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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84th MEETING

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WEDNESDAY
JUNE 20, 2012

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The meeting convened at 8:30 a.m., Mountain Daylight Time, in the Courtyard Marriott, 3347 Cerrillos Road, Santa Fe, New Mexico, 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
JAMES E. LOCKEY, Member
WANDA I. MUNN, Member
JOHN W. POSTON, SR., Member
GENEVIEVE S. ROESSLER, Member
PHILLIP SCHOFIELD, Member

LORETTA R. VALERIO, Member
PRESENT: (Continued)

PAUL L. ZIEMER, Member
TED KATZ, Designated Federal Official

REGISTERED AND/OR PUBLIC COMMENT
PARTICIPANTS

ADAMS, NANCY, NIOSH Contractor
ALLEN, DAVE, DCAS
ANIGSTEIN, BOB, SC&A
ARENDS, JONI
BONSIGNORE, ANTOINETTE*
CRUZ, RUBEN, CDC
EVASKOVICH, ANDREW
FITZGERALD, JOE, SC&A
GLOVER, SAM, DCAS
HINNEFELD, STU, DCAS
KINMAN, JOSH, DCAS Contractor
KOTSCH, JEFF, DOL
LEWIS, GREG, DOE
LIN, JENNY, HHS
MAKHIJANI, ARJUN, SC&A
MCFEE, MATTHEW, ORAU Team
MCKEEL, DAN*
NETON, JIM, DCAS
RUTHERFORD, LAVON, DCAS
STIVER, JOHN, SC&A

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 ready to get started, our second day of Meeting 84 of the Advisory Board and I'll turn it over to Ted to do the roll call.

MR. KATZ: Sure. Thank you. So good morning, everyone and welcome to the second day of the Advisory Board meeting. Let's begin with roll call and let's just run down the line alphabetically and if you have a conflict with any session today, please note that as you register your attendance.

(Roll Call.)

MEMBER ZIEMER: Here, no conflict. And, Ted, while we're talking about conflicts, let me correct the record from yesterday where I declared I had no conflicts. I had forgotten that I actually am conflicted on Los Alamos from 2000 onward. And had ignored or forgotten the fact that some of the discussion overlapped into that period.

Although I didn't enter into it, I had remained at the table. So I'm going to attribute this to old age and forgetfulness, but for the record, I am conflicted on Los Alamos.

MR. KATZ: Thank you, Dr. Ziemer. I fell down on that one as well because I'm supposed to be watching this as well.

MEMBER ZIEMER: You'll have to have a different excuse than me.

MR. KATZ: Well, I don't have quite the years, but I have the memory problems.

MEMBER LOCKEY: I probably should say the same thing for yesterday because I am conflicted Fernald and I had forgotten. I'd see workers from Mound, so that's why the conflict is announced.

MR. KATZ: Very good. I don't see many faces from the public here in the room, but for folks on the line, the presentations today are all posted on the NIOSH website under the meeting section. Go to the date for today and you'll see those all as attachments on the link.

So you can read along with the presentations today. Also for folks on the line, please, one, mute your phones. You press *6 to mute your phone, if you don't have a mute button, and pressing *6 again will unmute your phone, but please keep your phones muted for the session.

Also, please do not put the call on hold at any point, but hang up and dial back in if you need to leave the call for a piece. And, yes, that takes care of my notices. Jim.

CHAIRMAN MELIUS: Okay. Our first order of business now, and Dr. Ziemer is ready and set to go, is the GSI SEC petition and we will have a series of presentations here and then some Board discussion, but we'll start with Dr. Ziemer.

MEMBER ZIEMER: Thank you, Dr. Melius. The focus here is on SEC Petition 00105, which is for General Steel Industries. I will kick this off with some introductory remarks, then we'll here from NIOSH and from SC&A.

I will return to the podium to

summarize the Work Group's recommendations and we will also have an opportunity to hear from the co-petitioner, Dr. Dan McKeel.

So I'll kick this off with a little background information on the petition. It was submitted in February 2008 and certified -- qualified, rather, for evaluation in May of 2008. The Evaluation Report was issued by NIOSH on October 3rd, 2008, and then we had an SC&A review of the Evaluation Report, and that was issued on July 24th, 2009.

I've put, on this slide, for your information, the proposed Class Definition and the actual Class as evaluated by NIOSH. And as you lay those two side by side, they appear to be almost identical and I'll simply point out that the difference is on the ending date.

You see the date on the original petition from January 1st, '53 through December 31st, '66, and then the residual period description. That ending date was changed based on information that NIOSH had obtained and changed to June 30th, '66, and

then the residual period starting date begins July 1st, '66.

So slight differences in the original proposed Class and the actual Class as evaluated by NIOSH.

Following the Evaluation Report and the review by SC&A, there have been a number of meetings and a great deal of additional information. Actually, an extensive amount of additional information arose following those two reports.

A great deal of it provided by the co-petitioner, Dr. McKeel, through FOIA requests and other means, as well as information from former workers and site experts.

The NIOSH website includes a number of White Papers. The Board Members have been made aware of these and you've received a number of emails citing a variety of White Papers over the past month. There's specific information and critiques from the co-petitioner as well as the White Papers from NIOSH and SC&A.

The Work Group has met 12 times

since the Evaluation Report was issued in 2008. Most of the focus of those meetings, although not a 100 percent, has been on GSI, which is part of the TBD-6000 through Appendix BB, and then a great deal of focus in the last couple of years on the SEC Petition 00105.

So the format today will have NIOSH review its proposed models for reconstructing dose at GSI in support of its recommendation to deny an SEC Class, and Dave Allen will present the NIOSH-proposed models.

Then we'll hear from SC&A, and Bob Anigstein will present the summary of their findings and their position on the NIOSH dose models. I then will return and summarize the Work Group's recommendations and then we will hear from co-petitioner Dr. McKeel, who will present his issues and concerns with the NIOSH proposal and the Work Group recommendations.

So let's call on Dave Allen now to present the NIOSH information and material.

MR. ALLEN: Good morning. My name is Dave Allen, as Dr. Ziemer said, and I'm here to provide a little bit of background on GSI, primarily, list the sources of radiation. Can you hear me better now?

I was going to list the sources of radiation at GSI as well as some of the key sources of data that we have, and then, as Dr. Ziemer said, I'd go through what our method is intended to be for estimating the dose to those.

A little background, the first couple of bullets, Dr. Ziemer has already covered. The work that was done at GSI that covered the facility was that they radiographed pieces of uranium metal brought over from Mallinckrodt.

They did not correct any defects or manipulate the metal in any way. All they did was to X-ray the metal, and then provide the X-rays to Mallinckrodt, and hand back the metal to them.

From that, the sources of radiation at GSI for internal includes dust

from uranium corrosion products, even though they didn't grind on it, cut on it, or anything like that, uranium will still corrode.

There'll be some uranium oxide on the surface and as you handle it by hand, or fork truck, or crane or some sort of chain fall, will slough some of that off and it can become airborne.

Primarily, it was a steel plant. They made steel castings and during the covered period that would still be covered dose, so we had to deal with the activation products in the steel.

For external dose, one of the big sources of radiation is the betatrons themselves. The betatrons were high-power industrial X-ray machines, approximately 25 MeV, and when I say direct radiation from that in the bullet, I'm talking about all sources of direct, which is what makes it through the shield to anybody that may be nearby. Also, sky shine, scatter, et cetera.

We also estimated the dose from

radiation from the activated steel because the steel castings would get activated, or it could get activated, after they were X-rayed with the betatrons.

We also have direct radiation from the uranium metal itself. Being a steel plant, they also had radiography with isotopic sources elsewhere in the plant and we estimated the dose from that. And they also had two portable X-ray machines; 250 kVp X-ray machines.

The betatrons, they actually had two and these were not portable X-ray machines. These were actually buildings. The head of the betatron itself was manipulated by crane in the shooting room of this building. And some of the capacitors and ancillary equipment were on the second floor above a control room, so these were not portable pieces of equipment.

There were two buildings specially built for these betatrons. Onsite, they referred to them as the new betatron and the old betatron. The old one was built in 1952 and had a reported maximum

energy of 24 MeV.

The new one was actually built in Eddystone in the '50s, and when the Eddystone, Pennsylvania plant closed down, they moved that equipment to GSI, built a new building for it, and that was in 1963. And the reported maximum energy on that was 25 MeV.

And with those kind of energies, the photon energy is actually above the threshold and it's high enough to create some activation of isotopes in steel, uranium, et cetera.

This is a drawing of the two betatron buildings. The one on the left is the old betatron building and you can see, one of the predominant features is this thick wall that you can see wrapped around there. This wall is actually two 1-foot thick concrete walls with 8 feet of sand poured in-between them.

All together, it forms a 10-foot thick shield wall. And the shield area is the area that's encircled on three sides and then the fourth side includes, what I'd

call, an equipment tunnel.

You've got a similar design in the new betatron building with the thick walls, et cetera, but the old betatron was built several hundred feet away from any other building, whereas, the new betatron was actually attached to their existing production buildings.

If you look on the left-hand side of the busy drawing of the new betatron, you can see the edge of the Number 10 Building, which was one of their production buildings. And the new betatron building was attached to that by, as I said, what I call, an equipment tunnel.

In order to model the betatrons, we used a computer code, MCNP, to model the activated steel. The model that we eventually started using went back to first principles to where it was actually sending a beam of 25 MeV electrons at a platinum target.

We have the, essentially, blueprint drawings of the platinum target as well as the ion compensator, and the ion

chamber. And from that, we could develop the actual Bremsstrahlung X-ray spectrum from the betatrons.

And from the operators, we knew the distances they would normally use for the betatron between the head the castings. And so that plus, you know, the various times that they might have X-ray equipment, we could estimate how much activation would occur in the steel casting or in the uranium.

For isotopic sources, they had two 500mg radium-226 sources up until 1962. And they were using the fishing pole technique, which was listed in the AEC records as well as the operators themselves explaining this technique.

And that technique is pretty much just what it sounds. The source is very small, it's tied to a string, which is attached to a long pole. They used the pole to pull it out of a shield and then they place it in a small cup, one of the operators said, that they'd placed in the casting that they wanted to X-ray, that

would put the source in the proper position.

And after the amount of time they wanted to expose the film to get the proper X-ray, they would pull it back out the same way and put it back into the shield container.

They also had a constructed radiography room in the Number 6 Building of the plant and that is where they did a lot of their radiography with these smaller sources, but the operators indicated that they also took these sources out into the plant as needed and would do radiography elsewhere besides this radiography room.

In 1962, the State of Illinois asked them to stop using the radium sources. And at that point, GSI applied for an AEC license, they obtained that license, and then they purchased two small cobalt-60 sources to replace the radium sources.

The assayed value of those cobalt sources was 260 millicuries and 280 millicuries. The operators often referred to them as quarter curie sources. The sources were intended to be used in the

radiography room that I mentioned in Building 6, however, the operators report that they were taken outside of there and used elsewhere in the plant as needed.

St. Louis Testing was a contractor that they hired to do some additional radiography work as well as, I believe, instrument calibration and maybe some other consulting type of work with radiography.

They brought on a 50-curie iridium-192 source as well as a 10-curie cobalt-60 source from time-to-time to do some additional radiography. The St. Louis Testing people reported that they did the radiography, the GSI people did not.

It is assumed that the GSI workers showed them where to go, what casting to X-ray, et cetera, so as you'll see in our estimate later, we assumed that GSI employees were working at the boundary the whole time the radiography was ongoing.

GSI also owned two portable X-ray machines, I have the models there, and we don't know a lot more about them. Many of

the operators actually don't remember them. One supervisor reported that he remembers buying this X-ray machine and he thought they did, essentially, a calibration test of it when they first got it just to make sure it worked and then they never used it again.

Other operators remember using it, but nobody could remember many details, and it doesn't appear that it was ever used very frequently. And that makes some sense. This was a 250 kVp, it wouldn't go through very thick metal, and a casting company, if they were making it, there wouldn't be very many items they could make that it'd be useful for.

As far as data sources, we were able to eventually obtain film badge data from Landauer. It did not cover the full time. It starts November of '63 and it goes on through 1972. It is not everybody on site. It was radiographers and those associated with radiography.

The badge exchange frequency was weekly. The reporting level was 10 millirem. Anything less than that they just

reported as a capital M, meaning minimal, but the vast majority of those ratings were reported as an M. We did the math and it was 99.7 percent of the readings were reported below that 10 millirem reporting level.

Prior to 1963, it was reported that film badges were worn. There is at least one picture of an operator wearing a film badge and debate on another picture or two. One of the previous operators provided a summary of his dosimetry records that were prior to 1963, but that was about all the information we came up for those.

So we were, from the operators all the way back as far as the operators could remember, they did have film badge dosimetry, but we could not produce the data itself.

The co-petitioner was actually able to obtain over a 1,000 pages of data from the Nuclear Regulatory Commission. This data ended up being very useful in estimating the doses. It contained, primarily, the AEC license as well as

license applications, along with the renewals of those license.

There were a few other memos and letters going back and forth, but primarily, it was the license applications and everything that goes with that, such as procedures, surveys, et cetera.

The license was granted in April of '62 prior to the purchase of the cobalt-60 sources. Some of the information on those NRC documents include drawings and radiation surveys of that radiography room in Number 6 Building that I mentioned. These were radiation surveys with the sources exposed.

There was some information, some sparse information, about the utilization log of the sources, so how often they used them per shift, et cetera. And some sparse information about what kind of exposures operators received prior to the Landauer film badge data.

There was also detailed drawings of the betatron building and various several drawings with the dimensions recorded on

them that helped us model that building quite a bit. And after the covered period, in 1971, they had done a survey of the new betatron with a large cobalt-60 source that they had, in the meantime, purchased.

It was an 80-curie cobalt source. They exposed it in the new betatron building and they did a survey in a number of locations around the building. That is after the covered period, but we were able to use those surveys with that known source in order to model the building and verify that that model was appropriate for the real world. It actually worked well with those radiation surveys.

Another key data source was former workers. There were quite a few interviews done, some from the co-petitioner prior to us involved, some with us involved. SC&A did some. Many of those were a group environment of a lot of workers together.

There was also a number of interviews that were shorter interviews done, usually over the phone, with SC&A, or with us, or even the co-petitioner was on a

few of those, to talk to a particular individual and ask specific questions about sources and other things.

There was also some of the former operators listened in on the Work Group meetings and participated in the Work Group meetings. They would often pipe in with some information we either didn't realize, or they wanted to make sure we did realize it, or we could even ask them a question or two every now and then.

Some of the information from them included the work practices with the sources outside the radiography room as well as inside the radiography room. We got some details on the fishing pole technique. We got some details that they did barricade off an area when they were outside the radiography room, at what point they barricaded that.

We got information about the frequency of the use of the betatron or how long the shot would normally take. There were, you know, obviously, different time periods. Some were short, some were long,

and essentially, the frequency that that would occur.

We got reports of, as I said, the work practices of the sources when you're outside the Number 6 Building radiography room, but also the violations of those work practices.

And one piece of information we got was that the company policy was to leave their film badges in the betatron building when they were going into the other production buildings, and the reports from the operators were it was company policy and it was followed pretty well.

Apparently, the idea of that, it was a steel plant, there was plenty of hot sparks, et cetera, and they were afraid those sparks would burn through the film badge and render them useless.

Now, as far as how we intend to estimate the dose, for internal dose, we went back to TBD-6000 and we used the slug production values. Slug production from TBD-6000 involves cutting uranium rods as well as grinding the ends down, and

inherently, it involves handling these uranium rods, either by hand or by some other means, crane, et cetera.

We also accounted for the dose from fission and activation products in the uranium that could occur after you X-rayed uranium with this high-powered betatron. And we also had to account for internal dose from steel dust that could occur if a casting was activated from X-raying and then somebody went in and started grinding on it.

And that's a pretty credible scenario since that was the purpose of the X-rays was to look for defects and when they found a defect in a large casting they didn't simply throw it away. They went in and ground out that defect and then welded new metal into that place where they grounded it out to try to repair it.

As far as uranium metal, we chose TBD-6000. TBD-6000 contains a number of tasks working with uranium metal, including forging, rolling, extruding, as well as slug production, machining, et cetera.

All of these tasks with uranium

metal inherently include the handling of uranium metal, either by hand, or more often, by fork truck, or by crane, or some other means, and it is a potential of getting some airborne from that handling just by stirring up the oxides on the surface.

So essentially, all those tasks within TBD-6000 include the source term that would be at GSI. We chose the lowest airborne causing task in TBD-6000 because all those would be bounding, but the lowest one would be closer to the most plausible.

As far as the external dose estimate, I mentioned earlier, we modeled the new betatron building with MCNP and we validated that model using the 80-curie cobalt-60 source survey.

Once we got the building model validated, we then replaced the cobalt-60 source with our model of the betatron and that allowed us to locate it in various locations within the shooting room, and point it in various orientations, that way we could try to find the worst-case

orientations.

We wanted to use the worst-case orientations that were consistent with the rest of the data, including film badge data and the utilization of the betatron that the operators recalled.

So in each of those orientations, we estimated the dose in various locations outside the betatron building. One of those included the badge rack where they kept their badges, and there's actually a couple of different locations over time.

Also, the control room where the operators would be while the betatron was on, and other locations, including just outside that equipment tunnel where it is possible for other people to have been.

And we combined these orientations in a way where it would be consistent with the utilization time the operators gave us would produce the 10 millirem per week at the badge rack that the badges were showing us, but would also maximize the dose outside that equipment tunnel, which is what we used for an

estimate for our layout man.

Once we had that, we also used the direct dose from steel and from uranium and added that to our estimates for operators and for steel for the layout workers.

I mentioned the typical use of the betatrons from the operators and that was information we obtained from interviews where, as I mentioned earlier, they would do some short shots, some long shots, how long those typically would be, and how often they would do one or the other.

From that, we come up with an estimate of how long the betatron was actually turned on. And that, combined with the external dose from the activated steel or the uranium itself, we could come up with a weekly dose estimate if you were only X-raying uranium or if you were only X-raying steel.

Then we combined those estimates based on the amount of uranium work that was ongoing and that was based on the purchase orders. The purchase orders included,

essentially, the maximum number of hours that they were working with uranium, and from the operators, we knew what the typical work week was, so we could make that fraction of their time the uranium work.

Layout man is another job. One was operating the betatron, doing these various tasks, as far as placing the film, removing the film, aiming the betatron, and actually making the shot itself. All that took some time and it was a busy place.

Consequently, when they had these large castings to X-ray, they would try to take the next casting in line, they would setup shots by making markings on these castings as to where they wanted to place the film, where they wanted to point the betatron, and they would set this up ahead of time outside of the betatron while another casting was being X-rayed.

It is possible that these castings were already X-rayed since, I mentioned earlier, that was the purpose of the X-rays was to look for defects, then repair them. Once they did that, they would

go back in and make sure that repair was adequate.

So it is possible for somebody to be grinding, or a layout man to be setting up a shot, on a casting that was already X-rayed.

I mentioned earlier, the dose for the layout man, we assumed that they were in the worst-case location outside the betatron, which was at that equipment door going into the betatron building. We gave them the dose that they would receive, the scattered radiation from the betatron being on, coming down that tunnel.

We also included some favorable scenarios for the dose they would receive from the activated steel. And the favorable scenario, as I said, it is possible for them to be laying out a casting even after it had been X-rayed.

And the favorable scenario we came up with was, essentially, to alternate castings, one going in being X-rayed while they're working on a freshly X-rayed one, and then reversing that, and just kept going

back and forth.

For the radiographers, the cobalt-60 sources, we had a 1962 survey around the radiography room with the sources exposed. So we used that survey and the source utilization to estimate a dose to the radiographers from cobalt-60 around that.

That included areas outside the walls of that building and we used those doses for anybody else, since it's possible somebody could have been working right next to that building.

We also, from the work practices the operators gave us, determined a dose estimate for radiography work that may have occurred outside of that Number 6 Building room. And that includes the normal procedures as well as the normal violations of those procedures the operators told us about.

And the intent was to assume all the work was either in the radiography room or outside the radiography room and simply pick the highest one as our dose estimate.

For the radium-226 sources, at

the time of the estimate that we had came up with, it was not clear if the Number 6 Building radiography room existed.

There was a notation that the building was modified in '62 and I think I had mentioned, at least in one of the Work Groups, that we didn't know if it had been modified or built in 1962, so we assumed all the radium-226 work occurred outside of that Number 6 Building.

After that time, some operators were interviewed and found out that that building was always there. NIOSH has not yet done an estimate of the radium-226 radiography occurring inside of that building, but SC&A did, and I think everyone agrees it can be done and we'll have to make sure we agree on the assumptions to be used.

And again, our intent here would be to use whichever was highest; inside the shielded room or outside.

For the St. Louis Testing, we talked to St. Louis Testing, they reported that they always put a boundary up at the 2 millirem per hour point. And they

controlled that boundary, inside that boundary but not necessarily outside that boundary, so the assumption we made here was somebody could have been working right next to that boundary full-time.

For the portable X-ray machines, as I said, we didn't have a lot of information. We knew they were 250 kVp and the frequencies we got from the operators were that they either weren't used or weren't used very frequently. Some even said they were used in the betatron buildings themselves, which would give it a great deal of shielding.

From that, realizing you can't do radiography with a portable X-ray machine as well as a betatron, or a radium source, or a cobalt source, if you have two sources of radiation in the area you're not going to have a very good X-ray, so you have to limit the sources in the area in order to do the job.

