

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

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
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NATIONAL INSTITUTE FOR OCCUPATIONAL  
SAFETY AND HEALTH

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ADVISORY BOARD ON RADIATION AND  
WORKER HEALTH

+ + + + +

ROCKY FLATS PLANT WORK GROUP

+ + + + +

THURSDAY  
SEPTEMBER 12, 2013

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The Work Group convened in the Zurich Room of the Cincinnati Airport Marriott, 2395 Progress Drive, Hebron, Kentucky, at 9:00 a.m., Mark Griffon, Chairman, presiding.

PRESENT:

MARK GRIFFON, Chairman  
DAVID KOTELCHUCK, Member  
WANDA I. MUNN, Member  
PHILLIP SCHOFIELD, Member\*

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ALSO PRESENT:

2

TED KATZ, Designated Federal Official  
TERRIE BARRIE  
BOB BARTON, SC&A\*  
JAMES BOGARD, DCAS\*  
ELIZABETH BRACKETT, ORAU Team\*  
RONALD BUCHANAN, SC&A\*  
STEPHANIE CARROLL\*  
JOE FITZGERALD, SC&A\*  
DeKEELY HARTSFIELD, HHS\*  
LARA HUGHES, DCAS\*  
JOSH KINMAN, DCAS\*  
JENNY LIN, HHS  
ARJUN MAKHIJANI, SC&A\*  
JOHN MAURO, SC&A\*  
DAN McKEEL\*  
JIM NETON, DCAS  
LaVON RUTHERFORD, DCAS  
MUTTY SHARFI, ORAU Team\*  
DAN STEMPFLEY, ORAU Team\*  
JOHN STIVER, SC&A\*

\*Participating via telephone

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(9:02 a.m.)

(Roll call.)

CHAIRMAN GRIFFON: Thanks, everyone, for coming. And I think we have a pretty straight-forward agenda. I hope I'm going by the agenda when I say that. We'll probably start off with a presentation from NIOSH overviewing what they've done so far on four issues, I think. Four or five issues. And then NIOSH has a couple White Papers in addition to the PowerPoint presentation. And then SC&A has at least one response document. And I think -- a couple papers, right.

So I think it makes sense to start off with LaVon's presentation, give us an overview and then we'll go from there, okay?

MR. RUTHERFORD: Yes, this is LaVon Rutherford. And our presentation is really going to focus on the revision to, you know, what we've done and why we've decided we're going to revise our existing Evaluation Report.

1                   Some of the other items associated  
2 with the tritium White Paper and the data  
3 falsification will actually be discussed in  
4 further when SC&A does their review of those two  
5 White Papers.

6                   A little background. I don't think  
7 -- listening to the people on the phone, I'm not  
8 sure we even need much background here. I've  
9 prepared a little background just for if there  
10 was going to be people that might need to know  
11 that.

12                   But we issued our Evaluation Report  
13 on September 5th of 2012. We presented the  
14 Evaluation Report in Denver on September 18th.  
15 Everyone should remember at that time our  
16 evaluation was focused on tritium exposures over  
17 the period at Rocky Flats up to 1989. And we  
18 recommended at that time for no Class to be added  
19 based on our evaluation.

20                   At that time the Board made a  
21 determination that additional reviews should be  
22 done, you know, that review included classified

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1 interviews, classified document reviews and  
2 such.

3 On the third slide, just to make it  
4 easier for people, some of the follow-up efforts  
5 that we did. We did additional data captures.  
6 We did data captures at Los Alamos National Lab,  
7 OSTI, EMCBC and DOE-Legacy Management, as well  
8 as some additional data capture at the Denver  
9 Records Center.

10 We had secure discussions, not only  
11 in Denver in November of last year, but also in  
12 Hanford this year, or this past August. We also  
13 did secure interviews and other interviews. We  
14 did some additional dose reconstruction  
15 modeling to try to fine-tune some of the tritium  
16 work, and we also looked at our analysis on the  
17 other issues.

18 As Mark had mentioned at the  
19 beginning, there were roughly four issues other  
20 than the tritium issue that we were looking at  
21 in the post-evaluation. There was some  
22 additional tritium work that we were doing, so

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1 we had some follow-up efforts on that. 7

2 We had the evaluation of petitioner  
3 concerns. The petitioner, Ms. Barrie, brought  
4 up some potential data falsification and data  
5 invalidation that we were running down.

6 We also were looking at the  
7 U-233/thorium strikes, and I'll discuss that a  
8 little more in-depth why we went back into the  
9 U-233 and thorium strikes. Also neptunium.  
10 Neptunium became an issue at other sites and then  
11 that became an issue that we wanted to look back  
12 into here. And then other thorium activities.

13 The last three items, the thorium  
14 strikes, our U-233/thorium strikes, neptunium  
15 and other thorium activities will be included in  
16 the Evaluation Report.

17 Next slide. The White Paper on  
18 tritium, just again a little background. And we  
19 issued that White Paper on June 25th. The White  
20 Paper at that time again concluded the same as  
21 the original ER did, that dose reconstruction  
22 was feasible. However, it did provide a little

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1 refined analysis, I guess a little more precise  
2 of what the potential chronic exposure could be  
3 to a worker.

4 And again we issued that paper on  
5 June 25th, provided it to the Work Group on June  
6 26th and to the petitioner on July the 3rd. And  
7 then we presented that to the Work Group at the  
8 Work Group meeting on July 8th.

9 There was some preliminary  
10 discussions at that time that the report had only  
11 been in the Work Group and SC&A's hands for a very  
12 short time. And so there were a few follow-up  
13 questions, but SC&A had not completed their  
14 formal review of that White Paper.

15 I'll hold off discussions about that  
16 until later on in the agenda. When SC&A discusses  
17 their review I'll discuss the follow-ups that we  
18 did as well.

19 The second White Paper that we did  
20 was the data falsification and data  
21 invalidation. Again, this was focused on  
22 issues brought up by the petitioner. We issued

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1 that report on June 25th, and we provided it to  
2 the Work Group on June 26th and the petitioner  
3 on July 3rd. And then again we presented that  
4 White Paper to the Work Group on July 8th.

5           Again, this was another White Paper  
6 that had only been in SC&A's hands and the Work  
7 Group's hands for a very short time. So there  
8 were a few questions that were brought up that  
9 we were doing follow-up work on, but their review  
10 was not completed yet.

11           Okay, let's jump into -- the next  
12 slide is on the U-233/thorium strikes, and this  
13 is more focused on the revision to the Evaluation  
14 Report. U-233/thorium strikes were originally  
15 vetted under SEC-0030 evaluation.           We  
16 reopened this under SEC-0192 after indications  
17 that this may have occurred more than the two  
18 times previously identified. We had actual  
19 indications that we had support for possibly  
20 five, I believe, five different strikes.

21           U-233 was being evaluated for its  
22 use in the weapons program at Rocky Flats. The

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1 problems with U-233, not only are there internal  
2 problems with U-233 and U-232, but it also  
3 presented an external problem, the U-232,  
4 because of the progeny and the high gamma  
5 energies emitted by the progeny associated with  
6 U-232. Therefore it had an external hazard, so  
7 that presented concerns.

8 So because of that concern, a  
9 chemical process was developed called a thorium  
10 strike to remove the thorium 228 and its progeny,  
11 and basically to keep the external exposures  
12 down so the material could be worked with and  
13 they could, you know, do what they were going to  
14 do with it. Okay, next slide.

15 During the deliberations of  
16 SEC-0030, the bounding thorium dose was based on  
17 air sampling taken during the strike in 1965.  
18 So there were two strikes identified in  
19 SEC-0030. The 1965 strike was felt as bounding.

20 The strike was considered bounding  
21 because it had the highest concentration of  
22 U-232 of the two strikes. It was roughly 50 ppm,

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1 if I remember correctly. No credit was taken  
2 for the ventilation, the hoods or the time  
3 limits.

4 Again, as I mentioned, the  
5 interviews that we had in documents indicated  
6 that strikes occurred other than the two  
7 previously evaluated. So our questions,  
8 knowing that there were additional strikes,  
9 were, okay, are these additional strikes, were  
10 they still bounded by the 1965 exposure? And,  
11 you know, could we verify that?

12 Other questions came up based on a  
13 recent addition of Classes at Hanford based on  
14 an inability to reconstruct doses to U-233,  
15 neptunium, thorium and highly enriched uranium.

16 Just a little background, the  
17 Hanford SEC, I believe it's number 201, added a  
18 Class up to 1983, and it was based on, as I  
19 mentioned, the U-233, the neptunium, the thorium  
20 and the highly enriched uranium.

21 We were aware that Rocky Flats had  
22 the U-233, as well as the neptunium, and so we

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1 wanted to do a little comparison. Were these  
2 activities similar? Were the materials'  
3 quantities similar? And how much monitoring do  
4 we have in comparison between the two?

5 Next slide. Okay, for the thorium  
6 exposures, we've come to the conclusion that the  
7 1965 bounding scenario that was in SEC-0030 is  
8 still, we believe, is the bounding scenario. We  
9 believe that because most documents indicate the  
10 U-233 was to be processed or shipped off-site  
11 prior to the 90-day period.

12 Once that hazard was recognized and  
13 in dealing with the U-233 they tried to ship the  
14 stuff offsite or process the stuff prior to that  
15 90-day period. Again, we do know that there  
16 were additional strikes, but the attempt was to  
17 limit the ingrowth.

18 Documents indicate that the  
19 concentration with U-232 did not exceed 8 ppm  
20 after 1965. As I mentioned, the 1965  
21 concentration was roughly 50 ppm, and the later  
22 years after that '65 period was around 8 ppm. It

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1 did not exceed 8 ppm. 13

2 So we've concluded that the original  
3 scenario that was developed under SEC-0030 is  
4 still a bounding scenario.

5 I will mention that we did have  
6 issues with the air sampling that was used in  
7 that 1965 -- or in that previous analysis. When  
8 we looked back and looked at the air sampling,  
9 we've come to the conclusion that the air  
10 sampling that was used in the previous analysis  
11 was not the right air sampling.

12 What we did, though, is we requested  
13 additional air sampling from the site and for  
14 that existing period and for the correct  
15 building. And then we used that air sampling  
16 and to revise our exposure, that exposure  
17 scenario. That'll be included in the  
18 Evaluation Report. So we came to the same  
19 conclusion, but we had to use different air  
20 sampling in doing that because we believe the air  
21 sampling originally done was not correct.

22 Okay, the next issue associated with that,

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1 other than the thorium strikes, the thorium  
2 issue, was the U-233 exposures. As I mentioned,  
3 this was an issue at Hanford, and under the  
4 Hanford recommended Class we wanted to look back  
5 at this and ensure that we had a good method for  
6 identifying U-233 exposures and encompassing  
7 when needed in dose reconstruction.

8 The quantity of U-233 onsite at  
9 Rocky Flats varied from 1964 to the end of U-233  
10 operations in 1983. Again, this was being  
11 evaluated for use in the weapons program at Rocky  
12 Flats. Estimates from available documents  
13 indicate quantities could have been from 1  
14 kilogram up to 150 kilogram from 1965 through  
15 1983. The highest quantities from 1965 through  
16 1968. Bioassay data for uranium exists and a  
17 uranium coworker model exists for the period of  
18 concern. No specific bioassays associated with  
19 U-233.

20 You know, initially, our idea was  
21 that we would use the uranium bioassay data and  
22 look at the uranium bioassay data and we would

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1 assign the U-233 doses to anyone that had uranium  
2 bioassay, based on the idea that if they were  
3 working with U-233 they were probably uranium  
4 bioassayed.

5 So in order to, you know, approach  
6 this, we thought we needed to come up with some  
7 type of validation or way to ensure that workers  
8 that were working with U-233 did actually  
9 receive -- did actually have uranium bioassay.

10 We have a logbook from a specific  
11 period of U-233 operations that listed names.  
12 There were 46 names of individuals that worked  
13 on the U-233 project for that specific time  
14 period in the logbook.

15 I want to make sure everyone  
16 understands that those 46 individuals, it's not  
17 reasonable to assume that those 46 individuals  
18 were the same 46 individuals that worked from  
19 1964 to 1983, but it gives you an idea.

20 We've got 46 individuals. If we  
21 could go back and we have a portion of those in  
22 NOCTS, that we can look at their internal data

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1 sets and see if they had uranium bioassay, ~~we~~  
2 could make the assumption, okay, yes, good. At  
3 least we know -- our first step in validation is  
4 that these workers that were working on the  
5 project that are claimants had uranium bioassay.

6 Well, we went back, we have 18 of the  
7 46, believe it or not -- which is a pretty high  
8 number; I was kind of surprised -- 18 of the 46  
9 are claimants at this time. Now, of those 18  
10 claimants, though, 17 had uranium bioassay. So  
11 there is one individual that did not have uranium  
12 bioassay over the period in his file, not over  
13 any period. And we could not come up with a  
14 conclusion or a good reason why that individual  
15 did not have uranium bioassay. So that put a  
16 little hole in our initial idea of using uranium  
17 bioassay for the individuals.

18 So as I mentioned -- next slide --  
19 indications that not all workers working on  
20 U-233 operations had uranium bioassay. We had  
21 this small sample set of individuals and we have  
22 one individual that did not have uranium

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1 bioassay with no real good reason why he did not<sub>7</sub>

2 The problem with that is, is that  
3 forces us to assume then that all workers that  
4 we would use a uranium coworker model for, we  
5 would have to come up with a method with --  
6 including the U-233 and U-232.

7 And the difficulty with that is, is  
8 that means that you're going to have a factor,  
9 an adjustment factor in doing that. And also  
10 the activities of U-233, and Jim will jump in if  
11 he needs to, associated with U-233, because of  
12 the very high specific activity similar to like  
13 plutonium, it was dealt with differently.

14 And using the uranium, standard  
15 uranium operations in support of a coworker  
16 model for that type doesn't necessarily make  
17 sense, okay? Jim, do you want to add anything  
18 to that?

19 DR. NETON: No, I think that's true.  
20 It's a different activity. I mean, it's short  
21 duration projects targeted, you know, with  
22 specific activity almost equivalent to

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1 plutonium, it's just much more active. So there  
2 is no good reason to believe that the coworker  
3 model we established using natural uranium,  
4 depleted uranium type exposure, even HEU  
5 exposures, would be valid for those operations.

6 It's almost like a pure  
7 stratification issue. I mean, this is a purely  
8 isolated operation that, like I say, I wouldn't  
9 be convinced that the coworker models would be  
10 appropriate.

11 CHAIRMAN GRIFFON: Was that the  
12 initial argument, though, was to use the  
13 coworker model?

14 DR. NETON: Yeah, and the  
15 interesting thing, there's two coworker models  
16 for Rocky Flats. There's a mass model and a  
17 gross alpha model. Well, obviously the mass  
18 model would give you ridiculous numbers because  
19 it referred to mass activity.

20 And then you would end up using the  
21 gross alpha model, the alpha urine model. But,  
22 again, that model is based predominantly on sort

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1 of other operations that weren't necessarily  
2 this U-233 strike activities. So what's to  
3 believe that the 50 percentile, or we use the  
4 95th percentile actually at Rocky Flats, 95th  
5 percentile, that model is valid for this other  
6 operation?

7 We also don't know that everybody  
8 was bioassay, even though there's 17 out of 18  
9 people that we knew worked on the project had  
10 bioassay samples, you always run into the  
11 situation about ancillary support work or clean  
12 up.

13 I mean, it's pretty clear that  
14 people that were directly making materials  
15 looked like they had good bioassay coverage, but  
16 after the operation's over, the clean-up crews  
17 go in, that sort of thing, you really have no  
18 idea. That's our thinking at this point on  
19 U-233.

20 MR. RUTHERFORD: So DCAS management  
21 did not feel this was sufficiently accurate and  
22 quantities, activities, and available

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1 monitoring were similar to a similar period at  
2 Hanford where DCAS determined dose  
3 reconstruction was not feasible. Again, this  
4 is roughly the exact same time period as what we  
5 added the Class for at Hanford for similar  
6 activity.

7 Neptunium. I'm going to jump from  
8 the U-233/thorium to neptunium. General  
9 conclusion under SEC-0030, our original  
10 evaluation was neptunium was used in small  
11 quantities for research-type work and had  
12 limited exposure potential compared to uranium  
13 and thorium.

14 A determination was made to  
15 re-explore this exposure situation based on  
16 interviews and recent determinations associated  
17 with neptunium, U-233, and thorium at Hanford.  
18 Next slide, please.

19 Records indicate that neptunium was  
20 processed at Rocky Flats as early as 1962 and  
21 inventories existed until 1988. And, you know,  
22 we believe 1962 was the earliest based on what

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1 we've seen in the neptunium processing, there's  
2 a document that's out on neptunium processing.  
3 There could be questions on that just because it  
4 wasn't a special nuclear material until 1985.

5 Neptunium was processed to produce  
6 pure neptunium oxide, metal, and metal alloys.  
7 The processes employed included dissolution,  
8 anion exchange, precipitation, filtration,  
9 calcination, conversion to fluoride, and  
10 reduction to metal.

11 So you basically went through the  
12 whole metal production process. So fabrication  
13 steps such as casting and rolling were performed  
14 to produce metal shapes and foils. It was also  
15 recovered from residual materials including  
16 sand, slag, crucibles, casting skulls, and  
17 alloys.

18 These residues were not only  
19 generated from operations at Rocky Flats but at  
20 Lawrence Livermore, and I believe Savannah River  
21 as well had operations that -- I know Lawrence  
22 Livermore did, but other sites provided residues

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1 for Rocky to process. 22

2 Based on documents and inventories,  
3 it appears most work with neptunium was  
4 completed by the end of 1983. If you look at  
5 when the neptunium processing report that was  
6 done by Rocky Flats, it was done shortly after  
7 -- I think it was 1983 or '84. But it was right  
8 in that time period and operations are indicated  
9 in a past tense manner.

10 All inventories, when you looked at  
11 the NMMSS database as well as the MC&A database,  
12 there were still inventories of neptunium at  
13 Rocky Flats but they're virtually constant. I  
14 mean, they're small gram -- I mean, single gram  
15 differences, but nothing to indicate to us that  
16 there were operations past 1983.

17 Annual onsite inventories were  
18 typically maintained around 1 kilogram. And I  
19 emphasize on this that this does not address  
20 throughput. You know, if you looked at the  
21 inventory and then when we went to the NMMSS  
22 database out in Hanford, you know, they changed

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1 over the periods that we would see, the quarterly  
2 periods or other periods we would see, but it was  
3 typically maintained around the 1 kilogram time.

4 If you looked at it, they had, you  
5 know, the batches did not typically exceed 300  
6 grams, but there's no real way to -- how many  
7 batches actually were processed, how much  
8 material went through.

9 We didn't actually have the material sheet  
10 records where they, you know, shipped this  
11 amount out to say that, you know, there was 1  
12 kilogram throughput in a year. You know, based  
13 on what we read, it looks like there would have  
14 been significantly more than that.

15 Buildings having neptunium  
16 inventories included 371, 559, a number of  
17 buildings as you can see on the presentation.  
18 And the reason why there were a number of  
19 buildings, they had so many different little  
20 operations and methods that they were doing,  
21 little things with neptunium. So, you know,  
22 that's why it's not just in one single R&D area.

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1                   Neptunium exposures, in the<sup>24</sup>  
2 neptunium processing document you will see  
3 there's a statement in there that documents  
4 indicate some early work was conducted in open  
5 hoods, but most work was performed in glove  
6 boxes.

7                   So, you know, we have the early work  
8 that we know had the potential of open hoods and  
9 then later work with the glove boxes. Based on  
10 our review, neptunium exposure potential  
11 existed in every processing step including  
12 extraction and purification,  
13 hydrofluorination, reduction to metal,  
14 alloying, casting, and rolling.

15                   The data that we have on neptunium,  
16 there are two bioassay samples. These were  
17 taken in 1966. One was listed as below the  
18 significant level and the other was a 0.9 dpm per  
19 24 hours.

20                   And then we have gross alpha  
21 bioassay samples existed up until 1970s. What  
22 happened was, at the time gross alpha was used

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1 as -- kind of used for workers that were working<sup>29</sup>  
2 in both uranium and plutonium areas.

