

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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SAFETY AND HEALTH

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ADVISORY BOARD ON RADIATION AND
WORKER HEALTH

+ + + + +

ROCKY FLATS PLANT WORK GROUP

+ + + + +

THURSDAY
SEPTEMBER 12, 2013

+ + + + +

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:

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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1 P-R-O-C-E-E-D-I-N-G-S 5

2 (9:02 a.m.)

3 (Roll call.)

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

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

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

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1 Report. 6

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

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

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

21 At that time the Board made a
22 determination that additional reviews should

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1 be done, you know, that review included
2 classified interviews, classified document
3 reviews and such.

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

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

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

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1 some additional tritium work that we were
2 doing, so we had some follow-up efforts on
3 that.

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

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

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

20 Next slide. The White Paper on
21 tritium, just again a little background. And
22 we issued that White Paper on June 25th. The

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1 White Paper at that time again concluded the
2 same as the original ER did, that dose
3 reconstruction was feasible. However, it did
4 provide a little refined analysis, I guess a
5 little more precise of what the potential
6 chronic exposure could be to a worker.

7 And again we issued that paper on
8 June 25th, provided it to the Work Group on
9 June 26th and to the petitioner on July the
10 3rd. And then we presented that to the Work
11 Group at the Work Group meeting on July 8th.

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

19 I'll hold off discussions about
20 that until later on in the agenda. When SC&A
21 discusses their review I'll discuss the
22 follow-ups that we did as well.

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1 The second White Paper that we did
2 was the data falsification and data
3 invalidation. Again, this was focused on
4 issues brought up by the petitioner. We
5 issued that report on June 25th, and we
6 provided it to the Work Group on June 26th and
7 the petitioner on July 3rd. And then again we
8 presented that White Paper to the Work Group
9 on July 8th.

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

16 Okay, let's jump into -- the next
17 slide is on the U-233/thorium strikes, and
18 this is more focused on the revision to the
19 Evaluation Report. U-233/thorium strikes
20 were originally vetted under SEC-0030
21 evaluation. We reopened this under
22 SEC-0192 after indications that this may have

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1 occurred more than the two times previously
2 identified. We had actual indications that we
3 had support for possibly five, I believe, five
4 different strikes.

5 U-233 was being evaluated for its
6 use in the weapons program at Rocky Flats.
7 The problems with U-233, not only are there
8 internal problems with U-233 and U-232, but it
9 also presented an external problem, the U-232,
10 because of the progeny and the high gamma
11 energies emitted by the progeny associated
12 with U-232. Therefore it had an external
13 hazard, so that presented concerns.

14 So because of that concern, a
15 chemical process was developed called a
16 thorium strike to remove the thorium 228 and
17 its progeny, and basically to keep the
18 external exposures down so the material could
19 be worked with and they could, you know, do
20 what they were going to do with it. Okay,
21 next slide.

22 During the deliberations of SEC-

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1 0030, the bounding thorium dose was based on
2 air sampling taken during the strike in 1965.
3 So there were two strikes identified in SEC-
4 0030. The 1965 strike was felt as bounding.

5 The strike was considered bounding
6 because it had the highest concentration of U-
7 232 of the two strikes. It was roughly 50
8 ppm, if I remember correctly. No credit was
9 taken for the ventilation, the hoods or the
10 time limits.

11 Again, as I mentioned, the
12 interviews that we had in documents indicated
13 that strikes occurred other than the two
14 previously evaluated. So our questions,
15 knowing that there were additional strikes,
16 were, okay, are these additional strikes, were
17 they still bounded by the 1965 exposure? And,
18 you know, could we verify that?

19 Other questions came up based on a
20 recent addition of Classes at Hanford based on
21 an inability to reconstruct doses to U-233,
22 neptunium, thorium and highly enriched

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1 uranium. 13

2 Just a little background, the
3 Hanford SEC, I believe it's number 201, added
4 a Class up to 1983, and it was based on, as I
5 mentioned, the U-233, the neptunium, the
6 thorium and the highly enriched uranium.

7 We were aware that Rocky Flats had
8 the U-233, as well as the neptunium, and so we
9 wanted to do a little comparison. Were these
10 activities similar? Were the materials'
11 quantities similar? And how much monitoring
12 do we have in comparison between the two?

13 Next slide. Okay, for the thorium
14 exposures, we've come to the conclusion that
15 the 1965 bounding scenario that was in SEC-
16 0030 is still, we believe, is the bounding
17 scenario. We believe that because most
18 documents indicate the U-233 was to be
19 processed or shipped off-site prior to the 90-
20 day period.

21 Once that hazard was recognized and
22 in dealing with the U-233 they tried to ship

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1 the stuff offsite or process the stuff prior
2 to that 90-day period. Again, we do know that
3 there were additional strikes, but the attempt
4 was to limit the ingrowth.

5 Documents indicate that the
6 concentration with U-232 did not exceed 8 ppm
7 after 1965. As I mentioned, the 1965
8 concentration was roughly 50 ppm, and the
9 later years after that '65 period was around
10 8 ppm. It did not exceed 8 ppm.

11 So we've concluded that the
12 original scenario that was developed under
13 SEC-0030 is still a bounding scenario.

14 I will mention that we did have
15 issues with the air sampling that was used in
16 that 1965 -- or in that previous analysis.
17 When we looked back and looked at the air
18 sampling, we've come to the conclusion that
19 the air sampling that was used in the previous
20 analysis was not the right air sampling.

21 What we did, though, is we
22 requested additional air sampling from the

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1 site and for that existing period and for the
2 correct building. And then we used that air
3 sampling and to revise our exposure, that
4 exposure scenario. That'll be included in the
5 Evaluation Report. So we came to the same
6 conclusion, but we had to use different air
7 sampling in doing that because we believe the
8 air sampling originally done was not correct.

9 Okay, the next issue associated
10 with that, other than the thorium strikes, the
11 thorium issue, was the U-233 exposures. As I
12 mentioned, this was an issue at Hanford, and
13 under the Hanford recommended Class we wanted
14 to look back at this and ensure that we had a
15 good method for identifying U-233 exposures
16 and encompassing when needed in dose
17 reconstruction.

18 The quantity of U-233 onsite at
19 Rocky Flats varied from 1964 to the end of U-
20 233 operations in 1983. Again, this was being
21 evaluated for use in the weapons program at
22 Rocky Flats. Estimates from available

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1 documents indicate quantities could have been
2 from 1 kilogram up to 150 kilogram from 1965
3 through 1983. The highest quantities from
4 1965 through 1968. Bioassay data for uranium
5 exists and a uranium coworker model exists for
6 the period of concern. No specific bioassays
7 associated with U-233.

8 You know, initially, our idea was
9 that we would use the uranium bioassay data
10 and look at the uranium bioassay data and we
11 would assign the U-233 doses to anyone that
12 had uranium bioassay, based on the idea that
13 if they were working with U-233 they were
14 probably uranium bioassayed.

15 So in order to, you know, approach
16 this, we thought we needed to come up with
17 some type of validation or way to ensure that
18 workers that were working with U-233 did
19 actually receive -- did actually have uranium
20 bioassay.

21 We have a logbook from a specific
22 period of U-233 operations that listed names.

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1 There were 46 names of individuals that worked
2 on the U-233 project for that specific time
3 period in the logbook.

4 I want to make sure everyone
5 understands that those 46 individuals, it's
6 not reasonable to assume that those 46
7 individuals were the same 46 individuals that
8 worked from 1964 to 1983, but it gives you an
9 idea.

10 We've got 46 individuals. If we
11 could go back and we have a portion of those
12 in NOCTS, that we can look at their internal
13 data sets and see if they had uranium bioassay,
14 we could make the assumption, okay, yes, good.
15 At least we know -- our first step in
16 validation is that these workers that were
17 working on the project that are claimants had
18 uranium bioassay.

19 Well, we went back, we have 18 of
20 the 46, believe it or not -- which is a pretty
21 high number; I was kind of surprised -- 18 of
22 the 46 are claimants at this time. Now, of

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1 those 18 claimants, though, 17 had uranium
2 bioassay. So there is one individual that did
3 not have uranium bioassay over the period in
4 his file, not over any period. And we could
5 not come up with a conclusion or a good reason
6 why that individual did not have uranium
7 bioassay. So that put a little hole in our
8 initial idea of using uranium bioassay for the
9 individuals.

10 So as I mentioned -- next slide --
11 indications that not all workers working on U-
12 233 operations had uranium bioassay. We had
13 this small sample set of individuals and we
14 have one individual that did not have uranium
15 bioassay with no real good reason why he did
16 not.

17 The problem with that is, is that
18 forces us to assume then that all workers that
19 we would use a uranium coworker model for, we
20 would have to come up with a method with --
21 including the U-233 and U-232.

22 And the difficulty with that is, is

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1 that means that you're going to have a factor,
2 an adjustment factor in doing that. And also
3 the activities of U-233, and Jim will jump in
4 if he needs to, associated with U-233, because
5 of the very high specific activity similar to
6 like plutonium, it was dealt with differently.

7 And using the uranium, standard
8 uranium operations in support of a coworker
9 model for that type doesn't necessarily make
10 sense, okay? Jim, do you want to add anything
11 to that?

12 DR. NETON: No, I think that's
13 true. It's a different activity. I mean,
14 it's short duration projects targeted, you
15 know, with specific activity almost equivalent
16 to plutonium, it's just much more active. So
17 there is no good reason to believe that the
18 coworker model we established using natural
19 uranium, depleted uranium type exposure, even
20 HEU exposures, would be valid for those
21 operations.

22 It's almost like a pure

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1 stratification issue. I mean, this is 20
2 purely isolated operation that, like I say, I
3 wouldn't be convinced that the coworker models
4 would be appropriate.

5 CHAIRMAN GRIFFON: Was that the
6 initial argument, though, was to use the
7 coworker model?

8 DR. NETON: Yeah, and the
9 interesting thing, there's two coworker models
10 for Rocky Flats. There's a mass model and a
11 gross alpha model. Well, obviously the mass
12 model would give you ridiculous numbers
13 because it referred to mass activity.

14 And then you would end up using the
15 gross alpha model, the alpha urine model.
16 But, again, that model is based predominantly
17 on sort of other operations that weren't
18 necessarily this U-233 strike activities. So
19 what's to believe that the 50 percentile, or
20 we use the 95th percentile actually at Rocky
21 Flats, 95th percentile, that model is valid
22 for this other operation?

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1 We also don't know that everybody
2 was bioassay, even though there's 17 out of 18
3 people that we knew worked on the project had
4 bioassay samples, you always run into the
5 situation about ancillary support work or
6 clean up.

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

14 MR. RUTHERFORD: So DCAS
15 management did not feel this was sufficiently
16 accurate and quantities, activities, and
17 available monitoring were similar to a similar
18 period at Hanford where DCAS determined dose
19 reconstruction was not feasible. Again, this
20 is roughly the exact same time period as what
21 we added the Class for at Hanford for similar
22 activity.

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1 Neptunium. I'm going to jump from
2 the U-233/thorium to neptunium. General
3 conclusion under SEC-0030, our original
4 evaluation was neptunium was used in small
5 quantities for research-type work and had
6 limited exposure potential compared to uranium
7 and thorium.

8 A determination was made to re-
9 explore this exposure situation based on
10 interviews and recent determinations
11 associated with neptunium, U-233, and thorium
12 at Hanford. Next slide, please.

13 Records indicate that neptunium
14 was processed at Rocky Flats as early as 1962
15 and inventories existed until 1988. And, you
16 know, we believe 1962 was the earliest based
17 on what we've seen in the neptunium
18 processing, there's a document that's out on
19 neptunium processing. There could be
20 questions on that just because it wasn't a
21 special nuclear material until 1985.

22 Neptunium was processed to produce

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1 pure neptunium oxide, metal, and metal alloys₃

2 The processes employed included dissolution,
3 anion exchange, precipitation, filtration,
4 calcination, conversion to fluoride, and
5 reduction to metal.

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

13 These residues were not only
14 generated from operations at Rocky Flats but
15 at Lawrence Livermore, and I believe Savannah
16 River as well had operations that -- I know
17 Lawrence Livermore did, but other sites
18 provided residues for Rocky to process.

19 Based on documents and
20 inventories, it appears most work with
21 neptunium was completed by the end of 1983.
22 If you look at when the neptunium processing

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1 report that was done by Rocky Flats, it was
2 done shortly after -- I think it was 1983 or
3 '84. But it was right in that time period and
4 operations are indicated in a past tense
5 manner.

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

14 Annual onsite inventories were
15 typically maintained around 1 kilogram. And
16 I emphasize on this that this does not address
17 throughput. You know, if you looked at the
18 inventory and then when we went to the NMMSS
19 database out in Hanford, you know, they
20 changed over the periods that we would see,
21 the quarterly periods or other periods we
22 would see, but it was typically maintained

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1 around the 1 kilogram time. 25

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

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

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

22 Neptunium exposures, in the

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1 neptunium processing document you will see
2 there's a statement in there that documents
3 indicate some early work was conducted in open
4 hoods, but most work was performed in glove
5 boxes.