So with that in mind, exposure to people would be to one type of radiography or another. And we made a qualitative

argument where the 250 kVp X-ray machines would provide a lower dose than these other sources of radiation and that is consistent, like I said, with the frequencies that were reported, which simply said they weren't very often, if at all, used.

Lastly, the residual contamination period, we started with the airborne estimate that we used from the slug production and we used a standard technique of assuming that that would settle out to surfaces.

The time frame that we allowed it to settle out was for the time frame that the operators were actually manipulating the uranium, essentially, all the time except for when it was actually being shot.

The idea behind that was, you still need some kind of mode of force to stir up these oxides off the surface and into the air, and when the uranium is just sitting there and being X-rayed with nobody around, you don't have that mode of force.

From that estimate, we came up with a surface contamination value and we

re-suspended that to come up with an airborne value for the residual period. For external dose, we used that same surface contamination and estimated an external dose rate.

Uranium doesn't give a great deal, especially uranium contamination, of external radiation, but it will give some. So we estimated that and it was understandably low, but when it got that low, it is possible some other situation could pop up and cause us to be underestimating the dose.

So it's a realistic assumption that there are mechanisms that could have concentrated that contamination and there was actually a FUSRAP survey of a vacuum cleaner that the surface dose rate on this vacuum cleaner showed 90 micro R per hour on the surface of the vacuum cleaner.

It's a fairly low level, but it's higher than what we were getting with the surface contamination, so we made the favorable assumption that somebody was, essentially, in contact with that vacuum

cleaner all the time that they were working.

It seems like an implausible, but it ended up being a fairly low dose and it accounted for various possibilities.

And that's all I have for my presentation. Dr. Ziemer, I don't know if you wanted to entertain questions at this point or wait till all the presentations --

CHAIRMAN MELIUS: Paul and I just talked, we're going to wait until all the presentations are done. It will sort of fit together nicely and I think it's easier to ask questions rather than to, you know, try to -- I'm afraid we'll ask a question and it will be in the other presentation or something, so, Bob, do you want to give the SC&A presentation?

Then we'll have Paul again and then we'll get everybody up there and ask questions.

DR. ANIGSTEIN: I am going to give you a brief history of the site operations. General Steel Casting was actually, that was the original name of the company, it was started in about 1929. The

purpose was to make steel castings for locomotive beds.

Around 1940, they developed a technique for casting tank armor for the U.S. Army, but it was a small part of their business at that time. Then, they got into the business, big time, around the Korean War, and at that time, the Army wanted to make sure that the castings didn't have defects, so as Dave pointed out, they furnished two betatrons.

They were manufactured by Allis-Chalmers and they installed one of them at the Eddystone, Pennsylvania facility in November '51, and in January '52, one in the Granite City, Illinois facility, which is the one that, you know, is under consideration here.

So in each case, the Army Corps built the betatron building according to specifications furnished by Allis-Chalmers. Somewhere around that time, and the beginning data isn't clear, you had the Mallinckrodt Chemical Works in St. Louis, under AEC contract, that were making uranium

castings.

And someone at Mallinckrodt got the idea that, here, we have this betatron facility right across the river, you cannot X-ray uranium with any ordinary radiographic methods, but the 25 MeV photons are just strong enough to penetrate Mallinckrodt casting, about 4 inches of uranium.

So they started sending over uranium to be radiographed and there are purchase orders starting in 1958 through 1966, continuous purchase orders. As an example, during the next six months, you are allocated $500 and you are allowed to charge $16 an hour, so from that, they can calculate how many hours of uranium handling and radiography was during each time period.

Prior to '58, there are no records, but there is a memo, actually, it's just a title page of a set of memos, something to the effect of, regarding uranium ingots shipped to General Steel Castings. The name was later changed to General Steel Industries.

The start date was, by DOL and

DOE, assumed to be in 1953. It could have been as early as 1952, but there is no evidence for it.

Late-1963, the Eddystone foundry shutdown and the betatron was moved to Granite City. And GSI, as the company was now known, built the building to house that. Then finally, in June '66 is the last uranium purchase order, and so that's the end of the covered period.

They were still doing their main business, which is radiographing steel, rather, producing steel and then radiographing it to check for defects, but they were no longer doing uranium radiography, so it's not considered part of the covered period.

Between 1989 and 1993, FUSRAP surveys were done of the betatron buildings, since they assumed there would be some residual uranium contamination, they found uranium contamination only in the old betatron building; that was the first one built.

And then they, in 1993, around

June, there was a cleanup and a verification survey, and finally, by December, all the wastes were taken offsite, so that would be the end of the residual period.

Here is a aerial photograph, at a later time of the operation period, of the General Steel Foundry in Granite City. You see here, the old betatron building, and as Dave said, at a distance from all the other occupied buildings.

And then you have the new betatron building, this one was built by GSI, right next to the -- this is the Number 10, which is referred to as the Number 10 Finishing Building, and here is a closeup, which would be an enlargement of that, but the old betatron building and the new betatron building.

So the old betatron building was in a location where there would be -- you know, no significant radiation could reach the occupied buildings. So it was not the case, here is a -- you know, this is actually a Google Earth view, I did this a few years ago, showing the roof of the new

betatron building and this is a rail tunnel connecting it to this Number 10 Finishing Building.

And here's an example, actually, it's a unique example, of a steel casting being radiographed. This is an axle of a power shovel. It's one of the largest castings that was made and here is the betatron.

You see here, the electromagnets, the two coils above and below, and the betatron tube is sandwiched in-between them, and the beam comes out this way, so you can't see where the beam would exit, you know, it would come out this way in this direction.

All right. So the tube is sandwiched in-between here and the beam comes out in this direction. So here, you have a typical crew of, maybe, two or three, this one is the operation of the betatron, so the betatron is suspended from a traveling crane, so it has complete freedom of movement. It can traverse the room horizontally.

Using geometrical terms, in the X and Y directions, and then it can move up and down, and it can also be tilted, and it can also be rotated around this axis. So it's got virtually complete freedom of movement in here.

This particular casting was brought in on a trailer because of the size. It's rather unusual.

MEMBER ANDERSON: So where was the film?

DR. ANIGSTEIN: Say again.

MEMBER ANDERSON: Where was the film?

DR. ANIGSTEIN: The film would be, in this case, for instance, it would be placed inside.

MEMBER ANDERSON: Okay.

DR. ANIGSTEIN: Inside this hollow casting, in this instance. Obviously, if it's a flat plate, they put it simply behind the plate.

And this way, they have these marks here to indicate -- they would have to go in different directions. They would have

to shoot somewhat from above, somewhat from below, and of course, straight.

So again, Dave went over this. I'm just going to briefly review these. Sources of exposure include direct penetrating radiation. I wrote photons. It really should be photons and neutrons, because there's some neutron exposure, and you would get stray radiation during the betatron radiation.

You would get delayed radiation from the activated metal, and you would also get neutron and photon radiation from the natural uranium even before it was radiographed.

Typically, you have threshold binding energies of the nucleus, somewhere in the order of 8, 10, 12, and maybe for neutrons and protons, so when you have 25 MeV photons coming out, of course, very few, but the electron beam is 25 MeV, so you have a photon spectrum with a upper energy cutoff of 25, going down.

Typical energies are in the few MeV, but still, you have some high-MeV

photons, some high-energy photons, which can knock out a proton, or a neutron, more frequently a neutron, and create another isotope, which, in many cases, would be radioactive, sometimes short-lived.

Then you have your external exposure to the sealed sources. This had nothing to do with uranium, but because it was used at GSI, all radiation sources have to be considered in dose assessments.

So as Dave pointed out, they had radium sources, 500 millicurie radium sources, until May of 1962, when they stopped using them and switched over to cobalt-60 sources, which they continued using until the end of their operation period.

The cobalt-60 source was somewhat smaller and the other sources would be external exposure through the skin. They would get it from natural uranium. Also, from the activation products in the uranium and also to the activated steel, which many of these short-lived isotope would be beta emitters.

And then finally, there would be internal exposure from intakes of uranium oxide and from inhalation, potentially, of activated metal dust.

So SC&A performed an independent assessment of the external exposure and our assessment, we assumed, because NIOSH had indicated that they would be using, for each period, whatever was the bounding exposure, they would apply that to all workers.

So even though we did a number of assessments of many different scenarios, and the scenarios somewhat changed over the years that we've been studying this, since about 2007, as we got more information, in the end, what I'm summarizing here is the bounding exposure.

So the bounding scenario from between '53 and '62 were the radiographer using radium-226. And our best estimate of his exposure during '53 and '54 was 15 rem a year and during '55 to '62 was 12 rem a year.

And this was based on the AEC annual occupational dose limits. And I'll

get to why we adopted that in a moment. From '63 to '66, the layout man that Dave described would be the limiting scenario, and according to our analysis, the limiting dose, the bounding dose, the highest plausible dose that he would get, would be 9.2 R, and we did this one in roentgens per year.

And we did this with an MCNPX simulation, which I'll describe in a moment. Now, also, there were, for the other sources of exposure, the neutron dose, here, the bounding scenario would be the betatron operators and it didn't vary very much. It goes from 480 millirem down to 460 millirem.

1966 is cut in half because only half of it was the operational period. You only have six months here. Then we have the beta dose, again, varying. The hands and forearm, which are assumed to be in contact with both the uranium level and with the activated steel, as the case may be.

For the betatron operator, it would primarily would be the uranium. Now, going back to the radium radiographer.

Here's a picture of a radiographer and just the radiography source, of course, not the one used by GSI, but I got this from the ORISE website, but the operators agreed, yes, this is sort of like -- I described it on the phone and they said, yes, this sounds like the one that they had.

And here is an illustration, very old one, around 1940s, of the fishpole technique, and not quite the way they did it at GSI, but the idea is, here's a long pole, and string is attached to the end of it, and the radium source is suspended.

So the worker essentially holds it away from his body and then use it to transport it. Here's a photograph. This is not actually the fishpole technique, but I included this one to show that the radium would be kept in its shield, with a very little narrow cavity, and it would be lifted out so that, while it was in the shield, unless someone was directly above it, there wouldn't be any exposure.

Here are the bases for our assignment of these doses. We have the

application for the AEC license for those small cobalt-60 sources where they describe their previous history and their previous experience with the radium sources.

And they made the statement, and also the betatron, and here is the statement that's in the application saying that, during this period, the exposure limit published by AEC at the applicable time, I emphasize that, were followed. They never exceed an average under 25 percent.

I take that to mean that they might have been reached because if there were a small fraction, they would have said that. So that's where we get the 15 and 12 rem for the two respective periods.

But however, there is further information and one worker furnished his exposure history. It was prepared at the time they started using the cobalt sources, but it summarized his exposure over the previous 18 quarters, which is four and a half years.

And he had a total of 9.1 rem, so over four and a half years, that comes out

to 2 rem per year. However, his regular job was working in a laboratory doing some other testing that did not involve radiation. So he was not exposed to radiation. He was not wearing a film badge.

However, he moonlighted on weekends as a radiographer. He apparently had worked in another facility before coming to GSI and had some training, experience, and he, of course, didn't have an exact record of his work hours, but he told me he worked, typically, one to two shifts per weekend, 80 to 90 percent of the time.

So if you take the two limits of this, he could have worked as few as 40 and as many as 90 shifts a year, and therefore, he could have had anywhere between 22 and 50 millirem average exposure per shift; average dose per shift.

So now we take a full-time worker who worked 65 hours a week, and this, by the way, is probably an overestimate for this period. This was the workers who were there in '64, '65, they said there was a very intense effort and they were encouraged to

put in overtime, and that's how much they put in.

They probably put in less during those earlier years, but nevertheless, saying that they did have 65 hours a week, depending on, you know, how many hours this weekend worker worked, it could have been from 9 to 20 rem a year.

And then finally, and this same worker testified that he did have a film badge that he wore while he was performing radiography. So this very nicely spans the 12 to 15 rem a year based on the AEC limits, which GSI claimed that they followed; observed.

And then finally, we did an independent analysis using MCNPX and we followed that, okay, he's holding this pole 4 feet away from his body, this is the source, then he's there for, he said, 12 to 15 seconds, so I always took the lower, he said 4 to 6 feet, I said 4 feet, he said 12 to 15 seconds, I assumed 15 seconds, that was in the records, and in the shot records, was up to 10 times per shift.

So we got his total exposure over the course of a year, and in-between the time he was actually setting up the shot, we assumed that he was in this little radiography room, which had concrete walls.

Later on, they put in steel shielding, but it didn't have it at the time, and so they had 16-inch concrete walls, and so he would be getting exposed while he was waiting, you know, in-between exposures, while the film was being exposed, while he was sitting there waiting in that room.

And with all of these assumptions, again, on a full-time, 65-hour-a-week basis, the exposure was 10 rem. So these numbers are, being approached through entirely different ways, remarkably close; 10 rem, 9 to 20 rem, 12 to 15 rem, so we think the 12 to 15 is a very sound number.

And then furthermore, just indicate that they most likely using film badges as early as '53, here's a photograph out of a GSI magazine that was furnished to me by an advocate for the workers. He

actually furnished me the magazine so I could scan it myself and try to get a better picture.

And here, there was a device on his belt that looks very much like a film badge. Notice, he's wearing the white T-shirt, so he most likely didn't have a pocket, typically workers put the badges on the shirt pocket, but here, if they didn't have a pocket, he would put it on his belt.

And I found this photograph of a film badge from that era, which had the same general outline. This thick portion on top, the white area further down the border. So again, I'm not saying it was a Tracerlab badge, but it's plausible.

Next, we get to the layout man, and Dave already showed this picture, but I'm showing it again to give you more information. This is a diagram, again, from a later AEC application when they filed an application for an 80-curie cobalt source, and they said they were going to use it in this room; in the betatron shooting room.

Now, typically, the betatron

would be located around here, and the casting would be here, and they would shoot away from the control room, away from the occupied areas. And there were actually limit switches which prevented it from being turned.

It could only go, maybe, this far and this far in a forward direction, but not all the way back. However, there was a way to override the limit switches to, they call, drooping the head, and they were able to radiograph the casting right on the casting car.

And the reason for that was simply, speed; save time, save money. So they would bring the casting in, they would leave it on the casting car, and radiograph it, and then so they could take it out quickly.

Now, the procedure they used, the best analogy is a dentist filling a cavity. First a dentist takes an X-ray of your tooth, and identifies where the cavity is, then he drills it out, removes all the decayed tooth, and then he puts in a

filling, exactly what they did with the casting.

Here, the X-ray was taken. When they finished taking all the X-rays, they used 14x17 regular chest X-ray film, so consequently, the castings were usually larger, they would have to have a number of shots to cover the entire casting.

They would then remove the casting, and if this was something that was being done urgently because they wanted to ship it out quickly, because they don't get paid until they ship it out, so everyone was interested in getting paid, the workers would, you know, I don't know if they got a bonus.

At any rate, so we're assuming the plausible upper bound exposure where the casting was removed, then here, it's lifted up by a crane and put -- it can't be left on the railroad track because that would block traffic, so it was put off to the side here.

And the layout man comes, his job actually is, by this time, the film has been developed and delivered to him, so the

layout man looks at the film, he's the dentist, he looks at the film, he looks at the casting, and he marks the casting where the defects are; shows all the areas that need to be repaired.

Then the dentist, with his drill, here they are called chippers and grinders, which is exactly what they sound like, come in and chip away, and remove all the defective areas; regions. And then the welders come in, as a dentist filling, and with their welding metal, and fill-up the cavity, and restore it to where it should have been.

Now, while he's doing this layout --

CHAIRMAN MELIUS: Excuse me, Bob, can you speed up because we have other presentations and limited time, so let's try to wrap up. Can you wrap up, please. Can you speed up your presentation?

DR. ANIGSTEIN: Okay. Sorry. Sure. Anyway, in the meantime, they're shooting another casting here on this car. And here is the MCNPX model reproducing that

drawing, and here is the betatron, the casting, which is just represented by this hollow axle, and the position of the layout man, and if you do a straight line, he's actually within eyesight, you know, within view of the betatron.

He can't really see it, there is a very thin metal door here where it doesn't show up because it's part of the model. It doesn't show because of the scale. So he's getting the number of the beam. That's the source of his radiation.

Then, very quickly, we looked at the internal exposures, so we get the source of internal exposures would be, we wanted to see how much the activation really affected internal exposure.

So we calculated the dose from natural uranium, that's your 234, 235, 238 in natural abundances, and that comes out to 20 millirem per milligram inhaled. Then we looked at all the fission and activation products in the uranium for the 24 hours following betatron exposure, and this gives you an additional 10 to the minus 5 millirem

per milligram.

So it's completely ignorable. NIOSH actually increased this dose by 1 percent to be on the safe side. And then the activation products from the steel castings, assuming the workers, these chippers and grinders, were exposed to recently irradiated castings, continuously, eight hours a day, they get less a 1/10 of a millirem a year.

So again, that's insignificant. They do get direct exposure, but not inhalation. Inadvertent ingestion is about 1 percent of inhalation, so that can be ignored. And we looked at the annual doses from inhalation of natural uranium dust, we simply looked at the NIOSH model, and we agree, in principle, with the NIOSH model.

And it was given their assumption they calculated those correctly, however, we don't agree with all the assumptions. So we agree in principle, but not in detail.

And finally, during the residual period, we find that the uranium intakes are consistent with the NIOSH model, again,

given our reservation about some of the parameters. And then with the external, we concur with their assessment. Any questions?

CHAIRMAN MELIUS: We're going to take questions later. Thank you.

DR. ANIGSTEIN: We are at the end, fine.

CHAIRMAN MELIUS: Paul.

MEMBER ZIEMER: I want to remind you, at this point of the timeline, sources at GSI, this is, in part, important because the initial finding of SC&A in the findings matrix had to do with the early period, and by that, we're talking about the period from January 1st, 1953 until March '62, early part of the operational period, where we know that some of the practices may have changed at the point of the AEC license.

Initially, we had very little information about the early period. This was before some of the later materials were discovered, but in any event, just to remind you that, in that initial period, they had the first betatron and then the two radium

sources were in use.

Then, beginning in March, we had that original AEC license application, and I have here in the slide that's already been referred to, the license was granted, the two cobalt sources were used in replacing those radium sources, the second betatron was put into operation shortly after that in 1963, and also, those two portable X-ray units were obtained.

I don't have it on this slide, but it's already been mentioned that during that later period, also, we had St. Louis Testing using a 50-curie iridium source and a 10-curie cobalt source, doing some radiography on the site as well.

I will also mention to you, in the 80-curie cobalt source, which was obtained later beyond the operational period, but was used to, in a sense, calibrate the thicknesses of the walls for the second betatron.

I should point out to you, and I think the petitioner will also mention this, that some of the workers reported believed

that that 80-curie source was used prior to this licensing period.

We have a hard time understanding how that could come about, how they could have obtained such a source without license, but there are some conflicting worker reports on that issue, and also some conflicting worker reports on whether there was another iridium source, which would also have required a license.

In any event, when the Work Group evaluated the different parts of the findings matrix, that early period was, in a sense, separated out and looked at as a separate entity.

So I just have this timeline here to remind you of why that break occurred and the fact that the film badging is more complete, that is, there are records, mainly, for the period of '62, on, with the additional exception of that case that Bob just mentioned.

My intent here was to summarize the findings and I'm going to change, a little bit, how I do this. And I do want to

remind you that the issues resolution matrix, an updated version of that, was distributed to all of the Board Members earlier this month, so I don't want to go through all of those findings in detail, but I do want to highlight a couple of them here.

Particularly, issue 1, the initial finding was lack of radiation monitoring and data for 1953 to '63. Again, remember, this finding preceded much of the information that we have on that site now; number one.

Number two, there was concern expressed by SC&A in that finding about reports of specific incidents, one of which, was the possible taking home, or not taking home, but taking one of the radium sources, a person taking it, and putting it in his pocket, and carrying it around.

But in any event, there was concern about the assumptions for reconstructing doses in that early period. Concern about training, and monitoring, and other controls that may or may not have been

effect.

But more recently, both NIOSH and SC&A agreed that the doses could be bounded in that early period. The Work Group actually voted on this particular one. The vote was split. It was voted 2 to 1, there were three of the four Work Group Members present to vote, and the vote was not to recommend an SEC status for the early period.

And I say for the early period because we were actually thinking at that time that perhaps there could be, or there might be, an SEC for the early period and maybe not one for the later period, so we were separating it in our minds at that time.

Most of the other findings, and again, I think perhaps in the interest of time, I need not go through every one of these. They are summarized in your handout, or on your drive, but they are in the report, what the issues were.

Issues on the incomplete monitoring and that's been addressed through

bounding models so that the approach is not relying strictly on film badges to bound doses, and that's particularly true in the early period.

There was questions on documentation, but both after identifying the sources and additional information, SC&A has accepted NIOSH's approach for reconstructing doses. There was a lot of concern about film badges in the initial findings and also some particular concerns about how film badges responded.

This is more of one of those overarching issues, but for this particular site, there has been agreement on the use of the film badges there with respect to both energies and geometries. And the Work Group actually had closed that issue earlier.

There was concern about the validation of the earlier models, but later models, particularly with the normalizing of the film badge data that was done, has led to agreement between NIOSH and SC&A, that the modeling would be appropriate.

Concern on the early models

focused on the radiographers versus, what I'm calling here, non-exposed plant people, but the current models assign exposures to all workers and include the exposures originating from the betatron, the isotropic sources, and the other support activity.

So under the modeling approach, all workers, regardless of where they worked, would be assigned the appropriate dose.

