UNITED STATES OF AMERICA

CENTERS FOR DISEASE CONTROL

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NATIONAL INSTITUTE FOR OCCUPATIONAL
SAFETY AND HEALTH

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ADVISORY BOARD ON RADIATION AND
WORKER HEALTH

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116th MEETING

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THURSDAY
MARCH 23, 2017

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The meeting convened at 8:30 a.m., Central Time, in the Embassy Suites by Hilton, Chicago Naperville, 1823 Abriter Court, Naperville, Illinois, James M. Melius, Chair, presiding.

PRESENT:

JAMES M. MELIUS, Chairman
HENRY ANDERSON, Member
JOSIE BEACH, Member
BRADLEY P. CLAWSON, Member
R. WILLIAM FIELD, Member*
DAVID KOTELCHUCK, Member
JAMES E. LOCKEY, Member
WANDA I. MUNN, Member
GENEVIEVE S. ROESSLER, Member
PHILLIP SCHOFIELD, Member
LORETTA R. VALERIO, Member*
PAUL L. ZIEMER, Member
TED KATZ, Designated Federal Official

REGISTERED AND/OR PUBLIC COMMENT PARTICIPANTS:

ADAMS, NANCY, NIOSH Contractor
BARRIE, TERRIE
BROCK, DENISE, DCAS
DOMINA, KIRK
FITZGERALD, JOE, SC&A
HINNEFELD, STU, DCAS
HUGHES, LARA, DCAS
KINMAN, JOSH, DCAS
JERISON, DEB
LIN, JENNY, HHS
MCFEE, MATT, ORAU Team
NETON, JIM, DCAS
PEARSON, TIFFANY
RUTHERFORD, LAVON, DCAS
STEPHENS, HUGH
STIVER, JOHN, SC&A
TAULBEE, TIM, DCAS
ZIEMER, MARILYN

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8:29 a.m.

WELCOME AND INTRODUCTION

CHAIR MELIUS: Good morning, everybody. We will get started this morning and I will turn it over to Ted to do the housekeeping.

MR. KATZ: Right. Welcome, this is the Advisory Board on Radiation and Worker Health, our second day of our Naperville meeting. Welcome, everybody.

Folks on the line, if you want to follow along with today's presentations, we have the agenda is on the NIOSH website under of schedule of meetings, today's date. The agenda is there, also all the written materials and presentations, written materials as the basis of some of the presentations and the presentations themselves. They are all posted there. You are welcome to follow along that way, you can just open up those documents, or we also have -- we also -- what's it called -- we also have a Skype link, which is on the agenda. And if you go to the Skype link, you can see the presentations as

we see them, as the slides change. So it's not necessary but that is if you would like to do it that way, you are welcome to.

There is no public comment session today.

And just as a note upfront, please mute your phones press *6 if you don't have mute, because that will improve the audio for everyone also on the line, as well as in the room.

(Roll call.)

SAVANNAH RIVER SITE SEC PETITION UPDATE

CHAIR MELIUS: Okay, thanks, Ted. We will start with an update on the Savannah River SEC Petition and Site. I guess there is lots of work going on. So, we will star with Tim Taulbee, ably assisted by Stu Hinnefeld on the computer.

DR. TAULBEE: Thank you, Dr. Melius. I am going to give a brief update of where we are at with the Savannah River Site.

As you may recall back in I believe last July, we listed nine different deliverables that we were planning to give to the Work Group.

We have delivered five of those over the past months and you will see our initial estimated completion and when we completed them here on this particular slide.

But what I want to focus on is the four remaining, to give you an update on where we are at. All of the green items we have delivered to the Work Group and are ready for discussion on those.

So, the first one that I would like to talk about is the coworker models. Revision 3 was sent to the Advisory Board on Radiation and Worker Health, the Work Group -- the Savannah River Site Work Group, as well as the SEC Issues Work Group back in November. And then last week or maybe it was the week before, we did receive some comments back from SC&A on that and we are beginning to look at that.

Revision 3 just to remind everyone was the americium, curium, californium, thorium models, as well as the tritium model.

Revision 4 will cover the remainder of the radionuclides of interest for the Savannah

River Site.

Our current status is we coded some additional NOCTS data and it is undergoing data completeness and QA verification right now and it is progressing nicely there. The scheduled completion is the end of June of 2017.

The next report that I want talk about is what we call Report-70. This is thorium exposures at the Savannah River Site in the post-1972 time period.

The coworker model itself will cover the time period from 1972 up through May of 1980, at which time the thorium fuel cycle research being conducted in the 773 Building was discontinued. The program was canceled.

And from there, you see a wind down of thorium inventory there in the building. And there weren't any significant operations going on.

So this report will be describing the justification of why we believe that ten percent of the derived air concentration will bound the thorium doses. This report is in draft form. It

is undergoing internal review.

I'm not sure why that jumped there. Let me back up.

It is on my desk right now for review. So the scheduled completion should be the end of next month in April or the beginning of May.

The next report is Report-81. This is the thoron exposures at the Savannah River Site and this is where the report would demonstrate the appropriateness of the bounding approach of using the tank farm air monitoring data. And the tank farms is where there is 30,000 kilograms of thorium stored in a tank. And so what we were looking at was the emissions from that to bound for on throughout the site during the miscellaneous thorium operations.

This has been delayed due to what I am calling a non-uniformity in the computation methodology. One of the kind of the lessons learned here is whenever you have different health physicists doing calculations of this manner of two-count -- we call it the two-count method of a six-hour count and 24-hour count on

samples to determine -- I'm not sure why it's jumping ahead here, Stu but -- but they will make different assumptions.

And so what we ended up with different methods for calculating this. So what we have decided to do here is come up with a generic methodology to be used by all sites, not just Savannah River, because we found that in various documents we have calculated it slightly differently. And so that just kind of opens up for multiple critiques of the different assumptions. So by having one method that everybody can agree to, then we apply that.

Report-81 has been revised to incorporate this and is working its way through the review cycle. We do hope to get both of these out by the end of next month.

And the final one that I want to talk about is Report-83. This is our subcontractor evaluation that was discussed back in July, as well as a little bit in November, and we had some technical calls on this.

We have sampled the job plans and

randomly selected 110 construction trades workers for follow-up. In November, we did a data capture out at the site about that. We were expecting to get those results right there around Thanksgiving, maybe a week or two after. It turns out that the Savannah River Site's classification officer abruptly retired in December. And so this resulted in a delay.

We actually didn't receive these records until January 26th. So this introduced a couple of months longer than what we anticipated. So it has pushed back the schedule but we do expect to have this completed in June of this coming year.

And with that, I will be happy to answer any questions.

CHAIR MELIUS: Thanks, Tim. Questions from Board Members? Okay, thank you. Don't go too far.

And now we will switch over and SC&A will provide an update, Joe Fitzgerald, of their work at the site.

MR. FITZGERALD: Good morning. Yes,

this is going to dovetail pretty well with Tim's.

You know we had a special tasking last fall to look at the subcontractor issue in terms of records completeness and we have just last week, I think, issued three out of the five responses to the five deliverables that Tim mentioned a little earlier. So things are breaking but they are happening rather soon.

Let me see if I can get this to work. Okay, let's try that again.

Anyway, this is the issue we briefed you last, I guess it was even as early as July but maybe in the fall. The concern is that in terms of SRS subcontractor records, whether or not the records are complete. And of course this is an issue we typically want to address early in the process but in the course of an interview that we did in 2014 with a senior health physicist at the site, we learned that the subcontractor records were being kept separately in company files. And of course that kind of engendered the immediate question well, how were they addressed, how were they treated and were they, in fact,

incorporated into the main body of electronic records as thoroughly as the other records that we were familiar with.

And so in any case, the notion was let's go and look at completeness. And I know that Tim and his staff actually tried several different options to validate that the subcontractor database is in fact complete and they looked at NOCTS. They looked at a subset of the Department of Labor records and just tried to do some comparisons.

In these cases, and we have done this at other sites over the last ten years, in fact, where you sample to look at completeness and try to get some confidence level that you are dealing with a complete deck of cards. In this case, those options didn't really pan out as effectively as we were hoping.

So the basic question is how complete were the files when they were originally maintained and whether it is company files or other files, how complete are those files.

And then the second question is, and

this is a common question, were they in fact transferred into the electronic database or any database, in fact, that is relied upon for dose reconstruction or not. So that is kind of the basic question.

And this is the task that Tim just talked about. I'm not going to go through that again but that is ongoing.

In terms of our status, the Board tasked us with looking at an expanding scope for the validation to perhaps go beyond that one facility, 773A for the early '80s and see if there is any way one could expand that. And how we went about this was to rely on the EDWS, which is the secure electronic data system that Savannah River has and we used that to actually search their document file to see if we could find not only construction job plans but RWPs, radiation work permits, any mechanism, any permits that would indicate that workers would have been obliged to get a bioassay as part of the course of their work during a certain time frame at certain facilities. That was the trigger we were

looking for because that would lend some credence to the fact that that you would expect to find a bioassay record, either hard copy or electronic.

So we were going to go ahead and do that kind of a sampling. And we were going to focus on CTWs, construction trade workers as a group and, therefore, we were looking for tags that would highlight the fact that we were dealing with subcontractors, on one hand, and ones that were more likely than not, or if not clearly outside contracts, subcontractors. And the distinction I am making there is that actually DuPont had an in-house group of construction trade workers and it was, in fact DuPont Construction, as they termed it. And they did, in fact, do some hiring from hiring halls but that was a pretty coherent group that was monitored, as far as we know, pretty much the same as the other DuPont employees. So we were kind of looking for subcontractors that were coming in, say electricians, construction trade workers that were being brought in. And the way we were doing that, of course, is in the DuPont

system, they had roll numbers, payroll numbers that signified that they, in fact, were subcontractors. And in the later Westinghouse system, they actually listed the subcontractor companies.