3 If you remember, at Rocky, the early  
4 years at Rocky, uranium was their main focus and  
5 then shifted over to the plutonium work. They  
6 were doing the gross alpha. It allowed them to,  
7 if they had a large spike on a gross alpha they  
8 could do a plutonium analysis on it to see if it  
9 was actually a plutonium exposure. It was kind  
10 of an indicator as well.

11 So workplace monitoring data, we  
12 have found no workplace monitoring data specific  
13 to neptunium operations.

14 The reason why I pointed out the  
15 gross alpha was we looked at, you know, the  
16 initial idea was to use the gross alpha as an  
17 indicator for plutonium. If you have all your  
18 alpha-emitting radionuclides in this gross  
19 alpha sample, we ought to be able to -- if we  
20 could assume or if we had the concern that an  
21 individual worked with neptunium, we could apply  
22 that gross alpha from a neptunium exposure.

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1                   The problem with that was we were  
2 concerned that the actual analysis technique or  
3 the chemical process may have potentially  
4 stripped out the neptunium, since their focus  
5 was typically uranium and plutonium. And so we  
6 wanted to, one, go in and see if they were using  
7 a gross alpha as an indicator for exposure to  
8 other radionuclides, to other alpha emitters.

9                   So we interviewed two former Rocky  
10 Flats plant employees, both of those, one who was  
11 in charge of the bioassay program from 1961 until  
12 -- and I can't remember the dates -- in the '80s,  
13 and then another who was a main player in the  
14 RADCON program itself. And we interviewed them  
15 to want to ask them, were you using the gross  
16 alpha as an indicator for neptunium? And if  
17 they said no, did the gross alpha, did you have  
18 the ability to see the neptunium in the gross  
19 alpha?

20                   When we interviewed both of these  
21 individuals, you know, both of them had concerns  
22 with being able to -- the actual neptunium

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1 following through in the co-precipitation  
2 process.

3 The way they, initially, up until  
4 1961, the bioassay samples, all the bioassay  
5 samples were completely ashed. And so all your  
6 alpha emitters would have stayed in that  
7 solution. But the problem with that, it took a  
8 considerable amount of time.

9 And so the individual that we  
10 interviewed actually came up with this  
11 co-precipitation process where they would  
12 basically focus the samples, and in that process  
13 -- and that individual, he said he couldn't be  
14 for sure but he questioned whether the analysis  
15 would support identifying neptunium.

16 MEMBER KOTELCHUCK: Excuse me, I  
17 don't know what you mean by focus the samples.

18 MR. RUTHERFORD: Well, you know,  
19 and I'm definitely not the best at internal  
20 dosimeters, but I will say that they were looking  
21 at, you know, uranium and plutonium mostly. So  
22 the analysis was to focus, to get the sample to

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1 a point where it would be easier to see the  
2 uranium or plutonium.

3 Would you agree, Jim?

4 DR. NETON: The analysis was  
5 optimized to precipitate the plutonium and the  
6 uranium, not with any concern about the ability  
7 of neptunium to also come down. It could have,  
8 but no one knows. No study was done.

9 MEMBER MUNN: So basically we have  
10 no gross alpha that is actually gross alpha?

11 DR. NETON: After certain dates.

12 MR. RUTHERFORD: Exactly. And  
13 it's -- well, we can't be for sure it's all gross  
14 alpha, exactly. It's kind of gross alpha for  
15 plutonium and uranium. That's what it --

16 MEMBER MUNN: And these folks who  
17 put this together didn't have any real concept  
18 of what alpha emitters they were stripping out  
19 of their sample? They're just saying they don't  
20 know.

21 MR. RUTHERFORD: They don't know.  
22 It could have been in there but they don't know,

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1 because they weren't, you know, they weren't  
2 looking at that. And when we talked to both of  
3 them, they said, you know, we really weren't  
4 looking for that.

5 MEMBER MUNN: No, but you don't have  
6 to be looking for it.

7 MR. RUTHERFORD: Sure.

8 MEMBER MUNN: There's nothing in my  
9 education that prepares me for gross alpha not  
10 being gross alpha.

11 MR. RUTHERFORD: I understand.

12 DR. NETON: Well, but they had a  
13 specific chemical procedure that would bring out  
14 the plutonium and the uranium. They didn't  
15 optimize it at all for anything else, so it was  
16 optimized for precipitating out the plutonium  
17 and uranium.

18 MEMBER MUNN: When did they start  
19 this and when did they stop it, if they ever did?

20 MR. RUTHERFORD: Yeah, they started  
21 it in 1961 and they stopped gross alpha, period,  
22 in 1970. And our original approach was we were

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1 going to look at using the gross alpha up until  
2 that 1970 period, and then, if we could use that  
3 up to the 1970 period, we would look at, is it  
4 feasible to say that -- because after 1970 we  
5 really had nothing to hang our hat on.

6 But we were looking at, can we use  
7 that early period of gross alpha and say, based  
8 on engineering controls and the program, that we  
9 can extrapolate it to the later years? But  
10 there ended up being two holes with that problem,  
11 two holes with that idea, let's put it that way.  
12 One, the gross alpha we couldn't use.

13 The other end of it, when I went to  
14 Hanford and looked at the NMMSS database and  
15 looked at the inventories, the inventories  
16 didn't support that idea. Meaning that if  
17 you're going with the idea that the controls and  
18 everything are in place, it works if it looks  
19 like the operations and everything were constant  
20 and you were doing the same types of things. But  
21 there were large fluctuations in inventories  
22 after 1970 that I would struggle saying that the

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1 activities stayed exactly the same. 31

2 MEMBER MUNN: At Rocky Flats.

3 MR. RUTHERFORD: At Rocky Flats.

4 At Rocky Flats specifically, yes. And the  
5 reason why I'm saying at Hanford -- and you guys  
6 are probably wondering. The reason we went to  
7 Hanford, Hanford now has an ability to review  
8 classified documents electronically.

9 And so these classified documents  
10 from the NMMSS database were sent to Hanford for  
11 our review electronically, and from the NMMSS  
12 database. And so I was able to look at  
13 inventories of not only neptunium, but U-233 and  
14 thorium in that classified environment.

15 MEMBER MUNN: And Rocky Flats  
16 inventories of neptunium are not adequate for us  
17 to determine a bounding dose on neptunium?

18 MR. RUTHERFORD: Well, you're  
19 saying -- are you looking at a source model, a  
20 source term model?

21 MEMBER MUNN: I'm talking about a  
22 potential source model, yes.

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1 MR. RUTHERFORD: Well, I'll talk  
2 about that here in just a second, actually. And  
3 I'll be specific on that one too.

4 MEMBER MUNN: Okay.

5 MR. RUTHERFORD: So we have little  
6 to no personal area monitoring. Gross alpha  
7 bioassay can't be used as a viable means. We  
8 have too many different activities. And here's  
9 where I get into why a source term model is  
10 difficult.

11 You had wet, dry processes. You  
12 have many different chemical forms that you were  
13 dealing with, with the neptunium. It was alloy,  
14 it was oxide. It was, you know, nitrate  
15 solutions. And so it was many different chemical  
16 forms. And then it was processed in many  
17 different ways.

18 You know, they recovered the  
19 residues, and there wasn't a single method for  
20 recovering residues. There were three or four  
21 different methods. There were different  
22 methods for actually producing materials that

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1 they used.

33

2 So with so many different operations  
3 and the chemical forms being different, it would  
4 be very hard to come up with a source term model  
5 that would support all these activities. Do you  
6 agree, Jim?

7 DR. NETON: Yes.

8 MEMBER MUNN: Well, I can  
9 understand how it would be difficult to  
10 identify, for example, a minimum. But I don't  
11 understand why it would be difficult to identify  
12 a maximum, regardless of the form, regardless of  
13 the process. Neptunium is neptunium.

14 MR. RUTHERFORD: I agree.

15 MEMBER MUNN: And if you have an  
16 adequate inventory, regardless of the process  
17 and regardless of the form, you ought to be able  
18 to establish a maximum. The only question that  
19 resides then is, is the maximum sufficiently  
20 bounding to be able to use it?

21 MR. RUTHERFORD: And I agree with  
22 you. The only problem you've got is those

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1 inventories were annual inventories. That  
2 doesn't address throughput. It doesn't address  
3 how much -- at the end of year or end of the  
4 quarter they gave inventories of the material.  
5 That's what was listed.

6 We don't have a mechanism. I mean,  
7 there's probably a way, I'm not sure, to go back  
8 and look at all the material shipped off-site  
9 versus all the material that came onsite to  
10 determine the throughput from the site. But  
11 that's what it would take to determine the  
12 throughput in order to come up with that bounding  
13 exposure scenario. Because you had operations  
14 that would use 300 grams, but we don't know how  
15 many times they did that, you know, over a year,  
16 because like I said, you know, they were  
17 producing material. They were getting material.  
18 They were getting residues from other sites.  
19 And so we have inventories in different,  
20 specific time periods, but we don't know the  
21 throughput between those time periods. Does  
22 that make sense?

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1 MEMBER MUNN: The probability that  
2 it exceeded a kilogram is what?

3 MR. RUTHERFORD: You know, I just  
4 don't know.

5 DR. NETON: But if you get to a  
6 kilogram, I mean, it doesn't sound like a lot of  
7 mass, but activity-wise it's substantial.  
8 Hundreds of millicuries, I don't know, I haven't  
9 done the calculation, but the specific activity  
10 is pretty high.

11 So you have a very large amount of  
12 potential for intake from this material. It  
13 wouldn't be like if you just had a kilogram of  
14 uranium.

15 MEMBER MUNN: I understand.

16 DR. NETON: So this is not unlike  
17 what we've encountered, what I would call the  
18 exotics, at other facilities. I mean, it turns  
19 out that Rocky Flats had some exotics out there  
20 that we're not able to develop models for as  
21 well. I mean, the neptunium was not considered  
22 in the first Evaluation Report.

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1 MEMBER KOTELCHUCK: Tell as a little  
2 about where they got their neptunium before or  
3 the raw material from that they processed.

4 MR. RUTHERFORD: I mean, most of it  
5 was processed from residues or they received it  
6 from other sites. And it wasn't, you know, so  
7 good.

8 MEMBER KOTELCHUCK: So it was  
9 already worked on at other sites?

10 MR. RUTHERFORD: Well, to a degree.  
11 I mean, sometimes it was worked on, you know, and  
12 sometimes they would receive it as a residue or  
13 a by-product in material, have to extract from  
14 that by-product then get it into the right form  
15 that they want to produce the metal. Okay, so  
16 they fluoride it and so on.

17 MEMBER KOTELCHUCK: So you could  
18 not rely on how much, really, was coming in  
19 because it was a residue within something else?

20 MR. RUTHERFORD: Yes. And I could  
21 -- you know, if I knew what percentage of that  
22 material it came in and the quantity, and I could

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1 come up with how much was produced, but every  
2 shipment that comes in, doing that and trying to  
3 come up with that would be really tough.

4 That would be hard to do, I can tell  
5 you. Just because, you know, I'd have to go back  
6 and I'd find all the shipping records of every  
7 time that residues were shipped to Rocky Flats  
8 that contained neptunium, and then from that  
9 determine how much, possibly, the neptunium was  
10 retrieved from that residues and then processed.

11 And then you had neptunium that was  
12 worked on the site and had residues picked up  
13 onsite and reintroduced into the system as well.  
14 I don't know what to add to that.

15 MEMBER MUNN: It's hard to believe  
16 that all of the badging that was done and all of  
17 the bioassays that were done are worthless. It  
18 is just impossible for me to accept that nobody  
19 can say anything about all of the science that  
20 was done at Rocky Flats. It's hard to accept  
21 that. If I have to accept it, I guess I have to  
22 accept it.

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1 MR. RUTHERFORD: I recommend, §  
2 you get a chance, to read the interviews with the  
3 two individuals. And these are very, I mean,  
4 well-educated, top of the line --

5 MEMBER MUNN: I understand.

6 MR. RUTHERFORD: -- individuals.  
7 I would recommend reading those, because --

8 MEMBER MUNN: I understand.

9 DR. NETON: And neither indicated  
10 there was any intention of monitoring workers  
11 for neptunium.

12 MR. RUTHERFORD: And, you know, I  
13 interviewed Leo Faust, who worked on the  
14 program, who worked out at Hanford, and I'm not  
15 one of -- I shouldn't say his name on there,  
16 should I?

17 (Simultaneous speaking.)

18 MR. KATZ: You're okay.

19 MR. RUTHERFORD: And I interviewed  
20 Leo because working at Hanford, you know, and  
21 dealing with the same thing. And Leo said, you  
22 know, we had small operations going on with

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1 neptunium and our focus was not neptunium. Ours  
2 focus was the plutonium work and the other work  
3 that we were doing onsite, and so -- yes.

4 CHAIRMAN GRIFFON: But to argue  
5 Wanda's side for a change.

6 MR. RUTHERFORD: Sure.

7 CHAIRMAN GRIFFON: I mean, did they  
8 not monitor for neptunium because they felt like  
9 it was just not that big of a hazard or that, you  
10 know, they had programs in place, that potential  
11 doses were so small? I mean, I think it --

12 MR. RUTHERFORD: Yes, I would say  
13 it's probably true, but --

14 MALE PARTICIPANT: I'm not sure  
15 though. Well, maybe --

16 MR. RUTHERFORD: The problem you've  
17 got is, though, you only have two bioassay  
18 samples and one of them is positive, okay. And  
19 we know they worked in open hoods.

20 DR. NETON: You've also got to look  
21 at the monitoring programs that were in place.  
22 I mean, for example, the thorium strike

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1 operations. If you look at that, they did some  
2 monitoring there because they're worried about  
3 the thorium issues.

4 But, you know, their conclusions  
5 were that these were very small exposures  
6 because they didn't exceed 50 percent of the MPC.  
7 And so that was the mentality then, which was not  
8 to keep doses ALARA or, you know, worry about  
9 health endangerment, but did we exceed the  
10 maximum permissible concentration in air that a  
11 person could breathe every hour for a whole work  
12 year? I mean, so that was a slightly different  
13 mentality.

14 MEMBER MUNN: But it wasn't a  
15 reasonable mentality.

16 DR. NETON: I'm not saying it  
17 wasn't, but then if that's your monitoring  
18 mentality then how do you know why they did or  
19 did not monitor the neptunium operations? They  
20 could have said, look, this is a short duration  
21 project. It could exceed a huge amount, but  
22 it's only for ten hours so we're not worried

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1 about it, as far as exceeding any exposure  
2 limits. But how we would bound that I don't  
3 know. I mean, it would be a guesstimate at best.

4 CHAIRMAN GRIFFON: Well, get  
5 through neptunium and then the other thorium.  
6 And then I have some questions on the thorium  
7 strike stuff, and then we'll go back and have  
8 some chance for questions.

9 MR. RUTHERFORD: Okay, so, again,  
10 quantities and activities associated with  
11 neptunium at Rocky Flats are similar to the  
12 Hanford during the same time period, as I  
13 mentioned. Based on this, NIOSH has concluded  
14 dose reconstruction is not feasible for  
15 neptunium exposures.

16 Other thorium issues. You know, in  
17 SEC-0030, the NIOSH position was that documents  
18 supported that thorium quantities present at  
19 Rocky Flats were not in high enough quantities  
20 to contribute significant to internal dose  
21 potential. And, you know, this statement was  
22 taken out of our original evaluation.

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1                   Beginning in 1952, thorium was used  
2 onsite in quantities small enough that effluents  
3 were not routinely analyzed for thorium.  
4 Thorium quantities vary from as little as none  
5 to as much as 238 grams in a given month --

6                   DR. NETON: Kilograms.

7                   MR. RUTHERFORD: -- kilograms, I'm  
8 sorry, in a given month. Okay, so zero to 238  
9 kilograms in a given month. The principle use  
10 was fabrication of metal parts from natural  
11 thorium metal and from various thorium alloys.

12                   Thorium oxide might have been used  
13 as a mold-coating compound in limited  
14 experiments. And thorium compounds were used  
15 in analytical procedures. Most of the work  
16 associated with thorium during the SEC-0030  
17 evaluation was focused on specific activities  
18 that occurred in the '60s.

19                   The ingot work, the thorium strike  
20 work, everything that was originally looked at  
21 was post-1960. You know, our concern was we  
22 want to look at and see -- we had indication that

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1 thorium was onsite prior to 1960 all the way back  
2 to 1952.

3 So based on interviews and document  
4 review, NIOSH decided to reevaluate the thorium  
5 issue, especially for the early years. We could  
6 not find any specific reports or documents that  
7 supported other activities occurring other than  
8 what were previously identified.

9 The problem we had is that we do know  
10 inventories of thorium existed back to 1952. We  
11 looked at those inventories and we've seen that.  
12 And those inventories changed. It was not just  
13 one year. I mean, it wasn't every year the same  
14 inventory type thing. The annual inventories  
15 changed at a point where it would give you  
16 indication that there was some work going on.

17 Again, we don't know what that work  
18 is, but we do have indication that there were  
19 other work going on. We know that there was  
20 things that were mentioned in the previous  
21 evaluation, that those activities could have  
22 been going on, but again we haven't seen any

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1 additional documentation on that. 44

2 We do know that, based on the review  
3 of the NMMSS database, that thorium was pretty  
4 much nonexistent at Rocky Flats after 1971, at  
5 least from an inventory perspective.

6 And so, really, the only thing I want  
7 to say right now on the thorium is we're still  
8 looking at the early years of thorium use at  
9 Rocky Flats. We're trying to finalize our  
10 position on that.

11 Again, we have nothing that's  
12 identified, really -- I would say nothing that's  
13 really identified new activities. It's the  
14 question of with the inventories changing in  
15 those early years, which gives you an indication  
16 that there was activities going on with it, you  
17 know, what do we do with that?

18 Our revised Evaluation Report,  
19 again the current SEC Classes are from April 1,  
20 1952 through December 31st of 1966, and it's for  
21 all employees who were monitored or should have  
22 been monitored for neutrons.

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1                   Based on our inability to  
2 reconstruct U-233 and neptunium, we will be  
3 recommending a Class at the October Advisory  
4 Board meeting. The parameters of that Class  
5 recommendation have not been fully determined  
6 but they will include the years previously  
7 discussed for U-233 and neptunium operations.  
8 Like I said, it may just be 1962 through 1983.  
9 We just haven't finalized this one portion.

10                   CHAIRMAN GRIFFON: Can you go back  
11 to the slides on your next to last Other Thorium  
12 slide?

13                   MR. RUTHERFORD: Yes. Is that the  
14 right one?

15                   CHAIRMAN GRIFFON: Yes. Can you  
16 just -- I might have missed it. I might even be  
17 reading the previous slide. But can you go over  
18 that again? I mean, you're saying that --

19                   MR. RUTHERFORD: What we were  
20 looking for was something that said -- we were  
21 looking for documents or reports that indicated  
22 a specific other work that was going on in the

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1 early years associated with thorium. And ~~we~~  
2 didn't find anything other than what was  
3 previously discussed in SEC-0030. There was,  
4 you know --

5 CHAIRMAN GRIFFON: Oh, okay, other  
6 activities.

7 MR. RUTHERFORD: Right.

8 CHAIRMAN GRIFFON: Okay, because  
9 the next bullet confused me.

10 MR. RUTHERFORD: Yes.

11 CHAIRMAN GRIFFON: You're saying  
12 you do have inventories?

13 MR. RUTHERFORD: We do have  
14 indication that inventories changed in those  
15 early years. And so --

16 CHAIRMAN GRIFFON: So you're just  
17 continuing to look for --

18 MR. RUTHERFORD: Yes, we're looking  
19 at this and -- there's changing in inventories.  
20 You know, do we feel like what we did under  
21 SEC-0030 is still appropriate? And that's what  
22 we're trying to finalize right now.

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1 CHAIRMAN GRIFFON: All right<sup>47</sup>

2 Well, go ahead. Let's start with Terrie, if you  
3 have something.

4 MS. BARRIE: Okay. I just have a  
5 quick question on the other thorium issues. Our  
6 favorite, the magnesium-thorium alloy plates?

7 MR. RUTHERFORD: Now, the magnesium  
8 -- and I don't know if you heard me there at the  
9 very end when I said based on what's in  
10 inventory. Magnesium-thorium alloy, I doubt  
11 that it was inventoried as part those  
12 inventories, all right.