Dose reconstructions not based on best available science. That particular finding had to do with an actual calculational error in the original Evaluation Report and some differences in the code models used by NIOSH and SC&A, but that has since been resolved.

Issue 8 on the modeling was a similar sort of thing and that issue also was resolved. The beta dose, there were two issues, one is something called the Putzier effect and NIOSH has agreed to include that in the main TBD-6000 -- well, actually, in the Appendix BB main document, so that would be addressed there. It's not an SEC issue.

And then the issue of skin dose has been addressed in the most recent models. The lack of consistency in the external exposures, that again, focused on a particular error in the early models and was since resolved and the issue was closed.

So I've given, here, a summary slide of the ten issues that were in the original findings matrix. Four of them were closed and they're indicated here, and the others were deemed not to be SEC issues and have been transferred to Appendix BB.

There was one issue that arose because the Work Group had not had an opportunity to address the residual period until last week, and we actually did this in a phone call.

And in that discussion, an issue arose on the appropriateness of using the TBD-6000 model that was described earlier by Dave Allen, and that is the model of the uranium slugs to, in a sense, represent this particular facility as far as the development of the inhalable materials, and it was basically a question of the

appropriateness of using that as a, sort of, surrogate.

So the Work Group has recommended that the Board not actually take action today on the SEC petition, but defer action until the next Full Board Meeting so that the Work Group can look at the issue of the appropriateness of that particular use of the TBD-6000 facility, which serves as a kind of surrogate, in establishing the contamination levels for the handling of the uranium in this particular facility.

And this will apply, actually, both to the operational period as well as to the residual period, although it arose during our discussion of the residual period. So we would like to have an opportunity to look at that until we make our final recommendation.

But aside from that, as you see, we have, essentially, either closed or moved the other issues out of the SEC finding matrix. So that completes my presentation. Dr. Melius, I don't know if you want questions for presenters before you hear

from the petitioner?

CHAIRMAN MELIUS: Yes. I think now would be a good time and thank you, Dr. Ziemer, for organizing a comprehensive presentation on what's been a lot of work. So, Board Members, do we have questions for any of the three presenters, please? Wanda?

MEMBER MUNN: Just one piece of information --

MR. KATZ: Wanda, your mic, I think, might be off.

MEMBER MUNN: Is it on? Closer than this?

MR. KATZ: That's perfect.

MEMBER MUNN: All right. Do we currently have any outstanding claims from this site that have not already been reconstructed? When the Evaluation Report was issued, there were less than 300 claims and most of them had been already submitted at that time. Do we have outstanding ones currently?

MR. ALLEN: I'm not sure if we have any outstanding right now. If there are, there's only a few that had come in

recently. We have been doing those dose reconstructions under Appendix BB and we know that is going to be revised once all these issues are resolved, and then we will perform a PER process on all those claims.

MEMBER MUNN: I just wanted to verify. I thought we had done them all. Thank you.

CHAIRMAN MELIUS: And I remind the Board, I think Ted sent out, maybe even yesterday, okay, I saw it in my email, a summary of the claims so far by year, and it didn't answer your question, Wanda, I don't believe, but it does have a summary of Probability of Causation, and other issues related to the years there.

MEMBER MUNN: I have had non-functional email for the last 24 hours.

CHAIRMAN MELIUS: Okay.

MEMBER MUNN: Thank you.

CHAIRMAN MELIUS: Yes, Brad?

MEMBER CLAWSON: I guess this is more for NIOSH. Out of this, I've seen film badge, but do we have any film badge information or any kind of real bioassay, or

anything, for GSI, or are these all models?

MR. ALLEN: We have the film badge data starting November of '63. It's the last three years or so of the covered period and a period of time beyond that covered period. We have a, I think Bob mentioned this, summary of one person's film badge data for some time frame before that.

MEMBER CLAWSON: But was this summary, did it have the doses or what did we actually have?

MR. ALLEN: Yes, it had doses, Bob, can you correct me if I'm wrong, but I think it was a total dose over 18 months? No, more than that. Eighteen quarters and a total dose over that.

MEMBER CLAWSON: It's interesting to me because, I guess, I have to rely on my previous life as a radiographer, because I started to look at this and you guys started putting time frames on everything, and it just really amazed me. It amazed me that you could come up with that because I sure couldn't have.

It appeared to me that most of

this information, I heard many times the term used, we think, you know, you're trying to reconstruct this, and I understand what it's at, but really, we don't have, in my mind, any kind of information.

To say that cobalt 80-curie source is fairly small, I used a 90 to be able to do 6-foot concrete walls, so they're pretty powerful. And the scatter on those are unbelievable.

And for us to try to -- I'm just amazed that -- and I'm not saying that the models aren't good, I'm just saying, it's amazing to me that we're trying to do this with no information, because to try to reconstruct something like this, just, to me, it's not really feasible.

MR. ALLEN: Well, just to clarify one thing real quick, that 80-curie cobalt source came after the covered period. The small cobalt sources we were talking about were nominally quarter curie, 260 millicurie, and 280 millicurie assayed value.

And also, this was different than

-- I'm not sure what your experience with the radiographer would be. A lot of people have experience doing radiography for maintenance. You know, some piping needs to be repaired or a piece of equipment replaced, and you do radiography on it, that would be very difficult.

This, on the other hand, was a production facility to where they would do campaigns of the same type of thing they were making over and over so the operators could remember quite a bit of what their normal routine was on this stuff, such as in the Number 6 Building radiography room, they said, almost always, it was these, I believe, railcar frames, essentially, that they were X-raying.

CHAIRMAN MELIUS: Paul, I think you had a response.

MEMBER ZIEMER: I was just going to mention, relative to the revision of --

MR. KATZ: Paul, your mic is off, I think.

MEMBER ZIEMER: Relative to the Appendix BB, one of the changes that was

agreed upon quite early was the work week at GSI is actually longer than 40 hours. And I believe, and maybe Dave can correct me if I'm wrong but, that the claims that had been previously done were done with the shorter work week.

So as a minimum, I believe most of those claims will certainly have to be reworked, if only to extend the time period, which will, I suspect, increase the PoCs to some extent, we don't know how much, it'll depend on the particular case, but that's one change that will occur in any event.

CHAIRMAN MELIUS: Dave Kotelchuck.

MEMBER KOTELCHUCK: I wanted to call attention to the material in the SC&A report about the FUSRAP investigation of the betatron buildings in 1989. We have very little hard data, almost none, from before 1963, after '63, there is good film badge data.

But the fact that the old betatron building still had residual radiation and the new betatron building did

not, suggests to me something perfectly reasonable, which is that, people have a learning curve and that practices in the old betatron building, as they were learning to do this procedure and do it as safely as they could, were improved over time.

But that, the early days things were, if you will, a bit messy, and therefore, there were some problems. And the FUSRAP data concerns me that, it seems to me to be evidence that that was the case and make me quite cautious about the assumptions during the period up through 1963.

The hard data, as I understand it, is from this one gentleman, who Dr. Anigstein referred to, and there were some issues and questions about the quality of his reporting, although, if we take one person's word, then we might begin to take one person's word, who was a worker and not a professional, who said, you know, there were problems and film badges were ignored because they read high, et cetera.

And so I'm concerned and I was

curious if either Mr. Allen or Dr. Anigstein wanted to comment about that.

DR. ANIGSTEIN: Let's see now, several things were brought up, as far as the models are concerned, they were all verified. You know, we have verification that pointed out the models at 10 rem, the film badge, depending how, you know, many hours the man really worked, was in that, you know, 9 to 20 rem.

The statement made by the GSI administration to the AEC saying that the workers have always been monitored, or at least the operators, and they never exceeded these criteria, they would have no reason to lie about it because the AEC could have said, let me see your records. You know, we would like to verify that.

You know, it's a felony making a false statement on an application, and they would have no reason to do that because they were not even under AEC control during that period. They had a voluntary radiation control program. It was not under state supervision. It was not under federal

supervision.

There were using radium, which wasn't regulated by the AEC, and it's still not by the NRC, and the state did not get into that business until -- they weren't even empowered to do it until about 1961. And as soon as they did get into the business, what they disapproved of was the fishpole technique.

And the fishpole technique, now, is explicitly forbidden. I just did a Web search and a number of states explicitly forbid it, so it's the idea of using it. As a matter of fact, as soon as they switched to the cobalt-60 sources, they were entirely different.

They were inside the radiographic camera, they were inside a heave lead shield, and they were operated remotely, you know, with a mechanical cable, and were cranked in and out.

The radiographer was behind a shield when he was doing this and that same worker who had 9 rem over four and a half years, suddenly, when they started using the

cobalt-60 sources, his doses dropped right down to 10 millirem a week, and basically, he was assigned that because the badge read nothing, so he was given that as the default amount.

So there was a vast improvement at that time. Now, as far as the FUSRAP, first of all, the old betatron building was in use ten years earlier. It was in use from, uranium radiography, we assume, 1953, in my opinion, it could have been as early as 1953, until the new betatron building, didn't go into operation, probably, until '64. It was built in '63.

So you had 10 or 12 years of additional uranium radiography in the old betatron building and only about two and a half years of uranium radiography during the time the new betatron was in operation.

And I think there's also good reason to believe that the uranium was probably handled in the old betatron building, because this was a sideline.

They were getting, you know, peanuts; $500 here, even those days, that

wasn't very much money to do this. Where the big business was selling the castings. And the new betatron was built next to that Number 10 Finishing Building so they could move the castings in and out quickly.

So there probably wasn't much uranium done there. They probably did it in the old building and while they were doing the steel in the new building. So that would be the difference. It wouldn't be, you know, like practices improved because this was simply dust settling off the uranium. It wouldn't have been very much difference in their practice.

And there also may have been more cleaning up in the new building. This is a little speculative, but I don't think it's a serious issue.

MEMBER KOTELCHUCK: Okay. Thank you.

CHAIRMAN MELIUS: I'm going to -- okay, we'll take Wanda's question, then I want to give time for the petitioner. So, Wanda?

MEMBER MUNN: It's not a

question. It's a statement.

CHAIRMAN MELIUS: Okay.

MEMBER MUNN: It is disturbing that this body has repeatedly heard the kind of comment that we just heard that professionals not being workers, and why professionals aren't workers, since they're there too, I don't know, therefore, provide information that is suspect.

One cannot help but take umbrage at that. And it is incorrect. It is very, very poor technique, and certainly, bad science for this body to take that position, as they have frequently, and it needs to be put on the table and thought about.

That's not correct. It should not be implied and nothing should be inferred from it by parties hearing that statement.

CHAIRMAN MELIUS: Well, we should take that up another time. Let's try to move on with GSI. And I believe that we have the petitioner on the line.

DR. MCKEEL: Yes, Dr. Melius, this is Dan McKeel.

CHAIRMAN MELIUS: Thank you.

DR. MCKEEL: Can you hear me?

CHAIRMAN MELIUS: Yes, we can.

DR. MCKEEL: Okay. I'm sorry. I'm having a little mute problem. Can you hear me okay now?

CHAIRMAN MELIUS: Yes, we can.

DR. MCKEEL: Okay. Well, good morning, to the Board. I was allotted just ten minutes by Dr. Melius, which is a historical ABRWH precedence. I have to rebut 51 slides, just presented, in those ten minutes, but I did submit to all a 25-page written remarks yesterday, that primarily address Dave Allen's NIOSH presentation and how the vote went on 3/15 and 6/14 in the TBD-6000 Work Group.

John Mauro of SC&A, on October the 12th, 2010, gave a speech on an SEC for General Steel Industries for the first ten years to the TBD-6k Work Group. He said, and I quote, “The first basket is the showstopper.”

If we can't, if the Board, the Work Group, and the Board struggles with the

idea that we've got ten years of people working in radiographic operations, no film badge data, and no radiologic protection, no occupational records, programs where we could track people who might have been injured, might have received overexposure, if that's the case for the pre-film badge, I'm saying right now, the critical path on whether this goes down as an SEC or not is going to be held to pre-1962 time period, is going to be dealt with for the issues that I just described.

What happened between then and now, October 2010 and today? NIOSH was given a second chance to redo all its dose reconstruction methods under the David Allen Path Forward for GSI. A major reason was that GSI film badge data diverged too much from NIOSH and SC&A, MCNP, and Attila, 2008 modeled external doses for betatron operators, and other workers, based on layout worker dot doses.

Over the past 21 months, SC&A and NIOSH shared development of MCNPX models for one betatron only, despite having no real

betatron measure data, either at GSI or in the literature, to validate the models. The petitioners reject the notion that a CO-60 source data in 1971 can be used to validate external betatron radiation doses 1953 to 1966.

Doses from the old betatron were not bounded with sufficient accuracy. Old and new betatron facilities are not equivalent, as Dr. Anigstein shows. As my table on Page 23 shows, and I ask you all to please view that, the SC&A and NIOSH 2012 rework MCNPX models do not agree with each other better than by twofold.

A model and validation data should agree plus or minus 10 to 20 percent. That's the rule in academia. That's the gold standard. The 2012 betatron dose is 90 percent lower than 2008 and the layout worker dose increases dramatically between 2008 and 2012.

This shows that computer models are not reliable and do not agree with each or with the GSI radiographer Landauer film badge data.

NIOSH failed to develop models for GSI and St. Louis Testing Company at 50-curie iridium-192 sources, for the 80-curie CO-60 source that workers say was at GSI in 1964, '96, for the two 250 kVp X-ray units, for the 1957 to '60 iridium-192 source that was at GSI, and they needed to bound these external doses with sufficient accuracy for all their uses, locations, and job categories during the operational period as required by OCAS-IG-003, and they could not do that.

On 3/15/12, Dr. Ziemer and Wanda Munn voted to uphold the NIOSH recommendation to deny SEC 105. This morning, Dr. Ziemer says, for the period 1953 to 1962. I heard the vote as saying for the entire period.

Josie Beach voted to approve an SEC for 1953 to 1963, stating evidence used by her colleagues was "too skimpy". Here is what that too skimpy evidence was. In 1953 to 1957, a GSI magazine grainy photo of a belt object on one radiographer that John Ramspott and Dan McKeel now believe is a GSI

identification badge, not a film badge.

The film badge retraction by them was sent to all Board Members and to NIOSH, and yet, that was not mentioned at all today. The GSI 1962 license application contained a GSI management letter to the AEC that has been referred to by Dr. Anigstein.

And it reads, I quote, "During this period, 1953 to '62, the exposure limits published by AEC at the applicable time were followed. They were never exceeded and averaged under 25 percent."

My comment is, yet, no such film badge data has been located to backup this letter. The letter was not corroborated by GSI workers who thought much of the GSI AEC license information was untrue and self-serving to the GSI management.

One GSI worker has a summary film badge report, 1957-'61, but again, no actual film badge data reports back this up. The film badge vendor is not known and the picture that Dr. Anigstein shows of a possible vendor is simply not corroborated.

My eighth point that GSI measured

data in totality consists of the following, that is real data. A, the Nuclear Consulting Corporation's 1962 Building 6 small cobalt-60 source survey, which is part of the AEC license application, 1971 80-curie cobalt-60 source survey of the new betatron only, film badge data on a 108 radiographers, 1964 and 1973, who wore those badges part-time.

Then there, finally, there's a uranium dust dose from a small vacuum in the old betatron building by ORNL in 1989. Ninth point, next to last. TBD-6000 Work Group, on 6/14/12, then voted 3 to 1 to recommend the Full Board defer an SEC vote for GSI on June 20th.

The Work Group then indicated that they would task SC&A to review the use of surrogate data at GSI during both the operational and residual periods. The yes votes that day were Ziemer, Beach, and Poston, no vote was Munn.

The petitioners believe that computer models, not validated by real data from the source or the site being evaluated,

should be viewed as surrogate data. So we believe the surrogate data at GSI is far more prevalent than just TBD-6000.

What data is missing in the way of real measured data at GSI? This point needs to be emphasized and has not been mentioned today. 97 percent of the total GSI workforce of 3,000-plus people was not monitored by film badges at any time, but should have been.

A 100 percent of the workforce had no internal monitoring of any kind. There was no air or breathing zone, or urine uranium bioassay intake data. There were no direct dose measurements from any source for photons, beta, or neutrons.

All values are calculations or computer simulations of radiation dose, or inappropriately used surrogate data. The exceptions, such as the limited film badge data, are listed above as real GSI data.

Here's what I conclude. Since 2005, when OCAS Director Elliot told me that GSI was "unique" and "had no monitoring data," the co-petitioner has believed that

GSI merited an 83.14 SEC for the full operational period to the present.

I equate sufficient accuracy with beyond reasonable doubt of accuracy rather than any claimant favorable plausible bounding term that truly defies scientific definition. I believe that qualitative data that NIOSH, SC&A, and two TBD-6000 Board Members have recently accepted, uncritically, as being valid, such as computer model values, letters, summary reports, and pictures, should not be allowed to substitute for film badge and other rigorous quantitative physical measurement data that should define the core SEC term sufficient accuracy.

Real monitoring data do not exist for 97 percent of the SEC 00105 Class. Final comment is that, Appendix BB rev 0 from June 2007, needs to be revised as soon as possible. I want to thank the Board for its time today.

CHAIRMAN MELIUS: Thank you, Dr. McKeel. I also draw the Board's attention to, we have a letter that is on your -- I

think you all received from the other co-petitioner. It's listed as Advisory Board Letter and I don't believe the other co-petitioner wants to make any comments, but if you'd like to, you may.

Okay. If not, then just draw attention to the letter. Okay. We have some minutes left for additional questions or comments on this. Dr. Ziemer, do you have any --

MEMBER ZIEMER: No, I have no additional questions or comments. I think if Board Members have questions for Dr. McKeel, it would be appropriate as well.

CHAIRMAN MELIUS: No, I was including him as everybody at this point. Bill Field, are you on the line?

MEMBER FIELD: Yes, I'm on the line. I don't have any questions. I appreciate the very comprehensive presentations today as well as the petitioner's comments.

CHAIRMAN MELIUS: Okay. Thank you, Bill. Okay, Bob, you want to --

DR. ANIGSTEIN: I have one

comment on one of Dr. McKeel's statements regarding that there was a drastic change in the model between 2008 and 2012. That is incorrect. In the 2008 report, we identified the betatron operator as the limiting dose, that was before we had film badge data, and the layout man was actually a very close second. The two were very close.

I didn't list the annual doses. I simply listed the doses per shift, but the doses changed somewhat because we got better drawings of the betatron building in the AEC application. So there were walls that were not shown in the FUSRAP report, but the difference was not great.

CHAIRMAN MELIUS: Okay. Thank you. Paul, do you want to, sort of, sum up the path forward now and timing on that for us?

MEMBER ZIEMER: Yes, the Work Group needs to meet again and address the issue that I identified, which had to do with the appropriateness of the selection of the slug facility as a, sort of, surrogate

for this facility as far as the uranium contamination levels.

I've asked Ted to look at possible dates, if you can go doses too, Ted, that'd be great, but possible dates; sometime late-July or early-August is what I'm hoping for. And we want to come back with a definite final recommendation at the next full Board meeting.

And in the meantime, I know that there's been a lot of documents that all of you have received, some of them are the NIOSH documents, some are the SC&A, a number of them are from the petitioner or co-petitioner, and this will give you a little more breathing space to digest those documents as well.

And you've heard, today, sort of, the highlights of the various positions and concerns, so I think it behooves all the Board Members to take the time now, between now and the next meeting, and digest this material.

And then determine what you think is the best, sort of, final position on

this. And this, in my mind, has the possibility of being broken into pieces, if necessary, or to be done in one fell swoop. So I think you'll have to determine that, whether there are differing circumstances in the various periods that would cause you to consider them differently.

But in any event, I think the additional time will help Board Members, particularly the new ones who have not had a chance to follow this for quite the length of time that others have.

CHAIRMAN MELIUS: And also, can I just remind people, if you have questions or you can't find a document that deals with a particular issue, you know, please contact, I think, Dr. Ziemer, or any other people involved, SC&A, or NIOSH, rather than wait until the next Board Meeting.

I'd also ask that, if I understand right, SC&A is doing one more report before the Work Group meeting, is that correct or are they just going to report to you on that?

MEMBER ZIEMER: Well, I think

what we agreed, during our phone meeting, was that we might want to task SC&A at this meeting, this would be Board tasking, for them to examine the matter of what we're, sort of, referring to as the surrogate use here, prior to the next Work Group meeting, but I think the tasking has yet to be done.

CHAIRMAN MELIUS: Well, why don't we do it right now while you're still here.

MEMBER ZIEMER: Well, I'd like to recommend, then, to the Board that we task SC&A to evaluate the appropriateness of the use of the TBD-6000 slug facility use as a surrogate as it might be appropriate when examined in light of our surrogate data criteria.

I'm not sure what I just said, but if you think you understood it, I think you should vote for it.

CHAIRMAN MELIUS: Yes, it made sense. Do we have a second to that?

MEMBER ANDERSON: I'll second that.

CHAIRMAN MELIUS: So a second from Henry and all in favor say aye.

(Chorus of ayes.)

CHAIRMAN MELIUS: Opposed. And I just remind the Board, the Work Groups themselves can also do the tasking. So that's not necessarily that we come back to the Board, so at least for the new Members, remember that.

And what I would ask is that, when SC&A completes that report, if they could share it with the entire Board, not just with the Work Group, because that'll help us get ready for the September meeting rather than getting something just a few days, or a few weeks, before, and remind us if there are further questions. Yes, Henry.

