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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104th MEETING

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THURSDAY
MARCH 26, 2015

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The meeting convened at 8:30 a.m., Pacific Time, in the Red Lion Richland Hanford House, George Washington Way, Richland, Washington, James M. Melius, Chairman, presiding.

PRESENT:

JAMES M. MELIUS, Chairman
HENRY ANDERSON, Member
JOSIE BEACH, Member
BRADLEY P. CLAWSON, Member
R. WILLIAM FIELD, Member*
DAVID KOTELCHUCK, Member
RICHARD LEMEN, Member*
JAMES E. LOCKEY, Member
WANDA I. MUNN, Member
JOHN W. POSTON, SR., Member
DAVID B. RICHARDSON, 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
AL-NABULSI, ISAF, DOE

CRAWFORD, FRANK, DOL
DAVIS, TIKI
DOMINA, KIRK
ENGELMANN, RAMONA
FINDLEY, MITCH, ORAU Team
FITZGERALD, JOE, SC&A
GLOVER, SAM, DCAS
HINNEFELD, STU, DCAS
KINMAN, JOSH, DCAS
KNOX, WAYNE
JOYNT, GABE*
JOYNT, TOM
LIN, JENNY, HHS
LUZZO, MIKE
MCFEE, MATTHEW, ORAU Team
NETON, JIM, DCAS
RHOADS, CARRIE, DOL
RUTHERFORD, LAVON, DCAS
SPLETT, GAIL, DOE Hanford POC
STIVER, JOHN, SC&A
TAIT JOYNT, MARCIA
TAULBEE, TIM, DCAS
WOLZ, GERALD*
WORTHINGTON, PATRICIA, DOE
ZINK, BRIAN*

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

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

(8:30 a.m.)

CHAIRMAN MELIUS: Good morning, everybody. We're here for our second day of

Meeting 104, the Advisory Board on Radiation and Worker Health. And I'll turn it over to Ted to do the roll call and other work here.

MR. KATZ: Thank you. Good morning, everybody. Just a couple of preliminaries before the roll call. The agenda and all the materials for the meeting are in the back of the room here for people in the room. And for people online, those materials could be found at the NIOSH website, under the Board section, under the schedule of meetings, today's date.

So you can find all of these documents that we're discussing today there and follow along with the discussion. And you will also see the agenda for today there, and the agenda has on it the Live Meeting link if you want to follow along with the presentation in real time as it is presented here.

It'll show on your screen at your computer at home. So that takes care of that. Another thing, for people listening on the line, please mute your phone and keep your phone muted for the meeting.

There is no public comment session today. The petitioners for the petitions we're discussing today will have an opportunity to speak, but there is no general public comment session.

In terms of phone etiquette also, please don't put the phone on hold at any point, but hang up and dial back in if you need to leave the meeting for a time.

So, roll call. I'll do this alphabetically again and I'll speak to any conflicts that are relevant for today's agenda as we get to them.

(Roll call.)

MR. KATZ: Great. And then just to note, of all of these, the only conflict today, Mr. Clawson has it, and he'll recuse himself in the INL session. And that takes care of roll call. And, Jim, it's your meeting.

CHAIRMAN MELIUS: Did you do the *6?

MR. KATZ: I thought I said that, maybe I didn't.

CHAIRMAN MELIUS: Okay, good.

MR. KATZ: Dr. Poston?

MEMBER POSTON: Yes. Mr. Chairman, I move that the Advisory Board on Radiation Worker Health take this opportunity to wish a happy birthday to Josie Beach, and many, many more.

MEMBER BEACH: Thank you.

(Applause.)

MEMBER SCHOFIELD: Congratulations, Josie.

MEMBER BEACH: Thanks, Phil.

MEMBER VALERIO: Happy birthday, Josie.

MEMBER BEACH: Thank you.

CHAIRMAN MELIUS: Do I have to prepare a letter for --

(Laughter.)

CHAIRMAN MELIUS: We did do the birthday card, so I guess that's the letter. And it was approved by the attorney. In fact, they signed it.

Okay. The first order of business today is the view of the Dow Chemical Pittsburg, California SEC Petition. And LaVon Rutherford will do the presentation, then followed by Board

questions. And then we'll hear from the petitioners, and then we will have further discussion and possible action on that petition.

So I will just tell, just for the other Board Members, I think what we'll do if we finish this up early and so forth -- I guess the next session people may be on. So between then and ten o'clock, until we start the next session, we may catch up on some more of our Board work, so just don't go running off.

And, LaVon. We're anxious to hear from you.

MR. RUTHERFORD: Alright, thank you. I'm going to talk to you about NIOSH's Petition Evaluation of the Dow Chemical Company.

The Dow Chemical Company was an Atomic Weapons Employer facility in Pittsburg, California. It covered the time period from 1947 to 1957. Dow was contracted during that time period to do small scale research on uranium recovery from phosphate residues, which I will talk about a little further.

A little background. Our petition was

received on June 12, 2014. The petitioner petitioned that there was a -- as a basis, that there was a lack of monitoring data. We reviewed our records, and from our records we concurred with the petitioner and qualified the petition for evaluation on August 5th, 2014.

The Class evaluated was for the entire operational period, 1947 to 1957, and there is no residual period for the Dow site. We are going to recommend a Class today of all workers at Dow Chemical through the entire operational period, and I will get into further discussions on why.

A little history. Back in the late '40s, a lot of the domestic ore hadn't -- the AEC was looking for more of a routine supply of uranium ore, and a lot of the domestic ores had not been identified at that time.

It was recognized that the phosphate ores contained a small percentage of uranium within that ore matrix. And so what they looked at was, is there a process that we can employ to actually extract that uranium?

So they contracted with Dow to look at

various extraction methods with residues and raw materials. That contract lasted more than nine years. It included small scale extraction experiments, bench top and pilot plant scale production operations.

The idea was that, after they went through these processes and approaches, they would scale up and put this into a production mode at other sites.

The Pittsburg site is 513 acres. Most of that is wetlands. Forty-one of those acres are used by Dow. During the AEC operational period, the second floor of the research laboratory was used for AEC operations. The first floor was commercial activities.

Stu, I don't know your pin number.

MR. HINNEFELD: Oh.

MR. RUTHERFORD: I was right in the flow of things there.

Okay, so the AEC used the second floor of the research building at Dow. The first floor was the commercial work.

The Dow research portion consisted of

roughly seven rooms, 4200 square feet. Again, as I mentioned, the commercial work was on the first floor.

They employed -- roughly 100 workers were involved in this operation. That did not include support personnel. And then also, you know, that number fluctuated up and down. There was actually indications from Dow reports that they actually got some of their commercial engineers, engineers that were working commercial work, involved in some of the AEC work whenever they needed additional support.

Also, in addition, because I know this question is going to come up, the site is -- you know, I've gotten various indications on the actual site population. Today, the site has roughly 350 Dow workers and 250 contractor employees. So that's roughly 600 people. And there's one report that indicates that during AEC operations there was up to 800.

However, one of our workers was indicating 400. So, that gives you an idea. The population surely adjusted over time during that

period, 400 to 800, but it does give you a feel for how many people were at the site.

The main three processes they looked at in uranium extraction was precipitation, ion exchange, and solvent extraction. There were a number of other activities involved in this, other different analyses that they looked at other than these three main process approaches. But precipitation, ion exchange, solvent extraction were the main ones that they used for recovering the uranium.

Precipitation is the actual method that was used at Blockson Chemical. The ion exchange method, they looked at that process and then they recognized ultimately that it was not going to be a very economical process.

They moved to solvent extraction. Solvent extraction was the process that became the process of choice and was the one that a significant -- well, a number of sites moved to implement.

However, around 1960, or in the late '50s, it was recognized that there was plenty of domestic ore, uranium ore, that the recovery of

uranium through the phosphate process was really not practical. And so around 1960 these operations pretty much ceased.

The raw materials involved at the site were residues and ores, phosphoric acid, and phosphate rock. The significance of the phosphoric acid: phosphoric acid was used as basically the starting point for each of these three processes. And the phosphoric acid, because of the process of converting it to the acid from the phosphate rock, it actually removed the uranium progeny. And so the radium and polonium and such were actually moved into another matrix and were not part of the acid.

So when we initially looked at this in wet processes we thought we really didn't have that issue to deal with. However, upon further research, we recognized that there was a considerable amount of work with residues and ores and the phosphate rock that contained those items.

There is no indication of thorium separations that took place under this AEC contract. Actually, there was documentation that

indicated that there could've been thorium ores, however we have not seen anything.

Okay. Now, this is the Claims Tracking System. We have one claim for this site. It's during the operational period. And it's kind of weird, we have dose reconstruction completed outside of the SEC period. Well, since the SEC period is the whole period it's kind of a moot point.

We did attempt to do a dose reconstruction on this one claim. We looked at using Texas City Chemicals, some of the actual modeling that we did at Texas City Chemical. However, after further review, during the SEC evaluation, we recognized that there are so many other processes involved in the work that was done at Dow. Not just the solvent extraction, you had the precipitation, the ion exchange, some additional work on particle sizing of the phosphate rock and so on, that we recognized that Texas City Chemical was probably not a good surrogate data approach for that one claim, nor would it be a good approach for the entire Class.

So the one claim does not have internal dosimetry or external dosimetry.

Where we looked for information. We have 166 documents on the Site Research Database, and we looked at the claim file. The petitioner and petitioner's son provided us some additional information, which was very valuable and it actually gave us some different places to pull the string, basically, and look for more information.

We contacted Dow Headquarters. Landauer, the reason we went to Landauer is because we interviewed three former workers and one of the workers indicated that they were badged and they believed that it was a contractor that provided the badging and reading the badges.

So we assumed that Landauer may be the holder of those records, so we contacted them. However, we did not get anything.

Searches on OSTI. We recognized that a number of the Dow reports, if you look at some of the reference documents that are identified, the Dow 162 report identifies a large number of reports that were produced during this operation. And,

you know, it's kind of obvious, because you can look at 162 and you can see there is one statement in 162 that mentions over 248,000 uranium analyses were conducted during the contract period.

But that report in itself also identifies all these different things that Dow was doing at looking at different approaches, different things to maximize uranium recovery, and all different kinds of things in support of this operation. So we were able to retrieve a number of the documents, the Dow documents, from OSTI.

We also did, as I mentioned, the worker interviews which we discussed the operations in itself. And, you know, although the workers felt that the exposure potential was low, they also identified that there was no monitoring. So, nobody knew exactly from an internal perspective what they would be getting.

All of the wet chemistry work was conducted in a hood, and with the wet chemistry work you would not expect a major internal exposure anyway, but the reason it was conducted in a hood was because of the flammability. It was not

conducted in a hood because of potential exposure potential.

All the bench scale work, the pilot work, the grinding and operations, all the other things for the product material were conducted outside of the hoods. And when one of the interviewees was asked about respiratory protections, he said "respiratory protection was on the wall in case of an emergency, but we did not use respiratory protection."

So, our internal exposure potential, I just kind of identified some of it. Uranium and progeny, if contained raw materials -- and I say "if contained in the raw materials" because, as I mentioned, the phosphoric acid in itself, the progeny, was extracted.

Now, there is something to think about with that as well, though. There is indication that they did work with the actual phosphate rock and the ores. One indication, which we don't know for sure was conducted onsite, but up to a ton of ore was worked with on the site.

And one of the things that we were doing

was actually taking the phosphate rock and breaking it into different sizes and doing acidification with it, with that phosphate rock, at different sizes to see if they could increase the amount of uranium production based on that.

So you had that operation occurring. And, again, other than the dealing with the -- I mean, the grinding and such, all the operations would have been conducted outside the hoods.

Thorium and progeny, as I indicated, we have found nothing to support the thorium-bearing ores. Again, this was a FUSRAP report, it indicated that the site did uranium work, worked with uranium ores and thorium-bearing ores. At this time, we have found nothing. That doesn't say that there wasn't something done there, but we have found nothing to prove that there was thorium work at the site.

As I mentioned, uranium, polonium, are typically not carried into the phosphoric acid during the phosphate rock process. External exposures would've mainly been from product material, beta and photon.

Our data. We have no internal or external monitoring data. We have no air sampling or air survey data available.

Source term information. Without a good idea of the source concentration -- and these phosphoric acids and phosphate rock came in from not only the Florida mining, but also West Coast mines. It came from all over the place.

We also have some indication that raffinate, believe it or not, raffinate material from Mallinckrodt may have been processed. And the idea would be such that, I would think, that low amount of uranium in the raffinate, may have been looking to recover that residual uranium, I don't know.

But the source term information, we don't have a good feel for the throughput on the product material. There is indication from the reports that they produced UF4 and UF4 was sent out to other sites for further processing. So, not good source term information.

Process information. You know, the Dow repots are really good at identifying the

process and how the process -- I mean, the process of producing, how it actually works. But from a health and safety perspective and quantities and, you know, the throughput, we don't really get that feel, so that makes it very difficult.

And there is no medical occupational exposure information available, as well.

So our feasibility is, based on the available monitoring records, process information, source data, they're insufficient to complete dose reconstruction with sufficient accuracy for the evaluated work Class.

Our evidence reviewed and the evaluation indicates that some workers in a Class may have accumulated chronic exposures through intakes of radionuclides and direct exposure to radioactive materials. Consequently, NIOSH feels health may have been endangered.

Our proposed Class is all Atomic Weapons Employer employees who worked for the Dow Chemical Company in Pittsburg, California, from October 1, 1947, through June 30, 1957, for a number of work days aggregating at least 250 days.

Our feasibility table, again, we really felt we couldn't come up with a good approach for reconstruction of any of our internal or external components. However, if any personal or area monitoring does become available we will use our standard procedures and apply them for partial dose reconstructions. We also do feel that we can do occupational medical x-rays. And that's it.

CHAIRMAN MELIUS: Okay. Thank you, LaVon. Board Member questions? Yes, Paul?

MEMBER ZIEMER: The thought that was occurring to me was that, at least for the external, it would seem, sort of intuitively, that if it's bench top and pilot-types of studies one might be able to bound the source terms in terms of amounts.

MR. RUTHERFORD: From an external exposure.

MEMBER ZIEMER: Yeah. And knowing that, one might be able to bound external. What are your thoughts on that? Maybe you could discuss that.

MR. RUTHERFORD: Well, you know, I definitely initially felt that way. I felt that,

I mean, from an external perspective, I mean, we would expect that the external exposures would be low. However, the problem we got into is there's so much information that doesn't give a clear indication of where it was done, meaning that the one indication where we had phosphate ores at the site with up to a ton of phosphate ores. And you say, okay, well, we could bound that, probably come up with a decent bounding number to that. Then you hear, well, there could've been raffinates from Mallinckrodt. Okay, well, how does that change? Then our product materials that were produced. It just becomes, you know, you're almost at a guessing game of where do you put that bound, you know, where do you set it at, from an external perspective?

The internal perspective, I don't know exactly where you'd go, you know, because there was just so many different throughputs of different types of materials involved, and you got different exposure points with that.

You know, the grinding and crushing of the product, the grinding and the crushing of the phosphate rock, where did the phosphate rock

originate from? You know, was this phosphate rock Florida phosphate rock, was it Western part of the United States? There's just a number of different things that we really felt like it was going to be very difficult.

Also, if the phosphate rock was there, the radon exposures, you know, would've been an issue as well. We don't know anything about that.

MEMBER ZIEMER: Yeah. So you had given some thought to that, because, particularly for those who don't meet the SEC criteria in terms of time or cancer type, it would be useful to be able to at least reconstruct the external.

MR. RUTHERFORD: Right. I think that something that we could always -- you know, if additional information or if we feel like a method comes up, we could always revisit that, the external portion of it.

You know, and you bringing that up reminded me of another thing, the claims. Because right now we only have one claim. And I know one of the questions would be, why do you think we only have one claim for a site that's, you know, 600 to

800 people, whatever?

And I think that's two-fold. One of them, in our interviews with the workers, the three workers that we interviewed, they did indicate that most of the people were deceased.

In fact, the one guy said, "Everybody I knew at the site is deceased." So, you know, that's one issue with the survivors probably not recognizing -- and the other issue was initially the site was identified as Dow Walnut Creek, A.K.A. Pittsburg. In our review, we recognized that actually Pittsburg and Walnut Creek are two separate facilities. And the Walnut Creek facility was not built until around 1960 and the actual AEC work was done at the Pittsburg site in '47 to '57.

So, another thought could've been that -- and we've got that changed through the Department of Energy -- but another thought could've been that workers or survivors looked and said, oh, well, my father or grandfather, so on, they worked at Pittsburg. This is a Walnut Creek thing, I can't -- so we may get more claimants that

will come, which would mean that we may need to have a partial dose reconstruction approach for.

CHAIRMAN MELIUS: Just to follow up on that, because I think that is the key question that I had when I read the report, and also what Dr. Ziemer raised, and I thought you covered in the report and more here and addressed that issue. I just things there's, you know, just such a paucity of information to be able to do anything with any confidence there.

One of the things, though, that may help would be if the outreach group, whatever it's called, could do a session out near there, and it might bring some more people forward. Because, again, I'm not sure the external would, you know, help people that much, but it might, and you might get some more information that would be useful for that.

But at least an outreach session would also at least get more people aware of it and maybe do away with this confusion between Walnut Creek and Pittsburg.

Any other Board Members? Yes, Dr.

Poston?

MEMBER POSTON: LaVon, good report.

MR. RUTHERFORD: Thank you.

MEMBER POSTON: I just wanted clarification here, because on Slide 14 you say occupational medical X-rays can be reconstructed, but on Slide 10 you said you didn't have any data. So I'm wondering what kind of magic wand you might have. It wasn't clear in the write-up that --

MR. RUTHERFORD: We actually have -- I think it's a TIB, OTIB -- a TIB that we used that actually pulls in information from the era and we come up with a dose approach for all of the facilities. So we've been able to get support, I think, from the Board and SC&A to use that approach for reconstructing medical exposures.

We don't have any information, you are correct, and that is correct in here, but we have a site-wide kind of OTIB for doing occupational medical exposures.

MEMBER POSTON: Okay. You just didn't explain it too well and I said, "Wait a minute, I'm fully awake here, I was just" --

MR. RUTHERFORD: And I appreciate that. I appreciate that.

CHAIRMAN MELIUS: Wanda?

MEMBER MUNN: LaVon, refresh my memory, what's the highest concentration of uranium that was actually handled? My memory from the report was that it was exceedingly low.

MR. RUTHERFORD: Yeah, I mean, on average, or what they were saying, it was only 0.01 percent, very, very low. And you are absolutely right, from an actual amount, that is a very low concentration, but the processing in and of itself and the actual producing of the product we really felt like, you know, we didn't have enough information from the processes, the throughput, the amount of the material that was produced, to really come up with a good bounding approach for it.

I agree with you, it is a very low concentration in the actual matrix itself.

MEMBER MUNN: Of course, this is not our first rodeo with this kind of process.

MR. RUTHERFORD: No.

MEMBER MUNN: And it still is very difficult to come to grips with the possibility that one could be radiologically harmed by this kind of process.

MR. RUTHERFORD: Right.

MEMBER MUNN: I can understand how a dust inhalation over a period of nine years would affect the lungs, but it's difficult for me to understand, at that concentration, how -- I've never seen any documentation anywhere that would lead me to believe that that kind of low exposure could be detrimental radiologically.

DR. NETON: But I think the incoming material had that very low concentration of uranium, but the whole point of this process was to concentrate -- enrich is the wrong word, but to concentrate the uranium. So they ended up with quantities of uranium tetrafluoride and purified uranium that were pure uranium compounds.

Now, how large a mass of that material is, we don't know. They did run these pilot plant columns that were fairly large, within the building themselves, to concentrate it. But the fact of the

matter is we just don't know. There was purified uranium there, but the quantity that was generated is unknown.

MEMBER MUNN: Yeah, I never saw anything that led me to believe it was really production-level quantities.

DR. NETON: That's correct, but you can't think of it as 0.2 percent uranium in a product. It's the purified product that we're worried about.

MEMBER MUNN: No. Yes, I know, but that's different than what people were handling generally in the plant.

DR. NETON: True.

MEMBER MUNN: Yeah.

CHAIRMAN MELIUS: Josie?

MEMBER BEACH: Yeah, you mentioned that, in the Evaluation Report, neutrons aren't a big issue and were only mentioned on Page 25, but when I was looking at the Evaluation Report under your table for summary of feasibilities, neutron is X'd as not reconstructable, and here it says N/A. So I was just wondering --

MR. RUTHERFORD: It's N/A. It should be N/A.

MEMBER BEACH: So it is definitely N/A?

MR. RUTHERFORD: Yes.

MEMBER BEACH: Okay.

CHAIRMAN MELIUS: Okay. Board Members on the telephone, do you have any questions, comments at this point?

MEMBER LEMEN: None for Lemen.

CHAIRMAN MELIUS: Okay. Hearing none, I'll assume you're okay. I think next we'd like to hear from the petitioners.

MS. TAIT JOYNT: That's me. Thank you. I'm Marcia Joynt, Marcia Tait Joynt, and my father worked at Dow Chemical as a scientific apparatus glassblower. I'm going to read my statement here so I don't forget anything.

He worked at Dow at the time on projects and investigation. As a glassblower, he had a background in chemistry and engineering, as well as five years of working as a glassblower at the National Bureau of Standards from 1941 to 1946.