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

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

19 And then we have gross alpha
20 bioassay samples existed up until 1970s. What
21 happened was, at the time gross alpha was used
22 as -- kind of used for workers that were

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1 working in both uranium and plutonium areas, 27

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

11 So workplace monitoring data, we
12 have found no workplace monitoring data
13 specific 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
22 apply that gross alpha from a neptunium

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1 exposure. 28

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

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

22 When we interviewed both of these

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1 individuals, you know, both of them had
2 concerns with being able to -- the actual
3 neptunium following through in the co-
4 precipitation process.

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

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

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

21 MR. RUTHERFORD: Well, you know,
22 and I'm definitely not the best at internal

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1 dosimeters, but I will say that they were
2 looking at, you know, uranium and plutonium
3 mostly. So the analysis was to focus, to get
4 the sample to a point where it would be easier
5 to see the uranium or plutonium.

6 Would you agree, Jim?

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

13 MEMBER MUNN: So basically we have
14 no gross alpha that is actually gross alpha?

15 DR. NETON: After certain dates.

16 MR. RUTHERFORD: Exactly. And
17 it's -- well, we can't be for sure it's all
18 gross alpha, exactly. It's kind of gross
19 alpha for plutonium and uranium. That's what
20 it --

21 MEMBER MUNN: And these folks who
22 put this together didn't have any real concept

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1 of what alpha emitters they were stripping out
2 of their sample? They're just saying they
3 don't know.

4 MR. RUTHERFORD: They don't know.
5 It could have been in there but they don't
6 know, because they weren't, you know, they
7 weren't looking at that. And when we talked
8 to both of them, they said, you know, we really
9 weren't looking for that.

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

12 MR. RUTHERFORD: Sure.

13 MEMBER MUNN: There's nothing in
14 my education that prepares me for gross alpha
15 not being gross alpha.

16 MR. RUTHERFORD: I understand.

17 DR. NETON: Well, but they had a
18 specific chemical procedure that would bring
19 out the plutonium and the uranium. They
20 didn't optimize it at all for anything else,
21 so it was optimized for precipitating out the
22 plutonium and uranium.

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1 MEMBER MUNN: When did they start
2 this and when did they stop it, if they ever
3 did?

4 MR. RUTHERFORD: Yeah, they
5 started it in 1961 and they stopped gross
6 alpha, period, in 1970. And our original
7 approach was we were going to look at using
8 the gross alpha up until that 1970 period, and
9 then, if we could use that up to the 1970
10 period, we would look at, is it feasible to
11 say that -- because after 1970 we really had
12 nothing to hang our hat on.

13 But we were looking at, can we use
14 that early period of gross alpha and say, based
15 on engineering controls and the program, that
16 we can extrapolate it to the later years? But
17 there ended up being two holes with that
18 problem, two holes with that idea, let's put
19 it that way. One, the gross alpha we couldn't
20 use.

21 The other end of it, when I went
22 to Hanford and looked at the NMMSS database

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1 and looked at the inventories, the inventories
2 didn't support that idea. Meaning that if
3 you're going with the idea that the controls
4 and everything are in place, it works if it
5 looks like the operations and everything were
6 constant and you were doing the same types of
7 things. But there were large fluctuations in
8 inventories after 1970 that I would struggle
9 saying that the activities stayed exactly the
10 same.

11 MEMBER MUNN: At Rocky Flats.

12 MR. RUTHERFORD: At Rocky Flats.
13 At Rocky Flats specifically, yes. And the
14 reason why I'm saying at Hanford -- and you
15 guys are probably wondering. The reason we
16 went to Hanford, Hanford now has an ability to
17 review classified documents electronically.

18 And so these classified documents
19 from the NMMSS database were sent to Hanford
20 for our review electronically, and from the
21 NMMSS database. And so I was able to look at
22 inventories of not only neptunium, but U-233

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1 and thorium in that classified environment. 34

2 MEMBER MUNN: And Rocky Flats
3 inventories of neptunium are not adequate for
4 us to determine a bounding dose on neptunium?

5 MR. RUTHERFORD: Well, you're
6 saying -- are you looking at a source model,
7 a source term model?

8 MEMBER MUNN: I'm talking about a
9 potential source model, yes.

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

13 MEMBER MUNN: Okay.

14 MR. RUTHERFORD: So we have little
15 to no personal area monitoring. Gross alpha
16 bioassay can't be used as a viable means. We
17 have too many different activities. And
18 here's where I get into why a source term model
19 is difficult.

20 You had wet, dry processes. You
21 have many different chemical forms that you
22 were dealing with, with the neptunium. It was

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1 alloy, it was oxide. It was, you know,⁵
2 nitrate solutions. And so it was many
3 different chemical forms. And then it was
4 processed in many different ways.

5 You know, they recovered the
6 residues, and there wasn't a single method for
7 recovering residues. There were three or four
8 different methods. There were different
9 methods for actually producing materials that
10 they used.

11 So with so many different
12 operations and the chemical forms being
13 different, it would be very hard to come up
14 with a source term model that would support
15 all these activities. Do you agree, Jim?

16 DR. NETON: Yes.

17 MEMBER MUNN: Well, I can
18 understand how it would be difficult to
19 identify, for example, a minimum. But I don't
20 understand why it would be difficult to
21 identify a maximum, regardless of the form,
22 regardless of the process. Neptunium is

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1 neptunium. 36

2 MR. RUTHERFORD: I agree.

3 MEMBER MUNN: And if you have an
4 adequate inventory, regardless of the process
5 and regardless of the form, you ought to be
6 able to establish a maximum. The only
7 question that resides then is, is the maximum
8 sufficiently bounding to be able to use it?

9 MR. RUTHERFORD: And I agree with
10 you. The only problem you've got is those
11 inventories were annual inventories. That
12 doesn't address throughput. It doesn't
13 address how much -- at the end of year or end
14 of the quarter they gave inventories of the
15 material. That's what was listed.

16 We don't have a mechanism. I mean,
17 there's probably a way, I'm not sure, to go
18 back and look at all the material shipped off-
19 site versus all the material that came onsite
20 to determine the throughput from the site.
21 But that's what it would take to determine the
22 throughput in order to come up with that

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1 bounding exposure scenario. Because you had
2 operations that would use 300 grams, but we
3 don't know how many times they did that, you
4 know, over a year, because like I said, you
5 know, they were producing material. They were
6 getting material. They were getting residues
7 from other sites. And so we have inventories
8 in different, specific time periods, but we
9 don't know the throughput between those time
10 periods. Does that make sense?

11 MEMBER MUNN: The probability that
12 it exceeded a kilogram is what?

13 MR. RUTHERFORD: You know, I just
14 don't know.

15 DR. NETON: But if you get to a
16 kilogram, I mean, it doesn't sound like a lot
17 of mass, but activity-wise it's substantial.
18 Hundreds of millicuries, I don't know, I
19 haven't done the calculation, but the specific
20 activity is pretty high.

21 So you have a very large amount of
22 potential for intake from this material. It

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1 wouldn't be like if you just had a kilogram of
2 uranium.

3 MEMBER MUNN: I understand.

4 DR. NETON: So this is not unlike
5 what we've encountered, what I would call the
6 exotics, at other facilities. I mean, it
7 turns out that Rocky Flats had some exotics
8 out there that we're not able to develop models
9 for as well. I mean, the neptunium was not
10 considered in the first Evaluation Report.

11 MEMBER KOTELCHUCK: Tell us a little
12 about where they got their neptunium before or
13 the raw material from that they processed.

14 MR. RUTHERFORD: I mean, most of
15 it was processed from residues or they
16 received it from other sites. And it wasn't,
17 you know, so good.

18 MEMBER KOTELCHUCK: So it was
19 already worked on at other sites?

20 MR. RUTHERFORD: Well, to a
21 degree. I mean, sometimes it was worked on,
22 you know, and sometimes they would receive it

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1 as a residue or a by-product in material, have
2 to extract from that by-product then get it
3 into the right form that they want to produce
4 the metal. Okay, so they fluoride it and so
5 on.

6 MEMBER KOTELCHUCK: So you could
7 not rely on how much, really, was coming in
8 because it was a residue within something
9 else?

10 MR. RUTHERFORD: Yes. And I could
11 -- you know, if I knew what percentage of that
12 material it came in and the quantity, and I
13 could come up with how much was produced, but
14 every shipment that comes in, doing that and
15 trying to come up with that would be really
16 tough.

17 That would be hard to do, I can
18 tell you. Just because, you know, I'd have to
19 go back and I'd find all the shipping records
20 of every time that residues were shipped to
21 Rocky Flats that contained neptunium, and then
22 from that determine how much, possibly, the

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1 neptunium was retrieved from that residues and
2 then processed.

3 And then you had neptunium that was
4 worked on the site and had residues picked up
5 onsite and reintroduced into the system as
6 well. I don't know what to add to that.

7 MEMBER MUNN: It's hard to believe
8 that all of the badging that was done and all
9 of the bioassays that were done are worthless.
10 It is just impossible for me to accept that
11 nobody can say anything about all of the
12 science that was done at Rocky Flats. It's
13 hard to accept that. If I have to accept it,
14 I guess I have to accept it.

15 MR. RUTHERFORD: I recommend, if
16 you get a chance, to read the interviews with
17 the two individuals. And these are very, I
18 mean, well-educated, top of the line --

19 MEMBER MUNN: I understand.

20 MR. RUTHERFORD: -- individuals.
21 I would recommend reading those, because --

22 MEMBER MUNN: I understand.

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1 DR. NETON: And neither indicated
2 there was any intention of monitoring workers
3 for neptunium.

4 MR. RUTHERFORD: And, you know, I
5 interviewed Leo Faust, who worked on the
6 program, who worked out at Hanford, and I'm
7 not one of -- I shouldn't say his name on
8 there, should I?

9 (Simultaneous speaking.)

10 MR. KATZ: You're okay.

11 MR. RUTHERFORD: And I interviewed
12 Leo because working at Hanford, you know, and
13 dealing with the same thing. And Leo said,
14 you know, we had small operations going on
15 with neptunium and our focus was not
16 neptunium. Our focus was the plutonium work
17 and the other work that we were doing onsite,
18 and so -- yes.

19 CHAIRMAN GRIFFON: But to argue
20 Wanda's side for a change.

21 MR. RUTHERFORD: Sure.

22 CHAIRMAN GRIFFON: I mean, did

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1 they not monitor for neptunium because they
2 felt like it was just not that big of a hazard
3 or that, you know, they had programs in place,
4 that potential doses were so small? I mean,
5 I think it --

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

8 MALE PARTICIPANT: I'm not sure
9 though. Well, maybe --

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

14 DR. NETON: You've also got to look
15 at the monitoring programs that were in place.
16 I mean, for example, the thorium strike
17 operations. If you look at that, they did
18 some monitoring there because they're worried
19 about the thorium issues.

20 But, you know, their conclusions
21 were that these were very small exposures
22 because they didn't exceed 50 percent of the

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1 MPC. And so that was the mentality then,
2 which was not to keep doses ALARA or, you know,
3 worry about health endangerment, but did we
4 exceed the maximum permissible concentration
5 in air that a person could breathe every hour
6 for a whole work year? I mean, so that was a
7 slightly different mentality.

8 MEMBER MUNN: But it wasn't a
9 reasonable mentality.

10 DR. NETON: I'm not saying it
11 wasn't, but then if that's your monitoring
12 mentality then how do you know why they did or
13 did not monitor the neptunium operations?
14 They could have said, look, this is a short
15 duration project. It could exceed a huge
16 amount, but it's only for ten hours so we're
17 not worried about it, as far as exceeding any
18 exposure limits. But how we would bound that
19 I don't know. I mean, it would be a
20 guesstimate at best.

21 CHAIRMAN GRIFFON: Well, get
22 through neptunium and then the other thorium.

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1 And then I have some questions on the thorium
2 strike stuff, and then we'll go back and have
3 some chance for questions.

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

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

19 Beginning in 1952, thorium was used
20 onsite in quantities small enough that
21 effluents were not routinely analyzed for
22 thorium. Thorium quantities vary from as

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1 little as none to as much as 238 grams in 4^q
2 given month --

3 DR. NETON: Kilograms.

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

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

16 The ingot work, the thorium strike
17 work, everything that was originally looked at
18 was post-1960. You know, our concern was we
19 want to look at and see -- we had indication
20 that thorium was onsite prior to 1960 all the
21 way back to 1952.

22 So based on interviews and document

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1 review, NIOSH decided to reevaluate the
2 thorium issue, especially for the early years.
3 We could not find any specific reports or
4 documents that supported other activities
5 occurring other than what were previously
6 identified.

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

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

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

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

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

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

22 Based on our inability to

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

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

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

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

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

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1 on in the early years associated with thorium,
2 And we didn't find anything other than what
3 was previously discussed in SEC-0030. There
4 was, 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
19 looking at this and -- there's changing in
20 inventories. You know, do we feel like what
21 we did under SEC-0030 is still appropriate?
22 And that's what we're trying to finalize right

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1 now. 50

2 CHAIRMAN GRIFFON: All right.

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

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

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

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

21 So that's still on our plate. We
22 have not had a chance to run that magnesium-

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1 thorium alloy issue down again. 51

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

9 MR. RUTHERFORD: Yes, I'd like to
10 keep this.

11 MS. BARRIE: Okay, thank you.

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

16 CHAIRMAN GRIFFON: What were the
17 activities, right.

18 MS. BARRIE: Okay, thank you.

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

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1 MR. RUTHERFORD: Yes. Magnesium
2 thorium alloy was back when we were doing an
3 evaluation of Dow Chemical in Madison. And
4 one of the operations for Dow was producing
5 magnesium-thorium alloy.