MEMBER ANDERSON: So we're going to have this at our next face-to-face meeting?

CHAIRMAN MELIUS: The September meeting, yes.

MEMBER ANDERSON: I think it's complex enough.

CHAIRMAN MELIUS: Yes, and I agree, and I think that was what the Work Group thought also, and given the timing for

the next Work Group meeting. Why don't we take a break and we need you back here at 10:45.

We have another SEC to discuss and we will need to -- the petitioner will be on the line, I believe, so we need to try to start, fairly promptly, at 10:45.

(Whereupon, the above-entitled matter went off the record at 10:31 a.m. and resumed at 10:49 a.m.)

CHAIRMAN MELIUS: Welcome back, everybody. I think we got everybody back. We'll now have a presentation on the Clarksville facility SEC petition. This is an 83.14 and Stu's going to do it. We got the top gun.

MR. HINNEFELD: Good morning, yes. I'm really not your -- Dr. Lara Hughes is our primary investigator on the Clarksville facility; primary contact. I'm here to assist her, probably not very capably, but at least she is on the phone and so I think she can help out with questions later on if needed.

Okay. I'm here to present the

results of our Evaluation Report for the Clarksville Modification Center, often times we call it the Clarksville facility, but I think it was just March of this year there was a federal registry notice from the Department of Labor to change their official covered name to the Clarksville Modification Center.

It's on the property of Fort Campbell in Tennessee. Well, it's on the border between Tennessee and Kentucky, I guess. The address might be Kentucky, I guess, but it's on the border in-between.

This is an 83.14 petition. We concluded that dose reconstruction wasn't feasible for Clarksville Modification Center. We notified that claimant that dose reconstruction wasn't feasible, provided the Form A, and the petitioner then returned on May 24th, and then we issued an Evaluation Report, which we had been working on. That's why we could get it done in a week.

The facility is covered under EEOICPA from 1949 to 1967. It's a DOE facility as opposed to an AWE. It's part of

Fort Campbell, contains a portion of the base, it's on the Tennessee/Kentucky border, not too far from Nashville. It's constructed by the AEC as a weapons storage area and it was jointly operated by the AEC.

It's contractor was Sandia Corporation and then there were also military personnel who were on the facility at times as well.

The site became operational in August 1949, that's when the nuclear materials arrived, and some sort of, I think it was a strategic bombing wing, or some Air Force organization that doesn't mean a lot to me, arrived there.

The nuclear capsule, during the earlier weapons, if you'll remember, was the fissile component, the nuclear component. And there's more to the weapon than that, but that is one piece of it. The nuclear capsules predated what we call the sealed pit design, which was later on.

There were weapons assembly and modification, and disassembly operations there. There were a number of structures

associated with the nuclear capsules part, just the storage, and places where they would do maintenance and inspection on those.

And then there were other facilities that were constructed for the remainder of the weapon storage and for maintenance and modification to the other pieces of the weapons.

So recall that, while we consider the pit, or the capsule, the nuclear component, if you'll remember from our discussions at Pantex, there are radioactive materials in the other part of the weapon as well. So all of these buildings, there was potential for exposure.

The activity and maintenance with respect to the nuclear capsules involved checking the fissile material, and by that, we mean the activity of the fissile material. And they did that by introducing a neutron source and making sure they were getting enough multiplication.

And they also, during the time of when the initiators on these weapons were

made from a polonium/beryllium neutron source, those had to be replaced with some frequency because of the short half-life of the polonium.

AEC transferred the operations to the Pantex in 1965, but there would continue to be some remaining activities there, including storage, and perhaps some remaining activities. To be honest, we have some inconsistent accounts of when things really wrapped up there.

And so the covered period, at the end of '67, we don't have a convincing story that things were done earlier than '67, so we're treating the entire covered period en masse here rather than to say there is a convincing reason to stop sooner than that.

And the workforce ranged from a 118 to 230 based on the monitoring summary reports that were submitted. They wrote annual summary reports and they would say the number of monitored and unmonitored employees, and so that's what those numbers come from is those exposure monitoring reports.

This slide shows a picture, I think we presented this one because we had a document that showed it, of the nuclear capsule storage and work area; one of the types. There were other types of nuclear capsule storage areas that were added later on.

These were, essentially, tunnels, I believe, in the side of a hill. There were A, B, and C structures in this one long tunnel. The A structure is all the way down at the end and it's blowup is down there on the bottom right. That's where the nuclear capsules were stored.

They were brought out to the C structure. That blowup is on the upper left corner. That's where the actual maintenance, and inspection activities, and replacement of the initiators was done. And then the B structure was just some additional room. It was, essentially a backup to the C structure.

We don't have a similar diagram or drawing of the weapon storage facility or the gravel gerties that were used for the

modification.

This is all very similar to the Pantex facility. Pantex assembled the weapons and then did disassembly for maintenance and modification just as Clarksville facility did. So it's the same kind of exposure situation that workers would have encountered at Pantex.

We have our usual sources of available information. We captured a fair amount of information on Clarksville. We have out existing claim files. Because of the similarities with Pantex, we considered the similarities of Pantex as we go forward; as we presented this.

And we have some worker interviews as well as the normal computer-assisted telephone interviews we do as part of dose reconstruction, then we've done some data captures.

Data captures were at our normal, we call it, sort of, our due diligence list of places. You know, before we make a decision we want to make sure we ask, sort of, the standard checklist of places to see

if we can find information that's relevant that would help us reconstruct doses at the site.

And here are the claim statistics. As of the date of this slide, we had 92 claims from Clarksville, all of which would meet the recommended Class years because our recommended Class is the entire covered period.

We had done dose reconstructions for 70 of those and these were done in accordance with Site Profiles which we had written, which, those Site Profiles relied, to some extent, on data from Pantex as a surrogate, and to some extent, on models that were considered at Pantex and considered to be not sufficiently accurate by the Board's action on Pantex.

So you can see that none of those claim files have any internal dosimetry; a handful have external dosimetry. We do have a pretty complete list of dosimetry summary reports that the site prepared showing how many people were monitored and how many in these various ranges.

So there is a fair amount of external exposure information available, but there's very little, or no, internal exposure. The claim files don't have any internal dosimetry data. I'm not sure that we found anything that, you know, we would count as internal exposure data.

There are reports we have read that would indicate that there was an air sampling program. We haven't seen the air sampling results and we don't know if those were breathing zone samples or some sort of general air samples. We don't know where the sampler heads would have been placed.

Some documents describe a plan for tritium bioassay, but we've never seen any tritium results or any additional description of, you know, a summary of how many they took or anything like that.

Potential exposures here are the same that you would encounter at Pantex. We include radon in here because there are some radon measurements from this facility after the covered period had ended and it was elevated. I mean, they're in the Evaluation

Report.

Most of them are in the 20 to 40 picocuries per liter, which is pretty high for a site that doesn't have any radium. It's just, you know, radon in the tunnels.

(Telephonic interference.)

MR. KATZ: Excuse me. There are people on the line who haven't muted their phones. If you would please press *6, if you don't have a mute button to mute your phone. Thank you.

DR. HINNEFELD: We list on here, you know, we do have high-enriched uranium and plutonium in here. Those are typically in the nuclear package and as we talked about Pantex, the internal exposure potential from the nuclear package is really relatively low, but the internal exposure from the depleted uranium and the other pieces in the other part of the weapon is, really, the issue that led to the Class at Pantex.

I don't think cesium is an internal potential because cesium was in an instrument. It was in what's called a spark

tube. One of the instruments that were used, either in the weapon or in the inspection of the weapon. So cesium is in the external although it's listed in the internal also.

External exposures are from those same things. Polonium initiator would be a potential source also for an external dose; and they did have some radiography there as well.

We have almost no bioassay data that we've captured. Like I said, none of the claims have any internal monitoring data. There is a letter that describes one individual who was sampled, he gave five samples, because of a depleted uranium potential exposure, apparently, because the memo talks about D-38, which would be depleted uranium.

The person gave two samples on one day, two samples on the next day, it was like a morning and an afternoon sample, on those two days. And then there were two days off, which might be a weekend. I didn't check to make sure. And then, on the

following day, there's one sample on that following day.

None of those samples found anything. There was no detectable in there, so the conclusion was D-38. We don't know what the analytical technique was, although I would presume in 1962 it was fluorometric. That was pretty well established by that time.

The analysis was done by Oak Ridge National Laboratory, so that's the only bioassay data we've seen any indication of.

The external monitoring data was provided by Sandia and annual reports are generally available. We have a pretty complete list of the annual summary reports on the external dosimetry. They added NTA film at some point, but we don't have NTA results.

For instance, the annual reports that were prepared say this many people got between 0 and 1 rem, but there's no distinction between photons and neutrons, so we don't really know what kind of a neutron

result you have.

And we have other dosimetry reports, some weekly summary data, so we have a pretty good body of summary information and then some individually more specific information.

We have a little bit of information about workplace contamination surveys for a limited amount of time. We've seen documents that seem to describe tritium air monitoring and other, you know, contamination surveys, but we've not found any tritium monitoring data.

There's no record of radon monitoring during the covered period. There were some radon monitoring campaigns. It wasn't really a routine program, but radon monitoring was in a series campaigns that occurred after the covered period.

Source terms, you know, it's the same kind of information that you would have at Pantex. The kind of work doesn't lend itself to a source term model very well, to build a source term model to say we can model this intake from building a source

term model.

So our feasibility determination is that the available internal monitoring records and other types of information are not adequate to provide sufficiently accurate dose reconstruction for the covered period. And these findings are very analogous to the decision that was reached for the Pantex facility.

And in fact, the decision on the Pantex facility, since these facilities essentially did the same work, and to a certain extent, their dose reconstruction technique relied on some Pantex data that we had that was for a surrogate for this work, because we had more data on Pantex than we had here, even though we didn't have that good of data in Pantex, we felt, well, if the data is not good enough for Pantex it's not good enough for this site.

So we proceeded forward with the 83.14. You know, this work was wrapped up. It occurs kind of concurrently with Pantex as I remember the Pantex covered period.

We had a hard time believing that

they would have had a good uranium monitoring program at these facilities and then stop doing it when they moved that work to Pantex.

Now, on the external dose, we do state in our Evaluation Report, and we state in our presentation with some certainty that we believe we can do external down the line. First of all, we will do medical X-rays in accordance with our site-wide documents.

We don't have any indication that their annual physicals would have been elsewhere, so we would include the medical X-rays. As I said, we do have a pretty good set of summary data that we believe we can apply a co-worker approach from that for, you know, photons predominantly.

And at the time we wrote this, we feel like we can do neutron to photon ratios from similar operations. And I think that may be an open question. These techniques would only be used for partial dose reconstructions. In other words, a dose reconstruction for someone who doesn't get paid through the SEC, doesn't affect the

decision on the Class, but it would affect how we do partials.

We still have a little work to finalize on exactly what the partial dose reconstruction is going to look like. Part of it is verifying to ourselves that our neutron to photon data is appropriate and we do have a good way to do that.

And then we also have some classified documents to review at a couple of places that are relevant to the site. We got no indication that anything is going to be there about uranium intake; it's about other types of things. Those things might inform us on our partial dose reconstructions as well.

So we still have a couple of those to knock out. I know one of them is next week. So we're just going to look at that. I know Brad has seen some information relative to these sites on some of the captures he's been on. He might be able to add information to this later on if we want.

Our summary of our feasibility findings is, for internal, we don't feel

like there's sufficient information to do a sufficiently accurate internal of any fashion. You know, we don't feel like there's any component internal that we can say, we can reconstruct that component of dose for all the claims.

If in fact we find some internal data, we will include it in the dose reconstruction for that particular claim if it's a non-SEC cancer if we, in fact, get some internal data.

For dose reconstruction, we believe it's feasible down the way. As I said, we still want to justify the neutron decision to ourselves, whether we can really do that. That's just a matter of, is there going to be a neutron component in this partial dose reconstruction or not? That's the only thing that that decision will affect.

So for health endangerment, we have concluded from our evaluation that some workers in the Class may have accumulated chronic radiation exposures through intakes of radionuclides and direct exposure to

radioactive materials.

And so we believe that their health may have been endangered if they worked there for 250 days or longer, or in aggregate with other Classes. We did not find evidence of a single incident that would result in a large dose and would therefore, allow us to specify a Class at that facility. So we believe it's 250 days for health endangerment.

So our proposed Class is all employees of the Department of Energy, its predecessor agencies, and DOE contractors and subcontractors, so on and so forth, for the entire covered period, August 1st, 1949 to December 31st, 1967, for the 250 days.

I believe that's the end. Yes. One final slide is that we do not believe it's feasible and, yes, we do believe health is was endangered.

I will try to answer questions you may have, either about the presentation or the Evaluation Report. Dr. Hughes is on the phone, I believe, so she might be helpful if the questions are very hard.

It's always good to have smart people working for you when you're not very smart.

CHAIRMAN MELIUS: Well, you did an excellent job.

MR. HINNEFELD: Thank you.

CHAIRMAN MELIUS: Brad.

MEMBER CLAWSON: Stu, I just was looking at your proposed Class and it has August 1st, '49 and then in the next slide it has January 1st, '49.

MR. HINNEFELD: It's August.

MEMBER CLAWSON: It's August? Okay.

MR. HINNEFELD: It's whatever is written in the Evaluation Report, which I'm pretty sure is August.

MEMBER CLAWSON: Okay. I just wanted to make sure on that --

MR. HINNEFELD: Sorry. It's a typo on the slide.

MEMBER CLAWSON: -- because we have two different ones there.

CHAIRMAN MELIUS: Good pick up, Brad. Gen.

MEMBER ROESSLER: I tried to find

this on the website, Stu, and I couldn't quickly, but you talked about Pantex. Is there an SEC for Pantex or is that --

MR. HINNEFELD: Yes. The Board recommended adding an SEC for Pantex after the telephone call, right?

CHAIRMAN MELIUS: Yes.

MR. HINNEFELD: The last telephone call.

MEMBER ROESSLER: I don't think it's on the website yet. Maybe that --

MR. HINNEFELD: Well, it may not be effective yet. Remember, from the Board's vote, there's almost three months, sometimes, before the effective date.

MEMBER ROESSLER: Okay.

MR. HINNEFELD: And so I believe it's not yet effective, but it's on the way.

MEMBER ROESSLER: Okay. Thanks.

MR. HINNEFELD: Isn't that right, Jim, or is it effective?

CHAIRMAN MELIUS: I think it should be in place.

MEMBER CLAWSON: It's already, Stu --

MR. HINNEFELD: Is it effective?

MEMBER CLAWSON: -- it's in place, yes.

MR. HINNEFELD: Okay.

CHAIRMAN MELIUS: I think it's more the website's --

MR. HINNEFELD: Maybe the website's behind.

CHAIRMAN MELIUS: -- reconstruction is --

MR. HINNEFELD: Well, I would blame Chris Ellison, but I'm sure it's my SEC team leader's fault that he didn't get the word to her.

CHAIRMAN MELIUS: Yes. We'll remind him of that when --

MR. HINNEFELD: Okay.

CHAIRMAN MELIUS: -- we get our chance later. Okay. Any other questions? Paul, I'm sorry.

MEMBER ZIEMER: Stu, could you remind us, on the claims tracking, you have completed 70 of 90 dose reconstructions. Now, what did you do on those as far as internal?

MR. HINNEFELD: There was a model approach, sort of, an attempt to model the amount of depleted uranium that might be there and that was an approach, I think, that was not convincing in the Pantex discussion. There was also a --

MEMBER ZIEMER: Well, this was pre-Pantex when these were done and then --

MR. HINNEFELD: Yes, these Site Profiles were written back when we had a Site Profile for Pantex and felt that we could do dose reconstructions there.

MEMBER ZIEMER: Got you.

CHAIRMAN MELIUS: Wanda.

MEMBER MUNN: I'm ready to propose a Class if you're ready for the motion.

CHAIRMAN MELIUS: I see nobody else --

MR. HINNEFELD: Is the petitioner on? Ted, is the petitioner participating in this one?

CHAIRMAN MELIUS: Yes, we need to do the petitioner first and I also need to ask Bill Field if he has any questions.

MEMBER FIELD: No questions for me.

CHAIRMAN MELIUS: Okay. And I believe the petitioner is present. I'm not sure that he or she wishes to speak, and you're not required to, but if you'd like to say anything at this point, you're welcome to. Okay. I'll assume the petitioner doesn't want to make comments and then we can move on.

We have a motion and a second to that, and barring further discussion, Ted, do you want to go ahead and call the roll?

MR. KATZ: Sure.

MEMBER MUNN: Yes. I'll be glad to move that the Board accept the proposed Class.

CHAIRMAN MELIUS: Oh, I was taking your earlier. I thought you had made the motion already.

MEMBER MUNN: Oh, I didn't specify that it was for Clarksville Modification Center as identified on Slide 16 of Mr. Hinnefeld's presentation.

CHAIRMAN MELIUS: Okay.

MEMBER CLAWSON: I second it.

CHAIRMAN MELIUS: And we have a specific second.

MEMBER SCHOFIELD: I'll second it.

CHAIRMAN MELIUS: Well, we had Brad.

MEMBER SCHOFIELD: Brad, well, shame on you, Brad.

CHAIRMAN MELIUS: Brad, yes. Get with it, Phil. Come on.

MEMBER SCHOFIELD: Yes, I know. I haven't had my chili today yet.

MR. KATZ: Very good. Anderson.

MEMBER ANDERSON: Yes.

MR. KATZ: Beach.

MEMBER BEACH: Yes.

MR. KATZ: Clawson.

MEMBER CLAWSON: Yes.

MR. KATZ: Field.

MEMBER FIELD: Yes.

MR. KATZ: Gibson, are you on the line? Absent. And Griffon is absent. Kotelchuck.

MEMBER KOTELCHUCK: Yes.

MR. KATZ: Lemen, are you on the line? Dr. Lemen. Absent. Lockey.

MEMBER LOCKEY: Yes.

MR. KATZ: Melius.

CHAIR MELIUS: Yes.

MR. KATZ: Munn.

MEMBER MUNN: Yes.

MR. KATZ: Poston.

MEMBER POSTON: Yes.

MR. KATZ: Richardson is absent. Roessler.

MEMBER ROESSLER: Yes.

MR. KATZ: Schofield.

MEMBER SCHOFIELD: Yes.

MR. KATZ: Valerio.

MEMBER VALERIO: Yes.

MR. KATZ: And Ziemer.

MEMBER ZIEMER: Yes.

MR. KATZ: It's unanimous, so the motion passes and I'll collect the absent votes after this meeting.

CHAIRMAN MELIUS: And we're running a little ahead of schedule. LaVon, how long is your presentation?

MR. RUTHERFORD: I can be done in

the amount of time that we have left. Let's put it that way.

CHAIRMAN MELIUS: So that's 30 seconds for presentation and two and a half hours of questions.

MR. RUTHERFORD: All right. I do want to note that the Pantex information is on our website, by the way.

MEMBER ROESSLER: But it's not under the SEC list. It's in one place, but not another.

MR. RUTHERFORD: Okay. I'll look at that.

MEMBER ROESSLER: Okay.

MR. RUTHERFORD: That might be. Okay. I'm going to discuss our status of our SEC petitions.

CHAIRMAN MELIUS: Excuse me a second, LaVon. For those looking, it's under the non-quilifying (sic).

MR. RUTHERFORD: And I'm also going to talk about non, what did you call that, quilifying (sic)?

CHAIRMAN MELIUS: Well, that's what was on our --

MR. RUTHERFORD: Yes, I'll talk about non-qualifying petitions as well. Okay. We provide this update to the Board routinely to give them an update on current SEC petitions, and the status of those petitions, and also, it gives the Board an idea to prepare for upcoming Work Group Meetings and Board Meetings.

A little summary, we are up to 204 petitions, as Stu pointed out yesterday. We have one in the qualification process. We have a 125 that have qualified for evaluation. A good majority of those are complete: 120. And then we had 79 petitions not qualify.

You'll notice a little later that that's different in another slide and that's because the five petitions that were received prior to the Rule and one site being de-listed.

Petitions being presented at this meeting, Winchester Engineering, Hanford, Clarksville, that you just heard, Medina, and Titanium Alloys, who you'll hear later, as well as Medina, you'll hear tomorrow.

Status of current petitions in the evaluation process, Oak Ridge National Lab, that one we had hoped to have for this meeting, however, some data came up late in the game that we felt we really needed to review that data prior to issuing our final recommendation to the Board, so that will be presented in August. It's a Class of all employees from January 1, 1943 through December 31st, 1952.

Rocky Flats plant, again, this is all employees who worked at Rocky Flats plant from January 1, '72 through December 31 of 1989. We do expect to complete that evaluation in August and present that report at the September meeting.

Nuclear Metals, Inc., which is located in Concord, Massachusetts. The Class being evaluated is all employees who worked at NMI from January 1, 1958 through December 31st of 1983. We do expect to complete this in early September. It's going to be close whether this will be presented at the September meeting or not. Hopefully we can get this one done in time.

CHAIRMAN MELIUS: They're all close, LaVon.

MR. RUTHERFORD: Yes, I know. Actually Ventron Corporation -- good segue for me -- Ventron Corporation is actually in final signature right now, so it should be issued within the next week. Let's see, it's a Beverly, Massachusetts location. It's all employees who worked at Ventron Corporation from January 1, 1942 through December 31st of 1948.

CHAIRMAN MELIUS: Holding our breath.

MR. RUTHERFORD: Yes. Joslyn Manufacturing and Supply Company is a Class being evaluated. It's located in Fort Wayne, Indiana, which is close, and actually, Sam Glover is going to go to that facility here and do some interviews.