I have read the petition and

recommendation for adoption, and it is, in whole, the outcome I had requested, I have requested. Although I wanted proof that my Dad died from his exposure to dangerous levels of uranium or thorium, what I have is a thorough investigation by NIOSH that has not revealed any records that will prove or disprove anything.

No records of invoices, production, accidents, or incidents, monitoring, safety inspections, deliveries of raw materials by truck, van, rail, or ship have been found.

I might point out that the Dow Pittsburg plant is located on a slough where there is rail accessibility and ship. At the time they were bringing things in from all over.

No budget records, dose badges, medical reviews, or hazard reports have been located, so I must accept that those records are now gone.

The NIOSH report looked at what records are available and clarified the misunderstanding that the physical plant where the Atomic Weapons-contracted work of Dow was performed was in Pittsburg, California, rather than Walnut

Creek. They are about 13 miles apart.

And we've seen aerial photos now that show that the Dow Chemical plant in Walnut Creek wasn't even started until '62, so we know that. I first started my claim almost -- oh, and there's been sort of a misunderstanding about that because a FUSRAP report had said that it was done at the Walnut Creek location.

I first started my claim almost three years ago. From the first phone call to EEOICPA, I have been treated with respect and compassion, even when I expressed occasional frustration at the pace of the process.

Last year, my son called Josh Kinman to see if a petition to establish Dow Walnut Creek, A.K.A. Pittsburg, might qualify as a special cohort.

At this time, I would like to thank Mr. Kinman, LaVon Rutherford, Stuart Hinnefeld, Monica Harrison-Maples, and the whole team at ORAU within NIOSH who put this Petition Evaluation together. And I recognize I may be not clear on all my initials, I may have that wrong.

They have worked on this report for nine months and we, my son and I, have been kept informed as the work progressed. I am very grateful for their work and their expertise.

Josh Kinman has been very helpful and gracious when dealing with the many questions and concerns voiced by my son or myself. Thank you, Members of the Advisory Board, for your time and consideration on this petition. Thank you.

CHAIRMAN MELIUS: Thank you very much. You actually brought up two more questions. One is that I am hoping the FUSRAP was done in the right area, not 15 miles away, or 12 miles, whichever it is.

MR. RUTHERFORD: Yeah. Actually, the FUSRAP, they did not do any decontamination because that wasn't necessary, what they did was they put together a report. And in that report they had identified Walnut Creek but clearly the surveys that were taken, it was indicated they were done at Pittsburg.

CHAIRMAN MELIUS: The other question, and you mentioned it in the report, and I've

forgotten until it just was brought up, but did Dow cooperate with this effort to get information?

MR. RUTHERFORD: Yeah, actually, Dow was fairly cooperative, and they had indicated that most of the information had been archived. And they did give us some information that was really kind of proprietary information, so they've been very cooperative.

CHAIRMAN MELIUS: Good, because there was mention earlier on that there was some trouble getting information.

MR. RUTHERFORD: Well, I shouldn't say it easy. Initially it was tough, so, yeah.

CHAIRMAN MELIUS: Okay. But they eventually did, okay. Any other comments or questions on that? If not, do we hear some suggestion for some action by the Board?

MR. JOYNT: This is Gabe Joynt. I had a brief comment to make.

CHAIRMAN MELIUS: I'm sorry, I didn't realize you were going to also be making comments. Okay, go ahead.

MR. JOYNT: Yeah, sorry. I don't

think I announced myself. So, if it's appropriate, I have a few words to say.

CHAIRMAN MELIUS: No, please, go ahead.

MR. JOYNT: I'm Marcia's son, you know, representative or co-petitioner on this, and I also wanted to say just thank you, for the Board, for considering the petition, and for NIOSH for really what's been, you know, an impressive amount of work done to work with the evidence available and kind of describe what was going on using the science and evidence available at the time.

The effort is impressive, and, you know, I've learned enough about kind of the science involved to appreciate how thoroughly NIOSH has pursued this and appreciate it.

As a student of history and kind of my own, you know, family history, I wanted to address a couple comments around the plant that can't really be described based on the scientific evidence and yet I still think are useful contexts to put around the site.

And for simplicity, I want to focus this

on just one interview that was conducted with Frank Woods McQuiston, who was the former head of the AEC Raw Materials Division, who oversaw procurement of uranium for the AEC prior to and during at least the beginning of the Dow contract.

The document is called "Metallurgists for Newmont Mining Corporation and U.S. Atomic Energy Commission, 1934 to 1982, Oral History Transcript, 1986, 1987." So, this is an interview that was conducted with McQuiston in, I believe, '86 and carried on into '87 shortly before he passed away.

To put one thing into context, I'm mainly just going to read directly from it because I don't want to paraphrase it too much, and it's fairly short.

Wilhelm Hirschkind was the head of research at Great Western Chemical. It was a company acquired by Dow, and Hirschkind oversaw research basically of this contract. And the plant, the Great Western Chemical plant, was at one point the largest chemical plant in the Western U.S., and it is the site of the current Dow

Pittsburg location.

Hirschkind was a German -- or Austrian, I believe, native and he was actually enlisted during -- kind of right after World War II to go and investigate German nuclear facilities and activities. So he was kind of a known expert in this area. And at this point I'll just go into the interview quotes. And I'll try to read this just as directly as I can so it's not me paraphrasing, but if I do paraphrase I'll let you know.

So, quoting the McQuiston, he said, "I had a discussion with Dr. Hirschkind, who was a Director for Research at Dow Company at the Pittsburg Plant in California. He was a very brilliant man and was very keen to be part of this project in South Africa." He was talking about kind of the initial procurement of uranium following the war.

Interviewer: "Were you still trying to be secretive about all of this also?" McQuiston: "Oh, anybody who worked on it had to be." Swent, or interviewer: "Did you have to go through clearance to talk to these people about supplies?"

McQuiston: "Oh, no, I just told them we had to build the plants. They didn't know what kind, but I said they were vital to the U.S. government. But no, we didn't. But we had certain men in certain companies, like Hirschkind, he finally got his clearance, many of them did. We already had clearance for the MIT people at Watertown Arsenal. We had clearance for those at Battelle."

Interviewer: "I was wondering if it was an extra delay to have to get these commercial contacts cleared?"

McQuiston: "I was fortunate enough to foresee that we would need this, so I went to Dow Chemical, oh, almost nine months before. I went to Dow Chemical with Rohm and Haas, who were leaders in the development of ion exchange," dot, dot, dot, "because I had a feeling, if we couldn't work carbonate in then we would use ion exchange pellets."

I'm going to skip here for a moment. And then he says, "The Dow Research people at Pittsburg, California, finally made the breakthrough and we erected a small plant, made

uranium solutions by using uranium chemicals in -- that was a secret plant, very, very secret."

Interviewer: "Out here at Pittsburg?" McQuiston: "Yes. And Dr. Hirschkind devoted, I would say, 95 percent of his time, he practically took retirement to devote full-time to this project."

So, that's kind of the conclusion of that context, but for me it just painted a picture that this was, especially at the very early part of this campaign, or this research effort, it was very, very close to the head of the kind of raw materials at AEC, and, you know, there's not a shred of scientific evidence in that passage, but it does certainly seem to suggest to me, kind of, from that history lens, that there was potentially a lot going on there.

It was very urgent in trying to get that team ready to go deploy a plant in Africa and to do other work that was needed to kind of get this work launched.

One other just brief comment, just to echo something that LaVon had said about kind of

the city. Walnut Creek, California, is an affluent suburb. 2800 Mitchell Drive, where kind of this work had been initially attributed or described to, was one of the first, literally one of the first, suburban office parks built in the Western U.S.

It's kind of the place that if you go there now you'd have medical offices, there's a Kaiser facility, there's, you know, a daycare and a storage facility right next to it. It is a tree-lined, quiet little street.

If your dad or if your grandfather worked at a busy chemical plant, you would never think that that happened in Walnut Creek. So, it's only 13 miles away, but if you read in the paper, in the USA Today, Wall Street Journal, saw something else that said workers in Walnut Creek are entitled to compensation, and you knew that your dad worked at a chemical plant, there would just be no connection between those two places.

Pittsburg is a bustling chemical facility on the Bay of San Francisco surrounded by rail lines and other chemical facilities. It's

just a fundamentally very different place.

It's not just that they are different cities, the character of those communities is quite different. And so if somebody had heard that there was, you know, an ability to file a claim or something, they wouldn't have necessarily connected the two places together even though they were both potentially Dow facilities. That's all.

CHAIRMAN MELIUS: Okay. Thank you very much for the comments. I've been to Walnut Creek and I agree with your description.

MR. JOYNT: Yeah.

CHAIRMAN MELIUS: Josie?

MEMBER BEACH: Yes. I'd like to make a motion that we accept NIOSH's proposal to add a Class for Dow Chemical in Pittsburg for the years stated, 1947 through '57, June 30th.

MEMBER CLAWSON: I second it.

CHAIRMAN MELIUS: Okay. We have a motion and a second to that. Any further discussion?

Okay, if not, I'll ask Ted to do the roll call, please.

MR. KATZ: Dr. Anderson?

MEMBER ANDERSON: Yes.

MR. KATZ: Ms. Beach?

MEMBER BEACH: Yes.

MR. KATZ: Mr. Clawson?

MEMBER CLAWSON: Yes.

MR. KATZ: Dr. Field?

MEMBER FIELD: Yes.

MR. KATZ: Dr. Kotelchuck?

MEMBER KOTELCHUCK: Yes.

MR. KATZ: Dr. Lemen? Dr. Lemen, are you --

MEMBER LEMEN: Yes. This is Dr. Lemen, yes.

MR. KATZ: Thank you. Dr. Lockey?

MEMBER LOCKEY: Yes.

MR. KATZ: Dr. Melius?

CHAIRMAN MELIUS: Yes.

MR. KATZ: Ms. Munn?

MEMBER MUNN: Abstain.

MR. KATZ: Dr. Poston?

MEMBER POSTON: Yes.

MR. KATZ: Dr. Richardson?

MEMBER RICHARDSON: Yes.

MR. KATZ: Dr. Roessler?

MEMBER ROESSLER: Yes.

MR. KATZ: Mr. Schofield?

MEMBER SCHOFIELD: Yes.

MR. KATZ: Ms. Valerio?

MEMBER VALERIO: Yes.

MR. KATZ: And Dr. Ziemer?

MEMBER ZIEMER: Yes.

MR. KATZ: And the yeas have it and the motion passes.

CHAIRMAN MELIUS: Okay. Thank you, and thank you for your comments and attention.

And by the way, on the Dow, I have a letter ready which is being copied, we'll do that later today when we have time and when the letter gets copied.

(Pause.)

CHAIRMAN MELIUS: Okay. So, let me read it into the record. "The Advisory Board on Radiation and Worker Health, the Board, has evaluated a Special Exposure Cohort Petition 00216 concerning workers at the Dow Chemical Company

Facility in Pittsburg, California, under the statutory requirements established by the Energy Employees Occupational Illness Compensation Program Act of 2000, incorporated into 42 C.F.R. Section 8313.

"The Board respectfully recommends that SEC status be accorded to all Atomic Weapon Employer employees who worked for Dow Chemical Company in Pittsburg, California, from October 1st, 1947, through June 30th, 1957, for a number of work days aggregating at least 250 work days, occurring either solely under this employment or in combination with work days within the parameters established for one or more other Classes of employees included in this Special Exposure Cohort.

"This recommendation is based on the following factors: individuals employed at this facility in Pittsburg, California, during the time period in question worked on research for the production of materials to be used for nuclear weapons.

"The National Institute for

Occupational Safety and Health, NIOSH, review of available monitoring data, as well as available process and source term information, for this facility found that NIOSH lacked the sufficient information necessary to complete individual dose reconstructions with sufficient accuracy for internal and external radiological exposures to uranium to which these workers may have been subjected during the time period in question. The Board concurs with this determination.

"Third, NIOSH determined that health may have been endangered for employees at this facility during the time period in question. The Board also concurs with this determination.

"Based on these considerations and the discussion at the March 25th and 26th, 2015, Board Meeting held in Richland, Washington, the Board recommends that this Class be added to the SEC. Enclosed is the documentation from the Board Meeting where this SEC Class was discussed. The documentation includes copies of the petition that NIOSH reviewed thereof and related materials. If any of these items are unavailable at this time they

will follow shortly."

So, it's in the record. If you have comments or questions let me know we can still make some changes. The lawyers have looked at it.

(Pause.)

MEMBER ANDERSON: Are we ready?

CHAIRMAN MELIUS: Yes.

MEMBER ANDERSON: Unlike the others which we're going over today, our SECs, in our Committee, and I think most of the Committees, we give priority to moving SECs as quickly as possible, and, when time allows, get caught up on the Site Profile reviews. And this is one of those at the DuPont Deepwater Works in Deepwater, New Jersey.

It's a site that was laboratory research producing UF6 in early 1942. They started production in '43. And you can see that, as with a lot of these sites, they used different sets of processes to concentrate and arrive at uranium.

The site operated from, as you see there, at the start of '42, '43, through '48. So

it's a fairly early site. And site decontamination occurred in 1948. There was a final site survey done at the end of December 1948. And then there's a long residual period from '49 through March of 2011.

As far as a chronology of our activity, this is one of those that started out as assigned and was being operated and managed through the TBD-6001 with an initial report in January of 2008. Then there was a TBD in February of 2011, when it became a freestanding Technical Basis Document, or Site Profile, replacing the Appendix B. And that TBD was revised in March of 2011.

It was assigned to be reviewed, and in August 2011 SC&A did a review of the document and had seven findings. In September of '12, the Work Group met and discussed those findings.

In 2013, in March, the SC&A critique was then reviewed by DCAS and they provided a written critique of the findings. Then SC&A reviewed those again and we had a report response in June of 2013. In September, the findings were reviewed at the Work Group meeting, and in October we

reviewed the Work Group reports at the Board Meeting.

At that time, on the resolution of the findings, there was some activity to begin to look at the review of some of the procedures, and in December of 2013 there was more comments.

By 2014, we were pretty well caught up and had a White Paper on the extent to which the earlier findings have been resolved in the Rev 1 of the TBD. And then we had a teleconference where we basically closed out most of the findings.

And then one of the issues that had been discussed, and I think we were at one point waiting for the TIB-9 review, but an issue came up that at this work site the length of the work day was more than the typical 8-hour work day. And for the TIB-9 procedures, really, the work days' conversion to calendar days was an issue, that for the workers who had longer hours in the work day, some discussion of how were hours assigned, and then in a facility like this where a workday was longer than the standard workday that the TIB-9 was working with.

This resulted in a discussion of did it cover it or not? And the discussion was, yes, it would, and that the conversion would be done on an hour in a workday basis rather than just a generic workday, and that would result in a small increase, about 9 percent, in the daily ingestion rate. Again, this is the residual period with dust and ingestion at the time.

So, basically, everything was resolved and now we're just waiting for -- as you can see here, we feel we can close this out, that we would approve it, ask the Board to approve it, with the caveat that the document, Rev 1, would be amended to ensure that this calculation of the ingestion doses would be consistent with the TIB-9 that I think now has been reviewed. I think you folks have reviewed and closed it out, so everything should be copacetic right now between the various Work Groups.

And so that's what we are right now asking to close this out, and to accept this with this statement as you see it here. Here is the references. I don't think, unless you'd really

like to belabor the issue and go through what our findings were and the resolution of those, I think you all received that, so I don't think I need to go through that unless -- I got a couple extra slides at the end here, but I'm not going to go through those unless you have specific issues to raise.

It's pretty straightforward, and the issue on the hours was one of unusual wording, I guess, of what's a workday versus a calendar day.

So, any questions? I've got you all thoroughly confused after six years of working on this?

CHAIRMAN MELIUS: Any Board Members on the phone have questions? I was going to say, it seemed pretty straightforward.

MEMBER ANDERSON: Yeah.

MEMBER LEMEN: Lemen, no.

CHAIRMAN MELIUS: Then I believe the action will be the Board -- the Work Group is recommending to the Board that we essentially close out this Site Profile review.

MEMBER ANDERSON: Yes.

CHAIRMAN MELIUS: So it's a motion, essentially, from the Work Group.

MEMBER ANDERSON: From the Work Group, yeah, so you don't need a motion from the floor.

CHAIRMAN MELIUS: Unless there's further comments. If not, all in favor, say aye.

(Chorus of ayes.)

CHAIRMAN MELIUS: Opposed? Abstained? Okay, thank you.

Well, you've helped the Board earn maybe a little extra time on the break. What I'd like to do now is start and finish up the Work Group reports.

And, Henry, your Work Group, I don't know if you have anything additional for your Work Group besides what you just presented to us?

MEMBER ANDERSON: No, that's the last active one. I think we have a couple of other sites assigned to our group and we're waiting for those reports to come out. So we'll be active again once we get those documents.

CHAIRMAN MELIUS: Okay. The next group I have that I believe is active is Weldon

Spring. Dr. Lemen? I think we're also waiting on a report.

MEMBER LEMEN: There is nothing new to report on Weldon Spring at this time.

CHAIRMAN MELIUS: Okay, thank you. And someone who reminded me yesterday that their Work Group was being forgotten because it's the last in the alphabet, the listing: Worker Outreach. Josie?

MEMBER BEACH: Yeah, that's been forgotten before, so I was just assuming. Okay, Worker Outreach, I reported to the Board in July of last year looking for recommendations on what to do with Worker Outreach. And to be honest, that is all I've done since then. So I think, Jim, maybe we'll have a conversation offline and kind of decide where this Work Group will go. That's all I've got, thanks.

CHAIRMAN MELIUS: Okay. So that finishes up our Work Group reports.

MEMBER KOTELCHUCK: Pardon me. Dave Kotelchuck. We do lots of things, calculations, analyses, that many of the claimants, most of the

claimants, feel not able to understand because it involves perhaps some advanced technical knowledge.

And I wondered, in terms of Worker Outreach, if it would make sense, it's a thought, to develop some sort of educational material on our website that would introduce basic ideas in nuclear physics and radiation hazards.

Obviously, there are statistical analyses that are done that probably would be difficult. On the other hand, Dr. Neton's paper that he produced yesterday on the coworker data certainly gave me ideas that we could simplify or outline processes of how we do things.

Now, I don't think it's a matter of our writing a book. I mean, people teach courses about this, many of us have taught such courses, and there is lots of material around. It may be just a question of identifying some such material.

And I wondered, Josie, if your Worker Outreach Committee, whether that's something that might be done. And I think it would be worthwhile. So, I just wondered, it's an idea, and I put it out

for comment, thought.

MEMBER BEACH: Thank you. We'll look at that.

CHAIRMAN MELIUS: Stu, do you have a comment?

MR. HINNEFELD: Yeah, this is Stu Hinnefeld from DCAS. I would just offer that there are some materials like that on our website.

There's at least one video. I think two videos: one video series is from all three agencies, DOE, DOL, and ourselves, describing the program and our role in the program.

There is an older video that, as far as I know, is still up on our website, where several of our staff talk about various aspects of what's done in dose reconstruction.

We have a Worker Outreach contractor who assists us, and lately much of their work has been done in the SEC investigation world. We get them incorporated in the SEC investigation to get worker input during Evaluation Report time. But they also host a dose reconstruction and SEC workshop each year in Cincinnati where we invite

interested parties from around the sites. That is a two to two-and-a-half day workshop.

And they have an abbreviated workshop that they will take once or twice a year to interested parties at specific sites. And I believe we're going to Idaho Falls in the spring, later on in the spring. So, we do some things along those lines that may not be readily apparent to the Board.

MEMBER KOTELCHUCK: Oh, there's no question that we do such things. I wondered, for example, some of the materials in that course, might they be put online?

MR. HINNEFELD: There's probably nothing that would prevent us from putting those on our website.

MEMBER KOTELCHUCK: I mean, I assume that, for claimants, many of the claimants never have looked at issues of radiation hazards, radiation physics, and they are brought to it by their claims. And it may then be an appropriate teaching point to have them -- they might be looking for materials then, and if it were onsite it would

be helpful.

It's not so much criticism of what we haven't done, but essentially thinking about outreach a little more to claimants.

MR. HINNEFELD: Right. There could be some more fundamental information like you described: radioactive decay, radiation versus contamination, some things like that, that probably are not specifically addressed in the training and materials we have so far.

So there might be -- I guess we could look into, you know, some topics like that, or if the Board would like to suggest topics to us that we think would be helpful to put public communication or training materials together on we might be able to do that.

Like you said, chances are we can just find them and link to it rather than right them ourselves.

MEMBER KOTELCHUCK: Oh, yes. I thought maybe the Worker Outreach Committee might be the appropriate place from the Board to take a look at it and talk with you.

MR. HINNEFELD: Okay.

CHAIRMAN MELIUS: We'll let Josie follow up next time. I think one -- I'm sorry, go ahead, Gen.

MEMBER ROESSLER: As long as we're on the subject, and as far as radiation fundamentals goes, that's been done a lot. I would recommend maybe Josie take a look at the EPA website, and I can show you how to get there.

You might think I'm a little biased, but I think on the Health Physics Society website we have an extensive amount of information on the fundamentals. And maybe I can just point it out to Josie and see if some of this could be linked from the CDC website.

MEMBER KOTELCHUCK: Excellent.

CHAIRMAN MELIUS: Okay. There's one important clarification, Dave, and you may have not been around when we talked about this, though. We got to be a little careful. The Board is not charged with, you know, doing outreach and in the legislation we have particular topics we're supposed to focus on, particular tasks. So I think

we have to be a little careful.

