavily-shielded accelerators and stuff, so you  
3 don't have a semantic and a low-energy neutron  
4 component that would add significantly to your dose  
5 that you would be missing like you would on some  
6 production lines.

7           And so we find that the NTA film results  
8 probably were representative of the doses at Kansas  
9 City. However, one thing is they didn't have very  
10 many positive.

11           They had about 2100 neutron  
12 measurements using NTA film and only 35 positive  
13 results. And so what NIOSH is suggesting is to use  
14 a 95th percentile of those 35 results, which really  
15 comes up to the top three results determine your  
16 dose and they suggest assigning 154 millirem a year  
17 to potential workers, workers that were  
18 potentially exposed to neutrons.

19           And so we, while that isn't a large  
20 statistic, it is a reasonable assumption. What we  
21 would like to see, we have so far no real problem  
22 with their approach, we would like to see the 35

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1 data points and the years those were taken, the  
2 magnitude and the year and the location if they have  
3 a department.

4 We would like to look at that data  
5 before we sign on off on Item 11. So that's where  
6 we stand at this point. If NIOSH can provide us  
7 with those 35 data points, as much information they  
8 have on them, we would like to look at those and  
9 evaluate them.

10 CHAIR BEACH: That seems reasonable to  
11 me. NIOSH?

12 MR. DARNELL: Will do.

13 CHAIR BEACH: Okay. So it sounds  
14 like, Ron, that they will make that available. And  
15 then on 12 for me, on the last paragraph, I think  
16 was a NIOSH, it talked about a bounding assignment  
17 of 0.154 rem a year, neutron could be assigned for  
18 unmonitored workers who worked with neutron  
19 sources or neutron-generating devices as indicated  
20 in the CATI or other DOL/DOE information.

21 I guess I'm concerned about that  
22 covering all employees because it's not always

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1 clear, unless you tell me it is clear in the CATI,  
2 that you wouldn't miss people with that.

3 So how do you not -- I mean I know it's  
4 an open-ended question, how do you not miss  
5 individuals? I mean what are you using so that you  
6 don't?

7 MR. DARNELL: I'm sorry. I was  
8 writing my notes and I didn't catch the beginning  
9 of what you were talking about.

10 CHAIR BEACH: Well it just says you're  
11 going to assign, for individuals you're going to  
12 assign a dose and you're going to use the CATI or  
13 other available DOL/DOE information.

14 MR. DARNELL: Right.

15 CHAIR BEACH: I guess to me that leaves  
16 a question of missed employees.

17 MR. DARNELL: Well the employee would  
18 know if they were working with the PB source. I  
19 mean this is a fairly significant piece of  
20 equipment.

21 DR. NETON: The employee might know,  
22 but the survivor might not know.

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1 MR. DARNELL: The survivor may not  
2 know.

3 CHAIR BEACH: The survivor might not.

4 MR. DARNELL: That is true.

5 (Simultaneous speaking.)

6 DR. NETON: This is a tough one because  
7 I, you know, unlike other sources of exposure  
8 where, you know, okay, you could assign to  
9 everybody, there were probably very few people  
10 working with this and in our experience with  
11 external monitoring has been that most people that  
12 were exposed to external were monitored unlike the  
13 internal.

14 CHAIR BEACH: Were monitored, okay.  
15 So you're telling me it's going to be a really small  
16 percentage?

17 DR. NETON: I think it would be a very  
18 small percentage of people that had received  
19 coworker doses.

20 CHAIR BEACH: Okay. I think that's  
21 what, I was looking for more of a reassurance there  
22 and I'm not looking at a large dose.

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1 MR. DARNELL: I can't give you 100  
2 percent --

3 CHAIR BEACH: No, and I'm not asking  
4 for a 100 percent.

5 DR. NETON: That would be my guess is  
6 that --

7 CHAIR BEACH: Whenever I see the CATI  
8 then I start thinking about survivors and --

9 DR. NETON: Yes. No, I agree with you.

10 CHAIR BEACH: Okay. So we're going to  
11 hold 11 and 12 open with viewing of the 35 data  
12 points and then we'll hear back from SC&A after  
13 that?

14 DR. NETON: I think 12 might be a  
15 different issue though.

16 CHAIR BEACH: Is it. I thought it was  
17 combined.

18 DR. NETON: It's about fading, which is  
19 a little different than --

20 CHAIR BEACH: Oh, okay, so there's a  
21 little difference, okay.

22 (Simultaneous speaking.)

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1 CHAIR BEACH: We covered them  
2 together, 11 and 12.

3 MR. FITZGERALD: Yes. Given the  
4 energy levels involved, which is almost  
5 universally higher, the NTA film issue we typically  
6 have actually doesn't apply to Kansas City.

7 DR. NETON: No, but this is about  
8 fading though, which is different --

9 (Simultaneous speaking.)

10 MR. DARNELL: This one actually should  
11 be closed.

12 CHAIR BEACH: Which one?

13 MR. FITZGERALD: Twelve. Twelve  
14 could be closed. We combined it because it sort  
15 of deals with neutrons generically, but 12 could  
16 be closed on the NTA side.

17 CHAIR BEACH: Okay.

18 MR. FITZGERALD: The inapplicability  
19 of NTA for low energy neutrons wouldn't apply at  
20 Kansas City, it's all hard neutrons.

21 CHAIR BEACH: Okay. So the data  
22 points we're looking at actually belong to 11.

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1 MR. FITZGERALD: You can close 12 and  
2 we'll keep 11 open for the 35 data points.

3 CHAIR BEACH: All right. Ron, are you  
4 good with that?

5 DR. BUCHANAN: Yes.

6 CHAIR BEACH: And NIOSH will make those  
7 available to you and, of course, the rest of the  
8 Work Group will know when that comes out.

9 MR. DARNELL: I'll do it like I  
10 normally do, send it to everybody.

11 CHAIR BEACH: Yes.

12 MR. KATZ: Is that good with Loretta  
13 and --

14 CHAIR BEACH: I'm going to ask. And  
15 then so we're proposing leaving 11 open with the  
16 viewing of the 35 data points, closing 12.  
17 Loretta, are you okay with that or do you have  
18 questions or comments?

19 MEMBER VALERIO: No, I'm fine with  
20 that.

21 CHAIR BEACH: Okay. Jim?

22 MEMBER LOCKEY: Fine.

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1 CHAIR BEACH: Brad?

2 MEMBER CLAWSON: Good.

3 CHAIR BEACH: Okay. And I'm fine with  
4 that as well, so that's out of where we're at.  
5 Everybody got their notes up to date? Where are  
6 we at time wise?

7 MR. KATZ: It's 1:30.

8 MR. DARNELL: If we really push we  
9 might make it.

10 CHAIR BEACH: Yes, let's carry on. I  
11 don't want to --- Item 14, so adequacy of post-1993  
12 monitoring.

13 MR. FITZGERALD: Yes, let me tackle  
14 that one.

15 CHAIR BEACH: Okay.

16 MR. FITZGERALD: Our original review  
17 we noticed that the '93 cutoff point for the SEC  
18 was, you know, sort of founded on some sampling of  
19 case files and in discussions at the Work Group  
20 meeting last year I think there was some discussion  
21 that, you know, perhaps more validation was needed  
22 on the cutoff date.

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1           And on the October visit that we did at  
2           the site we and NIOSH went through a lot of  
3           programmatic documentation and actually this time  
4           we did find the documentation that tracked with  
5           their coming into compliance with 835 and showing  
6           what they were doing in terms of making sure the  
7           monitoring programs were in place.

8           I would also add DOELAP took effect in  
9           November of '92. So we interviewed the RSO, who  
10          actually was there at the time, so we've got a lot  
11          of data points as far as their coming to compliance  
12          and tying this thing with a bow by '93.

13          So we're pretty satisfied that beyond  
14          the sampling of case files there's a lot of  
15          programmatic compliance records that seemed to  
16          point to a rather rigorous program to assure  
17          compliance at KCP by '93.

18          So I think that kind of was the missing  
19          component that we were looking for, so we would  
20          recommend closure of that issue.

21          CHAIR BEACH: Okay. Any discussion on  
22          that? Loretta, have you had a chance to review 14

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1 and do you agree with SC&A's recommendation to  
2 close?

3 MEMBER VALERIO: I have reviewed it and  
4 I do agree.

5 CHAIR BEACH: Okay. Brad?

6 MEMBER CLAWSON: I agree.

7 MEMBER LOCKEY: I agree.

8 CHAIR BEACH: Okay. I also agree with  
9 that, so 14 we'll call that closed. Next item is  
10 15, the thorium oxide exposure potential.

11 MR. FITZGERALD: Yes, let me tackle  
12 that.

13 CHAIR BEACH: Okay.

14 MR. FITZGERALD: On thorium oxide we,  
15 I think we scanned the NMMSS database, which is the  
16 inventory -- Pat's holding up the sheet that I made  
17 notes on. I made it very imprecise, because  
18 otherwise it would be classified.

19 CHAIR BEACH: Yes.

20 MR. FITZGERALD: But in any case, from  
21 the NMMSS database it was clear they had what they  
22 called non-alloyed thorium identified in kilogram

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1 quantities at Kansas City, which kind of raised my  
2 eyebrow because I knew there would be alloyed  
3 thorium, but un-alloyed thorium sort of pointed to  
4 something else.

5 And that something else is what we've  
6 actually rigorously looked for ever since to no  
7 avail, so we got a disconnect between the inventory  
8 and the operational accounts for this material.

9 We've seen laboratory quantities of  
10 thorium, but we haven't seen kilogram quantities  
11 that seem to be sitting there. And there may be  
12 some rather straightforward explanations of that,  
13 you know, you could hold thorium in a vault and  
14 never have it go into operations and that could  
15 account for the inventory totals.