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

18 And so then the question came up
19 that, you know, that people believe, workers
20 believe that magnesium-thorium alloy was
21 shipped to Rocky Flats and used at Rocky Flats.
22 And so I know Terrie's given me at least one

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1 document in reference to this for us to look
2 at.

3 And so the question is, is if
4 magnesium-thorium alloy was shipped to Rocky
5 Flats and used at Rocky Flats, is there
6 exposure potential from that magnesium-thorium
7 alloy under Rocky Flats' issue that we need to
8 reconstruct? And so we're still running that
9 one down.

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

12 CHAIRMAN GRIFFON: Sure, Dan. Go
13 ahead.

14 DR. McKEEL: I just wanted to
15 clarify the new information about magnesium-
16 thorium that keeps this off the radar screen.
17 So what LaVon just said is basically true about
18 the original discussions related to SEC-0079
19 and Dow Madison. However, recently, within
20 the past year, Terrie Barrie got an anonymous
21 tip from a Rocky Flats worker who desires to
22 be anonymous that the use of the magnesium-

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1 thorium alloy plates at Rocky Flats was
2 specifically that it was used in, quote, "the
3 mod center."

4 And this person said it was used
5 in Building 881 and it was used on Pad 903,
6 and this is pretty much a quote from the
7 tipster, "to shield," or "bulletproof," I
8 think was the term they used, "semi-trucks and
9 railroad cars in the mod center."

10 Well, that led to a long chain of
11 events which has included high level
12 discussions with Department of Energy, Legacy
13 Management, with their environmental
14 management who has looked a little bit into
15 classified records.

16 And also research that we've done
17 on the Internet, where it's very easy to find
18 under historical engineering records that as
19 a matter of fact the mod center, which is
20 actually -- the name of that really is the
21 Transport Modification Center, and it was
22 located at least for awhile in Building 440 at

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1 Rocky Flats, and in fact the HAER Library of
2 Congress entry on the Internet clearly shows
3 a photograph of the room in Building 440.

4 It has railroad tracks running
5 through and a railroad boxcar sitting on the
6 tracks. And the legend to that, which I've
7 supplied to everybody -- NIOSH, the Board, the
8 Work Group, and Terrie and I have done that -
9 - clearly says that what was done in the mod
10 center at that room is to retrofit semi-trucks
11 and railroad cars with some kind of material.

12 Now, the HAER, which is an acronym
13 for the Historical Engineering Records
14 project, does not indicate exactly what
15 material was used in Building 440.

16 However, armed with that
17 information, which is highly specific and can
18 be immediately confirmed right now on the
19 Internet as giving credibility to that tip,
20 led us to petition Department of Energy, to
21 summarize a lot of work, to look harder,
22 including the classified records, to verify

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1 this now even more specific information about
2 how magnesium-thorium alloy, particularly HM
3 21A, HK 31A was used, and if it was used at
4 Rocky Flats.

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

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

22 And here I listened this morning,

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1 and specifically to hear whether that
2 particular set of new information was going to
3 be brought up, and it wasn't until right now
4 when Ms. Barrie had to bring it up.

5 So I don't know where the
6 priorities are, but I would say this is very,
7 very old business. I reiterate to you that we
8 have 11 sworn affidavits from different people
9 at Dow Madison who swore that they saw marked
10 shipments going to Rocky Flats of truckloads
11 of these large magnesium-thorium alloy plates.

12 And even I have wondered over the
13 years, what in the world could you use that
14 for? It's kind of hard to believe that that
15 was used in a nuclear weapon, per se, or that
16 they cut little pieces out to make little
17 parts.

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

21 However, when you hear that there
22 was a material used to bulletproof, and we

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1 don't know whether that means actually to
2 protect those rail cars and semi-trucks from
3 attacks with guns and missiles or whether it
4 actually means to shield them from the
5 radioactive material that we do know Rocky
6 Flats shipped away from that site by the
7 truckloads for many years, including up to
8 2006 when the site was finally decommissioned.

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

12 CHAIRMAN GRIFFON: Yes, you're
13 right, Dan.

14 DR. McKEEL: -- and once and for
15 all, shed some light on that pretty clear-cut
16 testimony from many workers.

17 CHAIRMAN GRIFFON: You're right,
18 Dr. McKeel, and thank you for adding to that,
19 because that's why I asked LaVon to -- we're
20 not going to lose track of this issue. But
21 that's why I asked LaVon to give a little
22 background, and thank you for adding that.

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1 Can I ask one question, Dan? 59

2 DR. McKEEL: Sure.

3 CHAIRMAN GRIFFON: Did the tipster
4 give any time frames on when these activities
5 were occurring?

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

7 CHAIRMAN GRIFFON: Not really.
8 All right.

9 DR. McKEEL: No, we don't have a
10 handle on that.

11 MS. BARRIE: We were thrilled to
12 get --

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

16 MR. RUTHERFORD: Yes, I want to
17 assure Dan that I had no intentions of glossing
18 over the magnesium-thorium issue. That issue
19 is on our plate, we're following it, and as
20 I've told Terrie, that we will look into that.
21 And later on in the discussion that would have
22 came up.

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1 DR. McKEEL: I understand that 60
2 LaVon. I simply thought it was very important
3 to get that on the official record at this
4 point.

5 CHAIRMAN GRIFFON: Yes, thank you.

6 DR. McKEEL: Thank you.

7 CHAIRMAN GRIFFON: That was good,
8 yes. Can I just go back to the thorium strike
9 information? I mean, I just wanted to get
10 some clarification on some things, because,
11 you know, I think it's important that we
12 understand -- it seems like it's definitely a
13 change in position from what you had in the
14 first SEC.

15 And so, you know, when I read
16 things like you were only able to find 17 of
17 18 claimants, I mean, I could see that
18 presented differently saying we found 17 of
19 18, you know, and therefore we've got
20 everybody monitored pretty much, you know, and
21 the one was a supervisor and likely not
22 involved.

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1 MR. RUTHERFORD: No, he wasn't. 61

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

4 DR. NETON: I agree. That's a
5 little bit confusing when it's presented that
6 way.

7 CHAIRMAN GRIFFON: Okay.

8 DR. NETON: In my mind, the idea
9 is that you really don't know if everybody was
10 monitored. You had no routine monitoring
11 program for this that we know of. They
12 happened to have uranium bioassay. Whether
13 that uranium bioassay was specifically for the
14 U-233 operations or they just sort of
15 coincidentally had uranium bioassay because
16 they were working in an area that required it,
17 we don't know.

18 And then you couple that with the
19 fact that the coworker model that we have is
20 not driven by these unique activities, this
21 high specific activity U-233.

22 CHAIRMAN GRIFFON: Right.

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1 DR. NETON: We also have to
2 remember that most of our focus on the U-233
3 operations was the thorium strikes. That was
4 the focus. And we really didn't pull the
5 thread on the U-233 operations, which was
6 really more of an ongoing concern.

7 Thorium strikes occur, as you know,
8 periodically because of the contaminant it
9 would grow in. And whether there was two or
10 five, you know, I don't know how many there
11 were, but the reality ongoing was this U-233
12 sort of production operation where they would
13 make -- I don't know what they made. And I
14 don't know how many of those operations
15 actually occurred.

16 Do we even know how many times
17 they, you know -- we know that it occurred in
18 a number of buildings and it's essentially a
19 mini --

20 CHAIRMAN GRIFFON: So we sort of
21 overlooked that in our first --

22 DR. NETON: Exactly. You know,

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1 because the thorium strikes was really the
2 focus.

3 CHAIRMAN GRIFFON: Yes.

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

8 CHAIRMAN GRIFFON: Oh yeah. Okay.

9 DR. NETON: Like I said, that's the
10 idea here.

11 CHAIRMAN GRIFFON: Right. And I
12 think that's also going to be important. I
13 mean, when you make the presentation, and it
14 sounds like you're going to write this up and
15 make your presentation at the full Board
16 meeting.

17 DR. NETON: Yes.

18 CHAIRMAN GRIFFON: And I think it
19 would be good to lay out, like, there was that
20 previous position but, we learned, we have new
21 information.

22 DR. NETON: Yes.

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1 CHAIRMAN GRIFFON: I think the
2 Board needs to understand that.

3 DR. NETON: It's such a new
4 investigation into it. I mean, I think the
5 original ER is probably fairly silent on
6 reconstruction of U-233.

7 CHAIRMAN GRIFFON: That's right.
8 I think you're right.

9 DR. NETON: I don't recall -- I
10 think it was all focused on thorium strikes
11 that involved U-233, but I raised the question
12 early on. If I remember it, I said, well,
13 heck with thorium strikes, how are we
14 reconstructing U-233? And then we kept
15 pulling that thread and eventually it led to
16 this, well, we don't know.

17 CHAIRMAN GRIFFON: Okay. I just
18 think we need to be clear. We'll come back to
19 this.

20 MR. RUTHERFORD: I'll make sure
21 that's said.

22 CHAIRMAN GRIFFON: Yes. Go ahead,

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1 David. 65

2 MEMBER KOTELCHUCK: On the
3 neptunium, basically you have the annual
4 inventory about kilograms. And what you said
5 was, in terms of what was coming into the
6 plant, that you used the word "hard." It was
7 hard to estimate what was coming in.

8 I wonder if it was possible to
9 sample a couple of particular years to see how
10 much was coming in. I would be more persuaded
11 about the inability to use sourcing if I
12 thought that in fact a lot more was coming in
13 than a kilogram in the course of the year.
14 Because then the one kilogram wouldn't mean
15 that much, or wouldn't be a good estimate of
16 the sourcing there.

17 And I realize there are lots of
18 different ways that they're using the
19 neptunium. But, again, if I thought that
20 there a number of years where the one kilogram
21 represented only a small fraction of the
22 source material that was there that year, then

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1 we really don't know anything about the
2 neptunium.

3 MR. RUTHERFORD: Yes, and one, I
4 really don't think that's possible and I'll
5 explain why.

6 MEMBER KOTELCHUCK: Okay.

7 MR. RUTHERFORD: One, I don't know
8 if you heard me mention or if I mentioned it.
9 Maybe I was just thinking it. Neptunium did
10 not become a special nuclear material until
11 roughly 1984-85, all right.

12 One of the documents that we read
13 was, it said that updating the databases to
14 get specific inventories of neptunium once it
15 became a special nuclear material would be
16 very difficult and we would question the
17 accuracy.

18 Now I say that because, you know,
19 so, one, I have a little question with the
20 inventory that we already have because of that
21 document. And the other issue is, I mean
22 there's probably records that exist but I

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1 don't know how you would be able to take a~~l~~^l
2 the records for a given year of shipments
3 coming in. You would have to break down and
4 find out how many of those shipments have
5 neptunium.

6 MEMBER KOTELCHUCK: Because it was
7 not listed as neptunium, it was a contaminant
8 of something else?

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

15 MR. FITZGERALD: LaVon, this is
16 Joe Fitzgerald.

17 MR. RUTHERFORD: Yes.

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

22 And I think one thing that LaVon

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

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

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

18 DR. MAURO: This is John Mauro.
19 Can I ask a question related to this issue
20 related to trying to bound exotics that we run
21 into quite often?

22 And I recall on a number of

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

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

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

22 DR. NETON: John, this is Jim. I

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1 don't recall ever using that type of an
2 approach for an exotic. I know we had, those
3 documents were more specifically for routine
4 operations, but I could be wrong.

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

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

12 (Simultaneous speaking.)

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

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1 (Simultaneous speaking) 71

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

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

20 And since it wasn't accountable, a
21 lot of that wasn't accountable, how much went
22 out in waste, how much was actually recycled

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1 back through there? The number you see may be
2 what was the final product, but they actually
3 would have had substantially more than that at
4 the other end when they first started.

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

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

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

22 MR. RUTHERFORD: No, it seems

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1 coincidence, yes. It is coincidental, yes. 73

2 (Simultaneous speaking)

3 MR. FITZGERALD: One thing I would
4 add -- this is Joe again -- you know, on
5 neptunium more than the U-233 is, clearly, the
6 major production operations phased out about
7 that time but there remained an R&D and
8 analysis function that employed neptunium
9 beyond '83.

10 So that cut point is something that
11 I guess one could examine when this thing comes
12 to sort of closure, to make sure on that cut
13 point. But I think certainly it definitely
14 transitioned in '83.

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

21 MR. RUTHERFORD: How you define a
22 Class.

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1 CHAIRMAN GRIFFON: Is it going to
2 be all workers? Is it going to be -- you know,
3 and we see how much we struggle with trying to
4 do the building kind of -- right. SECs,
5 right.

6 MR. RUTHERFORD: If you look at how
7 many different buildings that we've identified
8 between the U-233 and the neptunium, and the
9 fact that maintenance workers moved between
10 buildings and the work that they would have
11 done on the glove boxes in trying to define a
12 smaller Class, I think we've concluded it
13 would be all employees.