We're not charged with developing outreach materials for the program. NIOSH can ask us to review materials or ask for advice on what to do, but, really, much of this is outside our scope. And we've struggled with that with the Worker Outreach Work Group, because it is something we're not charged with doing.

So, again, we can talk about this more maybe at the next meeting, Josie, but it is a limitation and we need to stay focused on what we are charged with doing, for the most part.

MEMBER KOTELCHUCK: Thanks.

CHAIRMAN MELIUS: Wanda?

MEMBER MUNN: Well, just a comment, a follow-on to what you were saying, Jim. Sometimes it's instructive to go back and read our actual charge.

I did that recently and one forgets exactly what we were charged to do here and the fact that we do have some limitations. So it was just a thought, that it surprises me a little when I go back and read what we're actually supposed to do,

and it does limit us.

CHAIRMAN MELIUS: Okay. I would like to turn next, which I think will be relatively straightforward. If you go to the materials that you were sent, we had received correspondence to the Board from Bonnie Klea, and also I think that was preceded by a letter, I believe, from Terrie Barrie that was transmitting Bonnie Klea's but in her own letter, I think, is how it came in.

They are raising concerns about comments that the Boeing Corporation had submitted after our last meeting near the Santa Susana site objecting to that and wanting the letters in your materials, essentially, we somehow reject that, those comments or something. And so the letter, which I think is relatively straightforward, but, you know, is that we do welcome public comments and we aren't going to, you know, sort of pick and choose in terms of who's allowed to provide those comments and that.

So let me just read my draft response into the record. So it would be: "Dear Ms. Klea, thank you for your letter of February 23rd, 2015,

to the Advisory Board on Radiation & Worker Health concerning comments submitted to the Board by the Boeing Company regarding NIOSH's and the Board's ongoing evaluation of the Santa Susana Field Laboratory site.

"While the Board understands your concerns the Board has long maintained a policy of welcoming public comments about matters before the Board. This submission will be submitted in the same manner as any other public submission. We also appreciate your efforts to provide the Board with information useful for our review and deliberations and hope that this response clarifies the reasons for also accepting these comments from Boeing."

And I think we can copy that to Terrie, or a similar letter. So if there are no comments, we'll put that on official stationary and send it out.

Ted, while we have everybody here why don't we at least start the discussion on timing.

MR. KATZ: Sure. If all of you will pull out your calendars, looking pretty far forward,

but, as you know, we need to do this pretty far forward.

I had included possible dates in some annotation I gave you. We're scheduled through the rest of this calendar year. So the next appropriate teleconference date, or period for a teleconference, is approximately the week of January 17th or 24th. So that's what I'd be looking for. Of course, we can move outside that range.

CHAIRMAN MELIUS: 2016, yes?

MR. KATZ: This is 2016 we're talking about, right. The week of the 17th and the week of the 24th, those two weeks are sort of about the right ballpark, but if those don't work we can move outside that ballpark.

We're just talking about a teleconference so we're talking about really an 11:00 to whatever, 1:00 or 2:00 p.m.

(Off-microphone comments.)

MR. KATZ: So the 21st, is that what you are suggesting? Okay, the 20th. Anyone on the line have a problem with the 20th, of January 20,

2016?

MEMBER LEMEN: That works for me, Dick Lemen.

MR. KATZ: Thanks, Dick.

MEMBER VALERIO: That works for me, that's Loretta.

MR. KATZ: Right, that's an 11:00 a.m. Eastern start time. And do we still have you, Bill, on the call? I knew he had to leave, but --

MEMBER SCHOFIELD: I don't have any problem with that, this is Phil.

MR. KATZ: Okay. So let's say that, then, the 20th, 11:00 a.m. Eastern Time.

Okay, then going to the next meeting, and approximately the right dates for that are the weeks of March 14th, 21st, or 28th, those weeks, 2016.

CHAIRMAN MELIUS: Yeah, I can't do it the week of the 13th into -- between the 13th and the 22nd I'm tied up, but I can do it after the 22nd.

(Off-microphone comments.)

MR. KATZ: So how is the 23rd, 24th, for everyone, of March?

MEMBER MUNN: Very good.

MR. KATZ: On the line?

MEMBER LEMEN: Did you say the 23rd?

MR. KATZ: Yeah, the 23rd or 24th of March of 2016.

MEMBER LEMEN: Either one is all right for Dick Lemen.

MR. KATZ: Yeah, both days. Okay.

(Off-microphone comments.)

MR. KATZ: And the dog is welcome, yes.

CHAIRMAN MELIUS: Yeah, Easter is early that year, so that's on the 27th.

MR. KATZ: Okay. So does that make sense?

CHAIRMAN MELIUS: Yeah, the 23rd and 24th.

MR. KATZ: Okay. The 23rd and 24th of March.

(Pause.)

MR. KATZ: Wait, do you have a question, Jim, that I didn't hear?

CHAIRMAN MELIUS: We just want to review when our next meeting dates are.

MR. KATZ: Oh, sure, yeah, one second, let me give you that.

CHAIRMAN MELIUS: Okay.

MR. KATZ: Okay, so, moving out from today --

MEMBER BEACH: It's July 22nd or 23rd.

MR. KATZ: That's the face-to-face, July 23rd through -- wait, no. July 23rd through 24th.

MEMBER BEACH: Yeah, I had 23rd, 24th, and then someone else, I think Jim, said he had 22nd, 23rd.

MR. KATZ: Yeah, it's 23rd through 24th. That's this next face-to-face, the 23rd through 24th of July.

The teleconference by the way, backing up, is June 9th. June 9th is the teleconference, but then the 23rd through 24th --

MEMBER LEMEN: You're back in 2015 now?

MR. KATZ: Yeah. We're back in more present time right now, yes.

MEMBER LEMEN: Okay, thank you.

MR. KATZ: Yeah, sure thing. So those

are the next two meetings coming up. And the 23rd through 24th, should we talk, Jim, about locations?

CHAIRMAN MELIUS: Yeah, let's talk about -- we've been talking about locations in terms of where we will be, and there's usually two factors. One, where are we in terms of an SEC evaluation? But also where do we need additional information that would be useful in evaluating an SEC, and particularly public comments and otherwise.

We had talked about where we'd be: Denver, Kansas City, and INL. I think I've talked to some of you already about this. We had some discussions, and we'll come to INL later, but I think there's a number of issues related to that site and there are additional reports coming from NIOSH that they have areas of that report that they've reserved.

I think at least the consensus of some of us trying to sort of figure this out was that going back to INL would probably make the most sense in terms of being productive for the Board in terms of getting information that we need for making some

decisions, and particularly some public comments and input from people around the site, because we'll have, I think, some specific questions in particular specific areas and so forth.

Not that that will be the only way we will follow up on INL, but it'll be one way. And we weren't as sure of where we would be with Kansas City or Denver, and we've already done a fair amount of outreach in those places, and we have more scheduled. I believe that's gotten clarified now.

(Off-microphone comments.)

MEMBER VALERIO: This is Loretta.

MEMBER KOTELCHUCK: -- perhaps another hotel in Idaho than the one we used last time.

MR. KATZ: Oh, my feelings are hurt. No, the trouble with hotels is we have pretty strict guidance about sort of lowest bidder and so on. So we'll do the best we can. I know it wasn't a happy place for everybody. My room was great, but we'll try to do -- there are not a lot of options that can host a meeting, is the problem, in that town.

MEMBER KOTELCHUCK: You will note that this is the first time I have raised such an issue

in many meetings. So, enough said.

MEMBER SCHOFIELD: There is plenty empty spud cellars.

CHAIRMAN MELIUS: Do you want to go through the times for the rest of the year?

MR. KATZ: Oh, sure, one second. Right. So, following July, the next teleconference is in September. September 23rd.

That's a teleconference, 11:00 a.m. Eastern Time, September 23rd.

(Off-microphone comments.)

MEMBER VALERIO: Ted, this is Loretta, can you hear me?

MR. KATZ: Yes, we can hear you, Loretta.

MEMBER VALERIO: Okay. You're breaking up. It kind of fades out. So, the July face-to-face meeting, was that decided on to be in Idaho?

MR. KATZ: Yes, that's in Idaho.

MEMBER VALERIO: And that's a 2-day meeting?

MR. KATZ: That's a 2-day meeting

probably.

MEMBER VALERIO: Okay, got it. Thank you.

MEMBER KOTELCHUCK: Dave Kotelchuck. I just checked. The Wednesday the 23rd is the holiday Yom Kippur. I will not attend and I am hoping perhaps others may not be able to. It's a major Jewish holiday and it starts the evening before.

So if it were possible to change that day, either the day after or the day before, but not that day. That's a request, otherwise I will just recuse myself.

MR. KATZ: Why don't we try to do that right now.

MEMBER MUNN: Couldn't we do the 24th?

MR. KATZ: How's the 22nd for everybody?

MEMBER MUNN: Well, wouldn't the 24th be better since sundown is an issue on the 24th -- I mean, the 23rd?

MR. KATZ: Well, it's evening on the 22nd, right? You're okay the 22nd at 11:00 a.m.?

MEMBER KOTELCHUCK: Absolutely.

MR. KATZ: Yes. So is the 22nd, does that work for everybody on the line, too?

MEMBER LEMEN: Would you say which month again? I'm confused.

MR. KATZ: I'm sorry, Dick. It's September 22nd.

MEMBER LEMEN: Thank you.

MEMBER MUNN: 2015.

MEMBER LEMEN: That works for me. This is Dick, that works for me.

MR. KATZ: That's super. That's super.

MEMBER SCHOFIELD: Works for me.

MR. KATZ: Great.

MEMBER VALERIO: This is Loretta, that works for me.

MR. KATZ: Okay. That's my wedding anniversary, super. Works for me.

(Laughter.)

MEMBER KOTELCHUCK: I'm sorry, just to double check, I have originally Thursday the 24th for that and you said it was, but you announced

verbally that it was Wednesday the 23rd, is that correct?

MR. KATZ: That's correct.

MEMBER KOTELCHUCK: Yeah, and we've moved it to the 22nd and I thank you.

MR. KATZ: Right. Okay, that's super. Okay, then, following that, the next meeting face-to-face is November 18th to 19th, November 18 through 19. No location yet.

CHAIRMAN MELIUS: We would decide that at our next meeting, next in-person meeting.

Okay. I'd like to move on to some discussion on the Dose Reconstruction Review Subcommittee. Dave, first, I don't know if you have an update on the Committee. That would be helpful. And then we'll talk about the going forward issue.

MEMBER KOTELCHUCK: I do. Just an update for the Board, we had a scheduled meeting on February 27th that was canceled due to lack of a quorum. We are one Member short, at least in terms of a current Subcommittee. We have our next meeting scheduled for April 14th. Basically, as

I think I may have indicated yesterday, we have finished 10 through 13. That has gone very slowly.

We put that as our highest priority because we wanted to be able to get to a report quickly to the Secretary. But a number of issues were raised yesterday, and important ones, and I personally concur with the notion that we have to rethink the way the Committee is structured and how we go about our tasks.

I have the files that were sent to us by SC&A. Really, sets 14 through 21 are really quite valuable. I don't know. They deserve a bit of statistical analysis soon, and also I think we need to do a similar job for 10 through 13 -- that is, the ones that we've already been through -- to see how things have changed.

If you are interested, if the Board is interested, I did not type it up, but I did some simple calculations, which is to say I added the columns, and I'm not sure they are absolutely perfect but they're pretty good, I think.

And just to give you a sense of that, 14 through 21, there are a couple sets for blind

review. But there are 166 cases. They were evaluated between 2004 and 2014. The number of findings was 305. So the number of findings that SC&A had were, as I say, 305, which is 1.84 per case. So a little under two findings per case.

Interestingly, I looked at those SC&A reports that had zero findings and I found that 52 of them, which is to say 31 percent of those that were reviewed had no findings, zero findings. Which is at one level fine, it means that there's agreement between the NIOSH review and the SC&A.

And on the other hand, that's a lot of work put in for materials where there would be no change in the NIOSH findings. That is, they were fine, and it would be lovely to think of a way of sensing what those might be.

Looking at the categorization of the 52, is there anything that identifies them to us a priori? In terms of types of finding, you'll remember the Board has set up A, B, C, D, E, F. And I'll do quickly the findings A about location in the plant. There were only two findings, that is 1 percent of all, that was in disagreement between

SC&A and NIOSH, or DCAS. So that's really yielded very little information.

Particle type, B, 17, ten percent. Surprisingly, to me, item C, external exposure: disagreements 86; 52 percent. That is, more than half of those there is a difference in the findings for external.

For internal exposures, the differences were 34 in number, or 20 percent. So 20 percent of the findings there was a disagreement internally. And, of course, there are multiple findings for different cases, so this is not rigorous, it's just a quick count of the columns.

We are debating within the Work Group, and we have not had a chance as a Work Group to go over these. There is an Item E, Quality Concerns. And there were 68 Quality Concerns representing 41 percent of the cases. And F, Other, which is very large, not surprisingly. F, 100. Sixty percent of them there is some other difference that is not well classified by A through E.

On the other hand, the quality assurance findings, which we are trying to do in

the future, and the Committee has talked with SC&A about that, and there are a total of 206 quality assurance findings that SC&A found.

We will discuss them, you know, with the findings with the DCAS, with the Committee and with DCAS. Which is to say there are one-and-a-quarter QA findings per case.

And, finally, the number of observations, which the Committee, for the other Board Members, in terms of observations, we simply -- we observe. We do not pass on them, but those are discussed in terms of -- presented and different points of view are presented and then it's so noted. But we don't act on them.

There were 146 observations in 14 through 21, which is to say 0.9 per case. So about one per case, so one finding per case roughly. So one finding per case -- excuse me, one observation per case and two findings per case, just as a quick summary. So perhaps that's useful to the Board as an outline. Thanks.

CHAIRMAN MELIUS: Thank you. Dave, could you give us an update on the blind reviews,

where that stands?

MEMBER KOTELCHUCK: There has not been progress on blind reviews. The Committee is focused on getting 10 through 13 finished. We are now ready to consider going forward on the blind reviews.

So we just have the six that were done long ago, and it is on our agenda at the next meeting -- and the next meetings, if need be -- to move ahead on that. We admit we prioritized completing 13.

MR. STIVER: This is John Stiver from SC&A, and I would just like to kind of expand on that a little bit.

We have completed the Set 20 of blind reconstructions, but we have not completed the comparison studies yet at this point. And we've kind of changed up the process a bit to where instead of reporting out our blinds at one meeting and then, you know, sometimes a year later we finally get around to discussing the comparison reports, what we're going to do now is just go ahead and complete the comparison report as soon as we get the information back from NIOSH, and then just

do one report and then we just discuss that. It makes a lot more sense, and it's something that Ted had suggested, and we're going to run with that.

CHAIRMAN MELIUS: I guess my comment would be that I think we -- I know we've put this off for a while, but I'd be a little concerned about trying to move forward with a letter to the Secretary without having some possibility of addressing the blind reviews.

I mean, they were an important part of our original plans. And lots of reasons that they got the delayed in that, and to me they would, in some ways, be more of a priority than trying to move forward with 14 through 21, though I don't think those are mutually exclusive issues.

MEMBER KOTELCHUCK: Our goal was not moving ahead on 14. Our goal was finishing 10 through 13, and that was finished. We really have only started 14 and we are ready to move in other directions. And doing the blind reviews, I am most open, and you have mentioned that before and it is a priority, and I think the Work Group perhaps should move that as its highest priority

immediately.

And some of us are working on trying to look at 14 through 21 and looking at the data and comparing it for 10 through 13 to see how we might streamline the process of dose reconstruction for the future. So I agree and I'm open and I trust the Subcommittee is open to that.

CHAIRMAN MELIUS: Ted, do you have a comment?

MR. KATZ: Well, I just wanted to say, and maybe this is what you intended, but I had always assumed that we would -- because we had it on our agenda we just weren't able to meet -- but I always assumed the six blinds that we have now complete with the Subcommittee, I'd have assumed that we would address those before we write the letter to the Secretary so it would cover those.

CHAIRMAN MELIUS: Okay. Yes, Wanda?

MEMBER MUNN: Yeah, just a thought with respect to 14 through 21 that's upcoming. It was very heartwarming for me to hear Dr. Kotelchuck's brief overview of just what he saw taking a look at those, because I had only scanned them and hadn't

made any attempt to parse them.

If might be worthwhile, given the tenor of what he believes he sees there, for us to make sure that the Subcommittee has an opportunity to at least partially verify some of what he's saying, because although they probably would not appropriately be a major topic of a report to the Secretary, it seems to me that, since our entire objective in the Dose Reconstruction Subcommittee was to try to assure that the dose reconstructions were being done in an appropriate and efficient manner, the raw data that Dr. Kotelchuck just reported indicates to at least the casual observer that the number of findings have decreased markedly over the period of time we've been doing this. Which, of course, would logically be the aim of our Subcommittee.

So it might be worthy of at least taking a look at those more closely before we continue very far on the report to the Secretary, just to be able to say that it appears that the fruits of the labors of the Subcommittee are being seen to some degree.

CHAIRMAN MELIUS: Paul?

MEMBER ZIEMER: Well, I certainly agree with Dr. Melius on the need to get the blind reviews addressed and include that in the letter to the Secretary. And then I just want to reemphasize, you know, we've only addressed this once in the last roughly 15 years to the Secretary, and it's the bottom line of what we're charged to do as a Board. And so I think we just need to keep that letter as a high priority and let's get it done.

CHAIRMAN MELIUS: Yeah, I concur, though I agree with Wanda that we need to -- the Subcommittee and the Board need to take a look at, you know, the data on 14 through 21.

This was put together fairly quickly. And I thank SC&A for it. This was, what, the last week or so, two weeks, I don't know how long they've been charged. It is helpful. But I also agree with Paul that the focus on the letter ought to be, you know, 10 through 13 and get this moving along and this whole process and so forth.

And so to get that complete, along with the blind reviews. And it's not to say that we can't make

other comments, but they will be maybe not as rigorous a review as what we've already done and that should stay as the focus.

So I think if we think about this, our sort of priorities, one is to complete what needs to be done for the letter to the Secretary. Number two, we have to figure out how do we resolve 14 to 21? Do we change procedures for doing that? They've already been reviewed, but we need that. And number three is, what do we do going forward in terms of do we change the methodology that we're using for doing the reviews?

And so I think, in some ways, those may overlap, but they're also are sort, you know, have different -- you probably can't obviously change the methodology if it's already been done, so for what's already been reviewed maybe we look at how we do those reviews.

We did get some comments from SC&A suggesting that, for 14 through 21, we only should look at the findings and not look at where there wasn't a finding. And I think that has some merit, but I'm a little concerned that, really, the Board

is supposed to be making a finding, not our contractor. We're not hiring, you know, a contractor to make our decisions for us. And so there has to be some way of resolving that, whether it requires as much of a review on how we go about that may be different, but we need to talk about it and make sure we're doing our due diligence on that.

Secondly, we also need to, you know, maybe to some extent for resolving 14 through 21, but going forward is there a way that we can focus on what are the more important parts of the dose reconstructions that are more likely to raise concerns that the Board should be paying attention to? Is it a change in the methodology? Is it a site we haven't looked at in detail before? So it's applying maybe, you know, a general OTIB to a new site and, you know, does that apply, you know, to a Site Profile maybe -- or some of these sites we don't have Site Profiles. So it's going to be looking at that.

There may be others that I'm not, you know, thinking of off the top of my head. And I

think we need to see if we can come up with a methodology that would allow us to look at a higher proportion of the cases but in a way that's more likely to be productive. Not to find NIOSH mistakes, but to address and make sure we're doing the right thing and that we're looking at what are the more important exposures, say, for a person at a particular site. Or there may be more inconsistencies where it may be a higher, a more likelihood that, because of the nature of the procedure or something, that a mistake or something would need to be corrected in that.

That's not something I don't think we can do sitting here. Yes, Dave?

MEMBER KOTELCHUCK: You suggested yesterday that we set up a special subcommittee to look at what were -- a special subcommittee of the Subcommittee to look at what you have said are really Items 2 and 3, how do we go forward, how might we change procedures?

And, to me, that's a very good idea and that would allow the existing Subcommittee to complete the letter to the Secretary, which is to

particularly look at the blind reviews. And then also, at our April meeting, we could do -- we want to look as a Subcommittee at 14 through 21, at the results that I just preliminarily went over, and have other people's thoughts to give to the Subcommittee, so that I would see our Subcommittee as doing Item 1 and having a discussion at the next meeting of 14 through 21, how we view the results from SC&A. And then pass on Item 3, how do we go forward and the changes and procedures that follow from that discussion, for the special ad hoc committee to review.

To me, that would be a good way of going forward, that we have two groups looking at two rather different tasks.

CHAIRMAN MELIUS: Just one correction. My suggestion was a work group that would include some people from the Subcommittee and some other Board Members to look at, I guess, what you're calling 2 and 3 here.

MEMBER KOTELCHUCK: Fine.

CHAIRMAN MELIUS: But, again, one is because I think the Subcommittee's energies are

best focused on the other priority, number one.

MEMBER KOTELCHUCK: Yes, absolutely.

CHAIRMAN MELIUS: And second, I mean, I think other people, you know, Board Members have input into this, and any decision we make is going to be the decision of the whole Board.