16 However, it looks like there is some  
17 stones that need to be turned over. We started  
18 talking to the materials accountability people and  
19 we think that may be the pathway where we can  
20 establish how that got into NMMSS in the first  
21 place, and we were successful at Hanford doing  
22 that, but we have a new person at Kansas City so

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1 it's a little harder there.

2 But I think if we can reconcile what  
3 seems to be a fairly notable entry in that database  
4 to what's actually at Kansas City we can put this  
5 one to bed.

6 It may just be an anomaly, but it's kind  
7 of hard to ignore the kilogram quantities listing  
8 for about ten years at Kansas City and, you know,  
9 so far we haven't found the operational reference  
10 for that.

11 So it's a matter of just kind of making  
12 the accounts add up and that's the one area where  
13 we haven't done so, but, you know, again, I think  
14 turning to the materials accountability side of the  
15 house I think we might have more luck and we'll  
16 pursue that.

17 CHAIR BEACH: Not that there hasn't  
18 been work done because there's two pages of NIOSH's  
19 work here that tried to account for --

20 MR. McCLOSKEY: Yes, I mean I don't  
21 know how precise the NMMSS kilogram quantities  
22 would be, I mean when you got a half a kilogram here

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1 and a half a kilogram there, I think pretty soon  
2 you're talking about kilogram quantities.

3 MR. FITZGERALD: Yes. I thought  
4 though maybe this is the part we need to discuss,  
5 which is they were trying not to exceed 500 grams,  
6 weren't they at the lab?

7 MR. McCLOSKEY: It wouldn't have to be  
8 accounted for and wouldn't --

9 MR. FITZGERALD: Right. It wouldn't  
10 have to be accounted for if it was less than 500.

11 MR. McCLOSKEY: Yes.

12 DR. NETON: With the density of  
13 thorium, even if it's thorium dioxide powder are  
14 pretty high, so a kilogram quantity could be a  
15 couple hundred milliliters which would be enough  
16 to fit in a reagent bottle.

17 It might have been, you know, I'm  
18 speculating, of course, but it sounds to me like  
19 it's conceivable it could've been used as a reagent  
20 to be used to develop calibration standards and  
21 that sort of thing.

22 MR. FITZGERALD: Yes.

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1 DR. NETON: Because I mean kilogram  
2 quantities you think of a lot of material but it's  
3 really not. Volume wise it's a pretty small amount  
4 of material.

5 MR. FITZGERALD: Yes.

6 DR. NETON: And I've worked in  
7 chemistry labs where you have uranium, a kilogram  
8 of uranium in a bottle on the shelf. MR.  
9 FITZGERALD: And maybe it'll turn out to be a, it's  
10 just a --

11 DR. NETON: Yes, we don't know.

12 MR. FITZGERALD: We don't know for  
13 sure, but I think it's something that one more level  
14 of look I think we'll be able to put it to bed.

15 CHAIR BEACH: Well I put it on the list  
16 for a more look at at KCP for the next site visit  
17 and I also think that SC&A probably should take some  
18 time to digest --

19 MR. FITZGERALD: Right. We just saw  
20 --

21 CHAIR BEACH: -- what's in the matrix  
22 here because we got this with not really enough time

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1 to kind of --

2 MR. FITZGERALD: It occurred to me the  
3 same issue, I said well if you got these 500 gram  
4 quantities, well you only have to add three or four  
5 them and you got over a kilogram.

6 CHAIR BEACH: I know, I was doing the  
7 same thing highlighting different --

8 MR. FITZGERALD: And the other  
9 frustration is at Hanford we also worked backwards  
10 from the headquarters NMMSS and got a whole lot of  
11 information from what the site submitted.

12 The information comes from the site, so  
13 their input stuff is where you get the details and  
14 we haven't been able to do that at Kansas City yet,  
15 but we haven't actually had a chance to turn that  
16 rock over either.

17 So I think that we will find, one way  
18 or the other we'll find that one out, just haven't  
19 done so.

20 CHAIR BEACH: So the action is on SC&A  
21 to, or where's --

22 MR. DARNELL: Either. Yes, we'll --

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1 This is going to be part of the next --

2 MR. FITZGERALD: Yes.

3 CHAIR BEACH: Okay, the site. So I'll  
4 add that as a combined --

5 MR. FITZGERALD: I think what we'll do  
6 is make a stop at materials accountability and  
7 actually spend some time trying to figure out.  
8 This person was new and didn't really understand  
9 I think a lot of what we were trying to get.

10 MR. DARNELL: Yes, and I'll tell you,  
11 Pat has been in touch with her on and off several  
12 times and it's difficult because she is so new.

13 MR. McCLOSKEY: It's hard.

14 CHAIR BEACH: Yes.

15 MR. DARNELL: She's willing to give it,  
16 she just --

17 MR. FITZGERALD: She doesn't know.

18 MR. DARNELL: -- doesn't know.

19 MR. FITZGERALD: It's hard.

20 CHAIR BEACH: Okay. Jim, are you in  
21 agreement?

22 MEMBER LOCKEY: I am.

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1 CHAIR BEACH: Loretta, agree?

2 MEMBER VALERIO: Yes.

3 CHAIR BEACH: Thank you. Brad?

4 MEMBER CLAWSON: Yes.

5 CHAIR BEACH: Wayne, did you have  
6 something on this item?

7 MR. KNOX: No.

8 CHAIR BEACH: No, okay. I wasn't  
9 sure, and so that takes us to 17. Do you know what,  
10 should we, 18 should be fairly quick.

11 MR. FITZGERALD: Let me talk to 17.

12 CHAIR BEACH: Let's go ahead.

13 MR. DARNELL: It's 16.

14 CHAIR BEACH: Sorry.

15 MR. FITZGERALD: Well I'm going to,  
16 with the Work Group's agreement skip over 16 for  
17 a second and go back to 16 afterwards.

18 CHAIR BEACH: Okay.

19 MR. FITZGERALD: Fundamentally we  
20 don't have an issue on 16. You've read the White  
21 Paper and, you know --

22 MR. DARNELL: Yes.

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1 CHAIR BEACH: Yes.

2 MR. DARNELL: We pretty much are in  
3 agreement. We had some --

4 MR. FITZGERALD: On 17, which is D&D,  
5 our issue there was that the ER acknowledges the  
6 '84 and '86 D&Ds performed by Rockwell, but our  
7 concern with it didn't seem like it addressed, well  
8 it didn't address, but we felt were likely other  
9 D&D activities over the 50, 60-year history of the  
10 plant.

11 That was kind of our concern was, you  
12 know, making more a complete picture of D&D at the  
13 plant and we went back in June of last year to see  
14 if we could find weekly activity reports and other  
15 documentation that might point to these other D&Ds.

16 And I would call them small D&Ds, not  
17 the major D&D in '84, '86, and I think NIOSH's  
18 matrix reflects what we found, which is these other  
19 instances which were small area D&Ds, equipment  
20 D&Ds, and phasing out of operations D&Ds onsite,  
21 and so there was a number of those going on as  
22 expected.

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1                   And the only question we have left, and,  
2                   again, I'll throw this out on the table, is that  
3                   are we sure that the '84, '86 D&D would envelope  
4                   all of the other D&D activities at the plant?

5                   I think the assumption is that the  
6                   monitoring information out of that big D&D was, you  
7                   know, was bounding of those activities, but would  
8                   they be bounding of other D&Ds at the site as well?  
9                   That was kind of the question I had.

10                   MR. DARNELL:   Why would they need --

11                   MR. FITZGERALD:   Well I'm saying in  
12                   terms of the cleanup of the equipment, the area  
13                   where they took 20D and cleaned it up, you know,  
14                   those are the same workers that were actually the  
15                   workers that were running the machines and we  
16                   assume that they were monitored.

17                   I mean how would one handle those kinds  
18                   of activities?  Were they, you know, and this is  
19                   sort of a similar question we had before.

20                   MR. DARNELL:   Correct me if I'm wrong,  
21                   the big D&D had workers from Rockwell come in --

22                   MR. FITZGERALD:   From Rockwell come in

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1 from the outside.

2 CHAIR BEACH: Yes.

3 MR. DARNELL: -- and do the  
4 decontamination and decommissioning.

5 MR. FITZGERALD: Right.

6 MR. DARNELL: It wasn't site people.

7 MR. FITZGERALD: Right.

8 MR. DARNELL: The small D&Ds, the lower  
9 case D&Ds were site people.

10 MR. FITZGERALD: Were site people.

11 MR. DARNELL: They would've had to been  
12 on the project and have the monitoring that were  
13 required at the site for those projects, so I'm  
14 missing where the D&D from Rockwell has to  
15 encompass the other ones.

16 MR. FITZGERALD: The piece that I was  
17 looking for was when 20D was cleaned up in the late  
18 '60s were those the operators who did the cleanup?  
19 I couldn't find any confirmation on who actually  
20 did any of the cleanups.

21 MR. DARNELL: Yes. I don't have any  
22 idea.

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1                   MR. FITZGERALD: I mean I can envision  
2 the operators, you know, being told well now you  
3 have to wipe down the wall, but, you know, that  
4 wasn't clear to me that they were in fact the folks  
5 that would do all the cleanup as well.

6                   MR. McCLOSKEY: So there's a memo from  
7 the IH person to somebody and I think we can use  
8 that document that's referenced here and see who  
9 he sent the memo to, but he said, you know, this  
10 is how you have to clean it, soap, water, what kind  
11 of wiping, some painting involved, and then my  
12 folks have to survey it when you're done.

13                   MR. FITZGERALD: Yes.

14                   MR. McCLOSKEY: So one shot we can take  
15 it that it's to see which department he sent the  
16 memo to, and I didn't really think about that when  
17 I was looking at this previously.

18                   MR. FITZGERALD: Well it came to mind  
19 when they looked at the, Rockwell is easy because  
20 they came from the outside, they cleaned up, they  
21 got the monitoring data, they left.