14 (Simultaneous speaking)

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

17 CHAIRMAN GRIFFON: Okay. I would
18 support that, yes.

19 DR. NETON: I think we've learned
20 from past experience that it's very difficult
21 to administer --

22 CHAIRMAN GRIFFON: We've all

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1 learned that. Okay, all right. Any other
2 questions?

3 MEMBER KOTELCHUCK: I mean, the
4 argument on neptunium about the operations I
5 recognize, I mean because it just seems like
6 the neptunium exposure is in many different
7 forms, right? Airborne, vapors from liquids,
8 et cetera, liquid intakes. I could understand
9 that.

10 And I guess I didn't catch the
11 argument that not just that it was hard. Hard
12 is not a reason --

13 (Simultaneous speaking)

14 MEMBER KOTELCHUCK: Almost, but
15 really difficult to estimate reliably, I
16 assume, it's in there.

17 MR. RUTHERFORD: I'll work on that
18 portion of my presentation.

19 MEMBER KOTELCHUCK: Well, I mean,
20 even if I saw years where you might identify
21 a big shipment of something where you could
22 reasonably estimate the neptunium input into

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1 the facility and that number was far greater
2 than a kilogram, that to me would be persuasive
3 evidence that not only are the operations
4 difficult, which I will accept, but that the
5 sourcing also is unreliable.

6 I don't know if that's possible,
7 but that would be persuasive evidence to me.

8 MR. RUTHERFORD: Okay.
9 Recognizing that uranium and the U-233 issue
10 and the neptunium issue, the years are
11 virtually identical coincidentally as Mark
12 pointed out, the one is, I believe, '62 through
13 '83, and the other is '64 through '83.

14 CHAIRMAN GRIFFON: Any questions
15 on the line? Any follow-up, Phil, or --

16 MR. FITZGERALD: This is Joe. I
17 just have a question on when we might see the
18 actual White Papers on those two.

19 MR. RUTHERFORD: Well, Joe, we're
20 not going to have a White Paper on those.
21 We're going to issue a revised --

22 MR. FITZGERALD: Oh, I'm sorry,

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1 the revised ER. 77

2 MR. RUTHERFORD: We're working to
3 have that, and as I mentioned in the email it
4 probably will not be available until about two
5 weeks prior to the Board meeting. It's just
6 pulling all that information together and
7 getting the report out, and getting it through
8 classification review.

9 CHAIRMAN GRIFFON: So that's not
10 too far away.

11 MR. RUTHERFORD: No. No, it's not
12 too far away at all.

13 DR. NETON: Everybody's decided
14 neptunium, uranium. And thorium is still
15 being evaluated. That's a little bit harder
16 to --

17 CHAIRMAN GRIFFON: Well, and
18 that's why I asked about the years for the
19 other, especially the magnesium-thorium, and
20 if --

21 DR. NETON: Yes, because --

22 (Simultaneous speaking)

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1 CHAIRMAN GRIFFON: -- fell under
2 this window it may not amount to that much.
3 And I think that might likely be the case with,
4 I mean I'm getting ahead of myself but the
5 tritium question, you know, depending on how
6 this SEC falls, right.

7 DR. NETON: Some of the other
8 tritium issues would be subsumed --

9 (Simultaneous speaking)

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

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

18 DR. NETON: Talk about the White
19 Papers?

20 CHAIRMAN GRIFFON: -- and
21 introduce some of the White Papers, right.
22 Okay.

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1 (Whereupon, the foregoing matter
2 went off the record at 10:21 a.m. and went
3 back on the record at 10:36 a.m.)

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

7 CHAIRMAN GRIFFON: Okay, so I
8 think, you know, the next items will be the
9 White Papers, and maybe we can just do this
10 back and forth, you know, start with the
11 tritium issue maybe, or whichever one you want
12 to do first, LaVon. And then the SC&A sort of
13 say what they'd, you know, hook onto these
14 things.

15 MR. RUTHERFORD: What I had
16 planned was that I thought SC&A was going to
17 give their reviews of the White Papers and
18 then we would talk about the issues that they
19 had come up with. Then I'll also talk about
20 the follow-up efforts that we did as well.

21 CHAIRMAN GRIFFON: All right.
22 Well, if Joe -- yes, that's fine. Joe, if you

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1 want to start, then either way, yes. 80

2 MR. FITZGERALD: Yes, Mark, I'd
3 like to suggest that perhaps the White Paper
4 authors or LaVon could basically review the
5 binning on the separate pieces of the tritium
6 paper, for example, the '73, '74 to '75, then
7 pre-'73, and have discussions in those parts.
8 That's kind of the sequence that we went
9 through.

10 I think it would allow them in
11 their own words to describe, you know, what
12 approach they took, and then our paper
13 responds to that approach as written. To sort
14 of lead in to what we evaluated, rather than
15 having us basically describe the approach they
16 took. That might be a --

17 (Simultaneous speaking)

18 CHAIRMAN GRIFFON: Back to my
19 initial format.

20 MR. RUTHERFORD: Okay, that's fine
21 with me. And I know that Jim Bogard who is
22 one of the co-authors, and Elizabeth Brackett

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1 and Mutty Sharfi, that all three co-authors
2 are on so they will quickly correct me or
3 provide additional information as needed when
4 I get into this.

5 So basically the tritium
6 exposures, initially the Evaluation Report had
7 identified that we would use the 1973 incident
8 as our bounding scenario for, at that time for
9 all exposures to tritium.

10 We'd come up with a worst case
11 scenario, taking the worst case bioassay
12 sample from the '73 incident, and originally
13 came up with a maximum dose of 700 millirem.
14 From that then, in the White Paper we went
15 back and looked at, was there ways that we
16 could refine this? Instead of using the 700
17 millirem over the whole time period, was there
18 ways that we could break this down?

19 So we looked back and said, well,
20 there's a clear cut point, 1973, when the
21 incident occurred. There's a cut point in the
22 amount of data we have. There's a cut point

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1 in this big incident occurring. 82

2 And so we decided to break the
3 exposure periods down into a pre-1973 period,
4 like roughly 1959 to 1973, if you assume 1959's
5 the first year of exposure, and then 1973 when
6 the incident occurred, and then post-1973 when
7 we had additional bioassay data.

8 And so the White Paper breaks down
9 into the pre-1973 period. That was a time
10 period when we had very few bioassay samples.
11 I think a total of six, if I remember, four or
12 six, something like that non-specific as to
13 what they were. It wasn't specific as if they
14 came from an incident or such.

15 So we had the '59 to '73 period.
16 We had little to no modern data. We have
17 indications that bubblers were in use. Based
18 on our interviews that we had, the classified
19 interviews, we had identified a potential
20 exposure of returned units from Pantex or
21 other sites, mainly Pantex, and shipping
22 containers, opening up these containers and

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1 having a release from these shipping
2 containers.

3 So recognizing that event, we
4 identified this 1974 incident. That was where
5 they opened up the container, had a release,
6 the release was recognized here today. We had
7 monitoring data, bioassay data, and we used
8 that release scenario as our bounding scenario
9 all the way from '59 to '73.

10 Our basis for that being a pretty
11 good incident to use was when you look at the
12 timeline of when that incident occurred. And
13 I believe it was like the April to September
14 period or somewhere around there, I can't
15 remember for sure.

16 The incident was being monitored,
17 but we do not believe that the shipping
18 controls, or the controls for shipping
19 containers had really changed since the '73
20 incident. The '73 incident, remember, was
21 processing a unit. It was not a shipping
22 container being received and opened up.

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1 And so the focus wasn't necessarily
2 on contaminated shipping containers.
3 Contaminated shipping containers, they started
4 monitoring these shipping containers in early
5 1974, if I remember by the letter correctly,
6 and they went through a campaign of monitoring
7 these shipping containers.

8 In late 1974, after the '74
9 incident is when they sent out the letter to
10 the other sites that, you know, basically that
11 they couldn't accept potentially contaminated,
12 tritium contaminated containers because they
13 found that some of these containers contained
14 low levels of contamination.

15 So we felt like this incident was
16 a pretty reasonable scenario for a chronic
17 release in the pre-1973 period, and since we
18 could not define the numbers of releases that
19 could have occurred, we assumed one occurred
20 per day in coming up with our internal exposure
21 approach for that period. So that was the
22 pre-'73 period in a nutshell.

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1 1973, we used the actual '73
2 incident, and the '73 incident we actually
3 went back and took the bioassay data and came
4 up with a, we fitted the data based on each
5 bioassay and came up with a refined analysis,
6 and I think our numbers came up to around 84
7 millirem per year versus the 700 that we had
8 originally identified.

9 And then the post-1973, we have
10 bioassay data that, and if I remember
11 correctly, roughly 75 bioassay samples in the
12 '74-75 time period. We did a coworker
13 analysis based on that data, and that coworker
14 analysis identified that there was no
15 exposure, or zero. And so post-1974 we would
16 apply zero for that period.

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

19 MR. BOGARD: No. That sounds
20 fine.

21 MS. BRACKETT: Great, thank you.

22 MR. SHARFI: Agreed.

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

3 MR. FITZGERALD: No, that's very
4 helpful. And what we did was focus on those
5 three time periods. We kind of took the order
6 a little differently, but we spent some time
7 looking at the -- and we've looked at this
8 before but not perhaps in this detail with the
9 advantage of your analysis.

10 So what we want to do is take '73
11 first, and then, for making sense since that
12 was where most of the data started, where we
13 got the initial data that's been used in the
14 past and go from there.

15 John, Bob?

16 DR. MAURO: Yes, Joe, I'm here.

17 MR. FITZGERALD: You want to throw
18 out the first ball?

19 DR. MAURO: Okay, I'll carry the
20 relay race. I'll take the first leg. We did
21 start in '73, because I think that's a pivotal
22 year where the realization was that yes, it

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1 looks like there might be tritium problems. 87

2 You know, prior to '73 there was
3 this assumption -- I don't know how close the
4 Board is with regard to these matters, but it
5 might help, a little background. I'll try to
6 be brief.

7 The general sense was prior to '73
8 there really weren't any substantial tritium
9 issues. That the material, the plutonium that
10 was arriving was relatively clean of any
11 tritium. Any tritium was removed.

12 However, what happened was the
13 State of Colorado had an ongoing water
14 sampling program in Walnut Creek, a receiving
15 water stream from the facility, and you could
16 look at the data. There's data that they have
17 showing the concentration of tritium in Walnut
18 Creek as a function of time as reported by the
19 Colorado Department of Health.

20 Well, sometime in April, I believe
21 it was, '73, it became apparent that there was
22 a spike. There was a high level of tritium

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1 and that triggered a lot of research into
2 okay, what happened?

3 And really, I'm repeating a lot of
4 the material that's already in the reports,
5 but I think it's important to understand that
6 this was a sea change. That is, in '73 it
7 became apparent that the material that was
8 arriving at Rocky could, not necessarily
9 often, but certainly could contain elevated
10 levels of tritium which could expose workers.

11 So a very large investigation took place
12 to look into this issue. And what happened
13 was that in '73 a major follow-up
14 investigation took place that identified that
15 yes, it was a shipment, I think, that came
16 from Los Alamos that had a problem.

17 Yes, and they went ahead and took
18 bioassay samples from 250 workers, very good
19 follow-up urine samples. Did liquid
20 scintillation detection on the samples, and
21 they identified five individuals that had a
22 detectable level of that were of concern, I

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1 think they call them action levels. 89

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

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

18 The bioassay sampling began
19 several months later, September time period.
20 So what we have here is people that might have
21 been exposed earlier, April, May, June, their
22 bioassay samples were not collected until, oh,

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1 several months later, a September time frame
2 let's say.

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

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

18 They actually plot the
19 concentration of tritium in urine as a
20 function of time when they started sampling,
21 let's say September. And they say okay, given
22 this concentration that we're seeing they

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1 could back-extrapolate to the earlier time
2 periods of what the concentrations might have
3 been, and go all the way back to April in some
4 cases, what there might have been. And you
5 can do that and it's easily done.

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

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

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

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1 bound or understand what the high end
2 exposures might have been from this incident.

3 And by the way, we do believe by the way
4 that this incident was a one-of-a-kind,
5 because in other words we don't think
6 incidents of greater magnitude might have
7 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
12 twice a month, from the data I was looking at.
13 So they would have picked it up if something
14 big like this happened. Big, I'll call it big,
15 relatively 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
19 incident that had occurred. And now here at
20 NIOSH, and the Atomic Energy Commission at the
21 time and also later now NIOSH try to
22 reconstruct the doses to the workers from this

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1 incident.

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

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

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

19 Now when we look at the AEC
20 reconstruction of this person's dose, what
21 they say is, listen, you know, it's very
22 difficult to predict what this person's dose

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1 is because we're back-extrapolating, and we
2 really don't know when his exposure occurred.
3 It's hard to predict that.

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

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

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1 So what we, I guess, we're having
2 a little difficulty with is that gee, it seems
3 to me that if you wanted to place a plausible
4 upper bound on what the highest exposure might
5 have been to this worker, I'm only talking D
6 now, I would have said it's not 72, it's
7 probably more like 2 rem. Not 72 millirem,
8 but 2 rem.