MEMBER KOTELCHUCK: Right, that's correct.

CHAIRMAN MELIUS: I mean, you know, as Wanda has reminded us, this is one of our key charges in the legislation, so it's up to the Board to decide what we need to do. And so we would have to have a process that involves everyone in the Board in that.

Again, we also have some timing things. We don't want to spend three years deciding what to do and so forth, and we have a contractor that has some resources and we need to keep moving forward and appropriately utilizing those resources to get our work done. So I think we have to find sort of the right balance between all those and that.

And, again, not criticizing what the

Dose Reconstruction Review Subcommittee has done or not done, or whatever. I think they've been doing excellent work, and it's a lot of work, and a lot of work on the part of SC&A and NIOSH staff to get through these resolutions and do this.

I would also just add one more sort of complicating factor. We have to also remember that these are not, you know, random selection of cases. We've been targeting sites. And that's changed over time, the approach that's used, which, again, is appropriate, but so when we're looking at any data from there we have to remember that it's not a random sample.

We don't have to get into OPOS statistics or anything crazy, but it has changed over time. And that may be part of the recommendations, too, is how do we sample? It's just not what do we look at, but which sites and which kinds of cases and so forth.

So I guess my question would be, to the Board, is the Board -- is there a consensus, does this make sense in general as a way of going forward?

MEMBER KOTELCHUCK: And I'm looking at Subcommittee Members, especially, personally, to see how you're feeling.

CHAIRMAN MELIUS: Wanda always agrees with me, so --

MEMBER MUNN: Always. Absolutely always.

MEMBER BEACH: I agree.

CHAIRMAN MELIUS: Yes, Josie, okay. So I think we need a motion, then, to form a Work Group to move forward to look at the process of doing dose, how we should move forward on both resolving 14 through 21, as well as how we should go in the future in terms of doing the dose reconstruction review process on that.

I would hope that that Work Group would actually be a very short-lived work group. Not all of our Work Groups are as short-lived as we expect, but this one should be.

And I would even hope that we could at least provide some recommendations back to the Board at our June 9th conference call, rather than waiting another two months until the Board Meeting

at the end of July, or fairly far into July. But first can we get a motion or --

MEMBER KOTELCHUCK: Can I?

CHAIRMAN MELIUS: Yeah, sure.

MEMBER KOTELCHUCK: So moved. That is, that we establish a special Working Group, dose response, to report back to the Board at its next meetings, it's next teleconference, to first report at the next teleconference, and that the existing Subcommittee continue to work on completing the blind reviews and doing their review of 14 through 21.

CHAIRMAN MELIUS: Do I have a second to that?

MEMBER BEACH: I'll second that.

CHAIRMAN MELIUS: Okay. Further discussion on that? I guess the understanding would be the Work Group would be made up of people from the current Subcommittee as well as other Board Members.

MEMBER BEACH: And this may not be the appropriate time, but I think maybe one of those new Members should -- well, it sounds like we need

to add another Member to the Subcommittee as well.

CHAIRMAN MELIUS: What I plan to do, since not everybody's on the call and so forth, is we need to -- I'll do a solicitation out to the Board.

We also, I think, will need a Grand Junction Work Group. We've got someone we need to add to LANL. We need an addition to the Subcommittee, and we also have this new Work Group. So there will be a menu and people can pick, choose, and volunteer. I've already got one volunteer, Gen, but I think it's important we leave it open to everybody, even people that couldn't make it here today.

MEMBER BEACH: Oh, absolutely.

CHAIRMAN MELIUS: Good. And, also, you know, we can also, once we get the Work Group in place and so forth, charge SC&A with doing some more data evaluation for us. And, again, we would like to keep moving forward on dose reconstructions. And that's one reason, you know, given the resources and personnel at SC&A, I do think we need to try to keep that moving and get

them assigned also.

MR. KATZ: We need to vote on that motion.

CHAIRMAN MELIUS: Yes, we do need to, thank you. Our parliamentarian reminded us we had not voted on the motion. I think we can do orally, yes. So, all in favor of this new Work Group, say aye.

(Chorus of ayes.)

CHAIRMAN MELIUS: All opposed? Abstain? Okay, good. I think we have now earned a break until 10:45. Again, try to be back here directly at 10:45 because we have an SEC petition to review and evaluate. So we'll see you back here then. Thanks.

(Whereupon, the above-entitled matter went off the record at 10:21 a.m. and resumed at 10:47 a.m.)

CHAIRMAN MELIUS: Next on our agenda we'll hear from Jim Neton, who will give us an update on -- there he is, I couldn't see you hiding behind the podium. This will be the Grand Junction complex. It's the continuation, a few years

later, of the Grand Junction SEC.

DR. NETON: All right. Thank you, Dr. Melius. I am indeed here to talk about the Grand Junction Facilities. I should point out at the outset here that the name has been changed as of November last year. The Department of Energy changed it from Grand Junction Project Office, or Program Office, to Grand Junction Facilities. So you'll see several -- it was hard to change them all and be consistent. So you'll see some various different designations here, but they all refer to the same facility.

I'd also like to say at the beginning that Tom Tomes is the DCAS point of contact and did most of the work here. I'm just presenting the presentation. So I think Tom may be on the phone in case I get stuck with some difficult questions that I'm not prepared for.

The was SEC, originally, SEC 175. And we are going to be discussing today an addendum to that SEC petition. I'll get into that a little bit later, but first a little background information, because we haven't talked about this for a while.

It's the Grand Junction Facilities. It's a Department of Energy facility located in Grand Junction, Colorado. Its covered period covers a wide range: 1943, one of the first facilities, one of the oldest facilities that we have, through the present day. I think in around 2001 it became a remediation facility. But it still is on our list.

It did a lot of things. They did a lot of things at Grand Junction. But most importantly for our discussion today, they processed a lot of samples, thousands of samples per month over certain periods of time, that included uranium ores and tailings that were, of course, elevated not only in uranium but all the uranium along the progeny that tend to be in ores.

Numerous projects use large quantities, as I said, of these ores and tailings for materials. And what's going to be of central interest to us today is to talk about these calibration pads.

At one point they started to make, I'll call them elaborate check sources, but they're

really calibration pads for survey instruments to go out into the field. You go out in the field and try to measure and survey for uranium or thorium. And you need to figure out what your sensitivity of your detection instruments are. So they made these large concrete pads that were labeled, radiolabeled, with various isotopes. We'll talk about that a little bit later.

As I mentioned, the site started its operations in 1943. The U.S. Army established it as the Colorado Area Engineer Office. It later became the Grand Junction Operations Office. As I mentioned, now it's referred to as the Grand Junction Facilities.

The first operations on the site, in '43, was the construction of a refinery to make uranium concentrates for the MED. They took what they called green sludge that was left over from vanadium mining operations and used that to recover significant quantities of uranium, uranium ore concentrates, at that point.

The plant only ran a couple of years, 1943 to '45. After 1945, Grand Junction became the

center of uranium ore exploration, procurement, processing and sample activities.

Up through '75, they did a lot of assaying of ores. People would produce ore products in the area and samples would come to Grand Junction to be assayed to look at the purity and that sort of thing.

Over that time period, through '75, a substantial quantity of concentrates were received, sampled and assayed. This slide says there was almost 350 million pounds of that material. So these weren't like little laboratory samples. Quite of material came through there.

But the last of the drums were shipped offsite in January of '75. So all of the major source term was gone by that point.

MEMBER ANDERSON: Did it all come in drums?

DR. NETON: I believe so, yes. I could be wrong on that. But the majority of it, at least, was in drums. They did operate -- and we'll talk about it a little bit later -- an ore processing plant, a pilot plant. So they may have received

some ores not in drum state. I'm not sure about that.

This next slide talks about these two pilot plants in the '50s. They were trying to develop methods for extracting uranium, trying to improve the efficiency, that sort of thing. The tailings from those ore processing plants were buried onsite, which led to some significant contamination around that facility.

Of interest to us today, though, is this last bullet. They managed, between 1974 and '84, the National Uranium Resource Evaluation Program. And that program was targeted at the exploration and sampling of the nation's uranium reserves. They would accept core samples that were taken around various uranium areas to determine the uranium content of those materials. And they did literally thousands of those samples a month during this time period.

This slide, I know it's pretty difficult to see on the screen here, but I think you have it in your presentation. It's just sort of a graphic of the various operations that were

conducted. The long bar you see on the bottom is the laboratory operation that extended from the beginning of the Grand Junction operation's inception all the way through around 2000.

The bar right on top of that is green on my computer. I can't tell what color it is up there. It looks sort of orangish. The bar right above the second one from the bottom is the uranium/vanadium assay and brokerage period. And that's the period where they were doing all the assay of those drums, those 300-and-something million pounds of assay.

Two up from that, though -- well, all the way at the top you'll see the National Uranium Resource Evaluation Program. And that's really where we're going to focus today, that ten year period where they analyze these core samples. And also, at that same period, they constructed these calibration pads.

The other bars on the right-hand side really more refer to remedial action projects that were conducted primarily offsite. They provided offsite support services for the Grand Junction

Project Office's Remedial Action Program, Grand Junction Remedial Action Project.

Workers were stationed, located, at the Grand Junction Project Office, but their work would actually be performed in these remediation sites, although some samples would come back to the site for analysis in the laboratory.

So, to get into the petition history, SEC 175 was received in June of 2010 and qualified. And the petition requested that it cover all onsite personnel who worked at the operations office from January 1, '43, through July 2010.

At the Augusta Board meeting in 2011, I checked this, LaVon actually presented the SEC Evaluation Report where we recommended that we add a Class from the beginning of the plant, the facility's operations, in '45, through January 31st, 1975.

The Board heard our recommendation and agreed with it. And that Class has subsequently been added to the SEC. So, right now, Grand Junction is covered all the way through the end of January '75.

But at that time, even though our SEC Evaluation Report said that we thought we could reconstruct the remainder of the dose, just prior to the release of the Evaluation Report, we received a lot of additional data.

So we informed the Board at the time we delivered the presentation that this new data source was available, had not yet been reviewed by NIOSH, and we would evaluate the data in light of that and report back to the Board.

So that's what we're doing today, we're reporting our analysis of where we are in light of -- I think, originally we had something like 675 documents. And now we're up to, like, 1,600. So there's about 1,000 new documents that were recovered for us to review.

So, after our analysis of all those data, we drafted an Evaluation Report Addendum, which we're talking about today. And we are going to propose a Class that goes beyond 1975. And we'll discuss the rationale behind that, but we believe the Class should go from '75 through December 31st, 1985. And after that we believe we

can do dose reconstructions. So that's a little bit of a preview of what we're going to talk about.

So, after 1975, I mentioned all the drums were gone, the drum samplings were gone. So all that was really left at the site was legacy contamination of the soil and the buildings from the prior work. And there was considerable contamination. I think it covered 19 buildings, over 23 acres, or something like that, of contaminated land still existing at the site after '75.

Again, the buried uranium ore tailings from the pilot plants was out there. But there were continuing operations that remained. The sampling project for this National Uranium Resource Evaluation program. I'm not sure how you pronounce it. I couldn't figure that out. But anyway, the NURE program was the bulk of the continuing operations that involved radioactivity onsite. Although I did mention that there are a number of other activities that occurred offsite, like these remedial projects offsite that they provided assistance with. But the sample

processing at the site provided the greatest potential for exposure.

That processing involved the crushing and grinding of samples of ores and tailings. Now, these samples were not very particularly radioactive. The NURE program was not really a uranium exploration program. It was a program that took samples that went out to determine where conditions may be favorable for uranium to exist. So it wasn't really going and taking samples in well-known, established uranium deposits. So the bulk of these samples were barely, you know, higher in uranium than what you would consider to be a normal distribution.

So there were exposures associated with these samples that were processed in the laboratories. But, again, the radiological implications of exposures were not that great for those type of samples.

The analytical laboratory continued to operate through 2003 to support the various site projects, including the analysis of these samples that were processed in the crushing and grinding

operations.

The bottom three bullets that are on this slide are the ones that really are not relevant to what we want to talk about today exposure-wise because these activities, by and large, took place offsite. They were supported by the site administratively, but the exposures, since they were not acquired on the facility itself, are not considered covered exposures for this program.

Okay, a little bit more about the crushing and grinding. It happened in Building 7A, which was an addition on to Building 7 in 1956. This was something that we really hadn't considered a lot in the original SEC Evaluation Report. It is the greatest source of internal exposure from onsite operations after '75. It was a very dusty operation. They had these inverted V blenders where they would blend the samples and then dump them, take samples, that sort of thing.

And it was a sufficiently dusty operation that they actually had a ventilation system that vented the materials to a baghouse. And they would fill up a couple of 55-gallon drums

from the dust from that operation every year. So it was somewhat messy of an operation.

But as I said, the radiological implications of that dust were not too bad, because these were not particularly highly concentrated uranium samples.

But the last bullet, I think. is the most relevant here. They ground uranium ores, tailings and thorium ores to specific mesh size prior to downblending the referenced materials for use in calibration pads.

This is what was not understood in the original SEC Evaluation Report. They made these concrete pads and bore hole calibration standards that could vary from five feet in diameter, two feet thick, to 30 by 40 feet, where they actually built four of those large pads and installed them at an airport so that people could actually do flybys and calibrate their detection survey meters from the air. They also supported drive-throughs and that sort of thing.

But they made a number of these samples. I think we know of at least 27, I think, that were made during this particular period. And to start

making those samples, they actually had to grind fairly highly concentrated ores, five to ten percent uranium-by-weight ores and blend them. And then they would dilute them down to make the calibration standards.

They started with thorium ore that was fairly concentrated. And in some cases, they started with monazite sands, which are highly elevated in thorium content.

So this is the operation that we were saying we really don't have any idea of what kind of exposure potentials were occurring in this time period.

The analytical laboratory, as I mentioned, supported the operations in Building 7. And they did the assay of the ores and such. And they did have an upper concentration of incoming samples. I think they wouldn't accept any samples that were greater than 2,000 picocuries per gram. And so some of these monazite ores and such had to be blended down so that the laboratory could actually assay them. Again, as I mentioned, the samples were prepared in 7A. And the laboratory

was actually permanently closed in 2003.

So, our usual list of sources of available information, we use our already existing Technical Information Bulletins and procedures, of course. There were interviews conducted with nine former employees. We've looked through claimant files. There was some documentation provided by the petitioner. And we also looked at the files that we had captured in our Site Research Database.

As I mentioned earlier, 1116 additional documents have been added to that Site Research Database since we last presented this site's Evaluation Report in 2011. And that was obviously a result of additional data capture efforts that took place since 2000. Well, some of the data came in prior to that. But there's a lot of additional data here.

Of course, we always look, where we can, at the AEC documentation, DOE OpenNet. Internet searches are standard now. CEDR is also a source of information for exposure data. NARA and other DOE sites.

As far as claims go, there are 75 claims

from Grand Junction that have been submitted to NIOSH, 48 that have employment in this time period that we're talking about today.

Forty-seven of those were completed, and only ten of those claims had a PC, Probability of Causation, greater than 50 percent. Six of the claims had some type of internal dosimetry data.

Some monitoring was conducted. We'll talk about that in a little bit. But it's pretty sparse in the earlier years.

And 22 of those claims had some type of external dosimetry data. I think the criteria was at least one film badge measurement, or one TLD measurement.

As far as external exposure sources, you could imagine, this is uranium ore and thorium ore type exposure, so you have direct radiation from the handling and processing of the ore and tailings. One could also get exposure from being submerged in a contaminated air cloud, although that's not usually a very high exposure pathway for external anyway. And then one could receive exposures just from walking around the

contaminated grounds and buildings at the site.

There were also some sealed sources that were used for data logging. They were used offsite primarily, but they were stored onsite. And there were some potential exposures to those data logging sources.

So, from those source terms, the thorium and uranium, of course you have photon exposures from uranium progeny. The largest source, of course, would be the radium. Radium-226 has some shorter-lived progeny that emits some fairly energetic, high abundance photons.

That's the main source of exposure there, beta exposures, of course, from uranium progeny, protactinium-234m, most notably. And then, as I mentioned, the neutron exposures would occur from those data logging sources: californium-252, as well as -- this is something new to me - a zetatron, which is a vacuum-tube neutron generator. It's a deuterium-tritium-containing device that accelerates the material and generates neutrons

back via that pathway. So, that is, neutrons are legitimate potentials for some exposures at this facility.

As far as external dose reconstruction, we have dosimetry data in the claimant files, as I indicated. Twenty-two of the claimants had some type of dosimetry in them.

They measured, early on, before '81, I think, with film, and after '81 with was TLDs. We also have access to the REMS database, which gives summary -- you know, summary and categories of exposures for various years. And we can use that.

We've modified that to account for missed dose. For example, if you took the 95th percentile in the REMS database and said, okay, it's one rem -- or not one rem, let's say the highest exposed person had 100 millirem, then if we knew that there were, like, so many other badging periods, we would give them the MDA for the remaining badging periods.

So we would assume that that annual roll-up occurred in one monitoring period. And then it's not a missed dose. That's a sort of

standard technique that we use.

But beta exposures, we've adopted a beta-gamma ratio to supplement the individual records. I think the beta-gamma ratio used in the ER is 1.5.

And, again, neutron exposures, although not many people are exposed to neutrons, it was possible, some people were monitored. The neutron data are in REM starting in 1985. And we're assuming, in prior years, the exposures were pretty similar.

So we believe that there's enough information to estimate external doses from operations starting February 1st, '75, all the way through July 31st, 2010, the period that we evaluated. We also believe that we can estimate with sufficient accuracy the medical X-ray dose using our existing program technical documentation.

Okay. Now, some of the more fun stuff, in my mind: the internal sources of exposures. You have uranium exposures, of course. But you also have the progeny, thorium-230 and radium-226.

Thorium-232, it says limited quantities. It's limited compared to some sites, but we're talking in the hundreds of kilograms. I think at one time they had a couple hundred kilograms onsite that they were using for these calibration pads.

Now, that's a one shot deal. I don't know how many times that was replenished and such. But there was at least a couple hundred kilograms at one time onsite. And you always have the progeny associated with the thorium, including radon or thoron gas, which is one of the short-lived progeny of thorium.

So the internal sources would be inhalation and ingestion from the sample preparation of the ore used in those calibration -- they're called models here, but I call them calibration reference sources, or reference pads.

They would have to crush, grind and dry those materials in Building 7A. And then they would downblend them and then actually mix them with concrete to create these, you know, five-foot diameter pads that can be used to calibrate these reference instruments.

There was also sources of exposure from residual contamination from previous operations at the site. I mentioned the site was contaminated, so if you weren't working in Building 7 and you were in another facility, there are known levels of contamination around the site. And, of course, from resuspension of those materials, there's another additional exposure pathway.

Not much in the way of bioassay data at this facility. None, actually, from '75 to '83, that we found, at least that we had located, and very few samples for onsite workers in '84. Most of the samples appear to have been baseline samples. So they're not of much use if you didn't take a follow-up sample.

There are some fecal samples which will become relevant in a little while, for these workers in Building 7A, in 1986. After around '86, the monitoring program became somewhat more robust, and we have some indications that there were time-weighted air samples, some fecal sampling going on. They were very conscious of the potential exposures from some of these higher level

concentrated thorium and uranium sources.

And there are some bioassay samples starting in 1991 when the requirements earlier of 10 CFR -- or DOE Order 5480.11 came into effect. There was some very good documentation, Technical Basis Documents, for the site that were written in that time period that described, at least on paper, a pretty substantial knowledge of the hazards and how to go about monitoring for them.

Again, not much in the way of air samples in this time period, '75 to '79. There is a maximum air sample result reported for that sample prep lab, that's the Building 7A laboratory, taken in July of 1980, although it's a very low sample. It only measured about three picocuries per gram.

As I mentioned, most of the samples that were processed by this laboratory were these sort of core samples that were taken from the field, not necessarily in areas that were highly enriched or highly concentrated in uranium. So it's somewhat deceptive. And this is what we were basing our last presentation on, in '75, that this was the type

of exposure that occurred there.

Now, this is true. This is, in general, the type of air concentrations that one would see. But when you start processing these higher reference materials, the five to ten percent uranium concentrated materials and the monazite ores, you could get much higher -- you know, they used the same equipment, it was the same equipment that was used -- you get much higher air concentrations.

And in fact in this next bullet, in 1986, they did an MPC hour tracking sample in the prep lab. And for the first quarter of 1986, for this one operation, they estimated up to a 307 MPC-hours of exposures.

So, those of you familiar with how this works, 520 MPC-hours would be the limit for that quarter. So these people's potential exposures were bouncing up against the limit in that time period.

I will say that there is some indication that respiratory protection was used. But it's not clear how often and what type. I mean, it's

sort of spotty. We couldn't really determine. We weren't comfortable enough to say that the respiratory protection factor was effective for limiting these exposures. There is also some air sample results in the sample prep lab in 1990 that were pretty good.

There's some indication of onsite environmental samples taken in '85. They were discontinued in '94 after the land was remediated. These are of not much use for us in dose reconstructions, though.

However, during the site remediation effort that started around 1988, there are records of air monitoring, surface contamination, and worker bioassay that are pretty substantial. I think we have somewhere in the neighborhood of 600 air samples taken during this period, as well as a good indication of bioassay and why it was taken.

I'll talk a little bit about radon at the site. When you have uranium ores, you're always going to have a radon situation. And not much was taken in the earlier years, up until 1990, as you can see on this slide.