22                   These other D&Ds, if it turns out it's

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1 the operators are the same people that were in the  
2 department that did the cleanup well they're  
3 already monitored, so that's straightforward, but  
4 I couldn't distinguish whether those were the same  
5 people or not.

6 (Simultaneous speaking.)

7 MR. FITZGERALD: Certainly exposure  
8 will be different if you're trying to pick apart  
9 a machine and clean it down.

10 MR. McCLOSKEY: Yes. There's  
11 specific instructions there for like when you go  
12 into the hopper to clean out the turnings you'll  
13 put a respirator on and how deep, you know --

14 MR. FITZGERALD: Yes, I saw the  
15 procedures I just couldn't figure out who they're  
16 talking to.

17 MR. McCLOSKEY: Oh, I'm sure it was a  
18 site, I mean someone that's in the program already,  
19 but --

20 MR. FITZGERALD: Well that was the  
21 comment I had, but I think the listing of the D&Ds  
22 that we identified in the document review is pretty

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1 complete.

2 It's a pretty good list if one can  
3 establish all those workers are already monitored  
4 and, you know, that's it.

5 CHAIR BEACH: So you're talking about  
6 the list that --

7 (Simultaneous speaking.)

8 MR. FITZGERALD: Well, the ER right now  
9 -- the only thing on D&D in the ER is '84, '86, and  
10 it's Rockwell.

11 CHAIR BEACH: Yes.

12 MR. FITZGERALD: I think this last  
13 review kind of identified a number of, not  
14 unexpectedly, a number of cleanups that occurred  
15 over the history of the plant and all I'm saying  
16 if you can establish that those cleanups were done  
17 by the operators, the workers that were already  
18 monitored, then that monitoring encompasses  
19 whatever they were exposed to, but it's not really  
20 clear yet.

21 Well we just did the research that  
22 showed these other D&Ds, but it's not clear who

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1 those workers were, that's pretty much it.

2 MR. McCLOSKEY: For action go find out  
3 who did these lowercase D&Ds.

4 MR. FITZGERALD: The lowercase D&Ds,  
5 exactly.

6 CHAIR BEACH: Yes, and then the memo.  
7 So I have NIOSH doing a little bit more work there.  
8 And then do you -- Maurice you were talking about  
9 some D&D that happened in the later years, was that  
10 considered D&D in your department?

11 (Simultaneous speaking.)

12 MR. COPELAND: In my department?

13 CHAIR BEACH: Yes. Didn't you talk to  
14 us about it before lunch? No?

15 MR. COPELAND: I don't know.

16 CHAIR BEACH: So nothing on D&D,  
17 nothing to add? Okay.

18 MR. KNOX: Well I have a couple of  
19 things on D&D.

20 CHAIR BEACH: Okay, nothing. Jim,  
21 anything from you?

22 MEMBER LOCKEY: NIOSH is going to find

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1 out whether they're the same workforce though,  
2 right, that's what you're doing, yes?

3 CHAIR BEACH: Well there's a  
4 disagreement between --

5 MR. DARNELL: Well, yes, it's I'm  
6 trying to figure out what product we can actually  
7 get for you that'll mean something.

8 Actually finding out who did the D&D as  
9 far as the specific plant personnel with the state  
10 of our records I can say with almost complete  
11 assurance, or as Brad would say my gut will tell  
12 me, that there's no way you're going to get an  
13 answer.

14 So I think shooting for that might be  
15 unrealistic.

16 MR. FITZGERALD: Even by talking to  
17 people who were actually involved with D&D? I  
18 don't know if that question was posed that way.

19 MR. DARNELL: I mean we can -- I don't  
20 remember ever asking anybody who did what as far  
21 as D&D goes.

22 CHAIR BEACH: I remember asking a lot

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1 about Rockwell D&D, but that's what we were focused  
2 on.

3 MR. DARNELL: Yes.

4 MR. FITZGERALD: Right.

5 MR. DARNELL: But we never asked about  
6 the small --

7 CHAIR BEACH: The in-house, yes.

8 MR. DARNELL: We can go back and do  
9 another round of interviews, but as far as finding  
10 some type of documentation I think we're on a wild  
11 goose chase here.

12 Maybe we can, is there another way we  
13 can get the answers that the Work Group needs?  
14 Yes, no offense, I don't want to throw the towel  
15 in on any issue at all, believe me, but I don't see  
16 us finding anything like what you're asking for.

17 CHAIR BEACH: Okay.

18 DR. NETON: Well what about this one  
19 memo that Pat just alluded to.

20 CHAIR BEACH: Yes.

21 MR. DARNELL: I'm reading it. It  
22 basically says it's a report of the survey that they

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1 did and what needed to be done for D&D.

2 CHAIR BEACH: Was it a post or pre?

3 MR. DARNELL: It was a pre, October 1st  
4 '64 [identifying information redacted] monitored  
5 the walls, light fixtures, bus bar and piping, in  
6 all of Department 217-22.

7 A radiological survey was made with a  
8 PAC 3G. It gives maximum readings of 125 counts  
9 per minute alpha, 0.1 mR per hour beta gamma, and  
10 a [identifying information redacted], asked that  
11 all walls, light fixtures, piping and other  
12 equipment be wet washed and the walls painted to  
13 remove or fix any loose particulate.

14 MR. McCLOSKEY: Who's he asking --

15 DR. NETON: Who's he asking to do that?  
16 I mean did --

17 MR. DARNELL: It's a general --

18 CHAIR BEACH: It's not addressed to  
19 anybody?

20 MR. DARNELL: Yes.

21 MR. McCLOSKEY: Who's it to up here?

22 MR. DARNELL: Just [identifying

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1 information redacted].

2 MR. McCLOSKEY: So he's from  
3 department -- it's from this guy, [identifying  
4 information redacted], to [identifying  
5 information redacted] --

6 MR. DARNELL: It's from Industrial  
7 Hygiene to the guy who did the survey saying the  
8 guy who did the survey asked for this stuff to be  
9 done.

10 It's a circular. You've got an IH guy  
11 talking to a monitor, the guy that did the  
12 monitoring, and the guy that did the monitoring in  
13 the memo from the IH guy is stating that he wants  
14 this other work done.

15 CHAIR BEACH: Okay. All right, so  
16 what I would propose, because I know SC&A didn't  
17 focus on this, your write-up in the matrix, I'd like  
18 to take another look at this and the SRDBs and then  
19 come back if there's any more work that we need to  
20 do.

21 I mean, we can put it on the list to try  
22 to track down at our site visit, but I'm having a

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1 hard time pinpointing --

2 MR. FITZGERALD: Why don't we just make  
3 this pending, give us more opportunity to review  
4 the list, the SRDB list --

5 CHAIR BEACH: This list here, yeah.

6 MR. FITZGERALD: -- and decide what's  
7 a reasonable course.

8 CHAIR BEACH: Does that work for --

9 MR. FITZGERALD: And we'll do that in  
10 concert with the Work Group and NIOSH.

11 MR. DARNELL: Yeah, I think we need to  
12 really sit down and figure out what it is that we  
13 need to do to answer --

14 CHAIR BEACH: And I just don't think  
15 we've had time to focus on what you wrote here and  
16 look at all of the SRDB numbers that you put here.  
17 I know I haven't. I've read your response but I  
18 haven't been able to go down back and look through  
19 all of it.

20 MR. FITZGERALD: We've scanned them,  
21 but, you know, again, it's been five days, six days,  
22 so, you know, certainly I agree that planning this

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1 carefully so that we make good use of the time makes  
2 sense.

3 MR. DARNELL: Now, based on the second  
4 SRDB reference, or the second item in that SRDB,  
5 there's a list of four names: [identifying  
6 information redacted], people we can follow up with  
7 to see.

8 CHAIR BEACH: Okay. Yeah, great.  
9 And that SRDB is listed in the matrix, right?

10 MR. DARNELL: It is listed in there.

11 CHAIR BEACH: Okay.

12 MR. SHARFI: The interviews, that's  
13 about it.

14 CHAIR BEACH: And then, Wayne, you said  
15 you had something on -- or, Maurice -- D&D?

16 MR. COPELAND: Yeah, the department  
17 that we closed up, the lab that was connected to  
18 the model shop, it was directly under the model  
19 shop. I would like to know myself what was I  
20 cleaning up?

21 MR. McCLOSKEY: So that's in the  
22 basement underneath the model shop?

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1                   MR. COPELAND:    Basement, no.    No,  
2                   there aren't any basements in that building

3                   CHAIR BEACH:    Okay, he's trying to find  
4                   out what room you're talking about, what was --

5                   MR. COPELAND:    Directly under the  
6                   model shop adjacent to the cafeteria.

7                   MR. McCLOSKEY:    The cafeteria.

8                   MR. COPELAND:    On the basement level,  
9                   if you want to call it the basement.

10                  MR. McCLOSKEY:    Yeah.

11                  MR. COPELAND:    It's directly under  
12                  there and we called it the lab.    Everything in  
13                  there was top secret.    I only caretook the room.  
14                  I had no personnel.    I would send someone down to  
15                  run a machine every once in a while.    What they did,  
16                  I don't know, I didn't care, but --

17                  MR. McCLOSKEY:    Radioactive material?

18                  MR. COPELAND:    Huh?

19                  MR. McCLOSKEY:    Was there radioactive  
20                  material down there?

21                  MR. COPELAND:    You tell me.    You tell  
22                  me.    No, and I would like to know.

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1 (Simultaneous speaking.)