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

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

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1 out is, we understand the process you went
2 through and we agree with the whole story
3 that's told, but we're coming out with numbers
4 that are quite a bit different than the numbers
5 you're presenting in Table A-5, which I
6 believe are the basis for the numbers that
7 you're going to use to assign doses to workers
8 for 1973. And so I guess that's the first
9 issue that perhaps we should talk about.

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

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

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

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1 to get our paper out. 97

2 So our White Paper was moving
3 through the system, through DOE clearance, and
4 in the interim we all agreed amongst
5 ourselves, you know, we probably should go
6 back to the original source document, the
7 source data, the bioassay results, and see if
8 we can match these numbers. And it wasn't
9 until yesterday.

10 So quite frankly, when you read our
11 paper, our paper regarding 1973 is very
12 supportive of your work.

13 MS. BRACKETT: That's what I
14 thought.

15 DR. MAURO: And it was, until we
16 said, listen, let's go back and do some number
17 crunching and go grab some numbers, and lo and
18 behold. So I'm sorry to spring this to you in
19 this manner, but we are troubled by the fact
20 that gee, we're coming, and not only us, but
21 ironically when I did my calculations it
22 wasn't until later I realized, gee, I came up

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1 with 2 rem. And that's exactly an upper bound
2 for Case D. And by the way that's what the
3 AEC report came up with.

4 MR. STIVER: Yes, this is John. I
5 think the source of the sort of comment at the
6 end of that review where it points out that we
7 were troubled by Case D because we did see the
8 700 millirem as a chronic exposure for one
9 quarter, and that's what sort of precipitated
10 the, you know, this doesn't quite add up.

11 MS. BRACKETT: Right. Well, I
12 believe I can explain the discrepancy, and I
13 thought that it was described in this paper.
14 But the AEC paper was done in the '70s. And
15 from what John has said, I gathered that you're
16 just, you said you were doing a hand
17 calculation so you're probably just assuming
18 a ten-day --

19 DR. MAURO: Yes, as simple as that.
20 Yes.

21 MS. BRACKETT: But that's not the
22 correct model anymore. And there's a 40-day

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1 component, which if you're only looking at the
2 samples collected within the week or two after
3 the intake occurred then the use of just strict
4 ten days is fine and you'll get about the
5 correct answer.

6 But going back to the '70s, they
7 hadn't followed the tritium amount long enough
8 to see -- it's a small, I don't remember, I
9 think it's a few percent. But when you start
10 collecting samples months after an occurrence
11 then --

12 DR. MAURO: Okay.

13 MS. BRACKETT: -- 40 days makes a
14 difference. And so that's why my values don't
15 match theirs, because of that 40-day component
16 that they don't account for, and I'm guessing
17 that's why they don't match yours. Case D was
18 the one that had the most subjectivity in it,
19 I believe. They had the fewest number of
20 samples, and they were kind of all over the
21 place.

22 So that one definitely is a bit

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1 more subjective as to what the best fit is 100

2 but --

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

8 MS. BRACKETT: Yes. And that is
9 the current ICRP model and that's what's in
10 IMBA if you use IMBA to do it.

11 DR. MAURO: Okay, but let me ask
12 you this now. Why would you assume that at
13 that point in time following this intake that
14 occurred over several days that, you're saying
15 that you're into this slower excretion rate
16 component as opposed to the ten-day half life
17 component. It's not intuitively obvious to me
18 that you know that to be the case. And I'll
19 tell you why I say that now.

20 If you look at the graphs that are
21 presented, this is interesting now. If you
22 look at the graphs that you provide in your

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1 report for A through D or H, I forget, ~~the~~
2 slope at that point looks like a ten-day half
3 life.

4 And that's what brought me there.
5 I said gee, it looks like, you know, I look at
6 those numbers. I don't know if I have the
7 graph here but I won't burden you with that.
8 But the trigger for me was I looked at it and
9 the fit for a lot of the data looked an awful
10 lot like a ten-day half life. Because
11 remember, the data were collected, it looked
12 like every few days out for about a couple of
13 weeks.

14 And the slope was, you know, in ten
15 days went down by about a factor of two. So
16 it looked like you were in the mode of
17 clearance at that point in time which was still
18 in the ten-day half life mode of removal and
19 not the slower removal rate that might occur
20 at the back end.

21 DR. NETON: John. John -- oh.

22 MS. BRACKETT: Right. It's not

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1 like, it doesn't do ten days and then at some
2 point switch to 40. It's just they're both
3 all, you know, apart at the same time.

4 DR. NETON: John, this is a two-
5 part clearance model, and so you fit the data
6 using the two-part clearance model. It has
7 nothing to do with the early data being ten-
8 day half lives. I mean it's a two-part model.

9 DR. MAURO: Yes. Well, I hear
10 what you're saying, but I'm just looking at a
11 graph right now. And you follow it for the
12 time period and the slope is a ten-day half
13 life. So you're saying that that slope that
14 I'm looking at for the time period that the
15 bioassay samples were taken --

16 DR. NETON: Is correct.

17 DR. MAURO: -- is not the slope
18 that was experienced earlier. It was
19 something different. It was flatter.

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

22 DR. MAURO: And it still is when

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1 you get to the back end. 103

2 DR. NETON: How do you know that?

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

6 Are you looking at that? I'm
7 looking at Figure A-4. I just happened to
8 pick this one. They all look like this. This
9 is Case B as in Boy. And I'm looking at the
10 line and I'm saying, okay, over a ten-day
11 period look like you've got about a factor of
12 two drop in the excretion rate, so it looks
13 like you're in a ten-day half life mode. And
14 so I just went back on that basis.

15 Now I hear what you're saying that
16 the model's more complex, but the data belie
17 that.

18 MS. BRACKETT: Well, look at the
19 fit. I mean I don't want to argue with you
20 what you think the slopes are, but the model
21 is the model and that's what was used to do
22 the fit. And you can see, and this is a semi-

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1 log file and not a -- 104

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

8 MS. BRACKETT: Well, okay. But if
9 you look at the overall plot it looks like a
10 straight line, but this is not a linear plot.
11 So it's not dropping linearly.

12 DR. MAURO: No, I understand what
13 you're saying. But I'm just looking at the
14 reading on Day 169, and you've got a 1.5 times
15 ten to the fifth in this case, and then I go
16 to Day 179 and I'm down considerably.

17 So I'm just looking at, it looks
18 like about that you've got a factor of two
19 reduction over ten days. Now am I thinking
20 wrong about this? I mean I'd be the first to
21 admit I might be thinking wrong about it, but
22 it seems pretty straightforward. You're in a

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1 ten-day half life line here and that goes for
2 every one of these figures.

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

8 MR. RUTHERFORD: When you go into
9 IMBA these aren't every day plots. So they're
10 connecting the dots only calculated on the
11 individual bioassay points.

12 DR. MAURO: Yes.

13 MR. RUTHERFORD: You have to
14 understand it's connecting two points with a
15 straight line. This isn't fitted with every
16 day, so you don't actually see how the curve
17 goes in between points.

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

22 DR. MAURO: Yes.

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

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

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

10 DR. NETON: Well, that's what
11 we're using.

12 DR. MAURO: I understand what
13 you're saying.

14 MS. BRACKETT: That is what you're
15 saying.

16 (Simultaneous speaking)

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

21 DR. NETON: But your eyeball fit
22 is not going to show you that John. You need

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1 to go back and look at the IMBA. I think ~~you~~
2 need a little more inspection of the data than
3 just an eyeball fit.

4 CHAIRMAN GRIFFON: Yes, that's all
5 I'm asking for, John --

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

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

11 DR. MAURO: Okay.

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

15 DR. MAURO: Yes, I understand.
16 Well, anyway that's where we are, and I'd be
17 more than happy to take a, run the data with
18 IMBA, I'll load up the data with the points
19 and see what happens then.

20 CHAIRMAN GRIFFON: That's good.

21 MS. BRACKETT: Well, and just to
22 caution, IMBA is tricky with tritium because

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1 you have to add in some extra, you have to do
2 some finagling to get it to run urine samples.

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

6 MS. BRACKETT: Yes, and I think we
7 have the direction on it. It will do whole-
8 body, so you have to convert whole-body to use
9 it for urine so, but yes, I can --

10 CHAIRMAN GRIFFON: If you just
11 send the runs that will give him a guideline
12 too.

13 DR. MAURO: But could I ask you, I
14 mean I will do that but can I ask you
15 something? And this brings me to what my
16 common sense -- just look at the dots and where
17 they are as a function of time for all of these
18 cases and ask yourself, if I'm going to back-
19 calculate, you know, why would I believe that
20 the slope is going, as the dots themselves,
21 where they show up gives you an indication of
22 the rate at which this is declining.

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1 And you're saying that the rate ¹⁰⁵
2 which it's declining is different in the
3 earlier models than it is here. I mean that's
4 what you're saying, and that's what you're
5 saying IMBA says. And, you know, I want to
6 think about that. Think about that a little
7 bit too, I mean whether that makes sense or
8 not.

9 MS. BRACKETT: That's what all of
10 the models are. There's always different
11 parts. It's not that for awhile it's ten days
12 and then for awhile it's 40. They're both
13 simultaneous.

14 DR. MAURO: Yes.

15 MS. BRACKETT: It's just that
16 after awhile the 40-day would become more
17 obvious because --

18 (Simultaneous speaking)

19 MS. BRACKETT: -- will be, you
20 know, have less of an impact. And so it's not
21 --

22 MR. STIVER: This is John Stiver,

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1 if I could just jump in for a second. Why
2 don't we just go ahead and we'll have Joyce
3 take that data, your runs, and she could either
4 use IMBA or AIDE, and do her own independent
5 analysis.

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

8 (Simultaneous speaking)

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

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

12 CHAIRMAN GRIFFON: So Joe, maybe
13 you can tee up your next --

14 MR. FITZGERALD: Yes. Okay, so
15 basically the '74-75, which is the data source
16 for the proposed coworker model that would be
17 used, I guess, again for the pre-'73 doses
18 from tritium is something that we also looked
19 at in terms of the 70 data points. And John,
20 do you have a second baseball?

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

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1 CHAIRMAN GRIFFON: He's still got
2 a good arm.

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

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

14 So a program was mobilized where
15 what was done as I understand it is, one out
16 of every ten bioassay sample that was taken
17 for the purpose of plutonium urinalysis was
18 sent off for tritium analysis. So you
19 collected data, and it turns out it was 75
20 people that were captured in that program.

21 So it was an effort to say, listen,
22 let's keep an eye on this tritium business and

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1 see if we come up with anybody that's something
2 unusual. And out of that and out of those 75
3 measurements, now granted, as you point out
4 correctly, those 75 people that were measured
5 ended up, you know, about one sample, I think,
6 per year. So it wasn't that you had people
7 being followed closely.

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

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1 were collected, specifically for that
2 incident.

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

9 When I looked at the data for the
10 1974 incident follow-up it appeared that there
11 was a real potential for at least some of the
12 workers that were involved to have experienced
13 doses in excess, have concentrations in urine
14 and that may have inhaled tritium at levels
15 that could have given more than a few millirem
16 from that incident.

17 I'll say one millirem, two. It's
18 not big, don't get me wrong. We're talking
19 about small numbers here. But it's the
20 thinking, the logic sequence that eludes me
21 here now. So what we have is two datasets,
22 and please correct me if I'm wrong if I'm

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1 misrepresenting this, but we have ~~two~~
2 datasets.

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

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

20 MR. BARTON: John?

21 DR. MAURO: Yes.

22 MR. BARTON: Could I interrupt you

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1 here? This is Bob Barton. 115

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

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

12 DR. MAURO: Right.

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

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1 their chronic excretion rate for that entire
2 year. Am I correct so far?

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

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

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

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

22 And then even then there was two

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1 cases afterwards in the data afterwards, ~~one~~
2 case in 1978, I know, and one case in 1981,
3 where if you use the OTIB-11 methodology with
4 the assumption of a constant excretion pattern
5 you would get doses that are, you know, less
6 than ten millirem but still above one
7 millirem. So I guess that's where I became
8 troubled with using this dataset to sort of
9 say, you know, there was no exposure
10 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
17 the workers for that year. I guess I'd ask
18 for some clarification on that because that
19 may be why, you know, if you look at the 95th
20 percentile maybe you're just under one
21 millirem, but if you actually look at the
22 highest exposed in that cohort of population

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1 you will get small doses, really, I mean we're
2 talking a couple of millirem but definitely
3 not zero.

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

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

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

21 So it's a layered problem. It
22 doesn't seem that there is a relationship

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1 between the cohort model of '75 and the follow
2 up investigation of the incident that occurred
3 in August.

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

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

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

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1 this leap that went from what took place in
2 '74-75, and then bring that somehow and apply
3 it to how are you going to reconstruct doses
4 pre-'73. You know, it just doesn't line up
5 for us, for me anyway.