However, in 1985, and this is prior to the D&D operations, the after all the drums were gone, the source term, but prior to cleanup, they took 300 air samples in three different buildings which were thought to be the highest buildings where radon could have existed. And we have those values. They aren't very high at all. I think the highest four samples were around four picocuries per liter or something like that.

They were actually measured in working levels. I think they were reported about 0.02 working levels, which, at 50 percent equilibrium, would come out about four picocuries.

So you really don't have evidence of a lot of radon exposure, although we would certainly consider this to be occupationally derived, because it's ADC source term. But, again, they are not very high.

So as far as internal dose feasibility goes, the sample preparation processing of these ores and tailings and the reference materials, we just believe there's insufficient data and information to reconstruct internal dose from

February 1st, '75, through December 31st, '85.

We do believe that we can reconstruct exposures, internal exposures and external exposures, from January 1st, '86, through July 10th, 2010. And we'll talk a little bit about that, why we think we can do that.

As far as intakes uranium, thorium and their associated long-lived -- yeah, so we're saying we can't reconstruct the intakes from thorium and uranium in that time period. And here's the reasons listed why. But we do think we have methods that we can use to estimate radon, radon progeny, after '75 through 2010, for the reasons I just mentioned.

We have those 300 radon measurements prior to the remediation period after the drums were taken offsite. And they're fairly low, they're in the maximum four picocurie per liter range. So we would be using those values to reconstruct radon exposures at the facility.

As far as uranium, thorium and long-lived progeny after January 1st, '86, again, the most significant exposures were either from the

sample prep lab or from the site remediation and building demolition, which actually happened starting in around 1988.

So let's just talk about the sample prep lab first. I mentioned we have that one sample in 1986, the 300-and-something MPC-hours. They were clearly using the occupational limit to control exposures at that point. So we believe that if we assigned the maximum intake of 520 MPC-hours per quarter during this time period, it would sufficiently bound exposures to workers during this period.

I will say that there's only a couple instances where those calibration pads, as far as we know, were produced after 1980, in this time period that we're talking about.

Of course, the intakes from the site remediation and building demolition from '88 through '91, we have, as a I mentioned, a lot of air samples, 600 or so. And we have analyzed those data.

We would assign the highest dose to what we call the operator category based on the 93rd

percentile of those air samples. Other personnel would be assigned using a graded approach as listed in TBD-6000, which is 50 percent for the non-rad worker types and then ten percent for administrative people. That's a fairly standard prescription that we use out of TBD-6000.

Okay. After 1992, as I mentioned, DOE 5480.11 came in, subsequently followed by 10 CFR 835. There's a pretty good Technical Basis Document out there that talks about limiting exposures internally to 200 DAC-hours per year prior to taking airborne -- prior to requiring bioassay samples.

And intakes for non-rad workers will be bound and based on a 40 DAC-hour per year trigger, which is pretty standard these days. That would result in 100 millirem internal dose.

So this chart is our standard chart that summarizes what we think we can and cannot do at the facility. And you see, from February 1st, '75, through 12/31/1985, we say that dose reconstruction is not feasible for internal exposures, and that would include thorium and

uranium. Radon can be reconstructed, as well as all external doses. And after 1/1/86, we think we can reconstruct both internal and external exposures in all categories.

So, health endangerment, we believe that some workers may have accumulated chronic exposures through intakes of nuclides and direct exposures. We are specifying, then, that health may have been endangered for these workers.

And our recommendation is for the period March 23rd, 1943, through -- well, that's the last SEC period. So let's just skip to the proposed Class. That's what happens when cut and pasting occurs. Sorry about that. I'm surprised I didn't notice that.

So, at any rate, to summarize, our proposed Class here is all employees of the Department of Energy, its predecessor agencies, and contractors and subcontractors who worked at the Grand Junction Facilities site -- and this is correct -- February 1st, '75, through December 31st, 1985, for a number of work days aggregating at least 250 days, with the standard caveats after

that. And I think that concludes my presentation.

CHAIRMAN MELIUS: Thank you, Jim. That was almost what I -- before the last meeting I had actually sent around a letter for review where I had copied an old letter, and I had not only the wrong dates but the wrong decision, because I had changed it, but I hadn't saved it and I ended up sending out the old, saved letter that I was copying from. I got this real, you know, shock --

DR. NETON: What's sad is I looked at this thing at least six times. I must be getting old. That's all I can say.

CHAIRMAN MELIUS: Just one thing for the record. I had this question earlier to Jim. There is no Site Profile for this site.

DR. NETON: That's correct.

CHAIRMAN MELIUS: Right. And so there's no prior review by the Board or SC&A of any of this information, really, other than the earlier SEC. And I think that one we just accepted. So I don't think SC&A has ever looked at this site at all.

DR. NETON: They have not.

CHAIRMAN MELIUS: Yeah. Questions, Gen?

MEMBER ROESSLER: Jim, as you went through the whole sequence, it looked to me like there were a lot of changes in the mid-'80s in activities and monitoring and so on.

And as I look at it, I think you could have picked a date to end in '83, or it could have been '88. And I'm wondering what was the most significant thing that determined the December 1985 for the end date?

DR. NETON: Yeah. It really was that air sample that estimated the 300-and-whatever-it-was DAC-hour or MPC-hour exposures, where they really were consciously monitoring and taking air samples during the processing of some highly elevated ores.

And I didn't mention this, I don't think, but they also took fecal samples associated with that. So we have some ways of sort of doing a sanity check. Do the air samples really match up with what the fecal samples are trying to tell us? So they were doing the right things at that

point.

Originally, we were thinking about using that and saying, well, we can go back in time and use that to bound exposures. But we just didn't feel comfortable doing that. But from that point forward, it seems like there was more of a conscious effort to control, or at least monitor, these workers during that time period.

CHAIRMAN MELIUS: Henry?

MEMBER ANDERSON: Yeah, I just had a question about that 307. That was a single? I mean, to say, well, because the standard and the guideline at the time was 520, to use that as your bounding, if all you ever had is one sample at 307, that doesn't encourage me that they were closely tracking to keep their exposures below what the --

DR. NETON: Yeah, we could discuss that, I suppose. But I don't know that it was one single sample. It was for the quarter. So that was a cumulative, you know, MPC-hours. So it was sampling over the quarter. But it was one campaign. I'll grant you that.

However, as I mentioned, we only know

of about 27 of these campaigns in this ten-year window. It seems it took about a month for each of these reference things to be made. So, part of the issue is we don't know. I mean, in the case of 27, were there more that we don't know about? That sort of thing.

MEMBER ANDERSON: Are there any letters or documentation that they were paying close attention to the 520?

DR. NETON: Oh, yes. There's a memo associated with this, actually --

MEMBER ANDERSON: Okay, okay. I'm just looking for, you know, is that a reasonable thing to use, in the light of this? Or was it just serendipity that it was only 307?

DR. NETON: No, no. There was a memo. And remember, they did use some sort of respiratory protection. But it's somewhat vague, to me, as to what they used.

They had one type of respirator they were recommending at that point. Then they switched to another one. And, you know, we certainly don't have any indication of any kind of

a respirator fit program or that sort of thing.

And typically in our program, we don't have any of that information. We just assume it didn't happen. So, in all likelihood, the exposures are less than that 307. But it certainly, in our opinion, is the maximum.

CHAIRMAN MELIUS: Any Board Members on the phone have comments or questions?

MEMBER VALERIO: This is Loretta. I have a question.

CHAIRMAN MELIUS: Go ahead.

MEMBER VALERIO: It's on that same slide. And it was breaking up a little bit. I don't know if you were stepping away from the microphone. But I'm not clear on the air sample results that were reported for the sample prep lab in 1990. Are those sample results reported for that MPC-hour tracking that was done in 1986?

DR. NETON: No, no. The air samples that were taken in 1990, I don't exactly remember now what they -- I don't believe that they were the MPC-hour tracking.

By 1990, they were switching over to the

5480.11 implementation. But honestly, I can't tell you the nature of those samples off the top of my head. If Tom Tomes is on the phone and he knows, maybe he can chime in.

MR. TOMES: Yes. This is Tom Tomes. We don't have any indication they were MPC-hour tracking samples in 1990. But there was a -- we have a table of results that they were looking for, mostly thorium-230 was the isotope of concern. But they were not MPC-hour tracking results.

MEMBER VALERIO: Thank you.

CHAIRMAN MELIUS: Thanks, Tom. Dr. Ziemer?

MEMBER ZIEMER: I don't recall is you mentioned this in the original document or not, but in the Grand Junction case, unlike many other DOE facilities or AEC facilities, the operations office and the operational stuff seem to be sort of combined. But there clearly are administrative people on this site. Could you clarify the extent to which people have access to all the facilities?

DR. NETON: Yeah. That's a good point. I meant to include that in the presentation.

I don't think it's mentioned in the ER. But much like many other sites that we encounter, we're not aware of any controls that would prohibit anyone from entering these areas.

So we're not going to be able to exclude anybody, you know, from the Class. It's going to have to be all employees, just because we really don't know who had access to which areas or when. I meant to include that. Thank you.

CHAIRMAN MELIUS: Any other Board Members on the phone have questions?

MEMBER LEMEN: None for Lemen.

CHAIRMAN MELIUS: I would just have one comment to sort of follow-up to my earlier question to Jim.

Given that we have not reviewed this site at all, other than the original SEC, while I'm comfortable with their SEC recommendation, I think a little more due diligence on the follow-up period would be helpful.

I don't have any specific doubts, but I think there's enough uncertainty there that we ought to pay some attention to that. I don't think

it would necessarily take a lot of effort, but it should take some to make sure that, given some of the questions that have been asked and given some of the changes that have occurred at the site and so forth.

But that's just my sort of personal sense from when I looked at the report last week and wrote the letters.

MEMBER ANDERSON: Kind of focusing on the end point area.

CHAIRMAN MELIUS: The end point and sort of the methods. Since we haven't done a Site Profile review, or they haven't done a Site Profile and we haven't done a Site Profile review, again, not that it was necessary, but I think this is our one opportunity to sort of review the site other than the SEC.

MEMBER ANDERSON: I think we should send it to the 6000 group. Paul, I think they --

CHAIRMAN MELIUS: I had actually suggested a new Work Group. I wasn't going to burden --

MEMBER ANDERSON: This is going to pile

on Paul one more time, right?

CHAIRMAN MELIUS: He did kick me several times when I started mentioning a further Work Group review.

MEMBER BEACH: So, I agree with a Work Group for this. But can we still do the tasking today?

CHAIRMAN MELIUS: Yeah. No, I think there's no reason we can't do that. But first, let's go back to the -- my understanding, by the way, there is a petitioner, I'm not sure they are even -- they may or may not be on the line. But my understanding is that they don't wish to comment today. So, just that for the record. And Josh is indicating that's correct.

PARTICIPANT: I wish to make at least a brief comment.

CHAIRMAN MELIUS: No, sir. You're not a petitioner on this site.

PARTICIPANT: Okay. Oh, not on this site, I'm sorry.

CHAIRMAN MELIUS: Yeah. It's just the petitioner on this site. Those are the rules.

I'm sorry.

So, having said that, do I hear a suggested action from Board Members?

MEMBER ANDERSON: Sure. I would move that we accept and then create a Work Group to --

CHAIRMAN MELIUS: Why don't we do them separately?

MEMBER ANDERSON: Okay, fine.

CHAIRMAN MELIUS: Reading your intent, one would be to recommend the SEC and the second we'll move on and --

MEMBER ANDERSON: Yes, yes.

MEMBER BEACH: Jim, I'll second that.

CHAIRMAN MELIUS: Any further discussion or comment? Then if not, go ahead, Ted.

MR. KATZ: Dr. Anderson?

MEMBER ANDERSON: Yes.

MR. KATZ: Ms. Beach?

MEMBER BEACH: Yes.

MR. KATZ: Mr. Clawson?

MEMBER CLAWSON: Yes.

MR. KATZ: Dr. Field, I believe, had to leave. He hasn't returned, right? Dr. Field?

CHAIRMAN MELIUS: I think he's up in an airplane.

MR. KATZ: Okay, that's right. Dr. Kotelchuck?

MEMBER KOTELCHUCK: Yes.

MR. KATZ: Dr. Lemen?

MEMBER LEMEN: Yes.

MR. KATZ: Dr. Lockey?

MEMBER LOCKEY: Yes.

MR. KATZ: Dr. Melius?

CHAIRMAN MELIUS: Yes.

MR. KATZ: Ms. Munn?

MEMBER MUNN: Yes.

MR. KATZ: Dr. Poston?

MEMBER POSTON: Yes.

MR. KATZ: Dr. Richardson?

MEMBER RICHARDSON? Yes.

MR. KATZ: Dr. Roessler?

MEMBER ROESSLER: Yes.

MR. KATZ: Mr. Schofield?

MEMBER SCHOFIELD: Yes.

MR. KATZ: Ms. Valerio?

MEMBER VALERIO: Yes.

MR. KATZ: And Dr. Ziemer?

MEMBER ZIEMER: Yes.

MR. KATZ: And the motion passes, and I'll collect a vote from Dr. Field post-meeting.

CHAIRMAN MELIUS: The second part of that, Henry, if you want to continue with that now?

MEMBER ANDERSON: The second part was to form a Work Group and task SC&A to review the documentation that we have, specifically focusing on, you know, the appropriateness of the end of this period and the utility of the data and the monitoring. Not a full-blown, but a careful look.

MEMBER BEACH: I'll second that.

CHAIRMAN MELIUS: We have a motion and second. Any further discussion on that?

(No response.)

CHAIRMAN MELIUS: Okay. And then we can do, yeah, just a -- we'll do a voice vote here. So all in favor, say aye.

(Chorus of ayes.)

CHAIRMAN MELIUS: Opposed? Abstain? Good.

MEMBER ANDERSON: And we do have SC&A

allocation time to work on this?

CHAIRMAN MELIUS: Yeah. No, we've tasked them that as part of the motion.

MEMBER ANDERSON: Good, okay.

CHAIRMAN MELIUS: Okay, yeah, Work Group and task SC&A. So Ted will follow-up with SC&A and work that out.

In the meantime, I will send out an email to all the Board Members asking for volunteers for this Work Group, as well as the others we've talked about earlier.

So I don't believe we have any more Board work to do. I think we've completed our Board work period.

MEMBER ANDERSON: We missed the letter from yesterday --

CHAIRMAN MELIUS: Actually, we can do the letter, I can do that. And then, yeah, let me do that now. Let me first start with the Grand Junction letter.

So, the Advisory Board on Radiation and Worker Health, the Board, has evaluated Special Exposure Cohort, SEC, Petition 000175, concerning

workers of the Grand Junction Facility site in Grand Junction, Colorado, under the statutory requirements established by the Energy Employees Occupational Illness Compensation Program Act of 2000, incorporated into 42 CFR, Section 83.13.

The Board respectfully recommends that SEC status be accorded to "all employees of the Department of Energy, its predecessor agencies, its contractors and subcontractors who worked at the Grand Junction Facility site in Grand Junction, Colorado, during the period from February 1st, 1975, through December 31st, 1985, for a number of work days aggregating at least 250 work days occurring either solely under this employment or in combination with work days within the parameter established for one or more other Classes of employees included in the Special Exposure Cohort."

This recommendation is based on the following factors. Individuals employed at this facility in Grand Junction, Colorado, during the time period in question worked on research and production for materials used in the production of

nuclear weapons. The National Institute for Occupational Safety and Health, NIOSH, review of available monitoring data, as well as available process and source term information for this facility, found that NIOSH lacked the sufficient information necessary to complete the individual dose reconstructions with sufficient accuracy for internal radiological exposures to thorium, uranium and their progeny, to which these workers may have been subjected during the time period in question. The Board concurs with this determination.

NIOSH determined that health may have been endangered for employees at this facility during the time period in question. The Board also concurs with this determination.

Based on these considerations and discussion at the March 25th and 26th, 2015, Board meeting held in Richland, Washington, the Board recommends that this Class be added to the SEC.

Enclosed is the documentation from the Board meeting where this SEC Class was discussed. Documentation includes copies of the petition, the

NIOSH review thereof and related materials. If any of these items are unavailable at this time, they will follow shortly.

(Pause.)

CHAIRMAN MELIUS: While Ted passes this out, I'll start reading it into the record.

The Advisory Board on Radiation and Worker Health, the Board, has evaluated Special Exposure Cohort, SEC Petition 000226, concerning workers at the Hanford Site in Richland, Washington, under the statutory requirements established by the Energy Employees Occupational Illness Compensation Program Act of 2000, incorporated into the 42 CFR 83.13.

The Board respectfully recommends that SEC status be accorded to "all employees of the Department of Energy, contractors and subcontractors (excluding employees of the Hanford prime contractor during the specified time periods: Battelle Memorial Institute, January 1st, 1984, through December 31st, 1990; Rockwell Hanford Operations, January 1st, 1984, through June 28th, 1987; Boeing Computer Services,

Richland, January 1, 1984, through June 28th, 1987; UNC Nuclear Industries, January 1, 1984 through June 28th, 1987; Westinghouse Hanford Company, January 1st, l984 through December 31st, 1990; and Hanford Environmental Health Foundation, January 1st, 1984 through December 31st, 1990) who worked at the Hanford site in Richland, Washington, during the period from January 1st, 1984, through December 31st, 1990, for a number of work days aggregating at least 250 work days either solely under this employment or in combination with work days within the parameters established for one or more other Classes of employees included in the Special Exposure Cohort."

This recommendation is based on the following factors. Individuals employed at this facility in Richland, Washington, during the time period in question worked on research and production for materials used in the production of nuclear weapons.

The National Institute for Occupational Safety and Health, NIOSH, review of available monitoring data, as well as available

process and source term information for this facility, found that NIOSH lacked the sufficient information necessary to reconstruct internal radiological exposures and thus unable to complete individual dose reconstructions with sufficient accuracy for the Class of employees as described by the proposed Class Definition. The Board concurs with this determination.

NIOSH determined that health may have been endangered for the Class of employees as described by the proposed Class Definition. The Board also concurs with this determination.

Based on these considerations and discussion at the March 25th and 26th, 2015, Board meeting held in Richland, Washington, the Board recommends that this Class be added to the SEC.

Enclosed is the documentation from the Board meeting where this SEC Class was discussed. The documentation includes copies of the petition, the NIOSH review thereof and related materials. If any of these items are unavailable at this time, they will follow shortly.

And I would add, at the next Board

meeting we're going to have a quiz on that Class Definition to see if we can recall it from memory. And we'll include the NIOSH staff in that.

(Laughter.)

CHAIRMAN MELIUS: I was very happy when I was able to cut and paste that Definition. Because I know if I had tried to type it out I would have messed up.

So, I think we're all set with letters. And I think that completes our work session items. But we may have more later.

So we have another presentation at 1:30 on the Idaho site. And then we have our favorite presentation of the day, of each meeting. LaVon will give us the SEC update, status update, and so forth. And then we'll see if we have other tasks to do.

So we'll take a break now. We will reconvene promptly at 1:30. We do expect to have petitioners either on the line or here, I'm not sure which. I think they're on the line for the Idaho presentation.

So we would very much like to start

promptly. So make your post-lunch nap short. We'll have Ted call everybody's room if you're not here. Anyway, thank you. And we'll reconvene at 1:30.

(Whereupon, the above-entitled matter went off the record at 11:41 a.m. and resumed at 1:35 p.m.)

MR. KATZ: Good afternoon. I was about to get started again. Let me check on the line and see which Board Members I have with us.

(Roll call.)

CHAIRMAN MELIUS: Okay. We will start with our afternoon session. And we have two presentations left. The first one will be on the INL site. And as you all know, a long report. I've been kidding with Tim a little bit about the length of his presentation and so forth. But we will bear with him for a reasonable amount of time. We've worked that out and so forth.

And he told me he thought we weren't kidding and we were going to put him on a timer. But he checked through his PowerPoint before he got up there, so we're all set.

But, no, this is a very thorough report and one we're going to be working with for a while. And there are parts of it that are reserved in terms of decisions and so forth. So it's something that we'll be using.

And for those of you that did notice, there are two sets of presentations. One was his earlier planned one, and we're getting the slightly abbreviated version, 35 less. But we appreciate everybody's effort on this site. And go ahead, Tim.

DR. TAULBEE: Thank you, Dr. Melius, Members of the Board. The presentation today will be the Idaho National Laboratory Special Exposure Cohort Petition Evaluation Report.

And before I get started here, I want to recognize my ORAU evaluation team. There were four health physicists working with me on this. The lead health physicist was Mitch Findley, Mike Mahathy, Jason Davis, Brian Gleckler. And then we had a large data capture support team: Bill Connell, Jennifer Warner, Art Gutzman, Guy Babin and Sally O'Neil.

We conducted five data captures on-site from September through January of this year, as well as one in the Seattle Federal Records Center. So this was a very large effort. And the team did a fantastic job with this report. And I just have the privilege of presenting it to you today.

I'd also like to recognize the Department of Energy, the Idaho National Laboratory site. They did a phenomenal job of reviewing and clearing our documents, documents that we would select during data capture.

Since September, the data captures, they've cleared somewhere between 80,000 to 100,000 pages of information that my team captured. And they were able to get it to us so that we could evaluate it and then present this report to you.

In particular, I'd like to thank Craig Walker there at the site. He was the one who was kind of feeding everything there. And so I really want thank the site for that effort.