13 We have not looked -- and I will say  
14 we have that issue on our plate to look at that.  
15 But our focus over the last few months has been  
16 to get to a point where we could be ready for a  
17 meeting in October to discuss, you know, the  
18 Evaluation and the changes.

19 So that's still on our plate. We  
20 have not had a chance to run that  
21 magnesium-thorium alloy issue down again.

22 MS. BARRIE: And I just have one

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1 other thing if that's okay. And I don't know ~~if~~  
2 this is accurate or -- it's accurate, but if it's  
3 applicable. I have an inventory list for  
4 thorium nitrate. In 1974 there was three kilos,  
5 and 1988 there was 3.754 kilos. And I don't know  
6 if you'd like this?

7 MR. RUTHERFORD: Yes, I'd like to  
8 keep this.

9 MS. BARRIE: Okay, thank you.

10 DR. NETON: I mean, we do know those  
11 thorium inventories in those years. I mean,  
12 that's not in debate, really. It's really what  
13 they did with this material.

14 CHAIRMAN GRIFFON: What were the  
15 activities, right.

16 MS. BARRIE: Okay, thank you.

17 CHAIRMAN GRIFFON: LaVon, can you  
18 summarize, I mean, to help my memory, but also  
19 for David, just the magnesium-thorium alloy  
20 question?

21 MR. RUTHERFORD: Yes.  
22 Magnesium-thorium alloy was back when we were

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1 doing an evaluation of Dow Chemical in Madison,

2 And one of the operations for Dow was producing

3 magnesium-thorium alloy.

4 And originally -- and we do have one  
5 of the main players on the line -- but originally  
6 when Dow was designated as a facility under this  
7 program, it was designated because of the  
8 uranium work that occurred at Dow in the 1957 to  
9 1960 period. Well, at the same time Dow was  
10 producing magnesium-thorium alloy. Later on it  
11 was determined that that magnesium-thorium  
12 alloy could have been used in weapons program,  
13 and because of that it was added as a covered  
14 process or covered under our program.

15 And so then the question came up  
16 that, you know, that people believe, workers  
17 believe that magnesium-thorium alloy was  
18 shipped to Rocky Flats and used at Rocky Flats.  
19 And so I know Terrie's given me at least one  
20 document in reference to this for us to look at.

21 And so the question is, is if  
22 magnesium-thorium alloy was shipped to Rocky

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1 Flats and used at Rocky Flats, is there exposure  
2 potential from that magnesium-thorium alloy  
3 under Rocky Flats' issue that we need to  
4 reconstruct? And so we're still running that  
5 one down.

6 DR. McKEEL: Chairman Griffon, this  
7 is Dan McKeel. Could I make a comment?

8 CHAIRMAN GRIFFON: Sure, Dan. Go  
9 ahead.

10 DR. McKEEL: I just wanted to  
11 clarify the new information about  
12 magnesium-thorium that keeps this off the radar  
13 screen. So what LaVon just said is basically  
14 true about the original discussions related to  
15 SEC-0079 and Dow Madison. However, recently,  
16 within the past year, Terrie Barrie got an  
17 anonymous tip from a Rocky Flats worker who  
18 desires to be anonymous that the use of the  
19 magnesium-thorium alloy plates at Rocky Flats  
20 was specifically that it was used in, quote, "the  
21 mod center."

22 And this person said it was used in

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1 Building 881 and it was used on Pad 903, and this  
2 is pretty much a quote from the tipster, "to  
3 shield," or "bulletproof," I think was the term  
4 they used, "semi-trucks and railroad cars in the  
5 mod center."

6 Well, that led to a long chain of  
7 events which has included high level discussions  
8 with Department of Energy, Legacy Management,  
9 with their environmental management who has  
10 looked a little bit into classified records.

11 And also research that we've done on  
12 the Internet, where it's very easy to find under  
13 historical engineering records that as a matter  
14 of fact the mod center, which is actually -- the  
15 name of that really is the Transport  
16 Modification Center, and it was located at least  
17 for awhile in Building 440 at Rocky Flats, and  
18 in fact the HAER Library of Congress entry on the  
19 Internet clearly shows a photograph of the room  
20 in Building 440.

21 It has railroad tracks running  
22 through and a railroad boxcar sitting on the

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1 tracks. And the legend to that, which I've  
2 supplied to everybody -- NIOSH, the Board, the  
3 Work Group, and Terrie and I have done that --  
4 clearly says that what was done in the mod center  
5 at that room is to retrofit semi-trucks and  
6 railroad cars with some kind of material.

7 Now, the HAER, which is an acronym  
8 for the Historical Engineering Records project,  
9 does not indicate exactly what material was used  
10 in Building 440.

11 However, armed with that  
12 information, which is highly specific and can be  
13 immediately confirmed right now on the Internet  
14 as giving credibility to that tip, led us to  
15 petition Department of Energy, to summarize a  
16 lot of work, to look harder, including the  
17 classified records, to verify this now even more  
18 specific information about how  
19 magnesium-thorium alloy, particularly HM 21A,  
20 HK 31A was used, and if it was used at Rocky  
21 Flats.

22 And so Ms. Barrie and I have two FOIA

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1 requests of, I would say, a large magnitude  
2 pending with both NNSA and with DOE-Legacy  
3 Management. The fees for the search, for the  
4 first one, were originally said to have been  
5 \$6,250, which we had to pay or the FOIA request  
6 would be cancelled. I appealed, and I was very,  
7 very happy that Department of Energy has decided  
8 to waive those fees.

9 So both of those FOIA requests are  
10 ongoing. And I'm really very upset, to be quite  
11 honest with everybody, that this information has  
12 been conveyed. The pictures have been  
13 conveyed. The information is very, very  
14 specific. And as far as I can see that shouldn't  
15 take a lot of effort to look into that.

16 And here I listened this morning,  
17 and specifically to hear whether that particular  
18 set of new information was going to be brought  
19 up, and it wasn't until right now when Ms. Barrie  
20 had to bring it up.

21 So I don't know where the priorities  
22 are, but I would say this is very, very old

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1 business. I reiterate to you that we have 14  
2 sworn affidavits from different people at Dow  
3 Madison who swore that they saw marked shipments  
4 going to Rocky Flats of truckloads of these large  
5 magnesium-thorium alloy plates.

6 And even I have wondered over the  
7 years, what in the world could you use that for?  
8 It's kind of hard to believe that that was used  
9 in a nuclear weapon, per se, or that they cut  
10 little pieces out to make little parts.

11 So those Livermore documents that  
12 led to Dow Madison being a AWE site may not have  
13 anything to do with this usage at all.

14 However, when you hear that there  
15 was a material used to bulletproof, and we don't  
16 know whether that means actually to protect  
17 those rail cars and semi-trucks from attacks  
18 with guns and missiles or whether it actually  
19 means to shield them from the radioactive  
20 material that we do know Rocky Flats shipped away  
21 from that site by the truckloads for many years,  
22 including up to 2006 when the site was finally

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1 decommissioned. 55

2 So that's where things stand. I  
3 really hope the Work Group, that NIOSH, and  
4 everybody, will work harder to find out --

5 CHAIRMAN GRIFFON: Yes, you're  
6 right, Dan.

7 DR. McKEEL: -- and once and for  
8 all, shed some light on that pretty clear-cut  
9 testimony from many workers.

10 CHAIRMAN GRIFFON: You're right,  
11 Dr. McKeel, and thank you for adding to that,  
12 because that's why I asked LaVon to -- we're not  
13 going to lose track of this issue. But that's  
14 why I asked LaVon to give a little background,  
15 and thank you for adding that.

16 Can I ask one question, Dan?

17 DR. McKEEL: Sure.

18 CHAIRMAN GRIFFON: Did the tipster  
19 give any time frames on when these activities  
20 were occurring?

21 MS. BARRIE: No, not really, no.

22 CHAIRMAN GRIFFON: Not really.

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1 All right. 56

2 DR. McKEEL: No, we don't have a  
3 handle on that.

4 MS. BARRIE: We were thrilled to get  
5 --

6 CHAIRMAN GRIFFON: Yeah, no, I  
7 know, it's very specific, and you're right, and  
8 NIOSH will pull that thread, I'm sure.

9 MR. RUTHERFORD: Yes, I want to  
10 assure Dan that I had no intentions of glossing  
11 over the magnesium-thorium issue. That issue  
12 is on our plate, we're following it, and as I've  
13 told Terrie, that we will look into that. And  
14 later on in the discussion that would have come  
15 up.

16 DR. McKEEL: I understand that,  
17 LaVon. I simply thought it was very important  
18 to get that on the official record at this point.

19 CHAIRMAN GRIFFON: Yes, thank you.

20 DR. McKEEL: Thank you.

21 CHAIRMAN GRIFFON: That was good,  
22 yes. Can I just go back to the thorium strike

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1 information? I mean, I just wanted to get some  
2 clarification on some things, because, you know,  
3 I think it's important that we understand -- it  
4 seems like it's definitely a change in position  
5 from what you had in the first SEC.

6 And so, you know, when I read things  
7 like you were only able to find 17 of 18  
8 claimants, I mean, I could see that presented  
9 differently saying we found 17 of 18, you know,  
10 and therefore we've got everybody monitored  
11 pretty much, you know, and the one was a  
12 supervisor and likely not involved.

13 MR. RUTHERFORD: No, he wasn't.

14 CHAIRMAN GRIFFON: Okay. I mean, I  
15 think it's important that we --

16 DR. NETON: I agree. That's a  
17 little bit confusing when it's presented that  
18 way.

19 CHAIRMAN GRIFFON: Okay.

20 DR. NETON: In my mind, the idea is  
21 that you really don't know if everybody was  
22 monitored. You had no routine monitoring

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1 program for this that we know of. They happened  
2 to have uranium bioassay. Whether that uranium  
3 bioassay was specifically for the U-233  
4 operations or they just sort of coincidentally  
5 had uranium bioassay because they were working  
6 in an area that required it, we don't know.

7 And then you couple that with the  
8 fact that the coworker model that we have is not  
9 driven by these unique activities, this high  
10 specific activity U-233.

11 CHAIRMAN GRIFFON: Right.

12 DR. NETON: We also have to remember  
13 that most of our focus on the U-233 operations  
14 was the thorium strikes. That was the focus.  
15 And we really didn't pull the thread on the U-233  
16 operations, which was really more of an ongoing  
17 concern.

18 Thorium strikes occur, as you know,  
19 periodically because of the contaminant it would  
20 grow in. And whether there was two or five, you  
21 know, I don't know how many there were, but the  
22 reality ongoing was this U-233 sort of

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1 production operation where they would make --59  
2 don't know what they made. And I don't know how  
3 many of those operations actually occurred.

4 Do we even know how many times they,  
5 you know -- we know that it occurred in a number  
6 of buildings and it's essentially a mini --

7 CHAIRMAN GRIFFON: So we sort of  
8 overlooked that in our first --

9 DR. NETON: Exactly. You know,  
10 because the thorium strikes was really the  
11 focus.

12 CHAIRMAN GRIFFON: Yes.

13 DR. NETON: But ongoing was this  
14 U-233 thing with material that has a specific  
15 activity of plutonium, so it's pretty hot stuff.

16 CHAIRMAN GRIFFON: Oh yeah. Okay.

17 DR. NETON: Like I said, that's the  
18 idea here.

19 CHAIRMAN GRIFFON: Right. And I  
20 think that's also going to be important. I  
21 mean, when you make the presentation, and it  
22 sounds like you're going to write this up and

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1 make your presentation at the full Board  
2 meeting.

3 DR. NETON: Yes.

4 CHAIRMAN GRIFFON: And I think it  
5 would be good to lay out, like, there was that  
6 previous position but, we learned, we have new  
7 information.

8 DR. NETON: Yes.

9 CHAIRMAN GRIFFON: I think the  
10 Board needs to understand that.

11 DR. NETON: It's such a new  
12 investigation into it. I mean, I think the  
13 original ER is probably fairly silent on  
14 reconstruction of U-233.

15 CHAIRMAN GRIFFON: That's right.  
16 I think you're right.

17 DR. NETON: I don't recall -- I  
18 think it was all focused on thorium strikes that  
19 involved U-233, but I raised the question early  
20 on. If I remember it, I said, well, heck with  
21 thorium strikes, how are we reconstructing  
22 U-233? And then we kept pulling that thread and

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1 eventually it led to this, well, we don't know<sup>1</sup>

2 CHAIRMAN GRIFFON: Okay. I just  
3 think we need to be clear. We'll come back to  
4 this.

5 MR. RUTHERFORD: I'll make sure  
6 that's said.

7 CHAIRMAN GRIFFON: Yes. Go ahead,  
8 David.

9 MEMBER KOTELCHUCK: On the  
10 neptunium, basically you have the annual  
11 inventory about kilograms. And what you said  
12 was, in terms of what was coming into the plant,  
13 that you used the word "hard." It was hard to  
14 estimate what was coming in.

15 I wonder if it was possible to sample  
16 a couple of particular years to see how much was  
17 coming in. I would be more persuaded about the  
18 inability to use sourcing if I thought that in  
19 fact a lot more was coming in than a kilogram in  
20 the course of the year. Because then the one  
21 kilogram wouldn't mean that much, or wouldn't be  
22 a good estimate of the sourcing there.

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1                   And I realize there are lots of  
2 different ways that they're using the neptunium.  
3 But, again, if I thought that there a number of  
4 years where the one kilogram represented only a  
5 small fraction of the source material that was  
6 there that year, then we really don't know  
7 anything about the neptunium.

8                   MR. RUTHERFORD: Yes, and one, I  
9 really don't think that's possible and I'll  
10 explain why.

11                   MEMBER KOTELCHUCK: Okay.

12                   MR. RUTHERFORD: One, I don't know  
13 if you heard me mention or if I mentioned it.  
14 Maybe I was just thinking it. Neptunium did not  
15 become a special nuclear material until roughly  
16 1984-85, all right.

17                   One of the documents that we read  
18 was, it said that updating the databases to get  
19 specific inventories of neptunium once it became  
20 a special nuclear material would be very  
21 difficult and we would question the accuracy.

22                   Now I say that because, you know, so,

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1 one, I have a little question with the inventory  
2 that we already have because of that document.  
3 And the other issue is, I mean there's probably  
4 records that exist but I don't know how you would  
5 be able to take all the records for a given year  
6 of shipments coming in. You would have to break  
7 down and find out how many of those shipments  
8 have neptunium.

9 MEMBER KOTELCHUCK: Because it was  
10 not listed as neptunium, it was a contaminant of  
11 something else?

12 MR. RUTHERFORD: I mean, yes, it was  
13 listed as a contaminant because that's what they  
14 were getting it in to recover that neptunium, so  
15 it was listed. I just don't know that you would  
16 be able to pull together a decent number.

17 MR. FITZGERALD: LaVon, this is Joe  
18 Fitzgerald.

19 MR. RUTHERFORD: Yes.

20 MR. FITZGERALD: The other thing I  
21 would add is that Rocky was a center almost  
22 within DOE for the processing and recycling of

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1 neptunium.

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2 And I think one thing that LaVon said  
3 earlier that adds to this conundrum, if you may,  
4 is that there was a myriad of activities on site.  
5 That they were, you know, not only doing  
6 fabrication of all kinds of different things  
7 whether it was foils, whether it was, you know,  
8 small items, coatings, I mean it was a whole  
9 bunch of things.

10 And they did it in all these  
11 different buildings and it really was a bunch of  
12 different activities, a large scope of  
13 activities that, you know, one would have to  
14 account for.

15 I don't think the -- certainly the  
16 quantities don't appear to be high per activity,  
17 but getting a throughput for the site is one  
18 thing. Getting a throughput for actual  
19 operations would be another thing.

20 DR. MAURO: This is John Mauro.  
21 Can I ask a question related to this issue  
22 related to trying to bound exotics that we run

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1 into quite often?

65

2 And I recall on a number of occasions  
3 where OTIB-18 and OTIB-33 were used, where you  
4 were dealing with radionuclides, you knew that  
5 there was a good health physics program in place,  
6 and a decision is made using those OTIBs to say  
7 that well, there's a level of confidence that  
8 there might have been some exposures, but if  
9 there were any they were well below some level  
10 of MPC hours.

11 In other words I'm coming at the  
12 problem the opposite direction. Rather than  
13 trying to come up with throughput and let's say  
14 model, I know on occasion you took advantage of  
15 the fact that there was in fact a good air  
16 sampling program.

17 There was good documentation that  
18 was in place, and you would use, I think it's 18  
19 and 33, which goes to MPC hours as a way to place  
20 a plausible upper bound on any work it might have  
21 experienced. Have you considered that strategy  
22 for bounding neptunium, for example?

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1 DR. NETON: John, this is Jim. 65  
2 don't recall ever using that type of an approach  
3 for an exotic. I know we had, those documents  
4 were more specifically for routine operations,  
5 but I could be wrong.

6 But I'm not recalling anyplace where  
7 we've actually said we can bound exotics because  
8 of the air sampling programs that were in place.

9 DR. MAURO: You know what, Jim, I  
10 think you're right. My experience has also been  
11 with a more --

12 (Simultaneous speaking.)

13 DR. NETON: You know, like uranium  
14 facilities. They had a lot of air monitors out  
15 and about the plant, and they were very careful  
16 about, you know, controlling it. But the  
17 exotics were typically, were sort of the  
18 off-normal type situations where they'd be  
19 working with, you know, this of course surfaced  
20 mostly at the National Laboratory where there  
21 would be people off working on their own.

22 (Simultaneous speaking)

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1 MR. FITZGERALD: The other thing~~67~~  
2 would find -- this is Joe again, Fitzgerald --  
3 is we wrestled the same question, I think Jim  
4 just touched on it, at Los Alamos as well as at  
5 Hanford and came up against the same kind of  
6 questions as far as how one could model, how  
7 could one take what data was there. And I think  
8 in all cases it proved to really be a big problem.

9 MEMBER SCHOFIELD: This is Phil.  
10 I'd like to throw in one thing. Materials that  
11 weren't normally classified, I guess, as SNM,  
12 when you see a lot of these numbers that doesn't  
13 give you the whole amount, because there's some  
14 of this material could be held up in residues  
15 from the exchange columns, in salts, or just even  
16 cleaning the materials in glove boxes.

17 And since it wasn't accountable, a  
18 lot of that wasn't accountable, how much went out  
19 in waste, how much was actually recycled back  
20 through there? The number you see may be what  
21 was the final product, but they actually would  
22 have had substantially more than that at the

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1 other end when they first started. 68

2 You know, well, Joe knows all about  
3 like the MUF accounts and stuff. I mean, when  
4 it's not accountable then nobody's really that  
5 concerned unless it's a very special material or  
6 something. So you can have a substantial, a  
7 larger quantity than what you see at the final  
8 product.

9 MR. FITZGERALD: And I'd just agree  
10 with that. Yes, you find the MUF, the material  
11 unaccounted for numbers in all these inventories  
12 including neptunium.

13 CHAIRMAN GRIFFON: Okay. And just  
14 to change the line of questioning a little bit.  
15 In your final slide you talked about a potential  
16 SEC. Is it just coincidental that both of these  
17 kind of, and in '83 was it just the --

18 MR. RUTHERFORD: No, it seems  
19 coincidence, yes. It is coincidental, yes.

20 (Simultaneous speaking)

21 MR. FITZGERALD: One thing I would  
22 add -- this is Joe again -- you know, on neptunium

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1 more than the U-233 is, clearly, the major  
2 production operations phased out about that time  
3 but there remained an R&D and analysis function  
4 that employed neptunium beyond '83.

5 So that cut point is something that  
6 I guess one could examine when this thing comes  
7 to sort of closure, to make sure on that cut  
8 point. But I think certainly it definitely  
9 transitioned in '83.

10 CHAIRMAN GRIFFON: Well, then what  
11 I was getting at, really, was the age-old problem  
12 I see at least for neptunium. I don't know if  
13 you did for thorium strikes but in neptunium you  
14 mentioned buildings, and so the question of who,  
15 you know --

16 MR. RUTHERFORD: How you define a  
17 Class.

18 CHAIRMAN GRIFFON: Is it going to be  
19 all workers? Is it going to be -- you know, and  
20 we see how much we struggle with trying to do the  
21 building kind of -- right. SECs, right.

22 MR. RUTHERFORD: If you look at how

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1 many different buildings that we've identified  
2 between the U-233 and the neptunium, and the fact  
3 that maintenance workers moved between  
4 buildings and the work that they would have done  
5 on the glove boxes in trying to define a smaller  
6 Class, I think we've concluded it would be all  
7 employees.