So anyway, we went ahead and searched those. We came up with the names and the identifiers, identified these for searches. We also found boxes that we had to look at on-site, did the data request, looked at those records, made two site visits. Effectively, two full weeks of review on-site. We had Tim and his staff along.

And these were scanned and will be up on the SRDB. So that was a key to that whole process.

And in the end, the notion, and this is not too complicated, to match the subcontractor CTW names and identifiers with the corresponding radiation record, particularly the bioassay. So, month-to-month, looking for that match.

These were workers that were on RWPs.

They signed RWPs. The RWPs signified that they in fact would need to leave a bioassay sample upon the completion of their task.

Now some of these RWPs were standing RWPs, there were sign-up lists, partly because at Savannah River you had such an influx of subcontractors that the discrete RWPs weren't necessarily used anymore. They were using sign-up sheets. So that is less tight in the sense that we can do one for one checks on whether or not they actually did a certain type of work. But nonetheless, it was a good indicator that these were people that were being tagged to do work in radiological areas and they were to have dosimetry.

And this is just a quick status in terms of expanded scope. Here is the facilities that came off the RWPs, clearly a number of different facilities. Timeframes, even though we did look in the '80s, by virtue of the search results, most of our results were from '89 to '95. Not totally unexpected. This was when they had K Reactor restart at Savannah River and there

was a heavy reliance of subcontractors trying to get that reactor to restart. A lot of physical hardening of the reactor, a lot of seismic bracing. So they brought a lot of construction trades in from about '89 through the early '90s. So that sort of corresponds to the number of subs that we actually picked up on.

And here is just a list of some of the crafts that we identified as part of the RWPs. Quite a diversity of crafts.

We are still in the process of actually getting the records online. Actually, Savannah River did it. As Tim pointed out, they had a problem with declassification but to our benefit, not so much to Tim's, we were able to take advantage of the fact that they were solving those issues when we got our records and we actually got all of our documents cleared last week and we are now getting access to that online. And I think Tim has the records as well and is putting them up on the SRDD.

So we are going to be able to start crunching some of this information, getting it

into a report. But the bottom line so far, the only hard numbers is that we weren't able to find 29 out of the 360 individual subcontractors in the process of working with Savannah River dosimetry records staff. And we will re-verify that but that is kind of one bottom line.

The other bottom line that we are going to look at is whether the corresponding bioassay records from a time frame standpoint match up with the RWPs. If the RWPs say that you need to leave a bioassay sample after you finish work at a certain time, we are going to be looking to see if that, in fact, is the case on the bioassay side. So we are going to look at that a little more tight. And we saw some evidence that there were some mismatches but, again, I think that takes a little more review.

So we are going to go ahead and expedite this for you. We are expecting maybe May-June that we can deliver reports to the Board on this. And that pretty much corresponds with what Tim is saying on his review as well.

That is it on those subcontractor

review. Any questions on that before I go over just -- there isn't much more to say about the neptunium reports. I mean we did look at them. We did provide some responses on that in OTIB-81 last week. I know Tim hasn't had a chance to look at them and they are just relatively new but we should have all of those pretty much in hand as well.

Questions?

CHAIR MELIUS: Yes, Paul.

MEMBER ZIEMER: Joe, could you clarify is SC&A attempting to independently establish the completeness of records or are you simply monitoring what NIOSH is doing? In other words, are there two separate tracks of attempting to verify or you all doing the same thing?

MR. FITZGERALD: No, I think they actually are very coordinated. This is an expanded version of what Tim is doing. And I think the Board from the last couple of sessions felt that the one facility that the construction job plans, you if remember, the 3,000 pages of

construction plans were identified, that one facility for those four years probably would not easily answer the question of completeness for Savannah River, given the diversity of operations and the time frame.

And as I understood the Board tasking was look at to what extent one could expand that scope using the same approach, looking at the completeness by virtue of the subcontractors and the bioassay files. And we were very careful to follow the same protocol that Tim was using.

MEMBER ZIEMER: Okay.

MR. FITZGERALD: So this is really an expanded scope review to answer the same question that Tim was getting into as well last year.

MEMBER ZIEMER: So is it fair to say you are following the same protocol and we want to see if you come up with the same conclusion as NIOSH?

CHAIR MELIUS: But a different sample. A different scope --

MEMBER ZIEMER: Different sample but the same protocol.

MR. FITZGERALD: Yes, it is the same protocol, a broader sample, and hopefully the same answer. But, again, you are dealing with a difference in time frame and a difference in the scope of facility. One facility versus maybe 15-20 facilities. So it is not clear.

I think the concern was whether the answer for the one facility for that time frame would be representative. And I think what we were hoping for is to deliver, both Tim and I, to the Board in June a complete answer that would be pretty solid from the standpoint of representativeness, rather than saying well, there is a concern we will go back and take another look and have this become a sequential process that will take a long time. This way, I think we will be finished with it, hopefully, in June.

MEMBER ZIEMER: Thank you.

CHAIR MELIUS: Can I just add I mean the Board deliberately tasked it in this way. Savannah River Site SEC has been around for a long, long time. And we needed to be able to

expedite it. There is a lot of work to be done and we felt this was a key issue in terms of an SEC for the construction workers there and trying to resolve that issue. And this, having the two parallel efforts under it would be better than doing the usual sequential approach, saving time.

Again, this is probably a candidate for, you know we have never done this before, but for an SEC which has just been under evaluation for so long that we should consider what do we do. How long is long enough?

Yes.

MEMBER BEACH: I have a question.

CHAIR MELIUS: Yes, go ahead, Josie, then Brad.

MEMBER BEACH: You mentioned that the two types of subcontractors, the prime subcontractors and then the other subcontractors.

MR. FITZGERALD: Right.

MEMBER BEACH: How is the sampling being done? Are you sampling from both pools? Because that seems like it would lend to some complication and the records may not be the same

for both sets of or the two different types of subcontractors.

MR. FITZGERALD: Yes, these -- to keep the scope the same as where I think NIOSH started, we have scoped it to just be the construction trade workers, the subcontractors that were sourced in to Savannah River. And in the DuPont system, that would be roll -- payroll 4 and 6. Those were two codes. And for Westinghouse, those would be clearly Bechtel and other subcontractors. So that is kind of how we scoped it.

Now, again, there is construction trade workers that work for DuPont who might have been hired from town halls as well but they worked directly for DuPont Construction. And I think that actual practice probably carried forward to Westinghouse as well. We didn't look at those, per se. We were kind of sticking to the scope of CTW subcontractors that were in those specific other areas.

MEMBER BEACH: Okay. And then you said that the records were ready to get loaded on

the SRDB. Any timeframe? Tim, I think you are in charge of that, aren't you, of when those will be available?

DR. TAULBEE: Well, Tuesday morning before I drove up here is when I downloaded them from the site. So we are hoping within the next week or two.

MEMBER BEACH: Oh, in the next week or two?

DR. TAULBEE: Yes.

MEMBER BEACH: Great.

DR. TAULBEE: Yes, that they will be in the SRDB.

MEMBER BEACH: Okay, that's good. Thanks.

MR. FITZGERALD: Which actually is pretty essential because I have access to the Savannah River secure system but I can't download anything from it. I can look at it but I can't do anything with it. So, it is an important distinction to have to go on the SRDB.

MEMBER BEACH: Right, thanks.

CHAIR MELIUS: Brad.

MEMBER CLAWSON: Joe, help me understand this 29 that were not found. Out of 360 subcontractors that you identified when you say were not found, what are you saying? Are you saying that they were on the RWPs but you can't find them or --

MR. FITZGERALD: Well, the process we went through at the site, we had three avenues by which we had to look at records. One was hard copies; a lot of the files there are still in hard copy. Some are on microfiches; these are the radiation records, both external and internal. And they, in I think maybe ten years ago, maybe longer, maybe 20 years ago, went to their electronic system which is called ProRad, which is the system they primarily rely on because it actually points to records that are maintained as microfiche or -- so it is definitely the more comprehensive system.

And we gave Savannah River the names and the identifiers, Social Security number, whatever, and when we could not find somebody in the system, we had them search ProRad as well.

And if they could not locate a subcontractor in ProRad, again these are the individuals that would actual handle claims for the electronic program, so if they could not find an individual in that system, we could not find anybody, and we did look, in the hard copy or microfiche, then we just kind of indicated that you know that worker could not be found. And that is kind of where we are at now.

Now, we will go back and probably revalidate those identifiers with Savannah River, have them look again, but that is where it stands right now. That is the only hard number we have because we haven't had a chance to look at the timeframes for the bioassays, which is another area of interest.

But for those, SRS came back and said we could not locate those individuals. So that is where that number comes from.

MEMBER CLAWSON: That being said, is Savannah River, these people that are looking for this data, are they hampered by any of the problems, lacking manpower, or anything else, or

are they pretty good at this, I guess I would ask?

MR. FITZGERALD: No, no, there wasn't any issue. I mean the ProRad system is a pretty straightforward system. And you put the identifier in, Social Security number, and they can locate it.

Now the presentation yesterday where you have 60 days and Savannah River was actually the only site that was put up there as sort of 100 percent. I mean it is a pretty good -- they have a pretty good program and good system. It is a tight system. So I think there is a relatively high confidence that if they can't locate a worker through that system, then it is probably a gap.

Now, normally you do have 60 days. So I want to go back and have them look again but right now, that is where it stands.

MEMBER CLAWSON: Okay. This one is kind of more for Tim. Have we ever verified the operations personnel side of this for -- have we V&V'd the operations personnel?

DR. TAULBEE: No, we have not.

MEMBER CLAWSON: What's that?

DR. TAULBEE: We have not. This petition was originally filed by the construction trades workers. So all of the evaluations we have done to date have really focused on construction trades.

Early on, we did look at external dosimetry. In fact in the initial evaluation report, we look at operations, as well as construction trades and did some comparisons from that standpoint, but we have not looked at operations bioassay from this standpoint.