A little bit of an overview of this petition. The petitioner is an authorized rep for an energy employee. We received this petition

back in July of 2014. The petition qualified on September 16th.

We sent a notification to both the petitioner and the Advisory Board that we were going to be exceeding 180 days due to site complexity and the need for multiple data captures at multiple locations, again, Seattle as well as on-site.

We got the Evaluation Report here sent to the Board about two weeks ago, on March 12th. And then after the final ADC clearance was received from DOE, we sent it to the petitioner just one week ago. So this has been a really crunched timeline in order to meet this particular schedule.

The preliminary Class that was proposed by the petitioner was all employees who worked in any area of the Idaho National Laboratory from January 1st, 1949, through December 31st, 1970.

So the initial Class suggested by the petitioner does not include the full site history. It was just up through 1970. And the petitioner's basis was that, to their knowledge, there was no internal monitoring for plutonium, neptunium or

fission products.

And what we found when we were doing our qualification process, there is a lot of fission product bioassay for the site. But we did find that there's very limited plutonium and neptunium bioassay and monitoring. And so that was why we qualified this particular petition.

The current dose reconstruction for plutonium within the Site Profile and the TBD is to use mixed fission product bioassay and apply a ratio off of that, with the assumption that any plutonium exposures would be associated with mixed fission products, and so you could use this ratio to bound what the plutonium exposures were.

What we found during the evaluation is that's not necessarily the case. And so to jump to the end here, what we're actually recommending is a Class of workers for the Idaho National Laboratory, in particular the Chemical Processing Plant.

And so I'll read the first part of this proposed Class Definition, then I'll explain why or how we came to this conclusion.

Our proposed Class Definition is: All employees of the Department of Energy, its predecessor agencies and their contractors and subcontractors who worked at the Idaho National Laboratory in Scoville, Idaho, and were monitored for external radiation at the Idaho Chemical Processing Plant.

And for an example, at least one film badge or one TLD dosimeter from CPP between January 1st, 1963, and December 31st, 1974, for a number of work days aggregating at least 250 work days.

So what you will immediately notice is our initial evaluation period was '49 to '70, and we are starting the proposed Class in 1963 and extending past our initial evaluation period to December of 1974. And hopefully it will become clear as to why we did that by the end of the presentation.

One of the first things that we learned, much to our surprise, was how complex the Idaho National Laboratory site is. The original petition included both INL and ANL West. The energy employee who worked the majority of his

career at Argonne National Laboratory West, in particular the early 1960s through 1995.

So, what we found was that, due to the covered facility Definitions, we actually had to break this into two petitions, one for the Idaho National Laboratory and then one for Argonne National Laboratory West. And the reason was, again, due to these covered facility Definitions.

In 2005, the two sites were combined. So when you talk about Argonne National Laboratory West, to the current people at the site, there is no Argonne West. It's all one site, INL.

The petitioner was gracious enough to submit a new petition for Argonne West so that we could evaluate that one. We received that on December 4th.

The petition, the slide, it needs to be updated here that it's no longer in the qualification process. It has qualified, and we are beginning the evaluation. That was published in the Federal Register this week.

And, in fact, next week the evaluation team that I listed on that second slide there will

be headed back out to Idaho next week to begin the evaluation of Argonne National Laboratory West.

The current evaluation for SEC 219 is just the INL facilities. So, what am I referring to as the Idaho National Laboratory facilities? The boundary here, the black boundary, is the Idaho National Laboratory as it is today.

But within this site, traditionally, this little area here with EBR-II was considered Argonne National Laboratory West. However, in 1949, that area didn't exist. That site didn't come into existence until around 1957. And so this area down here was Argonne National Laboratory West back in the early years of 1952, being EBR-I, and ZPR and BORAX.

So what were actually evaluating in this petition are these blue boxes. This would be Test Area North, Test Reactor Area, CPP and miscellaneous reactor areas, Central Facilities and the burial grounds. So that's what this Evaluation Report is covering, is these facilities that we're considering Idaho National Laboratory.

This red dot here in the center is the

Naval Reactor Facility, which is not even covered under EEOICPA. So what you've got here is two covered facilities and one facility that's not covered, all within this boundary of Idaho National Laboratory. So that was why we had to break this out for the evaluation.

So the areas I'm going to talk about today are the six main areas that I just showed you on the map: the Chemical Processing Plant, Test Reactor Area, Test Area North, miscellaneous reactors, central facilities and burial grounds.

The bulk of the presentation I'm going to focus on the central or Chemical Processing Plant because that's where we're recommending a Class. And so a lot of the slides that got cut, from the 75 slides down to the 47 that we're at today, is due to other things within these other areas where we're not recommending a Class.

So, the Chemical Processing Plant, it's comprised of multiple buildings, but the main processing buildings would be the enriched uranium reprocessing facility, the analytical laboratories, there was a fuel storage building

where they received fuels from offsite before they were dissolved down and the uranium extracted. There's a remote analytical facility, there was a solvent burning building, as well as the calcination building.

Unlike Hanford and Savannah River, as far as storing waste from the chemical separations process, Idaho took that liquid waste and turned it into calcine. So they went through that whole process.

So I'm going to start here with the reprocessing facility of 601. The top floor is -- this is a diagram starting with, actually, the operating floor. It was a very modest building that was a process makeup area where they would store chemicals and add into some of the tanks. The operations corridors where the workers primarily worked as far as making sure fuels were being dissolved as they were going through the process and then manipulating different valves.

Around this outer ring from this first floor is what's called the sampling corridor. And this was where the operators, as well as physics

technicians and others, would go.

And there were sampling stations where they could monitor for each of the cells what was going on inside the tanks. They could extract chemicals, they could extract what the solution was. And they would send them to the analytical laboratories for analysis.

Below that is the service corridor where piping changes would be done to move materials between cells if they needed to modify something. And then the bottom was an access corridor.

All of these cells -- these are tall, vertical cells, roughly three stories -- the access to them was from the bottom. And that's where the access corridor was. And I will get into that a little bit more.

So, unlike the canyons of PUREX and Savannah River, where nobody went back into the canyons, they could go into these particular cells and do modifications. It was designed to do hands-on type of maintenance and reconfiguration, if you will.

So, the picture down here at the bottom

is a worker in the operating corridor. This happens to be L cell. It was the only cell that had a window to it. But you see a lot of valves and changes, things that they could do from that operating corridor. So that was the main job of the operations people there.

The general process of extracting uranium was to first dissolve the fuel. And then there was a first stage separation where the mixed fission products primarily went away. And you were left with a solution of uranium, some mixed fission products, plutonium, neptunium and other transuranic radionuclides.

Generally, after the second and third stages, the uranium was extracted. That was the product. The product here was not plutonium at the Chemical Processing Plant. It was just uranium, enriched uranium.

So, generally, the raffinates then were sent to the tank farms, recombined with the mixed fission products. It would go to the calciner then. And so from the Technical Basis Document standpoint of our dose reconstruction method, using

the mixed fission products to estimate the plutonium, it works quite well for the calciner and for the general process that was going on here.

Where it didn't work well is for the one campaign where they did separate plutonium and neptunium. That took place from 1965 to 1972. And so in talking a little bit about this campaign, in this case that raffinate that normally went out to the tanks was actually collected and stored in N cell.

It took about six years to reach the capacity that they had there of leftover capacity within N cell. They could have built more, but they actually wanted to just get rid of it. They weren't accumulating a lot of it, and so it wasn't a big product for the particular facility.

Through interviews with workers, some of the activities that were conducted during that six years was they would be sampling the neptunium and plutonium out of the tanks. With every different uranium-235 batch of fuel that was dissolved, they would then go, after the campaign was done, resample from those tanks and analyze what was the

concentration change of the neptunium and the plutonium.

They also did some chemical separations work there in the analytical chemistry laboratories in order to extract this. You've got people that would be going into cells to do maintenance where they would have this particular material.

And when they got ready to do the final extraction, they did some of these experiments. And we interviewed the chemist who did them. And he indicated it was a short duration project to him. You know, by 1972 they pretty much knew how to extract plutonium from uranium. The question, really, that he was trying to solve at the time was more of, what's the most efficient way for CPP to do that?

So, this campaign was conducted, the actual extraction of plutonium and neptunium, was conducted during a three week time period in June of 1972. The solution was pumped between various cells and eventually to the multi-curie cell where it was loaded into L-10 bottles, about 140 liters, so it took 14 bottles to fill up this solution of

neptunium, plutonium and uranium.

And what you can see here is the actual recovery of neptunium was about five kilograms. To put this into a little bit of perspective as to why they only did this once and didn't do it more --

(Technical difficulties.)

DR. TAULBEE: Sorry about that. From interviews with the workers when they did this recovery, one worker actually did the actual bottling of all of the solution, the 140 liters. But there were a lot of observers, and health physics was present, so it was kind of a big production at the time.

So that was one of the potentials for plutonium exposure there at CPP that didn't accompany mixed fission products, that we ran into. Another one that turns out to not be a significant exposure potential but is worthy of mentioning here was what was called the umpire qualification program. And we ran into this by looking at material transfers between different sites.

And the thing that really caught our eye was 13 bird cages of plutonium being shipped from

Hanford to CPP. And we are, like, where is this material going and what are they doing with it?

This was part of a round robin testing qualification process where they were getting differences between receiver and shipping laboratories. So they awarded a contract to CPP in May of 1965 to manage this program and qualify laboratories.

And so CPP and K-25 prepared uranium standards; Rocky Flats and Hanford prepared plutonium standards. And they were all sent to CPP. And they were sent out from there to different laboratories.

And the exposure potential appears to be minimal, because --

(Telephonic interference.)

MR. KATZ: Excuse me, Tim. Folks on the line, someone has not muted their phone, at least one person. Can you please mute your phone. Someone on the line? Is that me, an echo?

(Off-microphone comments.)

DR. TAULBEE: All right. And so we haven't uncovered any evidence that they analyzed

any of the plutonium coming from Rocky Flats or from Hanford. It was more of receiving these standards and sending them out, is what this appears to be.

But, of note, there were several people in that analytical laboratory that were monitored for plutonium exposure during this particular time period. Not many, but a few.

So, now, I hope I've established that there is a potential for exposure to plutonium or neptunium without associated mixed fission products associated at CPP.

And so I want to talk a little bit about what I'm going to call the degradation of radiological control. And what we found from the RAD surveys from the 1950s -- 1961 here as an example -- they had good control of contamination there within the processing building.

This particular slide here is showing, the note here in the center is less than RCG for beta, gamma and alpha, which would be less than the radiation control guideline. And the guideline at the time period was 20 dpm per 100 square centimeters, which is the current standard in 10 CFR

835 today.

So they were controlling contamination very well here in this time period, 1961 and earlier. There will be time periods where they would have a spill, and they would mop it up, clean it up, and we would see, again, back to completely clean areas.

And the reason that this was important is that they were not doing routine bioassay for plutonium, neptunium or any transuranics. They were doing it based upon incident-based issues, to where if an incident happened, then they would do follow-up bioassays. So we do see some bioassay, but it's really incident driven. And so they were relying on identifying these incidents.

But by 1963, there doesn't appear to be any severe contamination issues, but perhaps the beginning of a slow degradation. And what you'll see here is this small, little area here. And if you zoom in on your slides, you'll see that that says 60 dpm alpha.

So now we're about three times what the rad control guideline was, from 20 up to 60. And

a note there that they suggest cleaning this. So, again, there's times of it being clean and times where it was contaminated.

By 1965, we're beginning to see a spread of contamination in this access corridor. And what you'll see here now is, instead of a small area, you've got this whole area between the cells. And the alpha level down here is now 80 to almost 2,000 dpm per 100 square centimeters.

So now you're looking at four to 100 times that rad control guideline that was going on. And so this is just, you know, a short four years after that previous time period when everything was clean.

When you jump to 1970, you'll notice the whole area is contaminated. That SC means shoe cover area. The only area here in the entire corridor that was less than RCG is this small, little area off to the right. That's the only clean area within that entire corridor.

So we see this continual spread of contamination and it getting worse over time. So there was a slow degradation of the radiological

control.

And like I said, in general, if you've got good control and you're using incident-based bioassay that Jim was talking about earlier, you can identify the incidents, and you can do appropriate follow-up.

What ends up happening is, as you get continuous contamination, if you don't have a routine bioassay you lose the ability to identify those incidents and do proper follow-up bioassay.

And so what they've got is this noise level coming up of contamination control, and they didn't institute a routine bioassay monitoring program.

What this led to was, in November of 1972, there was a plutonium intake in the analytical laboratories. Contamination was found, rather severe contamination levels. And so they did follow-up bioassay among the workers. And those that were positive, they did further analysis to do isotopic to figure out the plutonium-238 to -239.

And what they found was one of the workers had a different ratio than the other workers. And

it didn't match the material that was actually there in the lab that was available for intake that the other workers inhaled. And so they started doing an investigation of what caused this. Where did this worker work? What caused this intake?

And they narrowed it down to that they concluded the intake occurred six months previously, in May of '72, in another part of the plant, in the X cell, during a cleanup activity that was going on in one of those other cells in another part of the building area.

So we went back and we looked at the survey logs in X cell in that time period. And what we found was the cell was severely contaminated with alpha, and it was cleaned up. "Cleaned up," I say, because after mopping there was still a few thousand dpm of alpha in the cell. So the background levels were so high there, they couldn't identify that an incident occurred and a worker was actually exposed.

And I am not doing that.

(Telephonic interference.)

DR. TAULBEE: Okay. So the site took

this particular incident rather seriously, that they knew they had a problem. They hired in some health physicists to come back and help them conduct the evaluation and see what they could do to improve radiation control in that area. Stu?

(Technical difficulties.)

DR. TAULBEE: Okay. So the site hired health physicists back, and then they began to evaluate and propose upgrades of the radiation contamination control for CPP.

This particular committee issued a report in October of 1974. So if you think about the timeline there, that incident happened in November of '72. By the time they got the analysis, you're looking at 1973.

(Technical difficulties.)

DR. TAULBEE: So this particular committee went through and evaluated the program at CPP and was to make recommendations to management to improve their radiation safety. And so I want to read a couple of the excerpts that were in that report from 1974.

One of them was the access corridor is

contaminated routinely to several thousand dpm per 100 square centimeters. That I showed you from the radiation surveys.

They also indicate here at the bottom, significant levels, greater than ten to the fifth dpm per 100 square centimeters of plutonium contamination, have been identified recently in a number of cells.

And so they begin to recognize that they have a plutonium contamination issue here that they didn't know about previously, that was getting out of control, effectively.

Other issues were that they were working with higher levels of radioactivity on open bench tops and in hoods where they should have been using more glove boxes, at least compared to other facilities.

And then, finally, they indicated that bioassay samples, both fecal and urine, are collected and analyzed presently only when an exposure incident is suspected.

So a routine bioassay program hadn't been instituted yet. They were still on that

incident-based monitoring. This is why they missed that one particular exposure, at least one anyway.

They were adding a routine bioassay program. It was being developed. And a draft of that program was being submitted to management at this time, in October of 1974.

So our Class recommendation for January of '63 through December of 1974 is because there is known alpha contamination in the analytical laboratories, the processing cells, that access corridor in the 1963 time period with very few workers being monitored for plutonium exposure, plutonium and transuranics. There is a potential for routine exposure to these transuranics during that campaign that was going on from '65 to '72 where workers would be pulling samples from those sample blisters around in the corridor.

You have, at the same time, this degradation of the radiation control program where before areas were clean and now they can't identify these particular incidents.

So the potential for exposure continued

past 1970. When we identified this particular deficiency, we started looking for what's a logical end date for now, at this standpoint. And so we went through the end of 1974, based upon the review committee's published report. Because prior to that, there didn't seem to be any recognition by management that they had a major issue that they were going to be dealing with. After that particular report, things began to change.

And so what we will do is, from our standpoint, we're very confident that nothing began to change before the end of 1974. That's why we've designated the Class now from January 1963 through December of 1974, with the intent of looking at the years beyond that and potentially expanding the Class through the 83.14 process.

But since we've identified this discrepancy or this issue in feasibility, we didn't want to hold up any potential claims while we tried to figure out a real end date for this potential exposure.

Somewhere between 1974 and the 1980s, operations began to improve. Now, whether that was

'75, '76, '78, '80, '85, I don't know. We only were evaluating through 1970, and then we were looking for a reasonable cut off for the Class to evaluate further under 83.14.

Some of the things that changed that will make this process more difficult, not as straightforward, is that after 1974 we begin to see more routine bioassay.

At the same time, there is significant effort to decontaminate facilities. And we heard about that through the interviews that were conducted this past summer and in November where there was concentrated efforts to clean up the buildings and get the contamination back under control.

So it's not going to be a very quick, very easy evaluation to find a good end date for this. So, that covers the Chemical Processing Plants. Now, briefly I'm to try and go through the remainder of the areas.

Test Reactor Area, you've got three main reactors: the material test reactor, engineering test reactor and advanced test reactor. They

operated from May of '52 through present. ATR is still running. But the main goal of these, they were all materials test reactors that were operating at various power levels of increasing intensity so that you have a higher neutron flux amongst those reactors.

Other facilities within the Test Reactor Area that were of significant was the neutron chopper. And for nuclear engineers, this is where a lot of the neutron cross-section data came from. There was a beam coming off of the side of MTR where they would do cross-sectional measurements for reactions.

There's a gamma spectroscopy laboratory that was operating next to MTR. And those of us who are health physicists, in all of our initial radiation measurements laboratories, we went through looking at spectroscopy. We all used Heath's simulation spectroscopy catalogue. That's where it was developed, right next to MTR.

And then you've got chemistry labs that did some exotic radionuclides. There was a gamma building for cobalt-60 irradiations. And they had

an alpha hot cell which is a cave. And that started operating around 1960.

Over 200 exotic radionuclides have been identified as being produced at MTR and ETR. Pretty much anything that they could irradiate, they irradiated. The vast majority are beta-gamma emitters. There were some actinides produced and were separated in the alpha laboratories.

This particular picture is a chemist that's working there at the alpha cave. You can see its remote manipulator arms. It's not a hands-on through a glove box type of operation.

So our recommendation for TRA is that there's minimal potential for internal alpha exposure. There were a few workers exposed to alpha materials. However, we do have plutonium and other actinide bioassay available for these few workers that we've identified.

So from the reports and other survey records, we know some of the chemists that were working in there. We went and pulled their records, looked at it, and we see some plutonium and other actinide bioassay. So we feel those workers

are covered, and we could reconstruct their dose.

Internal exposures throughout the Test Reactor Area were generally controlled through smear surveys and continuous air sampling. The air samples accounted for both alpha and beta. And so they were trying to keep tight control and keep alpha at bay, such that they didn't see any alpha contamination at all throughout the facility.

There were times when there were incidents that did occur from that standpoint, and there was significant bioassay follow-up associated with those incidents.

Mixed fission products, we believe, can be reconstructed. However, a coworker model is needed for the post-1967 time period. And let me try and explain why we believe this.

If you look at the whole body counting procedure in 1963, and this is very difficult to see, and I apologize for that, but it's an exposure potential based sampling scheme.

And so what you'll see is welders, and fitters, as well as operators, in the far left column, are monitored four times a year for whole

body count in 1963, whereas machinists in the machine shop were only monitored once per year. And clerks and secretaries were not monitored at all.

So it's clearly those that had a higher potential for exposure were being monitored from the whole body count standpoint up until 1967. At that point, it changed. The sampling methodology went from exposure-based potential to one quarter of the workforce per year.

So if a supervisor was to take his number of workers, select one fourth of them, send them for a whole body counting, the next year a different quarter, with the goal of a complete monitoring over a four year period for mixed fission products.

So this is why we need a coworker model, because if you have somebody that comes in and only works two years, and they weren't monitored at any time during that, we've got to rely upon the coworker model test to make their dose.

They were more using this to make sure that they were below the maximum permissible type of limits at the time, is what they were doing.

So now I'll jump up to Test Area North which is about 30 miles north of the rest of the facility. And just as a little bit of a reference here, actually Mound and Fernald are about the same distance as Test Area North and the burial grounds here. So these facilities are really not that close together.

MR. KATZ: Excuse me. Someone's listening, but they're not, they haven't muted their phone. If you press *6, that'll mute your phone.

(Off microphone discussion.)

MR. KATZ: Well, there is no comment right now. So please, whoever is on the phone and is talking, mute your phone. Press *6. Thank you.

DR. TAULBEE: Okay. With Test Area North, you've got the initial engine tests which were run by GE. These are the aircraft nuclear engines that were tested there in the 1950s. You've got Test Area North hot shop. You've got an actuator building, a low power test facility and a shield test facility.

The pictures here, the one to the right

is actually the initial engine test. The reactor was pulled into that building, hooked up to the exhaust so that the exhaust came out a stack.

The workers were actually shielded here inside a bunker. And the lower picture is the workers looking through a periscope to look at the operations that were going on. So the reactor wasn't shielded, the workers were shielded, kind of the inverse of what you typically see at a reactor.

The left hand picture happens to be the Test Area North hot shop where they could roll these large aircraft engines in and do maintenance on them remotely.

The key with Test Area North is that fission products and actinides were not separated, and they always appear to be together from the radiological standpoint. So that methodology in the TBD should be applicable for this particular area because of the ratio.

And to illustrate this Test Area North hot cell, this is a survey of it. And if you look at some of these survey results, if you can zoom in, and looking at them, what you'll see is, like, 14

counts per minute alpha and 800 counts per minute beta. So you can definitely see that these two are tied together from an exposure standpoint.