2 MR. COPELAND: When we shut that  
3 department down, I was assigned no union personnel,  
4 no nothing. There was two supervisors assigned to  
5 clean the place up, to take the machines, stack the  
6 machines, place the machines where they could be  
7 shipped out, to clean up the residue and everything  
8 else that was in there. I did that. So I would  
9 like to know what --

10 CHAIR BEACH: Pat, do you have kind of  
11 a room number or do you kind of know where that's  
12 at?

13 MR. McCLOSKEY: I think so.

14 CHAIR BEACH: Okay. And, Wayne, you  
15 said you had something else on D&D?

16 MR. KNOX: Yes.

17 (Simultaneous speaking.)

18 MR. COPELAND: Well, there's the model  
19 shop. Right here. And it would be directly under  
20 the model shop on the west side of the aisle. The  
21 cafeteria is directly under the model shop on the  
22 west side of the aisle. It would be the department

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1 at the end of the cafeteria directly under the model  
2 shop, it's called the lab.

3 CHAIR BEACH: Okay.

4 MR. COPELAND: And you could ask the  
5 ES&H director, the people assigned to ES&H, what  
6 the number of the department was directly under the  
7 model shop, called the lab, simply called the lab.

8 CHAIR BEACH: Okay, thank you. And  
9 then, Wayne, on D&D?

10 MR. KNOX: Yeah, on D&D, of course,  
11 everything focuses on the promethium-147 spill.  
12 It's very dear to me since I was responsible for  
13 cleaning up Building 325 after a big promethium-147  
14 spill.

15 MR. McCLOSKEY: That's at Hanford,  
16 right?

17 MR. KNOX: At Hanford.

18 CHAIR BEACH: Okay. So, yeah, could  
19 you pertain your comments strictly to KCP so we  
20 could -- please?

21 MR. KNOX: Okay, yeah. Okay. What I  
22 did was to do some analysis here. That's the

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1 report I found on some contamination on boxes and  
2 containers. And this sort of feeds back into what  
3 Maurice was saying.

4 They were shipping material here that  
5 was contaminated, or it got contaminated within  
6 this facility, but they were not opening boxes  
7 under the hood like they were supposed to do, and  
8 apparently they were not properly surveying the  
9 shipments.

10 But the old nuclear flea issue came up  
11 --

12 CHAIR BEACH: Okay, so does this have  
13 to do with D&D, what we're talking about right now,  
14 the D&D of the different rooms? That's what we're  
15 looking at right now.

16 MR. KNOX: Well, this was the --  
17 Rockwell came in, as I recall, and performed this  
18 D&D of the promethium-147 spill.

19 CHAIR BEACH: Yeah, that's very well  
20 documented.

21 MR. DARNELL: Yeah, that's not exactly  
22 what we're talking about.

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1 CHAIR BEACH: No, that's not. We're  
2 looking at just D&D when they were finished with  
3 the project, how that area was deconned and  
4 decommissioned.

5 MR. SHARFI: The post-operation  
6 cleanup.

7 CHAIR BEACH: Post-op, yeah. So we're  
8 trying to focus just on that right now, Wayne.

9 MR. KNOX: Okay.

10 CHAIR BEACH: Okay, so hold on to this  
11 for later topics. Unless you have something that  
12 talks about one of these rooms that can add to the  
13 D&D of one of these rooms at KCP.

14 MR. KNOX: Okay. The only comment was  
15 that you can't just go in and clean up  
16 promethium-147. They have nuclear fleas and it  
17 will keep coming back up on you.

18 CHAIR BEACH: Okay.

19 MR. KNOX: And I have some other data  
20 I will pass around.

21 CHAIR BEACH: Okay. So then you were  
22 going to take on, what are we at now?

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1 MR. FITZGERALD: Yeah, I can finish the  
2 last two issues, which is 18 --

3 MEMBER CLAWSON: Well, before we do  
4 this, I just want to say one thing. We went down  
5 to Kansas City and we're trying to tie Rockwell into  
6 this thing because we've found -- there's a common  
7 denominator someplace with Rockwell and actually  
8 all these other sites.

9 They've got some players in this. We  
10 had a whole lot of a group of people that have come  
11 in there and done this D&D that really don't even  
12 fall into this.

13 I just don't want us, as we're looking  
14 through all this paperwork, something might come  
15 up, because I'm trying to understand the  
16 relationship of Rockwell to these sites,  
17 especially in the early years.

18 If you remember right, in the beginning  
19 of it we had a fire in Area 20, everybody was  
20 assigned to a different area, Rockwell came in and  
21 cleaned it up, boom.

22 MR. DARNELL: Well, we had that from an

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1 interviewee. We have yet to find any  
2 documentation that Rockwell was there at any time  
3 except for the D&D.

4 MR. FITZGERALD: They did pursue that  
5 issue, yes.

6 MEMBER CLAWSON: You have, and I  
7 understand that. And what I'm getting from you is,  
8 well, because we haven't found anything it didn't  
9 happen or whatever. All I am saying is we have an  
10 interviewee who was actually there and actually was  
11 a part of this program telling us this.

12 If we run across something with  
13 Rockwell, because we've been looking at contracts  
14 with them, I'd sure like to know how they end up  
15 coming to these places. Because in the early years  
16 it went to KCP, it's gone to Hanford, it's gone to  
17 all of this. And, now, I don't know if it's because  
18 they were out of Rocky Flats or that they had the  
19 area of expertise, but we have a whole other group  
20 of people out here that we have no data for or even  
21 understand how they worked.

22 So, just in the back of our minds, keep

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1 that open, of if we run across something, because  
2 it's really interesting to me that they keep  
3 showing up at all these sites. There's got to be  
4 a reason why.

5 MR. DARNELL: Well, is that actually,  
6 though, a Work Group issue?

7 MEMBER CLAWSON: Actually, Pete, it  
8 is, because if you can't tell me what happened in  
9 Area 20 there with those -- because that was part  
10 of Kansas City then -- you don't have any data  
11 there, you don't have anything there, I think  
12 you've got to --

13 MR. DARNELL: What if we tell you -- I  
14 don't understand.

15 MEMBER CLAWSON: Okay.

16 MR. DARNELL: Tell you what about  
17 Department 20?

18 (Simultaneous speaking.)

19 CHAIR BEACH: The clean-up of the fire.

20 MEMBER CLAWSON: Tell me about the  
21 fire.

22 CHAIR BEACH: We're going to talk about

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1 that in 18.

2 MR. DARNELL: Yeah, that's coming up.

3 CHAIR BEACH: Is that okay? Hold  
4 that. I think Joe's going to go back to 16. Oh no,  
5 I'm sorry, you're going to go to 18 first.

6 MR. FITZGERALD: We're going to go 18  
7 then 16.

8 CHAIR BEACH: Eighteen then 16, so  
9 we're right there.

10 MR. FITZGERALD: Yeah. Our original  
11 issue on 18 was just, you know, the accident  
12 incidents, there were two that were cited in the  
13 ER, the '87 erbium tritide, which we mentioned  
14 earlier, and the 1989 promethium-147, which was a  
15 big one.

16 Those two were cited, and no question  
17 those were two fairly major incidents. But we were  
18 concerned about what, you know, seemed to be a lack  
19 of maybe a broader accounting of incidents that  
20 fell somewhat lower than those but still were  
21 significant enough to be reported at the site.

22 And so the subject of the October 2014

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1 visit was to really start shaking the tree and see  
2 if we could find a file that was a little more  
3 complete, maybe more extensive on incidents and  
4 accidents during the operational history of the  
5 plant from the '50s, and we didn't find everything  
6 we wanted.

7 I mean, the weekly activity reports we  
8 were hoping would be a real source and we only found  
9 a rather narrow range of those. But we did find  
10 a number of radiation incident documents, a folder  
11 for '63 through '75 that was pretty extensive, it  
12 had I think a fair number of incidents reported.

13 So I think it's a more complete listing  
14 now. Whether it's as complete as it could be we  
15 don't know at this point, but it's much more  
16 complete than it was before. There's nothing that  
17 has come out yet that approaches a major release,  
18 a major exposure, something that would've been  
19 unusual from our standpoint.

20 So the Work Group wanted us to go back,  
21 take another look and see if we could find more  
22 documentation. More documentation has been

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1 found. In reviewing that, we haven't found  
2 anything that would stand as a major release or a  
3 major exposure sort of along the lines of  
4 promethium-147, something in that universe.

5 It would have been better to find more  
6 weekly activity reports than we did, but, you know  
7 --

8 MR. DARNELL: And we're still going to  
9 look for them.

10 MR. FITZGERALD: We'll still look for  
11 them, so it's up the Work Group. I mean, it's just  
12 sort of a work in progress. It's a much better  
13 listing than it was before. Whether it could be  
14 better, it's possible that we might be able to find  
15 some more information at the site. So that's kind  
16 of where that stands.

17 MR. DARNELL: Hey, Brad, just to let  
18 you know, on SRDB Reference 123895, Page 45, a  
19 beautiful memo discussing not only who was at the  
20 fire, what monitoring was done, results of the  
21 monitoring, what medical personnel responded, what  
22 IH personnel responded, urinalysis, yeah, the

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1 whole bit.

2 MR. FITZGERALD: That was 123895?

3 MR. DARNELL: 123895, Page 45.

4 MR. McCLOSKEY: They even went up on  
5 the roof and checked to see what bypassed the  
6 ventilation system and would've been --

7 MR. DARNELL: Yes.

8 CHAIR BEACH: And I know SC&A was  
9 recommending closure of this one, but I would like  
10 to leave this one open pending the Work Group to  
11 have time to look at all of these and feel  
12 comfortable with the list that you guys put in here.

13 That's what I think, because, again, I  
14 scanned this, but I didn't have time to read all  
15 the SRDBs.

16 MR. DARNELL: Sure. There's no way  
17 you could get --

18 CHAIR BEACH: I was focusing on a  
19 couple and this wasn't one of them.

20 MR. DARNELL: But I just wanted to  
21 point that out to Brad because he's very interested  
22 in it.

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1 CHAIR BEACH: No, I agree, I'm glad you  
2 did.