The Class that's being evaluated is all employees who worked at Joslyn Manufacturing and Supply Company from January 1, 1944 through December 31st of 1952. We expect to complete this one in September as well. And again, this one will

be -- actually, I doubt that this one will make the September meeting, but we'll see.

Petition qualification, again, I wanted to talk a little bit about this. This was brought up at the last meeting, why petitions don't qualify. It says 73, and that does not include the six petitions that I mentioned earlier, that five were received prior to the Rule and one that the site was de-listed.

And that 202 should be 204. This slide wasn't updated with the earlier slide. As you can see, the major reason is petition basis not being met; 48 of the 73 were because of that. Okay. You can also see, sometimes that that petitioner will petition for multiple sites and you can only petition for one site.

And also, petitioner withdrew petition, we had six of those, and petitioning for a site that's already covered by an SEC, we had five of those. Those are typically, individuals that -- okay, I'm out of water. Those are typically, individuals with non-presumptive

cancers.

Well, after he threw me under the bus about the SEC thing, but particularly for sites that are already covered by an SEC --

CHAIRMAN MELIUS: Stu, I'll get the next. Only the best for you.

MR. RUTHERFORD: Again, we had individuals that petitioned for a site, not recognizing that the non-presumptives aren't covered and they have a non-presumptive cancer. So as you can see, the petition basis not being met is the major reason why a petition would not qualify.

And what is required by a petition basis, it's a description of the basis for believing records and information available are inadequate to estimate radiation doses based on one of the following, and that's lack of monitoring, destruction, falsification, loss of records, expert report, or scientific or technical report.

Typically, what a good basis we see, a lot of times, is lack of monitoring

for sites. Like, a good one, you know, Joslyn, that we just qualified and we're in the evaluation phase, no thorium monitoring. That was a good one there.

Destruction, falsification, loss of records, NUMEC, we had the falsification of the CEP data. Expert report, that could be, like, a report from SC&A that actually identifies an issue of monitoring data, and a scientific or a technical report, and I'll get into the specific definition of those.

The federal regulation criteria, lack of monitoring, radiation exposures and doses to members of the proposed Class were not monitored either through personal or area monitoring. So what we do is, we get a petition in, that's their basis, we look at, okay, do we have bioassay data for the individuals for this defined period?

If we don't have bioassay data, do we have area monitoring data, such as general area breathing zone samples? And this can get somewhat subjective because you have to look at the amount of data you have, does it cover the entire time period that,

you know, they're petitioning for?

And you ultimately make a decision that you may actually qualify a petition for a shorter period because you've identified that, yes, we do have a lack of monitoring for this defined period, and that gets the petition through the qualification and into the evaluation phase.

Destruction, falsification and loss of records, again, radiation monitoring records for members of the Class have been lost, falsified or destroyed. And we have had a couple of those. Typically, it would be lost. We do have the falsified with CEP data, as I mentioned earlier.

Expert report, it's a report from a health physicist or other individual with expertise in dose reconstruction documenting the limitations of existing DOE or AWE records on radiation exposures at the facility as relevant to the petition.

This report should specify the basis for believing these documents, document limitations that might prevent the completion of dose reconstructions for

members of the Class. As I mentioned, we have used SC&A reports, actually, we had petitioners that have petitioned and have cited SC&A reports that we've ultimately qualified a petition because of that.

Scientific or a technical report, again, it's a scientific or technical report published or issued by a government agency, and I'll go through that. And we have had situations, Tiger Team reports, that have been cited in petitions that have been used for qualification, if it cites a limitation in the dosimetry information or a failure in some type of radiologic controls that we would ultimately be using to support dose reconstruction.

Again, this is just qualification. It gets you in the door. Once we get you qualified, then we do the full evaluation. Okay. And that's it. I want to answer any questions on the qualification. I think a lot of you got somewhat of a training session on this early on, but we haven't been updated since then.

CHAIRMAN MELIUS: Can you just

briefly describe the process?

MR. RUTHERFORD: Yes.

CHAIRMAN MELIUS: So it comes into you and --

MR. RUTHERFORD: It comes into us. What we do initially is we look at the petition up front, we put together a consult call with the petitioner to kind of go over the specifics of the petition to try to, you know, we'll identify deficiencies that we've noted in the petition.

A deficiency, if it's a deficiency like the site's wrong or the site name is wrong, all the little administrative stuff, we'll fix that. We will get that fixed one way or another. But we go through and we identify deficiencies in this thing and then we get the petitioner on the phone, we go through these deficiencies, and they get a time period to resolve them. It's 30 days.

And that 30 days is not set. We accept extensions all the time if they need additional time to do something. And then once they provide that additional

information, they come back and if, you know, they've completed everything, then we make the determination if they've met the basis for qualification at that time.

The problem you get into, just a note, is that all of this is on the clock; the 180-day clock. And what we try to do now, and we've done, this is a lesson learned over the years of doing this, is we look at this thing initially, right up front, as quickly as we can and say, do we think this thing is going to qualify.

And if we do, then we try to pull our team together and start working as quickly as we can because, if you look at the Rocky Flats one, for example, we were in qualification on this last Rock Flats one for about three months, and it was because of different things weren't provided, and ultimately, it was only because of some additional work that was done internally that we were able to find it ourselves and get it moving through.

So it does take some time, but we have done some lessons learned to try to

help the process along.

CHAIRMAN MELIUS: I mean, I think it's very burdensome on the petitioners to come up with information. I mean, how do you prove that records are lost, because they're lost?

MR. RUTHERFORD: Exactly. You're right. And, you know, the first two require an affidavit and we look at that, you know -- well, for example, if they say the records are lost, we'll look and see, do we have records. Do we have personal or area monitoring on individuals? And if we don't, then we say, okay, you have to qualify it to move it forward.

CHAIRMAN MELIUS: Yes.

MR. RUTHERFORD: So you're right. It's tough.

CHAIRMAN MELIUS: And I think also, and I remember when we discussed these initial regulations for this process, I think we thought that having a health physics expert, or something, might be more available, but it's, you know, I think, frankly, pretty hard.

Do you have any sort of instruction sheet or something for the petitioners that would help them to provide some of that --

MR. RUTHERFORD: There is --

CHAIRMAN MELIUS: What kinds of information you're looking for beyond, I mean, the regulation is a little bit sparse.

MR. RUTHERFORD: Well, the petition forms tell you what you need to fill out, all right?

CHAIRMAN MELIUS: Yes.

MR. RUTHERFORD: But then we also have, on our website, a fax sheet that talks about things on -- or qualification is included in that. And we also, Josh Kinman, gets a ton of calls as well as Denise Brock, you know, to answer any questions they have in the qualification phase.

CHAIRMAN MELIUS: Yes. I mean, something like, what is in a good petition and what doesn't help a petition might be helpful to have in writing, not that Josh or Denise can't help, but I think for people to get this stuff prepared, because I think

they feel the deadlines, they feel the pressure, you may say, yes, we extend beyond 30 days, but, you know, it makes them anxious and, you know, especially when you ask them to get more records, you know, 30 days is not adequate.

And I know you extend, but it's still hard. Wanda, you had a question.

MEMBER MUNN: Just a request. The next time you do this, could you please break out for us the difference in the SECs, that is, how many 84.13s do we have, how many 84.14s?

MR. RUTHERFORD: Yes.

MEMBER MUNN: It is instructive for some of us to be able to see that differentiation.

MR. RUTHERFORD: Yes. I can actually add that to my summary for now.

CHAIRMAN MELIUS: One other question I had was just, I guess, related to that, are there instances where you've turned down petitions and later, as you've gone through, the sites have become 83.14s?

MR. RUTHERFORD: You know, I

don't know off my head, but I would say yes.

CHAIRMAN MELIUS: Yes.

MR. RUTHERFORD: And, you know, this is the nature of the beast. Early on in this process we would get petitions in and, you know, we hadn't done the data captures, and all the information that we've pulled together to date.

For example, Joslyn is a really good one. Even though it's an 83.13, it's one that, early on, we felt like, you know, we had exposures covered.

However, then we found a document that indicated thorium work occurred at Joslyn. And so, actually, a petitioner contacted Denise and I said, great, have them petition thorium monitoring.

CHAIRMAN MELIUS: Just some background for the newer Members, I think we talked a little bit about this yesterday, but we actually had a Work Group that looked at this process, we were thinking five or six years ago, Jim Lockey chaired it, and it sort of coincided, I think, with LaVon, sort of, taking over the process, I think.

MR. RUTHERFORD: Actually, I took over from the beginning of the SEC process.

CHAIRMAN MELIUS: Okay. Well, then it coincided with some changes in the process.

MR. RUTHERFORD: Yes, actually, we had shifted from --

CHAIRMAN MELIUS: I wasn't going to blame you for the previous mistakes, but you're honest, take credit or blame.

MR. RUTHERFORD: Yes, okay.

CHAIRMAN MELIUS: And I think, since that time, with those changes, I think it's become a process. I think the hard part is, where do you draw the line between petition qualification and evaluation.

MR. RUTHERFORD: I agree.

CHAIRMAN MELIUS: Yes. And I don't know. It's not an easy answer, but it's that, but I think it's clearer now in terms of the process and so forth. And I think, Jim, you'd agree with --

MEMBER LOCKEY: No, I would agree with that. Plus, there's a lot of -- as new information is found on an ongoing process,

you go back and re-evaluate it.

CHAIRMAN MELIUS: Right.

MEMBER LOCKEY: There's a lot of ways to go back into the system and re-evaluate.

CHAIRMAN MELIUS: Yes. Any further questions? Yes, I'm sorry.

MEMBER ANDERSON: So how many have been granted or how many have the Board acted on?

MR. RUTHERFORD: Now, actually, the Board Classes?

MEMBER ANDERSON: Yes.

MR. RUTHERFORD: That was mentioned earlier. Fourteen, I believe, Classes have been denied by the Board.

MEMBER ANDERSON: Okay.

MR. RUTHERFORD: That's after we've completed qualification, went through evaluation, and the Board has ultimately made the recommendation to the Secretary.

MEMBER ANDERSON: I was just wondering, you were saying you evaluated a 120, how many of those would be considered closed either that we denied it or we

approved it? So how many are actually -- you say there's 12 here at the Board to --

MR. RUTHERFORD: Right.

MEMBER ANDERSON: So do you have 80-something that are under evaluation?

MR. RUTHERFORD: No, actually, the number of petitions under evaluation are five right now, okay, that are actually in our evaluation phase. And then the Board has 12 that we've competed our evaluation and submitted to the Board. Actually, that 12 includes the five that are with the Board for this meeting.

So that's a smaller number, really.

CHAIRMAN MELIUS: Yes. I think though that --

MR. RUTHERFORD: I'm missing the question, I guess.

CHAIRMAN MELIUS: No, no, well, remember, we evaluate and we'll do partial SECs, so it's about -- yes.

MEMBER ANDERSON: I was just wondering what's the backlog that may be coming to the Board versus what's already --

MR. RUTHERFORD: Right.

MEMBER ANDERSON: -- either been through or --

MR. RUTHERFORD: There's five. There's five evaluations in progress. We have one that's in the qualification phase. So there's a total of, possibly, six total that are on our slate right now. And that doesn't count the 83.14s that may come up.

CHAIRMAN MELIUS: I think it's a good time to break for lunch. Okay. So we will break for lunch and reconvene at 1:30.

(Whereupon, the above-entitled matter went off the record at 11:36 a.m. and resumed at 1:33 p.m.)

CHAIRMAN MELIUS: Okay. If we get seated, we'll get started. Well, Ted has to do the --

MR. KATZ: So let me just check on the phone lines for which Board Members we have.

MEMBER FIELD: Bill Field.

MR. KATZ: Good to hear you, Bill. Any other Board Members on the line? Very good. And let me remind everyone on

the line to please mute your phone. Press *6 if you don't have a mute button to mute your phone. That'd be appreciated. Thank you.

CHAIRMAN MELIUS: And I have one announcement before we start on Mound. One of the issues we're going to be discussing tomorrow morning will be some issues related to the Linde site and those issues have to do with some tunnels that were at that industrial site.

And in order to help everybody understand, the Work Group's already gone through this, and we'll have some, I think, slides, maybe, showing the tunnels, but the full-sized, you know, drawings are on the back table. Jim Neton just put them out. And so I think some of these issues may be a little easier to understand if you see the blowup rather than seeing the diagram on the screen.

So if the Board Members could, when they have an opportunity, you know, later today, or before the Linde presentation tomorrow, go back and take a

look and look at these drawings and so forth.

We have a lot of experts who've looked at these drawings quite a lot who might be able to assist you and willing to assist you. Gen, Josie, who else was --

MEMBER ROESSLER: Lockey.

CHAIRMAN MELIUS: Lockey.

MEMBER ROESSLER: And, of course, Jim Neton.

CHAIRMAN MELIUS: Jim Neton, yes.

MEMBER ROESSLER: And I only have one slide. It's a summary diagram, so it really tells what our conclusion is --

CHAIRMAN MELIUS: Okay.

MEMBER ROESSLER: -- to see how we came to that conclusion. You really have to look at the maps that Jim brought.

CHAIRMAN MELIUS: Okay. So look back and take a guide with you if that'll help. They're inexpensive, good service. You got a choice, you know?

MEMBER ROESSLER: You can take them home with you.

CHAIRMAN MELIUS: Our first

session this afternoon we're going to be talking about the Mound plant SEC petition, and this is an update, and, I guess, Josie, you're starting. I'm not quite sure who's presenting and how this is going, but go ahead.

MEMBER BEACH: I'm going to present the whole thing, unless there's some technical issues that, I know that Joe's here and so is Jim. So I just want to remind you that, in July of 2009 is when I last presented Mound to the full Board. That was our Cincinnati meeting.

See if I can turn my pages and get this changed at the same time. So this slide is just an overview of what we've done with Mound. A couple of the highlights, you'll notice that, in December 2007 when the Evaluation Report was issued, NIOSH estimated that they couldn't estimate internal for radium, actinium and thorium.

And we did vote in an SEC for October 1st, 1949 through February 28th, 1959, and I just key on that because I just want to point out, we do have quite a bit of

covered period for Mound already.

The second one is, we did add the SEC Class for radon. We've held over ten Work Group Meetings in the last five years with various onsite visits, technical sessions, worker interviews, the normal data capture.

The next two slides is just an update. We had 21 issues when we started. So today I'm going to tell you that we've closed all them but one. So these two slides just give you an overview of what those were.

The open item is tritium and stable metal tritides. Okay. And what I'm going to do is go ahead and just give you a brief review description of each issue, the status of that issue, and then what the Work Group actions were.

You know, and I was talking last night at dinner, we've had five years of White Papers, five years of data and to reduce it down to one slide, it gives you the gist, but if there's more questions you have, we do have numerous White Papers on

every single issue that we've closed.

The other thing I want to point out is, all these issues have been closed with, it was unanimous within the Work Group, so there was no contention on any of these closed items.

Okay. So the first one, NIOSH concludes that, where radionuclide-specific bioassay data is lacking, either available gross alpha data can be applied, an alternate dose reconstruction approach can be used or an exposure potential required routine monitoring is not evident.

We did have two questions. The first one, can the lack of bioassay data for radionuclides in use at Mound be rationalized on the basis that either the radionuclide form or handling preclude exposure potential, thereby making monitoring unnecessary or that operations were limited during these periods to intermittent campaigns for which event-driven bioassay coverage would have been sufficient.

The second question, is the use

of gross alpha monitoring, a suitable surrogate for radionuclide-specific bioassay at Mound where isotopic-specific data is not available.

So NIOSH and SC&A both turned to what was called the King and Meyer report for historic background information on exposure potential and available bioassay techniques. SC&A provided an analysis of data adequacy and completeness which highlighted the gaps in the assay data and for identified Mound source terms over extended periods.

The Work Group came to an impasse over being able to prove routine exposures took place and accepted NIOSH's position in the Evaluation Report regarding dose reconstructability.

All items are now closed with data adequacy and completeness except for there's a front-end period where there's a gap between the Monsanto SEC and the Mound SEC, and those dates are from February 1st, 1949 through September 30th, 1949.

An extension of the existing SEC

remains to address polonium. We also have various Site Profile issues within this data adequacy and completeness. And NIOSH has told us they would come before the Board with that, that gap year, to be brought together.

Okay. So this next slide talks about plutonium-240, -241, and -242, whether available Pu-239 monitoring data can be substituted for plutonium-240 and -241 when data is lacking. SC&A questioned whether availability of the data and whether dose reconstruction approach would be bounding given the operational history.

NIOSH did demonstrate that plutonium-239-based ratios could be used to estimate the intakes for other isotopes. This was closed way back in July of 2008.

Okay. The next item talks about radon in Buildings R and SW. The Evaluation Report concluded that available radon monitoring air concentration data collected from 1979 to 2000 could be used to derive indoor radon levels.

The Work Group questioned whether

elevated radon levels were limited to just SW Building and whether very limited measurements prior to 1980 provided valid basis for dose reconstruction.

A confounding issue is that radon-222 was not the sole source of radon exposure. We also had 220 and 219 in appreciable quantities. So NIOSH found that they could not reconstruct the dose for various radon isotopes with sufficient accuracy and recommended that an SEC status under an 83.14 be approved in July of 2010.

Those dates are March 1st, 1959 through March 5th, 1980. This did require the claimants to have at least one tritium bioassay sample and to have worked in R and SW between -- well, excuse me, not R and SW, worked at Mound during those dates in March from '59 to '80.

They did find, and, Jim, shake your head, is it NIOSH that found the missing logbooks or was it DOL? Okay. So there's missing tritium logbooks for September 1st, 1972 through December 31st, 1972 and January 1st, 1975 through December

31st, 1976.

I wanted to be specific on those dates so you'd know, this may lead to an 83.14 consideration and NIOSH should present that at our September meeting. Okay. This next issue is for tritium and the stable metal tritides.

This is our open item and NIOSH's Evaluation Report assumes that tritium uptakes are from tritiated water and does not include exposures to other tritium compounds.

NIOSH's response to this was to revise the TBD to include conditions applying the OTIB-66 for that historic exposure and that it was -- excuse me, NIOSH's position is that, hafnium tritide is the insoluble special tritium compound of concern and that historical exposure was limited to a very small discrete group of workers, known to NIOSH by name, and that OTIB-66 provides a bounding dosed estimation model.

The Work Group concluded that support workers had a potential to the

special tritium compound exposure as well and NIOSH did develop a contamination swipe-based model in response that concluded that the STCs did not present any internal dose to support workers theoretically or physically.

The Work Group questioned NIOSH's proposed model because it applied to exposure potential versus dose reconstruction. It also raised uncertainties and data gaps. At our last Work Group Meeting, it was just in June on the 5th, NIOSH agreed that special tritium compounds need to be dose-reconstructed and that they will address the data gaps, the treatment of uncertainties and identify applicable worker categories.

So where we are now is, July 12th is the due date for the proposed model. So we have set up a Work Group Meeting on August 7th to review that new model. And that, I'm hoping we'll be able to bring that before the full Board for a vote on just that tritides model.

Should I go ahead and stop for

questions on tritides or should I move right along?

CHAIRMAN MELIUS: Why don't we stop for questions for, sort of, this first part.

MEMBER BEACH: That's kind of what I thought. Everything else is just a closeout.

CHAIRMAN MELIUS: Yes, and anybody have questions, because if not, I can start? Okay. If you go back to your fifth slide, data accuracy for internal exposure sources, under issue status you have, Work Group found impasse over being able, I don't understand what that means.

MEMBER BEACH: Well, we couldn't prove a negative. That's in my terms, but I'm sure Joe can be a little more eloquent in explaining that.

MR. FITZGERALD: You know, this was one of these issues where you had documentation that placed, you know, these nuclides in the workplace, and this was the King report, even the Meyer report. However, there wasn't really a good way to,

any specific evidence or confirmation, whether the form of those nuclides, the exposure of workers to those nuclides, or use of those nuclides, in fact, led to active exposure.

And we had a lengthy debate on the question and it really comes down to, it is difficult to demonstrate or prove an exposure potential in lieu of actual documentation that these exposures took place. We tried different ways of doing that, even looked at incident reports.

And I think what we came to was an acknowledgment that you need some corroboration beyond the fact of a document placing a source term in a workplace. You need some corroboration that there was actually an exposure link between that exposure source, you know, whether the form, whether the handling or something that would confirm that there was this exposure taking place on a routine basis.

We couldn't satisfy, in my mind, that test, even though we tried to figure that out. So we used the word impasse

because it's one of these situations where it was difficult to write it off because, certainly, we could establish it was, you know, being handled, was in the workplace, but on the other hand, you couldn't really cross the finish line and confirm that the exposure was taking place.

And this was for a whole span of nuclides. This is, again, a laboratory, so there was a lot of nuclides that were certainly in the workplace, but you could not prove it. So we decided that, you know, to agree to disagree that there was really any way, one way or the other, to prove it.

And we felt that that corroboration was the key. You had to have something that would corroborate the exposure beyond the fact that these documents placed them there. And that wasn't available, certainly, to the Work Group.

CHAIRMAN MELIUS: I think I understand and at least I understand the impasse, what you meant by impasse. I couldn't tell if the Work Group was at an

impasse or the Work Group with NIOSH was at an impasse, but that's helpful.

If you go to the indoor radon, this issue's been around for a while, this 83.14 issue, the tritium, so NIOSH's plan is to present an 83.14 at the next -- did I miss that on your presentation, LaVon?