MEMBER CLAWSON: Okay. I know that you guys did a verification of the data being transferred from the hard copy to the electronic copy and that has been done, though, correct, if I remember right?

DR. TAULBEE: Are you meaning from the NOCTS data set?

MEMBER CLAWSON: Yes.

DR. TAULBEE: Yes. That is what we are calling data completeness and that is what is

currently going on within Revision 4 of the coworker model is looking at the data from NOCTS and going back and then looking at the hard copy and comparing with the electronic database to make sure it is all in there.

MEMBER CLAWSON: Okay. Now, Joe, your is overarching all of the different facilities but your ten years is only look at 773A?

DR. TAULBEE: That's correct. With 773A, what we found was a complete set of job plans over a time period, so we could pull a random sample. We weren't trying to look from one box to another box. We could actually look at this group from 1981 through 1986 and sample from within that, a statistical sample, in a sense.

We did not have them, at the time, readily available in order to look at other facilities, job plans. And as Joe has learned, as well as myself, that those are more allusive by the way that they are named and there is other -- you type in job plan within the EDWS system,

you will get a lot of different hits and they are not necessarily what it was you were looking for.

So we had this one random sample here. We could pull it and look and see with the thought that if subcontractors are missing out of this, we would see it under any construction trades job over this time period in 773A. If you recall, that was the initial concern that was raised by the interviewee. He felt all of those construction subcontractor company files had been incorporated into individual files and that is what we are trying to verify.

So we felt that this sample should be able to do that.

MEMBER CLAWSON: Okay, thank you.

MR. FITZGERALD: I would say the only other comment was I think one impetus to look a little later in the time frame was the concern that the Savannah River System, if it was going to be stressed from the records standpoint, would have been probably in that era where you are bringing in the thousands of subcontractors, which was the '89 to the early '90s when they had

the influx. So you know if you are talking about a stress test for Savannah River records, that would have been the time period. So that is another reason we wanted to expand this and look at that particular time frame to see if you did see any issues with the completeness at that point.

MEMBER CLAWSON: And that was with the K Reactor?

MR. FITZGERALD: That was with primarily -- it was other things but K Reactor restart was the only tritium source for the country and when that went down in '88, I guess it was, there was a large, large effort, almost no holds barred effort to get that back up, which was only shortchanged by the end of the Cold War. But before that time frame, there were thousands of workers brought in to do seismic bracing, to upgrade, and get that reactor so it would be operating again.

So you know that was an unprecedented amount of subcontractor influx at that site. And I think that was one concern to take a look at

that time frame.

MEMBER CLAWSON: Thank you.

CHAIR MELIUS: Well one quick question for Tim on the thoron computations.

DR. TAULBEE: Yes, sir.

CHAIR MELIUS: How far off are they? How much difference is there? Any estimate on the different methods that were used? Is it one percent, ten percent?

DR. TAULBEE: Within an order of magnitude.

CHAIR MELIUS: Okay. Okay, good. I'm asking more concerned you know we are talking about dose reconstruction reviews and consistency.

Thank you very much. And with that, thank you both.

Any further questions? Did I miss anybody? Okay, thanks.

Okay, now we will move on to the Rocky Flats SEC Petition. And Dave, I guess you are going to start.

MEMBER KOTELCHUCK: Yes.

CHAIR MELIUS: Okay.

ROCKY FLATS SEC PETITION UPDATE

MEMBER KOTELCHUCK: Okay. Let's go ahead. The Working Group at Rocky Flats Plant was myself as Chairperson, Bill Field, Wanda Munn and Phil Schofield.

Just a quick petition overview. In 2011, NIOSH received an 83.13 petition for 1952 through '89, 4/1/52 to 12/31/89, covering tritium exposures.

The petition qualified for evaluation and the period was extended to 12/30 petition to 12/2/05.

In October of 2013, the Board extended SEC-30 to cover all employees with at least 250 workdays between April 1st, 1952, and December 31st, 1983.

The Board then voted to extend the investigation from 12/31/83 to 12/31/2005 in order to do the following, the five following: Evaluate the use and exposure potential for magnesium-thorium alloy; continue to evaluate for '84 through '88 the neptunium exposure potential;

resolve open questions with SC&A and the Work Group concerning tritium; and examine implication of data falsification issues, which of course was a major concern; and examine exposures at the Critical Mass Lab.

There were other issues that came up as raised by the petitioners, the co-petitioners. I'd like to talk and deal with these -- there are five of them and you'll see there are other issues that came up -- in the order in which they were -- the Working Group was charged.

First, let's do magnesium-thorium alloy, which presented a number of important and difficult issues.

So, the alloy was allegedly shipped to Rocky Flats Plant for use in plates to bulletproof military trucks. Typically two to four percent thorium -- the plates contained two to four percent thorium.

As part of the earlier 192 examination, NIOSH, in 2013, carried out another review of the Site Research Database for the magnesium-thorium link and found no corroborating

evidence. However, workers at the Dow-Madison plant in Wisconsin reported shipping magnesium-thorium plates to Rocky Flats.

The Dow-Madison workers worked with these plates, according to records, between '62 and '75.

NIOSH asserted in its report, that workers there were apparently not aware of Dow facilities in the Denver area and may have delivered magnesium-thorium to these instead.

That's a thought, a possibility, but we really -- ultimately, we don't know what happened, but we, again, found no corroborating RFP links.

So, on 5/31/13, NIOSH was informed that an RFP worker reported that magnesium-thorium was used at the plant.

NIOSH further reviewed the databases and still could not find corroborating documentation, and concluded that there was no corroborating evidence for the use of magnesium-thorium at the site.

Additionally, NIOSH observed that if

the alloy was sent to the Rocky Flats Plant, this took place between '62 and '75, which was part of the SEC period -- covered SEC period. SC&A, however, had a different perspective.

The workers interviewed both by NIOSH and SC&A provided a high level of clarity and detail and they specifically named five different magnesium-thorium alloy specifications or types, only two of which were searched for.

Rather than confusion, SC&A concluded it is just as possible that the worker had it right all along, that is, the Dow-Madison worker had it right all along and the SC&A's conclusion was the receipt and use of magnesium-thorium alloy at RFP remains inconclusive.

Then the Work Group had to decide the path forward on this. There was basically disagreement between NIOSH and the SC&A, or a difference of opinion about what might be going on.

SC&A noted that 400 boxes of records sit at LANL, according to the Department of Energy, and would have to be hand-searched.

Estimated search time, two years.

Also in the SC&A report, a project manager noted that two percent to four percent thorium in the magnesium may not have been considered a reportable quantity, that is, that it was not a highly radioactive material and is used in a number of things.

For example, it was used in the bulletproofing of trucks and military vehicles. So, obviously, it was not considere4d by the military to be highly radioactive.

Two years ago on 3/17/15, the Working Group decided not to ask NIOSH or SC&A to pursue this issue further and to close the issue.

And our reasons were the failure of intensive, year-long searches for documentation at the plant and agency levels. This had been going on since 2007. So, it was ten years of looking at data.

And of course once the issue was open, it was clear that both groups, had they seen anything that related to magnesium-thorium, would have so reported.

So, the searches had failed to corroborate the reports from the Dow-Madison workers and, frankly, consideration of current limitations on NIOSH resources of staff, time and funding. I mean, this source, these sources are not unlimited and we thought that finally we had to simply close this.

I should note that the vast majority of cancers during the years of possible magnesium-thorium use are compensable under the existing SEC, which goes to 1983. So, only those with noncompensable cancers not in the SEC might be negatively affected by this.

So, in February of this year, co-petitioners released the transcript that they got via FOIA of a 2013 interview with an RFP worker who reported use of the plates between '84 and '89 that he believed might have been magnesium-thorium.

An interview was held. The person when asked about the use of magnesium-thorium, said "It's hard to say." And, indeed, it may be. It may be that it was not discussed. It was,

again, might not have been considered a highly radioactive material. Co-petitioners asked that the interview be reopened.

At its meeting three days later, the Working Group, with input from NIOSH and SC&A, decided the transcript had been evaluated, the context of all the information, and did not warrant further reconsideration or elaboration and this issue remained closed.

So, then let's go now to the neptunium issue, the second one. A NIOSH search concluded that neptunium-237 was used at RFP after the '83 SEC date perhaps up until 1988.

Evidence points to a series of discrete tasks performed from '62 through '83 involving a few grams to a few hundred grams, usually at the request of other DOE facilities. The maximum use was 300 grams in 1966 during the covered period.

The only processing operation in the post-'83 period involving neptunium was the plutonium-neptunium separation and residue recovery operation from late '85 to the end of

'87. Which was outside, then, of the SEC period. This was a glove box operation involving five operators and one engineer.

With the plutonium-neptunium mass ratio of 6.4 and the greater specific activity of plutonium, the neptunium operation and later waste cleanup were monitored by a plutonium air sampling, contamination surveys, and bioassays, which were consistently implemented in the post-'83 period.

The SC&A studies independently confirmed this, and the conclusion only one operation involved neptunium. And the co-presence with plutonium enabled radiological monitoring to account for exposure in a claimant-favorable manner and this was closed. So, that was the second item.

The third was tritium exposure. Of course that was key during the pre-'83 period for establishing an SEC. This was the original basis for accepting SEC-192. The internal doses are the main health concern from tritium.

Prior to the 1970s, the radiological

program did very little monitoring for tritium, because they believed there was limited tritium exposure potential. However, a '73 incident revealed that returned trigger containers could emit as much as 500 to 2,000 curies of tritium.

So, as a result, changes were implemented. This was a major issue, and of course majorly affected the -- the tritium majorly impacted in the environment and it was a national issue. But, as a result, a series of changes were implemented: increased number of tritium bubblers and swipe samples, air sampling on opening incoming containers that used pits, and urine samples for 250 workers thought to be most effective followed two years later by sampling only among those job-specific categories, because the earlier results showed no excess exposure levels.