So the one exception here appears to be the actuator building which was built in 1956 for testing prototype control mechanisms. So think of a building to just simply test control rod drives going in and out of the aircraft engine.

Sometime after 1961, it was renamed to the Test Area North Fuel Handling Facility. So between '61 and '63, they handled some fuel in that particular building. Because by '63, during the turnover from GE to Phillips Petroleum, it was found to be contaminated with uranium.

And so we're reserving judgement on this facility, because here we have an alpha exposure of uranium not associated with mixed fission products. And we don't really understand the full range of this exposure or when this facility was decontaminated and returned to clean.

We do know in later years that this building was not contaminated with alpha. So this is why we're reserving the judgement on this

particular area.

So our recommendation for Test Area North is no appreciable exposure to actinides without mixed fission products. The actinide exposures can be bounded using the ratio methodology.

But given the decrease in urinalysis and whole body counting from '67 to 1970 and beyond, by the way, until they got more of a routine program reestablished, we recommend the development of a coworker model to estimate the mixed fission product doses to these workers.

We'll prepare an addendum to the Evaluation Report for the actuator building from the '61 through '70 time period once we can get to evaluate that further.

Miscellaneous reactor areas, this will be the special power excursion reactor tests, auxiliary reactor area, which consisted of ARA-1 hot cell. There was not a reactor there. It was just a hot cell.

ARA-2 is stationery low power where SL-1, as most people have heard about, it operated from '58 until January of 1961 when it had a catastrophic

accident. ARA-3 was the gas cooled reactor experiment. ARA-4 is mobile low power unit, ML-1. And then you have the organic moderated reactor experiment which was the predecessor to the Piqua Reactor.

Special power excursion tests were to investigate the safety of water cooled reactors. What's important here is that you have a central control point in the center here. And then you've got SPERT-1, 2, 3, 4, all about a half mile or so away from where the central control room was.

Personnel were evacuated from each of the areas during the operation. There were continuous air monitors on the facility exhaust for each of these. And health physics was involved during the re-entry during this.

So we believe dose reconstruction in SPERT is feasible since the exposure is limited to mixed fission products, and the workers were monitored. ARA-2 through 4, dose reconstruction we think is feasible because, again, it is limited to mixed fission products. OMRE is the same thing.

ARA-1 is the exception here. Dose

reconstruction is feasible with the possible exception of 1968 for protactinium-233 work, and we're reserving it.

And the issue here is we ran into some facility modifications that were taking place in 1968 to handle thorium fuels coming in and being dissolved down to extract the protactinium-233.

And so we feel we need to evaluate that one further because of what was done with the thorium, the waste, as well as the protactinium-233 at that hot cell. We need to investigate further.

Central facilities, the main potential for exposure there would be the laundry. The clothing coming in from all the facilities was segregated by type and contamination level. It was cleaned, and dried and monitored again, and each type of clothing had a permissible contamination level.

Any item over the limit was re-washed. If it still wasn't clean, they would let it decay for 30 to 90 days. If it's still not good, they'd send it back to the site for disposal.

The laundry had a radiation detector over

the receiving room door and a CAM in the working area. So any large, highly radioactive clothing coming in would be caught by this radiation detector over the door. And if either of those two alarms sounded, the room was evacuated.

And let me wrap up here with the burial ground. And for those who've been out to Idaho National Laboratory and have been to the Radioactive Waste Management Complex, the burial ground in the first 20 years is nothing like what it is today, absolutely nothing.

The initial burials were dig a trench, put waste in it, cover the trench up, dig another trench, put waste in it, cover the trench up. So that was the general process.

And the same thing with the Rocky Flats waste. The waste would come in, they would stack the barrels or, in this case in 1957, the first bulk items were arrived in large glove boxes. They were put into pits. And then once the pits were full, they were covered up.

In 1958, the drums were actually stacked by hand, and we've got photographs. If you look

through the extended slide version, you'll see that, where they're actually rolling them out and stacking them.

In 1961, they're using a crane to move them around and stack them neatly. 1963 they decided to stop stacking them and start dumping them. And so their method of dumping was a land and sea container that you back up to a pit, grab a hold of the front of it with a crane and dump it out the back into a pit.

So that continued on through 1968 and l969. But at the end of 1969 was the first retrieval of plutonium drums from Rocky Flats. And so things began to change at that point. And I'll get to that more here in a minute.

The last bullet there of 1970 burial PU waste was discontinued. That just means they weren't putting it into the ground. They were still receiving it and putting it on storage pads.

At the burial ground in these early years, there was restricted access. There was a locked gate that people could not go in through without health physics accompanying them.

There's a 1959 memo that indicates workers were required to wear a film badge going into the area issued out of Central Facilities. They had to wear anti-contamination clothing, and they had to work under a safe work permit.

Workers were monitored by health physics before leaving. And health physics was always present during these dumpings. Air sampling during the drum dumping was conducted during the dumping of Rocky Flats waste. And then there were radiological surveys of the burial ground.

So I want to go back to this drum retrieval in 1969 to explain a little bit of why we're reserving this particular operation. And what you can see here from this photo is there are no buildings here at this time period.

The first buildings for RWMC were built in the early 1970s. So this was really an open field that was covered up with dirt. But here they went to extract some drums. So they had to dig down, and then people get down in the holes in order to pull them out. That's a very different exposure potential compared to the previous operations.

And so now you're extracting drums that have been rusting for 15 years or likely breached in some cases. You've got contaminated dirt. This is very different than taking a drum off of a truck that's been surveyed and cleaned on the outside and stacking it. And so as a result, we feel we need to evaluate this potential exposure further.

In the 1970s, the first buildings were erected, and then you begin to have continuous worker presence there at the Radioactive Waste Management Complex or the burial ground.

So we do believe doses can be reconstructed in the period '53 through '68. We're uncertain about the '69 drum retrieval and forward from that standpoint.

We will prepare an addendum to the Evaluation Report when we get into looking more closely at these exposures in '69 and '70. And if we end up recommending a Class during the addendum, then we will certainly evaluate further the post-1970 years and may expand the Class through an 83.14 type of process.

So this is the summary of the feasibility. The dark green here is the areas where we feel we can reconstruct doses. The light green off the right, '67 to '70, is all governed based upon that coworker modeling and that decreased sampling from exposure potential to one quarter of the work force.

The red is CPP, where we're recommending a Class. The yellow here is that actuator building in Test Area North with the uranium fuel handling that was going on. ARA, that one block of yellow, is that protactinium work. And then the burial grounds are '69 and '70.

This is just another version of that same feasibility summary in the form that you all are familiar with.

And so for SEC Petition 219, we do feel that some workers of the Class may have accumulated chronic exposure through intakes of radionuclides at CPP.

Therefore we're specifying that their health may have been endangered, and those workers monitored at CPP who were employed at least a number of work days aggregating 250 should be included in

the Class.

What about employees that worked at CPP and not included in the SEC? There is some plutonium bioassay for some of the lab workers but not many of them, just a handful. If we have bioassay data, we will use that data to try and reconstruct their doses if they have a non-SEC cancer.

And again, our proposed Class is all employees of the Department of Energy, its predecessors agencies, and their contractors and subcontractors who worked at Idaho National Laboratory in Scoville, Idaho, and were monitored for external radiation at the Idaho Chemical Processing Plant, CPP.

As an example, at least one film badge or TLD dosimeter from CPP between January 1, 1963 and December 31st, 1974 for a number of work days aggregating at least 250 work days occurring either solely under this employment or in combination with work days within the parameters established for one or other Classes of employees in the SEC.

And with that, thank you very much. And

I'll be happy to answer any questions.

CHAIRMAN MELIUS: All right. Despite our best attempts, that made it through, so good. Thank you, Tim. You bet.

So next up we'll have questions from the Board Members. And then we will give, I believe, the opportunity for the, I believe the petitioners on the line would like to make some comments. But first we need to hear any questions from the Board. And Paul, you're up first.

MEMBER ZIEMER: The requirement of one external dosimeter is a little unusual. Why do we require any external monitoring?

DR. TAULBEE: Idaho National Laboratory is unique from the rest of the DOE complex, in that to go into any of the areas you had to monitored. You had to wear a dosimeter. And so it was governed to the standpoint to where if you worked at CPP and you went down to the Test Reactor Area, when you left CPP you left your badge there. And you got a new badge down at TRA.

And then if you went from there up to Test Area North, you got another badge. And so we have

this issue of multiple badging in the same cycle, if you will. So from the missed dose standpoint when we do dose reconstruction, we see multiple dosimeters for a single person that did bounce around.

You couldn't have done work, especially in those cells or the analytical laboratories without being monitored. Because you couldn't get in through the gate.

The reason that we require one badge is that, in the 1960s when they switched to TLDs, some workers, secretaries in particular, didn't wear monitors with a dosimeter, but they were on an annual exchange frequency.

So they could have one dosimeter and have been in that area for the entire year. There wasn't anything to really restrict them from going into CPP or into the processing building, 601. And so that is why we have this unique language.

MEMBER ZIEMER: Well, could I follow-up on that? And I sort of understand the rationale, because basically it confirms that they worked there in a sense.

DR. TAULBEE: Yes.

MEMBER ZIEMER: Would there never have been anyone that worked there that was given, for example, only a pocket dosimeter?

DR. TAULBEE: No. From our interviews with workers, it's the one thing that's been very consistent, is that every worker going into the area said that they were monitored by wearing a film badge dosimeter.

CHAIRMAN MELIUS: And how many interviews was that?

DR. TAULBEE: About 60.

MEMBER SCHOFIELD: And how many thousand?

CHAIRMAN MELIUS: Please, if you hold your comments, you'll have a chance in a little while. Oh, I didn't recognize the voice, Phil. Other Board Members here? Yes, Dave?

MEMBER KOTELCHUCK: Dave Kotelchuck. Might it be, you gave convincing evidence why one film badge or dosimeter was absolutely required. Might it not be safe to say that you have to have at least one a TLD or otherwise be able to establish

the presence in the plant? That's really all that it's there for, is to establish that they're in the plant.

Now, that would of course be a violation of the rules and should not have happened. But that doesn't mean it didn't happen.

And that allows, if the person can establish, somehow, through records, that they were in there, they would be compensated. Because they satisfy the criterion that they worked in the plant for 250 days. Might it not be wise to do that?

DR. TAULBEE: I don't disagree with that, from that standpoint. You do run into one particular issue. And that was when they were doing some additional buildings that were not part of that reprocessing facility, they would actually move the fence line in and put dosimeters on the outside of that fence line, so the construction would not have been monitored.

But those construction workers, if they went inside the fence, would have to be monitored.

So you could have some people that were established at CPP doing this new construction work

that were not going into the process cells or not going down into that access corridor and not in these analytical laboratories. So they wouldn't have been exposed.

So that's the only downside I can see with your particular recommendation there. But it is another way that this could be done, I think. I don't think it would be that difficult.

With the particular dosimetry reports, they were issued by area. So in talking with the Department of Energy and the Department of Labor, this seems to be the easiest way for us to identify workers, is to look at these area dosimetry reports which will have construction trades on there, Kaiser, as well as Fluor, and the operating contractors and then other visitors coming in as well. But even visitors though would have to establish 250 days of employment type of scenario.

So really the best way, in our opinion, was to use these dosimeters, to use that gatekeeping that was done by the health physics, actually the security guards were the ones who were checking it.

Health physics wasn't continuously there

at the gate. But if somebody needed to go in, didn't have a dosimeter on the board, then they had to go get a dosimeter.

CHAIRMAN MELIUS: Henry?

MEMBER ANDERSON: I mean, I can see that everybody had to have it. Have you done some quality control to see, yes, they have it? Were they all measured? I mean, there's not a single page of records that was lost? Or, you know, was there a log of people going in and out? I mean, how certain are you that they got a badge and every badge that was assigned actually was recorded and read?

DR. TAULBEE: We asked the Department of Energy, their records, as to how complete they were. And they believe they're complete all the way through. There's 3,000 pages of these dosimeter records, and there's about 25 people per page on this. So this is about 80,000 dosimeter readings during this particular time period. So we feel it's pretty complete.

MEMBER ANDERSON: But pretty complete isn't enough. I mean, if you have any --

DR. TAULBEE: I do not have any sense that

is not complete, let me put it that way.

CHAIRMAN MELIUS: But you've not done any evaluation of that. That's the question.

DR. TAULBEE: No, we have not.

MEMBER ANDERSON: I mean, from that standpoint --

(Simultaneous speaking.)

CHAIRMAN MELIUS: I mean, I think you understand our --

DR. TAULBEE: We asked the Department of Energy if all visitors were included on those reports, and the answer was yes.

CHAIRMAN MELIUS: But that's a statement, not any sort of evaluation of that. And, you know, I think you understand why we're skeptical. We've, you know, revised previous SEC Class Definitions, we went through what we did at Savannah River where we had pretty good evidence, at least on the construction workers, that they didn't fit the Definition there. Because records were incomplete. And we will --

DR. TAULBEE: I would --

CHAIRMAN MELIUS: Let me finish, Tim.

And we will, you know, we are extremely skeptical, at least I am, of any statement that's based on what was policy without very much evidence that that is.

And it is, you know, difficult to prove that records are perfect. But I think some evaluation of that would be much more convincing than just a policy, given our experience at many other DOE sites.

And maybe this site was different. And I hope it is, for the sake of the workers and others involved. But at the same time, we want to be careful on that.

DR. TAULBEE: I understand. I would like to just clarify one particular point. You brought up Savannah River for example. We have since gone back and looked at some that.

And during the time period where you have these electronic records and we issued a report about this, that we did not see any of the discrepancies in the post-1960 time period there at Savannah River.

All of the issues that were identified by SC&A were prior to 1960. And so this Class that

we're recommending is in the mid-1960s through '72 where you've got better record-keeping than what was conducted that caused some of the issues there at Savannah River.

So it's just a clarification. But I understand your hesitance, and I understand the need to do this type of verification. And we're certainly willing to do so.

CHAIRMAN MELIUS: Henry, then Wanda.

MEMBER ANDERSON: Follow-up. I mean, another way to look at this would be how many of the claims that people filed said, you know, a determination was made, well, you didn't work there because you didn't have a badge.

I mean, do we know that all of, I mean, the practical reality, yes, you could have missed some. But if a person didn't develop disease and file a claim, you know, then it, kind of, no harm done sort of.

I shouldn't say no harm done, but no claim. So do you have any sense of any of those that have applied where they, you know, denied or told no because they wouldn't have met this criteria?

DR. TAULBEE: I do not have a sense from that standpoint as to how many of those would be --

MEMBER RICHARDSON: This is David Richardson. Can I follow-up on that?

DR. TAULBEE: Sure.

CHAIRMAN MELIUS: Yes, go ahead, Dave.

MEMBER RICHARDSON: In Table 42 in the report which has 1,000 claims that match the Definition of the Class that was being evaluated, of which approximately 71 percent of the claims had external dosimetry records obtained for the years in the evaluated Class Definition, I mean, it's not directly addressing Henry's point.

But it seems to me this appears, because there aren't complete dosimetry records for all the people who were filing claims, certainly.

DR. TAULBEE: Well, I guess I would disagree a little bit there, David, in that you've got the Central Facilities area which had a large number of people that were not required to be monitored. So you have all of your maintenance shops and that type of operation going on at Central Facilities.

What we're talking about is going into CPP and that those people from, like I said, all of the interviews we've conducted, they were required to be monitored.

So how to tease out that 30 percent that Dr. Richardson was just pointing from whether they should have been monitored or not is not trivial.

CHAIRMAN MELIUS: Wanda, then David, David Kotelchuck, I should --

MEMBER MUNN: I hesitate to ask this question, because I don't know the answer to it. And I've been told you should never ask a question unless you know the answer.

CHAIRMAN MELIUS: That's lawyers.

MEMBER MUNN: Yes. I should have gone to law school, right? The question that I have is whether we have any indication from any source other than this Board that there might be people who are being overlooked in this way?

DR. TAULBEE: I do not have any indication other than the discussions here. But the discussions here make sense in our experience at other sites. And it is potentially something we

should look at from that standpoint.

But please keep in mind that Idaho was different from the rest of the sites, that they had multiple badging for each area that you went into. Other sites you would wear your dosimeter into a different area. Here it was a different badge there at CPP.

CHAIRMAN MELIUS: We're not saying it's impossible. We're just saying --

MEMBER MUNN: And one comment having absolutely nothing to do with this, thank you so much for the completeness of your presentation and especially for the horizontal colored bar graph which finally made sense to me about where things were and which people were monitored and which were not. That was most helpful. Thank you.

DR. TAULBEE: You're welcome.

CHAIRMAN MELIUS: David Kotelchuck, I think you're next.

MEMBER KOTELCHUCK: Yes. My thought was if we simply -- I was going to suggest that, I was initially going to suggest that we simply delete, e.g., at least one film badge or TLD dosimeter.

Because that's an operational thing for us to decide.

That doesn't have to be in the wording of who was in the Class. But the problem is it does say they have to be monitored for external radiation.

We could, let me just see, if we talk about who worked in the Chemical Processing Plant at the Idaho National Laboratory in Scoville, and it leaves it to the Department to decide if that happened. It doesn't force us into saying you must have a badge or not, just in case. Would that take care of it?

DR. TAULBEE: I would have to defer to Stu Hinnefeld and our OGC. Because this particular Definition was vetted through the Department of Labor. And so to change that Definition as to whether they could administer the Class that way, I don't know.

MEMBER KOTELCHUCK: Yes.

MR. HINNEFELD: Yes. The question, this is Stu Hinnefeld, the question comes down to have we written a Class Definition that can be

administered?

And so before we come, you know, before we present the evaluation, you know, recommendations, we provide our Class Definition to the Department of Labor. And oftentimes the Department of Energy assists in those discussions. And they determine that, yes, with this Class Definition, we can administer it.

If we're going to change the Definition, it might be in our best interest to run that Definition past the Department of Labor to see if they can administer the Class.

And typically, the Department of Labor has told us that the Class Definition is what they rely on to administer the Class. They're not really particularly interested in other communications which wouldn't have the same official weight as a Class Definition to sort of work out the details of determining the Class.

MEMBER KOTELCHUCK: Thank you. I see what the complication is.

CHAIRMAN MELIUS: Do Board Members on the phone have questions or comments?

MEMBER SCHOFIELD: Yes. This is Phil. I've got some questions here. One of the big ones is it concerns me that, if you have people that don't have security clearances at times or if you're bringing in people from another area who typically wouldn't work in the plant but because of their expertise, whether it's some form of chemistry or whether it's a craftsperson, they could be brought in and out of there under an escort. And maybe only the escort is given a badge? I mean, has this been vetted or not?

DR. TAULBEE: All indications that we have at this time, Phil, is that each individual person was given a badge to go into that area. So a visiting person, a visiting chemist or something to help out with a particular process would be given a badge to do that.

And again, from the 60 or so interviews that we've conducted in June and July, or June and November, we asked every single person whether they were required and whether they wore their film badge going into the area. And all of them indicated yes, they had to wear a film badge dosimeter to go into

the area.

MEMBER SCHOFIELD: What about people working on the perimeter of the facility? I know we know they've had spills, they've had contamination that has gotten outside of the building. I'm curious about those people who worked on the perimeter who didn't necessarily go in the building, but they still have that potential.

DR. TAULBEE: Well, the potential for exposure is really in the process cells in the 601 Building where those separations were conducted down in the access corridor, the process cells, the analytical laboratories.

Around the perimeter, the alpha transuranic radionuclides are associated with the mixed fission products that would be coming from the calcine operations and the others that were going on.

CHAIRMAN MELIUS: Any other Board Members on the phone have questions or comments?

MEMBER VALERIO: This is Loretta. I have a couple of questions.

CHAIRMAN MELIUS: Go ahead.

MEMBER VALERIO: My questions have to do with the burial ground. It states that the health physics was always present during dumping. Was this prior to that 1959 memo as well? Or was this as a result of that memo, that the health physics were there?

DR. TAULBEE: No. Our indication is that they were there from the very beginning to always be present while dumping was going on. We have some photographs of some of the dumping that was going on in, like, 1953 or something like that -- I believe it's there in the extended slides -- that shows a health physicist standing beside the truck measuring radiation levels during the dumping process.

So our indication is that actually on gate entrance it clearly says to gain access you had to contact health physics at the central facilities in order to get in.

MEMBER VALERIO: Okay. So then that brings me to my second question. If they were required to wear a film badge that was to monitor for external radiation, what about internal

radiation when they were stocking these by hand?

DR. TAULBEE: The procedure was for the drums to be surveyed. And we have some photographs of health physicists or health physics technicians, rad techs, climbing into the trucks and taking surveys of the drums before they were coming out to make sure there weren't anything leaking or any problems at that standpoint.

After they were done removing the drums, the trucks were also surveyed. And in those particular instances, there were a few occasions where the trucks were found to be contaminated. They were sent to CPP for cleaning. And health physics was doing additional monitoring on those particular workers that were involved during that process.

Typically, we're looking at between three to four workers during one of these unloading type of operations, I guess, maybe as much as five.

MEMBER VALERIO: Okay. All right, thank you.

CHAIRMAN MELIUS: Anybody else on the phone, Board, any other Board Members on the phone

have questions?

MEMBER LEMEN: No. All of my questions have been answered, thank you.