8 (Simultaneous speaking)

9 MR. RUTHERFORD: No, because that's  
10 what I said. They're not --

11 CHAIRMAN GRIFFON: Okay. I would  
12 support that, yes.

13 DR. NETON: I think we've learned  
14 from past experience that it's very difficult to  
15 administer --

16 CHAIRMAN GRIFFON: We've all  
17 learned that. Okay, all right. Any other  
18 questions?

19 MEMBER KOTELCHUCK: I mean, the  
20 argument on neptunium about the operations I  
21 recognize, I mean because it just seems like the  
22 neptunium exposure is in many different forms,

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1 right? Airborne, vapors from liquids, et  
2 cetera, liquid intakes. I could understand  
3 that.

4 And I guess I didn't catch the  
5 argument that not just that it was hard. Hard  
6 is not a reason --

7 (Simultaneous speaking)

8 MEMBER KOTELCHUCK: Almost, but  
9 really difficult to estimate reliably, I assume,  
10 it's in there.

11 MR. RUTHERFORD: I'll work on that  
12 portion of my presentation.

13 MEMBER KOTELCHUCK: Well, I mean,  
14 even if I saw years where you might identify a  
15 big shipment of something where you could  
16 reasonably estimate the neptunium input into the  
17 facility and that number was far greater than a  
18 kilogram, that to me would be persuasive  
19 evidence that not only are the operations  
20 difficult, which I will accept, but that the  
21 sourcing also is unreliable.

22 I don't know if that's possible, but

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1 that would be persuasive evidence to me. 72

2 MR. RUTHERFORD: Okay.

3 Recognizing that uranium and the U-233 issue and  
4 the neptunium issue, the years are virtually  
5 identical coincidentally as Mark pointed out,  
6 the one is, I believe, '62 through '83, and the  
7 other is '64 through '83.

8 CHAIRMAN GRIFFON: Any questions on  
9 the line? Any follow-up, Phil, or --

10 MR. FITZGERALD: This is Joe. I  
11 just have a question on when we might see the  
12 actual White Papers on those two.

13 MR. RUTHERFORD: Well, Joe, we're  
14 not going to have a White Paper on those. We're  
15 going to issue a revised --

16 MR. FITZGERALD: Oh, I'm sorry, the  
17 revised ER.

18 MR. RUTHERFORD: We're working to  
19 have that, and as I mentioned in the email it  
20 probably will not be available until about two  
21 weeks prior to the Board meeting. It's just  
22 pulling all that information together and

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1 getting the report out, and getting it through  
2 classification review.

3 CHAIRMAN GRIFFON: So that's not  
4 too far away.

5 MR. RUTHERFORD: No. No, it's not  
6 too far away at all.

7 DR. NETON: Everybody's decided  
8 neptunium, uranium. And thorium is still being  
9 evaluated. That's a little bit harder to --

10 CHAIRMAN GRIFFON: Well, and that's  
11 why I asked about the years for the other,  
12 especially the magnesium-thorium, and if --

13 DR. NETON: Yes, because --

14 (Simultaneous speaking)

15 CHAIRMAN GRIFFON: -- fell under  
16 this window it may not amount to that much. And  
17 I think that might likely be the case with, I mean  
18 I'm getting ahead of myself but the tritium  
19 question, you know, depending on how this SEC  
20 falls, right.

21 DR. NETON: Some of the other  
22 tritium issues would be subsumed --

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1 (Simultaneous speaking) 74

2 CHAIRMAN GRIFFON: Exactly. But  
3 if there's no more on this, thank you for asking  
4 the process question, Joe. I was going to ask  
5 that too. So a couple weeks before we should  
6 have the report, and that's good.

7 And if there's no other questions on  
8 this, I think can we take like a ten-minute break  
9 and then come back --

10 DR. NETON: Talk about the White  
11 Papers?

12 CHAIRMAN GRIFFON: -- and introduce  
13 some of the White Papers, right. Okay.

14 (Whereupon, the foregoing matter  
15 went off the record at 10:21 a.m. and went back  
16 on the record at 10:36 a.m.)

17 MR. KATZ: Okay, I'm sorry. We're  
18 five minutes late. This is Rocky Flats Work  
19 Group, we're back and ready.

20 CHAIRMAN GRIFFON: Okay, so I  
21 think, you know, the next items will be the White  
22 Papers, and maybe we can just do this back and

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1       forth, you know, start with the tritium issue  
2       maybe, or whichever one you want to do first,  
3       LaVon. And then the SC&A sort of say what  
4       they'd, you know, hook onto these things.

5                   MR. RUTHERFORD: What I had planned  
6       was that I thought SC&A was going to give their  
7       reviews of the White Papers and then we would  
8       talk about the issues that they had come up with.  
9       Then I'll also talk about the follow-up efforts  
10      that we did as well.

11                   CHAIRMAN GRIFFON: All right.  
12      Well, if Joe -- yes, that's fine. Joe, if you  
13      want to start, then either way, yes.

14                   MR. FITZGERALD: Yes, Mark, I'd  
15      like to suggest that perhaps the White Paper  
16      authors or LaVon could basically review the  
17      binning on the separate pieces of the tritium  
18      paper, for example, the '73, '74 to '75, then  
19      pre-'73, and have discussions in those parts.  
20      That's kind of the sequence that we went through.

21                   I think it would allow them in their  
22      own words to describe, you know, what approach

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1 they took, and then our paper responds to that  
2 approach as written. To sort of lead in to what  
3 we evaluated, rather than having us basically  
4 describe the approach they took. That might be  
5 a -- (Simultaneous speaking)

6 CHAIRMAN GRIFFON: Back to my  
7 initial format.

8 MR. RUTHERFORD: Okay, that's fine  
9 with me. And I know that Jim Bogard who is one  
10 of the co-authors, and Elizabeth Brackett and  
11 Mutty Sharfi, that all three co-authors are on  
12 so they will quickly correct me or provide  
13 additional information as needed when I get into  
14 this.

15 So basically the tritium exposures,  
16 initially the Evaluation Report had identified  
17 that we would use the 1973 incident as our  
18 bounding scenario for, at that time for all  
19 exposures to tritium.

20 We'd come up with a worst case  
21 scenario, taking the worst case bioassay sample  
22 from the '73 incident, and originally came up

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1 with a maximum dose of 700 millirem. From that  
2 then, in the White Paper we went back and looked  
3 at, was there ways that we could refine this?  
4 Instead of using the 700 millirem over the whole  
5 time period, was there ways that we could break  
6 this down?

7 So we looked back and said, well,  
8 there's a clear cut point, 1973, when the  
9 incident occurred. There's a cut point in the  
10 amount of data we have. There's a cut point in  
11 this big incident occurring.

12 And so we decided to break the  
13 exposure periods down into a pre-1973 period,  
14 like roughly 1959 to 1973, if you assume 1959's  
15 the first year of exposure, and then 1973 when  
16 the incident occurred, and then post-1973 when  
17 we had additional bioassay data.

18 And so the White Paper breaks down  
19 into the pre-1973 period. That was a time  
20 period when we had very few bioassay samples. I  
21 think a total of six, if I remember, four or six,  
22 something like that non-specific as to what they

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1 were. It wasn't specific as if they came from  
2 an incident or such.

3 So we had the '59 to '73 period. We  
4 had little to no modern data. We have  
5 indications that bubblers were in use. Based on  
6 our interviews that we had, the classified  
7 interviews, we had identified a potential  
8 exposure of returned units from Pantex or other  
9 sites, mainly Pantex, and shipping containers,  
10 opening up these containers and having a release  
11 from these shipping containers.

12 So recognizing that event, we  
13 identified this 1974 incident. That was where  
14 they opened up the container, had a release, the  
15 release was recognized here today. We had  
16 monitoring data, bioassay data, and we used that  
17 release scenario as our bounding scenario all  
18 the way from '59 to '73.

19 Our basis for that being a pretty  
20 good incident to use was when you look at the  
21 timeline of when that incident occurred. And I  
22 believe it was like the April to September period

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1 or somewhere around there, I can't remember for  
2 sure.

3 The incident was being monitored,  
4 but we do not believe that the shipping controls,  
5 or the controls for shipping containers had  
6 really changed since the '73 incident. The '73  
7 incident, remember, was processing a unit. It  
8 was not a shipping container being received and  
9 opened up.

10 And so the focus wasn't necessarily  
11 on contaminated shipping containers.  
12 Contaminated shipping containers, they started  
13 monitoring these shipping containers in early  
14 1974, if I remember by the letter correctly, and  
15 they went through a campaign of monitoring these  
16 shipping containers.

17 In late 1974, after the '74 incident  
18 is when they sent out the letter to the other  
19 sites that, you know, basically that they  
20 couldn't accept potentially contaminated,  
21 tritium contaminated containers because they  
22 found that some of these containers contained

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1 low levels of contamination. 80

2 So we felt like this incident was a  
3 pretty reasonable scenario for a chronic release  
4 in the pre-1973 period, and since we could not  
5 define the numbers of releases that could have  
6 occurred, we assumed one occurred per day in  
7 coming up with our internal exposure approach  
8 for that period. So that was the pre-'73 period  
9 in a nutshell.

10 1973, we used the actual '73  
11 incident, and the '73 incident we actually went  
12 back and took the bioassay data and came up with  
13 a, we fitted the data based on each bioassay and  
14 came up with a refined analysis, and I think our  
15 numbers came up to around 84 millirem per year  
16 versus the 700 that we had originally  
17 identified.

18 And then the post-1973, we have  
19 bioassay data that, and if I remember correctly,  
20 roughly 75 bioassay samples in the '74-75 time  
21 period. We did a coworker analysis based on  
22 that data, and that coworker analysis identified

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1 that there was no exposure, or zero. And so  
2 post-1974 we would apply zero for that period.

3 Let's see, Jim, Liz or Mutty, do you  
4 want to add anything to that?

5 MR. BOGARD: No. That sounds fine.

6 MS. BRACKETT: Great, thank you.

7 MR. SHARFI: Agreed.

8 MR. RUTHERFORD: All right. So I  
9 guess we can -- does that help, Joe, to start?

10 MR. FITZGERALD: No, that's very  
11 helpful. And what we did was focus on those  
12 three time periods. We kind of took the order  
13 a little differently, but we spent some time  
14 looking at the -- and we've looked at this before  
15 but not perhaps in this detail with the advantage  
16 of your analysis.

17 So what we want to do is take '73  
18 first, and then, for making sense since that was  
19 where most of the data started, where we got the  
20 initial data that's been used in the past and go  
21 from there.

22 John, Bob?

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1 DR. MAURO: Yes, Joe, I'm here. 82

2 MR. FITZGERALD: You want to throw  
3 out the first ball?

4 DR. MAURO: Okay, I'll carry the  
5 relay race. I'll take the first leg. We did  
6 start in '73, because I think that's a pivotal  
7 year where the realization was that yes, it looks  
8 like there might be tritium problems.

9 You know, prior to '73 there was this  
10 assumption -- I don't know how close the Board  
11 is with regard to these matters, but it might  
12 help, a little background. I'll try to be  
13 brief.

14 The general sense was prior to '73  
15 there really weren't any substantial tritium  
16 issues. That the material, the plutonium that  
17 was arriving was relatively clean of any  
18 tritium. Any tritium was removed.

19 However, what happened was the State  
20 of Colorado had an ongoing water sampling  
21 program in Walnut Creek, a receiving water  
22 stream from the facility, and you could look at

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1 the data. There's data that they have showing  
2 the concentration of tritium in Walnut Creek as  
3 a function of time as reported by the Colorado  
4 Department of Health.

5 Well, sometime in April, I believe  
6 it was, '73, it became apparent that there was  
7 a spike. There was a high level of tritium and  
8 that triggered a lot of research into, okay, what  
9 happened?

10 And really, I'm repeating a lot of  
11 the material that's already in the reports, but  
12 I think it's important to understand that this  
13 was a sea change. That is, in '73 it became  
14 apparent that the material that was arriving at  
15 Rocky could, not necessarily often, but  
16 certainly could contain elevated levels of  
17 tritium which could expose workers. So a  
18 very large investigation took place to look into  
19 this issue. And what happened was that in '73  
20 a major follow-up investigation took place that  
21 identified that yes, it was a shipment, I think,  
22 that came from Los Alamos that had a problem.

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1 Yes, and they went ahead and took  
2 bioassay samples from 250 workers, very good  
3 follow-up urine samples. Did liquid  
4 scintillation detection on the samples, and they  
5 identified five individuals that had a  
6 detectable level of that were of concern, I think  
7 they call them action levels.

8 And action level was any person that  
9 had tritium in urine above 10,000 picocuries per  
10 liter. It sounds like a big number but it really  
11 is not a big number. And that's associated with  
12 if you had 10,000 picocuries per liter of tritium  
13 in your urine, chronically or continuously,  
14 you'd be getting about one millirem a year. So  
15 it's not a high number.

16 But they did identify five  
17 individuals. Now, and here's the first problem  
18 we have, and I'm trying to get to the issue in  
19 '73 that we do need to air out. What happened  
20 is the sampling didn't take place immediately  
21 after the realization that there was a possible  
22 incident in April of '73.

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1                   The bioassay sampling began several  
2 months later, September time period. So what we  
3 have here is people that might have been exposed  
4 earlier, April, May, June, their bioassay  
5 samples were not collected until, oh, several  
6 months later, a September time frame, let's say.

7                   And so what we really have is we have  
8 five individuals who have fairly thorough  
9 bioassay samples but not starting until several  
10 months after the exposures may have occurred.  
11 And these are the five individuals out of the 250  
12 samples that had the highest levels.

13                   Now, so what was done by the Atomic  
14 Energy Commission report, it's this big report  
15 that stands behind the White Paper that is being  
16 referred to in this discussion that NIOSH  
17 prepared, where a detailed analysis is provided  
18 of what the -- here's the bioassay results of  
19 these workers that started several months later.

20                   They actually plot the  
21 concentration of tritium in urine as a function  
22 of time when they started sampling, let's say

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1 September. And they say okay, given this  
2 concentration that we're seeing they could  
3 back-extrapolate to the earlier time periods of  
4 what the concentrations might have been, and go  
5 all the way back to April in some cases, what  
6 there might have been. And you can do that and  
7 it's easily done.

8 So now you could actually say, well,  
9 we're seeing this concentration of tritium in  
10 urine in September. Back in April, the  
11 concentrations would have been much, much, much  
12 higher as you can imagine just going back in  
13 time, because tritium has a ten-day half life.

14 Well, anyway we have four- to 18-day  
15 half life, and ten is sort of like the going  
16 number. And it's a good number. Now what  
17 happens is, that's sort of like the setup to the  
18 story now.

19 Then NIOSH reported that well,  
20 there's a Table A-5 in their White Paper. And  
21 by the way, up until this point I was, you know,  
22 we were very comfortable with the whole strategy

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1 that was being adopted here to try to bound ~~of~~  
2 understand what the high end exposures might  
3 have been from this incident. And by the  
4 way, we do believe by the way that this incident  
5 was a one-of-a-kind, because in other words we  
6 don't think incidents of greater magnitude might  
7 have occurred before because it would have been  
8 picked up by this water sampling program which  
9 was quite extensive.

10 It looked like data was being  
11 gathered by the State of Colorado at least twice  
12 a month, from the data I was looking at. So they  
13 would have picked it up if something big like  
14 this happened. Big, I'll call it big, relatively  
15 big happened.

16 So there's good reason to believe  
17 that this 1973 incident was a one-of-a-kind  
18 incident, was perhaps the most serious incident  
19 that had occurred. And now here at NIOSH, and  
20 the Atomic Energy Commission at the time and also  
21 later now NIOSH try to reconstruct the doses to  
22 the workers from this incident.

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1                   Now here's where SC&A -- and these  
2 calculations were only done a day or two ago.  
3 But there's this Table A-5, and this is Issue  
4 Number 1. It took a little bit of time to get  
5 to it but I had to set the table.

6                   Table A-5 in the White Paper gives  
7 NIOSH's estimate of the doses, the time  
8 integrated doses, to the five workers that had  
9 the highest levels of tritium observed in the  
10 bioassay program.

11                   And I went back, and so did Bob, and  
12 independent of me we had, really, two people  
13 looking at it. And the first one we looked at  
14 was Case Number D. Okay, this is one of the  
15 workers. And the number that's reported in this  
16 Table A-5 of the White Paper is 72 millirem.

17                   Now when we look at the AEC  
18 reconstruction of this person's dose, what they  
19 say is, listen, you know, it's very difficult to  
20 predict what this person's dose is because we're  
21 back-extrapolating, and we really don't know  
22 when his exposure occurred. It's hard to

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1 predict that. 89

2 And so what they do in the AEC  
3 papers, they have three different scenarios.  
4 They say, well, here's the low end number, and  
5 I think they came up with it could be as low as  
6 25 millirem. Then they said here's another  
7 estimate that might be a little higher, and they  
8 came up with 700 millirem.

9 And then they say here's our upper  
10 end case, and they come up with 2.2, I think it  
11 is, rem. And so that late case is the case that  
12 assumes the person's exposure may have been as  
13 early as April. That is, at the time that the  
14 shipment arrived the person might have been  
15 working with it and his intake could have  
16 occurred very early. And that being the case,  
17 when you back-extrapolate, you know, you're  
18 going all the way back in time and all of a sudden  
19 the intake at times zero could be substantial.

20 So what we, I guess, we're having a  
21 little difficulty with is that gee, it seems to  
22 me that if you wanted to place a plausible upper

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1 bound on what the highest exposure might have  
2 been to this worker, I'm only talking D now, I  
3 would have said it's not 72, it's probably more  
4 like 2 rem. Not 72 millirem, but 2 rem.

5 So regarding this issue which is  
6 really the starting point for all this is we're  
7 having a little trouble understanding the  
8 rationale for the doses for A, B, C, D, and H  
9 cases in Table A-5.

10 It seems that the doses were, if you  
11 were trying to place plausible upper bound on  
12 what the doses these workers may have  
13 experienced could have been substantially  
14 higher. And keep in mind that, you know, we  
15 reviewed this material relatively recently. We  
16 actually did the hand calculation, it's a pretty  
17 straightforward calculation, yesterday.

18 And where we're coming out is, we  
19 understand the process you went through and we  
20 agree with the whole story that's told, but we're  
21 coming out with numbers that are quite a bit  
22 different than the numbers you're presenting in

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1 Table A-5, which I believe are the basis for the  
2 numbers that you're going to use to assign doses  
3 to workers for 1973. And so I guess that's the  
4 first issue that perhaps we should talk about.

5 MR. RUTHERFORD: Okay. Well, I  
6 guess we better get some help from Liz and Mutty  
7 on this one. I'm not sure.

8 MS. BRACKETT: Okay, this is Liz.  
9 I guess I didn't see this in your paper.

10 DR. MAURO: No, I apologize. We  
11 reviewed your paper as best we could just about  
12 a week ago. You know, it had to go through  
13 clearance and everything. And at the time that  
14 at least I was looking at it I accepted the  
15 numbers that I looked at. I said, listen, I'm  
16 not going to go back to the original data and do  
17 a lot of calculations. We were trying to get our  
18 paper out.

19 So our White Paper was moving  
20 through the system, through DOE clearance, and  
21 in the interim we all agreed amongst ourselves,  
22 you know, we probably should go back to the

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1 original source document, the source data, the  
2 bioassay results, and see if we can match these  
3 numbers. And it wasn't until yesterday.

4 So quite frankly, when you read our  
5 paper, our paper regarding 1973 is very  
6 supportive of your work.

7 MS. BRACKETT: That's what I  
8 thought.

9 DR. MAURO: And it was, until we  
10 said, listen, let's go back and do some number  
11 crunching and go grab some numbers, and lo and  
12 behold. So I'm sorry to spring this to you in  
13 this manner, but we are troubled by the fact that  
14 gee, we're coming, and not only us, but  
15 ironically when I did my calculations it wasn't  
16 until later I realized, gee, I came up with 2 rem.  
17 And that's exactly an upper bound for Case D.  
18 And by the way that's what the AEC report came  
19 up with.