In addition, ten percent of urine samples for plutonium were tested for tritium. Result: greatly reduced level of tritium exposure by the 1980s.

Since virtually all RFP workers before

1983 are covered by the SEC, the crucial issue for the Work Group, for NIOSH, SC&A, was whether the post-'83 tritium exposure control program was adequate and individual tritium exposures appropriately assessed.

After extensive group discussion about the placement of bubblers, their efficacy, the sampling procedures, the Working Group agreed that the exposure control program after '83 was adequate to protect workers exposed to tritium. So, we'll talk about partial dose reconstruction. So, the Working Group closed on this.

Now, data falsification. As is publicly well-known, an FBI raid was conducted at the Rocky Flats Plant in 1989 concerning alleged data falsification, improper bioassay processing, and document destruction. Also in '89, a related DOE study was conducted. However, the FBI did not release the redacted interview transcripts until 2015.

NIOSH and SC&A interviewed a number of Rocky Flats employees, including one who reported being ordered to destroy records. NIOSH reported

no loss in essential records which would interfere with radiation dose reconstruction, nor did it find evidence of relevant data falsification.

There may well have been problems with processing that might have affected chemical composition and chemical deterioration during storage, but we're talking in our program about radiation dose reconstruction.

Another interviewee made statements about the inadequacy of fume hoods, stack samples, and improper handling and/or preparation of environmental samples.

NIOSH said, from a radiological perspective, NIOSH finds no scientific basis for concluding the issues raised regarding the samples would compromise -- and my emphasis -- radiological count results.

Another interviewee raised the issue of dosimeter technicians writing down dose rate information in pencil, which might allow others later to direct changes in the data.

This might impact results recorded for

field survey instruments, but the primary sources of dose reconstruction data are personnel dosimeters and bioassays, which are assessed in the lab, not in the field.

SC&A reviewed eight documents mentioned in the NIOSH White Paper. The documents were concerned with other aspects of the operations and environmental issues rather than data falsification, record destruction, or bioassay data that would potentially impact the ability to perform adequate dose reconstruction.

Based on the interviews, analyses, evaluation of the 2015 FBI report, NIOSH concluded there exists sufficient quantity of individual monitoring to support the assessment of RFP personnel external doses. SC&A agreed and it was closed.

But in addition to its basic support of conclusions of the NIOSH White Paper -- I moved ahead of myself -- SC&A expressed concern that the data used to generate the intakes might be impacted by the environmental sampling and data issues that surfaced both after the FBI raid and

the DOE investigation.

The Working Group, having read the White Papers and heard the presentations, agreed with the NIOSH conclusions and referred the possible environmental occupational linkage issue to the Subcommittee on Procedures Review.

And claimant representatives wrote a detailed response to the NIOSH White Paper, and NIOSH combines all the issues raised by the petitioners and the relationship to Building 123. Each of the issues raised are separate concerns. Some concerns may be related to Building 123, but not all of the issues are. Therefore, each of the issues needs to be addressed on an individual basis.

It is the petitioner's position that the problems associated with each individual concern is sufficient for NIOSH to determine that they cannot reconstruct dose with sufficient accuracy. And they itemized six different areas of concern.

Let's address some of these. For records destruction, the petitioner's concern was

that there was a relatively low number of urine samples -- 10,000 in 1984 -- which equates to less than two samples per employee that year.

NIOSH noted that this incorrectly assumes -- NIOSH asserted this incorrectly assumes that every worker employed at RFP in 1984 had a potential for internal exposure and that this metric, as NIOSH noted, it was not appropriate.

In terms of record destruction, the petitioner said that no fecal samples were listed for years 1980 through '88, eight full years. The number of fecal samples pre-'88 is very important. And agreed, NIOSH said fecal samples are not necessary to bound inhalation intakes. Urinalysis can also be used.

However, they noted in their White Paper about it that more than a thousand fecal sample results were available for the 1980 to '88 period.

Based on its review of the rebuttal document, NIOSH concludes --- NIOSH --- sorry, typo -- concludes that no new information has

been presented that impact its ability to bound or reconstruct with sufficient accuracy and the dose for the Class evaluated. The Working Group concurred and this aspect of the investigation was closed.

Finally, next to finally, the Critical Mass Lab. The operations at the Critical Mass Lab took various assemblies and radioactive materials to criticality levels.

In addition to emissions from the criticality studies, the NIOSH White Paper in June of 2015, noted that "radioactive materials at the lab included the nuclear fuels and sealed radioactive sources used in criticality experiments, fission and activation products generated in the fuels, building materials and fixtures as a result of the nuclear criticality experiments conducted there are an additional source of radiological exposure."

The White Paper concluded external radiation exposure to CML from criticality experiments is accounted for by the personnel dosimetry program, which assigned radiation

dosimeters to all CML workers. And this program also included periodic bioassays.

NIOSH found no significant personnel dose to CML workers from mixed fission and activation products over the lifetime of the lab. SC&A agreed and the Working Group accepted the paper.

However, in June of --- excuse me, in July of 2015, in the RF Working Group conference call, the last surviving of three senior scientists at CML from '64 through '86 joined the discussion and expressed strong disagreement with the conclusions of the NIOSH paper. He requested a personal interview at a later time, which was agreed to and conducted in October of 2015.

During the interview, this CML scientist argued that no one could bound the neutron flux in the lab's near-criticality experiments. He disputed NIOSH's ability to calculate upper bounds on the neutron flux via the reactor's energy input during the criticality experiment.

He also asserted that radiation levels

at CML were not properly documented and that Rocky Flats' personnel dosimetry program only performed lung counts, not full body counts, on the lab's 30 to 35 employees and conducted these urinalyses irregularly.

In addition to exposure to its full-time employees, this CML scientist reported that, during the 1980s, typically one to 200 non-CML RF employees entered the lab annually to observe ongoing experiments.

At the conclusion of the discussion, NIOSH staff agreed to review existing data, extend the search, and issue an updated White Paper on CML. Including in this effort was a capture of CML data from Los Alamos National Lab. A reassessment paper was issued in November of 2016.

Here's what the NIOSH paper, reassessment paper -- NIOSH found that CML staff had on five occasions satisfactorily assessed the thermal power and neutron flux, and the power in all cases was less than the 10 milliwatts estimated in its 7/14/15 White Paper.

Routinely collected data was found for external exposures monitored via personnel badges and daily radiation surveys at control points. Potentially contaminated surfaces were checked regularly for alpha radiation via tissue smears.

Internal exposures resulting from inhalation and ingestion of airborne dust and resuspension from contaminated surface were assessed via bioassays and with an adequate amount of exposure data and amount of data.

Thus, after reassessment, NIOSH again concluded that no significant personnel dose to Rocky Flats workers or contractors resulted from the generation of fission or activation products in the uranyl nitrate fuel or resuspended contamination from fuel spills as a result of criticality experiments conducted at CML over its lifetime. And the Working Group agreed and it remained closed. It --- yes, and it closed.

Another additional issue that came up from the claimants. In spring 2015, claimants raised new concern about radiation exposure from the 600-curie cobalt-60 source at Rocky Flats and

presented information from DOE via a FOIA application that --- presented information from DOE as well as employee testimony alleging lack of proper exposure protection during removal of this source from RFP.

A NIOSH White Paper on sealed sources was issued on 7/18/15. And in October of 2015, at an RFP Working Group meeting, NIOSH reported that proper standard radiation measurements were made during cobalt-60 use and removal, and only background levels of contamination were found. And this the Working Group closed on.

So, these are the issues. I don't know if they may be a little small to read, but basically we closed on each of the five issues that we were charged with investigating, as well as examining exposure from the cobalt-60, as raised, and a number of the issues that were raised in rebuttal by the co-petitioners.

Our recommendation is that for the period January 1, 1984, to December 31st, 2005, the Rocky Flats Plant Working Group finds that radiation dose estimates can be adequately

reconstructed for individual claimants and recommends that this Class not be added.

Okay. Questions?

CHAIR MELIUS: Thanks, Dave.

Questions? Phil.

MEMBER SCHOFIELD: Yeah. I got a couple things I was thinking of yesterday. And, one, on the reading of either film badges or TLDs, depending on the timeframe, because of the different type of processes some people are going to be exposed to higher neutron fields and others are going to be exposed to higher gamma fields.

And based on my experience, did they give them full credit for those exposures, or were they assuming that some of this neutron or some of those higher gamma levels was erroneous?

CHAIR MELIUS: LaVon. Go ahead.

MR. RUTHERFORD: I was going to say, the neutron exposures were checked for the CML lab and at different energy levels suspected. And it was also accounted for, I believe, in the NDRP report as well.

MEMBER SCHOFIELD: Okay. Then the

other question I have is, when people were suspected of having an update, you know, maybe a minor one, 50-70 dpm, something like that, when they did swabs to see what they did, did they do just nasal, or did they do oral swabs, or both?

MR. RUTHERFORD: Are you talking for any individual on the site, or CML, or what?

MEMBER SCHOFIELD: I'm talking about individual. Say they have a --

MR. RUTHERFORD: They were nasal smears.

MEMBER SCHOFIELD: They were all nasal smears?

MR. RUTHERFORD: Yes, from what I can remember. I don't remember any --

MEMBER SCHOFIELD: Okay.

CHAIR MELIUS: Josie?

MEMBER BEACH: Dave, I'm going to go back to your slide 10 and those 400 boxes that sit at LANL.

MEMBER KOTELCHUCK: Yes.

MEMBER BEACH: I understand the Work Group closed that out.

MEMBER KOTELCHUCK: Right.

MEMBER BEACH: Who knows what could possibly be in those boxes, those 400 boxes and -- yeah, I just keep going back to that information.

MR. RUTHERFORD: I would like to say that it's not 400 boxes. We have reviewed some of those boxes. When we went through the Rocky Flats early on in not only SEC-30, but SEC-192, we have been to LANL, we have captured documents and we have, you know, looked for this issue.

