

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

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ADVISORY BOARD ON RADIATION
AND WORKER HEALTH

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KANSAS CITY PLANT WORK GROUP

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FRIDAY
JULY 17, 2015

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The Work Group convened in the Hampton Inn Cincinnati Airport-North, 755 Petersburg Road, Hebron, Kentucky, at 9:00 a.m. Eastern Time, Josie Beach, Chair, presiding.

PRESENT:

- JOSIE BEACH, Chair
- BRADLEY P. CLAWSON, Member*
- JAMES E. LOCKEY, Member
- JOHN W. POSTON, SR., Member
- LORETTA R. VALERIO, Member

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ALSO PRESENT:

TED KATZ, Designated Federal Official
BOB BARTON, SC&A*
RON BUCHANAN, SC&A*
PETE DARNELL, DCAS
JOE FITZGERALD, SC&A
JOYCE LIPSZTEIN, SC&A*
JOHN MAURO, SC&A*
PAT MCCLOSKEY, ORAU Team
JIM NETON, DCAS*
MUTTY SHARFI, ORAU Team

* Present via teleconference

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

(9:04 a.m.)

1
2
3 MR. KATZ: Okay. Good morning,
4 everyone. We're still awaiting Dr. Lockey, unless
5 he joins us by phone. We expect him here, but we
6 are going to get rolling here.

7 So, this is the Advisory Board on
8 Radiation and Worker Health, the Kansas City Plant
9 Work Group. And this is second day of a two-day
10 meeting.

11 Yesterday we heard from Wayne Knox and
12 went down a large list of his issues. And today
13 we have a fairly full agenda of issues being worked
14 through by the Work Group.

15 The agenda for today and papers related
16 to the agenda today are posted on the NIOSH website
17 under the Board section, schedule of meetings,
18 today's date. So, anyone on the phone can look
19 there and all those documents should be PDFs that
20 you can open and follow along with the discussion.

21 We will do roll call in a second. The
22 other thing I would just like to note before --
23 well, I'll wait until we have done roll call and

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1 we are formally in meeting.

2 So, roll call, we are speaking a
3 specific site, so any Agency-related people,
4 please speak to conflict of interest as well.

5 (Roll call.)

6 MR. KATZ: That takes care of roll
7 call. Let me just ask everyone to mute their
8 phones, except when you're addressing the group,
9 for the audio call or the conference call. If you
10 don't have a mute button, *6 to mute your phone,
11 *6 to take your phone off of mute.

12 Yesterday Mr. Knox had raised an issue
13 about whether GSA employees at Kansas City Plant,
14 some of them should be considered contractor or
15 subcontractor employees to GSA. And the main
16 point of that discussion response was that that is
17 not a determination that's made by the Board or by
18 NIOSH. It's a DOL matter.

19 Then I said in that discussion that
20 federal agencies are not contractors to other
21 federal agencies. Someone kindly wrote in from
22 the public that DOL has designated other federal
23 agencies within the Department of Interior as

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1 contractors to DOE at other facilities, and Nevada
2 Test Site was one example given, I think Savannah
3 River another. So, I don't know about that, but that
4 may be true. I'm not aware of it, but that still
5 remains a DOL matter, not a Board of NIOSH matter.

6 But I wanted to put that on the record.
7 I may be incorrect. It may be that federal
8 agencies can be designated as contractors or
9 subcontractors in this program. And I wanted to
10 make that clear.

11 And that takes care of my business.
12 Okay, thank you. Josie.

13 CHAIR BEACH: Okay, thank you. So, I
14 am wondering, for those of you on the phone and in
15 the room, if it would be okay if we started with
16 Issue 13, the mag-thorium issue. I talked to Pete.
17 He said that was okay. Any objections, anybody?
18 Joyce, does that work for you?

19 DR. LIPSZTEIN: Hello? I'm sorry.

20 CHAIR BEACH: Hi, I'm just wondering.
21 I was thinking we should go ahead and start with
22 Issue 13, the mag-thorium issue. Are you prepared
23 for that to start?

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1 DR. LIPSZTEIN: Yes, yeah.

2 CHAIR BEACH: Okay. So, we had a
3 couple of different White Papers exchanged: SC&A's
4 White Paper of May 2015 and then we have NIOSH's
5 response. Both of these are posted on the website,
6 as Ted indicated. Do you want to start with issues
7 from the SC&A side and then go to NIOSH?

8 MR. FITZGERALD: Yes, I think in this
9 particular case, that would be appropriate.

10 CHAIR BEACH: Okay.

11 MR. FITZGERALD: We had a couple of
12 different issues. I really want to defer to Joyce
13 who has actually authored the White Paper. But
14 mag-thorium has had a fairly long history in the
15 Work Group of research because there was so little
16 specific monitoring data for thorium. And so a lot
17 of the effort was just trying to pinpoint the
18 timeframe, locations, and source term for that
19 particular operation, from the late '50s up through
20 the late '70s.

21 And I think we've actually made steady
22 progress throughout that time. And I think we are
23 at the point now where we've identified pretty much

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1 what information is available and I think we have
2 refined the method, or methods, to a point where
3 it is a lot clearer than it was maybe even a year
4 ago.

5 So, this last White Paper that Joyce
6 will walk us through really was pointing to what
7 we felt were remaining gaps or areas of
8 clarification that we were hoping that we could
9 bring before the Work Group in terms of NIOSH's
10 response.

11 We just received NIOSH's response this
12 past week and I think it was just posted a few days
13 ago. So, we don't have anything more than our
14 reaction to it, but I think over the last couple
15 of days we have been able to digest it and I think
16 we're prepared to talk about it before the Work
17 Group. So, I think we're in reasonably good shape.

18 Joyce, maybe the best way to do this is
19 if you could catch us up in terms of where we left
20 off at the last Work Group meeting in March, and
21 maybe just go through the essential issues that we
22 raised in this last White Paper of May of this year.
23 And then we can turn to NIOSH in terms of their

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1 response to that White Paper.

2 DR. LIPSZTEIN: Okay. I will begin by
3 repeating what Joe already said. That NIOSH
4 posted the response to our White Paper and I only
5 saw it posted yesterday morning. But we have,
6 SC&A, we have reviewed NIOSH's response to our
7 concerns, and although it was a fast review but
8 reviewed all the documents that NIOSH had in their
9 response. And I must say we are satisfied with
10 most of NIOSH's responses.

11 So, I'm going now to explain all the
12 concerns that we have posted in our May 2015 White
13 Paper.

14 The first thing is the start of the
15 mag-thorium machining operation at the Kansas
16 City. SC&A agreed with NIOSH's revised
17 information that KCP's magnesium-thorium
18 machining was performed offsite by subcontractors
19 from May 1, 1957, until August 1961 and not at the
20 Kansas City site itself.

21 So, according to NIOSH, mag-thorium
22 machining operations at Kansas City Plant actually
23 began on August 23, 1961. And SC&A is in agreement

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1 with the documents NIOSH has presented.

2 Second of our concerns was the location
3 of the mag-thorium machining. First, they
4 mentioned several departments on the location of
5 the mag-thorium machining. So, the machining of
6 mag-thorium first took place in Department 22. In
7 October '65, Department 22 changed its name to
8 Department 20D. So, whenever it is Department 22
9 and Department 20D, they are the same department.
10 They just changed names. But after August 1970,
11 mag-thorium machining took place in another
12 department, which was called the model shop. So,
13 mag-thorium machining was moved to the model shop
14 in 1970.

15 Now, about the bounding limit that
16 NIOSH posted, which is $3E-11$ microcuries per
17 milliliter. SC&A agrees with NIOSH on the
18 application of this bounding value for thorium
19 exposures in the machining work for the periods of
20 time and locations where this limit was enforced.
21 The application of this limit depends on NIOSH
22 being able to corroborate for relevant operational
23 time periods and locations that this limit was

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1 bounding of air concentrations to which
2 mag-thorium machining workers were exposed.

3 So, let's go to the period 1961 to 1963.
4 From the period August 1961 to 1963, it is clear
5 that there are gross alpha monitoring data for the
6 location in question, which is Department 22, and
7 mag-thorium and DU operations were co-located.
8 So, SC&A agrees with application of the bounding
9 limit to this time period.

10 For 1963 to 1966, we still need some
11 information regarding the mag-thorium machining
12 workload in concert with co-located DU operations.
13 Because what happens is NIOSH was using this limit
14 at this building, but this limit was enforced based
15 on the DU machining. And if DU machining was done
16 at the same time or in the same location as
17 mag-thorium machining, using the same machines,
18 then we can apply the results for the DU air
19 sampling to thorium. If not, we cannot apply the
20 limit.

21 For the 1966 to 1970, the information
22 remains lacking regarding the location, the
23 specific timeframe and workload for mag-thorium

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1 machining during this period.

2 Department 20D, where the DU machining
3 took place until 1966, started to be decontaminated
4 in that year and was likely not used, in whole or
5 part, for mag-thorium machining. So, this is
6 problematic, given that NIOSH makes use of DU area
7 air samples and surface smears for Department 20D
8 to show that the limit was achieved in the
9 mag-thorium operation, without knowing whether
10 those operations had been relocated relative to
11 these monitors.

12 I have to say that when NIOSH is going
13 to discuss their responses, I just reviewed it,
14 that they review the information from 1963 to 1970.
15 This is the new paper that was posted yesterday,
16 and certainly NIOSH to tell this again, but I just
17 want to say that those two locations from 1963 to
18 1970, NIOSH has determined that mag-thorium
19 operations were suspended in 1963 and did not begin
20 again until August 28, 1970. And we saw the
21 documents they had presented. We think that their
22 conclusions are probably correct, although there
23 was a fire in 1963. But as the limit is going to

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1 be used for this period with probably no
2 mag-thorium operation -- I don't know, that is for
3 NIOSH to answer, if they are going to use this limit
4 for the 1963, the whole period, 1963 to 1970 period.

5 Okay, now let's go to the 1970 to 1979.

6 MR. MCCLOSKEY: Joyce, may I interrupt
7 for a second? Did I just hear you say the word
8 "fire" or did I mishear?

9 DR. LIPSZTEIN: Yeah, there was a fire
10 in 1963 that I saw in one of the documents that
11 actually NIOSH referred to.

12 MR. MCCLOSKEY: And then you went on to
13 say that causes you to wonder how NIOSH is going
14 to apply the 3E-11 from '63 to 1970. Is that --

15 DR. LIPSZTEIN: Yes.

16 MR. FITZGERALD: I think the confusion
17 -- Joyce, wasn't that fire in '64?

18 DR. LIPSZTEIN: In '64, yes.

19 MR. FITZGERALD: Yeah, I think there
20 was some incident involving a pyrophoric magnesium
21 fire that she's referring to. And I think it is
22 just a question for clarification, if in fact that
23 was the case, you know, if there was in fact

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1 exposure. And I think that is the important
2 aspect: What would be applied to that exposure in
3 '64 for that one incident?

4 Of course, it also begs the question,
5 if there was a fire, does that mean there was
6 residual mag-thorium on the premises that might
7 have been involved or not.

8 MR. MCCLOSKEY: Yeah, we're not going
9 to be able to respond to that today. It'll
10 probably sound like, what Joe just said, that we
11 are going to need to think about how that fire will
12 be handled, because I need to see that SRDB
13 reference again and review that fire.

14 MR. FITZGERALD: Yeah, I recall the
15 incident, but I don't recall it being '64. If it
16 was '64, then it'd be sort of a little bit of an
17 aberration in terms of, what do you do with that?

18 MR. MCCLOSKEY: Okay.

19 MR. FITZGERALD: But that doesn't
20 necessarily mean there was an exposure. But there
21 was a fire. So, clearly, the ones that were
22 involved in putting it out, there might be some need
23 to cover it.

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1 MR. MCCLOSKEY: We'll have to review
2 that. Sorry for interrupting, Joyce. You can go
3 back.

4 DR. LIPSZTEIN: Oh, okay. Now for the
5 period of 1970 to 1979. One of SC&A's concerns was
6 that beyond the 1970 the breathing zone that
7 sampling conducted in the model shop, there are no
8 early sampling data applicable to mag-thorium
9 machining in the model shop, where mag-thorium
10 machining operations took place from 1970 to 1979.

11 SC&A found that most of the references
12 cited in NIOSH's response paper -- I mean the old
13 response paper, not the one from yesterday,
14 provided air sampling or surface contamination
15 data to corroborate that the time limit was met or
16 either not valid or relevant to its purpose, due
17 to wrong time period, not falling within the 1970
18 to 1979, or wrong plant location, not of the model
19 shop during September 1970 to 1979.

20 So, there was no air sampling, just the
21 one that they did as a test before
22 commence -- before starting the mag-thorium
23 operation in the model shop.

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1 SC&A calculated the significance of the
2 limiting air concentration. We wanted to know
3 what does this mean in terms of dose for the worker.
4 So, we made a calculation for the committed
5 equivalent doses from exposure to limiting air
6 concentration.

7 For example, if we use type M thorium
8 and we use one year continuous work by a mag-thorium
9 worker, for inhalation of thorium-232, thorium-228
10 and radium-224 considering the activity ratio from
11 thorium-228 to thorium-232 equal to 0.19, as
12 suggested by NIOSH, this gives a 20-year committed
13 equivalent dose to the ground surface of 136 rems
14 and a 50-year ground surface committed equivalence
15 dose of 300 grams. Ground surface is the main arm
16 for the position for thorium and is the highest
17 dose.

18 So, I think that this limit is pretty
19 conservative, looking at what one year of
20 continuous work would give as a dose to the worker.

21 If we use this type of Type M thorium,
22 if you use Type S thorium, and of course the most
23 exposed organ, they have the highest dose is the

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1 exit of airways and the lungs.

2 And so for each year that the
3 mag-thorium would work, considering thorium-228
4 and thorium-232 they can even actually, if the 0.19
5 was used, the difference is very small. The 20 to
6 50 year committed equivalent dose of the
7 extrathoracic airways is about 30 rems and the 20
8 to 50-year lung-committed equivalent dose is about
9 27 rem. I mean 20 to 50 years because it doesn't
10 vary too much.

11 So, in summary, we have concluded in our
12 White Paper that critical information regarding
13 mag-thorium machining location workload and times
14 range are lacking from '63 to '70, that the lung
15 set of 1970 samples, as samples taken in the models
16 shown are inadequate to demonstrate that the limit
17 was bounding for the model shop from 1970 to 1979.
18 But the limit itself that is being applied is very
19 conservative and likely claimant-favorable.