3 MR. McCLOSKEY: Is that the fire, Brad?  
4 '63, is that the --

5 MR. DARNELL: That's the one you're  
6 worried about?

7 MEMBER CLAWSON: I'll need to take a  
8 look at the report of this because I'm trying to  
9 think --

10 CHAIR BEACH: Okay.

11 MEMBER CLAWSON: I'm trying to think of  
12 that interview. But the point that, the part that  
13 bothers me is that we have this whole other outside  
14 group that comes in. It's like they just ride in  
15 on their white horse and then leave. We have no  
16 idea of what --

17 MR. McCLOSKEY: I can see perfect sense  
18 why KCP used them for the promethium spill, because  
19 they were just there for their major D&D from '84  
20 to '86, right.

21 They were just, they have a good  
22 relationship with the site, they're their client,

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1 and so they're still writing the report for the D&D  
2 and then they have a promethium spill.

3 So they had a relationship. So that  
4 makes sense to call, you got my number on speed  
5 dial, you know.

6 MEMBER CLAWSON: I understand that  
7 one. I just have a hard time understanding,  
8 because this goes clear back into the early years.

9 MR. FITZGERALD: Keep in mind that the  
10 Albuquerque Operations Office had the weapons  
11 program, had Kansas City, Rocky Flats, Sandia, Los  
12 Alamos, all of them were under the Albuquerque  
13 umbrella. So it's not overly surprising that, you  
14 know, perhaps with that influence that Rockwell may  
15 have made the stops within the Albuquerque complex  
16 because they were all sort of this one weapons  
17 family.

18 MR. McCLOSKEY: Yeah, they all need to  
19 be Q-cleared.

20 MR. FITZGERALD: Right.

21 MR. McCLOSKEY: I mean, once you find  
22 a D&D group that has this level of --

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1 MR. FITZGERALD: They might have been  
2 the ready source of D&D for the Albuquerque weapons  
3 complex, which would've been all those weapons labs  
4 and the weapons plants, in which Kansas City and  
5 Pinellas were actually part of.

6 MEMBER CLAWSON: So we have this whole  
7 group out there, we have this group that does this  
8 all over there --

9 MR. FITZGERALD: Yeah.

10 MEMBER CLAWSON: -- and we have no  
11 information on them.

12 CHAIR BEACH: All right, so I put as an  
13 action that we're going to continue looking for new  
14 incident reports and report back to the Work Group,  
15 and then give the Work Group time to review this  
16 list. And we'll leave this open until the Work  
17 Group convenes again. Jim, are you okay with that?

18 MEMBER LOCKEY: Yes.

19 CHAIR BEACH: Loretta?

20 MEMBER VALERIO: Yeah, Josie, would  
21 you repeat that reference number of the SRDB?

22 CHAIR BEACH: Yeah. Loretta, if you

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1 look in the matrix on Page 27, it's the second  
2 paragraph. It's in the 1963 fire for D22. And  
3 it's listed, the reference for the SRDB and the page  
4 numbers are there.

5 MEMBER VALERIO: All right.

6 CHAIR BEACH: But I would say, yeah, if  
7 you have time look at all of them and just feel  
8 comfortable with those and that they were covered  
9 appropriately.

10 Wayne, did you have something?

11 MR. KNOX: Yes. The Dotty Troxell  
12 event was a very serious one in which people,  
13 particularly on the roof, would've gotten a lot of  
14 exposure.

15 MR. DARNELL: Okay, Mr. Knox, we  
16 covered this one with you before. We cannot  
17 discuss the court case, okay?

18 MR. KNOX: The court case? The lady is  
19 dead. There are no privacy rights afforded her.  
20 The lady --

21 MR. DARNELL: This Working Group  
22 cannot discuss the litigation. We have gone

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1 through this --

2 MR. KNOX: It's not the litigation,  
3 it's the exposure. She ended up with cataracts in  
4 both eyes that was internal hemorrhaging and she  
5 was sent down to New Mexico to the hospital and  
6 everything.

7 MR. DARNELL: I'm going to give you a  
8 website. May I suggest that you go actually learn  
9 what the Troxell case was about before you come back  
10 here, okay?

11 MR. KNOX: Okay.

12 MR. DARNELL: I'll write it down for  
13 you. We've discussed this before. We covered  
14 this in the last Working Group meeting with you.

15 CHAIR BEACH: Okay, so while you do  
16 that, Pete, we're going to start on 16 --

17 MR. FITZGERALD: Just to wrap up the  
18 matrix, it's the last item.

19 CHAIR BEACH: The last item on the  
20 matrix.

21 MR. FITZGERALD: And then we can turn  
22 this over for petitioner discussion.

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1 CHAIR BEACH: Yes.

2 MR. FITZGERALD: This one, we did  
3 submit the White Paper last, I think it was July  
4 or August, and fundamentally we found no fault with  
5 the approach and felt it was conservative and  
6 bounding, as well as for the residual period in  
7 terms of TBD-6000. So the conclusion is that we  
8 really did not have any issues per se.

9 Now, the only proviso was that, you  
10 know, there weren't other operations. This is  
11 really a TBD-6000 proviso. There were no other  
12 operations, rad operations, going on at the same  
13 time that, you now, would confound to the  
14 application of TBD-6000.

15 We're not aware of any, and we think the  
16 rad mapping will help, you know, ensure that  
17 nothing like that was happening in the '50s. We're  
18 not aware of any other operations, so, frankly, we  
19 would recommend closure of that particular issue.

20 The specific comments that were  
21 provided in your latest response we had no problem  
22 with. I think that certainly they're all well

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1 taken and we find acceptable.

2 So unless the Work Group has any  
3 particular questions or issues on that particular  
4 White Paper from last year, we're okay with the  
5 natural uranium in the '50s.

6 CHAIR BEACH: Okay. For me, because  
7 we did want to look at the mapping and we are short  
8 of time, I, again, would like to hold this one open  
9 until the next Work Group meeting. And then I'd  
10 like to go through and look at the mapping, maybe  
11 not as part of this meeting, but just as we close.

12 MR. McCLOSKEY: You could probably  
13 take that. I could roll it up and you could take  
14 it with you and they do FedEx shipping around the  
15 country, if that would help you.

16 CHAIR BEACH: Perfect. Yeah, I was  
17 going to take a picture but I just haven't got to  
18 that point yet.

19 MR. McCLOSKEY: And I'll have a  
20 discussion with you afterwards, give you an  
21 orientation to help you.

22 CHAIR BEACH: Okay. And then, John, I

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1 just wanted to make sure that, SC&A brought up a  
2 couple of points, I know there was a couple of them  
3 that were okay. Did you want to provide any  
4 feedback? I know Joe said you were okay, so no  
5 feedback on the comments that --

6 MR. FITZGERALD: These are the four  
7 specific comments that were provided, John.

8 CHAIR BEACH: And John might not be on  
9 the line.

10 MR. FITZGERALD: John might not still  
11 be on.

12 CHAIR BEACH: Okay. So, because of  
13 those comments, I don't want to rush closing it.

14 MR. FITZGERALD: Okay.

15 CHAIR BEACH: And I know there's a  
16 couple of them that don't need comments, but there  
17 was a couple I thought might.

18 MR. FITZGERALD: Well, just so it's  
19 clear, John did review all of those specific  
20 comments, did not have any objections to those.

21 CHAIR BEACH: He was okay with them?

22 MR. FITZGERALD: He was okay with them.

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1 So, but, you know, certainly your --

2 CHAIR BEACH: Okay. For me, that's  
3 just my opinion. What do you think?

4 MEMBER LOCKEY: Take your time. You  
5 want to look at the map.

6 CHAIR BEACH: Yeah, I kind of want to  
7 have a feel for the map and I don't -- how are you,  
8 where are you --

9 (Simultaneous speaking.)

10 MEMBER CLAWSON: -- get a better  
11 feeling of it.

12 CHAIR BEACH: He said I could take the  
13 maps with me.

14 MR. McCLOSKEY: You're not flying out  
15 tonight, right?

16 CHAIR BEACH: I am.

17 MR. McCLOSKEY: Oh.

18 (Simultaneous speaking.)

19 MR. DARNELL: We'll get them mailed to  
20 you.

21 CHAIR BEACH: We'll have them at the  
22 next one. Maybe there will be more time.

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1 MR. McCLOSKEY: We can mail you copies  
2 if you'd like.

3 MR. DARNELL: We'll make copies and --

4 CHAIR BEACH: I'm going to take  
5 pictures of them, so it's fine. I just, I think  
6 I'm pretty comfortable with it, but --

7 (Simultaneous speaking.)

8 MR. DARNELL: We're still going to make  
9 copies and send them to all the Work Group Members.

10 CHAIR BEACH: Perfect, let's do that  
11 then. All right. So, yeah, I just don't want to  
12 rush closing stuff if I'm -- I agree with it, but  
13 I want to have time to look at the areas.

14 So, that is done. Actions, we'll do  
15 the same thing we always do. I'll either send a  
16 list out or, I don't know, I was capturing most of  
17 them, send it around and --

18 MR. FITZGERALD: We'll send it around  
19 like we usually do and make sure everybody's on  
20 board.

21 CHAIR BEACH: Like you usually do,  
22 okay. Now, before we get to petitioners, do you

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1 have some dates in mind for a site visit?

2 MR. DARNELL: Actually, if we want to  
3 have Pat, it needs to be very much sooner rather  
4 than later. He's got some stuff coming up in  
5 March.

6 CHAIR BEACH: Okay.

7 MR. DARNELL: Personally, I want Pat  
8 there, but I don't think we absolutely need his  
9 presence, because we're doing so much in looking  
10 through boxes. So the timeframe can be pretty much  
11 open.