20 MR. STIVER: Yes, this is John. I  
21 think the source of the sort of comment at the  
22 end of that review where it points out that we

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1 were troubled by Case D because we did see the  
2 700 millirem as a chronic exposure for one  
3 quarter, and that's what sort of precipitated  
4 the, you know, this doesn't quite add up.

5 MS. BRACKETT: Right. Well, I  
6 believe I can explain the discrepancy, and I  
7 thought that it was described in this paper.  
8 But the AEC paper was done in the '70s. And from  
9 what John has said, I gathered that you're just,  
10 you said you were doing a hand calculation so  
11 you're probably just assuming a ten-day --

12 DR. MAURO: Yes, as simple as that.  
13 Yes.

14 MS. BRACKETT: But that's not the  
15 correct model anymore. And there's a 40-day  
16 component, which if you're only looking at the  
17 samples collected within the week or two after  
18 the intake occurred then the use of just strict  
19 ten days is fine and you'll get about the correct  
20 answer.

21 But going back to the '70s, they  
22 hadn't followed the tritium amount long enough

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1 to see -- it's a small, I don't remember, I think  
2 it's a few percent. But when you start  
3 collecting samples months after an occurrence  
4 then --

5 DR. MAURO: Okay.

6 MS. BRACKETT: -- 40 days makes a  
7 difference. And so that's why my values don't  
8 match theirs, because of that 40-day component  
9 that they don't account for, and I'm guessing  
10 that's why they don't match yours. Case D was  
11 the one that had the most subjectivity in it, I  
12 believe. They had the fewest number of samples,  
13 and they were kind of all over the place.

14 So that one definitely is a bit more  
15 subjective as to what the best fit is, but --

16 DR. MAURO: Liz, let me ask you a  
17 question. So you're saying that you used the  
18 two component model. You have the rapid release  
19 of ten-day half life, and then followed by the  
20 slower release excretion rate?

21 MS. BRACKETT: Yes. And that is  
22 the current ICRP model and that's what's in IMBA

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1 if you use IMBA to do it. 95

2 DR. MAURO: Okay, but let me ask you  
3 this now. Why would you assume that at that  
4 point in time following this intake that  
5 occurred over several days that, you're saying  
6 that you're into this slower excretion rate  
7 component as opposed to the ten-day half life  
8 component. It's not intuitively obvious to me  
9 that you know that to be the case. And I'll tell  
10 you why I say that now.

11 If you look at the graphs that are  
12 presented, this is interesting now. If you look  
13 at the graphs that you provide in your report for  
14 A through D or H, I forget, the slope at that  
15 point looks like a ten-day half life.

16 And that's what brought me there. I  
17 said gee, it looks like, you know, I look at those  
18 numbers. I don't know if I have the graph here  
19 but I won't burden you with that. But the  
20 trigger for me was I looked at it and the fit for  
21 a lot of the data looked an awful lot like a  
22 ten-day half life. Because remember, the data

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1 were collected, it looked like every few days out  
2 for about a couple of weeks.

3 And the slope was, you know, in ten  
4 days went down by about a factor of two. So it  
5 looked like you were in the mode of clearance at  
6 that point in time which was still in the ten-day  
7 half life mode of removal and not the slower  
8 removal rate that might occur at the back end.

9 DR. NETON: John. John -- oh.

10 MS. BRACKETT: Right. It's not  
11 like, it doesn't do ten days and then at some  
12 point switch to 40. It's just they're both all,  
13 you know, apart at the same time.

14 DR. NETON: John, this is a two-part  
15 clearance model, and so you fit the data using  
16 the two-part clearance model. It has nothing to  
17 do with the early data being ten-day half lives.  
18 I mean it's a two-part model.

19 DR. MAURO: Yes. Well, I hear what  
20 you're saying, but I'm just looking at a graph  
21 right now. And you follow it for the time period  
22 and the slope is a ten-day half life. So you're

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1 saying that that slope that I'm looking at for  
2 the time period that the bioassay samples were  
3 taken --

4 DR. NETON: Is correct.

5 DR. MAURO: -- is not the slope that  
6 was experienced earlier. It was something  
7 different. It was flatter.

8 DR. NETON: No, no. The model  
9 predicts that the early clearance is ten days.

10 DR. MAURO: And it still is when you  
11 get to the back end.

12 DR. NETON: How do you know that?

13 DR. MAURO: I'm looking at the data  
14 right now. Go to Page, I tell you what, go to  
15 Page 31 of your White Paper.

16 Are you looking at that? I'm  
17 looking at Figure A-4. I just happened to pick  
18 this one. They all look like this. This is  
19 Case B as in Boy. And I'm looking at the line  
20 and I'm saying, okay, over a ten-day period look  
21 like you've got about a factor of two drop in the  
22 excretion rate, so it looks like you're in a

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1 ten-day half life mode. And so I just went back  
2 on that basis.

3 Now I hear what you're saying that  
4 the model's more complex, but the data belie  
5 that.

6 MS. BRACKETT: Well, look at the  
7 fit. I mean I don't want to argue with you what  
8 you think the slopes are, but the model is the  
9 model and that's what was used to do the fit.  
10 And you can see, and this is a semi-log file and  
11 not a --

12 DR. MAURO: You know, I have to say  
13 I do things very simply. I'm looking at the  
14 figure. Day 169, and then I go to Day 179 and  
15 I see, okay, how much did it drop in those ten  
16 days? And it looks like it dropped by about a  
17 factor of two.

18 MS. BRACKETT: Well, okay. But if  
19 you look at the overall plot it looks like a  
20 straight line, but this is not a linear plot. So  
21 it's not dropping linearly.

22 DR. MAURO: No, I understand what

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1 you're saying. But I'm just looking at the  
2 reading on Day 169, and you've got a 1.5 times  
3 ten to the fifth in this case, and then I go to  
4 Day 179 and I'm down considerably.

5 So I'm just looking at, it looks like  
6 about that you've got a factor of two reduction  
7 over ten days. Now am I thinking wrong about  
8 this? I mean I'd be the first to admit I might  
9 be thinking wrong about it, but it seems pretty  
10 straightforward. You're in a ten-day half life  
11 line here and that goes for every one of these  
12 figures.

13 Now if I got it wrong I'm fine with  
14 that, you know, and I'll let go of it. But right  
15 now it doesn't make sense to me to say that, you  
16 know, this ten-day half life seems to be working.

17 MR. RUTHERFORD: When you go into  
18 IMBA these aren't every day plots. So they're  
19 connecting the dots only calculated on the  
20 individual bioassay points.

21 DR. MAURO: Yes.

22 MR. RUTHERFORD: You have to

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1 understand it's connecting two points with<sup>10</sup>  
2 straight line. This isn't fitted with every  
3 day, so you don't actually see how the curve goes  
4 in between points.

5 CHAIRMAN GRIFFON: Here's what I  
6 would propose, John, just for the sake of time  
7 today, because this is hard to do, you know, over  
8 the phone and on, you know.

9 DR. MAURO: Yes.

10 CHAIRMAN GRIFFON: But why doesn't  
11 SC&A go and use IMBA and look at this, reassess  
12 your own position and then discuss further with  
13 Liz or Jim or whoever.

14 DR. NETON: John, you're suggesting  
15 the ICRP model is wrong for tritium, I guess we  
16 can be talking about that.

17 DR. MAURO: Well, I'm not saying,  
18 don't get me wrong.

19 DR. NETON: Well, that's what we're  
20 using.

21 DR. MAURO: I understand what  
22 you're saying.

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1 MS. BRACKETT: That is what you're  
2 saying.

3 (Simultaneous speaking)

4 DR. MAURO: No, wait a minute.  
5 What do I do with this data which says that it  
6 looks like it's dropping? You know, forget  
7 about the line, just look at the --

8 DR. NETON: But your eyeball fit is  
9 not going to show you that John. You need to go  
10 back and look at the IMBA. I think you need a  
11 little more inspection of the data than just an  
12 eyeball fit.

13 CHAIRMAN GRIFFON: Yes, that's all  
14 I'm asking for, John --

15 DR. MAURO: I'll be glad to do that.

16 CHAIRMAN GRIFFON: -- is take it  
17 back, look at it with the model and then if we  
18 need a technical call to follow up.

19 DR. MAURO: Okay.

20 CHAIRMAN GRIFFON: That's the way  
21 to handle it. It's just hard that we're talking  
22 past each other at a certain point.

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1 DR. MAURO: Yes, I understand<sup>102</sup>

2 Well, anyway that's where we are, and I'd be more  
3 than happy to take a, run the data with IMBA, I'll  
4 load up the data with the points and see what  
5 happens then.

6 CHAIRMAN GRIFFON: That's good.

7 MS. BRACKETT: Well, and just to  
8 caution, IMBA is tricky with tritium because you  
9 have to add in some extra, you have to do some  
10 finagling to get it to run urine samples.

11 CHAIRMAN GRIFFON: Liz, can you  
12 send your IMBA runs to make them available for  
13 SC&A so they can see the runs for this?

14 MS. BRACKETT: Yes, and I think we  
15 have the direction on it. It will do  
16 whole-body, so you have to convert whole-body to  
17 use it for urine so, but yes, I can --

18 CHAIRMAN GRIFFON: If you just send  
19 the runs that will give him a guideline too.

20 DR. MAURO: But could I ask you, I  
21 mean I will do that but can I ask you something?  
22 And this brings me to what my common sense -- just

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1 look at the dots and where they are as a function  
2 of time for all of these cases and ask yourself,  
3 if I'm going to back-calculate, you know, why  
4 would I believe that the slope is going, as the  
5 dots themselves, where they show up gives you an  
6 indication of the rate at which this is  
7 declining.

8 And you're saying that the rate at  
9 which it's declining is different in the earlier  
10 models than it is here. I mean that's what  
11 you're saying, and that's what you're saying  
12 IMBA says. And, you know, I want to think about  
13 that. Think about that a little bit too, I mean  
14 whether that makes sense or not.

15 MS. BRACKETT: That's what all of  
16 the models are. There's always different  
17 parts. It's not that for awhile it's ten days  
18 and then for awhile it's 40. They're both  
19 simultaneous.

20 DR. MAURO: Yes.

21 MS. BRACKETT: It's just that after  
22 awhile the 40-day would become more obvious

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1 because -- 104

2 (Simultaneous speaking)

3 MS. BRACKETT: -- will be, you know,  
4 have less of an impact. And so it's not --

5 MR. STIVER: This is John Stiver, if  
6 I could just jump in for a second. Why don't we  
7 just go ahead and we'll have Joyce take that  
8 data, your runs, and she could either use IMBA  
9 or AIDE, and do her own independent analysis.

10 DR. MAURO: I agree. That's the  
11 way to do it because --

12 (Simultaneous speaking)

13 CHAIRMAN GRIFFON: Just for time's  
14 sake, I think it's helpful, yes.

15 DR. MAURO: Yes, we'll do that.

16 CHAIRMAN GRIFFON: So Joe, maybe  
17 you can tee up your next --

18 MR. FITZGERALD: Yes. Okay, so  
19 basically the '74-75, which is the data source  
20 for the proposed coworker model that would be  
21 used, I guess, again for the pre-'73 doses from  
22 tritium is something that we also looked at in

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1 terms of the 70 data points. And John, do ~~you~~  
2 have a second baseball?

3 DR. MAURO: Yes, listen, I'll take  
4 a shot at it. I don't mind striking out.

5 CHAIRMAN GRIFFON: He's still got a  
6 good arm.

7 DR. MAURO: I love getting up to bat  
8 but I often strike out, although I'm not  
9 admitting I'm wrong about the '73 yet. Let me  
10 look into that. I'm not ready to give up on  
11 that. But I certainly will bow to Joyce's  
12 wisdom on this.

13 Now something interesting happens,  
14 and let's talk about '74-75. As I understand it  
15 two things happened in that time period and the  
16 recognition that there might be some problem  
17 with the tritium coming in.

18 So a program was mobilized where  
19 what was done as I understand it is, one out of  
20 every ten bioassay sample that was taken for the  
21 purpose of plutonium urinalysis was sent off for  
22 tritium analysis. So you collected data, and it

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1 turns out it was 75 people that were captured in  
2 that program.

3 So it was an effort to say, listen,  
4 let's keep an eye on this tritium business and  
5 see if we come up with anybody that's something  
6 unusual. And out of that and out of those 75  
7 measurements, now granted, as you point out  
8 correctly, those 75 people that were measured  
9 ended up, you know, about one sample, I think,  
10 per year. So it wasn't that you had people being  
11 followed closely.

12 But I would be the first to say,  
13 listen, you took samples from 75 people over this  
14 two-year period and none of them had anything  
15 above this 10,000 picocuries per liter. I have  
16 to admit that that's a pretty compelling  
17 argument that no one's really getting very much  
18 tritium exposure in '74 and '75 from that sample.  
19 Now, stay with me now. But that's one side of  
20 the coin in '74-75. The other side of the coin  
21 is that there was this, what we'll call an  
22 incident of some type, where some tritium was

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1 released. I think it was in August of '74. ~~And~~  
2 there was this follow-up investigation related  
3 to that where air samples were collected,  
4 bioassay samples were collected, specifically  
5 for that incident.

6 And it appears that there is no  
7 relationship between the follow-up examinations  
8 that were done to investigate that minor August  
9 1974 incident and the '75 samples collected.  
10 It's almost like it's two separate set of  
11 activities.

12 When I looked at the data for the  
13 1974 incident follow-up it appeared that there  
14 was a real potential for at least some of the  
15 workers that were involved to have experienced  
16 doses in excess, have concentrations in urine  
17 and that may have inhaled tritium at levels that  
18 could have given more than a few millirem from  
19 that incident.

20 I'll say one millirem, two. It's  
21 not big, don't get me wrong. We're talking  
22 about small numbers here. But it's the

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1 thinking, the logic sequence that eludes me here  
2 now. So what we have is two datasets, and please  
3 correct me if I'm wrong if I'm misrepresenting  
4 this, but we have two datasets.

5 One representing the follow-up  
6 investigations associated with the August 1974  
7 "incident" where we're getting a data that says,  
8 well, some of the workers might have gotten one  
9 or a few millirem from that incident, and then  
10 you have this other 75 people that were sampled  
11 where the highest level of exposure was 0.15  
12 millirem per year. In other words, so clearly  
13 there was two different things going on.

14 In one case you have this what I  
15 would say a cohort model where you're looking at  
16 a lot of people collecting data and clearly and  
17 unambiguously, none of those 75 people received,  
18 had any intakes that appeared that even  
19 approached one millirem a year. And then you  
20 have this other group --

21 MR. BARTON: John?

22 DR. MAURO: Yes.

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1 MR. BARTON: Could I interrupt ~~you~~  
2 here? This is Bob Barton.

3 DR. MAURO: Sure, guy, help me out.

4 MR. BARTON: NIOSH was kind enough  
5 to send along the actual data they compiled from  
6 the coworker dataset for '74-75, and actually  
7 some data points past that. And the statement  
8 that nobody had urine concentrations above  
9 10,000 picocuries per liter is not borne out by  
10 the data. There are definitely some samples in  
11 there. And again, we're talking about one  
12 sample per year.

13 DR. MAURO: Right.

14 MR. BARTON: So, you know, I'd  
15 really like to ask clarification from NIOSH. So  
16 we went into the claimant records and we pulled  
17 together this dataset, and from what I  
18 understand, and please stop me if I'm wrong, when  
19 you had a worker with only one data point in that  
20 year, we essentially assumed that they were  
21 sampled January 1st of that year and December  
22 31st, and that we came back with that same level,

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1 and that we just assumed that was their chronic  
2 excretion rate for that entire year. Am I  
3 correct so far?

4 MR. RUTHERFORD: I'd have to ask  
5 Mutty or Liz to respond to that.

6 MS. BRACKETT: Unfortunately I did  
7 not look at this specifically. Again that  
8 sounds correct, but I need to double check on  
9 that.

10 MR. BARTON: Okay. And the only  
11 reason I bring this up because, you know, we kind  
12 of dug into the dataset, you know, we got it, I  
13 think, Monday, and so we've been kind of cracking  
14 at it.

15 And we found at least two cases in  
16 the '74-75 time frame that had excretion  
17 patterns that if you apply the method in OTIB-11,  
18 which deals with, you know, calculating tritium  
19 doses, you get some yearly doses that are above  
20 one millirem. They're not large but, you know,  
21 I think they range from between one and four  
22 millirem.

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1                   And then even then there was ~~two~~  
2 cases afterwards in the data afterwards, one  
3 case in 1978, I know, and one case in 1981, where  
4 if you use the OTIB-11 methodology with the  
5 assumption of a constant excretion pattern you  
6 would get doses that are, you know, less than ten  
7 millirem but still above one millirem. So I  
8 guess that's where I became troubled with using  
9 this dataset to sort of say, you know, there was  
10 no exposure potential.

11                   Now I know one part of this is, and  
12 I'd ask for clarification on this as well, it  
13 indicates that you used the 95th percentile.  
14 And I'm not sure if that means the 95th  
15 percentile of the data points, of the log  
16 normally fit data points, 95th percentile of the  
17 workers for that year. I guess I'd ask for some  
18 clarification on that because that may be why,  
19 you know, if you look at the 95th percentile  
20 maybe you're just under one millirem, but if you  
21 actually look at the highest exposed in that  
22 cohort of population you will get small doses,

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1 really, I mean we're talking a couple of millirem  
2 but definitely not zero.

3 DR. MAURO: I'd like to pick up a  
4 little bit on this also in that it seems that the  
5 basis for your coworker model are those 75  
6 workers, and notwithstanding the issue that Bob  
7 just brought up.

8 But let's just assume for a moment  
9 that whatever the process was using those 75  
10 workers as being the basis for the coworker model  
11 to be used not only for '74 or '75, but also for  
12 pre-'73, but then you do something that eludes  
13 me.

14 You then say, well, what we're going  
15 to assume is that one of these incidents that  
16 occurred in August '74 occurs every day, but I  
17 don't see any linkage between the bioassay  
18 sample of the 75 people and the follow-up  
19 investigation of that incident.

20 So it's a layered problem. It  
21 doesn't seem that there is a relationship  
22 between the cohort model of '75 and the follow-up

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1 investigation of the incident that occurred ~~in~~  
2 August.

3 But then you assume that, well,  
4 let's assume that we have an August incident  
5 every day and we're going to use that, and that's  
6 in my mind, of course, that's fairly arbitrary,  
7 and make that assumption and apply that to  
8 pre-'73.

9 The multiple layers of concerns that  
10 we have related to this whole construct that  
11 eludes me as being the logic for it, and one is  
12 the separation of these two groups, which they  
13 may or may not be but appears that they were, one  
14 is this cohort and the other is the follow-up to  
15 the '74 incident.

16 And then there's a question of,  
17 okay, now we're going to assign some doses to  
18 pre-'73 people where you're assuming that this  
19 incident occurs every day. And, you know, why  
20 you would pick once a day? That's, I have to  
21 tell you, that's where my greatest concern is,  
22 this leap that went from what took place in

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1 '74-75, and then bring that somehow and apply~~114~~  
2 to how are you going to reconstruct doses  
3 pre-'73. You know, it just doesn't line up for  
4 us, for me anyway.

5 MR. RUTHERFORD: John, this is  
6 LaVon. I'll jump in on this a little bit. If  
7 you look at the interviews that we conducted, the  
8 classified interviews, the exposure scenario  
9 that most likely occurred based on those  
10 interviews was opening a shipping container and  
11 a release from those shipping containers. This  
12 was close to that scenario, very close to that  
13 scenario, that 1974 incident.

14 And so the idea here is that, okay,  
15 if we had this release, okay, if these releases  
16 occurred pre-1973, and we believe that the 1974  
17 incident that controls had not been adjusted,  
18 and it was probably that yes, there was more  
19 monitoring in place in 1974 but the containers  
20 coming in had not changed, in our opinion the  
21 sites had not, the information that we've seen  
22 so far hasn't supported that the sites had really

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1 changed in doing additional work to ensure that  
2 shipping containers and shipments coming to the  
3 sites were going to have any less contamination  
4 at that period in 1974 than they did prior to  
5 1973. So that scenario we felt was a good  
6 scenario to cover those earlier years.

7 The reason we use every day is  
8 because we have no basis and no information to  
9 support not. If we said, well, obviously this  
10 doesn't happen every day if you look at the  
11 '74-75 bioassay data it clearly didn't happen  
12 every day. But clearly at some point you would  
13 expect after they saw the shipping containers  
14 were contaminated in 1974 that controls would  
15 have changed and sites would have changed and  
16 that's supported by that letter.