20 So, we made some recommendation that in
21 the absence of measurement data, NIOSH should
22 validate the proposed air concentration limits for
23 source term-based exposure model, followed by

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1 suitable sample dose reconstruction to demonstrate
2 this is ability of applying this limit for the
3 values operational time periods in question, 1963
4 to 1966, 1966 to 1970, and 1970 to 1979.

5 I must say that you are going to see now
6 that I am going to say it before NIOSH, NIOSH
7 complied with most of SC&A recommendations for the
8 period 1970 to 1979. They presented in the White
9 Paper that was published on the website. Yes, they
10 presented documents showing that the 1970 to 1979
11 machining were wet operations and they calculated
12 source term-based exposure modeling. And the only
13 thing that was missing from our recommendation was
14 the dose calculations for that period.

15 So, that's it.

16 CHAIR BEACH: Thank you, Joyce. So,
17 any Work Group discussion? Questions for Joyce?

18 Brad, do you have any questions for
19 Joyce before NIOSH starts?

20 MEMBER CLAWSON: No, I don't. Thanks,
21 Josie.

22 CHAIR BEACH: Okay, seeing none at the
23 table. Pat.

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1 MR. MCCLOSKEY: Okay, so thanks,
2 Joyce. The paper that she was referring to that
3 got to the NIOSH website yesterday, we had that
4 phone call a week or so ago and we told you then
5 that we would not have this paper ready for today's
6 meeting. We were expecting a verbal response to
7 this paper.

8 CHAIR BEACH: Right.

9 MR. MCCLOSKEY: Before we went on
10 vacation we got approval, technical approval, and
11 so we initiated the agency reviews and it moved
12 along a little bit faster than we expected. So,
13 it is out there.

14 I have copies of it, if you want me to
15 hand those out. They are not appropriately marked
16 because there were further PA reviews done after.
17 But if you think that would be a good idea.

18 MR. KATZ: You don't need to really --

19 MR. MCCLOSKEY: Okay.

20 MR. KATZ: -- because it is available
21 now, posted, and everybody will have it.

22 CHAIR BEACH: Before you go on, I
23 wasn't sure if the Work Group knew about the meeting

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1 that we had. Pete had asked for myself to get on
2 a meeting to talk about the dose reconstructions
3 for a couple of different items. And I was sitting
4 here thinking that the rest of the Work Group may
5 not have been aware of that meeting.

6 I was on the meeting with Pete and then
7 I asked Joe and Ted to be on the meeting. So, it
8 wasn't a Work Group meeting. There was no
9 transcript taken and it was basically so that --
10 it was a technical call.

11 Has this been sent out? I'm wondering
12 if the Work Group has a copy of this so that they
13 know what we discussed. I didn't send it to
14 everyone.

15 MR. KATZ: I didn't forward your -- no,
16 I don't think so.

17 CHAIR BEACH: Okay. So, we will
18 forward the note. It just basically talks about
19 the dose reconstructions that we want for 13 and
20 14, which will be discussed today also. I'm
21 sitting here feeling bad that I hadn't gotten that
22 out. So, sorry for interrupting.

23 MR. MCCLOSKEY: Okay. No, it's okay.

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1 So, Joyce and SC&A put out their White
2 Paper that we received on May 15th of this year and
3 we were in the middle of working on responding to
4 some of the other issues for this meeting. And so
5 we didn't think we were going to get any lengthy
6 response put together in time for this meeting.

7 So, I mean, Joyce, you added a lot of
8 issues within there, within your paper that, if we
9 would have taken the time to answer all of them,
10 we wouldn't have it ready for today.

11 We recognize that there were a lot of
12 things unanswered by the paper posted just the
13 other day. So, we will just move forward with what
14 we do have.

15 So, the paper I will be reading from is
16 on the website. I'm not going to read the whole
17 thing. Joyce touched on some of the key issues
18 there. The second paragraph says that we now have
19 agreement for the period of August '61 to March
20 31st, '63. It is the start of the mag-thorium
21 machining operations at the Kansas City Plant.
22 So, we are in agreement there.

23 For the remaining period, we had some

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1 discussion about how to apply the methodology
2 there. So, that is what this paper attempts to do
3 is to describe what to do with the remaining period.

4 And then the SC&A paper, they wanted
5 some more validation and they raised the question
6 was mag-thorium even machined during the period of
7 1963 to 1979. And in the absence of confirmatory
8 data that showed actual operations occurring
9 during that period, we were making the assumption
10 that they continued. We didn't have confirmation
11 that they stopped. We have records of a formal D&D
12 of that process. So, we were moving and trying to
13 acquire more data from the site and try to lock it
14 down. But over time, we never got there.

15 So, what we are saying now, let's see
16 -- since January -- I'm reading from page three,
17 the first paragraph. Since January, NIOSH has
18 continued to obtain and review documents and
19 perform interviews. And based on the review of the
20 information available from 1963 to 1979, NIOSH has
21 determined that mag-thorium operations were
22 suspended during April first '63 and did not begin
23 again until receiving approval from Health

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1 Services on August 28, 1970.

2 So, we have now removed that period from
3 the operations. Joyce touched on that already and
4 we are saying they were suspended during that
5 period.

6 We found some information to
7 corroborate it and that would be the inventory
8 information that shows -- it comes from NMMSS. It
9 comes from these documents called Statement of
10 Measurement documents.

11 So, there is an inventory document that
12 has information beginning in 1969 and it documents
13 the presence of mag-thorium inventory starting in
14 only 1971. And another document of the NMMSS
15 corroborates the inventory information also,
16 documents the presence of mag-thorium beginning in
17 '71.

18 So, we used inventory information to
19 confirm our dates of operations.

20 Also, there are these reports from the
21 site called Weekly Activity Reports. They
22 corroborate the suspension of mag-thorium
23 operations. They document a very small staff

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1 working in the area where we said the operations
2 were occurring, Department 22. So, they had only
3 five people working in that area on one shift and
4 they also began their D&D of Department 22
5 beginning in May of '64.

6 And by August of that same year, half
7 of the machines were removed from the area and the
8 staff was reduced to two part-time personnel. So,
9 it was a very small staff in that area during that
10 time period where we are saying that operations
11 were suspended.

12 So, then we move on to 1970, where we
13 do have information of another campaign starting.
14 So, we reviewed the memo that helps define the date
15 of operations for the second operational campaign
16 starting in '70 and ending in 1977. In this
17 memorandum, a 1970 start date was identified by
18 model shop management, which corroborates the
19 operational information discussed above about the
20 suspension of activities. And the 1977 ending
21 date agrees with the Source and Special Nuclear
22 Material inventory information, which shows the
23 last receipt in March of 1977.

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1 And NMMSS information does not indicate
2 a later date of operations, other than waste
3 management. So, if you look at the NMMSS, I have
4 the report, a copy of it, here. It has mag-thorium
5 dates of that inventory at the site and it has
6 alloyed thorium up until -- what is it, '76 -- and
7 then -- oh, here we go, that'll look better.

8 So, it has alloyed metal up until '76.
9 Those are Joe's notes from NMMSS. And then the
10 only other time with dates after '76 it is
11 thorium/other awaiting disposal. So, yes, the
12 mag-thorium was still on-site after '76 but as a
13 waste in barrels.

14 I just held up SRDB reference 137786,
15 for those of you on the phone.

16 Okay. SC&A wanted us, in their White
17 Paper, to produce more air-monitoring results.
18 There are no other air-monitoring results after
19 1970, other than that one we have discussed several
20 times. That was that negative exposure assessment
21 where they followed each operation through model
22 shop and took breathing air samples. That is all
23 we had for that.

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1 But NIOSH considers other things when
2 we think about whether or not our methodology is
3 bounding and when we looked at pyrophoricity of the
4 material and how that would have caused the site
5 to control this with work practices.

6 So, we looked at the pyrophoric nature
7 and the controls Kansas City Plant implemented to
8 prevent fires. From the beginning of the
9 operations in '61, KCP was sensitive to the hazard
10 and required fire department involvement prior to
11 any work. And they were explicit about that
12 hazard, saying, quote, this alloy is a potential
13 problem, primarily as a result of the pyrophoricity
14 of the magnesium.

15 Those guidelines followed throughout
16 that campaign in the '70s, continued to address the
17 pyrophoricity and included statements, such as the
18 Fire Protection Department shall be contacted
19 before initiation of the project and regarding any
20 alterations in the process. So, we made sure that
21 they had buy-in from fire protection personnel when
22 any changes to this process occurred.

23 And we took some interviews in March of

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1 this year and a few of those interviewees
2 corroborated the fact that information was driven
3 down to the floor level of operations and they
4 actually implemented it and they were told that it
5 was extremely flammable. Those are taken from
6 Ted's notes of the March meeting.

7 So, that pyrophoric nature is a driver
8 for many of their IH, industrial hygiene controls,
9 such as their Good Housekeeping. If you look
10 through those Health and Safety Management Guides,
11 they talk about making sure there is no dust
12 accumulation or waste accumulation. They make
13 sure they run a clean operation.

14 And the pyrophoric nature also provides
15 us with something that is very valuable in the
16 health-physics regard and that is wetting
17 controls. So, we looked at that and saw that all
18 reports indicate that that work was a wet process.
19 The mag-thorium machining was done wet. And some
20 machine operations, such as those at a tape lathe
21 in the model shop were performed completely
22 submerged in coolant. They used a Cadet Z mineral
23 oil coolant for these machine operations.

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1 They kept those work practices
2 throughout the '70s. They included state of the
3 art controls that we even have in place today in
4 our DOE world: medical surveillance, respiratory
5 protection. And so they had that in place at the
6 start of the campaign in 1970.

7 I have moved over to page five, for
8 anyone that is following along.

9 And one of the guides says in quotes,
10 all machining operations of this material shall be
11 machined wet, using mineral oil base coolant, Cadet
12 Z.

13 The interviews we did in March
14 corroborated the implementation on the floor that
15 the chips were always kept wet. Then, we
16 considered that, given that the material was
17 wetted, it is not plausible that KCP machinists
18 would generate a significant amount of dust.
19 After 1970, the magnesium-thorium was a two percent
20 thorium by weight and it doesn't seem plausible to
21 reach concentrations greater than 3E-11
22 microcuries per milliliter on a consistent basis.
23 NIOSH estimates that breathing that air, one would

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1 inhale approximately 33 grams of alloy in a year,
2 which is a very high number for a wet process.

3 So, then we went and looked at the SC&A
4 report on Dow Madison. That is the organization
5 that created the same magnesium-thorium that KCP
6 operated with, that they machined.

7 And there were some interesting parts
8 from that report. They took an affidavit from a
9 mill operator and he said that there was no airborne
10 dust. He said any dust generated would have been
11 smothered by the mill coolant.

12 And Dow Madison was working to a
13 procedure that they also provided to Kansas City
14 Plant and it was the basis for many of the controls
15 at the beginning of all of the controls that Kansas
16 City Plant used. So, they were all using similar
17 controls for the work.

18 So, in that same SC&A report, they had
19 some breathing zone air sampling discussed, while
20 Dow Madison was doing some very aggressive machine
21 operations, such as open-wheel surface grinding,
22 air-operated vibration sanding, buffing and
23 drumming of mag-thorium powder. And during those

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1 fairly aggressive activities, the highest air
2 concentration they saw in the breathing zone was
3 3.9E-12 microcuries per milliliter. So, that is
4 almost an order of magnitude lower than the control
5 level that we have used for our methodology.

6 So, that would have yielded a dose of
7 8 rem per year at that highest level with that Dow
8 saw during those aggressive activities. That
9 would be CEDE, committed effective dose
10 equivalent.

11 MR. SHARFI: If it's an annual dose.
12 That was for a year, right?

13 MR. MCCLOSKEY: Yes. Okay, and then
14 NIOSH believes that the operations at Dow represent
15 a worst case exposure scenario, and it is not likely
16 the Kansas City Plant's machinists were exposed to
17 a higher concentration on a 2000-hour
18 time-weighted average basis.

19 Okay, so now I will jump down to the
20 source term. SC&A requested corroborating data
21 and, in the absence of such data, recommends a
22 source term-based exposure model. So, they asked
23 for some air-monitoring data and we said after

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1 1970, we wish there were more but there isn't. So,
2 they came with a solution, not just wondering where
3 is the data but they offered us something we could
4 try. And what we did was we looked at what
5 inventory information was available. We reviewed
6 it and we didn't see extensive source-term
7 information and recognize that it was limited,
8 however, it could be explained. The lack of this
9 inventory information could be explained by the
10 small-scale nature of those operations and that
11 there just wasn't much inventory after they started
12 tracking it in 1969. And we provide some
13 corroborating information from Waste Management
14 reports for that.

15 But, nevertheless, we go on with our
16 calculation. We took the largest set of inventory
17 information for a particular year we could find,
18 that was 1973 and there is the reference there. It
19 comes from the Statement of Measurement records
20 that Joe found at Kansas City Plant. And then we
21 had information from eight separate months during
22 that year, added it up and it came up to 42 kilograms
23 of thorium. And we used NUREG-1400, their

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1 equation 1.2, and it is listed here. You can go
2 through that if you like.

3 That NUREG provides guidance from the
4 NRC for sites to determine whether or not they need
5 to do air monitoring. And there is a calculation
6 available there where you can assess your
7 operations and determine what degree of protection
8 you are using, glove bags, glove boxes, inhalation,
9 what state the material is in, is it a metal, is
10 it powder. And you apply all of those that you
11 think are appropriate.

12 And what we did, if you went through it
13 there, you would see that we went with the more
14 conservative decisions on each one of those and we
15 came up with a -- and that yields an intake rate.
16 The person around that material would receive --
17 fire alarm.

18 MR. KATZ: Fire alarm. Okay. Well,
19 we are going to break for the fire alarm. I'm not
20 going to kill the phone. I'm just going to put it
21 on mute, so you don't have to hear the alarm. And
22 we will be back as soon as they let us back.

23 (Whereupon, the above-entitled matter

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1 went off the record at 9:48 a.m. and resumed at 9:53
2 a.m.)

3 MR. KATZ: Okay, so we are back in the
4 room. There was no fire but everyone is good.

5 So, continue.

6 CHAIR BEACH: Okay. So, Pat, you were
7 saying.

8 MR. MCCLOSKEY: Yes, so that
9 NUREG-1400 calculation that we showed starting on
10 page six and continuing onto seven, it yields an
11 intake rate for someone that works around that
12 material. And we calculated $4.2E-3$ grams per
13 year. We used the specific activity of
14 thorium-232 and converted it to activity and came
15 up with $4.62E-10$ curies per year of an intake and
16 that converts to 17.1 becquerel per year.