12 CHAIR BEACH: Okay. Do you want to  
13 just send around some dates and we'll do it that  
14 way?

15 MR. DARNELL: Well, I was just thinking  
16 the second week of February.

17 MR. McCLOSKEY: It starts with the 8th.

18 MR. DARNELL: Yeah, it would be the  
19 week of February 8th.

20 MR. FITZGERALD: Do you think the site  
21 can host us that soon? That's usually the  
22 determiner.

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1                   MR. DARNELL: I'm not sure, but if we  
2 come in with a date that's, what, three weeks from  
3 now?

4                   MR. FITZGERALD: Right, three weeks.

5                   CHAIR BEACH: How many days are you  
6 talking?

7                   MR. McCLOSKEY: We have to put together  
8 a list.

9                   MR. DARNELL: They already have Tier 3,  
10 Tier 4 boxes pulled for us.

11                  MR. McCLOSKEY: Well, we've added some  
12 words to the search.

13                  CHAIR BEACH: Yeah, I'd rather wait  
14 till the last week of February.

15                  MR. DARNELL: The last week of  
16 February, okay.

17                  CHAIR BEACH: Would that work?

18                  MR. DARNELL: That works for me.

19                  CHAIR BEACH: Okay. I have a wedding  
20 I'm planning on the 14th and I would really rather  
21 not go the week before that, and I would like to  
22 go. So let's shoot for the last week if we could.

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1 Does that ace you out, Pat?

2 MR. McCLOSKEY: I have to look at my  
3 budget plan for delivering another ER on another  
4 site and see how long I can be away.

5 CHAIR BEACH: Okay. All right. And  
6 the next Work Group meeting, we'll send around  
7 dates after that. I think I will report to the full  
8 Board in March, regardless of what we do, with just  
9 what we've done so far, what we've closed, and where  
10 we're headed. So, we'll do that.

11 MR. KATZ: So maybe I'll send around  
12 -- to try to schedule no matter what since we know  
13 when the Board meeting is at the end of March --  
14 maybe I'll send out for sort of two weeks before  
15 that, those two weeks, available dates for another  
16 Work Group meeting?

17 MR. DARNELL: If we pick up anything at  
18 all we have to have time to review it before we have  
19 the next meeting.

20 MR. KATZ: You will not?

21 MR. DARNELL: Yeah. Not in that short  
22 timeframe.

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1 MR. KATZ: Oh, okay.

2 CHAIR BEACH: We can still report out  
3 where we're at without having another Work Group  
4 meeting.

5 MR. KATZ: Okay.

6 MR. DARNELL: If we pick up stuff at the  
7 end of February, we're looking at the earliest the  
8 end of March before we'll get it from the site.

9 MR. KATZ: Oh, I see, okay.

10 CHAIR BEACH: Okay. So, Maurice, I  
11 wanted to give you a few minutes for petitioner  
12 issues or your personal issues to address the Work  
13 Group.

14 MR. COPELAND: Yeah, I'll think I'll  
15 send an email out. It was an incident, of course,  
16 we all know about.

17 CHAIR BEACH: If you send it to Ted, he  
18 will make sure that we all get it.

19 MR. COPELAND: Well, it had the  
20 question that I'm going to ask now, so I'll read  
21 it.

22 CHAIR BEACH: Oh, okay.

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1                   MR. COPELAND:     And I'm sure that  
2                   everybody is familiar with the incident of where  
3                   I received a package.

4                   MR. DARNELL:    Yes, sir.

5                   MR. COPELAND:    Okay.  It seems to be,  
6                   and this was an incident of exposure to some type  
7                   of radioactive device, right?

8                   MR. DARNELL:    Well, you --

9                   MR. COPELAND:    Okay.  I guess I don't  
10                  know when we can't get an answer, it's either yes  
11                  or no.

12                  MR. DARNELL:    We have no records that  
13                  have shown, that for any unusual event, that a  
14                  package showed up like that on anybody's --

15                  MR. COPELAND:    You have no records?

16                  MR. DARNELL:    We have no records of it.

17                  MR. COPELAND:    Okay.

18                  MR. DARNELL:    We have records of other  
19                  packages that we've discussed before about how  
20                  things changed with the way things were shipping.  
21                  NIOSH views those as two separate things.

22                  MR. COPELAND:    My concern with those

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1 records, if you have nothing that you found  
2 nothing, it's very strange how you can do any type  
3 of investigation when the person that was directly  
4 involved in this incident is [identifying  
5 information redacted]. He was the [identifying  
6 information redacted] at the time that this --

7 MR. DARNELL: We have sent to the  
8 Kansas City Plant --

9 MR. COPELAND: I can't hear you.

10 MR. DARNELL: We have sent to the  
11 Kansas City Plant asking of [identifying  
12 information redacted], I forget his name --

13 MR. COPELAND: [Identifying  
14 information redacted].

15 MR. DARNELL: Yeah, [identifying  
16 information redacted], through the ES&H folks, we  
17 have asked them to ask that question and we've got  
18 no information from them.

19 MR. COPELAND: Good. Well --

20 MR. DARNELL: Excuse me, we got a  
21 response that said they have no information for us,  
22 make sure I got that right.

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1                   MR. COPELAND: Good. So, in essence,  
2 they're saying the incident did not happen. He was  
3 directly involved. I gave it to him. I put it on  
4 his desk. He said he would take care of it.

5                   I have other witnesses to that and we  
6 have other people that were exposed. Now, if you  
7 can't get a simple answer from [identifying  
8 information redacted], how can you be sure that the  
9 information that you're getting for the dose  
10 reconstruction is proper?

11                   So if they're saying that this incident  
12 that happened, this was 16 years ago or more --  
13 well, I guess I'm fabricating all of this.

14                   MR. DARNELL: Well, nobody's trying to  
15 say that at all.

16                   MR. COPELAND: I can't get an answer  
17 after 16 -- one of the questions that you had on  
18 the SEC Report, what did the employees know about  
19 radiation exposure? That was number one. Yeah,  
20 of course, you want to know what did the employees  
21 know about exposures of radiation.

22                   Look, what do I know after 16 years?

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1 You can't even make a phone call and call  
2 [identifying information redacted] to get an  
3 answer from him yes or no. Either the incident  
4 happened --

5 MR. DARNELL: I just told you we did  
6 that.

7 MR. COPELAND: Huh?

8 MR. DARNELL: I just told you we  
9 contacted the --

10 MR. COPELAND: What did he say?

11 MR. DARNELL: He said there is no  
12 exposure. There's no information to give on the  
13 incident. He's not remembering any exposures.

14 MR. COPELAND: He's not remembering  
15 that incident?

16 MR. DARNELL: It wasn't a big deal to  
17 him.

18 MEMBER LOCKEY: Can I ask you a  
19 question?

20 MR. COPELAND: It wasn't a big deal?

21 MEMBER LOCKEY: Does he remember the  
22 incident?

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1                   MR. COPELAND: He said it wasn't a big  
2 deal.

3                   MR. DARNELL: We pushed him about it  
4 and pushed him about it and talked several times  
5 to try to get him to remember.

6                   MEMBER LOCKEY: So he doesn't remember  
7 it, that's what he said?

8                   MR. DARNELL: Doesn't really remember  
9 it, doesn't -- he says he would've remembered it  
10 if it was a big deal.

11                  MR. COPELAND: If it was a big deal. I  
12 would like to take a radioactive part and stick it  
13 up someone's ass and wonder if they think it's a  
14 big deal just because it was a low level deal.

15                  Look, he doesn't think it was a big  
16 deal. I don't think it was a big deal that the  
17 train hit his ass either.

18                  CHAIR BEACH: Okay, you're still on the  
19 record, just so you know.

20                  MR. COPELAND: Oh, yeah. I don't  
21 care.

22                  MR. DARNELL: I apologize if this is --

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1                   MR. COPELAND: But, look, it's me, it's  
2 me and my body and we want to know about the people  
3 who worked at Bendix and the exposures of  
4 radiation.

5                   Do you think it's any big deal that  
6 we're going through this process to find out if  
7 anybody was injured because of this? Do you think  
8 it's any big deal?

9                   I think it's a big deal on the radiation  
10 exposure that I had and I think it's a very big deal  
11 that I cannot get an answer after 16 years and now  
12 I'm hearing that the guy that was directly involved  
13 doesn't think it was a big deal.

14                   He can't remember, and I have five or  
15 six witnesses, plus we have other people that were  
16 exposed to this stuff that have not been told.

17                   MR. DARNELL: I will glad to query him  
18 again.

19                   MR. COPELAND: What?

20                   MR. DARNELL: I will be glad to  
21 question him again when we go down there. I'll  
22 make an appointment to talk to him directly

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1 face-to-face.

2 MR. COPELAND: Make an appointment for  
3 me and him.

4 MR. DARNELL: I doubt he'll see you for  
5 all the other reasons.

6 MR. COPELAND: He has asked to see me.

7 MR. DARNELL: Well, okay, that's --

8 MR. SHARFI: You can ask.

9 MR. DARNELL: I will be glad to go down  
10 there and I will make you this promise, I will ask  
11 him directly face-to-face instead of going through  
12 the groups that we usually go through, because  
13 that's our standard operating procedure.

14 I am so sorry that this information has  
15 made you angry that they're not thinking that this  
16 is a big deal. I really am sorry that you're angry  
17 about that. I will go and --

18 MR. COPELAND: Wouldn't you be angry  
19 about it?

20 MR. DARNELL: My level of education and  
21 expertise in this --

22 MR. COPELAND: Oh.

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1                   MR. DARNELL: Now, listen to the whole  
2 response. My level of education and expertise in  
3 this field, if I got that response, I wouldn't think  
4 twice about it, because of the experience I have  
5 with it and my knowledge in radiation, okay?