I know we haven't looked in all of those boxes, but it's not 400 boxes.

MEMBER BEACH: Okay.

MR. RUTHERFORD: And I'd also like to point out that, in our opinion, this is not an SEC issue. We can reconstruct the thorium exposures from cutting, grinding, welding, your two to four percent thorium alloy. And we've done this for a number of metals operations.

MEMBER BEACH: Okay. I understand that part of it. I just wonder if there's anything -- did you just overlook -- did you just

didn't go into some of those boxes?

MR. RUTHERFORD: Well, what we did was we tried to -- LANL indexed the number of boxes when they got them. And we tried to pull boxes we thought we would find information in. So, we didn't look at all of them, but we pulled the ones we thought might have information.

MEMBER BEACH: So you don't know what you don't know, basically.

MR. RUTHERFORD: Exactly.

MEMBER BEACH: Okay.

MEMBER KOTELCHUCK: But you never know what you don't know.

MEMBER BEACH: I know. That's why I like to look at all of them.

MEMBER KOTELCHUCK: And I respect that, but --

MR. RUTHERFORD: I would like to point out another thing is we did look at the classified documents at LANL. That was the ones we focused on, because the operation was a classified operation. And so those were the documents we were specifically looking at at LANL.

MEMBER BEACH: Okay.

MEMBER KOTELCHUCK: And I just went over, I mean, the list in the databases that had been gone over over the years and the interviews that have been conducted have been going on for ten years and we could never find anything to corroborate internally what was quite reasonably described by the Dow-Madison workers. We just didn't find it in the plant.

MR. RUTHERFORD: Yeah. We also did investigations at Sandia, we did investigations at Lawrence Livermore, we did investigations at Kansas City and have no indication of magnesium-thorium alloy use from documents we retrieved there.

MEMBER KOTELCHUCK: Obviously, if ever information were to come up of evidence, any time there's new evidence about any plant, that will be looked at, and that would be looked at, but the evidence has to be there.

And it would be easy to calculate, "oh, what could have happened if they had used?" Although we don't even know, if it was used there,

we don't know how extensively it was used. It's just -- we just keep looking and looking and weren't able to find anything.

MEMBER BEACH: Okay. So, just a follow-up.

MEMBER KOTELCHUCK: Sure.

MEMBER BEACH: So, the Rocky Flats individuals will not get dose, the four percent during that time period, because you haven't been able to prove that there was mag-thorium there, is that correct?

MR. RUTHERFORD: That's correct.

MEMBER BEACH: If you did prove it, then you could.

MR. RUTHERFORD: Yes.

MEMBER BEACH: But they're not going to --

MEMBER KOTELCHUCK: Oh, yeah.

MEMBER BEACH: Okay.

MR. RUTHERFORD: Exactly.

MEMBER KOTELCHUCK: Absolutely. And, of course, most of the people -- if we are wrong and it was -- or if we corroborated the

assertions, the reasonable assertions by the Dow-Madison workers, and they did use it, we could --- excuse me. If we were able to corroborate it, we could do the calculations, and we would. I mean, there's no question we would reopen, but it hasn't --- we haven't found that corroboration. And at a certain point, we just said it's been going on for a long time in ---

MR. RUTHERFORD: Another thing I'd like to point out on that, most of the operations that we've seen throughout the DOE sites, those sites were not using any magnesium-thorium alloy after 1983.

Now, that doesn't mean that, you know, as Dr. Kotelchuck said, we may find something at some later date. But at this point, nothing we have seen goes past 1983, and we're already in SEC up to 1983.

MEMBER BEACH: Right.

MEMBER KOTELCHUCK: Right. Again, if we had found any, most of it would be covered in the existing SEC.

CHAIR MELIUS: Okay. Any other Board

Members with questions? Anybody on the line that has questions?

(No response.)

CHAIR MELIUS: Okay. Thank you, Dave.

MEMBER KOTELCHUCK: Okay.

CHAIR MELIUS: And I believe that the petitioner, Terrie Barrie, wants to make comments.

MS. BARRIE: Yes.

CHAIR MELIUS: I'm not sure if it's a PowerPoint or written.

MS. BARRIE: No, PowerPoints take too long to --- and we only have ten minutes and that's not enough for the petitioners to present our objections. And I ask the Board to reconsider that for the future petitioners.

My name is Terrie Barrie, and I thank you for appearing here --- or for allowing us comments.

I'd also like to mention that when NIOSH sends documents to the petitioners, we need a whole lot more lead time than two days, okay?

My packet is waiting at my house. I was already in Chicago. And although I got online, not every petitioner gets their information online. So I'd like that to be reconsidered also.

I'd like to --- obviously, I object to the conclusions by the Work Group and NIOSH and SC&A. And the reason for this, we'll start off with the tritium issue, which was the basis of the qualification in the beginning. They haven't researched the metal tritides.

Now, I didn't know about metal tritides when [identifying information redacted] and I first filed for the SEC petition, but it was mentioned in General Atomics and I brought that up in November. And also SC&A raised the issue of metal tritide presence at Rocky Flats.

And so that started me researching, and I did find a few documents that's publicly available. And one was an internal 1976 letter which describes processing a hundred kilograms of plutonium oxide containing 3,000 micrograms of tritium into metal. I provided that to NIOSH.

There's also a document titled

"Tritium Permeation and Passivated 304 Stainless Steel," a third one from DNFSB, and an FBI interview where a chemical engineer, former worker, stated that there was a tritium site that was separate. "Due to the ongoing practice of conducting classified projects at Rocky Flats, tritium was produced and disposed of at the plant in the areas of the 207 ponds."

And that's been overlooked. It hasn't been investigated at all although NIOSH has had this, that interview, for quite a while.

When it comes to the Critical Mass Lab, [identifying information redacted], the expert for that, voiced a number of concerns. [identifying information redacted] yesterday brought many of them up, but I'd like to call your attention to the White Papers on page 30, which states, "NIOSH has found no indication that confirmatory bioassays were performed for employees involving in the cleanup of any accidental UNH spills. Fission and activation products, which decay primarily into beta gamma emissions, are not likely, in any case, to have

been detected by bioassay intended to detect alpha particles emitted by uranium or transuranic radionuclides."

The question is, why didn't they find any bioassays? Were they performed? Were they not performed? And if bioassay can't detect this gamma beta emissions, how is NIOSH going to reconstruct dose for that? There's no methodology for that yet. And so all these workers are probably being underestimated.

And I know I'm kind of nervous here, but I did submit a fully-written statement to everybody and I hope you consider that before voting.

The other thing that they said was closed was the cobalt-60 issue. And when the last -- I think it was the last Work Group meeting, NIOSH had said --- actually interrupted Dr. Kotelchuck before closing it out, that they did -- that the person who owns or has possession of the cobalt-60 source has additional information and there was supposed to be a secured interview held with that person or

company or whatever. And it hasn't happened, as far as I know.

Let's see. The new information --- and I apologize, this was brand new for us. I'll give you a little story. Deb Jerison was working on Part E database to help the claimants and she sent me some stuff over from the CEDR database that applied to Rocky Flats.

And I was just doing to thank her. You know, I thought I'd open it up and just take a look so I can, you know, properly thank her and tell her I'd take a look at it later. And lo and behold, at the top of the columns of her spreadsheet, it says "Gamma Neutron Radiation," along with the building numbers.

So, I scroll through, and sure enough Building 460, a cold building, has neutron radiation assigned to the workers, as does Building 444. And this is detailed in my response.

But Deb had previously went to NIOSH, asked if they were aware of the CEDR database and if it was used for dose reconstruction.

And NIOSH replied, "NIOSH has made use of CEDR data to complete coworker studies for some sites. This includes all three Oak Ridge sites, as well as the Rocky Flats and Hanford sites."

So, if that information is in the database --- now, this is a chance I'm taking, you know, because they could possibly go back and say, "Oh, yeah, we should reconstruct dose with, you know, assign dose to these workers," but for 10, 15 years they haven't been assigning proper dose, as far as I'm concerned, to these workers in the cold buildings. They're just making assumptions that are not based on facts. Okay?

And just to clarify, on the CEDR thing, that also is not complete. I know of one worker whose radiation records are not included in Building 460.

When it comes to NIOSH responding about my question about neutron radiation in Building 444 because there was depleted uranium and beryllium in the same building, and they responded that, "Therefore, it would take about

a thousand kilograms of depleted uranium and intimate contact with beryllium to give a dose rate of one millirem per hour at a meter."

Well, I found the document and I did send that off, I believe, to NIOSH a while ago, from DOE, that says that there was at least 300 metric tons per year for many years at Rocky Flats, which would equate to about a thousand whatever I just said --- a thousand kilograms of depleted uranium in contact with beryllium.

Two site experts, which I know you will have to research this and find documentation, but I believe them when they tell me that the beryllium and the depleted uranium would have been in close contact, at least on the loading docks and in the ductwork, the heating ductwork, because it was one heating ductwork and they would intermix and, you know, neutrons penetrate different things.

So, I think --- oh, neptunium. My favorite. I'm sorry, I'm nervous here. I have to reiterate that the SEC for Los Alamos was approved because of a document from DOE that says

you cannot use plutonium bioassay to reconstruct dose for neptunium. And that's exactly what they're doing for Rocky Flats and that's wrong. It's inconsistent.

And let's see. I think that is just about it. And I did, through Cold War Patriots, they sent out an email asking for assistance for me. And I did have people come to tell me, "Yes, I worked on magnesium-thorium." They have no documentation. And, "Yes, I know people who worked with metal tritides."

So, I think that's about it. I believe, and [identifying information redacted], the petitioner, believes that NIOSH has failed to provide reasonable and factually-based evidence to support their position to reconstruct dose for the Rocky Flats workers after 1983.

The uncertainty of whether the documents were investigated and used for methodology alone should give pause for the Board before they vote not to expand the years. Omissions of factual evidence by NIOSH, which is readily available to the public, should also give

the Board cause --- or pause.