17 When we compare that amount, that
18 intake amount that you would get from the
19 NUREG-1400 calculation to an intake amount based
20 on our bounding methodology, the $3E-11$ microcurie
21 per milliliter and SC&A did us the service of
22 calculating that in their Finding 7 of their most
23 recent May document, May 2015. You can see where

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1 they have calculated it. And what they came up
2 with is 2,664 becquerel per year. That's a good
3 calculation.

4 So, what that shows is the source-term
5 calculation, based on all that conservatism and
6 based on the highest inventory amount for a year
7 that we could find is 156 times smaller than our
8 ER method.

9 So, there is some corroborating
10 information for you. We used plenty of
11 conservatism, we think, in that calculation but if
12 we want to go off and see if in fact '73 was the
13 worst-case for that year, we could go back to NMMSS
14 and see if we can refine that.

15 We just offer that in response to SC&A's
16 request, just as an additional layer of assurance.
17 We are not going to use that for any DRs or
18 anything.

19 So, in conclusion, at the end of the
20 paper, we say that NIOSH, along with SC&A and the
21 Advisory Board Work Group, has been reviewing
22 Kansas City Plant documents and interviewing
23 personnel since 2004 regarding radiological work

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1 at the Kansas City Plant. And for the last several
2 years, we have specifically been searching for
3 mag-thorium information. NIOSH continues to seek
4 and review additional information.

5 Based on a review of the information
6 available at this time, NIOSH believes the weight
7 of evidence supports the ER's bounding method, as
8 modified with the Advisory Board's and SC&A's
9 assistance, as plausible and claimant-favorable.

10 CHAIR BEACH: Okay, thank you, Pat.
11 Just for clarification, I have one action that
12 Joyce brought up about the fire in 1964 that Pat
13 was going to go back and review the SRDB for that
14 incident. So, that was one action.

15 Joyce, are there any other issues with
16 NIOSH's paper, just in summary?

17 DR. LIPSZTEIN: Yes, I don't think it
18 is clear how they are going to apply this limit of
19 $3E-11$ microcuries per milliliter. They are going
20 to apply it to the whole period from 1961 to 1979
21 continuous exposure of workers. How are they
22 going to apply this limit?

23 CHAIR BEACH: Okay, I think that is

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1 part of the Work Group's question as well, how it
2 is going to be applied and to whom.

3 MR. MCCLOSKEY: Okay, first, Joyce, if
4 you get a chance or someone gets a chance to find
5 the SRDB reference for the fire, I heard you say
6 that you read --

7 DR. LIPSZTEIN: I'll get it now. It is
8 in one of the papers that you gave -- just one
9 second.

10 CHAIR BEACH: While Joyce is looking
11 for that, Work Group Members, any questions for
12 NIOSH or SC&A at this time?

13 Brad, anything?

14 MEMBER CLAWSON: No, not at this time.

15 CHAIR BEACH: All right.

16 DR. LIPSZTEIN: It is 137860.

17 MR. MCCLOSKEY: Okay.

18 CHAIR BEACH: Thank you.

19 DR. LIPSZTEIN: It's a paper that you
20 cite just before the second campaign in the last
21 line. Then, on page three, there is something
22 about the fire in October 28, 1964.

23 And I think that I would like to know,

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1 as part of the dose calculation and was already
2 asked, to whom is this going to be applied.
3 Because I saw some interviews of people that were
4 working on D&D and they were dismantling the
5 machines and things like that, so their exposure
6 is certainly different.

7 CHAIR BEACH: Okay.

8 MR. MCCLOSKEY: So, to start that off
9 with Joyce asked from the period of '63 to '79, are
10 we going to apply the 3E-11 continuously.

11 So, we have now said from '63 to '70,
12 those operations were suspended. So, it is pretty
13 clear that we are not applying it there.

14 CHAIR BEACH: So, '63 to '70, so I am
15 clear.

16 MR. MCCLOSKEY: Yes, no operations.

17 CHAIR BEACH: Okay.

18 MR. MCCLOSKEY: So, we now have two
19 mag-thorium periods.

20 CHAIR BEACH: Okay.

21 MR. MCCLOSKEY: We have a '61 to '63 and
22 then a '70 to '77, roughly.

23 And so, from -- and Mutty will help with

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1 how we apply the 3E-11 over the years, now where
2 it is, in effect. So, we have everyone that
3 submits a claim that has a job description that we
4 can match to the TBD-6000 generated job
5 descriptions in the ER, such as operator,
6 supervisor, laborer, and other categories there
7 where they give different ratios of what the
8 operator gets, different ratios of the 3E-11.

9 So, at the March visit you guys obtained
10 some really good, useful documents for us to help
11 apply this. And those include job descriptions.
12 One of them is an Excel spreadsheet that has each
13 Kansas City Plant job description, what all they
14 would have done, and where they would have done it,
15 what area.

16 And this one file that he got, he got,
17 well I will say three or four of them, so that is
18 going to help us, when claims come in, determine
19 which of those four TBD-6000 categories that person
20 fits into.

21 And so they will -- we will determine
22 where they were, to the best we can, with our normal
23 DR practices, and apply their category of exposure

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1 for that period of time.

2 Am I missing anything?

3 MR. DARNELL: No. I'm actually
4 looking at the SRDB reference that Joyce gave us.
5 I don't see any reference to fire in the Weekly
6 Activity report but in Joe's note, he references
7 a magnesium fire in Department 90, which is --

8 MR. FITZGERALD: I don't even remember
9 what 90 is now.

10 MR. DARNELL: Ninety was not part of
11 radioactive work. It was magnesium work done in
12 other places.

13 MR. DARNELL: Oh.

14 MR. FITZGERALD: But Department 90 was
15 never one of those.

16 MR. DARNELL: Oh, it may be a magnesium
17 fire that was not related to the mag-thorium work.

18 MR. MCCLOSKEY: They did machine pure
19 magnesium without the thorium. Correct?

20 MR. DARNELL: That is the only
21 reference. Joyce, is that correct, the reference
22 that you are talking about?

23 DR. LIPSZTEIN: Yes. Actually --

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1 MR. DARNELL: Okay, that was actually
2 not radioactive work.

3 MR. FITZGERALD: That may be magnesium
4 not related to magnesium-thorium, now that we have
5 the reference in hand. We can verify that.

6 DR. LIPSZTEIN: In 1964, there was
7 still some activity, although --

8 MR. DARNELL: Oh, there is no
9 disagreement that there was activity going on with
10 the mag-thorium. It is just that in this
11 particular location, they did not use radioactive
12 materials.

13 MR. MCCLOSKEY: Well, actually, we
14 said there is no machine operations in '64. So,
15 if it even indicates that there is machining
16 operations after '63, we still need to evaluate
17 that.

18 MR. DARNELL: It is just evaluate to
19 see if it is pure magnesium or magnesium-thorium.

20 DR. LIPSZTEIN: I think '64 has to be
21 evaluated.

22 (Simultaneous speaking.)

23 MR. FITZGERALD: I think that

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1 clarification should be -- we should be able to do
2 that pretty straightforward.

3 MR. DARNELL: I'm almost positive that
4 there was never radioactive work in Department 90.
5 We can just double-check that.

6 MR. FITZGERALD: We can double-check
7 that but that very well may be the case.

8 DR. LIPSZTEIN: Because we know that
9 there was machining came out of uranium in other
10 departments after they cleaned Department 22. So,
11 I don't know if the magnesium-thorium also moved
12 to other places.

13 MR. FITZGERALD: Yes, what we are
14 saying, Joyce, is that it is worth just confirming
15 --

16 DR. LIPSZTEIN: Yes, looking at it.

17 MR. FITZGERALD: -- looking at it as
18 far as what exactly Department 90 was at that time
19 and what was being machined in there.

20 CHAIR BEACH: Okay. So, what I am
21 hearing -- yes, NIOSH is going to do that -- 1963
22 to 1970, other than clarifying the 1964, that there
23 was no mag-thorium work done. So, there is no dose

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1 reconstruction going to be done.

2 But 1970 to 1977 is still --

3 MR. SHARFI: It would be 1964 to 1970.

4 Right?

5 MR. MCCLOSKEY: Let me read the exact
6 dates.

7 CHAIR BEACH: Okay, give me the exact
8 dates, so I can have them. Thank you.

9 MR. MCCLOSKEY: I think we can find
10 those in our White Paper.

11 CHAIR BEACH: Yes.

12 MR. MCCLOSKEY: So, there is a period
13 from August '61, so that would be August 1, '61
14 through March 31, '63. That is the first period
15 of magnesium-thorium operations that we have
16 agreed on.

17 Then the second period, so operations
18 are suspended from April 1, '63, they are suspended
19 up until -- and did not begin again until after
20 receiving approval from Health Services on August
21 28, 1970. Yes, that is practically the end of
22 August but that is our first indication.

23 And that ends up being, the first thing

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1 that we see that they have done there is that one
2 where they took the air sample. That ends up being
3 the first firm confirmation of operations
4 occurring.

5 But we were saying as soon as they got
6 the release to do work in August, on August 28th
7 of '70, that is when the second campaign starts.
8 And since we were using the inventory information
9 to corroborate all this, we also said that since
10 the NMMSS information and other inventory
11 information shows -- and especially a document from
12 a manager of the area, where -- I can pull that out
13 and read it. It might help. But we used that also
14 now to cut off operations in '77.

15 MR. FITZGERALD: You're cutting it off
16 in '77 rather than '79 at this point.

17 MR. MCCLOSKEY: Yes, since we were
18 using that inventory information to confirm other
19 dates, we were going to stick with it and say --

20 MR. KATZ: Do you have a month for that?

21 MR. FITZGERALD: This says December of
22 '77.

23 MR. MCCLOSKEY: Yes, December 31, 1977

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1 because the inventory information is annual now.
2 Annual dates, so we went with December 31st. Is
3 that clear for you, enough?

4 CHAIR BEACH: Yes.

5 MR. FITZGERALD: So, if a worker
6 self-identified as a mag-thorium worker who
7 happened to work from the beginning of that period
8 to say '61 and, thereafter, that individual would
9 get the ER, I can't remember the exact value but
10 the value in the ER for '61 to '63. And then even
11 though he self-identifies as a mag-thorium worker,
12 no credit for '64 through '70.

13 MR. MCCLOSKEY: For mag-thorium.

14 MR. FITZGERALD: Right. But then
15 would get the 3E-11, if we was an operator from '70
16 to '77.

17 If the individual is not an operator,
18 but had access to the area, then they would get
19 proportionally less, depending on the worker
20 category. I think there were three other
21 categories of labor, something like that.

22 So, that is kind of the ER picture.

23 MR. DARNELL: I actually have a little

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1 bit of a problem with saying a worker
2 self-identified as a mag-thorium worker because we
3 have had evidence in the interviews that workers
4 actually never really knew specifically what they
5 were working with.

6 I think that we had a worker with
7 medical records --

8 MR. FITZGERALD: To substantiate that
9 they were doing it.

10 MR. DARNELL: Yes.

11 MR. FITZGERALD: Okay, good point.

12 The only wrinkle in this that we
13 actually can pick up on D&D and waste handling is
14 whether that pre-established category that is
15 discussed in the ER where you proportionately
16 assign less than 50 percent, depending on worker
17 category, it is still a little fuzzy as how it would
18 apply to the laborers who were, in fact, doing
19 direct handling. We can deal with that in the
20 other issues but I know that was set up before we
21 actually started investigating what these other
22 categories were doing. And I think that was more
23 of a generic labor category. And we are sort of

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1 looking a little more specifically at laborers who
2 happen to be carrying waste or happen to be doing
3 small letter D&D. So, I am a little bit uncertain
4 about whether that generic would apply to those
5 kind of folks.

6 MR. MCCLOSKEY: Yes, I mean anytime you
7 just simply have four categories for a site as
8 complex as Kansas City Plant, you are going to come
9 across categories of workers that their square peg
10 doesn't necessarily fit perfectly into that round
11 hole.

12 MR. FITZGERALD: Yes, just as an
13 asterisk on this one. I think we are, generally,
14 pretty satisfied but I think that is the only --
15 and that is addressed in other issues.

16 MR. MCCLOSKEY: We can talk about that
17 further.

18 MR. FITZGERALD: We can talk about that
19 further later.

20 But so that is kind of the ER. I think
21 that is the ER picture for mag-thorium.

22 CHAIR BEACH: Okay. So, the other
23 part of this is also the example dose

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1 reconstruction that we had asked for being
2 completed and we are going to get that at a later
3 time. Correct?

4 MR. DARNELL: Correct, once we get done
5 agreeing on all the aspects, we are planning on
6 giving you the entire product, instead of a
7 piecemeal product.

8 CHAIR BEACH: Okay. So, other action
9 items, anybody? Joyce, do you have anything else?
10 I know NIOSH is going to still track down that time
11 period and get back to us on that.

12 DR. LIPSZTEIN: Okay. No, that is it.
13 And I have just the people from decontamination,
14 how they are going to be treated.

15 CHAIR BEACH: Did you say D&D?

16 DR. LIPSZTEIN: Yes.

17 MR. FITZGERALD: Yes, D&D, one set, for
18 example, went through and dismantled the
19 equipment, the lathes after the mag-thorium period
20 ended. I think it is certainly in question. That
21 is kind of addressed in a different issue.

22 MR. MCCLOSKEY: Yes, we can do that now
23 or later.

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1 MR. FITZGERALD: It's up to the chair.

2 CHAIR BEACH: I think it fits better in
3 the other issue.

4 MR. MCCLOSKEY: Yes, if it comes to a
5 point where we close this issue and then move to
6 another issue, whichever you think is appropriate.
7 Whatever you want to do.

8 MR. FITZGERALD: We can move to those
9 two issues, if you want to segue into D&D and waste
10 handling. It does include mag-thorium,
11 obviously.

12 MR. MCCLOSKEY: Yes.

13 CHAIR BEACH: So yes, we can -- what is
14 the Work Group's preference here?

15 MEMBER LOCKEY: It is a good segue into
16 those too.

17 CHAIR BEACH: It is, actually. And we
18 were going to go to 11:00 but Ron's not with us now.

19 So, any other issues with 13? Any
20 other clarification? Everybody comfortable with
21 that? Then, we will move --

22 DR. MAURO: Josie, this is John Mauro.

23 CHAIR BEACH: Yes, hi, John.

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1 DR. MAURO: Hi, everybody. I've been
2 on for a while, listening. I have one question
3 sort of after I started to read some of this
4 material, and in light of the fact that I did a lot
5 of work early on at the site and also at Dow.