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

16 And so the idea here is that, okay,
17 if we had this release, okay, if these releases
18 occurred pre-1973, and we believe that the
19 1974 incident that controls had not been
20 adjusted, and it was probably that yes, there
21 was more monitoring in place in 1974 but the
22 containers coming in had not changed, in our

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1 opinion the sites had not, the information
2 that we've seen so far hasn't supported that
3 the sites had really changed in doing
4 additional work to ensure that shipping
5 containers and shipments coming to the sites
6 were going to have any less contamination at
7 that period in 1974 than they did prior to
8 1973. So that scenario we felt was a good
9 scenario to cover those earlier years.

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

21 So we had no basis to come back and
22 say, well, let's use ten per year. Let's use

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1 50 per year. That the only reasonable thing¹²²
2 to do was to say that it occurred every day.
3 And remember, that was 0.15 millirem, if I
4 remember correctly, from that release.

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

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

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

17 DR. MAURO: Pardon?

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

22 DR. MAURO: Okay, I can't say one

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1 way or the other but I believe you. But here's
2 the problem. It's not the follow-up
3 investigation from that incident that you're
4 using for your dosimetry. In other words, the
5 0.15 millirem is from the 75 cohort, not from
6 the follow-up investigation from that August
7 '74 incident.

8 When I looked at the data for that
9 incident I see, now the data's not very good,
10 but I have some air samples. I think we have
11 a few bioassay samples, and the doses are not
12 0.15 millirem. They're closer to one or
13 greater millirem to the people that were
14 involved in the August 1974 exposure.

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

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1 is a good correlation between those two. 124

2 MR. RUTHERFORD: I want to ask Jim
3 Bogard, when we did the pre-'73 calculation,
4 which -- and I can't remember, and I guess I
5 could go back and look myself, but what data
6 did we specifically use in coming up with the
7 numbers?

8 MR. BOGARD: There were actually
9 two populations. The '75, that's a chronic
10 issue. The four or five people that were
11 involved in the '74 incident that was a
12 response to an incident. And so the 0.15
13 millirem is based just on the incident data as
14 I recall.

15 DR. MAURO: That's a factual piece
16 of information where we're disagreeing. I
17 didn't read it that way. I might be wrong,
18 but I read that the 0.15 is related to the 75
19 people while the incident data is
20 substantially higher than that, maybe a factor
21 of ten higher.

22 MR. BOGARD: I didn't do the dose

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1 estimates. I'd have to -- 125

2 DR. MAURO: And certainly this is
3 an easy problem to solve.

4 MR. RUTHERFORD: Oh yes, it is.
5 Yes.

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

9 MR. RUTHERFORD: Yes, I think this
10 is --

11 MR. BARTON: John, this is Bob
12 Barton. I think when we talk about the 75
13 claimants that were sampled from NOCTS, I
14 don't think there was ever a number put on
15 there except for the statement that when they
16 evaluated the doses they were all under one
17 millirem. I do believe that 0.15 millirem was
18 associated with the people who were sampled
19 immediately in the aftermath of that 1974
20 release.

21 DR. MAURO: Yes.

22 MR. BARTON: I'm not sure where

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1 that number actually came from, whether it was
2 calculated by NIOSH or, I don't think I saw
3 that in the actual documentation.

4 DR. MAURO: By the way that part
5 of the analysis is in our White Paper. I did
6 the calculation. You guys can take a look at
7 it and see if I did it wrong. In other words
8 I talk about the incident, talk about the air
9 sampling data.

10 I talk about data that appeared to
11 me that was available at the time for
12 reconstructed doses to the people involved in
13 this August '74 incident, and I come up with
14 doses higher than 0.15. So again, you know,
15 this is easy to figure out whether I got it
16 wrong or not.

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

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1 DR. NETON: I guess one practical
2 question, this always happens over in the
3 process of adding an SEC is that, you know, we
4 are now proposing that we have an SEC for all
5 workers at Rocky Flats at least from 1962 to
6 1985.

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

8 DR. NETON: '62 to '83. So then
9 the question becomes, are these tritium doses
10 which appear to me to be pretty small, are
11 they SEC issues, or is this something that
12 could be tabled as a Site Profile issue
13 recognizing that it's not going to affect
14 anybody's compensability under the SEC? It
15 would affect how dose reconstructions might be
16 performed, unless one wants to say these can
17 be reconstructed and added to the SEC
18 rationale, which I don't I'm hearing is
19 probably warranted.

20 DR. MAURO: Jim I agree with you
21 completely. I think that if, you know, if an
22 SEC is going to granted based, let's say, on

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1 neptunium or thorium that cover these same
2 years, this whole issue we're talking about
3 goes away and it becomes simply a very, very
4 modest Site Profile issue.

5 DR. NETON: Not a problem with 362.

6 DR. MAURO: Yes, yes.

7 DR. NETON: Not a problem. But we
8 still would have a problem to covering 362 for
9 tritium, but this whole thing around the
10 incident and bounding and such is --

11 MR. KATZ: But just to be clear
12 though, John Mauro, you don't concede whether
13 it's an SEC issue or not based on whether an
14 SEC would be granted for something else.

15 DR. MAURO: Okay, my apologies.

16 (Simultaneous speaking)

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

18 (Simultaneous speaking)

19 DR. MAURO: Okay, okay.

20 DR. NETON: I think we all
21 understand what we're trying to say here which
22 is if it's a Site Profile issue, if we could

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1 all feel that this one's bounded -- 129

2 (Simultaneous speaking)

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

8 CHAIRMAN GRIFFON: Yes, it may be
9 lower in the priorities, right. All right,
10 but I am going to keep targeting these actions
11 whether they end up being Site Profile issues
12 or -- right, right.

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

17 CHAIRMAN GRIFFON: I don't think
18 so, right.

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

21 (Simultaneous speaking)

22 MR. KATZ: It doesn't sound like

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1 it takes extensive work to put either of these
2 to bed.

3 MR. BARTON: This is Bob Barton.
4 Can I make a comment here? I heard, I believe
5 it was LaVon Rutherford say that one of the
6 assumptions sort of backing the use of that
7 1974 incident is that the conditions, or, you
8 know, the contamination source term, or
9 whatever you want to call it, for that incident
10 would not be decidedly different than that
11 found in the pre-1973 period. Do I have that
12 correct?

13 MR. RUTHERFORD: Yes, and I think
14 we believe that.

15 MR. FITZGERALD: Yes, I want to
16 talk to that, Bob. Yes, this is Joe. Mark,
17 I just said there was three parts to this
18 thing. And the pre-'73, you know, the use of
19 the '74 event, the bounding estimates from
20 that to cover the pre-'73 is something I've
21 been looking at.

22 And as LaVon knows, I've been a

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1 little troubled by how representative that
2 event would be for all the preceding years
3 before '73 for a couple different reasons.
4 Certainly one is it was almost a year between
5 the '73 release and the '74 event.

6 And I'm certainly concerned that
7 whatever actions were taken operationally, you
8 know, whether it was to control contamination
9 to have the vending site, the shipping sites
10 scrutinized as they were supposed to do, but
11 obviously they failed to do that carefully in
12 the past on the containers that they were
13 sending to Rocky, or frankly, whether, you
14 know, the site was going to monitor carefully
15 before proceeding with handling at the site.

16 These were things that certainly,
17 if not, intuitively I felt there would have
18 been actions taken on an intermediate basis
19 between the '73 event and what took place in
20 '74.

21 And the importance of that is
22 obviously if we're going to rely on the source

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1 term of that particular event and the doses¹³²
2 the bioassays that were taken from it, we need
3 to know that it is in fact typical, which is
4 the, I think, the adjective that was used to
5 describe that event in the NIOSH White Paper.

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

19 So there wasn't a sense it was a
20 big deal. There were some checks in the
21 system procedurally and from a monitoring
22 standpoint to make sure that inadvertent

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1 releases weren't a major problem. 133

2 Now one thing at Rocky, you had two
3 types of shipments coming in. You had the
4 non-routine shipments, these were shipments
5 that came from places like Lawrence Livermore,
6 Los Alamos, Battelle, Savannah River.

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

16 These were considered non-routine,
17 so-called SS shipments, and these are the
18 shipments they certainly did have problems
19 with. You know, the rad chem releases that
20 occurred even before the '73 event, plus the
21 '73 event, they were all attributed to
22 shipments from Livermore.

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1 And clearly there was a quality
2 control issue at the lab in terms of what they
3 were sending. These items apparently were
4 contaminated. Just the four that were caught
5 were clearly contaminated.

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

16 But that document reviews the '74
17 event in some detail and basically analyzes it
18 as the source of the tritium comes from two
19 possible sources. One being the container
20 that was contaminated that was shipped in from
21 Battelle, the other was entrained tritium in
22 the lines, in the processing lines of Rocky

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1 that were remnants of the '73 event. 135

2 And as they say in that report,
3 it's very difficult to figure out how much was
4 contributed by what. Certainly they
5 established, there was some residual
6 contamination, tritium contamination in those
7 lines, process lines at Rocky.

8 So clearly, as far as the source
9 of the tritium it could have come from both
10 the Battelle containers as well as the process
11 lines at Rocky. But in any case, those were
12 all the non-regular shipments, non-routine
13 shipments that were coming in.

14 As far as containers, who knows?
15 I mean, Battelle, whatever they sent was
16 clearly in whatever form of container that
17 they routinely would send stuff to Rocky.
18 Same with Livermore. Each site, you know, had
19 used their own set of containers. It's not
20 clear how much standardization there was.

21 But at any rate, so you had a
22 Battelle container coming in that was

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1 implicated but not necessarily the only source
2 of tritium for the '74 event. You had
3 Livermore containers implicated in the three
4 releases before '73 as well the '73 release.

5 Now the shipping that's missing from all
6 of this is the routine, the returns that were
7 coming from Pantex. Pantex routinely sent
8 pits as far as returns back to Rocky starting
9 in the '50s, and that went on for decades.

10 And that was a major part of the
11 operation at Rocky, taking retired, and pits
12 that were taken from dismantled weapons and
13 processing them at Rocky for recovery purposes
14 and what not. That was a much different
15 operation than just taking scrap from
16 Livermore or taking material from Battelle.

17 These routinely came in daily over
18 the years. There was residual tritium
19 implicated with them. It wasn't a lot. I
20 think it was felt that you had maybe one or
21 two, and this was based on an interview we
22 had, one or two releases a year that you could

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1 actually get picked up in a bubbler in front
2 of an exhaust plenum.

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

10 And I believe this two-part process
11 may have applied, but I don't know for sure
12 from the routine shipments to the non-routine
13 shipments. What they did was basically ship
14 it in two containers. The outer container was
15 opened in an area which did have the tritium
16 monitor in the exhaust plenum, then it was
17 moved to a different room, building, where the
18 inner container was opened and the pit was in
19 fact put into a glove box for processing. And
20 it was this second step that was not monitored
21 using any tritium monitoring equipment on the
22 exhaust plenums. So clearly, the one to

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1 two per year was the, whatever was being
2 measured from the opening of the outer
3 container, not the inner container, which
4 would according to the interviewee would have
5 been where you would have had the higher
6 tritium contamination in any case and where
7 the worker would have been handling the pit
8 and would have been in the proximity of the
9 contaminated container, you know, longer and
10 closer.

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

19 So I want to go through to some
20 extent, I don't know if it's the same questions
21 on that, but I want to go through some of the
22 factors. And I thought these were good

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1 factors. 139

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

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

19 And, you know, certainly the item
20 about -- I'm going to go through the six
21 factors because I think these are good six
22 factors. I couldn't think of any others.

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1 But the six factors in terms 106
2 this weight of evidence discussion, the first
3 one which is that the background tritium
4 levels immediately prior to the incident
5 described in the Rocky Flats report was felt
6 to be undoubtedly elevated since the more
7 significant '73 release, were well below
8 dosimetrically significant values can be
9 considered as fairly representative of typical
10 background levels for this analysis.

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

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

21 I would think the containers would
22 be different from the routine versus non-

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

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1 equipment was contaminated with tritium. 142

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

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

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

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

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1 communications between the sites to see 145
2 Pantex's containers or shipping containers if
3 their protocols changed and stuff, and we
4 couldn't find any indication.

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

9 MR. FITZGERALD: Yes, I'll get to
10 that in Number 6.

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

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

22 I'm looking for some sense of

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1 apples to apples in order to apply the 174
2 backwards. And the six factors, I think,
3 which kind of are really six good factors, but
4 up to six factors I have problems with probably
5 half of them as far as one could objectively
6 come to that conclusion or even weighted
7 evidence come to that conclusion.

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

17 CHAIRMAN GRIFFON: That's Number 1
18 you're talking about?

19 MR. FITZGERALD: That's Number 1.

20 CHAIRMAN GRIFFON: Okay. If you
21 can, prior to lunch, get through all six that
22 would be great.

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1 MR. FITZGERALD: It goes faster¹⁴₁₅
2 the middle.

3 CHAIRMAN GRIFFON: Okay, okay.

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

14 MR. RUTHERFORD: Well, it's more
15 indicative of a chronic release than the '73
16 incident. Clearly, we can --

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

22 And I don't disagree it's more

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1 typical, you know, compared with '73. Is it
2 representative enough to be used as bounding
3 for pre-'73? I have difficulty with that. I
4 don't think we have any data for an entire
5 line of pit returns from Pantex.