MR. RUTHERFORD: Well, it was because we haven't actually got a petitioner yet and so we don't have a petition, but yes, we will be presenting that at the next meeting.

CHAIRMAN MELIUS: If you have a petitioner.

MR. RUTHERFORD: Yes. We've got to find somebody that hasn't been compensated already through the SEC that'll fit into that period.

CHAIRMAN MELIUS: Okay.

MEMBER BEACH: And it's my understanding it'll be all workers.

MR. RUTHERFORD: Yes, it will be all workers.

CHAIRMAN MELIUS: Okay.

MEMBER BEACH: Because if you

remember, we used the tritium to place them in R and SW.

CHAIRMAN MELIUS: Okay. It's been going on for a while and I was just trying to make sure I understood. And then my final question is, I'd like to understand this tritium issue better, because every time I think I understand it, the ground seems to shift and I can't tell who agrees and disagrees and what's going on.

MEMBER BEACH: I'll take a first stab and then I'm sure Jim was ready to get up. We actually were ready to come to the Board for a vote back in 2010 and NIOSH, at that time, told us that they had swipe data, tritium swipe data, so we, as the Work Group, decided to ask NIOSH to go and model that data for us.

DR. NETON: Yes, I can maybe expand a little bit on this. The issue has to do with the insoluble tritides, most notably, hafnium tritide that is very insoluble. So even though a large percentage of the Mound workforce where tritium was handled, in fact, everyone in

that building was on a tritium bioassay program. The idea is the hafnium tritide is relatively insoluble and will not show up in the urine, so how do you know how much the intakes were.

As Josie pointed out, there is a large set of data, of smear data, that they would smear the facilities on a routine basis, and I want to say there was 60,000, I know there's thousands, but 60,000 seems to ring a bell, 60,000 smears of the facility over a long period of time.

And those data were taken and evaluated, and then once you know how much tritium was there, tritium or tritides, you can't really tell, but you assume all of the smear was a hafnium tritide, and then you, with a resuspension factor, can come up with some inhalation exposure scenarios.

And using some pretty conservative assumptions, the doses to workers from inhalation of pure hafnium tritide, which is, not all is hafnium tritide, was pretty small. I mean, the original estimates for the test case was

millirem levels, but we acknowledged that it could be in the 100 millirem range, but the doses are small nonetheless, and we would include those doses in the dose reconstructions for anyone who was in the SW Building, meaning they were on the tritium monitoring program, and were support workers. That's it in a nutshell.

CHAIRMAN MELIUS: Okay. Yes, that makes sense. Joe, you have anything to add?

MR. FITZGERALD: Yes, this is kind of a really interesting issue. It touches a number of the kinds of dilemmas that we certainly have talked to the Board about in the past. And, certainly, the first issue was a plausibility question, because we got into, you know, there isn't really any monitoring data specific to the hafnium tritide.

And I think, certainly, one could look toward tritium, but then it, sort of, became a question of, similar to what you just heard on GSI, you know, yes, you can do that, but should you do that? And we did

kick that around, so that was one aspect of the issue.

The other issue is something I heard the Board discuss as well, earlier, which is, you need to, sort of, figure out which workers are affected in order to have a pathway. And for the operators, that was a little clearer. You know, I think it was easier to finger who those are.

But we understood there were a number of support workers that certainly supported the operation who, likewise, would have had some potential for exposure. So this issue quickly, sort of, devolved into, can we even identify the population, the cohort of workers, you know, the technicians, the housekeepers, anyone who would have actually had access and would have supported the operation.

And was there a way you could actually characterize their exposure in addition to these operators who, you know, we had some bioassay at least? And that was trickier because these people weren't as well defined and that was, certainly,

another aspect of that question.

But we, thirdly, got into yet another aspect of it, which was, sort of, the exposure potential question itself. And I think Jim will acknowledge, that sort of got a little confusing at some point because it certainly, the model, at some point, wasn't being necessarily advanced as a dose reconstruction method, but more as a means to ascertain whether the exposure was not negligible, I guess you might say.

So we, sort of, had a, over the past six months, bit of a debate on, how does one approach the question of exposure potential and do we, in fact, have something that ought to be dose reconstruction, and is this method something that should be judged as a DR method? I think we have solved that.

It did take some time to at least turn that corner and I think that's solved. So really, at this point, we're sort of back to, you know, is this model one that has sufficient root in site data, later question, and, you know, is the worker

cohort that's affected sufficiently defined that you would know who to assign the doses to?

So I think those are more traditional questions than the one we've been grappling for the last six months.

CHAIRMAN MELIUS: I was thinking this follows some of the ten-year recommendations, which is, you know, bringing in outside expertise like a theologist or a philosopher, or something, I don't know.

MR. FITZGERALD: It was getting difficult to solve.

CHAIRMAN MELIUS: Yes. A real question is, will this help us deal with the other sites where we have this, I guess, similar exposure issue? Because I know we've got some sites where this has come up and every time we talk about it, fingers point back to Mound.

DR. NETON: I would say it would if we had similar levels or amounts of smear data.

CHAIRMAN MELIUS: Okay.

DR. NETON: I mean, that's the key to this whole analysis.

CHAIRMAN MELIUS: Yes, okay. That's why I asked. But I think it's also, I'm thinking about, important that when we consider this, when you present it and so forth, that Simond Saw, if we're going to be using the same approach at other sites it's, sort of, understanding some of the potential limitations of this approach, or in some ways, more important than just thinking at it for, you know, the Mound factual situation.

Anybody else on the Board have questions going to this part?

MEMBER BEACH: And if any of the other Work Group Members want to speak up, feel free to.

CHAIRMAN MELIUS: You're doing well for summarizing what's been, as you pointed out, a lot of effort and work.

MEMBER BEACH: Thanks to my help there. Okay. So we'll move on to the next slide which is, high-fired plutonium-238. The Evaluation Report does not address the

relative insolubility of the high-fired plutonium-238 at Mound.

NIOSH agrees that exposure to special solubility types Pu-238 did occur and proposed a type-L excretion model to bound doses. The Work Group found that this model may not truly be bounding for all solubility types, plutonium-238, and proposed a type-J model, which NIOSH agreed to make available to the dose reconstructors.

I did get one email from Mr. Poston because he wasn't familiar with the type-L, type-J, so I do have background White Papers that can be sent out if there's any other questions on that. We closed this issue and it has become a Site Profile issue.

So the DR approach for D&D-era bioassay, evidence exists that worker exposure to residual contamination from sources generated during the life of the plant, particularly during D&D activities.

The Evaluation Report indicates that NIOSH would continue to investigate

whether a mismatch existed between the bioassay requirements, exposure potential, and whether a lack of termination bioassays would hamper dose reconstructability for D&D workers.

SC&A found evidence that bioassays may not have been performed adequately and dose distributions for D&D workers may not be bounded by the co-worker model proposed. NIOSH provided data and documentation to show that the termination bioassay data for D&D workers at Mound was relatively high, and I believe it was in the 90th percentile. So we were surprised and pleased with that.

The data is sufficiently accurate for DR purposes and we also closed that. Tritides might be another spot where it gets into the D&D time frame, but we'll know more about that next Board Meeting.

So the approach for neutron doses. The Evaluation Report indicates that neutron energy reported at Mound was approximately 4.5 MeVs, which is reliably monitored by NTA film. Wide availability of

photon measurements make use of n/p ratios, possibly, to provide a bounding dose estimate.

NIOSH concludes that the NTA film sensitivity to low-energy neutrons and track fading are not SEC issues. SC&A questioned the extent to which NTA film energy dependence and fading issues undercut dose reconstruction with sufficient accuracy.

NIOSH proposed a correction factor to compensate for the later proposed application of generalized MCNP model to determine dose below the NTA energy threshold of 0.5 MeVs. The Work Group, concerned over the lack of site-specific data for the MCNP model and whether conversion factors are accurate for Mound. We spent quite a few meetings on this topic. Based on additional NIOSH analysis, the Work Group agreed that the MCNP-based conversion factors was ultimately satisfied with NIOSH's proposed resolution to the NTA track fading.

We closed this issue, however, we do have remaining issues to be addressed

under the Site Profiles issues.

This slide deals with the beta and low-energy photon exposures. Again, the Evaluation Report assumes the design of the T Building processing areas controlled the beta dose to a sufficient extent. The site, therefore, did not record beta doses.

NIOSH notes that most of the plutonium-239 processing took place after non-penetrating doses from beta and low-energy gamma radiation began to be monitored. Therefore, doses are available for the most-exposed workers.

NIOSH found that it had not technically demonstrated that sufficient accurate -- boy, I can't talk today, their methods were in place to measure and record worker shallow doses or to create a co-worker model database in the period from 1949 to '78.

Following that exchange and analysis between SC&A and NIOSH, NIOSH recommended assigning a shallow dose as a function of ratio to photon doses for certain workers for certain time periods.

The Work Group agreed with that and we have remaining Site Profile issues here as well.

Okay. The next two slides just really briefly go over other SEC issues that were closed. Monitored workers were the most highly exposed. We closed this one. There have been no complaints or issues presented from the workforce indicating inadequate badging, despite the absence of formal policies or other documentation and no evidence that badging or bioassay policies were not strictly enforced.

The other one, adequacy and completeness of external dose data, while no verification have been conducted, SC&A did a limited sampling, about 22 cases, and did not find any SEC-level problems.

For the ambient internal dose, responding to the Work Group's concern regarding the site-wide ambient contamination, there was a statement that said there was none, NIOSH agreed to go in and change that statement, so they revised the statement.

And concerning actinium, 1991,

the actinium-227 urine samples. NIOSH investigated the reconstruction significance of the bioassay program failure, leading to Price-Anderson Act violation. The Work Group ultimately agreed with NIOSH's resolution on the DR issues.

And questions on any of those?

CHAIRMAN MELIUS: Any Board Members have questions on those? Any comments from Jim or Joe? Okay.

MEMBER BEACH: Great. And the last slide just talks about our review, which I already went over, for the path forward for the Mound Working Group.

CHAIRMAN MELIUS: Okay. Any comments on that? So you expect to be back here before us in September to finish up?

MEMBER BEACH: Based on NIOSH, if they are able to get the model in, and there's four action items on this issue, by July 12th, that gives us time to review and our Work Group Meeting is scheduled for August 7th, I think I said.

CHAIRMAN MELIUS: I thought you were leaving the room, Jim.

DR. NETON: I have a slight update on that delivery date.

MEMBER BEACH: Oh, okay.

DR. NETON: It's slipped a week and now it will be July 19th, is the projected delivery date. At the same time I put in for the request to get the date, there was some competing and conflicting work that was being done at the same time, and it took a little precedence, so there's going to be a week's slippage in that date, just so you know.

MEMBER BEACH: And do you think you'll be able to do all the items on that list?

DR. NETON: I think we'll get -- yes, we'll have something to say about all of it. I don't know that we're going to have the final model all -- the model will be done and we'll update the White Paper, but we may not have a TIB that is an exact, you know, the model itself. We'll be able to describe how we're going to use the contents of the White Paper to do the dose reconstructions.

MEMBER BEACH: What about putting the workers that were involved, do you feel like that's going to be an item --

DR. NETON: I don't think that's an issue. I think we've known that, but that's retrievable information.

MEMBER BEACH: For the support workers.

DR. NETON: Yes, well, the support workers, I think, anyone who left a tritium urine sample, which is anyone who worked in the SW Building, would be given that dose, because they're, by definition, tritium workers.

And so it wouldn't be the whole site, it would just be those people who actually worked in the SW Building where the excess activity occurred.

MEMBER BEACH: Okay. Makes sense. So even with the week slippage, I think we're still going to be okay; on track.

CHAIRMAN MELIUS: Just one question, I understand why the model may not be in, sort of, final TIB format, but can we

at least make sure that it's a usable model? I mean, it's applicable to the site and so forth.

DR. NETON: Yes, I think it's pretty self-obvious in the White Paper itself. As Joe indicated, there was some confusion as to whether this was a model or whether this was a demonstration of negligible doses that didn't need to be incorporated into dose reconstruction.

CHAIRMAN MELIUS: Yes.

DR. NETON: We have conceded that now, anything over 1 millirem is going to go in the dose reconstruction, so it has to be a co-worker-type model, and it would be fairly simple. I mean, we will use the 95th percentile value in each of those years and estimate the intakes, so it's a pretty straightforward model, but we'll make sure that it's obvious.

CHAIRMAN MELIUS: Yes.

DR. NETON: Provide some example calculations.

CHAIRMAN MELIUS: We've had some issues lately at some other sites too where

we seem to lose sight of the ultimate goal and so forth. That's everybody, so it's not just NIOSH.

DR. NETON: Understand.

CHAIRMAN MELIUS: So I just want to make sure. Paul?

MEMBER ZIEMER: Josie, I'll ask you this, but maybe it also goes to SC&A, does the NIOSH document that's coming out on the 20, what's the new date? Whatever it is.

CHAIRMAN MELIUS: The 19th.

MEMBER ZIEMER: Nineteenth, does that require SC&A review prior to our Work Group Meeting?

MEMBER BEACH: Yes, it does.

MEMBER ZIEMER: Because I'm a little concerned now we're starting to push --

MEMBER BEACH: I guess that's a good question for Joe if that's enough time.

MEMBER ZIEMER: You know, if we end up with something like the day before it's always a little inconvenient for the Work Group to --

MR. FITZGERALD: Yes, I think the benefit here is that we have been working and looking at this model in various forms.

MEMBER ZIEMER: So you'll be able to turn it around pretty quickly.

MR. FITZGERALD: Right. We've seen this model in its basic form since last December.

So there may be some loose ends which were identified at the last meeting, but nothing so major that we couldn't address those in the time frame. So I'm pretty confident, as long as it's essentially the same model, we'll be okay.

CHAIRMAN MELIUS: Okay. We have time, so I suggest that we go into Board Work time mode and let's get through what we can on that and make it a little easier for tomorrow and for unexpected lengthier discussions that we never know about, never can predict.

So I think there are two issues I talked about yesterday that we wanted to talk about now. And we have another item we can do too. Yes, okay, because we have some

more -- we have about two hours of Board work time, so we'll leave at least an extra minute or two to add to our breaks here.

One issue is the Board comments from last two meetings and those are under, you know, Board work session, I think, on the -- yes, it's under Board work session.

MEMBER BEACH: Do you have the title of the problem?

CHAIRMAN MELIUS: We will start with the December. And let's start with the December log and refer back because we've got 96 pages of the other and I'm afraid we'll get lost. If we need to, if we have questions, we can refer back to the transcript, the longer version.

So this is, again, sort of a memory test and these first five are comments from a person involved with the Hooker Electrochemical and I don't know, Henry, that's your Work Group. I don't know if you have any response. I think they look pretty straightforward and I think, to a large extent, were dealt with in the discussion.

MEMBER ANDERSON: Yes, we covered it.

CHAIRMAN MELIUS: Yes. Next one is related to Pinellas, which seems to be more of a factual thing referred back to NIOSH. A report, basically, referred back to NIOSH and to the Work Group. Phil, and that, again, looks straightforward to me.

Next one is the same. I think these are a whole series, if we remember, where former workers at Pinellas reported a number of incidents and other information to us, so that's all of the next page, eight through 13. So, Phil, is that all? That's your Work Group, right? Does that look all straightforward to you guys?

MEMBER SCHOFIELD: Yes.

CHAIRMAN MELIUS: Yes. Thanks. Number 14 is from someone asking about the Savannah River site. Yes, that's a mea culpa. We'll all try to get reports out and information. We were all scrambling and time was short. And again, it's some general comments there on that. Mark's not here, but as I recall, that looks, again,

pretty straightforward and so forth.

Again, these are a whole series on Savannah River that I think have largely been dealt with with our follow-up, so that's up through Number 20. Again, comments from the petitioner and it looks like, you know, responses look responsive and we've also gone ahead and approved that SEC.

Okay. Number 21 is the, starting on Page 6, representing Senators Schumer and Gillibrand. These are a set on Linde and most refer back to Mr. Crawford, who's since left, but I think, again, these look like they've been dealt with either through NIOSH action or through the follow-up by the Work Group.

Number 26 on Page 7 refers to Fernald and this is still under resolution, right? Is that fair?

MEMBER CLAWSON: Yes, it is. The Work Group is working on that one.

CHAIRMAN MELIUS: Yes.

MEMBER CLAWSON: SC&A is looking into her particular comments on that and we

can address it in the next Work Group meeting.

CHAIRMAN MELIUS: Okay. Number 27 and 28, again, were more comments in reference to the -- this was the Class Definition issue for the Savannah River site. And again, I think they have been dealt with with our action on that site.

Okay. So I think that takes care of those. February meeting. Again, another set of -- it sort of reminds you what the agenda was, but we dealt with all that. Hangar 481, we've dealt with or closed and that really takes care of those.

And then starting on Page 3 Number 11, these are Sandia and most of these are informational or comments, again, I think have been addressed in the action on the SEC action on that site.

Back to Fernald, Numbers 16 and 17, Page 4, Brad, those look --

MEMBER CLAWSON: Yes, these are ongoing ones that we have discussed and we're still looking at with SC&A and NIOSH.

CHAIRMAN MELIUS: Page 5,

comments related to Weldon Spring and I believe these are all being followed up and so forth, so they look appropriate to me and that takes us through Page 6.

Okay. So again, I think we need, then, a motion to accept these and isn't that the usual procedure, Ted?

MR. KATZ: Sure. You don't really have to vote on these.

CHAIRMAN MELIUS: Okay, then fine. We reviewed them and by consent -- okay.

MEMBER KOTELCHUCK: In the summary transcripts, there is a category 1 to 4 --

MR. KATZ: David, can you get closer to the mic just for the sake of recording?

MEMBER KOTELCHUCK: Yes, in the table on transcripts there's categorization 1 through 4, could someone say what they mean? What is comment 1 --

CHAIRMAN MELIUS: I hate to say this, but probably not; maybe Stu can. We got into this with our Worker Outreach Work

Group, and I think at one point there were, like, 25 codes, and I think we got reduced.

MR. HINNEFELD: Yes, it came from the Worker Outreach Work Group. There's a categorization of comments into categories, and I'm not familiar with the categorizations standing here, but I can provide it to you.

CHAIRMAN MELIUS: Yes, we'll get it to you.

MR. HINNEFELD: Shortly.

MR. KATZ: The whole point, though, of the categorization was so that, in the future, if one wanted to do some sort of analysis by a category of comment, one could. But for discussing the comments, it's not really germane or useful.

CHAIRMAN MELIUS: And at one time, the way these were formatted, that's all the information we had on the response and it was very confusing because none of us could remember if there were more codes and so forth.

It makes sense, again, for the people trying to categorize these, and sort

these, and so forth.

MEMBER KOTELCHUCK: Okay. Thanks.

MEMBER BEACH: I thought we got a code cheat sheet at one point.

MR. KATZ: We did.

MEMBER ANDERSON: It's on the O: drive.

CHAIRMAN MELIUS: Next time we'll try to remember to put it out there.

MEMBER BEACH: So did we get through all of these or do we still have --

CHAIRMAN MELIUS: Yes. Did I miss something?

MEMBER BEACH: Well, there was one for the February 29th -- Dr. Lockey was listed as Sandia Work Group Chair and that wasn't correct; it was Dr. Lemen.

CHAIRMAN MELIUS: Okay.

MEMBER BEACH: So I didn't know if that needed to be noted to changed.

CHAIRMAN MELIUS: Okay. The other item we wanted to move on to is to talk about the SC&A assignments. That's going to take some time, but we have time.

So, John, do you want to -- Stiver?

MR. STIVER: Sure.

MEMBER BEACH: And was that under the deliverables or was that separate?

CHAIRMAN MELIUS: I'm trying to see where that is myself.

I have a hard copy.

MR. KATZ: Do want to have hard copies made?

CHAIRMAN MELIUS: Yes.

MEMBER BEACH: What's the title of it?

MR. KATZ: New work maybe, or something like that. John, do you remember what the file title is or the email title? Because I would have forwarded it on.

MR. STIVER: I believe it's entitled budget discussions for Full Board Meeting at such and such. I don't remember the exact title of it.

CHAIRMAN MELIUS: Let's talk agenda while Ted's away, but no, while most of us are here and so forth. LaVon has given his presentation for tomorrow, though I think we got another issue for him

tomorrow, but it's separate. And then we've got just Medina and Linde to do in the morning.

The SEC petition letters are ready so we'll be able to do them, even though we haven't reviewed them all, the sites, yet, but I've got a draft for Medina done. Linde may take some time, so I think we should be finished up by 10:30 or so in the morning, is my sense -- before noon.

MEMBER ROESSLER: As long as you're on the same flight I'm on, I'm not worrying.

CHAIRMAN MELIUS: And someone needs to retrieve Dr. Lockey. Did you see him out there? He's on the same flight too.

(Whereupon, the above-entitled matter went off the record at 2:23 p.m. and resumed at 2:34 p.m.)

CHAIRMAN MELIUS: While we're waiting for copies, before we lose any other Board Members, I have all the bad English I want with Paul in the back and Wanda gone. Okay. I'm going to start with the Winchester.

The Advisory Board on Radiation Worker Health Board has evaluated the Special Exposure Cohort SEC petition 00199 concerning workers at the Winchester Engineering Analytical Center in Winchester, Massachusetts under the statutory requirements established by the Energy Employees Occupational Illness Compensation Program Act of 2000, EEOICPA, and incorporated into 42 CFR 83.13.