6 CHAIR BEACH: Of course.

7 DR. MAURO: This limit to dust, the
8 airborne limit that was established, that 10 to the
9 minus 11 number that was in place and that becomes
10 sort of the rock you are going to stand on right
11 now. It is my understanding that the airborne
12 thorium was really actually a magnesium-thorium
13 dust that was two percent by mass of thorium. Is
14 that correct? The inhalation exposure that we are
15 dealing with is airborne thorium that is basically
16 a thorium-magnesium alloy that consists, in terms
17 of it's two percent of thorium by mass. And I was
18 wondering what the milligrams per cubic meter are
19 when you have that limit on thorium because I seem
20 to recollect that certainly -- I understand the
21 arguments being made here but I would be interested
22 in knowing what that converts to in terms of
23 milligrams per cubic meter because I think that

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1 also goes toward weight of evidence as to whether
2 that strategy is, in fact, fairly kind of
3 favorable. I think you may find -- I can't say this
4 for certain because I haven't run the calculation
5 -- I just thought of it while you were talking, that
6 the number of milligrams per cubic meter might be
7 quite high, when you are dealing with a two percent
8 alloy.

9 So, I would just like to raise that
10 question. Maybe it could be looked into and help
11 to get some insight as to whether not that is a
12 fairly high dust load.

13 MR. FITZGERALD: Yes, actually, John,
14 I think Jim Neton, when he sat in on one of our Work
15 Group meetings, raised the question of whether you
16 would reach the threshold of breathability, just
17 because of the amount of thorium involved. That
18 was a comment he made back in January, I think.

19 DR. MAURO: Okay.

20 DR. LIPSZTEIN: And we answered it,
21 John, and we calculated it and we saw that it is
22 fairly invisible dust. It doesn't impair your
23 respiration. So, it is what is possible to have

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1 that in the air.

2 DR. MAURO: Okay, thank you.

3 DR. LIPSZTEIN: So, we made out a
4 calculation to see if that dust was visible but not
5 in carrying the health of the -- respiration of the
6 worker.

7 DR. MAURO: Very good. Thanks for
8 answering my question.

9 CHAIR BEACH: John, Pat was going to
10 answer it as well. But if you are satisfied, then
11 --

12 MR. FITZGERALD: Yes, I remember that
13 dialogue because Jim Neton raised that same
14 question.

15 MR. MCCLOSKEY: It is in our January
16 15th paper, and it equates at 1.1E-11 microcuries
17 per milliliter.

18 CHAIR BEACH: Okay. So, we are going
19 to go ahead -- oh, go ahead, John.

20 MEMBER POSTON: I'm sorry. I've been
21 sitting here trying to figure out exactly this
22 whole thing because I used to run a lathe and I never
23 did anything that didn't use coolant. And it seems

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1 to me the coolant knocks down the dust. So, I have
2 been trying to figure out how you get to this high
3 number for any situation, especially something
4 that is like magnesium, which is pyrophoric in
5 certain situations.

6 MR. SHARFI: And the Dow Madison's were
7 an order of magnitude well below that, when made
8 in the similar operations.

9 MR. MCCLOSKEY: That was our thought
10 all along with saying that we could bound this and
11 that there would not be high airborne values. They
12 wouldn't exceed their engineered bounds because of
13 their adherence to wet methods and the
14 pyrophoricity of the material. And they are
15 concerned with that.

16 MEMBER LOCKEY: For hard metal
17 pneumoconiosis, actually the coolant is
18 potentially for sensitization to cobalt. So, I am
19 not -- you say it knocks down the dust, but in that
20 particular disease process, cobalt just dissolves
21 in the coolant and actually is the biggest risk for
22 sensitization.

23 MEMBER POSTON: How do you aerosolize

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1 the coolant?

2 MEMBER LOCKEY: In the process of
3 machining it is aerosolized.

4 MR. MCCLOSKEY: So the coolant makes
5 things worse, really?

6 MEMBER LOCKEY: Yes, because the metal
7 is dissolved into the coolant. And the machine
8 process, whenever you have a machine process, you
9 are going to aerosolize the coolant, unless it is
10 contained.

11 (Simultaneous speaking.)

12 MR. MCCLOSKEY: Are you familiar with
13 that applying it to anything else, besides cobalt?

14 MEMBER LOCKEY: It is just I know in
15 cobalt it is a risk factor. So, I am just saying
16 there is another side of that.

17 CHAIR BEACH: Yes, there is.

18 MR. DARNELL: We need to take a step
19 back and look. We are dealing with two pyrophoric
20 materials.

21 MEMBER LOCKEY: I'm sorry?

22 MR. DARNELL: We're dealing with two
23 pyrophoric materials. If we aerosolized them, we

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1 would have had many fires.

2 MEMBER LOCKEY: I'm not knowledgeable
3 about that. I just know that with cobalt, it is
4 an issue.

5 MR. DARNELL: I agree with you.
6 Actually, I remember it from the Pathline days
7 because we had that same issue when we had to grind
8 inside piping. But for magnesium or thorium, both
9 pyrophoric materials, if you are able to aerosolize
10 them, you are also able -- that separates that from
11 the oil for some part of that also, which would have
12 meant a flash fire hazard. We didn't have that.
13 We have no evidence of that. We have no records
14 of that happening. It would have been happening
15 quite often, had that same process with cobalt-60
16 been occurring here.

17 So, because we have a loud
18 preponderance of no fires, we know that that wasn't
19 going on.

20 CHAIR BEACH: Okay, thank you. So,
21 thank you.

22 We are going to move on to Issue 17. It
23 segues naturally into this. NIOSH has a paper they

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1 put out June 11th that discusses that topic, and
2 then SC&A's memo. NIOSH, would you like to go
3 ahead and start?

4 MR. DARNELL: Let me think where we
5 are.

6 CHAIR BEACH: Seventeen, D&D
7 Operations.

8 MR. DARNELL: Give me just a second.

9 CHAIR BEACH: Sure.

10 MR. MCCLOSKEY: Are you talking about
11 the memos? There were a bunch of memo responses.

12 CHAIR BEACH: We'll go through the D&D
13 and then take an official break.

14 MEMBER POSTON: No fire alarms.

15 CHAIR BEACH: Hopefully not.

16 MR. MCCLOSKEY: Okay.

17 CHAIR BEACH: So, do you want to
18 summarize anything, Joe, first, and then have Pat
19 or what do you guys --

20 MR. MCCLOSKEY: I can read your summary
21 that we have.

22 MR. FITZGERALD: Well, we've given
23 each other a summary. Either way.

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1 MR. MCCLOSKEY: All right, here is
2 Joe's summary of where we are on 17. He says or
3 SC&A says similar to Issue 7 for radwaste handlers,
4 SC&A concluded that these activities were being
5 performed by worker category distinct from uranium
6 or thorium workers, who were not necessarily
7 monitored based on interviews and that these
8 workers or laborers would have been, potentially,
9 exposed.

10 Again, NIOSH notes that it had
11 identified two out of four laborers as having
12 internal monitoring records and, quote, will use
13 that data, where appropriate, to reconstruct
14 doses.

15 It is further noted that the ER
16 acknowledges and addresses the fact that various
17 worker categories had a varying exposure potential
18 and that, furthermore, an extensive procedural
19 review confirmed that Kansas City Plant
20 implemented a robust air and personal monitoring
21 program. Similarly, a review of SC&A's 2007
22 report a focused review of operations in thorium
23 exposures at the Dow Chemical Madison plant

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1 concludes that it is not likely the Kansas City
2 Plant handlers were exposed to a higher
3 concentration of airborne thorium-232 on a
4 2000-hour time weighted average basis.

5 SC&A's comments on that are that NIOSH,
6 again, references the two bioassay data points
7 identified for laborers and goes on to make a
8 programmatic case. The Kansas City Plant had a
9 robust contamination control program and that the
10 monitoring data for uranium workers validate the
11 bounding methods of the ER.

12 However, with only two data points for
13 laborers and some question as to whether both of
14 these particular laborers conducted D&D, it is not
15 clear how these bounding data would be applied for
16 them. Assuming they were cleaning rooms where
17 uranium machining had taken place, such as those
18 in Department 20, it remains unclear why any such
19 unmonitored workers conducting these activities in
20 uranium contaminated areas would not have the
21 bounding uranium worker dose distribution applied
22 for the D&D time period in question.

23 NIOSH's case regarding thorium is more

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1 persuasive. SC&A agrees that these workers were
2 unlikely to be exposed to residual thorium
3 concentrations in excess of 1.5E-11 microcuries
4 per milliliter.

5 So, that is basically what --

6 MR. FITZGERALD: Yes, I think that is
7 where we are at.

8 MR. MCCLOSKEY: Okay.

9 MR. FITZGERALD: And that issue,
10 again, is that we sort of just got into in March
11 looking at some of these cases and interviewing
12 some of these workers. And we weren't aware that
13 there was actually any internal data, internal
14 bioassay data for any of them, because initially,
15 they didn't recall any, but you found, I think, at
16 least two out of the four that we did interview did
17 have data.

18 MR. MCCLOSKEY: Yes.

19 MR. FITZGERALD: So really, kind of
20 before it was sort of like okay, what do we do
21 because they are, essentially, unmonitored workers
22 but now we actually have some data points. And the
23 so the question is a little different and saying

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1 okay, we do have some data and you are going to use
2 that in some fashion for dose reconstruction
3 apparently or maybe for those individuals alone.

4 But I just want to broach this subject
5 to clarify. We got into this issue originally
6 because I think there was some uncertainty about
7 whether the operators handled their own waste and
8 who did D&D and that was the whole genesis of let's
9 figure out how this was done. And we did find, I
10 think, that well, there was this whole category of
11 workers that we were aware of but didn't quite
12 appreciate everything they did. These laborers
13 actually handled a lot of the waste that fell to
14 the floor and picked it up and moved it to a central
15 area.

16 For the D&D, the small D&D, not the
17 two-year D&D that the ER refers to, that happened
18 pretty continuously, which is not surprising. And
19 that was handled by laborers who took machines
20 apart and decontaminated them and all that.

21 MR. DARNELL: Those people were
22 laborers that were actually dressed out.

23 MR. FITZGERALD: Yes, dressed out and

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1 everything. But the question was okay, so we do
2 have this subcategory of laborers that we weren't
3 appreciative of when the ER was put together. In
4 terms of dose reconstruction, those folks, the ones
5 that we can establish did small D&D, small letter
6 D&D and did handle the waste, what bounding dose
7 would they get or what contribution would be
8 assigned them?

9 It wasn't clear from the last write-up.
10 That is kind of what you just read, exactly what
11 would be done. I mean it looks like for certain
12 individuals that happen to have data, they would
13 be given that dose but if there was a category of
14 workers, some of whom don't have any internal dose
15 but were established as having done D&D or handling
16 waste, there doesn't seem to be enough to do a
17 coworker model.

18 So, it is kind of an open question. How
19 would you actually implement dose reconstructions
20 if you were to find these categories of workers that
21 we, I think, found from interviews? Yes, they
22 actually, day-to-day handled a lot of waste that
23 would go into the waste site and D&D, they actually

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1 did pick this equipment apart. So, it seems like
2 they were a category of workers that were being
3 exposed more than this generic sort of, of all the
4 laborers in the plant, they were getting exposed
5 more.

6 Now, were they being exposed as much as
7 the operators? It's not clear but sort of begs the
8 question how do you treat those, in terms of these
9 workers if they do file claims, how would you dose
10 reconstruct them?

11 MR. DARNELL: My personal opinion, I
12 believe this is rather straightforward. The way
13 we have handled it in other sites is these type of
14 workers were getting the 50th percentile of
15 operator dose.

16 MR. SHARFI: Are we talking about
17 uranium now?

18 MR. FITZGERALD: Just talking uranium
19 for now, yes.

20 MR. SHARFI: At that point, I mean, I
21 guess your question of whether or not there is
22 enough data to do a coworker, are you talking about
23 a stratified coworker or are you talking about --

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1 MR. FITZGERALD: Well, I am just saying
2 that --

3 MR. SHARFI: Generally, we have a
4 coworker set. I don't know whether or not we will
5 be able to stratify it in that sense, to stratify
6 them but we would have a coworker approach for those
7 individuals that you could apply coworker.

8 MR. FITZGERALD: That was one of my
9 questions saying that okay, they were exposed to
10 uranium but they weren't operators.

11 MR. SHARFI: Correct.

12 MR. FITZGERALD: The thing you are
13 talking about, 50 percent, I would be a little
14 concerned about that.

15 MR. SHARFI: There is not a percentile
16 at that point. I mean the internal coworker is,
17 depending on whether you fall at the geometric mean
18 or the distribution where you are getting the 95th
19 percentile, that is generally how the coworker --

20 MR. FITZGERALD: As I recall the ER, it
21 does carve out groups; operators would be given the
22 full dose. Laborers, the different categories
23 would get a portion of the last 50 percent, say.

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1 In this case, I think that would not
2 necessarily fit very well just because I think the
3 exposure potential is specifically, and you
4 mentioned this earlier, Pat, that you have groups
5 within this broad category that are a little
6 different. They were certainly handling stuff
7 more directly than the rest of the laborers in the
8 plant.

9 So, if they came forward and said well,
10 yes, I did D&D or my job is to go in and clean up
11 after the uranium lathe operators, I would think
12 -- and I was just thinking out loud in our response,
13 that I probably would apply the uranium coworker
14 model to them since, basically, without splitting
15 hairs, they probably got more than the standard
16 generic person in the plant. Did they get as much
17 as an operator? Who knows? But they certainly
18 fell in that category where it would be easier just
19 to apply the uranium coworker model.

20 But it wasn't clear after we went
21 through all that in your response on what data you
22 found exactly what would be the NIOSH approach to
23 dose reconstruction in those particular

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1 subcategories of workers.

2 MR. SHARFI: Yes, I mean generally I
3 would say those people fall into the use of
4 coworker.

5 MR. FITZGERALD: The broader uranium
6 coworker model.

7 MR. SHARFI: Yes. Yes, I mean it
8 depends upon the year period because I think
9 pre-'59 we used the Battelle 6000 approach to cover
10 them and then from '59 to '70, there is a coworker
11 model that would cover that.

12 MR. FITZGERALD: Well, that is the
13 clarification I was looking for. What would you
14 do with these workers? Would you include them in
15 the broader coworker model for the uranium worker,
16 operators, workers, or would you assign them this
17 fractional? I think the ER has some fractional
18 dose assignments which I would have more of a
19 problem with because I think they probably would
20 fit that generic category.