6                   Your experiences and expertise are much  
7 different than mine, so I wouldn't expect you to  
8 know the ins and outs that I know, just like I don't  
9 know the ins and outs that you know.

10                  So I truly value your input and truly  
11 value what you have to say. I value it enough to  
12 go and approach the guy again, this time directly  
13 face-to-face.

14                  MR. COPELAND: This time approach  
15 [identifying information redacted].

16                  MR. DARNELL: I don't know who  
17 [identifying information redacted] is.

18                  MR. COPELAND: I'm giving you her name.  
19 She worked for him, also, and she's one of the  
20 people that handled the device first.

21                  CHAIR BEACH: Maurice, have you been  
22 assigned any dose for this incident, do you know?

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1                   MR. COPELAND: No, I haven't had any,  
2 but isn't it -- from what I'm understanding, the  
3 incident did not happen. If the incident had  
4 happened, it would be a procedure, a written  
5 procedure, in your records of what's to take place  
6 afterwards. I should be examined. I should be  
7 told what the source of the radiation was. So,  
8 evidently -- also the [identifying information  
9 redacted], I can give you ten names, but I'm not  
10 going to give you all the names, I'm going to tell  
11 the people themselves, because they remember the  
12 incident.

13                   They will remember the incident and  
14 I'll let them know that they haven't been told. And  
15 a couple of the people are dead, so, you know, I'll  
16 tell their families so that they can start  
17 inquiring about and he can tell them that it's no  
18 big thing.

19                   MR. KATZ: Although just what I heard  
20 Pete say is that he doesn't recall the incident and  
21 he's assuming it's no big deal because he doesn't  
22 recall it. It's not the same as him telling you

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1 it was no big deal. It's just --

2 MR. COPELAND: Him not recalling the  
3 incident means that after the incident happened he  
4 did not follow the procedure.

5 MR. KATZ: Or he just doesn't remember  
6 all of it, which is also possible many years later,  
7 right? I mean, he may just not remember it, right?

8 MR. DARNELL: Mr. Copeland, do you have  
9 a --

10 MR. COPELAND: That's not true. I  
11 questioned this incident for years, so how can he  
12 not recall when I kept questioning this for years.

13 MR. KATZ: Okay, I see. I didn't know  
14 that history.

15 MR. COPELAND: We know what happened,  
16 they screwed up and they did not follow the process.  
17 What incident takes place after a radiation  
18 exposure? What happens? What does ES&H, what do  
19 the atomic people tell people to do after an  
20 exposure incident?

21 CHAIR BEACH: Document it.

22 MR. COPELAND: Document it.

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1 DR. NETON: It depends on what  
2 happened. And I don't want to take a lot of time  
3 here, but could you just briefly recount what  
4 happened? I might have heard this, but I've  
5 forgotten exactly. The package I remember that  
6 you received.

7 MR. COPELAND: A box was brought to me.  
8 And the box was sealed, was closed, brought to me.

9 DR. NETON: I remember this part.

10 MR. COPELAND: I was told to look in the  
11 box. I looked in the box, it was popcorn, the  
12 packing material. I took some of the packing  
13 material out and then there was a device in the box.  
14 And it wasn't a small device like someone put in  
15 there. I don't know what you consider small as  
16 compared to what. I took the device out, looked  
17 at it, I sat it down. The young lady told me you're  
18 not through yet.

19 I took the rest of the popcorn out of  
20 the box and there was a red tag, a red label in there  
21 that says "radioactive material inside." Well,  
22 that's not a good thing to do, I don't think.

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1                   So I looked at it, radioactive material  
2                   inside, thank you very much. Check this out, I  
3                   passed it around to a lot of different people. I  
4                   said, what are we going to do?

5                   CHAIR BEACH: So it was a source? Was  
6                   it a source, a sealed source? Did you --

7                   MR. DARNELL: He didn't know what it  
8                   was.

9                   CHAIR BEACH: I was just asking if you  
10                  determined -- did you determine what it was? Was  
11                  it a source or --

12                 MR. COPELAND: A source? It was a --

13                 MR. SHARFI: Was it a solid material?

14                 MR. COPELAND: It was a device --

15                 MR. SHARFI: Without getting too much  
16                 into --

17                 MR. COPELAND: Yes. It was a solid  
18                 material.

19                 MR. SHARFI: I don't want to get too  
20                 much in describing it --

21                 MR. COPELAND: Okay. I kept it  
22                 overnight. We kept it overnight in the

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1 department. And the next day I took it to  
2 [identifying information redacted], to his desk.  
3 I sat it on his desk. I told him to do the same  
4 thing, open the box.

5 He opened the box and went through the  
6 same process, got it, looked at it, put it back in,  
7 and said "I'll take care of it." That's it, "I'll  
8 take care of it."

9 DR. NETON: No one did any surveys on  
10 this? You don't know if it was emitting any  
11 radioactive material at all? You have no idea what  
12 was --

13 MR. COPELAND: I'm telling you nothing  
14 came to me after that day.

15 DR. NETON: Well, you no knowledge if  
16 this actually had any radioactive material it was  
17 emitting or anything like that? You're just going  
18 on the fact it said "radioactive material," you  
19 believe you were exposed?

20 MR. COPELAND: Yes, right. Right.

21 MR. SHARFI: Were you badged? Were  
22 you wearing an external badge the entire time?

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1 MR. COPELAND: No.

2 MR. McCLOSKEY: So you kept it in the  
3 department overnight. Which department was that,  
4 do you remember?

5 MR. COPELAND: Model shop.

6 MR. McCLOSKEY: Model shop, okay.

7 MR. DARNELL: Mr. Copeland, do you have  
8 a claim?

9 MR. COPELAND: Do I have what?

10 MR. DARNELL: A claim with NIOSH?

11 MR. COPELAND: Yeah.

12 MR. DARNELL: Do you remember the  
13 number, by any chance?

14 MR. COPELAND: No. No, that's not  
15 relevant to what we're talking about.

16 MR. DARNELL: Well, I want to check to  
17 see if the incident is in your report so that --

18 MR. COPELAND: Well, if he doesn't  
19 recall it, evidently they didn't make a report of  
20 the incident. Why would it show up?

21 DR. NETON: Did this come through the  
22 mail?

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1 MR. COPELAND: Huh?

2 DR. NETON: Did this come through the  
3 mail, or how did it arrive on your desk?

4 MR. COPELAND: A young lady received it  
5 in her department.

6 DR. NETON: From where?

7 MR. COPELAND: She was a [identifying  
8 information redacted] in the shipping department.

9 DR. NETON: So it came in through the  
10 shipping department?

11 MR. COPELAND: Shipping and receiving.  
12 Yeah. She was a [identifying information  
13 redacted], she brought it to me because she said  
14 that I would know what to do with it. And I didn't  
15 know what to do with it, I took it to [identifying  
16 information redacted], that knows all the  
17 processes and the procedures, that seemed to have  
18 followed none and it's out of his head now.

19 CHAIR BEACH: Okay.

20 MR. DARNELL: You see, one of the  
21 things about radioactive material --

22 MR. COPELAND: About what?

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1                   MR. DARNELL: One of the things about  
2 radioactive material, I can go to the store right  
3 now and --

4                   MR. COPELAND: I know that. I know  
5 that. Those little watches and stuff like that,  
6 that's elementary.

7                   CHAIR BEACH: I know you want to get  
8 through this, but I have got to leave at 2:45 so  
9 we only have a few minutes and I wanted to move on  
10 to Wayne.

11                   I know however briefly it is and I do  
12 apologize for that. So, Pete, you're going to look  
13 into Wayne's incident and try to give him a more  
14 satisfactory answer.

15                   MR. DARNELL: I'll look into it again.  
16 Yes, Mr. Copeland's.

17                   CHAIR BEACH: Mr. Copeland, sorry.

18                   MR. KNOX: And I'm still not satisfied  
19 with the development and testing of small reactors  
20 at that facility. I looked at the Detroit,  
21 Michigan license. It was a byproduct material  
22 license that they had.

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1 CHAIR BEACH: Okay.

2 MR. KNOX: Now, if you're telling me  
3 that they operated, build, and tested those  
4 reactors up, there they have a problem.

5 MR. DARNELL: I'm not telling you  
6 anything about reactors up there.

7 CHAIR BEACH: Before you jump into  
8 that, Wayne, you sent us a list which I sent -- I  
9 mean, we all looked at it and we've come to the  
10 conclusion that most of the things on your list,  
11 some of them we've already discussed, but we need  
12 more information -- I'm going to just speak for  
13 myself -- of what specific questions you are asking  
14 in order for us to go through this and to get you  
15 the answers that you need on this list.

16 So I don't know how NIOSH feels about  
17 it, but I'm wondering if you could take some more  
18 time -- some of them don't pertain to this Work  
19 Group at all and we can't answer them. Some of them  
20 I know Josh has sent you some answers.

21 So, for things that we have not  
22 discussed that you have questions on, can you give

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1 us more details of what you're looking for, if you  
2 don't mind?

3 DR. NETON: Yeah, if you ask specific  
4 questions on those general areas and provided them  
5 we would address them.

6 MR. KNOX: Okay.

7 CHAIR BEACH: Okay. So, you'll do  
8 that for us and then --

9 MR. KNOX: Can you identify the --

10 MEMBER LOCKEY: Yeah, you need to  
11 identify the ones you want --

12 (Simultaneous speaking.)

13 CHAIR BEACH: Yeah, they're all  
14 general, so all of them. Maybe you can respond to  
15 the ones that this Work Group -- because I think  
16 one, two and three we can't answer at all.

17 MR. DARNELL: Actually, what I'll do is  
18 make a response on that list once my management is  
19 happy, if they are happy with it, and I'll send it  
20 to the Work Group and they'll send it back down to  
21 Mr. Knox.

22 CHAIR BEACH: Okay.

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1                   MEMBER LOCKEY: And includes the things  
2 that we can respond to and things we can't.