The Board respectfully recommends that SEC status be accorded to all employees of the Department of Energy, it's predecessor agencies, and their contractors and subcontractors who worked at the Winchester Engineering and Analytical Center in Winchester, Massachusetts from January 1st, 1952 through December 31st, 1961 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 the Special Exposure Cohort.

This recommendation is based on

the following factors; individuals employed at the Winchester Engineering and Analytical Center during the time period in questions, worked on technology for extracting uranium and thorium from uranium bearing ores and on procedures for reducing radiological hazards associated with mill operations.

National Institute for Occupational Safety and Health, NIOSH, review available monitoring data as well as available process and source term information for this facility found that NIOSH lacked the sufficient information which includes in vivo and in vitro monitoring data to allow it to estimate, with sufficient accuracy, the potential internal and external exposures to uranium, thorium, or their progeny, which employees at this facility may have been subjected.

The Board concurs with this determination. Three, NIOSH determined that health may have been endangered for these Winchester Engineering and Analytical Center employees during the time period in question. The Board also concurs with this

determination.

Based on these considerations, discussions at the June 19th to 21st, 2012 Board Meeting held in Santa Fe, New Mexico, 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 are unavailable at this time, they will follow shortly.

And for the new Members, these are, sort of, standard formatted letters that go up and accompany the package that DCAS up through Dr. Howard, and up through the chain of command, so to speak, in the Department, up to the Secretary's level for approval, and so that includes a lot of -- including the transcript, and discussions, and so forth.

So this is just, sort of, a transmittal letter for that based on the Board. Dr. Howard sends a cover memo that

also includes his recommendation on this, which, to date, have agreed with the Board's transmissions. A couple of minor glitches, but very minor.

MEMBER CLAWSON: Shouldn't this be an 83.14?

CHAIRMAN MELIUS: Now, as our attorney can explain again, this keeps coming up, we used to have 83.14 mentioned, but the 83.14 is, essentially, encompassed within 83.13.

MS. LIN: Right. So if you look at the regulatory provisions and see the differences between 83.13 and 14, the 83.13 is the one that specifically talks about the SEC procedures and that's what we're dealing with here.

I know we sometimes use the 83.14 in the past to differentiate who actually initiated the petition, but since we're talking about meeting the statutory and regulatory requirements for the SEC Class to be added or denied, 83.13 is actually the correct provision here.

CHAIRMAN MELIUS: Every time we

get a new lawyer, we change it. No, these are pretty standard over time and there's lots of options. So anybody have any comments, suggestions? If the eagle eyes see anything they would like changed. Okay. We're still waiting on copies? Okay.

Next slide, we'll do Hanford. The Advisory Board on Radiation Worker Health, the Board has evaluated Special Exposure Cohort, SEC petition 00201 concerning workers at the Hanford Engineer Works in Richland, Washington under the statutory requirements established the Energy Employees Occupational Illness Compensation Program Act of 2000, EEOICPA, and incorporated it 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, and their contractors and subcontractors who worked at the Hanford Engineer Works in Richland, Washington from July 1st, 1972 through December 31st, 1983 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 the SEC.

This recommendation is based on the following factors; individuals employed at the Hanford facility during the time period in question worked on the development and production of nuclear weapons, through 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 radiological exposures due to highly-enriched uranium, uranium-233, thorium, or neptunium, during the time period in question. The Board concurs with this determination.

Three, NIOSH determined that health may have been endangered for these

Hanford Engineer Works employees during the time in question. The Board also concurs with this determination.

Based on these considerations and discussion at the June 19-21 Board Meeting held Santa Fe, New Mexico, 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.

MEMBER ANDERSON: Typo.

CHAIRMAN MELIUS: 2012.

MEMBER ANDERSON: No.

CHAIRMAN MELIUS: Oh, another one.

Again, the one thing we have to be, sort of, careful of is to use the correct facility name and that's been, probably, the thing we've had the most difficulty with just to make sure it's

clarified between the various SEC reports and so forth, but it has some legal importance.

The final letter, which actually, as you will see, this is a two-for, because even though we haven't talked about Medina yet, officially, this has the Medina letter buried in. The track changes. So whatever crossed out, you know, since these are very similar except for dates, locations, things like that.

So I'll read it as Clarksville since that's what we've done. The Advisory Board on Radiation Worker Health, the Board has evaluated Special Exposure Cohort, SEC petition 00202, concerning workers at the Clarksville Modification Center, Fort Campbell, in Clarksville, Tennessee under the statutory requirements established by the Energy Employees Occupational Illness Compensation Program Act of 2000, EEOICPA, incorporated in 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, and their contractors and subcontractors, who worked at the Clarksville Modification Center, Fort Campbell, in Clarksville, Tennessee from August 1st, 1949 through December 31st, 1967 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 the Clarksville Modification Center during the time period in question worked on technical tasks related to the production of nuclear weapons.

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 lacks sufficient information necessary to complete individual dose reconstructions with sufficient accuracy for internal

radiological exposures to uranium, plutonium, and tritium, which employees at this facility 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 the Clarksville Modification Center in Clarksville, Tennessee during the time period in question. The Board also concurs with this determination.

Based on these considerations and the discussion at the June 19-21, 2012 Board Meeting held in Santa Fe, New Mexico, the Board recommends that this Class be added to the SEC. Enclosed is the documentation from the Board Meetings 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.

And actually, at least my copy doesn't have the final paragraph, but that's

boilerplate. Just in time. I need mine

MEMBER ZIEMER: Question on this one.

CHAIRMAN MELIUS: Yes, I'm sorry, Paul.

MEMBER ZIEMER: On this last one, on the second bullet on that last sentence, the phrase, which employees at this facility may have been subjected during the time period in question. I think, maybe, should start with the word to, to which the --

CHAIRMAN MELIUS: Yes, that's a good point, Paul.

MEMBER KOTELCHUCK: It may not matter much, but each time the Center is described, it has a slightly different name. It's three places; Clarksville Modification Center, Fort Campbell, in Clarksville, then we say, Employees of Clarksville, okay, that's fine, and then the last bullet, Clarksville Modification in Clarksville.

CHAIRMAN MELIUS: So the important one is the one in parentheses, the Class Definition, that's the one that has to be the most careful about. Okay? The other

ones can --

MEMBER KOTELCHUCK: Be whatever they want.

CHAIRMAN MELIUS: Yes, refer --

MEMBER KOTELCHUCK: Okay.

CHAIRMAN MELIUS: Yes. You can't put, like, you know, just this facility someplace, but the references are --

MEMBER KOTELCHUCK: Okay. Just first one's --

CHAIRMAN MELIUS: Yes. The first one, that's the key because that's the --

MEMBER KOTELCHUCK: Legal Class --

CHAIRMAN MELIUS: -- Legal Class Definition and has to match up in all the documentation. And some of these, the way that the covered facility list, sometimes uses terminology that is not in common use for that facility, so it can get a little bit confusing and even through our reports.

That's one of the things that NIOSH and our lawyers check when they go through this process. So usually the process is that, somehow I inherited the job

of writing the letters, for the most part, and then we run them by NIOSH, obviously, and then Jenny, who is the lawyer now, whoever the attorney is here, and then make sure everything follows.

And then we, you know, look for dangling participles and stuff like that, and so forth.

John. And again, just for purposes of scheduling and so forth, we'll plan to go to about 3:15 and then we'll take a break. And then if we don't finish with this, we'll finish it up after the discussion of Titanium. So I don't think anybody's going anyplace anyway, but I want to make sure everybody gets a break.

MR. STIVER: All right. Thank you, Dr. Melius, and my apologies for not ensuring that everybody got a copy of this. I know it's kind of hard sometimes to make sure everyone is fully informed.

CHAIRMAN MELIUS: I think it's just, the Board, there's a lot of paperwork that comes --

MR. STIVER: Yes, I know. It's

hard to keep track of all these things. But at the last Procedures Meeting back in April, Brant Ulsh had put together a summary list of all the current OCAS documents that have been approved and before that particular list was prepared it had been, I believe, back in June 2009 since we had had an update.

And so I thought with the upcoming meeting I'd take advantage and kind of, you know, cover the waterfront, take a look at all the different new documents, Technical Basis Documents, procedures, and PERs that had come out that might possibly be candidates for review.

And after getting that, kind of, summary list we went through and winnowed it down and tried to pick out, basically, Site Profiles that we felt were complex enough and that might have a bit of ambiguity to them, or that seemed to me, by virtue of feedback I got from the dose reconstruction crew, that they have had problems that could benefit from a review.

And from that list we got about

six. There were about six Site Profiles. And I started looking at the number of claims associated with each of those and I looked at those with 50 or more. And I came up with this -- firstly, if you go to Page 3 on Table 2, there's a set of three Site Profiles.

And these are the Pacific Proving Grounds, the PPG, WR Grace, which is an AWE that has a matrix associated with it, not a full Site Profile, although it is 43 pages long, and finally, the Battelle Memorial Institute in Columbus, Ohio, which is a fairly extensive site that has not been reviewed, mainly because it's a fairly new one and has not had any outreach activities or comments provided for it.

But if we take a look at the Pacific Proving Grounds, this was a site, a very complex site, I know because, in my previous job, I spent about ten years doing dose reconstructions for the PPG.

And, probably, the toughest part about that was working on the internal doses, and fortunately, for us, that's not

an issue because an SEC has been granted for the entire period of above ground nuclear testing from 1946 all the way through 1962.

The issue is with the external dosimetry and I was very intimately involved with that when I was work with SAIC on the DTRA project. And a lot of problems with the dosimetry in the PPG. And our review of the Technical Basis Document, at least in our minds, shows that there are a lot of gaps there that haven't really been adequately addressed.

Also, the co-worker model, the basis for that, are some Defense Nuclear Agency reports that came out in the mid-1980s and those have since been updated. I know it, because I did the updates myself back in the 2004 to 2006 time frame.

And so we feel there are enough issues there, enough, kind of gray areas, and in addition to that, the feedback I've got from Hans and some other people who have actually done PPG dose reconstructions that, that particular site would definitely benefit from an SC&A review.

The second, being WR Grace, this is a site that operated from 1958, the operational period, or at least the AEC period, through December 1970. This is the Irwin, Tennessee plant. There were about a 186 claims associated with this one.

There have been two revisions, both complete rewrites. The latest was June 2011. This was kind of an interesting one because it gets to the issue of worker placement. Again, we have a pretty complicated site that was doing a lot of uranium fuel production using highly-enriched materials as well as thorium and plutonium.

And there's an SEC for a select group of buildings where thorium was used from 1958 to 1970 for the entire period. Feedback I've gotten, again, from our dose reconstructors is that this is a fairly complicated site. They feel there may be some issues involved with some of the other isotopes.

And also, the idea of being able to pin workers down to these particular

buildings where thorium was indeed processed, might be an issue.

The third, Battelle, as I said, this is a pretty new Site Profile. It came out in March 2010. Here, there's only 86 claims, but this was site that operated for 43 years under the AEC. This is the Columbus, Ohio, not to be confused with up in the Hanford area.

But there are two different facilities. They had a research reactor and a hot cell facility at one. And they did some other work studying analytical radiochemistry, and so forth, at the other facility. There have been no worker outreach activities, and again, no comments received.

But, you know, given the longevity of this site, and the complexity, and potential for various types of exposures, and the fact that it has not been reviewed externally by us, though it has gone through internal review, we thought it would be a good candidate as well.

So there were others. There were

quite a few AWEs, but those are the types that we felt are probably best addressed through these mini-reviews or, you know, there's just not enough cases, or claims, to really warrant a full-on Site Profile review.

The other types of documents we looked at were the --

CHAIRMAN MELIUS: Let's --

MR. STIVER: This might be a good time stop and get some questions.

CHAIRMAN MELIUS: Yes, just if there's questions. What I propose for a procedure is, let's, as he goes through the different types of documents, stop and ask questions, and if anybody has any, but we won't do any, sort of, approval or, you know, decision on tasking until we get to the end and do that all at once, because so much balancing between the different types of documents and so forth.

And also, I think that'll make it easier. And so, you know, I think Stu already has a comment. Go ahead.

MR. HINNEFELD: Stu Hinnefeld, I

just want to offer, on Battelle, the Columbus site to Battelle is the subject of an ongoing data capture in order to clarify that, even though the Site Profile was written just in 2010.

You know, there's certain things that we're not certain we can do there, certain types of exposures, and we're up there this summer. I think we've got a data capture coming up up there that we think is going to be the last one.

There's a decent chance that there will be an SEC for some portion of that period. So it's just a suggestion that maybe, you know, that may want to wait until we've completed that, at least, and have our best, you know, information out there.

CHAIRMAN MELIUS: One thought on that might be to wait until you've done your data capture, have some idea, and then we can revisit that in September also. You know, depending on how it looks and may you can tell, maybe you can't, but let's, sort of, keep it as an update.

MR. STIVER: Okay. Thank you,

Stu, we weren't aware of that. I think that would be a good idea to postpone that then until after they're complete.

CHAIRMAN MELIUS: Yes.

MR. STIVER: The other types of documents we looked at --

CHAIRMAN MELIUS: We have two other --

MR. STIVER: Okay. I'm sorry.

MEMBER MUNN: I'm glad we're going to wait for Battelle, even though it seems to me that that's legitimate and would be a very useful review for us to have. And it's clear to me why WR Grace would be something we'd also be very interested in seeing.

I have some reservations about the Pacific Proving Grounds, although it's informative to know that we have a couple of people who have extensive experience with the site already, you know, who wouldn't have to get up to speed on it.

I'm not at all sure whether it would be very illuminating for us, given the assumption, I'm assuming, that this is going

to be a covered SEC. And that it's highly unlikely that we would be doing any extensive work with it. Am I incorrect in that?

CHAIRMAN MELIUS: It is a covered SEC.

MEMBER MUNN: And since it is, it's hard for me to understand how this would be very illustrative for the Board.

CHAIRMAN MELIUS: I think we have the non-presumptive cancer issue, though, that have to be reconstructed.

MEMBER MUNN: Yes. I understand that, but I guess what I'm really saying is, we have a limited amount of information that, it seems to me, we're going to be able to get, even with well-instructed people in terms of this particular site.

But if we want to save your money, if we want to keep you under budget, that might be the one, from a purely academic point of view, that might give us less long-term information that we need than the other two; only a thought.

MR. STIVER: Could I respond?

CHAIRMAN MELIUS: Yes.

MR. STIVER: Actually, at the PPG, the internal doses are quite small for most of the personnel. However, the external doses can range, you know, depending on the operation and the type of personnel who are involved, the types of people we're going to be dealing with are the rad safers who got the highest doses.

It would be the contractors or the DOE people, or at the time, AEC, as well as Holmes & Narver, and some of the other contract people who went out right after the shots and did surveys and that sort of thing.

And so there's some pretty high exposures based on the dosimetry that was available. Another complicating factor is that, after Operation Castle, beginning with Operation Redwing in 1956, they went to a permanent film badge dosimeter and it was the first time they actually badged everybody.

And so each person got a permanent badge. And then they also,

whenever they went off on these particular sites for what they had the potential for accruing significant dose, they gave them what was a mission badge, a one-day badge, and they were supposed to wear these things together simultaneously, and of course, then you'd have -- the mission badges would be, like, plums in the pudding, basically.

This permanent badge would be the sum of everything that was in the mission badges plus all the environmental doses they could get. Well, it turns out that, often times, the mission badge zone far exceeds permanent badge zone, so it was evident they weren't wearing those continuously.

Also, at Redwing, and also at Operation Dominic 1 in 1962, almost, I don't know, I can't say all the badges, but a large fraction of the badges were damaged from water, and heat, and humidity, and actually, the films are available through Martha DeMarre at DOE out in Las Vegas.

And when I was working at SAIC, every time we did dose reconstruction we'd request a film badge analysis report from

them. She'd go pull up the exact badges for that particular person, and most of them are there, they'd re-read them, and provide us a summary, photographs, as well as a description of whether they were damaged and the type of damage, and so forth.

And so I noticed the Technical Basis Document states that, at Redwing, badges that were worn for six weeks or more were damaged, but that was just limited to the first badging period, which there were three. It turns out, all of them are subject to that type of damage.

That was kind of a standard phrase that DNA used in the early-1980s. So there are these issues, kind of, subtleties. There's the note from a fax that a lot of the source documentation is dated. So I feel, you know, I fully respect Wanda's opinion, or concerns, but I do believe that that would be a site that might be worth pursuing.

CHAIRMAN MELIUS: Josie.

MEMBER BEACH: John, you said on these unreviewed TBDs you concentrated on

the ones with 50 or more?

MR. STIVER: Yes, there were some that looked like they'd be good candidates. RMI was one that was real similar to Fernald.

MEMBER BEACH: Do you have the full list of those?

MR. STIVER: I don't have it with me. Basically, the ones I counted, there were a handful, there were about six and I picked the top three. Another was the thermal diffusion S-50 at Oak Ridge, and I believe a couple of others, but RMI had 22 claims. You know, is that really worth going to all this effort for 22 claims? I don't know.

MEMBER BEACH: If you're one of those 22 it would be.

MR. STIVER: If you're one of those 22, but I wanted to limit it to, you know, just the ones I thought were probably the most pertinent. It was a judgement call, but I do have the list of the others as well. So I can get it to you if you'd like to look at it.

MEMBER BEACH: I'd like to see a copy of that if you could.

MR. STIVER: Okay.

CHAIRMAN MELIUS: Okay. Any other Board Member questions?

MEMBER CLAWSON: I think we ought to have a Full Board Meeting at the Pacific Proving Grounds.

CHAIRMAN MELIUS: I think Dr. Lemen went out that way last year to scout out ahead for us and find a suitable facility.

Well, we can split the Board, half will go there and half will go to Amchitka.

You get to flip a coin. Okay. Why don't we go on to Table 2.

MR. STIVER: Table 2 is actually the Site Profiles. The next set of documents were TBDs. And typically, we've discussed these in the Procedures Work Group meetings or the Subcommittee meetings, excuse me.

However, just because of the timing of the meetings and the fact that we

had this Board Meeting in advance, plus we had a new listing, an updated list, I thought it would be good just to put this out there of the ones that, you know, we thought, after doing our own kind of triage, that might be candidates for review.

And the first group we looked at here on Table 3 on Page 5, these are documents that we've already reviewed. And of this, there were 39 total, 15 have been reviewed -- excuse me, I misread this. Thirty-nine have been reviewed and with no comments or anything like that, there's no need to re-review those.

Fifteen had been re-reviewed once and we probably incorporated all the changes. We're not really too concerned about that. However, when you look at Table 3, these are documents that have been reviewed two to three times since our initial review, and there's five of them here.

And I believe at least the first, the second, and the fourth, the first being TIB-5, the second TIB-20, and then TIB-31,

look like they are probably the best candidates. Third is the quality assurance records management, that might be worth looking into, but it's not all that pertinent from our standpoint for dose reconstruction.

Occupational and medical X-ray reconstruction for DOE sites, I think a lot of that is PROC-61. It's kind of been discussed in the Procedures Subcommittee. I think that's pretty well understood what's going on there. I don't know if that would really benefit from a full review.

But internal dosimetry at work, and external dosimetry at work in an IREP model selection by ICD-9 code, that might be. Use of co-worker dosimetry data for external dose assignment, this is TIB-20. Site Profile and Technical Basis Document development, PROC-31. I thought that might be a good one as well.

But again, I mean, this might be something that, you know, obviously, this isn't going to be decided today, but could certainly get the kind of preliminary triage

done, and then maybe at the July 31st Procedures Meeting, formally decide, you know, which ones might be reviewed.

CHAIRMAN MELIUS: Wanda.

MEMBER MUNN: John, I certainly agree with you on the first three. I don't think there's any question that we really and truly need to take a look at those first three. I'm not so sure about the other two, but you're correct: probably we should talk about this in the Subcommittee meeting on July 31 and agree on that one way or the other.

MR. STIVER: Right.

MEMBER MUNN: But in my mind, there's no question about 5, 20, and 66.

MR. STIVER: Okay. Table 4, previously reviewed documents that are no longer on the NIOSH-approved document list. These are really not a concern other than how they're going to be closed out. That's going to be, again, a Procedures Subcommittee tasking, I would assume.

Table 5 on Page 7, this is approved documents for prospective review.

These are 70 of TIBs, PROCs, and reports which have not been reviewed by SC&A. These are five unreviewed approved ORAU documents -- okay, yes, I thought I was on a different table here. Yes, these are ones that we would definitely want to look at.

We also have, the next table is those that are still in the process that have not been approved yet. The first is TIB-55, this is the technical basis for conversion from NCRP Report 38, Neutron Quality Factors to ICRP-60 Radiation Weighting Factors for Respective IREP Input Neutron Energy Ranges.

That's kind of a mouthful, but we thought that would be a good candidate for review. The next is TIB-79, Guidance in Assigning Occupational X-Ray Dose Under EEOICPA for X-Rays Administered Offsite.

The third, this is report 45, Analytical Evaluation of the Amount of Radioactivity in a Radium Toggle Switch; maybe, maybe not. Like I said, the selection criteria were really those that had not been reviewed, that weren't already

under review as part of a Site Profile or some other venue.

And so this one kind of came up. We probably should have struck it from the list. The last one is report 53, Analysis for Stratified Co-Worker Datasets. We think that's pertinent, given some of the discussions that have been held recently regarding stratification of co-worker models.

And so are there any thoughts on that --

MEMBER BEACH: There's actually one more on the next page.