17 So we had no basis to come back and  
18 say, well, let's use ten per year. Let's use 50  
19 per year. That the only reasonable thing to do  
20 was to say that it occurred every day. And  
21 remember, that was 0.15 millirem, if I remember  
22 correctly, from that release.

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1                   And so, you know, the bounding  
2 exposure of what, 37-1/2 millirem is not, you  
3 know, it's not substantial, so it seemed  
4 reasonable.

5                   DR. MAURO: Okay, I hear what you're  
6 saying, and here's where I'm having a bit of a  
7 problem. Now let's stipulate just for a moment  
8 that the one a day of this type of incident is  
9 a good number. You know, I consider it to be  
10 somewhat arbitrary, but let's just go with that  
11 okay, for a moment.

12                  DR. NETON: It's bounding, John.

13                  DR. MAURO: Pardon?

14                  DR. NETON: Wouldn't you agree it's  
15 bounding? Based on the data we've seen, I think  
16 it would not have been more than one per day.

17                  DR. MAURO: Okay, I can't say one  
18 way or the other but I believe you. But here's  
19 the problem. It's not the follow-up  
20 investigation from that incident that you're  
21 using for your dosimetry. In other words, the  
22 0.15 millirem is from the 75 cohort, not from the

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1 follow-up investigation from that August 174  
2 incident.

3           When I looked at the data for that  
4 incident I see, now the data's not very good, but  
5 I have some air samples. I think we have a few  
6 bioassay samples, and the doses are not 0.15  
7 millirem. They're closer to one or greater  
8 millirem to the people that were involved in the  
9 August 1974 exposure.

10           So if anything, if we accept the one  
11 per day it would not be 0.15 times 365 days a  
12 year, it would be closer to 1 or 2 times 365 days  
13 in a year. And again I might have it wrong, but  
14 I think that you did not use the data from the  
15 incident as the basis for your coworker model.  
16 You used the data from the 75 people you sampled.  
17 And I don't know if there is a good correlation  
18 between those two.

19           MR. RUTHERFORD: I want to ask Jim  
20 Bogard, when we did the pre-'73 calculation,  
21 which -- and I can't remember, and I guess I could  
22 go back and look myself, but what data did we

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1 specifically use in coming up with the numbers§§

2 MR. BOGARD: There were actually  
3 two populations. The '75, that's a chronic  
4 issue. The four or five people that were  
5 involved in the '74 incident that was a response  
6 to an incident. And so the 0.15 millirem is  
7 based just on the incident data as I recall.

8 DR. MAURO: That's a factual piece  
9 of information where we're disagreeing. I  
10 didn't read it that way. I might be wrong, but  
11 I read that the 0.15 is related to the 75 people  
12 while the incident data is substantially higher  
13 than that, maybe a factor of ten higher.

14 MR. BOGARD: I didn't do the dose  
15 estimates. I'd have to --

16 DR. MAURO: And certainly this is an  
17 easy problem to solve.

18 MR. RUTHERFORD: Oh yes, it is.  
19 Yes.

20 DR. MAURO: So we could just go take  
21 a look at it to see if maybe I got it wrong.

22 MR. RUTHERFORD: Yes, I think this

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1 is -- 119

2 MR. BARTON: John, this is Bob  
3 Barton. I think when we talk about the 75  
4 claimants that were sampled from NOCTS, I don't  
5 think there was ever a number put on there except  
6 for the statement that when they evaluated the  
7 doses they were all under one millirem. I do  
8 believe that 0.15 millirem was associated with  
9 the people who were sampled immediately in the  
10 aftermath of that 1974 release.

11 DR. MAURO: Yes.

12 MR. BARTON: I'm not sure where that  
13 number actually came from, whether it was  
14 calculated by NIOSH or, I don't think I saw that  
15 in the actual documentation.

16 DR. MAURO: By the way that part of  
17 the analysis is in our White Paper. I did the  
18 calculation. You guys can take a look at it and  
19 see if I did it wrong. In other words I talk  
20 about the incident, talk about the air sampling  
21 data.

22 I talk about data that appeared to

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1 me that was available at the time for  
2 reconstructed doses to the people involved in  
3 this August '74 incident, and I come up with  
4 doses higher than 0.15. So again, you know,  
5 this is easy to figure out whether I got it wrong  
6 or not.

7 CHAIRMAN GRIFFON: Let me just ask,  
8 I'll try to keep track of these. We're not going  
9 to solve this today so there's a couple action  
10 items already. The first one is John's hand  
11 calculation and having them relook at the  
12 models, and then this one, you know --

13 DR. NETON: I guess one practical  
14 question, this always happens over in the  
15 process of adding an SEC is that, you know, we  
16 are now proposing that we have an SEC for all  
17 workers at Rocky Flats at least from 1962 to  
18 1985.

19 MR. RUTHERFORD: '83, through '83.

20 DR. NETON: '62 to '83. So then the  
21 question becomes, are these tritium doses which  
22 appear to me to be pretty small, are they SEC

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1 issues, or is this something that could be tabled  
2 as a Site Profile issue recognizing that it's not  
3 going to affect anybody's compensability under  
4 the SEC? It would affect how dose  
5 reconstructions might be performed, unless one  
6 wants to say these can be reconstructed and added  
7 to the SEC rationale, which I don't I'm hearing  
8 is probably warranted.

9 DR. MAURO: Jim I agree with you  
10 completely. I think that if, you know, if an SEC  
11 is going to granted based, let's say, on  
12 neptunium or thorium that cover these same  
13 years, this whole issue we're talking about goes  
14 away and it becomes simply a very, very modest  
15 Site Profile issue.

16 DR. NETON: Not a problem with 362.

17 DR. MAURO: Yes, yes.

18 DR. NETON: Not a problem. But we  
19 still would have a problem to covering 362 for  
20 tritium, but this whole thing around the  
21 incident and bounding and such is --

22 MR. KATZ: But just to be clear

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1           though, John Mauro, you don't concede whether  
2           it's an SEC issue or not based on whether an SEC  
3           would be granted for something else.

4                     DR. MAURO:   Okay, my apologies.

5                     (Simultaneous speaking)

6                     MR. KATZ:   -- decision based on --

7                     (Simultaneous speaking)

8                     DR. MAURO:   Okay, okay.

9                     DR. NETON:       I think we all  
10            understand what we're trying to say here which  
11            is if it's a Site Profile issue, if we could all  
12            feel that this one's bounded --

13                    (Simultaneous speaking)

14                    DR. NETON:   -- or whatever word you  
15            want to use, then it's, you know, if we can do  
16            something with it then, you know.  There's a lot  
17            of work going on here, other places that we need  
18            to prioritize so this would be --

19                    CHAIRMAN GRIFFON:  Yes, it may be  
20            lower in the priorities, right.  All right, but  
21            I am going to keep targeting these actions  
22            whether they end up being Site Profile issues or

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1 -- right, right. 123

2 DR. NETON: I guess the question is  
3 does this really have to be decided before we go  
4 and recommend the SEC, and I don't think it does.

5 CHAIRMAN GRIFFON: I don't think  
6 so, right.

7 MR. KATZ: Although if you can put  
8 to bed these issues it's nice to --

9 (Simultaneous speaking)

10 MR. KATZ: It doesn't sound like it  
11 takes extensive work to put either of these to  
12 bed.

13 MR. BARTON: This is Bob Barton.  
14 Can I make a comment here? I heard, I believe  
15 it was LaVon Rutherford say that one of the  
16 assumptions sort of backing the use of that 1974  
17 incident is that the conditions, or, you know,  
18 the contamination source term, or whatever you  
19 want to call it, for that incident would not be  
20 decidedly different than that found in the  
21 pre-1973 period. Do I have that correct?

22 MR. RUTHERFORD: Yes, and I think we

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1 believe that. 124

2 MR. FITZGERALD: Yes, I want to talk  
3 to that, Bob. Yes, this is Joe. Mark, I just  
4 said there was three parts to this thing. And  
5 the pre-'73, you know, the use of the '74 event,  
6 the bounding estimates from that to cover the  
7 pre-'73 is something I've been looking at.

8 And as LaVon knows, I've been a  
9 little troubled by how representative that event  
10 would be for all the preceding years before '73  
11 for a couple different reasons. Certainly one  
12 is it was almost a year between the '73 release  
13 and the '74 event.

14 And I'm certainly concerned that  
15 whatever actions were taken operationally, you  
16 know, whether it was to control contamination to  
17 have the vending site, the shipping sites  
18 scrutinized as they were supposed to do, but  
19 obviously they failed to do that carefully in the  
20 past on the containers that they were sending to  
21 Rocky, or frankly, whether, you know, the site  
22 was going to monitor carefully before proceeding

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1 with handling at the site. 125

2 These were things that certainly, if  
3 not, intuitively I felt there would have been  
4 actions taken on an intermediate basis between  
5 the '73 event and what took place in '74.

6 And the importance of that is  
7 obviously if we're going to rely on the source  
8 term of that particular event and the doses, the  
9 bioassays that were taken from it, we need to  
10 know that it is in fact typical, which is the,  
11 I think, the adjective that was used to describe  
12 that event in the NIOSH White Paper.

13 So that was my going-in concern and  
14 there's certainly some other concerns. But let  
15 me back up a little bit. You know, one thing  
16 about the shipments to Rocky Flats, you know,  
17 certainly there was a sense that there wasn't,  
18 I think something John said earlier, there  
19 wasn't really a tritium exposure issue, per se,  
20 at Rocky. Shippers were to screen what they  
21 sent, and there were in fact some alarming  
22 bubblers to double check to see if there were any

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1 releases of tritium when the outer containers<sup>128</sup>  
2 were opened, that kind of thing.

3 So there wasn't a sense it was a big  
4 deal. There were some checks in the system  
5 procedurally and from a monitoring standpoint to  
6 make sure that inadvertent releases weren't a  
7 major problem.

8 Now one thing at Rocky, you had two  
9 types of shipments coming in. You had the  
10 non-routine shipments, these were shipments  
11 that came from places like Lawrence Livermore,  
12 Los Alamos, Battelle, Savannah River.

13 These were materials, scrap,  
14 general material that was being sent to Rocky  
15 essentially for recycling because Rocky was  
16 equipped to handle this. They had the  
17 operations and training and were certainly  
18 familiar with handling plutonium and other  
19 sources, so the rest of the complex tended to  
20 send materials to Rocky if it were PU and needed  
21 to be processed.

22 These were considered non-routine,

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1 so-called SS shipments, and these are ~~the~~<sup>127</sup>  
2 shipments they certainly did have problems with.  
3 You know, the rad chem releases that occurred  
4 even before the '73 event, plus the '73 event,  
5 they were all attributed to shipments from  
6 Livermore.

7 And clearly there was a quality  
8 control issue at the lab in terms of what they  
9 were sending. These items apparently were  
10 contaminated. Just the four that were caught  
11 were clearly contaminated.

12 And I say that very carefully  
13 because these were the four that their  
14 monitoring actually did catch in the system and  
15 did flag as providing a release in the building,  
16 in the plant. The '74 event, similarly, was a  
17 non-routine shipment from Battelle Northwest.  
18 And I say that somewhat guardedly because  
19 there's a document that's on the SRDB, let's see  
20 if I can get the number. It's 12460. I'm  
21 sorry, no, it's 24165.

22 But that document reviews the '74

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1 event in some detail and basically analyzes ~~128~~  
2 as the source of the tritium comes from two  
3 possible sources. One being the container that  
4 was contaminated that was shipped in from  
5 Battelle, the other was entrained tritium in the  
6 lines, in the processing lines of Rocky that were  
7 remnants of the '73 event.

8 And as they say in that report, it's  
9 very difficult to figure out how much was  
10 contributed by what. Certainly they  
11 established, there was some residual  
12 contamination, tritium contamination in those  
13 lines, process lines at Rocky.

14 So clearly, as far as the source of  
15 the tritium it could have come from both the  
16 Battelle containers as well as the process lines  
17 at Rocky. But in any case, those were all the  
18 non-regular shipments, non-routine shipments  
19 that were coming in.

20 As far as containers, who knows? I  
21 mean, Battelle, whatever they sent was clearly  
22 in whatever form of container that they

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1 routinely would send stuff to Rocky. Same with  
2 Livermore. Each site, you know, had used their  
3 own set of containers. It's not clear how much  
4 standardization there was.

5 But at any rate, so you had a  
6 Battelle container coming in that was implicated  
7 but not necessarily the only source of tritium  
8 for the '74 event. You had Livermore containers  
9 implicated in the three releases before '73 as  
10 well the '73 release. Now the shipping that's  
11 missing from all of this is the routine, the  
12 returns that were coming from Pantex. Pantex  
13 routinely sent pits as far as returns back to  
14 Rocky starting in the '50s, and that went on for  
15 decades.

16 And that was a major part of the  
17 operation at Rocky, taking retired, and pits  
18 that were taken from dismantled weapons and  
19 processing them at Rocky for recovery purposes  
20 and what not. That was a much different  
21 operation than just taking scrap from Livermore  
22 or taking material from Battelle.

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1           These routinely came in daily over ~~the~~  
2 years. There was residual tritium implicated  
3 with them. It wasn't a lot. I think it was felt  
4 that you had maybe one or two, and this was based  
5 on an interview we had, one or two releases a year  
6 that you could actually get picked up in a  
7 bubbler in front of an exhaust plenum.

8           Now I might add that that was an  
9 alarming device, it wasn't a measuring device.  
10 So it got to the exhaust plenum, you would have  
11 an alarm go off as far as the tritium escaping.  
12 I might also add that as we heard in our  
13 interviews at Rocky that we did together,  
14 there's a two-part process.

15           And I believe this two-part process  
16 may have applied, but I don't know for sure from  
17 the routine shipments to the non-routine  
18 shipments. What they did was basically ship it  
19 in two containers. The outer container was  
20 opened in an area which did have the tritium  
21 monitor in the exhaust plenum, then it was moved  
22 to a different room, building, where the inner

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1 container was opened and the pit was in fact put  
2 into a glove box for processing. And it was this  
3 second step that was not monitored using any  
4 tritium monitoring equipment on the exhaust  
5 plenums. So clearly, the one to two per year  
6 was the, whatever was being measured from the  
7 opening of the outer container, not the inner  
8 container, which would according to the  
9 interviewee would have been where you would have  
10 had the higher tritium contamination in any case  
11 and where the worker would have been handling the  
12 pit and would have been in the proximity of the  
13 contaminated container, you know, longer and  
14 closer.

15 I'm just trying to give you this  
16 background because I think the operational  
17 setting for all this is, you know, it certainly  
18 has more ins and outs when you're trying to  
19 compare apples to apples and trade a basis for  
20 the '74 event being representative to the '50s,  
21 '60s and the 20 or so plus years before that.

22 So I want to go through to some

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1 extent, I don't know if it's the same questions  
2 on that, but I want to go through some of the  
3 factors. And I thought these were good factors.

4 And, you know, I guess my  
5 perspective is I kind of understand the '74 event  
6 being characterized as a more typical event with  
7 source terms that would be more typical or  
8 representative of releases in the past.

9 The '73 event clearly was from a  
10 number of vantage points, unique, extremely  
11 high, not characteristic, so it would be  
12 difficult to consider that sufficiently  
13 accurate as a bounding approach. Certainly the  
14 '74 one at 1.5 curies and the doses we're talking  
15 about seems more typical, but where I'm  
16 stumbling is just looking at whether the  
17 circumstances around that release could be seen  
18 as representative of the preceding 20-some years  
19 of operations.

20 And, you know, certainly the item  
21 about -- I'm going to go through the six factors  
22 because I think these are good six factors. I

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1 couldn't think of any others. 133

2 But the six factors in terms of this  
3 weight of evidence discussion, the first one  
4 which is that the background tritium levels  
5 immediately prior to the incident described in  
6 the Rocky Flats report was felt to be undoubtedly  
7 elevated since the more significant '73 release,  
8 were well below dosimetrically significant  
9 values can be considered as fairly  
10 representative of typical background levels for  
11 this analysis.

12 My problem with that is I'm not sure  
13 how one would know what was a typical background.  
14 For example, the routine pit returns from  
15 Pantex, there are no measurements of the  
16 background for those returns.

17 You do have some sense that the  
18 Battelle contaminated container might be  
19 similar to the Livermore contaminated  
20 container, but I have no idea whether that would  
21 be similar to the pit containers.

22 I would think the containers would

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1 be different from the routine versus  
2 non-routine, but I'm not even sure they're  
3 similar from lab to lab. So there's a question  
4 in my mind whether you could actually assume that  
5 your background levels of tritium are going to  
6 be fairly consistent given the fact you have two  
7 different streams of operations and you have  
8 three or four different shipping sites involved.  
9 So right away I think you have to wonder about  
10 that. And also as I mentioned earlier, in the  
11 investigation of the 1974 event it was pointed  
12 out that the cross-contamination of the sampling  
13 apparatus and the rooms themselves as well as the  
14 process lines, you know, in my mind would make  
15 any assumption on background for the '74 event  
16 problematic anyway.

17 You know, what is background when  
18 you have both a contaminated container as well  
19 as contaminated lines, contaminated sampling  
20 equipment? I mean the sampling apparatus that  
21 they were using for tritium analysis during the  
22 '74 event, they found that the sampling

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1 equipment was contaminated with tritium. 135

2 So my sense is that, you know, from  
3 a number of different vantage points it would be  
4 very difficult to know what the background would  
5 be for the '74 event and whether that background  
6 compares favorably with all the different other  
7 operations that were going on in the past.

8 I'll take a breath there. Any  
9 reaction of LaVon, others?

10 MR. RUTHERFORD: No, I'm still  
11 listening. I mean, you know -- well, I'm not  
12 disagreeing with you but I don't think the  
13 background is going to overly affect what we've  
14 just done from the model we presented.

15 I don't disagree that, you know,  
16 non-routine samples doesn't necessarily reflect  
17 what the Pantex returns would be, but I would say  
18 that, you know, our additional work that we did  
19 we looked for documentation. As you did, we did  
20 correspondence with Pantex and Rocky Flats to  
21 see if we could find communications between the  
22 sites to see if Pantex's containers or shipping

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1 containers if their protocols changed and stuff<sup>56</sup>  
2 and we couldn't find any indication.

3 The only indication we found was  
4 documents that in later years, in 1980-81 that  
5 supported that they made changes then in their  
6 program.

7 MR. FITZGERALD: Yes, I'll get to  
8 that in Number 6.

9 MR. RUTHERFORD: Yes, I know. I'm  
10 just saying that, you know, I know where you're  
11 going with it, but I'm not sure that I really see  
12 that big of a difference right now.

13 MR. FITZGERALD: Yes. Well, I  
14 guess my point is that one wouldn't know. There  
15 would be no way of objectively knowing if there's  
16 a difference because these differences and some  
17 of these unknowns associated with the operations  
18 would make it difficult to even compare A to B.

19 I'm looking for some sense of apples  
20 to apples in order to apply the '74 backwards.  
21 And the six factors, I think, which kind of are  
22 really six good factors, but up to six factors

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1 I have problems with probably half of them as far  
2 as one could objectively come to that conclusion  
3 or even weighted evidence come to that  
4 conclusion.

5 I think if you look at SRDB, here's  
6 a number, 24165, which is the investigation for  
7 '74. I think a lot of the questions about Item  
8 1, which is, you know, the reliability of the  
9 measurements and knowing a representative  
10 background level, sort of comes into better  
11 focus in the sense that I think it would be very  
12 difficult. So I'll leave that at that and move  
13 on.

14 CHAIRMAN GRIFFON: That's Number 1  
15 you're talking about?

16 MR. FITZGERALD: That's Number 1.

17 CHAIRMAN GRIFFON: Okay. If you  
18 can, prior to lunch, get through all six that  
19 would be great.

20 MR. FITZGERALD: It goes faster in  
21 the middle.

22 CHAIRMAN GRIFFON: Okay, okay.

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1 MR. FITZGERALD: Okay. Item 138

2 The quantity of tritium release was  
3 significantly less than that released in '73, no  
4 argument there. And is probably more typical of  
5 potential undocumented releases in work areas  
6 for the reasons I just stated I don't think we  
7 know. There's no real good monitoring data for  
8 the routine shipments of pits over the 20-plus  
9 years that went into Rocky from Pantex. And --

10 MR. RUTHERFORD: Well, it's more  
11 indicative of a chronic release than the '73  
12 incident. Clearly, we can --

13 MR. FITZGERALD: Well, as I said  
14 earlier, intuitively I would say it's more  
15 typical than the '73. Is it in fact more  
16 representative of the previous 20-some years?  
17 That's the question I have problems with.