21 MR. MCCLOSKEY: Yes, it could have been
22 more clear, though. You are right.

23 For natural uranium, it is -- that

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1 issue, I think we are closed on that one, but it
2 is a TBD-6000 was the various operator, supervisor,
3 admin, whatever ratios.

4 MR. FITZGERALD: Right.

5 MR. MCCLOSKEY: But what we do for the
6 depleted uranium is coworker. And that is what you
7 are saying would be more appropriate. And that is
8 what we plan to do.

9 MR. FITZGERALD: Okay. I think that
10 was one clarification I would like.

11 MR. MCCLOSKEY: And as far as like
12 understanding these many categories of workers, I
13 think we are getting better at that with more
14 information that we get describes all of their --

15 MR. FITZGERALD: Well, we have gone --
16 we weren't sure who was actually handling the waste
17 and who was actually doing some of these small
18 letter D&Ds. And I think that became a lot clearer
19 from the last set of interviews, that you did have
20 people that were focused on doing that kind of work.

21 MEMBER LOCKEY: I'm sorry?

22 MR. FITZGERALD: That were being
23 assigned to do D&D on the site. The ER speaks to

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1 a very major D&D that took place like '83 and '84,
2 something like that.

3 MR. MCCLOSKEY: Yes, '84 to '87.

4 MR. FITZGERALD: 1984 to 1986 but
5 doesn't account for any other D&Ds. And of course,
6 in a plant with a 50-60 year old history, you are
7 always tearing things down and cleaning things up.

8 And we did establish that the laborers,
9 which is the category of workers at Kansas City,
10 were assigned to do that kind of work.

11 CHAIR BEACH: A small scale D&D.

12 MR. FITZGERALD: A small scale D&D,
13 yes.

14 MEMBER LOCKEY: So, there were four
15 were interviewed, two actually had records.

16 MR. FITZGERALD: Yes, which was
17 interesting because when you talked to them, they
18 didn't seem to account for any monitoring but when
19 NIOSH looked at the records and matched up the
20 names, they did find some bioassay data, which is
21 good. But that sort of begs the question. We are
22 sort of 50-50. The other two --

23 MR. DARNELL: Well, it follows the

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1 plant having these, doing medical monitoring,
2 doing radiological monitoring for workers assigned
3 to those projects.

4 MR. FITZGERALD: Yes.

5 MR. DARNELL: And whether or not --
6 part of the problem that we continually run into
7 and ask a worker did you do this kind of work and
8 they may have done that kind of work but it was for
9 non-radiological projects but they didn't know
10 that.

11 MR. FITZGERALD: They weren't told.

12 MR. DARNELL: They weren't told. And
13 they are so kept in the dark, it hinders some of
14 the information that we can get from them
15 accurately.

16 MEMBER LOCKEY: Do we know who those
17 workers are?

18 MR. MCCLOSKEY: Yes, if you look at the
19 latest paper that we posted on the website, our
20 response, we give NOCTS members -- do you have
21 access?

22 CHAIR BEACH: Is it the June 11th?

23 MEMBER LOCKEY: I guess the question is

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1 how many workers were involved with that.

2 MR. FITZGERALD: Yes, that is a
3 different issue.

4 CHAIR BEACH: Yes, it is.

5 MR. FITZGERALD: We happened to find
6 three or four workers that seemed --

7 MEMBER LOCKEY: But how many were
8 involved with it? That is what I am asking.

9 MR. FITZGERALD: We don't know. It's
10 not clear. We didn't see any records that carved
11 out here is by task or assignment. How many
12 workers did D&D or how many workers were devoted
13 to cleaning up waste.

14 MR. MCCLOSKEY: Well and in the case of
15 these four workers, you were able to identify, you
16 went back to the records and found bioassay data.
17 So, there may be additional bioassay data in the
18 records, you just haven't accessed it or you don't
19 know where to access them. Is that correct?

20 MR. MCCLOSKEY: Well, we don't know to
21 go looking for Person X that was a D&D or a waste
22 handler and see if there are in fact records for
23 him. We only knew to go look for these four.

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1 MEMBER LOCKEY: I understand, but
2 there may be, in the records that have not be
3 searched for whatever reason, there may be
4 additional bioassay data.

5 MR. MCCLOSKEY: Sure. Oh, yes, sure.

6 MR. DARNELL: Okay, we did a quick
7 review of people that were identified on some
8 specific access lists and we found bioassay data
9 on a lot of those folks. And some of those folks,
10 during interviews, were telling us, we were never
11 monitored. We never had bioassay. We went and
12 found it because they were on specific lists.

13 The remainder of workers, we just don't
14 know because we either haven't found them on a list
15 or they haven't been part of one of the different
16 things that we have done research in yet.

17 MR. FITZGERALD: That's kind of what we
18 are talking about, saying okay, we may be covered
19 but in case we do find some of these workers that
20 are established as being D&D or waste handlers,
21 they don't have records.

22 What I think Mutty is saying is that
23 they would apply the coworker model of the uranium

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1 operators and that would be fine. They would apply
2 that and that would be the dose they would get.

3 MEMBER LOCKEY: I think SC&A was asking
4 whether that was adequate. If you have two
5 bioassays of the four, is that adequate
6 information?

7 MR. FITZGERALD: Yes, it wasn't clear
8 from the response are we going to apply that which
9 we find or is the uranium coworker model, which we
10 kind of thought that was the case but we wanted to
11 confirm that, that the uranium coworker model would
12 be applied for those that don't have individual
13 records because we batted 50-50 on the four. So,
14 it is likely that some might not have any records.

15 But it is not easy to know how many
16 actually did the small letter D&D or -- it wasn't
17 something that was carved out very clearly. We
18 were lucky, I think, to even find people that
19 acknowledged they did that work.

20 MR. DARNELL: And the other thing to
21 remember is some of this small letter D&D that was
22 going on was on machinery or equipment that was
23 never radioactive to begin with. The people that

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1 were doing the work never knew it.

2 It makes it more and more difficult,
3 more challenging to find enough data to support the
4 different positions we are trying to come up with.

5 MR. MCCLOSKEY: This logic applies to
6 Issue 7 that we just --

7 MR. FITZGERALD: Yes. Yes, I think
8 the questions are tied together.

9 Now, for the benefit of Joyce, we looked
10 at the thorium aspect of that because, obviously,
11 you have mag-thorium lathe operations and these
12 issues apply equally to those but the value that
13 was being proposed, as far as the bounding value
14 for the reasons we discussed in the last
15 discussion, are very conservative. So, if that is
16 the bounding dose that is going to be applied, or
17 the air concentration that is going to be applied,
18 I don't think there is any question that would be
19 bounding of what those folks would have been
20 exposed to.

21 So, Joyce, this is the 1.5E-11
22 microcuries per milliliter, that is the value that
23 NIOSH is proposing as a bounding thorium

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1 concentration for D&D workers, as well as waste
2 handlers, I would imagine.

3 MR. MCCLOSKEY: Yes.

4 MR. FITZGERALD: So, in both cases,
5 that would be the bounding air concentration that
6 would be applied for them, as far as any residual
7 thorium.

8 DR. LIPSZTEIN: Yes. Why it is half
9 the concentration you are going to apply to the
10 regular workers?

11 MR. MCCLOSKEY: The regular workers
12 being operators on TBD-6000 approach defined as
13 four categories, operators, laborers,
14 supervisors, and other. And so we evaluated their
15 work and determined that the infrequency of the
16 clean-out and the D&D would reduce their exposure
17 to someone who was actually doing the machining
18 continuously.

19 DR. LIPSZTEIN: Like for example,
20 would you apply this limit for a continuous work
21 during one year or for some time during the year?

22 MR. MCCLOSKEY: If they come to us with
23 a claim, we determine if they are a mag-thorium

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1 worker that worked in the area for the entire year,
2 they would get 2,000 hours of the 1.5E-11
3 microcuries per milliliter exposure for those
4 2,000 hours. All right?

5 DR. LIPSZTEIN: But that is not what
6 you generally would do for the workers that they
7 don't know what happened.

8 MR. MCCLOSKEY: For workers --

9 CHAIR BEACH: So, Joyce, the question,
10 could you -- nobody understands your question.

11 DR. LIPSZTEIN: Okay.

12 CHAIR BEACH: So, for workers that you
13 don't know what they did. Is that your question?

14 DR. LIPSZTEIN: Yes, because sometimes
15 you know exactly when the worker was -- maybe they
16 recall whether some data thing from March to April
17 this person was in D&D in mag-thorium. But
18 sometimes you don't know. They just say well, I
19 have cleaned the mag-thorium floor.

20 One interview, for example, says he
21 worked with mag-thorium and after that, he cleaned
22 the machine and the floors and everything. They
23 don't know for how long. Do you have all the data

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1 from when the cleanup was done? Because if you
2 apply a limit of exposure to a worker, you have to
3 know for how many hours you are going to apply
4 during that year.

5 CHAIR BEACH: And how many years.

6 DR. LIPSZTEIN: So, what is the
7 criteria for the number of hours that is going to
8 be applied for each D&D worker?

9 MR. SHARFI: Well once they are put
10 into the mag-thorium worker category, then they are
11 going to get the entire exposure.

12 MR. FITZGERALD: I think what she is
13 saying, though, is if you are not an operator but
14 somebody who might have done some cleaning in the
15 context of this issue, how would you --

16 MR. SHARFI: Reducing their hours.

17 MR. FITZGERALD: We are basically
18 saying that they are working 2,000 hours in the area
19 just at a reduced concentration.

20 MR. SHARFI: Right, okay.

21 CHAIR BEACH: So, that is for laborers,
22 for the --

23 MR. SHARFI: I mean category

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1 adjustments are really adjusting -- well either you
2 can look at it they are adjusting concentration
3 because the work is less intense or you can say they
4 are working -- they are adjusting the hours.
5 Concentration versus time. So, however you want to
6 look it.

7 MR. MCCLOSKEY: The intake per year.

8 MR. DARNELL: Basically, these workers
9 are going to have medical records and training
10 records to back up that they were in the area. We
11 show that they were in the area, that is going to
12 be their airborne exposure for the year.

13 MR. FITZGERALD: Yes, I think this gets
14 into just the dose reconstruction, how one
15 approaches the claims themselves, how you
16 establish the time frames, the locations, and what
17 work they did and trying to figure out what
18 exposures to give them credit for. And then you
19 would apply the values that you have in the paper.

20 So, the first part, though, is I think
21 pretty standard: try and establish the worker's
22 history, exposure history. Then, Joyce, they
23 would apply the 1.5, which is the 50 percent of the

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1 three that we have been talking about.

2 DR. LIPSZTEIN: Because you know one of
3 the interviews that I read, I don't know that is
4 really Joe knows better because he interviewed the
5 person, the individual himself. He said from what
6 I understood from this summary, that he was, this
7 person was involved in the cleanup of the
8 magnesium-thorium area and they opened some
9 machines to clean it but when they entered the area
10 -- this is for the period of 1970 to 1979, okay,
11 was the model shop.

12 MR. FITZGERALD: Right.

13 DR. LIPSZTEIN: There were other
14 machines that were working with magnesium-thorium
15 at a distance from other machines and that area was
16 only roped with a caution tape but the area was open
17 in the middle of everything.

18 CHAIR BEACH: Yes, Joyce, I happen to
19 have that interview and I have it highlighted. So,
20 we'll remember that.

21 MR. FITZGERALD: But again, if I think
22 if that were the claim that was being submitted,
23 that whoever was submitting the claim would get

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1 credit for the exposure potential for that area.
2 I think you always you have to establish the
3 exposure history and whether or not there was any
4 exposure, in this case, to mag-thorium before these
5 values would be applied.

6 But if the interviewee was a claimant
7 and he indicated that the machinery, you
8 established a time frame that the D&D took place
9 and then you would give them the value.

10 But I think it goes through that process
11 for every claimant.

12 MEMBER CLAWSON: Hey, Joe, this is
13 Brad. You know I am kind of sitting here listening
14 to this. I understand the point you are getting
15 at. But if you remember most of these interviews,
16 most of these people didn't even know what they were
17 working with.

18 CHAIR BEACH: Right.

19 MR. FITZGERALD: Right, that is what
20 Pete was saying.

21 MEMBER CLAWSON: They just went in and
22 cleaned stuff. And when we start talking D&D, most
23 of them didn't even understand, what do you mean

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1 D&D time period. We have the big D&Ds back there
2 but that was done by Rockwell and everything else.
3 These other guys, it was just another day in the
4 park. I mean they just went in and did what they
5 were told.

6 I am kind of with Joyce a little bit
7 here, kind of wondering how we are going to pick
8 out these people that we are involved with here.

9 MR. DARNELL: Like I said earlier, Brad
10 and Joyce, the people that were assigned to this
11 work had medical monitoring records. They have
12 radiological training records. And they had other
13 requirements that they had to meet for plant
14 operations to be able to go into radiological
15 areas. We have got a lot of documentation that
16 shows that was the case throughout the site's
17 history.

18 So, if they self-identify, I worked on
19 magnesium-thorium, we are going to look at their
20 medical records and their training records. And
21 if they were in those areas the entire time that
22 they say they were in the areas, they're getting
23 that concentration.

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1 MR. FITZGERALD: I think Brad raises a
2 question that we have been touching on, which is
3 if somebody says they did D&D, and of course by
4 definition, decontaminate and decommission, that
5 suggests that they might have been involved in
6 something to cleaning up a machine that had
7 radiological contamination.

8 MR. DARNELL: To us it means cleaning
9 up radiological contamination.

10 MR. FITZGERALD: Right.

11 MR. DARNELL: To a site like Kansas
12 City, it could mean cleaning up anything.

13 MR. FITZGERALD: Well I think, though,
14 he is broaching the question, this gets back to --

15 MR. SHARFI: I'll go farther and I will
16 just say you don't talk to the worker, he has passed
17 away, and we are talking to survivors. At that
18 point, you know nothing.

19 MR. FITZGERALD: Right.

20 MR. SHARFI: And we still do get their
21 medical monitoring information and they do
22 identify like departments and some of the cards,
23 we saw they did identify mag-thorium workers

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1 related to that department.

2 So, even if there is no interview
3 process, we can identify workers that were part of
4 the department and those people would get it
5 regardless, whether they said it or not.