MEMBER SCHOFIELD: I have another question on that. When the RCTs were checking things, were those smear samples? Did they just take random smear samples, or were they using their wands on their Pee-Wees, or exactly how were they sampling for contamination?

DR. TAULBEE: Based upon what we can see, it looks like they were monitoring for contamination based upon hand held instrumentation and that if they began to see something, then they might take a smear. I believe there are some smear data for the burial grounds, but it's pretty limited.

CHAIRMAN MELIUS: Okay. Jim Lockey, did you still have a question?

MEMBER LOCKEY: I was just curious. You know, I asked you, Jim, this question going forward. Because NIOSH has other work to do on this site and the other sites. If they find that, in fact, where people who worked at CPP who may not have been

badged, can this be modified going forward in the future?

CHAIRMAN MELIUS: We've done that in the past, I think. So the question is sort of the timing involved and the effort to go up to the Secretary, get this approved and then, you know, to come back, you know, in a short period of time, it doesn't sort of make sense. If it was something that was going to take two or three years or something --

MEMBER LOCKEY: That's my concern.

CHAIRMAN MELIUS: Yes. Then I think we do. And I'm not sure we can judge on that time period right now.

MEMBER LOCKEY: And that's what I'm concerned about. This is a complex process, and site. And this could take more than months. And it's a balancing act here.

CHAIRMAN MELIUS: Yes. Just, again, hypothetically, if we decide not to take action today doesn't mean we couldn't take action on our Board call or the next meeting. I mean, nothing, you know --

MEMBER LOCKEY: But I don't want it to go out three years --

CHAIRMAN MELIUS: No, no. I don't think any of us would want to do that. But again, there's sort of due diligence. And, you know, again, the Class Definition is sort of the end of the process.

And in fairness to everybody involved, both us, and NIOSH and so forth, this is, you know, they really haven't had time to do a lot of the kind of vetting and the kind of questions we're asking them to do. And I think we have to decide what is it going to take to do that and how long, what's appropriate. And we have a Work Group formed and so forth, again, sort of the next step. David?

MEMBER KOTELCHUCK: After the discussion of how, Stu's discussion and the time that it will take, I don't want the perfect to be the enemy of the good.

And therefore, I'm going to support the Class as it stands so that the people who worked in the site, were badged, will be able to get their compensation and hope that somehow we could communicate to DOL that the people who are turned

down, if they feel that this missed them inadvertently, then we can make a change in the future.

But for the moment, let's get it, I say let's get it done. This is a good resolution to help lots of people, hopefully almost everybody.

CHAIRMAN MELIUS: Paul? And after Paul, I want to turn it back to the, we need to give the petitioners an opportunity to talk.

MEMBER ZIEMER: I think on this issue, there's two possibilities. One might be a little -- I have a little angst about one is, was everyone truly badged? That's one part of it.

The other is if they were all truly badged, is some of the information lost? Two different questions. But I'm willing to go ahead and say, yes, everyone truly was badged.

And if we have a claimant for whom there is not a badge, I think the claimant would be in a position of saying, yes, but I had a badge. And then it would be a matter of establishing that either the information was lost or some other thing occurred.

But I don't think the Definition, as it stands, will necessarily exclude someone if truly everyone had a badge. Because the claimant would say, yes, I had a badge, if truly that was the case.

But I suppose what we're looking for at some point, if we're going to have follow-up, is to demonstrate, in fact, from the actual data that there is this correspondence. You don't find any cases where people didn't have a badge that were in CPP.

DR. TAULBEE: If I could add also to this document, to follow on with what Dr. Kotelchuck was saying, in that if we were to go and evaluate this further in order to try and satisfy some of the questions that you've been raising here, keep in mind the evaluation team is the same team that's currently working on the Argonne West SEC petition which we're under timelines to try and produce and the petitioner himself actually worked at the Argonne National Laboratory during the bulk of this time period that we're talking about currently.

CHAIRMAN MELIUS: Okay. All right. If the petitioners are on the line and wish to speak,

you may speak now.

MR. ZINK: This is Brian Zink. I'm the petitioner. Can you hear me?

CHAIRMAN MELIUS: Yes, we can.

MR. ZINK: I was listening, and I just received the report a week ago or so. So I don't have a specific comment on any of the details that Tim talked about.

On this question that's been bantered about with the badge issue, I would comment, and I certainly don't want the Class not to go forward as it's described. As many of you have said, it's better to have the folks that would fit into that category and can prove that they had a badge to be paid.

From a practical standpoint, as an authorized representative for many cases, not just at Idaho but all over the United States, the most difficult process for a claimant, or even me as the authorized representative, to prove is actually the employment unless, by some circumstance, the worker kept a copy of his badge, or wrote it down or had it on some document.

I really don't, being a suspicious sort, I am a little concerned. And I'm not as confident that all of those records still exist. You know, whether it's one claimant that I get that says, yes, I worked there, but he's not on the list, trying to approve that, in knowing how it works with the Department of Labor, becomes very difficult.

Because I know that, you know, the Department of Labor is going to strictly scrutinize the Class as identified. And without the proof of that badge, that person would be eliminated.

Now, whether there are ancillary documents to establish that he was there, you know, they often ask about coworker affidavits, stuff like that, certainly those would be out there as possible sources of proof.

But I just wanted to add my two cents in terms of the authorized representative coming in and looking at a case and saying, okay, now we have to establish that you were monitored. And what is your badge number, et cetera, et cetera? That tracking, from a practical standpoint, oftentimes that can be more difficult.

And it would be, I guess, the question would be how well would the claims examiner or the Department of Labor be able to access this list or whatever it is that identifies every badged worker that went in there. Those are some of my concerns.

I appreciate Tim's report. It was hard to hear some of it. So that might be my own telephone problem. But I just wanted to make sure that you knew I was on the line, heard it. I believe the actual worker, Mr. Wolz, has been listening. But I don't know for sure. He may want --

MR. WOLZ: I'm on.

MR. ZINK: -- to comment.

MR. WOLZ: I'm listening.

CHAIRMAN MELIUS: Okay, Mr. Wolz, do you, first of all, thank you for those comments. And I think you did summarize up one of our concerns. And I think we have to remember that if they cannot verify under the Class Definition, that means we have to go through the whole 83.14 process. And you're putting the burden on the worker to prove that it's wrong.

And it's not an automatic, not even the

affidavit would help him in that particular case in terms of getting into the Class. It would, I think, refer back to NIOSH, and there would be a process. It's not going to be ignored. But it's not a straightforward process.

Mr. Wolz, do you wish to make any comments at this point?

MR. WOLZ: No. I've had trouble listening. It seemed like a good report, and I appreciate the comments the Board has. The early part of the presentation that had to do with CPP was quite interesting to me, because I worked at CPP during the years in the analytical lab and particularly in the X cell in the years '55 to '58, in those years. And it was a good presentation.

I note that most of my radiation that I received throughout the course of my employment for nearly forty years at the site, I worked at CPP and at MTR, ETR facilities. And then further, starting in '94, you know, not '94, it'd be about '62, '63, I was at Argonne National Laboratory.

My INL radiation dosimetry summary shows, that they came up with over the multiple years, 40

years, and loss of badges, it shows a 6,671 deep and a 11,440 shallow.

It doesn't show anything about internal contamination I might have received. I know there was some urinalysis. And I went through several decontamination processes that, you know, as a result of working in different capacities.

But I don't know what the records are as far as urinalysis, and thyroid monitoring and things like that. So I just, I don't have a record of that.

And somebody mentioned on the Board, which I appreciated, it's hard for people going back from young man back in '55 to reconstruct and remember all that.

But anyway, I know that we were young guys and total trustworthy on the system. And we really didn't know what we were getting into or how effective the monitoring was and so forth.

But having worked there over the years, I understand a lot about geometry now, and where the film badges are worn and where the radiation sources were coming from in the streams.

And I just don't know how, with certainty, we can always know whether the doses which we received would have or would have not caused cancer. So that's all your question. I recognize we went into it with taking risks, so I guess we were innocent to the fact we didn't know what they really were.

Anyway, I appreciate your time. I hope that my effort, most of all, would be helpful to others in the future and they improve the systems where they could be improved.

CHAIRMAN MELIUS: Okay. Thank you very much. And I would just add, if you weren't listening earlier, which you may not have been, was that our next meeting, which will be towards the end of July, will be at INL. So we will be gathering more information at that meeting and looking for people to help us out. But thanks again for your input.

MR. WOLZ: You're welcome.

CHAIRMAN MELIUS: Before we go forward, I'd like to have some information so I understand a little bit. We have an Argonne West SEC

evaluation which is mentioned, and I think it's in LaVon's upcoming presentation. But do we have a time on that, estimated?

DR. TAULBEE: Yes. Our current schedule is projecting that that report will be delivered to the Board the middle of September, is what the current schedule for the Argonne National Laboratory is.

CHAIRMAN MELIUS: And how about the reserved portions of this petition?

DR. TAULBEE: Our timeline is to finish the Argonne National Laboratory West petition first. Because that's the one that really affects the current petitioner as far as this next evaluation. And he's the one who filed this particular petition.

CHAIRMAN MELIUS: Right.

DR. TAULBEE: So after that report was done, at that point we would go back and probably start around the beginning of September. Because the last few weeks are a lot ADC type of reviews that we would start initiating the completion of the addendum to this particular petition.

CHAIRMAN MELIUS: Thank you. We have suggested action. Are there are any more comments or questions from Board Members? And I think we need to make a decision on what to do. Paul?

MEMBER ZIEMER: Is there an INL Work Group --

CHAIRMAN MELIUS: Yes.

MEMBER ZIEMER: -- that has reviewed this?

CHAIRMAN MELIUS: No. There is an INL Work Group, Phil Schofield's in charge. I'm a Member of it. I believe Josie, and Loretta and --

MEMBER BEACH: Loretta and John Poston.

CHAIRMAN MELIUS: And John Poston. Six. Oh, wow. Gen, oh no, I mentioned Gen.

And given the timing and the uncertainty about the timing of this report, that Work Group did not meet, it has not had a chance to review the report. And actually it's not met for a fair amount of time because of getting the Site Profiles and everything updated. And this has been an extended time period with this whole site.

MEMBER ZIEMER: I am not necessarily

wanting to slow down the process, but I'm wondering, particularly since the petitioner is going to be awaiting the other site materials anyway, if it would be useful to have the Work Group take a look at this and maybe address the issue also on the film badge requirement?

CHAIRMAN MELIUS: What I would suggest is that we postpone decision on this particular petition today, that we convene the Work Group meeting for at least a brief meeting to work out a plan for going forward on that and to try to prioritize what needs to be done, and particularly this issue of the Class Definition.

We include NIOSH in that meeting obviously, Work Group meeting, and so then we would be able to come up with a plan. And I think NIOSH has to make some decisions about how it would prioritize its resources going into this effort also.

I don't think it's necessarily appropriate that we wait until September and then start working on this Class Definition. I think a number of us have expressed concerns about that.

And I don't see any reason why it couldn't be addressed earlier. But I think we have to look at the scope of the amount of work involved. I don't want to, you know, judge prematurely.

But I think if we get that Work Group together and get a focus and then have SC&A start doing some work, even now we can task them to start working on it. And then we can meet relatively soon to make sure we've got this issue coordinated in terms of timing and so forth. Does that make sense to you, Paul? Josie, I'm sorry.

MEMBER BEACH: Well, I initially had mine up, because I was going to say that we could go ahead and still task SC&A to start their review. And you mentioned that at the very end. So I put it down. But I do agree with that path forward.

MEMBER SCHOFIELD: You know what, Josie, I back you on that one 100 percent. This is Phil.

CHAIRMAN MELIUS: Stu?

MEMBER SCHOFIELD: That was Phil.

CHAIRMAN MELIUS: Yes. Stu to come to the --

MR. HINNEFELD: Okay. I 'm here.

CHAIRMAN MELIUS: It's hard on the phone, Phil. I know, and we understand.

MR. HINNEFELD: Well, we would like, I mean, I tend to want to defer to the Board's wishes on priorities. You know, we can prioritize in accordance with your desires.

I think it certainly, coming out here today, it certainly seems like the first thing we want to do is investigate this Class. And that's clearly first.

And then beyond that, we can see, I mean, you know, Tim is working under the assumption that the resources available from our contractor are the resources available and that we have to accomplish all of this work. And so he's kind of laid it out in that way.

We can look at what does it do to other things in the program if we get our contractor to add, and perhaps have two teams sort of working collaboratively at Idaho to see if we can accelerate some of this.

We also have to bear in mind that the people at DOE Idaho who will be helping both teams,

that's a person, that's the same set of people at Idaho who now, instead of assisting one of our teams, would be trying to assist two of our teams.

So I don't know, that may actually be the rate limiting factor as opposed to how much staff we can put on the thing. So we can sort that out.

But in the meantime we can do some investigation, and perhaps collegially with SC&A, because they're being tasking to work on this. I think they probably will have some specific questions about what kind of evidence can we pursue that would either support or not support our proposed position about how to define the Class.

So, I mean, that might even be something best left to them, because they do, you know, they are kind of the well, yes, but sort of people in terms of the devil's advocate position. Well, they are.

CHAIRMAN MELIUS: We weren't sure how many T's there were in but there.

MR. HINNEFELD: It's no surprise to anybody, right? So I think that might be actually an avenue, is for them to say, you know, what holes

can you poke in this? I mean, what's the story here?

And so I think we can kind of work out how to do this. And we'll work, certainly, as quickly as we can on this.

CHAIRMAN MELIUS: And I would just add, I mean, I think what we were, or at least I was trying to propose was that we task SC&A. The first thing that SC&A comes up with is sort of a plan. How do we, you know, I hesitate to use validate, but evaluate this Class Definition?

We then have a quick Work Group call to get everybody onboard and discuss. Because I think we're also concerned that if that evaluation is going to take years, which I don't think it will, but I think we need to have some estimate of how long that will be. Because I think that would affect what actions we might take on this petition in the meanwhile and so forth.

I had also, when I first read the report, I had asked some questions. And I understand better now the reserved section. I was sort of hoping, well, do the areas that are reserved, would

they cover enough of the site in the same time period and get resolved quickly enough that they might sort of obviate having to look at just this area.

And I'm not sure that they're going to be quick to complete either, judging from what Tim was saying. So I think it's just, this is where our focus should be. Are Board Members on the phone satisfied with that approach?

MEMBER SCHOFIELD: I can live with that, Jim.

CHAIRMAN MELIUS: Okay.

MEMBER LEMEN: I can too, Jim.

CHAIRMAN MELIUS: Okay.

MEMBER VALERIO: This is Loretta. I agree.

CHAIRMAN MELIUS: Okay. Thank you. And thank you very much, Tim, and your team involved. They've been a helpful and a very thorough report. And we appreciate the effort and the number of slides. And we didn't do it, I didn't do it to your computer.

And the next item on our agenda, and I think we can actually say last but not least -- Where

is he hiding?

Search party underway. We called the airport.

MR. RUTHERFORD: After you heard those schedules from Tim, I wasn't sure I wanted to tell you the other schedules. No, I'm just kidding.

CHAIRMAN MELIUS: We're testing. We know what's there. We're going to start a new Q/A, Q/C evaluation, you know, competing presentations, and see which one has more credibility.

MR. RUTHERFORD: All right, ready? Okay, this is a final presentation. I'm going to give the Special Exposure Cohort update. By the way, I'm LaVon Rutherford. You probably heard that from Dr. Melius while I was outside.

CHAIRMAN MELIUS: Are you going to give me a chance to introduce -- no. Go ahead. Go ahead, LaVon. We all know who you are.

MR. RUTHERFORD: All right, thank you. So I'm going to talk about Special, I'm going to give a summary of the current petitions, petitions that are outstanding, evaluations, again, talk about petitions qualification, petitions under

evaluation, petitions currently with the Board for review, potential SEC 83.14. And we do this to update the Board to prepare for future Work Groups and Board meetings.

Our summary table, we added a little star to the summary table. And I'll explain why. If you look at the summary table, these numbers were put together as of March 16th, 2015.

We actually received Petition Number 227 shortly after this was prepared. And that is another petition for Rocky Flats. It's for the years post-84 to 2005, and so it is in the qualification phase.

So it won't show up on the rest of the table or the rest of the slides, I'm going to put up but just to let you guys know, so you can see we have three petitions in the qualification phase.

Petitions that were qualified, 138, various phases, and 85 petitions that did not qualify. So our petitions in the qualification phase, we actually have another petition for Grand Junction Operations Office.

I know there is probably people that

reviewed our summary report, it kind of threw them off, just wondering where this one came from.

But this was a petition that was for the later years, '86 to '90. But it was really for some of the calibration pads were actually moved out by the airport. So currently, the portion of the site that they were requesting a petition for is currently not covered in the program.

We are providing that information to the Department of Labor, Department of Energy, to see if either another site would be established or what they would do with that.

We have a Carborundum Petition Evaluation. And it is now qualified, I believe. It was just qualified. And that will be moving forward.

And we have a Blockson Chemical petition that is in the residual period. And it is in the qualification phase. Again, like I said, the Blockson Chemical in the residual period, it is in the qualification phase.

We have a few petitions under evaluation right now, Westinghouse Electric Company, this was

a petition that we received some time ago that was for the residual period. However during our evaluation we uncovered some information that supported that there was actually some operational work that occurred during this residual work.

We presented that information to the Department of Energy, the Department of Labor. And we had a small portion of operational period added, so that kind of pushed our evaluation out. We're almost complete with that. We expect completion in April of that report to present at the July Board meeting.

Lawrence Livermore National Lab, this one, it's qualified. And I know the 180 days are somewhere, you know, June/July timeframe. However, what we found is that, as most of you Board Members know, a lot of the work that was conducted at Lawrence Livermore National Lab has classification issues such that it's going to be required a lot of review.

There was a lot of different operations that took place there. For example, we went to the site, I can't remember exactly, recently, that we

did the data -- end of January, and identified a number of documents there for the evaluation. And we've just found out recently that the ADC is not going to start reviewing those documents for another month.

So we anticipated completion of the Evaluation Report in November. The site's been very cooperative, but it's, you know, it's going to be a challenge.

Argonne National Lab, I think we've already talked about that, so I won't go into that much more.

CHAIRMAN MELIUS: There's a little discrepancy, I think, here. I thought I heard September for --

MR. RUTHERFORD: For? Oh, you know -- Yes.

PARTICIPANT: The report will be completed in September. But we're proposing to present it in November.

MR. RUTHERFORD: Yes, instead of the two weeks. So now we get reports --

CHAIRMAN MELIUS: The Advisory Board

goes into shock.

(Laughter.)

MR. RUTHERFORD: We've got three Petition Evaluations there. Well actually, this is not true now. But Petition Evaluations that were waiting on initial Board action, Kansas City Plant, Grand Junction we presented today, and actually the Board moved forward on that.

Dow Chemical was presented today, and the Board moved forward on that one as well. And then Idaho National Lab was presented today. That has been delayed. And the Hanford was presented yesterday. And the Board took action on that one as well.

Sites with remaining evaluation periods, Fernald, I think we're working hard to get that closed out as Brad and Stu had talked about yesterday.

Hanford, the issues are working through there as well. Los Alamos National Lab, the challenge of dealing with the site, and we're working on a path forward with that one. Rocky Flats, I think Dr. Kotelchuck summarized very well

yesterday where we are with that one, a few remaining issues.

Sandia National Lab, I believe that Sam talked about it a little bit yesterday and where we are with that one. Santa Susana, we have one short, I want to say 1965.

That was the initial Petition Evaluation that we approved for review went through 1965. So we have a 1965 year for that Petition Evaluation that's still left out.

There still, as Jim Neton presented and Phil Schofield presented, there are still a number of issues that we're working on at Santa Susana as well, and Savannah River.

And 83.14s, again, we discussed this one, Sandia National Lab early years, they're still waiting for a litmus claim for that one. It appears that the claims are being pretty much moved forward as an SEC under Los Alamos National Lab.

So if we ever get one, we will move forward in 83.14 there as well. Dayton Project Monsanto, will move forward if we get a claim there as well. And that's it.

CHAIRMAN MELIUS: Questions for LaVon? Are you going to make a correction or --

MR. RUTHERFORD: No. Tim said I should add to that, Idaho potentially 83.14s, yes, where there are, because Tim had mentioned, we could end up with doing it additional 83.14s for that.

CHAIRMAN MELIUS: All right. I guess this goes back to the INL issue. I think, since we'll be in Idaho in July before the Argonne West report, if you can, Tim and the ORAU team could identify issues where we need more input on that would be helpful, I think that's helpful in terms of both conducting interviews and what SC&A will be doing there, but also when we have the, you know, public comment period and so forth.

I think we can at least help to identify people that have information, get some input from people working on the site and a little bit better, more involvement last time. We were up there last July and hopefully get more interest this time also. And so it would helpful, given the weather there, we probably won't be back until the following summer.

Okay. If there are no more questions, Board Members on the Board have any questions for LaVon -- excuse me, on the phone? I've talked to much.

Okay. That's it. And we have one more Board action to take. Do I hear a motion to adjourn?

MEMBER ZIEMER: So moved.

MEMBER LEMEN: So you know I'm still on the phone, I'll second that.

(Laughter.)

MR. KATZ: Goodbye, Dick.

MEMBER LEMEN: Goodbye.

(Whereupon, the above-entitled matter went off the record at 3:18 p.m.)

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