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

17 Anyway, Item 3 --

18 CHAIRMAN GRIFFON: Joe, are you
19 questioning whether the '74 data is, the acute
20 incident from '74 is bounding of the potential
21 smaller chronic exposures in the earlier 20
22 years or --

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1 MR. FITZGERALD: Yes, the chronic
2 and as well as intermittent acute exposures.
3 One, there was no monitoring for that, and
4 two, what data we do have is exclusive to, I
5 would call, non-routine shipments from two
6 labs which are Livermore and Battelle.
7 Battelle was the '74 event, and the rad chem
8 releases that were in that report plus the '73
9 are Livermore, apparently Livermore shipments.

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

16 MR. FITZGERALD: We don't have
17 anything that would be sufficiently accurate.
18 It's comparing these non-routine shipments
19 which certainly you have a source term, but we
20 have no idea how that compares with either a
21 chronic release associated with a daily set,
22 you know, you had very frequent, continuous

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1 shipments of pits being returned from Pantex~~148~~
2 to Rocky Flats over 20-plus years and how
3 representative would that be of those
4 shipments we don't know. We don't have the
5 good data for that.

6 MR. RUTHERFORD: Okay, I've got a
7 quick question, Joe, because it sounds like
8 you're concluding something different than
9 what your White Paper said. I mean if I read
10 the White Paper here it says, "Hence," this is
11 the last sentence on, or it's on Section 5.1,
12 where you basically conclude that the '73
13 incident would be bounding but our model --
14 because you say, "Hence, the experience cannot
15 serve as the basis for building a coworker
16 model for pre-'73 exposures to tritium except
17 perhaps to conclude that no worker prior to
18 '73 experienced tritium exposures in excess of
19 84 millirem per year."

20 So I mean, unless I heard you wrong
21 you just said that you can't make that
22 conclusion, but the White Paper says you can.

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1 MR. FITZGERALD: Well, I think
2 what we're saying there is that, and that we
3 said earlier that the '73 event stands unique
4 given the amount of tritium that released and
5 what circumstances dotted it.

6 You know, we're talking elemental
7 tritium versus HTO for the '73 event. So I
8 think there's no question that was a
9 particularly unique and particularly major
10 release. However, and you can correct me, I
11 think the reason you went to the '74 event as
12 your bounding approach is because the '73
13 event is that unique that it would not, you
14 know, it's like a large number approach.

15 If you have a large number like
16 that I'm not sure anyone would debate that it
17 would be unlikely you could have an exposure
18 that high and not have it been picked up. In
19 fact, with the monitoring that the EPA had
20 been doing since '69, it would have been picked
21 up from '69 forward.

22 But the more "typical," and I use

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1 that in quotations as the word that was used
2 in the White Paper, the '74 release, that is
3 where I think you do have to come up with an
4 argument that that release bounds pre-'73
5 because it is representative of the most
6 tritium, elemental tritium that would be
7 released in a container type situation where
8 you had a contaminated container.

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

18 MR. RUTHERFORD: Yes, and I
19 understand. I think I'll add that, you know,
20 our thought was we want to verify that we knew
21 this exposure scenario that was identified in
22 the classified interview, we wanted to verify

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1 that that exposure scenario would not exceed
2 what we had originally identified as our
3 bounding incident from the 1973 event.

4 We were thinking, okay, can this
5 continuous chronic exposure from a release
6 actually come up with exposures higher on an
7 annual basis than what we previously
8 identified from the '73 event?

9 And so using that 1.5 curie release
10 from the '74 event we felt was a reasonable,
11 or this is a pretty high release, it's from a
12 shipping container, yes, it's not from a
13 Pantex shipping container, and we'll assume it
14 happens every day and see what our numbers
15 come out. And they came out less than that
16 event.

17 I mean you've got good arguments in
18 that, you know, it's not a Pantex return that
19 typically, I mean that's what 95 percent of
20 what they dealt with was Pantex returns,
21 you're correct there. There is no monitoring
22 data to support anything for pre-'73, you

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1 know, we have none. I don't disagree with
2 that. But I think it was a reasonable
3 scenario.

4 MR. FITZGERALD: No, it's
5 reasonable, it's intuitive, and I think it
6 makes more sense than trying to apply the '73.

7 MR. RUTHERFORD: Yes, okay.

8 MR. FITZGERALD: I'm just saying
9 that when sort of put to some objective test,
10 I just find too many unknowns and too many
11 questions because of the operations that were
12 taking place at the time.

13 CHAIRMAN GRIFFON: Let's hear your
14 other four factors.

15 MR. FITZGERALD: Yes. Now I know
16 lunch is bearing down on us --

17 CHAIRMAN GRIFFON: Yes.

18 MR. FITZGERALD: I'm going to skip
19 what we agreed on. We agreed it's elemental
20 and not HTO. And, you know, as far as the
21 shipping containers we talked about that.
22 That there is definitely some question about

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1 the shipping containers not being the same 153

2 But let me go to 6, because I did talk
3 to LaVon earlier in this process that I was
4 concerned about the fact that picking '74
5 where it falls time-wise is almost a year after
6 the '73 became a very public issue at the
7 Pantex.

8 And having lived in DOE, you know,
9 to have an outside agency find that you're
10 contaminating somebody's reservoir, there is
11 almost nothing that would be more dramatic
12 than that.

13 So my concern was how
14 representative would the source terms we're
15 talking about in '74 be assuming that, you
16 know, Rocky and the AEC would have taken a
17 number of actions or precautions in the
18 intervening 10, 11, 12 months to minimize
19 tritium contamination and therefore make the
20 '74 event, while it wasn't an incident again,
21 certainly it would not have been necessarily
22 representative of the kinds of acute releases

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1 you might have had before '73. 154

2 And one thing I did work with NIOSH
3 on is I made a request of Pantex, made a
4 request of Legacy Management in Denver to look
5 for any specific correspondence that took
6 place between Pantex and Rocky Flats in that
7 time period, that one year time period, to
8 just gauge the level of feedback interaction
9 that was going on.

10 And in short, we didn't find any
11 actual memorandum or directives, and on one
12 hand that would have been helpful to get some
13 feel from that standpoint. On the other hand,
14 the AEC didn't always communicate by
15 memorandum and it wasn't necessarily the case
16 that memorandum would have been retained in
17 the file.

18 So I'll just stop there. I did go
19 back to the SRDB to look for any documentation
20 that would touch on this whole question of in
21 the aftermath of the '73 event what
22 operational actions were taken by management

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1 on an intermediate basis to address tritium
2 contamination in containers dealing with this
3 problem that Livermore sort of surfaced, which
4 they were sending contaminated items in the
5 containers that went to Rocky Flats and Rocky
6 Flats inadvertently opening them was releasing
7 this.

8 And in there, there were certainly
9 a number of documents that's referenced in the
10 White Paper. You know, certainly by the fall
11 of '73 both Rocky management and AEC
12 management were putting in place a number of
13 actions. The investigation of the '73 tritium
14 release prompted the AEC to set up an AEC
15 investigation, a very formal investigation
16 from the outside.

17 That investigation came up with a
18 number of actions and recommendations. And
19 one of the recommendations, Recommendation 2,
20 was to come up with interim control measures
21 for tritium contamination on these off site
22 shipments coming in.

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1 And this is on Page 13 on the top
2 and what they basically respond -- this was
3 publicized as well. This was issued in a
4 press release that one of the interim control
5 measures was a three-point check coupled with
6 a complete written history applicable to all
7 shipments of material to Rocky Flats.

8 That was something that they wanted
9 to assure the public they were doing as an
10 interim measure. And they also wanted to
11 tackle more specifically the so-called non-
12 routine SS shipments which the Livermore and
13 Battelle shipments represented and their
14 coming up with actual forms where these forms
15 would specify all the monitoring and, you
16 know, statements of reassurance that they
17 would have to give Rocky that they did due
18 diligence on looking for tritium contamination
19 and any contamination, actually, of the
20 material they were sending to Rocky.

21 In looking at those forms, and the
22 SRDB numbers are in there, it's pretty clear

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1 that the three-point check was looking for
2 just about everything that was coming into
3 Rocky that might have some tritium
4 contamination.

5 And the non-routine shipping form
6 addressed all of the non-routine shipments
7 that were implicated in these more recent
8 releases, and that form did not have Pantex on
9 it. And it's understandable why it isn't,
10 because it only applied to non-routine
11 shipments.

12 And there's a memorandum LaVon
13 identified which is the October 21st, '74
14 memorandum, which seems to suggest that, you
15 know, the site sent a directive, which it did,
16 in October of '74 which said, from here on
17 out, you know, we're not going to accept
18 anything until we're ready to do so with a
19 special room where these containers can be
20 opened and monitored for tritium and all of
21 that.

22 It was like a moratorium on

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1 shipments, non-routine shipments not Pantex
2 shipments, but non-routine shipments.

3 MR. RUTHERFORD: But Pantex was
4 included on that memo.

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

13 But in any case, I think the
14 operational history between the '73 event, and
15 this to me makes sense, because again I had
16 trouble thinking that they took a year before
17 they sent a directive out to the complex that
18 oh by the way, you know, we want you to be
19 careful with tritium contamination and supply
20 assurances that you're not sending us
21 contaminated material.

22 Given what happened in April

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1 through, I guess it was the mid-'73, I would
2 have expected the Atomic Energy Commission and
3 Rocky to take immediate action on it, at least
4 an interim basis, to get their hands around
5 this and actually ensure that the sites were
6 checking or following procedures and making
7 sure that when things were received that they
8 were checked, just because of the concern.

9 This was of course part of the
10 AEC's investigation from the investigation
11 report. So I guess the picture I'm painting
12 is that yes, actually management did do that
13 apparently, and did put in place some interim
14 directives, the three-point process of
15 checking.

16 They also made it clear to the
17 shipping sites that they were to again follow
18 procedure and monitor what they were sending
19 to Rocky, and that happened in September-
20 October of '73.

21 So I think this raises some real
22 question about how representative the source

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

18 MR. RUTHERFORD: Okay.

19 MR. BARTON: Joe, this is Bob
20 Barton. Could I just take a step back and ask
21 a point of clarification? You mentioned a
22 memo in October of 1974.

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1 MR. FITZGERALD: Yes, a memo. 161

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

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

17 MR. FITZGERALD: Yes, I referenced
18 that on Page 13.

19 CHAIRMAN GRIFFON: Do you have the
20 document number for that just so everybody has
21 it, Bob?

22 MR. BARTON: Yes. The SRDB number

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1 is 111253 and I'm looking on Page 189. 162

2 CHAIRMAN GRIFFON: Okay, thank
3 you.

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

9 MR. FITZGERALD: Yes, there was
10 definitely six although I skipped over --

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

20 MR. RUTHERFORD: I just need to
21 look at that. I mean, the question's going to
22 be -- or if we go back, we look at it and it

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1 appears that controls were put in place prior
2 to the '74 incident that which makes the '74
3 incident question whether it would be
4 bounding, the overall question is okay, if we
5 can't find another incident and we go back to
6 the '73 incident, which is the, you know, as
7 our bounding thing --

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

13 DR. NETON: I think, really, the
14 issue is small doses.

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

22 But then we'd have to really focus

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

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

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

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

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

20 DR. NETON: I don't know.

21 MS. BARRIE: But aren't you using
22 the '74 incident for post-'74 dose

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1 reconstruction? 165

2 MR. RUTHERFORD: No.

3 MS. BARRIE: No.

4 MR. RUTHERFORD: They started
5 monitoring.

6 MS. BARRIE: Okay.

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

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

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

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

22 DR. NETON: Understood. And in my

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1 mind it's most critical prior to '62 at this
2 point.

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

6 DR. NETON: I think so.

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

11 DR. NETON: Falsification.

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

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

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

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

21 CHAIRMAN GRIFFON: Back by 1:00,
22 those on the phone and -- all right, great.

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1 Thanks. 167

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

5
6 A-F-T-E-R-N-O-O-N S-E-S-S-I-O-N
7 (1:00 p.m.)

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

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

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

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

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

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

22 MR. KATZ: Okay, super. I think

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1 then we can get going. 168

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

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

12 CHAIRMAN GRIFFON: Okay.

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

20 Just a little, kind of go back over
21 the White Paper we put together. Originally,
22 Terrie Barrie the petitioner had identified a

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1 potential concern with data falsification, ~~105~~
2 data invalidation at Rocky Flats, and it was
3 based on the interview that was done with a
4 former employee who had concerns with
5 potential data falsifications. And one area
6 was in Building 123 which was of concern to us
7 because that was the area where bioassay data
8 was analyzed. We went back through and
9 reviewed the paper, went through each
10 allegation and responded to each allegation
11 originally with the White Paper. There was a
12 couple of concerns that were brought up at the
13 last Work Group meeting for to try to validate
14 what we had done, and so we did interview two
15 former Rocky Flats workers that, the same
16 workers we interviewed with the neptunium
17 issue we interviewed to try to get a feel for
18 how the health physics program may have been
19 affected by the 1989 raid and what went on
20 there.

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

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1 the raid you knew because it was done on 17th
2 need to know basis so if you weren't contacted
3 you weren't involved. And since the raid
4 related to environmental issues there was no
5 involvement from the bioassay program
6 perspective.