Rocky Flats, I know there's a problem with resources. This has been going on for years and years, but they deserve a fair investigation. And we just don't think -- to a degree -- to a degree, there's certain things that have been omitted. We just deserve a fair shake that all the evidence be honestly evaluated. And I ask that you vote to expand the Class. Thank you.

CHAIR MELIUS: Thank you, Terrie.

LaVon or Dave, do you have responses to --- I think there's ---

MEMBER KOTELCHUCK: Well, why don't we start with the metal tritides.

MR. RUTHERFORD: Metal tritides, we actually assessed the metal tritide issue. I actually did get the documents from Terrie.

The only period where we initially thought there could possibly be was the mid-'70s time era when some activities were going on.

However, when we did classified search on that and discussions, we concluded that this was not a concern during that period. And so we

have assessed that and it was reported to the Work Group. And we also gave SC&A the opportunity to rebut that.

CHAIR MELIUS: The CML cleanup workers spills?

MEMBER KOTELCHUCK: The cleanup of activity was --- that they said that they could not --- that we were not detecting alpha particles. I mean, there was -- there was cleanup.

MR. RUTHERFORD: Oh, we have documented surveys. We have contamination surveys. We have air sampling from the entire period.

The issue was, was there post-accident bioassay? We could not confirm that, but we do have the actual bioassay for individuals that worked in the actual Critical Mass Laboratory during their period.

It does not address fission and activation products, and we did mention that, because, at the time, the site did not feel that it was necessary. And our calculations prove

that it was not.

The highest dose we came up with was 2.5 times 10 to the minus fourth millirem potential exposure at the Critical Mass Lab from fission and activation products.

MEMBER KOTELCHUCK: Yeah, I mean, if I may say, on the cobalt-60, the assertion is that we didn't interview someone outside ---

MR. RUTHERFORD: Actually, the cobalt-60 source, the person did request an interview. That interview was conducted in a classified setting. The individual was not concerned with Cobalt-60. She was concerned with a tritium capture system that was employed during the production years.

She did not identify any situation where exposures could have been received from work with that unit. I can't discuss all of it, but I can give you that much. But, in fact, her interview said she had no issues with the cobalt-60 gamma cell. It was routinely surveyed. We could only come up with two or three of the leak checks, but we did find the complete work package

for the removal of the gamma cell and we had no indications there was ever any problems with that.

CHAIR MELIUS: Josie, you had a ---

MEMBER BEACH: Yeah, I have two, LaVon. Hang on. Hang on there.

MR. RUTHERFORD: I might as well just hang out.

MEMBER BEACH: Can you just respond to the 460 building that was supposed to be a cold building, but --

MR. RUTHERFORD: Yeah, and I do believe that we have, you know, found that there were some activities that were conducted, you know, just based on interviews, that there may have been some exposures in there.

However, we also have personnel monitoring data for all those situations that we, you know, we have personnel monitoring data for those individuals, so it's not a dose reconstruction issue.

MEMBER BEACH: Okay. And then the other one was on the CEDR. Did you guys look at

that?

MR. RUTHERFORD: CEDR database is part of our coworker model.

MEMBER BEACH: Okay.

MR. RUTHERFORD: However, it is also adjusted based on any additional data that we have. And, again, the coworker model will have to be reevaluated once the coworker methods have been finalized, you know, after SRS is completed.

MEMBER BEACH: Under the Site Profile.

MR. RUTHERFORD: Yeah. Right.

MEMBER BEACH: And then last one, the neptunium dose using alpha to ---

MR. RUTHERFORD: Yes. Neptunium, actually, the reason why we can use it there is we have documentation of the maximum ratios between the plutonium and the neptunium.

We employed those maximum ratios and compared that to the airborne concentrations and they were negligible. You could not --- it would clearly be bounded by the plutonium intake. And those individuals had monitored plutonium

bioassay.

CHAIR MELIUS: LaVon, don't go away.

(Laughter.)

MEMBER KOTELCHUCK: Also, I may say, while we're waiting, I mean, when people, in the plant, there were at least two people who reported using magnesium-thorium. One of them was --- and it was told to us a while ago there was an interview that was held. And that was the quote that I said that it was hard to tell. And, sincerely, it may have been, but that’s not, if you will, solid corroboration.

MR. RUTHERFORD: Well, I can say the interviews, when we conducted the interviews, the question was specifically asked, "Do you recall ever using magnesium-thorium alloy in your operations?"

No time period was put on it. It was basically, have you heard magnesium-thorium alloy -- and none of them that we interviewed, we interviewed workers that worked on the project that, you know, the SST&S, their railcars that were actually -- which were brought into

question, and none of them could corroborate that there was magnesium-thorium alloy.

CHAIR MELIUS: My question is different, and it's the X number of boxes, since we don't know it's 400. Are those ever going to be looked at?

MR. RUTHERFORD: I would suspect that we will, but I, you know, again, I would suspect we'll look at them just because of other issues as we move down the Rocky Flats path of Site Profile issues. And given opportunities where we go to LANL for different things, we will have opportunities that we can look into those boxes, I believe.

CHAIR MELIUS: Okay. And suppose that they corroborate the use of magnesium-thorium. Are you going to --- I mean, I think you've stated that that's, you know, sort of a Site Profile issue that you can reconstruct dose, but will you be able to place workers into that area?

MR. RUTHERFORD: Well, obviously, I mean, we do actually have a pretty good list of

the workers that worked on that project. So, we do have that.

It would be more of timing of what we would probably end up doing is identifying the exposure --- first of all, if the exposure is, you know, when we calculate it, is it a measurable exposure? That would be the first thing.

Then we would probably identify it to just the people, any individual that worked within that building over that time period, and we could apply that dose.

CHAIR MELIUS: Back to the boxes. Is there any sort of index of the boxes or of what the content may be?

MR. RUTHERFORD: Yeah. Actually, LANL had an index, that I remember, but it wasn't a very detailed index. And, actually, I've been sending emails to our staff to get a better feel for that as well. So, and I haven't got it back yet.

CHAIR MELIUS: Okay.

MEMBER KOTELCHUCK: Right. I mean, we have been --- also the Working Group has been

working on this for years.

MR. RUTHERFORD: And recognize, again, that this was also addressed under SEC-30. This was looked at under SEC-30. It was extensively looked at by --- I mean, because of [Identifying information redacted] concern with Dow-Madison and his concern with extending the covered period at Dow-Madison.

And so it was looked at there, because if they sent magnesium-thorium alloy to another plant after the covered period, then they would make the argument that it should extend that.

So, we looked at it there. We've looked at it under this, you know, so it's been looked at a lot.

MEMBER SCHOFIELD: LaVon, I've got a couple questions for you.

(Laughter.)

MEMBER SCHOFIELD: Okay. Was HF reductions done at Rocky Flats? And if so, was that an isolated area or was there other people working there who were not directly tied to the HF reductions?

MR. RUTHERFORD: Well, HF doesn't have --- it's not a radiological issue.

MEMBER SCHOFIELD: No, but if you're reducing plutonium fluoride with HF you do have that neutron flux.

MR. RUTHERFORD: Yeah. I can say --- I don't know. I can say that the neutron exposures were thoroughly evaluated under the NDRP program. They were evaluated extensively under SEC-30 and all issues were closed out under that.

MEMBER SCHOFIELD: Have you investigated --- there's some indication that some people say that californium was used there. Have you investigated that, or not?

MR. RUTHERFORD: We have no indication that --- there may have been a small source. Again, that's an external exposure that may have been used for calibrating instruments. I don't know. I don't recall that, but that is an external exposure issue. We have film badge data on everyone. And, again, neutron exposures have been evaluated. It wouldn't have --- they

would have been picked up by our -- by the monitoring.

MEMBER SCHOFIELD: Okay. Thanks.

CHAIR MELIUS: Anybody else have further questions?

MEMBER KOTELCHUCK: There were an extensive number of issues that we looked into and we tried to respond as we thought appropriate to the information that was provided by the co-petitioners and their representatives. So, and this is the conclusion that we came to that we should not add the SEC.

And, of course, all the individual cases, all the individual exposures, all the exposures to individuals will be assessed. And possibly in the future there may be issues that we might want to revise the profile. We will do that, but we've gone through this as thoroughly as we could.

CHAIR MELIUS: So, we have a motion from the Work Group that we closed?

MEMBER KOTELCHUCK: Yes, we do. Yeah.

MEMBER BEACH: Can I ask, was that a unanimous recommendation by the Work Group?

MEMBER KOTELCHUCK: Yes, it was.

MEMBER BEACH: Okay. Thank you.

CHAIR MELIUS: So, further discussion on that?

I will say I have some misgivings simply because I wish we had more information on the X number of boxes available to us, to know how you targeted them and so forth. And it seems, I guess, a little bit troublesome that there's information out there that we're not looking at.

On the other hand, I understand the impracticality of it, and, you know, stretching out an evaluation for a longer period of time for what may very well be an SEC -- or a Site Profile issue, not an SEC issue.

Though, I can imagine a scenario that's fairly common when we discover these where, you know, not because of the nature of the exposure, but because the issue of placing workers into a particular area, that we can't do,

you know, dose reconstruction for that particular exposure.

But, again, we haven't really gotten to that point and we haven't been able to explore it yet.

MEMBER KOTELCHUCK: Right. Coming to a conclusion that you can't find corroborating evidence is always troubling, I mean. But it seemed to us that there are many people who are going to be affected by the SEC petition and that it was reasonable after four years to say we've done a good job. And we are always open to reopening if more information is found ---- or I should say if information is found to corroborate.

MR. RUTHERFORD: I'd like to add onto that, you know, recognize that SEC-30 went through the entire period. It was only because new information was brought forth by the petitioner that was not previously evaluated that moved this petition forward.

So, in the future, if there's new information that comes out that provides a basis

for an SEC petition, we will open that petition and look at it. So, I mean, it never shuts the door on future petitions. I just wanted to make sure everybody remembered that.