18 And I don't disagree it's more  
19 typical, you know, compared with '73. Is it  
20 representative enough to be used as bounding for  
21 pre-'73? I have difficulty with that. I don't  
22 think we have any data for an entire line of pit

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1 returns from Pantex. 139

2 All we have are data points  
3 associated with non-routine shipments which are  
4 the Livermore and Battelle shipments that in  
5 fact had releases. And these are the higher  
6 releases. We don't even know given the degree  
7 of monitoring that was done at Rocky whether we  
8 have all the releases below what ended up being  
9 multiple curie releases. I mean the smaller  
10 releases that were less than say 50 curies may  
11 have been missed entirely, who knows?

12 Anyway, Item 3 --

13 CHAIRMAN GRIFFON: Joe, are you  
14 questioning whether the '74 data is, the acute  
15 incident from '74 is bounding of the potential  
16 smaller chronic exposures in the earlier 20  
17 years or --

18 MR. FITZGERALD: Yes, the chronic  
19 and as well as intermittent acute exposures.  
20 One, there was no monitoring for that, and two,  
21 what data we do have is exclusive to, I would  
22 call, non-routine shipments from two labs which

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1 are Livermore and Battelle. Battelle was ~~the~~  
2 '74 event, and the rad chem releases that were  
3 in that report plus the '73 are Livermore,  
4 apparently Livermore shipments.

5 CHAIRMAN GRIFFON: And the  
6 assumption is, as Jim just said that it was,  
7 they're applying it daily, right? The '74  
8 incident is assumed to happen every day prior to  
9 '73. So are you still questioning that being  
10 bounding or then sufficiently accurate?

11 MR. FITZGERALD: We don't have  
12 anything that would be sufficiently accurate.  
13 It's comparing these non-routine shipments  
14 which certainly you have a source term, but we  
15 have no idea how that compares with either a  
16 chronic release associated with a daily set, you  
17 know, you had very frequent, continuous  
18 shipments of pits being returned from Pantex to  
19 Rocky Flats over 20-plus years and how  
20 representative would that be of those shipments  
21 we don't know. We don't have the good data for  
22 that.

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1 MR. RUTHERFORD: Okay, I've got a  
2 quick question, Joe, because it sounds like  
3 you're concluding something different than what  
4 your White Paper said. I mean if I read the  
5 White Paper here it says, "Hence," this is the  
6 last sentence on, or it's on Section 5.1, where  
7 you basically conclude that the '73 incident  
8 would be bounding but our model -- because you  
9 say, "Hence, the experience cannot serve as the  
10 basis for building a coworker model for pre-'73  
11 exposures to tritium except perhaps to conclude  
12 that no worker prior to '73 experienced tritium  
13 exposures in excess of 84 millirem per year."

14 So I mean, unless I heard you wrong  
15 you just said that you can't make that  
16 conclusion, but the White Paper says you can.

17 MR. FITZGERALD: Well, I think what  
18 we're saying there is that, and that we said  
19 earlier that the '73 event stands unique given  
20 the amount of tritium that released and what  
21 circumstances dotted it.

22 You know, we're talking elemental

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1 tritium versus HTO for the '73 event. So I think<sup>142</sup>  
2 there's no question that was a particularly  
3 unique and particularly major release.  
4 However, and you can correct me, I think the  
5 reason you went to the '74 event as your bounding  
6 approach is because the '73 event is that unique  
7 that it would not, you know, it's like a large  
8 number approach.

9 If you have a large number like that  
10 I'm not sure anyone would debate that it would  
11 be unlikely you could have an exposure that high  
12 and not have it been picked up. In fact, with  
13 the monitoring that the EPA had been doing since  
14 '69, it would have been picked up from '69  
15 forward.

16 But the more "typical," and I use  
17 that in quotations as the word that was used in  
18 the White Paper, the '74 release, that is where  
19 I think you do have to come up with an argument  
20 that that release bounds pre-'73 because it is  
21 representative of the most tritium, elemental  
22 tritium that would be released in a container

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1 type situation where you had a contaminated  
2 container.

3 And what I'm arguing here is that I  
4 don't see how one can make a case of the '74 event  
5 being representative enough of what has happened  
6 before '73 just because either we don't know or  
7 the monitoring was inadequate to give you much  
8 of a measurement, and that the operations  
9 themselves were diverse enough and different  
10 from the '74 event that it would not be comparing  
11 apples to apples.

12 MR. RUTHERFORD: Yes, and I  
13 understand. I think I'll add that, you know,  
14 our thought was we want to verify that we knew  
15 this exposure scenario that was identified in  
16 the classified interview, we wanted to verify  
17 that that exposure scenario would not exceed  
18 what we had originally identified as our  
19 bounding incident from the 1973 event.

20 We were thinking, okay, can this  
21 continuous chronic exposure from a release  
22 actually come up with exposures higher on an

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1 annual basis than what we previously identified~~ed~~  
2 from the '73 event?

3 And so using that 1.5 curie release  
4 from the '74 event we felt was a reasonable, or  
5 this is a pretty high release, it's from a  
6 shipping container, yes, it's not from a Pantex  
7 shipping container, and we'll assume it happens  
8 every day and see what our numbers come out. And  
9 they came out less than that event.

10 I mean you've got good arguments in  
11 that, you know, it's not a Pantex return that  
12 typically, I mean that's what 95 percent of what  
13 they dealt with was Pantex returns, you're  
14 correct there. There is no monitoring data to  
15 support anything for pre-'73, you know, we have  
16 none. I don't disagree with that. But I think  
17 it was a reasonable scenario.

18 MR. FITZGERALD: No, it's  
19 reasonable, it's intuitive, and I think it makes  
20 more sense than trying to apply the '73.

21 MR. RUTHERFORD: Yes, okay.

22 MR. FITZGERALD: I'm just saying

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1 that when sort of put to some objective test<sup>14</sup>~~5~~  
2 just find too many unknowns and too many  
3 questions because of the operations that were  
4 taking place at the time.

5 CHAIRMAN GRIFFON: Let's hear your  
6 other four factors.

7 MR. FITZGERALD: Yes. Now I know  
8 lunch is bearing down on us --

9 CHAIRMAN GRIFFON: Yes.

10 MR. FITZGERALD: I'm going to skip  
11 what we agreed on. We agreed it's elemental and  
12 not HTO. And, you know, as far as the shipping  
13 containers we talked about that. That there is  
14 definitely some question about the shipping  
15 containers not being the same. But let me go  
16 to 6, because I did talk to LaVon earlier in this  
17 process that I was concerned about the fact that  
18 picking '74 where it falls time-wise is almost  
19 a year after the '73 became a very public issue  
20 at the Pantex.

21 And having lived in DOE, you know,  
22 to have an outside agency find that you're

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1 contaminating somebody's reservoir, there ~~148~~  
2 almost nothing that would be more dramatic than  
3 that.

4           So my concern was how representative  
5 would the source terms we're talking about in '74  
6 be assuming that, you know, Rocky and the AEC  
7 would have taken a number of actions or  
8 precautions in the intervening 10, 11, 12 months  
9 to minimize tritium contamination and therefore  
10 make the '74 event, while it wasn't an incident  
11 again, certainly it would not have been  
12 necessarily representative of the kinds of acute  
13 releases you might have had before '73.

14           And one thing I did work with NIOSH  
15 on is I made a request of Pantex, made a request  
16 of Legacy Management in Denver to look for any  
17 specific correspondence that took place between  
18 Pantex and Rocky Flats in that time period, that  
19 one year time period, to just gauge the level of  
20 feedback interaction that was going on.

21           And in short, we didn't find any  
22 actual memorandum or directives, and on one hand

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1 that would have been helpful to get some feel  
2 from that standpoint. On the other hand, the  
3 AEC didn't always communicate by memorandum and  
4 it wasn't necessarily the case that memorandum  
5 would have been retained in the file.

6 So I'll just stop there. I did go  
7 back to the SRDB to look for any documentation  
8 that would touch on this whole question of in the  
9 aftermath of the '73 event what operational  
10 actions were taken by management on an  
11 intermediate basis to address tritium  
12 contamination in containers dealing with this  
13 problem that Livermore sort of surfaced, which  
14 they were sending contaminated items in the  
15 containers that went to Rocky Flats and Rocky  
16 Flats inadvertently opening them was releasing  
17 this.

18 And in there, there were certainly  
19 a number of documents that's referenced in the  
20 White Paper. You know, certainly by the fall of  
21 '73 both Rocky management and AEC management  
22 were putting in place a number of actions. The

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1 investigation of the '73 tritium release  
2 prompted the AEC to set up an AEC investigation,  
3 a very formal investigation from the outside.

4 That investigation came up with a  
5 number of actions and recommendations. And one  
6 of the recommendations, Recommendation 2, was to  
7 come up with interim control measures for  
8 tritium contamination on these off site  
9 shipments coming in.

10 And this is on Page 13 on the top,  
11 and what they basically respond -- this was  
12 publicized as well. This was issued in a press  
13 release that one of the interim control measures  
14 was a three-point check coupled with a complete  
15 written history applicable to all shipments of  
16 material to Rocky Flats.

17 That was something that they wanted  
18 to assure the public they were doing as an  
19 interim measure. And they also wanted to tackle  
20 more specifically the so-called non-routine SS  
21 shipments which the Livermore and Battelle  
22 shipments represented and their coming up with

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1 actual forms where these forms would specify all  
2 the monitoring and, you know, statements of  
3 reassurance that they would have to give Rocky  
4 that they did due diligence on looking for  
5 tritium contamination and any contamination,  
6 actually, of the material they were sending to  
7 Rocky.

8 In looking at those forms, and the  
9 SRDB numbers are in there, it's pretty clear that  
10 the three-point check was looking for just about  
11 everything that was coming into Rocky that might  
12 have some tritium contamination.

13 And the non-routine shipping form  
14 addressed all of the non-routine shipments that  
15 were implicated in these more recent releases,  
16 and that form did not have Pantex on it. And  
17 it's understandable why it isn't, because it  
18 only applied to non-routine shipments.

19 And there's a memorandum LaVon  
20 identified which is the October 21st, '74  
21 memorandum, which seems to suggest that, you  
22 know, the site sent a directive, which it did,

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1 in October of '74 which said, from here on out<sup>50</sup>  
2 you know, we're not going to accept anything  
3 until we're ready to do so with a special room  
4 where these containers can be opened and  
5 monitored for tritium and all of that.

6 It was like a moratorium on  
7 shipments, non-routine shipments not Pantex  
8 shipments, but non-routine shipments.

9 MR. RUTHERFORD: But Pantex was  
10 included on that memo.

11 MR. FITZGERALD: It was included  
12 but it applied to non-routine. So I think even  
13 though -- and it went to the world by the way,  
14 so it went to all AEC operations, but it applied  
15 to non-routine shipments which we can confirm  
16 further, but based on my reading that  
17 non-routine did not include the Pantex pit  
18 returns.

19 But in any case, I think the  
20 operational history between the '73 event, and  
21 this to me makes sense, because again I had  
22 trouble thinking that they took a year before

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1 they sent a directive out to the complex that<sup>19h</sup>  
2 by the way, you know, we want you to be careful  
3 with tritium contamination and supply  
4 assurances that you're not sending us  
5 contaminated material.

6 Given what happened in April  
7 through, I guess it was the mid-'73, I would have  
8 expected the Atomic Energy Commission and Rocky  
9 to take immediate action on it, at least an  
10 interim basis, to get their hands around this and  
11 actually ensure that the sites were checking or  
12 following procedures and making sure that when  
13 things were received that they were checked,  
14 just because of the concern.

15 This was of course part of the AEC's  
16 investigation from the investigation report.  
17 So I guess the picture I'm painting is that yes,  
18 actually management did do that apparently, and  
19 did put in place some interim directives, the  
20 three-point process of checking.

21 They also made it clear to the  
22 shipping sites that they were to again follow

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1 procedure and monitor what they were sending<sup>159</sup>  
2 Rocky, and that happened in September-October of  
3 '73.

4 So I think this raises some real  
5 question about how representative the source  
6 term would have been for the '74 event, because  
7 again these operational precautions would have  
8 been received, would have been listened to, and  
9 certainly as a factor in this Item 6 where the  
10 argument is that the incident was close enough  
11 to '73 that the practices and controls were  
12 similar to those prior to '73. And I think  
13 they weren't, and logically they wouldn't have  
14 been. Certainly actions would have been taken  
15 rather promptly and would have been put in place.  
16 And then more specific ones, engineering  
17 controls would have been implemented a year or  
18 so later which is what happened starting October  
19 '74. They had a moratorium and were putting  
20 into place engineering controls, new  
21 facilities, to handle these things more  
22 carefully.

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1 MR. RUTHERFORD: Okay. 153

2 MR. BARTON: Joe, this is Bob  
3 Barton. Could I just take a step back and ask  
4 a point of clarification? You mentioned a memo  
5 in October of 1974.

6 MR. FITZGERALD: Yes, a memo.

7 MR. BARTON: I'm also looking at a  
8 memo in October 1973, and it's referring to these  
9 non-routine SS material shipments, and this  
10 thing it went out to everybody, Los Alamos, you  
11 know, Battelle, NLO, everybody pretty much.

12 And I'm just reading here from it and  
13 it says, "In order to provide Dow Rocky Flats  
14 with sufficient information concerning future  
15 requests to receive non-routine SS materials  
16 from other AEC contractors, Form," and it gives  
17 the form number, "Authorization to Ship SS  
18 Material, is being initiated and is required  
19 from this day forward." And that is dated  
20 October 15th, 1973.

21 MR. FITZGERALD: Yes, I referenced  
22 that on Page 13.

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1 CHAIRMAN GRIFFON: Do you have ~~the~~  
2 document number for that just so everybody has  
3 it, Bob?

4 MR. BARTON: Yes. The SRDB number  
5 is 111253 and I'm looking on Page 189.

6 CHAIRMAN GRIFFON: Okay, thank you.

7 All right, now I think we got the  
8 point. And is there anything else to add?  
9 Those were your six factors, although, Joe, I got  
10 five. But I'll catch up with you later to get  
11 the one I missed.

12 MR. FITZGERALD: Yes, there was  
13 definitely six although I skipped over --

14 CHAIRMAN GRIFFON: No, that's fine,  
15 that's fine. I mean, I think that last one is  
16 a very interesting argument to me that, you know,  
17 did things change a lot operationally between  
18 the '73 event and '74. That would raise a lot  
19 of questions on using that later incident for  
20 bounding. So I think we've got it. I think  
21 NIOSH probably needs time to consider it. Yes.

22 MR. RUTHERFORD: I just need to look

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1 at that. I mean, the question's going to be<sup>155</sup>  
2 or if we go back, we look at it and it appears  
3 that controls were put in place prior to the '74  
4 incident that which makes the '74 incident  
5 question whether it would be bounding, the  
6 overall question is okay, if we can't find  
7 another incident and we go back to the '73  
8 incident, which is the, you know, as our bounding  
9 thing --

10 CHAIRMAN GRIFFON: And it's  
11 questionable whether that would be plausible so,  
12 yes. So I think you run into maybe not being  
13 able to reconstruct, but I think you need more  
14 time to -- yes, yes.

15 DR. NETON: I think, really, the  
16 issue is small doses.

17 I don't know. And then if you go  
18 back to '62 and we say, okay, what's the shipping  
19 status prior to '62, because it's all SEC after  
20 '62. If it can't be reconstructed then we'll  
21 just give zero tritium dose to anybody in those  
22 years, right, I mean that's the idea. It's not

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1 sufficiently accurate. 156

2 But then we'd have to really focus  
3 on, well, what was the activity of shipments  
4 prior to '62? Can that be reconstructed? See,  
5 that's the only open issue in my mind.  
6 Otherwise we're going to end up with the  
7 conclusion you can't reconstruct tritium doses  
8 so we'll just take it away from all workers.

9 Okay, fine. I'm not sure we need to do  
10 that because they're small doses and we can bound  
11 that. So we've got to be careful --

12 MR. KATZ: So you're just saying the  
13 point is that you'd be taking it away from people  
14 who would require dose reconstructions because  
15 they wouldn't be in the Class anyway.

16 DR. NETON: Exactly. And I think  
17 they're smaller --

18 CHAIRMAN GRIFFON: But also the  
19 magnitude of this -- are they going to be a  
20 turning point anyway, so you can argue --

21 DR. NETON: I don't know.

22 MS. BARRIE: But aren't you using

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1 the '74 incident for post-'74 dose  
2 reconstruction?

3 MR. RUTHERFORD: No.

4 MS. BARRIE: No.

5 MR. RUTHERFORD: They started  
6 monitoring.

7 MS. BARRIE: Okay.

8 DR. NETON: Yes, and so I guess we  
9 just need to be careful on how we proceed with  
10 that because --

11 MR. FITZGERALD: Well, I think the  
12 caution also applies to the fact we just don't  
13 have any good data on the Pantex returns and we  
14 can make some assumptions, we can apply what we  
15 know on these other types, these few data points  
16 we have on the --

17 DR. NETON: Right, and then we say  
18 we can do reasonable dose reconstruction.

19 MR. FITZGERALD: Well, I'm just  
20 saying that, you know, it's just one of these  
21 things we have to be careful about taking an  
22 event and applying it backwards.

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1 DR. NETON: Understood. And in ~~my~~  
2 mind it's most critical prior to '62 at this  
3 point.

4 CHAIRMAN GRIFFON: Okay. Well,  
5 let's leave it there. Is that all the issues for  
6 the tritium?

7 DR. NETON: I think so.

8 CHAIRMAN GRIFFON: Okay, if that's  
9 the case this may be a good break point for --  
10 and we'll take lunch. I think we only have the  
11 one issue left after lunch.

12 DR. NETON: Falsification.

13 CHAIRMAN GRIFFON: Yes, the  
14 falsification issue. But let's --

15 MR. KATZ: Let's try to keep a  
16 shorter lunch though if we can.

17 CHAIRMAN GRIFFON: Yes, some people  
18 might be able to get earlier flights or whatever.  
19 So if we can get back by, I mean, by 1 o'clock,  
20 can we --

21 MR. KATZ: So let's try to --

22 CHAIRMAN GRIFFON: Back by 1:00,

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1 those on the phone and -- all right, great,  
2 Thanks.

3 (Whereupon, the foregoing matter  
4 went off the record at 12:09 p.m. and went back  
5 on the record at 1:00 p.m.)

6  
7 A-F-T-E-R-N-O-O-N S-E-S-S-I-O-N  
8 (1:00 p.m.)

9 MR. KATZ: So good afternoon, Rocky  
10 Flats Work Group. Let me just check on the line  
11 to make sure we have our other Board Member.  
12 Phil, are you on? Phil Schofield? Are you on  
13 the line, Phil? Are you on mute?

14 Do you want to give him a minute or  
15 two before we get started? Phil?

16 While we're waiting let me just  
17 check and see, Joe, do we have you on the line?

18 MEMBER SCHOFIELD: Ted, this is  
19 Phil. I'm on the line.

20 MR. KATZ: Oh Phil, great. And  
21 Joe, do we have you on the line too?

22 MR. FITZGERALD: Yes, I'm here.

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1 MR. KATZ: Okay, super. I think  
2 then we can get going.

3 CHAIRMAN GRIFFON: Okay. All  
4 right, so we just have the one last item for the  
5 meeting today, and I think we should do the same  
6 thing. It's with the data falsification  
7 concerns, data invalidation. And maybe just  
8 let NIOSH tee it up and then let Joe respond, SC&A  
9 respond.

10 MR. RUTHERFORD: Yes, that seemed  
11 to work pretty well last time. I'll go ahead and  
12 do that.

13 CHAIRMAN GRIFFON: Okay.

14 MR. RUTHERFORD: And also at the end  
15 of this we'll probably go over some additional  
16 items that Terrie had brought up, Terrie Barrie  
17 the petitioner had brought up. I want to make  
18 sure that we don't forget those, and I'm sure  
19 Terrie won't let me forget them. So we'll be all  
20 right.