6 MR. DARNELL: As a matter of fact, the
7 records were so clear that you can see timeframes
8 the worker was qualified to go in the Department;
9 he was disqualified for a little while, then
10 requalified to go back in at another time. That
11 is how detailed some of these records are that we
12 have seen. Now, of course, we haven't looked at
13 every single record, so I don't know that all
14 records are the same but we would have to go back
15 to those records for each individual worker that
16 makes a claim so that we can be fair to all of them
17 to give them as much credit for the exposure that
18 they think that they have.

19 MEMBER LOCKEY: Well, records are
20 precise enough that you can say if I was a laborer,
21 my status as a laborer, I worked in
22 decontamination, you can tell whether it was DU or
23 mag-thorium.

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1 MR. DARNELL: Yes, it specifically --

2 MR. SHARFI: Medical cards do identify
3 departments that they were part of.

4 MEMBER LOCKEY: So, you can get down to
5 that precision based on the medical records.

6 MEMBER LOCKEY: We have actually seen
7 DU qualifications. We have seen Department 20,
8 Department 22. We have seen mag-thorium
9 qualifications. We have seen model shop
10 qualifications, all of the different areas that we
11 have looked for, for radioactive material use, with
12 the exception of the tritium stuff, we have seen
13 on those cards.

14 On the bioassay portions of the medical
15 sections, we have seen tritium.

16 MEMBER CLAWSON: I'm glad to hear that
17 we have got that good of a record. So, what you
18 are telling me is that if somebody had a Department
19 20 acknowledgment on their medical card, then they
20 get dosed.

21 MR. DARNELL: They get what?

22 MR. KATZ: They get dosed.

23 MR. DARNELL: Yes, that is the way we

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1 have it set up.

2 MEMBER CLAWSON: Okay, I'm just trying
3 to get a better understanding of this. Because to
4 be right honest with you, these are some of the
5 better records of all the other sites we have found.
6 Usually we have found holes in it and stuff like
7 that. When push comes to shove, this is what I have
8 found interesting about Kansas City was that they
9 loaned the people out; they went from one side to
10 the other. You know they just had a labor pool
11 there. This is what I am wanting to make sure is
12 we are getting to the right people, that they are
13 supposed to get this dose and that we have a ways
14 and a means to be able to do it.

15 MR. DARNELL: We feel pretty strongly
16 that we are able to get to the right people that
17 would give them the right doses but we are still
18 looking, too, Brad.

19 MEMBER CLAWSON: Oh, I understand.
20 I'm just -- I just want to better understand how
21 we are going about this because you know as well
22 as I do this is a difficult one because we have a
23 whole other group or set of people that really

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1 aren't even working with any of this stuff.

2 MR. DARNELL: Yes.

3 MEMBER CLAWSON: And I understand
4 this. I am trying to understand in my mind,
5 looking at it, what I have seen, what I have talked
6 to with people that look into the right people.
7 Because many of these people didn't even know what
8 they were working with and when we asked them, they
9 give us this blank look. Then all of a sudden we
10 find medical records that yes, they were set up to
11 be able to work with this.

12 MR. DARNELL: Yes.

13 MEMBER CLAWSON: This is all I am
14 trying to understand is how we are going to do it.

15 MR. DARNELL: Well, I think that you
16 can rest assured that we are taking the most
17 conservative approach that we can to ensure that
18 we get the most people covered, giving them the
19 benefit of the doubt as they got the dose.

20 MEMBER CLAWSON: And I understand that
21 and I appreciate that. I am not criticizing you
22 either. I am just for me trying to picture how we
23 are trying to do it.

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1 And I think you guys are doing a great
2 job. I just am looking at pieces of this so I just
3 want to make sure that I have a full picture. I'm
4 not criticizing in any way. I am just trying to
5 understand it myself.

6 MR. DARNELL: Yes, I'm just trying to
7 make sure I answer all your questions right.

8 MEMBER VALERIO: So, my question was
9 whether or not there were training records found
10 by NIOSH which Pete touched on before I had a chance
11 to ask the question. So, I think that that
12 clarifies it in my mind that they did have some type
13 of training before entering this specific
14 building, whether it was D&D or machining or
15 whatever operation they were actually --

16 MR. DARNELL: Remember, it is not
17 actually entering a specific building. It is
18 entering a specific area of a huge building.

19 MEMBER VALERIO: Okay. So, 22 is
20 within Department 20. Is that right?

21 MR. DARNELL: Yes, it was basically the
22 same area. Sometimes it was called Department 20.
23 Sometimes it was called Department 22. Sometimes

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1 it was 22D, going down to the specific parts. And
2 that was an area within two areas.

3 CHAIR BEACH: Yes, and Pat has a map to
4 that. He can show you the different areas. I know
5 you weren't at the last meeting in person to see
6 that map. Or at least he had it yesterday.

7 MR. MCCLOSKEY: Yes, I have it.

8 CHAIR BEACH: Okay.

9 MR. DARNELL: Just for everybody's
10 information, in the ER on page 35 of 70, Table 6-4
11 has all the different occupation descriptions that
12 we went over and bioassay measurements for the
13 descriptions in general. So you can see even that
14 they were doing a lot of bioassay over a lot of
15 different job descriptions.

16 CHAIR BEACH: All right. Are there
17 any other questions or comments? No.

18 So, for recap, let's recap and I will
19 try to do this. Joe will step in and help me out
20 if I muck it up too much.

21 So, we are looking to apply the dose
22 through a coworker model for laborers, anyone that
23 was described as a mag-thorium worker -- I'm

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1 probably not saying this quite right.

2 MR. FITZGERALD: Well, I think what we
3 were saying, or what Mutty was saying is that for
4 the waste handlers and D&D workers who handled
5 uranium, if they didn't have individual data, which
6 they may very well have, but they didn't have it,
7 that you would apply the uranium coworker model for
8 them for the appropriate years of course, for the
9 right years.

10 And if it involved the mag-thorium, in
11 terms of thorium, it would be one-half of the 3.0,
12 which would be the 1.5, which is still very
13 conservative. We just went through that whole
14 discussion of how 3.0 is very, very conservative.
15 This is very conservative.

16 CHAIR BEACH: Which is listed in your
17 White Paper.

18 MR. DARNELL: Yes. So, I said in our
19 response that we understood the degree of
20 conservatism and still, we are okay with the 1.5
21 in this case. We were a little fuzzier on the
22 uranium but I think we are satisfied with the use
23 of the coworker model for those that don't have

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1 individual data.

2 CHAIR BEACH: Okay.

3 MR. DARNELL: So are we going to rely
4 on coworker models for I guess Issue 17 and Issue
5 7?

6 CHAIR BEACH: Yes.

7 MR. DARNELL: Both of those should be
8 transferred over to the TBD.

9 CHAIR BEACH: I think we wanted to
10 wait, hold off on that until we saw your --

11 MR. FITZGERALD: The fire issue. Oh,
12 no, not the fire issue.

13 CHAIR BEACH: No, the dose
14 reconstruction examples. Yes, so I think we are
15 close but we would like to see that. So, for Issue
16 13, the mag-thorium and then the D&D and waste
17 handlers, how that is going to look as a sample.

18 MR. DARNELL: Since we have agreed on
19 the numbers and the approach, then we can do the
20 sample.

21 CHAIR BEACH: You can do the sample.
22 Okay.

23 MR. SHARFI: I guess you are going to

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1 go back to if you want the approach for the
2 unmonitored -- if you want the example, are you
3 wanting me to us the current, given that we are
4 going to validate -- as part one, we are going to
5 be talking about validating the coworker study.
6 At one end as an example an ER with a coworker that
7 hasn't yet been relooked at or are you willing to
8 wait for Issue 1 to be resolved?

9 CHAIR BEACH: I think we need to
10 resolve Issue 1.

11 MR. SHARFI: Okay.

12 CHAIR BEACH: Okay. So, just for
13 recap, so we are done with Issue 13 and 17.
14 Anything else we need to discuss on Issue 7 or is
15 that covered, I believe?

16 MR. DARNELL: Part and parcel of what
17 we just talked about.

18 CHAIR BEACH: Okay. So, we will break
19 at this time for a break and then Ron should be back
20 with us and we will go ahead and move to Issue 11
21 when Ron comes back and then go back to the top at
22 Issue 1, so everybody is ready.

23 MR. KATZ: How long a break?

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1 CHAIR BEACH: What have we got? Let's
2 take until 11:05 or so. A ten-minute break.

3 MR. KATZ: Ten-minute break.

4 MR. Fitzgerald: And Joyce, you don't
5 have to hang in. We are trying to take care of you
6 and Ron so you don't have to stay on the phone all
7 day.

8 CHAIR BEACH: Yes, thank you, Joe.

9 (Whereupon, the above-entitled matter
10 went off the record at 10:54 a.m. and resumed at
11 11:10 a.m.)

12 MR. KATZ: Okay. We are back online.

13 CHAIR BEACH: Bob, have you rejoined
14 us?

15 (No response.)

16 CHAIR BEACH: Or Bob. Excuse me, not
17 Bob. Pardon me. Ron, are you back with us?

18 (No response.)

19 MR. KATZ: Maybe not.

20 CHAIR BEACH: No, okay. So, we were
21 going to go to 11 but now we will go back up to the
22 top of the list, Issue 1.

23 MEMBER CLAWSON: I'm here, Josie.

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1 CHAIR BEACH: Hi, Brad. We knew you
2 would be there.

3 MEMBER CLAWSON: Oh, yes, sure. Okay.

4 MR. KATZ: That's why we didn't ask.

5 CHAIR BEACH: We knew for sure you were
6 back. Okay, so we will just go ahead and go back
7 up to Issue 1, which is the data adequacy and
8 completeness issue. And NIOSH is prepared to talk
9 about that. We are reshuffling.

10 MR. MCCLOSKEY: Well you keep bouncing
11 around.

12 CHAIR BEACH: Yes, it is just part of
13 what I do.

14 MR. MCCLOSKEY: Okay, Issue 1 is linked
15 to Issue 9. And as a reminder, what these two
16 issues are about is so NIOSH used a database of
17 dosimetry information provided by the Kansas City
18 Plant to build our coworker model that is in the
19 TBD and that the ER references.

20 And for internal and external Issues 1
21 and 9, a question came up that we should validate
22 that database to compare to something like raw
23 dosimetry records to see if it is a good database

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1 to be used.

2 And so we submitted a preliminary plan
3 to SC&A from the Board where we suggest that we will
4 use the existing NOCTS raw data. So, whenever a
5 claim is filed, the site sends us photocopies of
6 dosimetry records, and we use what we have and
7 compare that to the database.

8 CHAIR BEACH: Okay, so when you are
9 talking about the database, you are talking about
10 the DOE-supplied records and you are comparing the
11 raw records to that database. Is that correct?

12 MR. MCCLOSKEY: Yes. So, this is a
13 printout of what you can see. The database was
14 provided to us and it is referenced --

15 CHAIR BEACH: That's from DOE.

16 MR. MCCLOSKEY: It came right from the
17 Kansas City Plant. Yes, the DOE. And this is a
18 page from it. And I took away the Social Security
19 numbers.

20 But the columns look like that. You
21 have the year that that employee worked. So, this
22 employee worked from '58 to '59. That is one
23 employee. The next column would have been their

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1 Social Security number.

2 And then reading across, it shows the
3 beginning date of monitoring, the ending date of
4 monitoring for that person, separate line items.
5 And then it has columns for deep dose, eye dose,
6 neutron dose, shallow dose, ring dose, those are
7 the dosimeters you wear on your fingers. And then
8 it has internal for uranium only in micrograms per
9 liter. This is something that Ron Buchanan looked
10 at and we covered in another issue about what do
11 all these values mean; how do we use them for DRs?

12 But so this is what we need to validate
13 it. It goes on. There is over 18,000 records in
14 there. I only got two pages.

15 And so from the NOCTS raw records, if
16 you go in NOCTS and say you pull up a claim number,
17 I have it listed here, I won't say it, but you would
18 find a bunch of raw records such as this one. I
19 blacked out the Privacy Act stuff.

20 And what we have begun doing already,
21 we have our data ready group, they have started
22 compiling information for each one of these records
23 and building a spreadsheet. This is an example of

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1 it.

2 So, this employee with this record, it
3 was entered here. And what this compilation will
4 do, it will have the NOCTS number in the farthest
5 column. It will have the Social Security number
6 as well, as we are able to positively marry a record
7 from the NOCTS files to the database with Social
8 Security numbers in. And there are names
9 available for the database personnel as well. So,
10 we can get a good match there.

11 The next column shows you exactly where
12 -- I moved it over so you can't read it all now
13 but it shows you where in NOCTS you can find this
14 exact record, what page number. So, if anybody
15 wanted to go back and check how we entered
16 information from the raw record to our compilation
17 they can do that.

18 And then we have a start and stop date
19 for the employee for that monitoring. So, this
20 whole grayed out section at the top is one employee,
21 all his records. Then the next one starts here and
22 it goes all the way down to here. That is all one
23 employee. And so the highlighted ones there are

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1 where this data was entered for that person.

2 And we are copying the data from the raw
3 records exactly how the site described it, if they
4 described it in rads, rem, or roentgen, or X or Y,
5 or neutron, ring doses, shallow doses, however they
6 described it, we were capturing it exactly the way
7 they described it.

8 And then once that is compiled, we will
9 do a comparison with the data records. And so I
10 guess SC&A had a question about what portion or
11 percentage of sampling do you intend to do. I
12 think we got agreement that they are using existing
13 raw data that you have already and it seems like
14 a good approach to validate the database but
15 exactly how much of that will be used.

16 MR. FITZGERALD: That is a standard
17 question because we have done it in the past, where
18 we have done it very statistically based and we have
19 done it sort of let's do 30 or 50. And that was
20 just a clarification question, what kind of
21 sampling were you intending to do.

22 MR. MCCLOSKEY: I can say that you know
23 Dr. Lockey brought up the question in January about

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1 a priori parameters, you know what is acceptable
2 error rate and things like that. A number of these
3 questions are being worked on in a program-wide
4 guidance for coworker modeling.

5 There is going to be next week, in
6 Brad's hometown, we are going to have the
7 presentation prepared in Idaho from Dr. Neton and
8 Dr. Melius about this coworker effort. You know
9 so that is being worked on program-wide. It is not
10 something you just choose for each individual site.
11 We feel that guidance should be somewhat universal.

12 MR. FITZGERALD: So this coworker
13 approach will be subject to the new guidelines.

14 MR. MCCLOSKEY: Oh, absolutely.

15 MR. FITZGERALD: Yes, so we're just
16 going to have to make sure that this is consistent.

17 MR. MCCLOSKEY: So, it kind of hard to
18 answer entirely.

19 And you know so we have started
20 compiling it and there is a lot to do. And so we
21 are going to just down that path going after all
22 of the NOCTS records at the moment and I talk about
23 how many there are.