CHAIR MELIUS: I'll just add that some of us were not very satisfied nor agreed with the conclusion on SEC-30. So, I'm not sure I'm as comfortable with the investigation there as I am with what's going on so far, except for this one issue which is somewhat troubling.

Any further comment on that? Paul?

MEMBER ZIEMER: Well, let me just ask a question on that.

Let's suppose that sometime in the future we found that there was the magnesium-thorium, some records of it for those group of workers that you're talking about. The main issue there, would it not be one where those who were doing welding would have internal exposures?

So, the likelihood of that ever becoming an SEC issue seems, to me, it's pretty low. It's still reconstructible.

CHAIR MELIUS: I agree it's

reconstructible. I'm not sure that --- usually the problem we have is placing workers into those categories. Do the records support people being there and does it cover all the people that were potentially involved in that work?

I mean, it's a hypothetical. I don't want to go over, you know --

MEMBER ZIEMER: It's pretty hard to call everybody on the site a welder.

CHAIR MELIUS: Well, and I don't recall enough about the record system there in terms of personnel records and placing people in sites. I'm going based on our experience at other sites. I don't want to exaggerate the possibility, but I don't think it's always, you know, it's as straightforward as just doing the dose reconstruction.

MEMBER KOTELCHUCK: It's certainly, I think, for people there, I think that if we were to find, in the future, records that it would not result in majorly increase in a dose that that workers got.

And we do know something about the

nature of the plates that were put up. And it was largely, as I understand, punching, using a punch to punch holes so that they can --- no, not welding, but I won't say that they didn't do any welding, because I don't know, but I would say that it doesn't look like the operations and the nature of the material would turn things upside down.

It would require, however, going over every single case that has been assessed to reassess them. And that would be a lot of work. But it does not make sense to try to think about what the exposures might be if you haven't been able to find evidence that the material, the magnesium-thorium alloy, was used there.

CHAIR MELIUS: A separate set of issues that I have, or issue that I have, so assuming, I guess, one way or the other whether how we deal with this SEC, the next step would be to further review the Site Profile? And would that further review of the Site Profile involve looking at those boxes?

(Laughter.)

MEMBER KOTELCHUCK: It certainly could.

MR. RUTHERFORD: I'm looking at my director.

MR. HINNEFELD: Well, I hate to make decisions on the fly like that. I think it would be something, since it's on the table, it would be something we would have to consider. I think, going forward, you know, it competes, like every other task, with our time and attention. So, you know, it would be something we'll put on the list of things to consider going forward.

MEMBER KOTELCHUCK: Yeah. I mean, thinking about this over a period of time, there's no question that sampling could be done. That is, if we have the number of boxes, we could sample some of the boxes so we didn't have to go through all 200 to see if there's some end and make some assessment based on the statistical analyses that would suggest that there's a pretty good chance that there was no magnesium-thorium used at the plant.

MEMBER BEACH: So, can I ask

something, Jim?

CHAIR MELIUS: Go ahead.

MEMBER BEACH: Back on those boxes, we're assuming that we're only going to find mag-thorium or not find mag-thorium. Is there any idea if there's other items in the boxes? I mean, we keep going back to that mag-thorium which ---

MEMBER KOTELCHUCK: We don't have outstanding issues on the other, that's all.

MEMBER BEACH: Is that it?

MEMBER KOTELCHUCK: Of course, one could find information about any sorts of things. Either one of the five things we were charged with or others. I mean, that's always, of course, possible.

But in terms of the issues, the only one that's outstanding in the investigation that the Board told us, suggested to us to do and the co-petitioners asked about, is the magnesium-thorium. It is the only issue that has --- that there's still some quality of openness to. And a sampling might be able to tell us, but we will

always have boxes, even if we sample, there's always the possibility that there could be something in one of the boxes we didn't sample. And that's real. I don't want to skim over that.

Could I ask, Dr. Melius, I mean, is it in the Board's purview to suggest that there be a look, that NIOSH look into revising the Site Profile by perhaps looking, I mean ---

MR. RUTHERFORD: That's automatic after every SEC petition goes through its process. I mean, there's a number of Site Profile changes that will be necessary based on all the work that we've done.

MEMBER KOTELCHUCK: Okay. Well, that's good.

CHAIR MELIUS: And I concur that --- I'm not trying to make Stu commit to going through every folder or whatever. I mean, there may be --- I think you have some information on what's in them and so forth.

So, any further discussion on the motion? Yeah, Phil.

MEMBER SCHOFIELD: Just one quick

question. I don't know, do you have access to their purchasing records? My point being that I don't know how common welding rods that contained thorium were used at Rocky Flats. Maybe they hardly ever used them, maybe they were only during the period of the SEC. I was wondering if you've run across those in any purchase orders.

MR. RUTHERFORD: No. We did not look for thoriated welding rods. What we did look for was magnesium-thorium alloy. We looked for other items of concern.

MEMBER KOTELCHUCK: Right. And it's use in plates. So we didn't look at that.

CHAIR MELIUS: Okay. So, any further questions? Board Members on the phone, questions?

PARTICIPANT: I have a question. I'm not on the Board. Is it open for ---

CHAIR MELIUS: Sorry, no. This is Board. No public comments at this point. I'm sorry.

PARTICIPANT: Excuse me. I'm sorry.

CHAIR MELIUS: That's fine. Okay. If no further questions, then I think, Ted, do you want to do the roll call?

MR. KATZ: Thanks. So, Dr. Anderson.

MEMBER ANDERSON: It's been a long process here and complicated. I mean, there are some remaining issues, but I do think we've done the best we can and I would vote yes on it.

MR. KATZ: Ms. Beach.

MEMBER BEACH: No.

MR. KATZ: Mr. Clawson.

MEMBER CLAWSON: No.

MR. KATZ: Dr. Field? Bill?

MEMBER FIELD: Could you clarify what the motion is, Ted?

MR. KATZ: Yeah, sure. The motion is to agree with NIOSH that dose reconstruction is feasible. And as a result, to deny the petition.

MEMBER FIELD: Yes.

MR. KATZ: Okay. Dr. Kotelchuck.

MEMBER KOTELCHUCK: Yes.

MR. KATZ: Dr. Lemen is absent. I'll collect his vote after the meeting.

Dr. Lockey.

MEMBER LOCKEY: Yes.

MR. KATZ: Dr. Melius.

CHAIR MELIUS: No.

MR. KATZ: Ms. Munn.

MEMBER MUNN: Yes.

MR. KATZ: Dr. Poston, are you on the line?

(No response.)

MR. KATZ: Okay. Absent. I will collect his vote after the meeting.

Dr. Richardson, are you on the line?

(No response.)

MR. KATZ: Okay. Also collect his vote.

Dr. Roessler.

MEMBER ROESSLER: Yes.

MR. KATZ: Mr. Schofield.

MEMBER SCHOFIELD: Yes.

MR. KATZ: Ms. Valerio.

MEMBER VALERIO: No.

MR. KATZ: Dr. Ziemer.

MEMBER ZIEMER: Yes.

MR. KATZ: We have eight yeses already. We have 15 Members. So, that's a majority. So the motion passes. And I will report on the remaining votes after I've collected them. And they will be reported on publicly for the teleconference, which is in June.

CHAIR MELIUS: Okay. So, we're scheduled now for a break. It's 10:15. So, why don't we come back at 10:30 and we will restart.

(Whereupon, the meeting went off the record at 10:14 a.m. and resumed at 10:42 a.m.)

CHAIR MELIUS: Okay, we are going to have an update on the review of the Kansas City Site Profile.

MEMBER BEACH: Okay.

CHAIR MELIUS: And Josie Beach.

KANSAS CITY PLANT SITE PROFILE REVIEW

MEMBER BEACH: Alright. Can everybody hear me? Do I sound okay?

The first slide just gives you the Work Group Members, of course myself as Chair, Brad Clawson, John Poston, Loretta and Jim Lockey

-- Loretta Valerio.

The Site Profile activities to date, the notice went out on April 21st, 2016. The last time I presented to the Board was in November at the Oakland meeting and we completed our SEC work at that time. We combined all Site Profile issues.

And then in 2017, NIOSH presented their final TBD-31 Rev. 1 for the Kansas City Site. We found that there was conformance with the matrix action items and the Work Group, the comments from the Work Group. In fact, we felt that NIOSH really responded to all the Work Group's comments over the years in all the Work Group meetings so we were pleased with that.

In March 2nd of 2017, the Work Group met and discussed all the issues.

What we have her is there is the first three slides are the SEC issues that were tabled for Site Profile later review. And then we had the Site Profiles from the 2013, the original TBD, and then we had comments that were made during our Work Group sessions that ended up

being added to the new TBD.

So, I will just start with the original SEC issues and some of them, you will notice, are similar.

So we started with worker job categories, worker locations, and the coworker model. Because there was a varied history of operations and there as a lack of specific work, worker locations, and they moved around, they moved different operations at different time periods, the application of the coworker model and the generalized TBD, we didn't feel like we would get a result in good dose assessments.

So the revised TBD provides guidance for different categories of workers for depleted uranium and for different categories of workers and time periods for other radionuclides.

Attachment B is the External Coworker Dose Assessment Guideline and that is helpful for dose reconstructors.

SEC 3, which was the chronic versus acute intakes, the uranium coworker model may not be applicable to all or most workers. When

estimating the intakes, dose reconstructors should assume exposure to uranium dust were chronic. A chronic exposure pattern best approximates the true exposure conditions for most workers with the potential for intake. In addition, a chronic exposure pattern approximates a series of acute intakes, which makes it approximate when no specific information was given for the individual.

The next one was non-penetrating dose. And for some of the periods, especially during the 1959 to 1962 time frame, there was information lacking. The TBD has resolved that issue and our concerns with the use of that recorded dose and the worker was satisfied with all three of these.