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

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

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

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1 specific with the RadCon program in that they
2 ran the RadCon program and the bioassay
3 program.

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

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

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

22 But we did find some procedures for

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1 Building 771 that supported that, I think ~~172~~
2 was 771, and Dan can correct me if I'm wrong,
3 but that supported that nothing changed, the
4 occupational health physics program before the
5 raid and after the raid. So those were
6 just a couple of additional things that we
7 did. And I'll let Ron or SC&A go through their
8 review of the White Paper and then I'll add a
9 couple other things as well.

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

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

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1 Clearly there were some other
2 documents that LaVon's going to talk to that
3 I think Terrie Barrie had identified that we
4 have yet to actually review.

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

13 Ron?

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

20 And these were interviews with
21 many, many employees like they said, and so we
22 did ask them some questions about the

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1 processing of the samples and how often ~~was~~
2 that, and some of the procedures mainly with
3 neptunium but with other, gross alpha, that
4 sort of thing also.

5 And from those two interviews we
6 did not get an indication of an issue from the
7 raid. However, as Joe as said we have not had
8 the privilege of the other four documents that
9 were brought forth and we haven't seen those
10 yet, and we would like to see those and review
11 those to further our investigation in the
12 area. So that's pretty much where we stand
13 now.

14 MR. RUTHERFORD: And I'll jump in
15 on that. One of the things that was brought
16 up by Terrie, and I think is Stephanie Carroll
17 as well, was there were four parts to the Tiger
18 Team report and we had one of those parts.
19 There are three other parts.

20 And I will say, to date we still
21 have not received those other three reports.
22 We've looked for those and we haven't found

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1 them yet. I think Joe has even offered to see
2 if he can, you know, find them in some of his
3 areas as well that he has access to and to see
4 if we can get those reports. So yes, we have
5 not received those reports and have not had a
6 chance.

7 Now one of the other issues was the
8 sealed documents, and I'm going to give you a
9 general overview of it and then I'm going to
10 turn it over to Jenny to give you a much
11 deeper.

12 But generally what the concern was
13 there were sealed documents that potentially
14 contained information that supported that
15 falsification occurred in the occupational
16 health physics program.

17 And the concern was we didn't have
18 those documents, and since we wouldn't have
19 them we needed to get those documents and see
20 if we could get those documents. So I
21 contacted our general counsel, Jenny, and
22 Jenny took, I'll just let her brief you on

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1 what she did. 176

2 MS. LIN: Sure. So we did contact
3 our colleagues in the Department of Justice,
4 the U.S. Attorney's office and the Department
5 of Energy, which was a really good place to
6 start.

7 They have an environmental
8 litigation division, and one of the senior
9 attorneys there happens to be a lead attorney
10 in the Denver's office when the Rocky Flats
11 raid and investigation was going on. So even
12 though she wasn't the person on task she was
13 very aware because their entire office was,
14 you know, assisting DOJ and FBI.

15 So when we were looking at these
16 sealed documents obviously we need to know
17 what they are, where they are and how to get
18 them. So we were able to answer all three
19 questions.

20 So these sealed documents were
21 documents provided by the Department of
22 Justice, you know, through the FBI raids, and

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1 they were provided to -- actually, let ~~me~~
2 retract.

3 So the sealed documents are
4 actually court documents. Those were sealed
5 by the court. Those are different than what
6 we typically think of classified documents and
7 that sort.

8 So these sealed documents are jury
9 reports, draft indictments, presentments and
10 other court documents, and they were actually
11 sealed by the U.S. District Court for the
12 District of Colorado pursuant to the Federal
13 Rules of Criminal Procedure 6(e). And they
14 have been litigated.

15 This issue in release of sealed
16 documents had been litigated at least twice
17 and they resolved it in court opinion saying
18 that they cannot be released. So because of
19 that we know that the sealed documents, they
20 would not be available to us.

21 CHAIRMAN GRIFFON: And you said
22 they include jury reports, draft reports and

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1 something else you said. 178

2 MS. LIN: I mean these are just the
3 characterization. No one was able to give us
4 the inventories of what these sealed documents
5 are.

6 CHAIRMAN GRIFFON: Generally
7 though, right.

8 MS. LIN: So generally. So I
9 looked at the Federal Rules of Criminal
10 Procedure 6(e) to see what type of documents
11 fall under that category and also look at the
12 court's opinions, and they're pretty
13 consistent in terms of the type of document
14 that was sealed by the court.

15 And then obviously there's ongoing
16 investigation so they're assuming for the
17 courts to seal those documents. And I think
18 at least one of the jurors had written a book
19 about their experience.

20 But I think an outcome of this
21 investigation by the Office of General Counsel
22 is that we were able to have these concurrent

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1 statements from the DOE's litigation division
2 and also from others who were doing the data
3 capture that is pretty consistent with the
4 source documents that were evaluated by the
5 grand jury, have been gradually released to
6 either the Rocky Flats plant when it was still
7 in operation or to DOE.

8 And I think our data capture team
9 also confirmed that's actually the case with
10 the person who is maintaining the data. So it
11 seems like the story that OGC is getting
12 actually confirm, matched up with what the
13 data capture team --

14 MR. RUTHERFORD: Yes, basically,
15 and as Jenny mentioned, the source documents,
16 the documents that they were using to
17 evaluate, I guess, these legal issues, the
18 source documents have been, some of those were
19 classified and they were returned to Rocky
20 Flats.

21 And there's actually an inventory
22 sheet of those documents that were, you know,

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1 taken and then returned over time, and the
2 Denver Federal Records Center has confirmed
3 that they had those documents and we have those
4 documents.

5 So the only outstanding one is the
6 three reports that are still from the Tiger
7 Team that we still have been unable to find at
8 this time.

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

11 MR. RUTHERFORD: They would be,
12 either they have them in the Site Research
13 Database or they're at the Denver Records
14 Center and we can get them. But I believe
15 we've got them all because, in fact I know we
16 do because we had a data capture with the EMCBC
17 locally in Cincinnati where some additional
18 documents that were sent that were part of
19 that and we retrieved those documents. So
20 Dan, correct me if I'm wrong. Dan Stempfley.

21 MR. STEMPFLEY: What you're saying
22 is how it is. We did identify and collect the

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1 pertinent documents that we were looking for¹⁸¹

2 MR. RUTHERFORD: Yes. Okay,
3 thanks.

4 CHAIRMAN GRIFFON: So you have all
5 the documents that run inventory to this?
6 Okay.

7 MR. RUTHERFORD: Yes, the only
8 thing we don't have is the three reports that
9 they have identified.

10 CHAIRMAN GRIFFON: Right. Got
11 that, right. The three parts of the Tiger
12 Team report, right? Okay.

13 MR. RUTHERFORD: Yes, and I don't
14 understand why we don't have this. It just
15 seems like that would be something easy for us
16 to get --

17 CHAIRMAN GRIFFON: Yes, that
18 should be easy.

19 MR. RUTHERFORD: -- that we
20 haven't been able to get.

21 MS. BARRIE: Well, that makes me
22 feel better because I've been waiting years to

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1 try to get my, I've filed FOIAs two or three
2 times on them and --

3 CHAIRMAN GRIFFON: So when -- I'm
4 sorry. When Joe at the end of his description
5 mentioned, or maybe it was Ron said the other
6 four documents that they're still waiting to
7 see?

8 MR. RUTHERFORD: I think he was
9 talking about the three --

10 CHAIRMAN GRIFFON: The three parts
11 of that, okay. I think that's what he was
12 referring to.

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

15 MR. FITZGERALD: I think the
16 bioassay procedures was another item that I
17 think Terrie had cited in one of her --

18 MR. RUTHERFORD: Yes, I actually,
19 we have an updated White Paper that I didn't
20 want to send it out, you know, at the 11th
21 hour type thing because it came out, it just
22 cleared ADC review yesterday and it hasn't

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1 been reviewed internally by us. So it does
2 cite some additional Site Research Database
3 documents for you to look at. So when you get
4 your hands on that you can look at that in
5 comparison.

6 MR. FITZGERALD: And on the three
7 documents that we're missing, I think I even
8 mentioned this to Terrie at one point, I will,
9 you know, sort of beat the bushes at DOE
10 headquarters both in the program office,
11 safety office as well as in their archives to
12 see if I can find them.

13 I know they have complete sets of
14 the Tiger Team reports. The Rocky ones were
15 not officially a Tiger Team so they should be
16 there as well.

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

19 MR. FITZGERALD: You would think.
20 I actually didn't do that one. I did the one
21 right afterwards.

22 MR. RUTHERFORD: Okay.

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1 DR. BUCHANAN: This is Ron with
2 SC&A and I had some questions for you. You
3 know, one of the four documents was HP
4 procedures, one was environmental and the
5 other three you haven't been able to get yet,
6 and then you talked just now about some new
7 court documents.

8 Can you email me those documents
9 that you do have? The HP procedure, the
10 environmental and the new documents, or give
11 me the --

12 MR. RUTHERFORD: SRDB numbers?

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

15 MR. RUTHERFORD: Yes, I will. And
16 hopefully we can get this revised report
17 released real quickly, but I'll get you all
18 the information. We also have inventory
19 sheets from the documents that were taken as
20 part of the raid. And I'll get you access to
21 all that information.

22 DR. BUCHANAN: Yes, if you could

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1 email that directly to me I'd appreciate it, ~~189~~
2 that I can start working on that.

3 MR. RUTHERFORD: Okay, no problem.

4 CHAIRMAN GRIFFON: And just to be
5 clear just so I didn't miss something, the
6 review of the sealed, you know, the court
7 documents, all source documents were returned
8 to the site, right, and it was inventoried and
9 NIOSH has all of those?

10 MR. RUTHERFORD: Yes.

11 CHAIRMAN GRIFFON: I think that's
12 the critical part, yes.

13 MEMBER KOTELCHUCK: Let me be
14 clear. The allegation was that environmental
15 data was manipulated or falsified. Is there
16 any allegation that the occupational health
17 data was falsified, or is that just a concern
18 because the people who measure the one
19 measured the other?

20 MR. RUTHERFORD: Yes, that's the
21 concern. And I mean, Terrie can correct me if
22 I'm wrong, but we didn't see anything

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1 specifically of the allegation that ~~the~~
2 occupational health, you know, the bioassay
3 data for the occupational health physics group
4 was ever in question.

5 MS. BARRIE: Yes, and if you
6 remember during the public comments during the
7 July meeting, there was a Rocky Flats worker
8 who filed a grievance through the union on
9 that Building 123 was changing their doses.

10 MEMBER KOTELCHUCK: A-ha. So
11 there is an allegation within the union --

12 MS. BARRIE: Right.

13 MEMBER KOTELCHUCK: -- and a
14 grievance procedure.

15 MR. RUTHERFORD: I'm glad you
16 brought that up because that is another thing
17 that we are following up on. We are doing an
18 interview, classified interview with that
19 individual. We've been working on that. It
20 kind of got held up a little bit.

21 One, scheduling a classified
22 interview is not easy especially depending on

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1 the location the individual is and whether we
2 have somebody out in that area to do it and
3 such.

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

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

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

18 MR. RUTHERFORD: Well,
19 environmental samples and --

20 CHAIRMAN GRIFFON: And occupational
21 or bioassay samples, all right. Both, okay.

22 MR. RUTHERFORD: But they weren't

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1 done by the same individuals or group. It ~~was~~
2 in the same building.

3 CHAIRMAN GRIFFON: In the same
4 building but separate, okay.

5 MR. RUTHERFORD: Yes.

6 CHAIRMAN GRIFFON: Joe, do you
7 have anything to add?

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

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

17 So one of the issues was a concern
18 of tritium stripping. And you guys might
19 remember an email questioning of what is this
20 tritium stripping, and it was identified. I
21 believe it was identified in our SEC-0030
22 Evaluation Report. It was also identified in

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1 an email exchange that we had internally. 189

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

9 MR. FITZGERALD: Yes, I have that.

10 MR. RUTHERFORD: Okay.

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

14 MS. BARRIE: I have overall
15 comments, yes.

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

22 All right, so then yes, Terrie.

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1 MS. BARRIE: Okay. 190

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

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

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

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

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

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

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

22 So this is, like I said, a 2004

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1 paper. So I do appreciate you not closing
2 this out, and I hope that we can resolve that
3 in the next few months after the meeting.

4 And what really bothers me about
5 this was it was authored by a Site Profile
6 author back then and he knew this when, you
7 know, he was authoring the Site Profile. So
8 if you'd like to see this or -- okay. But
9 thank you everyone. I do appreciate
10 everything.

11 CHAIRMAN GRIFFON: Thank you.
12 Yes, and I think that grievance in particular
13 is a good one that we really need to follow up
14 on. So any other public comments before we
15 close?

16 Okay, so I look forward to the
17 report a couple weeks before the Board meeting
18 hopefully.

19 MR. RUTHERFORD: Yes.

20 CHAIRMAN GRIFFON: The updated
21 report and your presentation in Denver. And
22 thanks for all the hard work by NIOSH and SC&A.

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1 All right, so meeting adjourned. 193

2 (Whereupon, the foregoing matter
3 went off the record at 1:26 p.m.)
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