3                   MR. DARNELL: Right.

4                   CHAIR BEACH: We need just more  
5 information of what you're looking for.

6                   MR. DARNELL: Well, actually, this,  
7 I'm not going to be responding, I'm going to be  
8 asking for what kind of a clarification we need to  
9 respond.

10                  CHAIR BEACH: Oh, you're going to do  
11 that, okay.

12                  MR. DARNELL: Yeah.

13                  MEMBER LOCKEY: He's going to do that  
14 and then we can work with that.

15                  CHAIR BEACH: Okay, then he can work  
16 with that.

17                  MR. DARNELL: Is that okay with you,  
18 Mr. Knox?

19                  MR. KNOX: Yeah.

20                  CHAIR BEACH: And then let us know  
21 what's not within our purview and maybe what we've  
22 already discussed.

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1                   And some of the answers you're not going  
2                   to be satisfied with, Wayne, and at some point we'll  
3                   have to maybe agree to disagree. Then you'll have  
4                   to go to other channels to get those answers.

5                   MR. KNOX: Yeah.

6                   CHAIR BEACH: Okay. So with that  
7                   said, if there's something else you want to address  
8                   the Work Group -- and I'll take that back because  
9                   some of my other stuff is on it.

10                  MR. KNOX: I just want to quickly say  
11                  that I have generated a lot of this data here. It  
12                  was not meant to be dissected the way you're doing  
13                  it now.

14                  The data that we generated was not  
15                  complete. It was not such that you could determine  
16                  accuracy from precision on anything. None of  
17                  those five data quality measures were able to be  
18                  performed with the data that we had.

19                  MR. DARNELL: I'm actually glad you  
20                  brought up the data quality objectives. We are  
21                  actually not required by the EPA to follow DQOs.  
22                  What you're looking for with data quality and how

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1 the statistics come together is not applicable to  
2 us.

3 MR. KNOX: No, I agree with that,  
4 because you can't do it.

5 MR. DARNELL: Okay.

6 MR. KNOX: It completely -- you're  
7 talking about completeness, which isn't their  
8 quality objective.

9 MR. DARNELL: It doesn't matter  
10 whether we can or cannot do it, it's not applicable.  
11 Every time you bring up data quality objectives  
12 you're not talking about this program, it's not  
13 something that applies to this program.

14 MR. KNOX: Okay. I just want to get  
15 through this one quick, because I spent a lot of  
16 time doing it. I'll be over with it, about the  
17 nuclear fleas here. Here is the indication of  
18 nuclear fleas. Again, based upon experience, they  
19 keep coming back out on you.

20 They said they were no big deal, but  
21 even after you've deconned they will come back out.  
22 I took that, those swipes right there, and did an

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1 analysis of them.

2 MR. DARNELL: What is this from?

3 MR. McCLOSKEY: Hanford.

4 MR. KNOX: No.

5 MR. McCLOSKEY: Oh, sorry.

6 MR. KNOX: No, that's from the  
7 promethium spill that lasted over a 12-year period  
8 at that plant. It was finally detected not by the  
9 Kansas City people, it was detected at Sandia.  
10 That material went to Mound lab and even to  
11 Amersham, England.

12 MR. DARNELL: Okay. And as we  
13 discussed in the last Work Group meeting with you,  
14 it doesn't matter the other places it went to. The  
15 only place that we are responsible for and can  
16 answer to is the Kansas City Plant.

17 MR. KNOX: Okay. I agree.

18 MR. DARNELL: So you're wasting what  
19 little time that you have talking about all the  
20 other issues.

21 MR. KNOX: Okay. If you just take one  
22 of the nuclear fleas that you identify here and do

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1 the analysis on it, based upon ICRP-68, you'll see  
2 that it represents some sizeable doses.

3 One nuclear flea would produce large  
4 radiation doses to the liver and other parts. And  
5 it's not in -- look, if you were to just take that  
6 smear that they have and do it as a technician,  
7 analyze it as a technician, what I did was to  
8 baseline the uranium with a Fiestaware cup. I  
9 looked at the -- that was --

10 MR. DARNELL: Hey, Mr. Knox, you're  
11 wasting your time talking about Fiestaware.

12 MR. KNOX: Okay.

13 MR. DARNELL: And I'm not trying to  
14 interrupt you or be smart-alecky, I'm trying to  
15 help you so you have more time.

16 MR. KNOX: The bottom line is that if  
17 you analyze that smear it appears to be three  
18 different types of alpha emitters. This is in this  
19 bottom chart here.

20 One appears to be depleted uranium from  
21 one. Another one, and I don't have, quite frankly,  
22 a lot of confidence in the low count, but they did

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1 do it with a counter because you get odd numbers.  
2 You got 121 percent alpha emitters on that shipping  
3 can and we shipped plutonium in shipping cans here.

4 Now, on boxes, you see Box 7, for  
5 example, it looks like that might have been a  
6 combination of the promethium and samarium, its  
7 daughter product, because samarium is a decay  
8 product of promethium-147, but it is an alpha  
9 emitter. And it suggests that you had this  
10 contamination in the facility --

11 DR. NETON: What's the half-life of  
12 samarium?

13 MR. KNOX: Huh?

14 DR. NETON: What's the half-life of a  
15 samarium?

16 MR. KNOX: I've forgotten.

17 DR. NETON: Pretty long I think, isn't  
18 it?

19 MR. KNOX: Yes, it's a long half-life.

20 DR. NETON: So it wouldn't grow in with  
21 its own half-life.

22 MR. KNOX: Yes, well --

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1 DR. NETON: You'd have almost no  
2 samarium there. It would be impossible.

3 MR. KNOX: Well, I don't know what it  
4 is. I know that, based upon the preliminary  
5 analysis, it appears as though there are three  
6 different classes, if you will, of radioactive  
7 material there in 1989 in this facility.

8 I know that the inhalation of one  
9 nuclear flea represents some large doses, and it's  
10 not to be ignored. And I know that you cannot come  
11 in and clean it up. They went in and cleaned up  
12 this lady's house in 45 minutes that tracked  
13 promethium in there.

14 MR. DARNELL: Okay. Mr. Knox, excuse  
15 me for interrupting, but we've sent you a letter  
16 on this topic discussing promethium-147, what  
17 NIOSH's point of view is and the dose consequence  
18 from the daughter activity.

19 Again, I'm not trying to be a smart  
20 aleck, I'm trying to help you get as much time for  
21 your issues. This is one we've already covered,  
22 so if you want to waste time on it, the answer is

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1 not going to change.

2 MR. KNOX: I'm through.

3 MR. DARNELL: Okay. Do you remember  
4 receiving the letter?

5 MR. KNOX: Yes. I received it, it was  
6 a lot of technical talk that I could've read out  
7 of a textbook.

8 MR. DARNELL: Okay, as long as you  
9 received the letter.

10 MR. KNOX: I received the letter, yes.

11 MR. DARNELL: All right. Just from  
12 that point of view, this is the same data that  
13 you've given us before, the same handouts that  
14 you've given us before. Our comments are not going  
15 to change.

16 MR. KNOX: You say that the promethium,  
17 it was only promethium that was spilled. There  
18 were several other leaking sources that --

19 MR. DARNELL: Again, we discussed that  
20 in the letter, and you're wasting your time. If  
21 you want to get to other issues -- the response to  
22 this is not going to change, because there's

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1 nothing new that you've given us.

2 And, again, I'm trying to help you so  
3 that you can get as many issues as you can in front  
4 of Ms. Beach before she has to leave.

5 MR. KNOX: All right, okay. No, okay.

6 MR. DARNELL: Okay.

7 CHAIR BEACH: Okay, so the action at  
8 this point is the list that Mr. Knox gave us, you're  
9 going to go through it and send it out to the Work  
10 Group and to Wayne for clarification, and what we  
11 can address within the Work Group that's --

12 MR. DARNELL: Yes.

13 CHAIR BEACH: Okay, that we have not  
14 addressed. Okay.

15 MR. KNOX: Okay.

16 MR. DARNELL: Was there something else  
17 that you wanted to cover that was new?

18 MR. KNOX: I don't see where I'm  
19 moving, so forget it.

20 MR. DARNELL: You don't see where  
21 you're moving?

22 MR. KNOX: It's not worth it.

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1 MR. DARNELL: Okay.

2 MR. KNOX: The report misrepresents  
3 the promethium-147 spill. It misrepresents  
4 others. It ignores a lot of detailed, technical  
5 data that is needed in order to properly assess the  
6 exposures.

7 CHAIR BEACH: Can I make a suggestion?

8 MR. DARNELL: Go ahead.

9 CHAIR BEACH: I would like to close the  
10 Work Group meeting. I know you guys are local and  
11 can stay and if Wayne wants to continue maybe  
12 clarifying some of his issues, that's up to you  
13 guys.

14 MR. DARNELL: Sure. I would be glad to  
15 discuss with you.

16 CHAIR BEACH: But if there's no  
17 objection, I'd like to close the Work Group  
18 meeting. Brad, are you okay with that?

19 MEMBER CLAWSON: Okay, fine.

20 CHAIR BEACH: Loretta?

21 MEMBER VALERIO: I'm fine.

22 CHAIR BEACH: Okay. Jim, you okay?

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1                   MEMBER LOCKEY: Okay.

2                   CHAIR BEACH: All right, so that at  
3 this time we are closed. The next Work Group  
4 meeting will be sometime maybe after the next Board  
5 meeting. And we're going to look for some dates  
6 the last of February for the site visit.

7                   Okay. Thank you for all your hard work  
8 in short time, again, for this rushed day. I  
9 appreciate all your patience. So we'll go ahead  
10 and close. Thank you.

11                   (Whereupon, the above-entitled matter  
12 went off the record at 2:38 p.m.)