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1 MR. FITZGERALD: Six hundred
2 ninety-one.

3 MR. MCCLOSKEY: It's somewhere, I'm
4 sure you are right. And we are going to see where
5 that gets us.

6 CHAIR BEACH: Yes, you said in your
7 paper 691 NOCTS claims currently available.

8 MR. MCCLOSKEY: Right and I break it
9 down into external and internal.

10 CHAIR BEACH: There are 223 external.

11 MR. MCCLOSKEY: Yes.

12 MR. FITZGERALD: So the NOCTS claim
13 file has, as you were pointing out, the actual
14 source records there.

15 MR. MCCLOSKEY: Yes, you can click on
16 the DOE supply response.

17 MR. FITZGERALD: Because in the past we
18 found that -- of course, we have gone back and done
19 V&V, the validation and verification was that in
20 a lot of cases, DOE never validated the electronic
21 database against the original source records and
22 the contractor never did. So, it just turned out
23 that since nobody down the chain had done it --

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1 CHAIR BEACH: Hang on just a sec.
2 Everybody on the phone may have lost connection.

3 MR. FITZGERALD: Oh.

4 MR. KATZ: Okay. I'm sorry this is an
5 interruption but Brad has been disconnected. And
6 you are sure you dialed the number right? Because
7 I don't know how that could be.

8 MR. MCCLOSKEY: Is everyone else
9 hearing us now?

10 CHAIR BEACH: Is there anyone on the
11 line that can hear us right now?

12 MR. BARTON: Yes, this is Bob Barton.
13 I'm still here.

14 CHAIR BEACH: Thanks, Bob.

15 MR. KATZ: Everyone else is still
16 connected, Brad. So, keep trying. Okay, bye.

17 CHAIR BEACH: Well when you said
18 everybody was disconnected --

19 MR. KATZ: No, Brad is disconnected and
20 he is trying to call in and it is not working for
21 him.

22 CHAIR BEACH: Okay.

23 MR. KATZ: I was worried he wouldn't be

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1 able to.

2 CHAIR BEACH: Do you want us to just
3 wait a couple of minutes and let Brad get back on?

4 MR. KATZ: We're off the record.

5 (Whereupon, the above-entitled matter
6 went off the record at 11:20 a.m. and resumed at
7 11:21 a.m.)

8 CHAIR BEACH: Brad, are you back with
9 us?

10 MEMBER CLAWSON: Yes. Yes, I am.

11 CHAIR BEACH: Thank you. Okay, so we
12 interrupted Joe. So, hopefully, Joe can go back
13 and recap where he was.

14 MR. FITZGERALD: Brad, this is for you.

15 MEMBER POSTON: Pay attention, now.

16 MR. FITZGERALD: I was saying before,
17 the reason I really focused on clarifying whether
18 the raw records were available through NOCTS is
19 that the issue we have had in the past is that for
20 some sites, the validation had not been done by
21 either the contractor supplying the electronic
22 records that were presumably transcribed from raw
23 and DOE had not done any QA to go back and do the

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1 same thing. So, the records that were arriving for
2 NIOSH use had not been QAed all the way down. So,
3 sort of a standard of practice, unless there is some
4 documentation that that was done by either DOE or
5 the contractor would be just to do that sampling
6 to validate that the electronic version can be
7 married up to the raw record.

8 So, the clarification there was just to
9 make sure that when you said DOE-supplied records
10 for NOCTS that that included the source documents,
11 the source records. If that is the case, we are
12 fine. Then it is just a question of, as you say,
13 on a coworker, what sampling fraction -- that's
14 fine.

15 MR. MCCLOSKEY: Yes, there is an
16 example of one of the source documents.

17 MR. FITZGERALD: Right. It wasn't a
18 second generation. The record was actually source
19 records that were included. So, we are fine with
20 that.

21 MR. MCCLOSKEY: All right.

22 MR. FITZGERALD: So, we will wait for
23 the guidelines that would be applied for the

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1 coworker model for KCP as well as the other sites.
2 That is something we can wait for. That is still
3 in process.

4 CHAIR BEACH: Yes. All right.
5 Anything else, Pat?

6 MR. MCCLOSKEY: I was just going to say
7 that is on the agenda for next Thursday and Brad's
8 time is at 9:30 in the morning.

9 CHAIR BEACH: Yes.

10 MR. FITZGERALD: Yes.

11 CHAIR BEACH: All right, I'm just
12 making a quick note.

13 Any other comments or questions on this
14 issue?

15 MEMBER CLAWSON: No, I appreciate you
16 allowing me to hear it again.

17 MR. FITZGERALD: Just for you.

18 CHAIR BEACH: Anything for you, Brad.
19 You know that.

20 MEMBER CLAWSON: Thank you.

21 MEMBER LOCKEY: I take option. I'm
22 not sure about that, Brad.

23 CHAIR BEACH: Okay.

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1 MR. FITZGERALD: We have a naysayer.

2 CHAIR BEACH: All right, anybody in the
3 room, Work Group Members, questions or comments on
4 this? Everybody is --

5 MR. MCCLOSKEY: That is two issues
6 right there.

7 CHAIR BEACH: That is 9 and -- 1 and 9.

8 MR. MCCLOSKEY: Is Ron back with us?

9 CHAIR BEACH: And Ron, are you back
10 with us? Ron Buchanan.

11 DR. BUCHANAN: Yes, I just came back.

12 MR. MCCLOSKEY: Perfect timing.

13 CHAIR BEACH: Wonderful. We are going
14 to go ahead and start with your issue, if you are
15 ready, Issue 11.

16 DR. BUCHANAN: Okay. This is Ron
17 Buchanan of SC&A. And this is an issue that we have
18 covered in the past and that was the neutrons at
19 Kansas City Plant. And, obviously, there wasn't
20 a lot of neutron exposure but there was some
21 radiation-generating 14-MeV neutron generators
22 and a few of the solid state UV sources and such.

23 And so they did have NTA film monitoring

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1 there and we investigated whether it was able to
2 detect the doses potentially received. And we
3 originally objected to using the method that NIOSH
4 suggested. And they went back and looked at it and
5 said yes, okay, we agree. And so they came back
6 with a plausible method.

7 And there was monitoring and this
8 consisted of the monitoring at Kansas City. They
9 had over 2,000 neutron badges read and only a few
10 of them, about 34 or 35 of them had any positive
11 dose and most of them were less than 0.1 rem. There
12 was only three greater than 0.1 rem. And so they
13 used a favorable method by looking at the 95th
14 percentile of that and that came out to .154 rem
15 per year and they will assign that to workers that
16 were potentially exposed to neutrons at Kansas City
17 Plant. So, we agreed that that is a
18 claimant-favorable method and that we suggested
19 that the issue has been addressed and that the Board
20 consider closing that issue.

21 CHAIR BEACH: Okay, thank you, Ron.
22 And everybody should have got the memo dated April
23 21, 2015 with Ron's write-up on this issue.

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1 Questions for Ron from the Work Group
2 Members? And this was written up 11 and 12; 12 was
3 actually closed at the January 20th meeting.

4 Hearing no questions, NIOSH, you are in
5 agreement, I assume?

6 MR. DARNELL: Reluctantly so.

7 CHAIR BEACH: Reluctantly, okay. So,
8 at the advice of SC&A and no questions, I would say
9 that we should go ahead and close Issue 11, based
10 on the report from SC&A. Is everybody in agreement
11 with that? Heads shaking yes.

12 MEMBER CLAWSON: This Brad, yes.

13 CHAIR BEACH: Brad, thank you. So,
14 Issue 11 is now closed. That was easy. Thank you,
15 Ron.

16 DR. BUCHANAN: Okay.

17 CHAIR BEACH: Okay, so just kind of a
18 recap. So, Issue 2 is a TBD issue. Issue 3, the
19 last meeting we closed 4, 5, 6, 8. Issue 10 is a
20 TBD. Issue 11 we have now closed. Issue 12 was
21 closed at the last meeting. Issue 14 and 19 were
22 also both closed at the last meeting.

23 That brings us to Issue 15. And we have

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1 already discussed 13. So, this is the thorium
2 oxide.

3 MR. FITZGERALD: This is the thorium
4 oxide and this is the infamous NMMSS issue. When
5 I looked at the classified database, it had two
6 listings for thorium, alloyed and unalloyed. And
7 so the effort was trying to figure out if the
8 unalloyed -- the alloyed was clear. That was
9 mag-thorium. But the unalloyed, that was
10 suggestive of possibly thorium oxide beyond the
11 site, even though the documentation suggested
12 otherwise.

13 So, a lot of it was just simply trying
14 to find some information on-site that would explain
15 why NMMSS seemed to have two listings that way.
16 And it took a while. But actually in the end, in
17 the March on-site visit, we came across the
18 precursor documentation, the documentation that
19 was used to compile the NMMSS, which is actually
20 kind of what I was looking for.

21 And very clearly, in that
22 documentation, what they had done at Kansas City
23 is done two calculations. They certainly had the

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1 estimate for the mag-thorium. They went ahead and
2 calculated how much actual pure thorium that would
3 represent and they submitted both values to DOE,
4 which as you can imagine, would be a source of some
5 confusion because that is actually listed. Both
6 are listed in NMMSS. So, anyone looking at that
7 would think there was more thorium than there
8 actually was. So, it was double-bookkeeping in a
9 sense, but that explains why there was two listings
10 for alloyed and non-alloyed. The non-alloyed is
11 just simply an estimate that was done to come up
12 with what that represented in terms of pure
13 thorium.

14 MR. MCCLOSKEY: And the years marry up
15 perfectly.

16 MR. FITZGERALD: Yes, so I went back
17 and took some values that Kansas City provided me
18 and compared that by year with what was in NMMSS
19 and it matched up pretty exactly. So, that issue
20 went away but for a while it just seemed like a loose
21 end because it certainly suggested there was
22 something in the way of an alloyed thorium.

23 So, that is one and the same. So, I

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1 would recommend the Work Group close that.

2 CHAIR BEACH: Yes, any comments or
3 questions on that issue? That was the final thing
4 that we needed to work out regarding that issue.

5 So, I would recommend that the Work
6 Group take SC&A's advice and close Issue 15. Any
7 questions? Does everybody agree?

8 Brad?

9 MEMBER CLAWSON: Yes.

10 CHAIR BEACH: Okay, so Issue 15 we are
11 closing.

12 Okay, Issue 16 was an issue, if you
13 recall, that we discussed at the January 20th
14 meeting. SC&A, at that time, recommended closure.
15 NIOSH agreed with that. However, the Work Group
16 was not quite ready to let go of that issue. We
17 were looking for validation on the proposed
18 application of TBD-6000. We asked for some maps
19 so that we could validate the different areas where
20 rad work was being done at the site. Those maps
21 were delivered to us in March.

22 So, really, this is a Work Group
23 discussion on where you want to go with this issue.

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1 We do have recommendation for closure.

2 So, I'm looking to the Work Group for
3 discussion. Brad, do you have any other issues?

4 MEMBER CLAWSON: No, I don't, Josie.
5 I think we've about run this to ground.

6 CHAIR BEACH: Yes, I agree with that.
7 How about other questions or comments, Work Group
8 Members?

9 So, we are in agreement with closing.
10 Okay, so we are closing Issue 16 as well.

11 Okay, so, that brings us to Issue 18.
12 And this was another issue. We were looking for
13 other incidents. There is quite a history on this
14 one. I am going to let Joe speak to it, if he
15 doesn't mind.

16 MR. FITZGERALD: No.

17 CHAIR BEACH: We are looking for
18 incidents. Our March visit was one that we used
19 quite a bit of time looking for incidents at the
20 plant. And Joe, I will let you --

21 MR. FITZGERALD: Yes, this issue came
22 from our reviewing the ER. And there were two
23 admittedly major incidents, the promethium and

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1 what was the other one?

2 MR. SHARFI: Erbium tritide.

3 MR. FITZGERALD: Erbium tritide,
4 right. Those were the two that were cited in the
5 ER.

6 And our reservation at the time was we
7 felt that, given the lengthy history of the plant
8 that that seemed to be a short list of what may have
9 been a longer list of what radiological incidents
10 they had at the plant.

11 And so in the ensuing year or two, we
12 wanted to shake the tree to see if there were other
13 records of radiological incidents taking place.
14 And iteratively, I think we have added NIOSH and
15 certainly we have added through research, a number
16 of files that contain more incidents but they still
17 stand as the two major ones. That hasn't changed.
18 And there certainly is a better record, I think,
19 of other incidents.

20 Our concern of maybe overlooking
21 something of substance that would contribute to the
22 understanding of the plant, I think what we were
23 able to validate was, no, there wasn't a large

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1 history of contaminations and whatnot that would
2 give one pause about the ER's premise. And so, I
3 think we are satisfied.

4 I wanted to look at the classified files
5 as well, make sure there was nothing in there, which
6 I did in Germantown I guess back in May. So, I
7 didn't see anything else that would add to that,
8 make a difference, in other words.

9 So, I think, what I would say to the Work
10 Group is I think the documentation on incidents is
11 much better than it might have been a year or two
12 ago and we are pretty satisfied that is about as
13 complete as one can get at this point.

14 We were kind of hopeful that we would
15 find more weekly activity reports. For a while
16 there was a glimmer of hope that we found a couple
17 years and there would be a whole history of these
18 weekly activity reports. It turned out we only
19 found I think four years' or so worth.

20 But even in those four or five years'
21 worth, there was a pretty rich documentation of
22 what was going on week to week in terms of even small
23 minor incidents: fires, what have you. Nothing

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1 that were really significant or eye-catching
2 radiological incidents.

3 So, I think the group, collectively,
4 had worked pretty hard to make sure that there
5 wasn't anything that was unreported, undocumented,
6 that would be of benefit to the ER. And I think
7 we can report today that we have not found anything
8 substantial. I think the record is better but
9 nothing substantial that would change anything.
10 So, that is kind of where we are at.

11 And we also spent a great deal of time
12 talking to workers as well as to the petitioners,
13 just trying to unpack anything that would represent
14 an overlooked event, incident, what have you. We
15 heard a little bit of this yesterday that we are
16 pretty confident that there isn't anything like
17 that that has been overlooked. That's where we
18 are.

19 CHAIR BEACH: Okay. There was also
20 one issue that I was -- I know NIOSH ran it down
21 -- a petitioner issue. NIOSH ran it down. I ran
22 it down, trying to find some extra information
23 about a source that was uncovered and we didn't get

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1 anywhere with that either.