21 Just a little, kind of go back over  
22 the White Paper we put together. Originally,

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1 Terrie Barrie the petitioner had identified<sup>161</sup>  
2 potential concern with data falsification or  
3 data invalidation at Rocky Flats, and it was  
4 based on the interview that was done with a  
5 former employee who had concerns with potential  
6 data falsifications. And one area was in  
7 Building 123 which was of concern to us because  
8 that was the area where bioassay data was  
9 analyzed. We went back through and reviewed the  
10 paper, went through each allegation and  
11 responded to each allegation originally with the  
12 White Paper. There was a couple of concerns  
13 that were brought up at the last Work Group  
14 meeting for to try to validate what we had done,  
15 and so we did interview two former Rocky Flats  
16 workers that, the same workers we interviewed  
17 with the neptunium issue we interviewed to try  
18 to get a feel for how the health physics program  
19 may have been affected by the 1989 raid and what  
20 went on there.

21 Both individuals indicated to us  
22 that the only people that were involved with the

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1 raid you knew because it was done on a need to  
2 know basis so if you weren't contacted you  
3 weren't involved. And since the raid related to  
4 environmental issues there was no involvement  
5 from the bioassay program perspective.

6 And accordingly there was no  
7 radiological program changes made as a result of  
8 the raid. This is coming from one of the  
9 interviewees. He indicated that the Department  
10 did not know the raid happened until they heard  
11 it in the news.

12 The interviewee also indicated that  
13 to this date he has not been informed of any  
14 aspects of the raid. That was one of the  
15 individuals.

16 And the second individual -- and I  
17 want to qualify these individuals. They are  
18 individuals that are part of management, so I  
19 want to make sure that that's, you know.  
20 Because I know that could be a question and I want  
21 to make sure, but these individuals were  
22 specific with the RadCon program in that they ran

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1 the RadCon program and the bioassay program<sup>163</sup>

2 The second employee confirmed that  
3 the first interviewee's point that the FBI raid  
4 involved specific people and only those who were  
5 involved received information about what was  
6 going on. He also confirmed the raid was  
7 related to environmental issues and not  
8 occupational or radiological issues.

9 And so we got pretty much the same  
10 thing from both interviewees. We also went back  
11 and we tried to pull together procedures that,  
12 you know, from prior years to later years.

13 We did get one individual that told  
14 us that we probably wouldn't find archived  
15 procedures, because up until the late '80s or so  
16 they didn't archive procedures, they just, you  
17 know, when new revisions were made they got rid  
18 of the old one.

19 But we did find some procedures for  
20 Building 771 that supported that, I think it was  
21 771, and Dan can correct me if I'm wrong, but that  
22 supported that nothing changed, the

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1 occupational health physics program before ~~the~~  
2 raid and after the raid. So those were just  
3 a couple of additional things that we did. And  
4 I'll let Ron or SC&A go through their review of  
5 the White Paper and then I'll add a couple other  
6 things as well.

7 MR. FITZGERALD: Okay, let me just  
8 preface our remarks. You know, our focus, this  
9 is something the Work Group tasked SC&A with is  
10 looking for evidence of a crossover problem or  
11 implication from the environmental side where  
12 the allegations rested and the occupational  
13 bioassay side.

14 And we reviewed the White Paper,  
15 looked at the references that were in there  
16 including the FBI affidavit and the other  
17 references that were cited, we reviewed those.  
18 And we participated in the interviews that were  
19 arranged by NIOSH.

20 Clearly there were some other  
21 documents that LaVon's going to talk to that I  
22 think Terrie Barrie had identified that we have

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1 yet to actually review. 165

2 So what we provided in a very brief  
3 form I might add, and I'll let Ron go through it,  
4 is more or less a status to this point that, you  
5 know, we have to this point haven't seen any hard  
6 evidence of a crossover but we have not completed  
7 this review on the other hand as well. So it's  
8 sort of the mid-course, you know, we still have  
9 more work to do.

10 Ron?

11 DR. BUCHANAN: Yes, I'm here. I  
12 had it on mute. Yes, this is Ron Buchanan with  
13 SC&A. I sat in on one of the interviews and  
14 reviewed the other interview. I did not sit in  
15 on the one in July but I did the one in August.

16 And these were interviews with many,  
17 many employees like they said, and so we did ask  
18 them some questions about the processing of the  
19 samples and how often was that, and some of the  
20 procedures mainly with neptunium but with other,  
21 gross alpha, that sort of thing also.

22 And from those two interviews we did

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1 not get an indication of an issue from the raid<sup>106</sup>  
2 However, as Joe as said we have not had the  
3 privilege of the other four documents that were  
4 brought forth and we haven't seen those yet, and  
5 we would like to see those and review those to  
6 further our investigation in the area. So  
7 that's pretty much where we stand now.

8 MR. RUTHERFORD: And I'll jump in on  
9 that. One of the things that was brought up by  
10 Terrie, and I think is Stephanie Carroll as well,  
11 was there were four parts to the Tiger Team  
12 report and we had one of those parts. There are  
13 three other parts.

14 And I will say, to date we still have  
15 not received those other three reports. We've  
16 looked for those and we haven't found them yet.  
17 I think Joe has even offered to see if he can,  
18 you know, find them in some of his areas as well  
19 that he has access to and to see if we can get  
20 those reports. So yes, we have not received  
21 those reports and have not had a chance.

22 Now one of the other issues was the

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1 sealed documents, and I'm going to give you<sup>169</sup>  
2 general overview of it and then I'm going to turn  
3 it over to Jenny to give you a much deeper.

4 But generally what the concern was  
5 there were sealed documents that potentially  
6 contained information that supported that  
7 falsification occurred in the occupational  
8 health physics program.

9 And the concern was we didn't have  
10 those documents, and since we wouldn't have them  
11 we needed to get those documents and see if we  
12 could get those documents. So I contacted our  
13 general counsel, Jenny, and Jenny took, I'll  
14 just let her brief you on what she did.

15 MS. LIN: Sure. So we did contact  
16 our colleagues in the Department of Justice, the  
17 U.S. Attorney's office and the Department of  
18 Energy, which was a really good place to start.

19 They have an environmental  
20 litigation division, and one of the senior  
21 attorneys there happens to be a lead attorney in  
22 the Denver's office when the Rocky Flats raid and

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1 investigation was going on. So even though ~~she~~  
2 wasn't the person on task she was very aware  
3 because their entire office was, you know,  
4 assisting DOJ and FBI.

5 So when we were looking at these  
6 sealed documents obviously we need to know what  
7 they are, where they are and how to get them. So  
8 we were able to answer all three questions.

9 So these sealed documents were  
10 documents provided by the Department of Justice,  
11 you know, through the FBI raids, and they were  
12 provided to -- actually, let me retract.

13 So the sealed documents are actually  
14 court documents. Those were sealed by the  
15 court. Those are different than what we  
16 typically think of classified documents and that  
17 sort.

18 So these sealed documents are jury  
19 reports, draft indictments, presentments and  
20 other court documents, and they were actually  
21 sealed by the U.S. District Court for the  
22 District of Colorado pursuant to the Federal

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1 Rules of Criminal Procedure 6(e). And they have  
2 been litigated.

3 This issue in release of sealed  
4 documents had been litigated at least twice and  
5 they resolved it in court opinion saying that  
6 they cannot be released. So because of that we  
7 know that the sealed documents, they would not  
8 be available to us.

9 CHAIRMAN GRIFFON: And you said  
10 they include jury reports, draft reports and  
11 something else you said.

12 MS. LIN: I mean these are just the  
13 characterization. No one was able to give us  
14 the inventories of what these sealed documents  
15 are.

16 CHAIRMAN GRIFFON: Generally  
17 though, right.

18 MS. LIN: So generally. So I  
19 looked at the Federal Rules of Criminal  
20 Procedure 6(e) to see what type of documents fall  
21 under that category and also look at the court's  
22 opinions, and they're pretty consistent in terms

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1 of the type of document that was sealed by ~~the~~  
2 court.

3 And then obviously there's ongoing  
4 investigation so they're assuming for the courts  
5 to seal those documents. And I think at least  
6 one of the jurors had written a book about their  
7 experience.

8 But I think an outcome of this  
9 investigation by the Office of General Counsel  
10 is that we were able to have these concurrent  
11 statements from the DOE's litigation division  
12 and also from others who were doing the data  
13 capture that is pretty consistent with the  
14 source documents that were evaluated by the  
15 grand jury, have been gradually released to  
16 either the Rocky Flats plant when it was still  
17 in operation or to DOE.

18 And I think our data capture team  
19 also confirmed that's actually the case with the  
20 person who is maintaining the data. So it seems  
21 like the story that OGC is getting actually  
22 confirm, matched up with what the data capture

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1 team -- 171

2 MR. RUTHERFORD: Yes, basically,  
3 and as Jenny mentioned, the source documents,  
4 the documents that they were using to evaluate,  
5 I guess, these legal issues, the source  
6 documents have been, some of those were  
7 classified and they were returned to Rocky  
8 Flats.

9 And there's actually an inventory  
10 sheet of those documents that were, you know,  
11 taken and then returned over time, and the Denver  
12 Federal Records Center has confirmed that they  
13 had those documents and we have those documents.

14 So the only outstanding one is the  
15 three reports that are still from the Tiger Team  
16 that we still have been unable to find at this  
17 time.

18 MS. BARRIE: So the documents that  
19 were returned by Justice is in the SRDB?

20 MR. RUTHERFORD: They would be,  
21 either they have them in the Site Research  
22 Database or they're at the Denver Records Center

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1 and we can get them. But I believe we've ~~995~~  
2 them all because, in fact I know we do because  
3 we had a data capture with the EMCBC locally in  
4 Cincinnati where some additional documents that  
5 were sent that were part of that and we retrieved  
6 those documents. So Dan, correct me if I'm  
7 wrong. Dan Stempfley.

8 MR. STEMPFLEY: What you're saying  
9 is how it is. We did identify and collect the  
10 pertinent documents that we were looking for.

11 MR. RUTHERFORD: Yes. Okay,  
12 thanks.

13 CHAIRMAN GRIFFON: So you have all  
14 the documents that run inventory to this? Okay.

15 MR. RUTHERFORD: Yes, the only  
16 thing we don't have is the three reports that  
17 they have identified.

18 CHAIRMAN GRIFFON: Right. Got that,  
19 right. The three parts of the Tiger Team  
20 report, right? Okay.

21 MR. RUTHERFORD: Yes, and I don't  
22 understand why we don't have this. It just

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1 seems like that would be something easy for<sup>143</sup>  
2 to get --

3 CHAIRMAN GRIFFON: Yes, that should  
4 be easy.

5 MR. RUTHERFORD: -- that we haven't  
6 been able to get.

7 MS. BARRIE: Well, that makes me  
8 feel better because I've been waiting years to  
9 try to get my, I've filed FOIAs two or three times  
10 on them and --

11 CHAIRMAN GRIFFON: So when -- I'm  
12 sorry. When Joe at the end of his description  
13 mentioned, or maybe it was Ron said the other  
14 four documents that they're still waiting to  
15 see?

16 MR. RUTHERFORD: I think he was  
17 talking about the three --

18 CHAIRMAN GRIFFON: The three parts  
19 of that, okay. I think that's what he was  
20 referring to.

21 MR. RUTHERFORD: Is there a fourth  
22 one I'm missing, Jim?

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1 MR. FITZGERALD: I think ~~the~~  
2 bioassay procedures was another item that I  
3 think Terrie had cited in one of her --

4 MR. RUTHERFORD: Yes, I actually,  
5 we have an updated White Paper that I didn't want  
6 to send it out, you know, at the 11th hour type  
7 thing because it came out, it just cleared ADC  
8 review yesterday and it hasn't been reviewed  
9 internally by us. So it does cite some  
10 additional Site Research Database documents for  
11 you to look at. So when you get your hands on  
12 that you can look at that in comparison.

13 MR. FITZGERALD: And on the three  
14 documents that we're missing, I think I even  
15 mentioned this to Terrie at one point, I will,  
16 you know, sort of beat the bushes at DOE  
17 headquarters both in the program office, safety  
18 office as well as in their archives to see if I  
19 can find them.

20 I know they have complete sets of the  
21 Tiger Team reports. The Rocky ones were not  
22 officially a Tiger Team so they should be there

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1 as well.

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2 MR. RUTHERFORD: I thought maybe  
3 you'd have it on your shelf or something.

4 MR. FITZGERALD: You would think.  
5 I actually didn't do that one. I did the one  
6 right afterwards.

7 MR. RUTHERFORD: Okay.

8 DR. BUCHANAN: This is Ron with SC&A  
9 and I had some questions for you. You know, one  
10 of the four documents was HP procedures, one was  
11 environmental and the other three you haven't  
12 been able to get yet, and then you talked just  
13 now about some new court documents.

14 Can you email me those documents  
15 that you do have? The HP procedure, the  
16 environmental and the new documents, or give me  
17 the --

18 MR. RUTHERFORD: SRDB numbers?

19 DR. BUCHANAN: -- SRDB number by  
20 email so I can look them up?

21 MR. RUTHERFORD: Yes, I will. And  
22 hopefully we can get this revised report

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1 released real quickly, but I'll get you all ~~the~~  
2 information. We also have inventory sheets  
3 from the documents that were taken as part of the  
4 raid. And I'll get you access to all that  
5 information.

6 DR. BUCHANAN: Yes, if you could  
7 email that directly to me I'd appreciate it so  
8 that I can start working on that.

9 MR. RUTHERFORD: Okay, no problem.

10 CHAIRMAN GRIFFON: And just to be  
11 clear just so I didn't miss something, the review  
12 of the sealed, you know, the court documents, all  
13 source documents were returned to the site,  
14 right, and it was inventoried and NIOSH has all  
15 of those?

16 MR. RUTHERFORD: Yes.

17 CHAIRMAN GRIFFON: I think that's  
18 the critical part, yes.

19 MEMBER KOTELCHUCK: Let me be  
20 clear. The allegation was that environmental  
21 data was manipulated or falsified. Is there any  
22 allegation that the occupational health data was

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1 falsified, or is that just a concern because ~~the~~  
2 people who measure the one measured the other?

3 MR. RUTHERFORD: Yes, that's the  
4 concern. And I mean, Terrie can correct me if  
5 I'm wrong, but we didn't see anything  
6 specifically of the allegation that the  
7 occupational health, you know, the bioassay data  
8 for the occupational health physics group was  
9 ever in question.

10 MS. BARRIE: Yes, and if you  
11 remember during the public comments during the  
12 July meeting, there was a Rocky Flats worker who  
13 filed a grievance through the union on that  
14 Building 123 was changing their doses.

15 MEMBER KOTELCHUCK: A-ha. So  
16 there is an allegation within the union --

17 MS. BARRIE: Right.

18 MEMBER KOTELCHUCK: -- and a  
19 grievance procedure.

20 MR. RUTHERFORD: I'm glad you  
21 brought that up because that is another thing  
22 that we are following up on. We are doing an

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1 interview, classified interview with that  
2 individual. We've been working on that. It  
3 kind of got held up a little bit.

4 One, scheduling a classified  
5 interview is not easy especially depending on  
6 the location the individual is and whether we  
7 have somebody out in that area to do it and such.

8 But we're working on that and so  
9 we're going to interview that individual because  
10 they requested it be in a classified area which  
11 is good. That means they can tell us a lot of  
12 things.

13 So we're going to complete that  
14 interview. We'll see if we can get Ron Buchanan  
15 or somebody from SC&A to be involved in that as  
16 well, and then we'll go from there on that.

17 CHAIRMAN GRIFFON: And can you  
18 clarify? Building 123 that Terrie referenced,  
19 that was the bioassay lab or was it -- did it do  
20 all --

21 MR. RUTHERFORD: Well,  
22 environmental samples and --

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1 CHAIRMAN GRIFFON: And occupational  
2 or bioassay samples, all right. Both, okay.

3 MR. RUTHERFORD: But they weren't  
4 done by the same individuals or group. It was  
5 in the same building.

6 CHAIRMAN GRIFFON: In the same  
7 building but separate, okay.

8 MR. RUTHERFORD: Yes.

9 CHAIRMAN GRIFFON: Joe, do you have  
10 anything to add?

11 MR. FITZGERALD: No, like I said, I  
12 think we will seek those missing documents and  
13 continue our review and try to get back to the  
14 Work Group.

15 MR. RUTHERFORD: Yes, there is one  
16 other thing that Terrie brought up that I  
17 followed up on, and it's not related to data  
18 falsification, but if I don't tell it now I'll  
19 end up forgetting.

20 So one of the issues was a concern  
21 of tritium stripping. And you guys might  
22 remember an email questioning of what is this

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1 tritium stripping, and it was identified. 180  
2 believe it was identified in our SEC-0030  
3 Evaluation Report. It was also identified in an  
4 email exchange that we had internally.

5 And that was a typo and I've provided  
6 SC&A, or Joe anyway, Joe Fitzgerald with SC&A,  
7 the SRDB reference that should have been  
8 titanium stripping and not tritium stripping.  
9 And I've given him the SRDB number and the chem  
10 risk report number that references that.

11 MR. FITZGERALD: Yes, I have that.

12 MR. RUTHERFORD: Okay.

13 CHAIRMAN GRIFFON: Terrie, did you  
14 want to add or comment anything on this file or  
15 overall comments?

16 MS. BARRIE: I have overall  
17 comments, yes.

18 CHAIRMAN GRIFFON: Okay, well, hold  
19 those for a second just to make sure. Is there  
20 anything else on this topic on the phone or here  
21 in the room? Because I think it's still a work  
22 in progress. Obviously we have several things

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1 to find in this review. Okay. 181

2 All right, so then yes, Terrie.

3 MS. BARRIE: Okay.

4 CHAIRMAN GRIFFON: I think at this  
5 point we've wrapped our -- you can make comments,  
6 yes.

7 MS. BARRIE: Right. I just want to  
8 thank everybody for all the work they've done.  
9 I mean, it's been a long hard road getting to this  
10 point of especially pointing out that oh, what  
11 about this thorium strike and what about this and  
12 what about that?

13 And I really appreciate everyone's  
14 interest and investigation. I honestly do, and  
15 I'm quite thankful that you are recommending an  
16 SEC for, you know, certain years and including  
17 all the workers.

18 When it comes to the -- and I hope  
19 that the full Board votes for it too obviously.  
20 When it comes to the falsification, this has been  
21 one of my sticklers because I have my husband's  
22 documents where there are erasures and there's

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1 cross outs, and so that's how I first ~~got~~  
2 involved with that.

3 You know, I don't know if he was  
4 exposed to uranium 238, 235 or 233, because it's  
5 whited out. But that's that. And I think I  
6 sent an article or a report from 2006 from the  
7 former worker program, and I found one from 2004.

8 And this is why I keep getting back  
9 to the falsification, how important this is.  
10 And I'll give this to you too. It says this is  
11 for the former worker program eligibility  
12 criteria.

13 And the very last criteria on this  
14 list here, the reason that the former workers  
15 from Rocky Flats were invited to participate is  
16 because a review of their exposure or work record  
17 indicated significant likelihood that an  
18 internal deposition or external dose may have  
19 occurred that was not well evaluated in the past.  
20 Okay, to me that says, oops, we made a mistake  
21 on our dosimetry records and our testing.

22 So this is, like I said, a 2004

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1 paper. So I do appreciate you not closing this  
2 out, and I hope that we can resolve that in the  
3 next few months after the meeting.

4 And what really bothers me about  
5 this was it was authored by a Site Profile author  
6 back then and he knew this when, you know, he was  
7 authoring the Site Profile. So if you'd like to  
8 see this or -- okay. But thank you everyone. I  
9 do appreciate everything.

10 CHAIRMAN GRIFFON: Thank you.  
11 Yes, and I think that grievance in particular is  
12 a good one that we really need to follow up on.  
13 So any other public comments before we close?

14 Okay, so I look forward to the report  
15 a couple weeks before the Board meeting  
16 hopefully.

17 MR. RUTHERFORD: Yes.

18 CHAIRMAN GRIFFON: The updated  
19 report and your presentation in Denver. And  
20 thanks for all the hard work by NIOSH and SC&A.  
21 All right, so meeting adjourned.

22 (Whereupon, the foregoing matter

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went off the record at 1:26 p.m.)

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