Of course, when you read the TBD, it is difficult to compile it down into a one- or two-minute brief presentation. So hopefully, you have the time to look at the full TBD.

The next slide, this is information that was collected as part of data capture during our SEC Work Group. There is three slides on

these. These were not in the original TBD but we found that they needed to be added.

So natural uranium operations from 1950 to 1955 we are applying the TBD-6000 methodology as a bounding for inhalation and ingestion intakes and accompanying information and guidance for these operations.

Then we had the post-operation period of 1955 to 1959. We are going to use the -- or NIOSH is using the max gross-alpha measured air sample 49 picocuries to determine internal exposure at KCP after natural uranium ceased in 1955 and again until the start of KCP urinalysis program which started in 1959.

The tritium water operations, it was a short-term process where they were transferring bottles, the tritiated water into smaller bottles. It was an isolated grouping. That happened between 1959 and 1975. To account for doses the bounding scenario they used the 400 millimeters of water as if it was spilled over an entire year and the worker absorbed that dose, giving them a 6.66 millirem dose per year and

that is going to be applied to all workers.

And then we get to the mag-thorium issue. The mag-thorium operations that we could find were between 1961 and 1963 and then again in 1970 through 1977. They used an engineering control limit of 3 x 10-11 milliliters of alpha applied as a constant distribution to estimate an exposure dose identified for the identified mag-thorium workers. They also used a TBD applied to determine the air concentration for classes of workers that have less exposure or spent less time in the mag-thorium machining areas, which were listed as Department 20 and the Model Shop.

The TBD also applies TIB-9 for ingestion rate of internal doses. We will talk about mag-thorium again, those years in-between '63 and '70.

And if you look -- well, I'll get to that in a minute.

So post-operations '72 to '84 bounded using a maximum measured surface contamination survey data during DU and D&D operations that also applied the OTIB-70.

And organically bounded tritium operations, they were using tritiated phosphor on hi-lo switch plates. It was, again, a small operation between '63 and '68 and NIOSH is going to bound that using a 95th percentile contamination transferred to the skin and absorbed as a 1.77 millirem dose. That will be applied to all workers.

We weren't able in this one and the previous one I identified, we couldn't identify which workers. So it is going to be applied to all, as I said.

Okay. Then there was a lot of discussion on the D&D. Rockwell came in and did a D&D activity between '84 and '86. I don't believe they used any Kansas City folks but that time period was under much discussion in our Work Group meetings and NIOSH is going to bound that time period using assuming an alpha inhalation rate of 6.76 picocuries a day within an ingestion intake of 0.135 picocuries a day based on the air sample control level of 1 x 10-12, a breathing air rate of 1.2 m3 per hour for a period of 2,000

hours per year. This is all in Rockwell's report. They did air sampling during that time, Rockwell did, and we were able to look at those sample results but we weren't able to determine if any Kansas City people were in and around that area. So again, those rates will be applied to everybody during that time period.

Rad handling for the operations associated with routine rad waste handling, rad-area maintenance, housekeeping, D&D bounding doses assigned to all unmonitored workers. They classified their D&D folks. During our interviews, we were able to kind of pinpoint who handled the rad waste. Anyway, so that we are using a coworker model and apply exposure category 2 to workers. And then there is also some occasional exposure there.

So now we are going to get into -- these are from the original TBD that was issued in 2013 -- or 2006, excuse me. Some of you will find are somewhat similar.

So the first one, activities at KCP involved handling substantial quantities of

uranium oxide powder. Site Profile recommended using a default option of AMAD of 5, which was questioned by SC&A. The revised TBD includes additional guidance and determined specifications for uranium oxide during that period. I believe they are using a smaller number there than the 5.

The bioassay data appears to be incomplete. That was resolved by revised coworker data and validation and verification that was performed.

The job codes, the admin job codes, that we handled earlier. That was one of the earlier questions, the approach on how to categorize workers. We were worried about that missed dose.

So now if you look at the TBD, you will find job categories, placement, different exposure rates of where different individuals would have worked. It is much clearer.

And then 13 was the mag-thorium alloy operations inhalation and ingestion intake rates by job category. Again, we covered that. I

covered that a little bit earlier. The TBD now provides information on this issue with the inhalation and ingestion rates by job category and time periods. It is much, much clearer.

SP20, photon calibration, correction factor for exposures to photon radiation, especially exposure to the skin and shallow organs was found to be needed. In the revised TBD it provides coworker with shallow dose parameters and recommends the use of a completed list of dose conversation factors in the IG-1 Rev. 3, which is the External Dose Reconstruction Implementation Guide, instead of the abbreviated list that was in the previous TBD.

Now, so that takes care of all of our Site Profile issues. We do have one that NIOSH has agreed to carry forward back to that mag-thorium operation, the years between 1963 to 1970. We looked and looked but we were never able to find any documentation source term that showed that there was anything happening with mag-thorium during those years. We did have it on both ends. So NIOSH will carry that forward

and if anything comes to light in any document searches, of course, we will move forward with a Rev to the TBDs on that.

And I don't have a question slide. So that concludes my presentation. Questions for anyone?

The recommendation from the Work Group, I can guess I can say that, is that we recommend closing all the TBD issues for Kansas City at this time. That was a unanimous Work Group recommendation at our March meeting.

CHAIR MELIUS: Board Member questions? I'm assuming there are no boxes that we are looking for about magnesium-thorium.

MEMBER BEACH: We left no boxes unturned.

CHAIR MELIUS: Right, okay.

MEMBER BEACH: Each one of these was vetted very rigorously.

CHAIR MELIUS: Okay, good. Yes, Phil, go ahead and then Paul.

MEMBER SCHOFIELD: Okay, I have got a couple of questions here. One, did they receive

their uranium metal as like an ingot? And did they generate their own uranium oxide? And then did they actually have to process it to get it down to the size they wanted or did they receive it as an oxide powder?

MEMBER BEACH: They machined it. What I remember is that they machined it but that is more technical than --

MR. HINNEFELD: I am speaking from recollection here and I really wasn't engaged in the Kansas City discussion to a great extent. But we do know that they purchased oxide. We have a purchase specifications of certain requirements on the uranium oxide that they purchased, rather than getting metal and oxidizing it.

They machined components that included uranium oxide but it came in. You know they didn't manufacture the oxide out of metal. Very early on, they did machine some metal.

MEMBER BEACH: And I don't know, Joe, if you have any more information on that.

CHAIR MELIUS: Yes, Paul, go ahead.

MEMBER ZIEMER: So this is sort of a follow-up on Phil's question. It has to do with the powder.

Originally, NIOSH was going to use a default for the dynamic mean diameter of 5 and then I think you said in slide 9 that they would use detailed specs for the uranium oxide. So where there actually specs for that powder that gives you a different distribution or were there air samples actually done?

MR. HINNEFELD: There is actually a purchase --

MEMBER ZIEMER: The purchase specs.

MR. HINNEFELD: -- specified things that would give you information about particle size.

MEMBER ZIEMER: Okay, thanks.

CHAIR MELIUS: Any other questions from Board Members?

MEMBER ANDERSON: So has the Site Profile actually been updated, then?

MEMBER BEACH: Yes.

MEMBER ANDERSON: Okay.

MEMBER BEACH: Did I not mention that? It was --

MEMBER ANDERSON: Yes, I think --

MEMBER BEACH: -- on the very first slide. It was updated on November -- January of 2017.

MEMBER ANDERSON: So you were just describing what transpired --

MEMBER BEACH: What went into this.

MEMBER ANDERSON: -- into it.

MEMBER BEACH: Correct.

MEMBER ANDERSON: So we don't have to worry about waiting for it to come out.

MEMBER BEACH: Yes, the first one was in '06. This one was in 2017 and we reviewed it, yes.

MEMBER ANDERSON: Okay, good. So then it is done.

MEMBER BEACH: And the thing that amazed me on this was everything that we discussed during our Work Group meetings, everything we asked for, it was in the new TBD. So we were quite satisfied during our meeting,

which is unusual. I mean it was.

CHAIR MELIUS: We often agree. Any further questions? Board Members on the phone with any questions?

If not, we have a motion from the Work Group to close out the Site Profile review.

So, if no further discussion or questions, Ted. Why don't we do it by voice? Okay, we'll do it by voice.

MR. KATZ: Sure.

CHAIR MELIUS: Okay, people on the phone, do you have your voice? Board Members, have your voices ready.

All in favor say aye.

(Chorus of ayes.)

CHAIR MELIUS: Opposed?

(No audible response.)

CHAIR MELIUS: Abstain?

(No audible response.)

BOARD WORK SESSION

CHAIR MELIUS: Okay, we're all set. Very good. Thank you, Josie.

We want to finish up. I think we have

taken care of our Board Work Session but I did want to mention Pat and I actually talked to -- we will do the letters afterwards. As soon as Stu reports back on the 400 boxes, I will finish the letters. No, seriously, I will do them tomorrow. I already told Jennie. She will hold me to it.

On a more somber note, I have already mentioned this to Jim Lockey and Gen Roessler, one of our original Board Members, I believe it was, Roy DeHart, died recently over the Christmas holiday. A sudden illness. He was someone that was very involved on the Board for several years and worked hard. And I had the privilege of serving with him on a number of other Advisory Boards on Occupational and Environmental Health. So he was a very good person to work with.

I just wanted to acknowledge. I know many -- all the Board Members, we all knew him or many of us here served with him on the Board and he was always very involved and very thoughtful about reviewing and contributed a lot to the Board. So I just thought we should acknowledge

for the public record that he had died recently.

MEMBER MUNN: A fine life, well lived.

ADJOURN

CHAIR MELIUS: Yes. So on that sad note, I will close and we will see everybody in someplace -- New Mexico -- someplace in New Mexico and not in the casino hotel. No camping. We will find someplace.

Anyway, so, thank you, and we will be busy between now and then.

(Whereupon, the above-entitled matter went off the record at 11:03 a.m.)