2 So, I am going to agree that we can close
3 Issue 20 -- or excuse me, 18.

4 Brad, any comments or concerns on that
5 recommendation?

6 MEMBER CLAWSON: No, we have done all
7 we can. We have tried to address it. I feel good
8 about it.

9 CHAIR BEACH: Other Work Group
10 Members?

11 MEMBER VALERIO: I think we can close
12 it.

13 CHAIR BEACH: Okay. So, we will go
14 ahead and close 18 as well.

15 So, our last issue is the tritium and
16 nickel. Let's go ahead and go through.

17 MR. MCCLOSKEY: Yes, I think I can do
18 it, unless --

19 CHAIR BEACH: It is Issue 20. It is
20 the tritium and nickel. The last White Paper on
21 it was the May 7th NIOSH's update answering SC&A's
22 --

23 MR. MCCLOSKEY: Okay, I will read

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1 SC&A's review -- I mean summary first.

2 MR. FITZGERALD: Summary of your
3 summary?

4 MR. MCCLOSKEY: Yes. So, in Rev 01 to
5 its paper, these are from SC&A's memo, tritium
6 nickel-63 at Kansas City Plant -- May 7, 2015 is
7 the date of that White Paper. NIOSH has added more
8 details regarding the operational history of
9 tritium use at Kansas City Plant and has added a
10 last page that identifies an upper-bound dose
11 estimation in millirem per year for each identified
12 tritium and nickel-63 operation at Kansas City
13 Plant.

14 And SC&A's staff's comments on that
15 paper are, while the more specific treatment of
16 bounding doses for each operation is helpful, NIOSH
17 does not explain how that dose will be used in dose
18 reconstruction, i.e., to whom it would be applied,
19 parenthetical, only workers identified as handling
20 tritium, all workers from certain parts of the
21 Kansas City Plant, for example, laboratory, or all
22 workers at Kansas City Plant during those specific
23 timeframes. So, that is their question.

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1 A teleconference was held on June 29,
2 2015 to clarify possible avenues to performing
3 sample ERs to validate that these bounding doses
4 can be applied to a defined worker category.

5 For nickel-63, SC&A concurs with
6 NIOSH's bounding analysis showing no external
7 exposure potential and a bounding annual dose of
8 0.02 millirem per year, which the Work Group may
9 consider negligible exposure.

10 So, that is SC&A's position or comments
11 at the moment.

12 So, our response would be that the White
13 Paper that SC&A referenced describes two
14 scenarios, the high-low switchplate and tritium
15 monitor operations. NIOSH can use those scenarios
16 to bound tritium exposures. NIOSH can assign
17 these doses to all claims submitted as follows.
18 And these dates are in that White Paper, the dates
19 that those exposure scenarios or bounding
20 scenarios are applicable to.

21 From January 1, 1959 through December
22 31, 1975, all claims submitted should be given 6.66
23 millirem per year. And from January 1, 1963

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1 through December 31, 1968, all claims submitted
2 will be assigned 1.77 millirem per year.

3 There is some overlap there. And for
4 those years that overlap, which are 1963 to 1968,
5 NIOSH will add the doses and assign 8.43 millirem
6 per year.

7 MR. FITZGERALD: That's all workers,
8 all claims.

9 MR. MCCLOSKEY: All claims. It is
10 such a small amount, the highest it gets is 8.43
11 millirem per year, if you use that bounding method
12 that we have already presented.

13 MEMBER POSTON: Why do they quote so
14 many figures? My God, the 8 millirem is probably
15 the right estimate.

16 MR. MCCLOSKEY: That's me. That's my
17 fault. That is the way it was calculated in the
18 paper. The significant figures is what you are
19 saying.

20 MEMBER POSTON: Yes, it is an estimate.
21 You have a model. All models are wrong, some are
22 useful, you know.

23 MR. FITZGERALD: Just going back on the

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1 timeframes. I know there was some ambiguity about
2 the tritium bottling at the time. I don't recall,
3 was that nailed down a little better as far as what
4 time periods would be recognized as the tritium
5 bottling time periods?

6 Because I know that we had originally
7 found that in the weekly activity reports but the
8 term during which that was done wasn't clear at that
9 time.

10 MR. MCCLOSKEY: Yes, it even is a
11 little fuzzy. You know we say -- I should just open
12 up and tell you what we say. It is in the White
13 Paper, those dates.

14 MR. FITZGERALD: I know I was just
15 trying to find it.

16 CHAIR BEACH: The dates that they
17 ordered the stuff --

18 MR. MCCLOSKEY: And I will direct you
19 to the dates that I have used to establish that
20 here.

21 CHAIR BEACH: So, I think it began in
22 1959 on page 10. Is that it?

23 MR. MCCLOSKEY: So, on page eight,

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1 first paragraph, you can see that, based on the
2 period during which it is known that switchplates
3 were used, NIOSH assumes the tritium exposures
4 occurred continuously between 1963 and 1968. So,
5 that is the high-low switchplate scenario. That
6 is the second one I listed there.

7 I started at January 1, 1963 and went
8 to December 31, 1968. And so you can see defense
9 of that date earlier in here. But what I was about
10 to say is I rounded out, I think we rounded out to
11 January first and December 31st there to capture
12 those entire years.

13 And then for the other scenario, the
14 longer one --

15 MR. FITZGERALD: The tritium bottling?

16 MR. MCCLOSKEY: Yes -- you can find the
17 source of my dates on page 12 of the White Paper,
18 second paragraph, closing statement.

19 To ensure claimant-favorability, it is
20 assumed that some part of the decanting operations
21 occurred in Kansas City Plant's Chemistry Lab every
22 workday beginning in 1959 and ending in 1975.

23 MR. FITZGERALD: So, it would be

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1 January 1, 1979 or '59?

2 CHAIR BEACH: 1959.

3 MR. MCCLOSKEY: Yes, January 1, '59 and
4 December 31, 75.

5 MR. FITZGERALD: For the --

6 CHAIR BEACH: Bottling.

7 MR. FITZGERALD: And the '75 end date
8 was based on?

9 MR. MCCLOSKEY: Okay, let's go through
10 how we got that. Bear with me, Joe. I will get
11 us there.

12 MR. DARNELL: I'm just trying to find
13 the basis for 1975.

14 CHAIR BEACH: Right.

15 MR. FITZGERALD: That was a question we
16 had for a long time because we knew it began in the
17 early '60s, if not earlier but the end date was
18 unclear at the time.

19 CHAIR BEACH: Wasn't it based on when
20 the items were purchased? I thought I read that.

21 MR. DARNELL: I brought it up
22 electronically. There is only one mention of 1975
23 on page 10 and one more on page 12.

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1 MR. MCCLOSKEY: Yes.

2 MR. DARNELL: Sorry, I guess we didn't
3 put it in here. Was it an earlier iteration,
4 maybe?

5 MR. FITZGERALD: I think the only
6 reference I recall now, it is written here on page
7 11, is that the market for those tritium counter
8 instruments presumably ended by the early '70s,
9 when liquid scintillation counters became widely
10 available. That was the rationale for why you
11 wouldn't certainly be putting these kits together
12 anymore but maybe '75 was just a conservative
13 endpoint based on that.

14 MR. MCCLOSKEY: I'm not sure yet, Joe.

15 MR. FITZGERALD: Okay.

16 MR. MCCLOSKEY: I thought we had a
17 better basis than that.

18 And I didn't know that was -- '75 was
19 one of your sticking points.

20 MR. FITZGERALD: Not a sticking point.
21 I think we were just looking for some hard edges
22 on the dose reconstruction implementation.
23 That's all.

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1 MR. MCCLOSKEY: Okay.

2 MR. DARNELL: It could have been in the
3 previous paper. In the January paper, it talks
4 about scintillation counters coming in.

5 MR. MCCLOSKEY: Yes, newer technology
6 has arrived and we back away from this technology.

7 CHAIR BEACH: Okay, is that a question
8 you want to come back to then --

9 MR. MCCLOSKEY: I suppose.

10 CHAIR BEACH: -- on why the end date was
11 --

12 MR. FITZGERALD: It is sort of part and
13 parcel of the dose reconstruction limitation and
14 so it fits with everything else that you are coming
15 back with. I think it is just a detail but since
16 that was such a question mark early on, because we
17 just had no idea how long they were doing this would
18 be of interest, I think.

19 MR. DARNELL: Considering that we have
20 not found that date any of the records, none of our
21 keyword searches have been helpful in doing that.
22 I think it might be of benefit just to come to a
23 consensus.

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1 We know that in the early 1970s, the
2 technology changed. We have picked 1975 for some
3 reason. Right now we don't know what it is but it
4 stands to reason that we have exhausted the
5 possibility of finding it in the record. And what
6 we need to do is come up with a consensus as to what
7 is reasonable for a site for dose reconstruction
8 purposes. That is a suggestion.

9 CHAIR BEACH: Right. And then did we
10 determine who it was going to be applied to?

11 MR. MCCLOSKEY: Everybody.

12 CHAIR BEACH: So, everybody, because
13 we can't pin down that it was just -- I know we
14 talked about just lab techs but we couldn't pin down
15 that it was just -- and it is such a small dose.
16 Yes, I understand.

17 MR. DARNELL: It is a lot easier just
18 to --

19 CHAIR BEACH: Yes, the last amount was
20 purchased in 1970. Okay, so we will come back to
21 that.

22 There is still the sample dose
23 reconstruction that you are going to do for this,

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1 so that question can be answered.

2 MR. DARNELL: You don't want to try to
3 come to a consensus as a Work Group?

4 CHAIR BEACH: For?

5 MR. DARNELL: An end date.

6 MR. SHARFI: I would agree with Joe. I
7 think, in fact, that '75 would cover all the early
8 '70s.

9 CHAIR BEACH: Yes, I am okay with the
10 '75. I think he was just wanting to know what
11 brought you to that point.

12 MR. FITZGERALD: I think the basis of
13 liquid scintillation counters going out -- or
14 coming into vogue explains it. I don't have a
15 problem with it.

16 CHAIR BEACH: Yes, just curious, more.

17 MR. MCCLOSKEY: Oh, I know. I wish I
18 could land on something right now.

19 CHAIR BEACH: Yes.

20 MR. FITZGERALD: Given the amount of
21 dose involved, it may not be worth it. It is up
22 to the Work Group, obviously.

23 MR. DARNELL: If I'm allowed to make a

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1 motion, I will make a motion.

2 CHAIR BEACH: Okay.

3 MR. DARNELL: You said 1975 is the end
4 date. Move on.

5 CHAIR BEACH: Okay, so any questions on
6 NIOSH's White Paper from the Work Group? Brad,
7 since you are on the phone, I will ask you.

8 MEMBER CLAWSON: No, not at that this
9 time.

10 CHAIR BEACH: Okay, the rest of the
11 Work Group Members, are you comfortable with that
12 end date? Yes, I am comfortable with that as well.

13 This one, I am going to not close again
14 because we are looking at the dose reconstructions
15 that we had talked about.

16 MR. DARNELL: So, in our example dose
17 reconstruction, everybody gets a tritium dose to
18 December 31, '75.

19 MR. SHARFI: Yes, it just gets rolled
20 into the environmental and TBD gets to determine.

21 CHAIR BEACH: Right. Okay,
22 comfortable with that?

23 MR. SHARFI: Yes.

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1 CHAIR BEACH: All right, so everybody
2 okay to move on to the Nickel-63?

3 MR. MCCLOSKEY: I suppose. I think we
4 said that is negligible on the exposure.

5 CHAIR BEACH: Yes.

6 MR. MCCLOSKEY: We said it is, they
7 said it is. I can say that number again if anyone
8 wants.

9 MR. FITZGERALD: Yes, as two
10 hundredths of a milligram, I think we can safely
11 say that is negligible.

12 MR. MCCLOSKEY: Yes.

13 CHAIR BEACH: The nickel?

14 MR. MCCLOSKEY: Yes, 0.02 millirem per
15 year.

16 CHAIR BEACH: So, for closure, let's --

17 MR. MCCLOSKEY: It wasn't its own
18 separate issue.

19 MR. FITZGERALD: It was linked to the
20 high-low plate.

21 CHAIR BEACH: Yes, it was. I think we
22 just lost part of our Work Group Members.

23 MR. KATZ: You can go ahead and talk

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1 over them.

2 CHAIR BEACH: Okay. Yes, so, I will.

3 So, we are saying this is a negligible
4 dose and nothing more to say on the nickel-63.

5 MR. MCCLOSKEY: I mean we have a paper
6 there. We've run it down, we presented it to you
7 guys.

8 MR. FITZGERALD: We reviewed the
9 analysis and don't have any problems with the
10 analysis.

11 CHAIR BEACH: Okay, so questions or
12 comments from the work Group? Are you comfortable
13 with what was written and reported?

14 Okay, so we can close that portion of
15 the issue. Correct? It is not a separate issue,
16 so it is not a separate --

17 All right, so we are done talking about
18 nickel-63, then. Correct?

19 MR. MCCLOSKEY: Yes.

20 CHAIR BEACH: All right, so that ends
21 our topics for discussion also.

22 Action items are pretty clear. Just
23 the Issue 13, just tracking down that mag-thorium

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1 was not used based on the SRDB for the year '64.
2 Did I miss any other actions?

3 MR. FITZGERALD: That is the one I had
4 down.

5 CHAIR BEACH: That's the one I had,
6 too. And, okay. And then the example DRs,
7 correct.

8 All right, good work.

9 MR. KATZ: Very good work.

10 CHAIR BEACH: Very good work and very
11 efficient.

12 MR. MCCLOSKEY: We got a lot
13 accomplished.

14 CHAIR BEACH: Yes, we did.

15 MR. MCCLOSKEY: It will be interest to
16 see if Brad thinks it was good work.

17 CHAIR BEACH: Brad?

18 MR. KATZ: Brad, did you hear that?

19 MEMBER CLAWSON: What's that? I
20 didn't hear that.

21 CHAIR BEACH: Pat is concerned that you
22 think that this was good work and are ready to move
23 on to --

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1 MR. MCCLOSKEY: Bigger and better
2 things.

3 CHAIR BEACH: Okay, so no other
4 comments. I am going to go ahead and close the
5 meeting at this time. Thank you, everyone, for all
6 your hard work and attendance.

7 MR. KATZ: Have a good day.

8 CHAIR BEACH: Have a great day.

9 (Whereupon, the above-entitled matter
10 went off the record at 11:53 a.m.)

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