MR. STIVER: Oh, excuse me.

MEMBER BEACH: O-44.

MR. STIVER: Yes, you're right. You know my own table better than I do. PROC-44, Special Exposure Cohorts, so that would also be one that we would want to take a look at.

MEMBER MUNN: I agree with everything except 45. I really don't know that that's --

MR. STIVER: Yes, 45, I think

probably shouldn't have even made it onto the list.

MEMBER MUNN: Yes, that would be better, I think, to knock that one off.

MR. STIVER: We'll take that one out.

MEMBER MUNN: But certainly, 53 and 44 as well as OTIB-55 and 79; very worthwhile.

MR. STIVER: Okay. Table 6, so this is the one I thought I was looking at earlier, this is the prospective documents for future reference. Let's see, TIB-41, this is the Graded Approach for Estimating External Dose to Workers at AWE Sites. It sounds to be kind of an efficiency method. Some kind of a refinement of an efficiency method. We would probably want to look at that.

TIB-71 seems to be very limited in scope. This is the Calculation of Doses from Intakes of Uranium Aluminide. Again, I'm not quite sure how extensive the applicability would be for that particular document.

TIB-76, Guiding Reconstruction of Intakes of Thorium Resulting from Nuclear Weapons Programs. I think that would definitely be on the short list of documents we'd like to see.

And Report 60, Neutron Dose from Highly-Enriched Uranium. I think that would also be a valuable one. And again, these have not been approved yet, so this would be down the road at some point, but we'd like to at least get that out there for everybody to see.

CHAIRMAN MELIUS: So are these documents that will be approved soon or should be approved?

MR. STIVER: I'm not quite sure. Maybe Stu could illuminate that.

MR. HINNEFELD: I don't have the schedule with me, but I can provide it to the Board.

CHAIRMAN MELIUS: Okay. Maybe I can ask my second question, this is for Wanda and the Procedures Work Group. Is it your preference to do the tasking through the Work Group or here, and does that differ

based on the type of document that John's talked about?

MEMBER MUNN: Actually, we can do either. My personal preference would be in Subcommittee, simply because we have a little more time to discuss it.

CHAIRMAN MELIUS: Yes.

MEMBER MUNN: And I think I've expressed most of the “yes, but” I have here.

CHAIRMAN MELIUS: Yes.

MEMBER MUNN: And other Members of the Subcommittee, of course, can weigh in on that extensively, much more in Committee. I also would appreciate having the opportunity to have the agency there --

CHAIRMAN MELIUS: Yes.

MEMBER MUNN: -- so that we can pass them back and forth.

CHAIRMAN MELIUS: I'm just trying to think procedurally how to proceed here and your Subcommittee is meeting?

MEMBER MUNN: July 31.

CHAIRMAN MELIUS: Okay. So it's not that far off, so we could task there.

MEMBER MUNN: No, it isn't. Yes, we can do that very easily.

CHAIRMAN MELIUS: Well, okay.

MEMBER MUNN: And I would be pleased to put that on the agenda.

CHAIRMAN MELIUS: Okay. And then Stu would be able to respond on schedule. I think we should keep in mind sort of the overall potential scope in terms of cost and so forth, but I think we're, if I understand the overall scope of this document, I think we're okay, so it's not going to be a problem. I don't think it's a question of trying to cut.

MEMBER MUNN: No, certainly, if there are estimates, as John has given them to us today, are anywhere in the right ballpark, then certainly they're covered, given the budget we have for them to work with already.

CHAIRMAN MELIUS: Right. Okay.

MEMBER ANDERSON: If you have time, and what do you need, given the charge to begin in order to complete them within the space?

MR. STIVER: I'm not quite sure I understood your question.

MEMBER ANDERSON: Well, I'm saying, we're budgeting for between now and December, you know --

MR. STIVER: You mean whether there would be carryovers?

MEMBER ANDERSON: -- go forward, it's a, we don't have the time --

MR. STIVER: Yes. If today, everything were okayed right at this moment in time, there would probably be some carryover into the following year. Yes, there probably would be.

MEMBER ANDERSON: Okay.

CHAIRMAN MELIUS: And just to clarify, the Site Profiles, we should try to do today. That wouldn't be the Procedures Subcommittee.

MR. STIVER: Yes, the Site Profiles, in my mind, are the most critical as well.

CHAIRMAN MELIUS: Yes. And I'm going to suggest that we start our break here now because the next table is long and

I'd rather not interrupt.

MR. STIVER: If I could say something, it might save us some time. The next table, I think, this is the list of PERs that Kathy Behling puts together for the Procedures Subcommittee Meeting.

CHAIRMAN MELIUS: Right.

MR. STIVER: And she went ahead and put together a new one because there were a couple of new PERs that came out. We them sorted by the number of cases to be re-evaluated, the complexity, and the selection criteria, and the science involved, and then a cost estimate.

And this is very complicated and we could probably spend the rest of the day talking about this. I just wanted to have this information in your hands, but I would believe that this might be best addressed in the upcoming Subcommittee Meeting rather than going through each one of these today. It might just be a little too --

CHAIRMAN MELIUS: I don't disagree with that, but I'd just like a chance for other people that may have looked

this over, that aren't in the Subcommittee, that may want to have some input.

MR. STIVER: Okay.

CHAIRMAN MELIUS: I don't think you need to read through the whole table or anything, and we may not have any comments, but let's do that when we come back and then we'll finalize what we need.

MR. STIVER: Okay.

CHAIRMAN MELIUS: And I've got some other questions, more general questions, about this site, some of this tasking that I think we should --

MR. STIVER: Okay. Fair enough.

CHAIRMAN MELIUS: -- talk about. Good. So we'll break and come back at 3:45, and then will do Titanium Alloy, and after that, we will go into Board work session again.

(Whereupon, the above-entitled matter went off the record at 3:16 p.m. and went back on the record at 3:51 p.m.)

CHAIRMAN MELIUS: Okay. Our first order of business is Titanium. Jim Neton.

DR. NETON: Good afternoon. I'm going to summarize the Evaluation Report for the Special Exposure Cohort petition for Titanium Alloys Manufacturing, also known as TAM by us.

Overview of the petition. It was an 83.13 petition we received on July 28th, 2011. About four months later, the petition was qualified for evaluation, and three months after that, the Evaluation Report was issued on February 14th, 2012.

I thought I'd eliminate the suspense and state right up front that we believe we are not going to recommend an SEC Class for Titanium Alloy Manufacturing, and hopefully my presentation will provide some support for that conclusion.

In the way of background information, Titanium Alloys Manufacturing is located Niagara Falls, New York, one of the number of so-called Niagara Frontier sites. We've dealt with a lot of sites from the Niagara Falls area. This is yet another one.

It always amazes me when we do

these site, the variety of different activities that were performed by the 200 or so plus Atomic Weapons Employers, which is what Titanium Alloys was.

Essentially, they produced titanium metal that was used as pigment in the paint industry, was one of their big, big products, but they also did produce zirconium tetrachloride for the Atomic Energy Commission from 1950 through 1956, and I'm not sure what that was used for, but it was provided to various sites, including Fernald, Electro Met, and Y-12, I believe.

And the waste products from the zirconium manufacturing process actually did end up at Lake Ontario Ordinance Works because it was AEC activities. But the zirconium that was made was not radioactive. It was just stable zirconium, and as such, that's not covered under the Act.

The AEC activities that we do know about were twofold. There was one activity in 1955 and one activity in 1956. In 1955, TAM melted 70 pounds of contaminated scrap metal for an AEC

experiment that I'll talk about later, and that was a two-day duration project with a, we're estimating, one-day cleanup operation.

In 1956, they reduced uranium compounds, that is, took various chemical forms of uranium and reduced them to uranium metal on a very small limited basis laboratory scale, actually in laboratory hoods, and that activity only covered two days of exposures, in July 10th and 11th of 1956, using very small quantities, which I'll talk about later.

So in total, as far as we can determine, there are really only five days of covered exposure associated with the Titanium Alloy Manufacturing facility.

The covered period for TAM as an AWE was previously listed as 1950 through '56, but that was largely based on the zirconium material that I just talked about that was non-radioactive. Once NIOSH discovered this, we requested DOL review the basis for the covered period and, in fact, they agreed with our determination and adjusted the covered period to cover just

1955 and 1956.

So all that zirconium work that was previously covered exposure is no longer that. So when the petitioner actually proposed the Class, they asked for the full covered period at the time, which was 1950 through '56, subsequent to our discussions with DOL, the Class that we evaluated was all employees who worked in any area at TAM from January 1st, '55 through the end of December 31st, 1956, so just those two years was what we investigated.

The petition basis is one of the bases that LaVon talked about earlier. They presented an affidavit indicating the lack of monitoring for any radiation exposures, which we agreed with. There was very limited amount of records available for airborne activity and surface contamination during 1956.

And in fact, at the time we started our evaluation, we had nothing, no data to bound exposures that occurred in 1955. In fact, we didn't really know what happened. We just know that there was a

memo that said that Mallinckrodt was instructed to send them some metal, contaminated metal.

Sources of available information, TBD-6000 was used in this site and the only place that was used was in reconstruction of the external exposures I'll talk about later. We also had site research documents and the Site Research Database.

I think there's about 70 or so documents, most of which were, sort of, descriptions of the site processes, nothing terribly useful, except there was some air sampling information for the 1956 operation.

The DCAS and ORAU technical bulletins were also relied upon, most notably, TIB-6, which is the reconstruction of occupational medical exposures, or occupationally-derived medical exposures, was used. And we also had access to the case files in the OCAS or DCAS claims tracking system, NOCTS, where we had 14 claims from this facility.

That was what we had when we started. Now, we did pick up a couple

additional pieces of information during the SEC investigation. And the first of these, I think, is kind of interesting.

I mentioned that, in 1955, there was a memo that said that the Health and Safety Laboratory, which we all know as HASL back then, the AEC's Health and Safety Laboratory, requested that Mallinckrodt Chemical Works ship 70 pounds of contaminated scrap metal to Titanium Alloy Manufacturing.

Well, that kind of rang a bell in my head. I said, why would HASL be requesting material to be sent from Mallinckrodt to this facility? Well, it turns out there's some pretty good databases one can search on previous HASL work, and we ended up finding a reference that was published in the Journal of Nucleonics in 1956 that described the experiment that was done with that contaminated metal at Titanium Alloy.

And I'll talk a little bit about that later. It had a very good description of the experiment, the contamination levels,

the airborne samples, and such. We also discovered an AEC source material license, which was almost by happenstance.

I happened to be in Albany looking for additional material for Linde and Bethlehem Steel, and I ran across an AEC source material license that was issued in 1956 to Titanium Alloys that indicated that they were authorized to possess up to 100 pounds of uranium, specifically, it was ore concentrates, so a pretty small amount of uranium as uranium goes.

Previous dose reconstructions: I mentioned we have 14 claims in our possession, 12 of those are in the Class, which I'm presuming that the other two were probably outside that 1955-56, time frame and are no longer considered to be covered.

We've done 12 dose reconstructions and we've, as I suggested earlier, zero personal monitoring for internal dosimetry or external; no film badges or bioassay results, but we do have air monitoring data.

So the potential radiation

exposures during the 1955-56 period were to uranium itself. Just natural uranium. It wasn't depleted, it wasn't enriched. Although I did put in the slide, and I should have mentioned, that since this was done in the 1955-56 time period, it is possible that it could have been recycled uranium that was used that has very trace contaminant levels of plutonium, neptunium, you know, actinides.

And so we have actually included a provision in the dose reconstructions for potential presence of recycled uranium. But both of these operations were experimental with limited quantities of material. I'll talk about that later.

The external dose would have been, obviously, from photons and beta radiation from the uranium that was present, even though it was small. And as we know from past sites, uranium doesn't have a tremendous amount of gamma activity and there is some beta activity from some of the short-lived daughters, most notably protactinium-234m.

And of course, there would have been internal dose from airborne radioactivity from working with the material and the surface contamination as a result of those work activities.

So what is the source term that we're talking about here? Well, the 1955 work, I mentioned, was the remelting of contaminated stainless steel and aluminum. It was shipped directly from Mallinckrodt to Titanium Alloy and it included 40 pounds of stainless steel, about a 1/4-inch thick of 30 pounds of aluminum, and my recollection was they were cut into pieces, about 3-inch square pieces.

HASL actually did a, and this was in that Nucleonics publication, did a very detailed survey of the surface contamination. The idea behind this, I should have mentioned, was that there was a lot of metals that had become contaminated in the AEC operations and they were looking for a way to clean it up so that it could be re-released.

And the idea was, if you remelt

the contaminated metal, whether it's aluminum or stainless, you would purify it, in a sense, because the metal would melt and then you'd develop a slag topping, and then you could just scrape off the slag and you'd have some, essentially pretty clean material that could be reused and sold.

So that was the idea behind this whole experiment. So they shipped the material there and because they were trying to quantify the purification process by remelting, they did very detailed surface contamination measurements on the metals itself.

And we took those surface contamination values and concluded that the total mass of uranium that was embodied in these 70 pounds of material would have been about 90 grams of uranium total. That was all that was present during this operation.

The surface contamination on the scrap varied, but the maximum value was approximately 27,000 dpm per 100 square centimeters. Now, that's for the 1955 two-day operation.

Now I want to talk a little bit about the 1956 operation that also encompassed two days. This operation took uranium compounds, including uranium tetrafluoride, uranium dioxide, and uranium hexafluoride, and it reduced them into uranium metal.

This occurred over a two-day period in a very small laboratory. I forget the exact dimensions, but I want to say the laboratory was somewhere around probably an 8-foot by 8-foot room. It was very small, with a hood, and this work was actually done in a hood in the laboratory.

As I mentioned, the AEC license authorized TAM to produce up to 100 pounds, but from the experiments that we're looking at, there was nowhere near that amount of material involved in this operation.

In fact, the air sample results that we have talk about sampling a condenser in a hood, or something like that, and there was 3 grams of material in the crucible at the time. So we're talking about very small levels, laboratory-scale levels, done in a

hood, gram quantities.

So 1955 was the melting operation, '56 was the uranium reduction operation. Well, our approach to dose reconstruction is, we do have air sampling data available for both of those operations and we have surface contamination data from -- we have surface contamination data for both operations as well, albeit, somewhat limited, but these are also very limited operations.

That would be our approach to reconstructing the internal exposures. As I mentioned earlier, we believe that TBD-6000 can be used to estimate external dose from uranium. It's sort of a standard practice that we use. If you know how much uranium is present in a given location, it's easy to calculate the dose rate coming off of a certain quantity of uranium, and that's what we've done.

Okay. Because we're relying solely on air sample data, and I think Dr. Melius had some early concerns, maybe, about the pedigree of the data used for this

analysis.

CHAIRMAN MELIUS: Actually, just for the record, my concern was the way it was written up in the report was it said it was peer-reviewed, therefore, the pedigree was good.

DR. NETON: Yes.

CHAIRMAN MELIUS: It just didn't have enough information.

DR. NETON: That's what I meant to say. Our explanation of the pedigree --

CHAIRMAN MELIUS: Yes, the explanation.

DR. NETON: -- is more accurate.

CHAIRMAN MELIUS: I'm not concerned about the pedigree as much as --

DR. NETON: So I'd thought I'd explain it a little better.

CHAIRMAN MELIUS: No, no, that's why I sent the emails.

DR. NETON: Okay.

CHAIRMAN MELIUS: So we could get it on the record.

DR. NETON: As I mentioned, this 1955 operation, the remelt, was sponsored by

HASL, who we know from past experience sort of set the standard for measurements in the AEC era. They operated with standard procedures and we've all seen those very standardized air sample sheets that document the flow rate, the detector efficiency, you know, the background, all the things that are needed to do a good quality measurement.

So we're pretty certain that they used their standard methods. There's no reason to believe they would have used anything different, especially since this was published in a peer-reviewed journal on top of all that.

As I mentioned, this was in Analytics, and again, the author of the article, Klevin, was the main author, his name has appeared on other air sampling programs, to my recollection, and again, they used the very standardized methods that were developed at HASL and adopted at a number of AWE facilities.

So in my opinion, HASL sort of sets the bar for quality of measurements. So to do the intakes of uranium from the

scrap melting operation, we know that each type of scrap metal was melted in a separate crucible and the Nucleonics article also said that there was only natural ventilation in the work area. There was no fans or any forced ventilation.

Of the air samples that were measured, all samples were reported to be less than 10 dpm per cubic meter based on the concentration, that should say two days not three days, in 1955, but they did say that there was a high value of 80 dpm per cubic meter measured.

And it was actually what they would call a process sample, which was in the gas stream directly above the uranium that was being melted, which, presumably, no one would have their nose in there, but again, it's a process sample and that's the highest value that they recorded.

So not knowing exactly where these sample were positioned to get the 10 dpm per cubic meter, we have assumed that the workers, over the two-day period, breathed the 80 dpm per cubic meter process

sample value during those two days of operation.

Now, there was, actually, the petitioner talked about a decontamination activity that went on, so we have one day of decontamination of the laboratory built into this dose reconstruction and we based that on the known 27,000 dpm per 100 square centimeter contamination on the scrap and applied a D&D re-suspension factor of 1 times 10 to the minus 5th, which is taken out of TIB-70.

That's a fairly standard value used for people that are doing sort of cleanup activities, sweeping and vacuuming, that sort of thing. And using those values, we ended up calculating a concentration of 27 dpm per cubic meter for the third day of operations.

So for the inhalation intakes during these three days, we have 80 dpm per cubic meter for day one and two of the melting, and then on the third day, when they cleaned it up, we have 27 dpm per cubic meter.

That's how we did the inhalation. The ingestion intakes, we used the TIB-9 approach, which is a re-suspension of material from the ground and the deposition of material on people's hands, and that sort of thing. It's a pretty standard approach that we've used in many, many dose reconstructions.

Okay. Let's talk a little bit about the 1956 operation. We actually have the original air sampling sheets for this operation. There were 11 total samples taken over the two-day period, eight were in this analytical laboratory, in the hood, basically, in the hood right in front of the operation, three were taken in the melting furnace area where they actually reduced the uranium to uranium metal.

These samples were not taken by HASL, but they were recorded on standard forms used by the National Lead of Ohio. There was some sort of relationship between National Lead and Titanium Alloys that I think they actually either were going to buy them or had purchased them. There was some

kind of a cooperative arrangement between them.

Anyway, these are on these standard forms used by National Lead of Ohio and those are really almost exact images of the forms that were used by the Health and Safety Laboratory. Primarily, I think the reason is because a number of people that worked at the Health and Safety Laboratory ended up at Fernald at the National Lead plant, and they adopted the HASL approach.

So, you know, these data sheets included a very good amount of information. The sample location, the type of the sample ground, the background count rate, detector efficiency volume, filter efficiency, all the stuff you need to know to reproduce the calculation of activity.

And we know the alpha measurements were made using a scintillation counter. So the intakes form the uranium reduction activities are based on the air sample data that we had over that two-day period on July 10th and 11th.

The highest reported value on

those air samples was 6 dpm per cubic meter. Now, I mentioned that we had all the parameters associated with those air samples, including the background count rate and the efficiency of the detectors, and we calculated what would be the minimum detectable activity of that measurement system using those data.

And determined that the system itself couldn't detect an air concentration of less than 15 dpm per cubic meter. It's one thing to say it's 6, but is that a real number? And so we're saying that it could have been 6, but it could have been as high as 15 and not been correctly identified.

So what we ended up doing was using the 15 dpm per cubic meter air sample calculated MDA and assumed that the workers breathed that 15 dpm over the two-day period. And the ingestion concentration was done the same way, using the standard TIB-9 approach.

Okay. That covers how we reconstructed the internal dose. As I mentioned, there was some potential for

external exposure, admittedly, pretty small, but we have to talk about it. And of course, this would have been the photons and beta radiation, and then our dose from required medical X-rays.

So the photon doses were estimated using TBD-6000 Table 6.1 values. The smallest value we had on there was for exposure to a uranium slug, which is about a 2 kilogram piece of uranium.

And then continuous exposure at 1-foot distance for all the days of the uranium work only ended up a little bit less than 3 millirem total exposure to external penetrating radiation. So that's what we would use in the dose reconstruction.

And the shallow dose to the skin from the beta particles is presumed to be a factor of 10 times higher, and this is based on ratios of shallow skin dose to penetrating dose that we've seen at a number of facilities, and that's documented, also, in TBD-6000.

We had no indication that medical X-rays were taken offsite. We don't know

even if they were required, but it's our practice to default to required medical X-rays if we don't know. So we are assigning an annual medical X-ray during the 1955 and 1956 period that would be included in the dose reconstruction.

So that's how we're going to do the internal and external. You've seen this slide many times, the two-prong test, and the first one, is it feasible to estimate dose? And we have concluded in the Evaluation Report that we can do dose reconstructions, and therefore, we don't need to worry about the value and whether health endangered or not.

So the feasibility of the dose reconstruction is: we believe that the process and the source term information provide sufficient data for us to estimate doses associated with the uranium work that was conducted over a five-day period at Titanium Alloys.

Here's a chart that just essentially summarizes that, that we can reconstruct the internal dose from uranium,

external dose from beta, gamma, neutron, I didn't mention this, but neutron exposures from 90 grams of uranium is not going to be very much. It's not even worth calculating.

And that we can also use TIB-6 to do the medical exposures. And that concludes my presentation.

CHAIRMAN MELIUS: Good. Okay. Thank you. Again, this is an SEC petition. I believe the petitioner is on the line. What we'll do procedurally is, if the Board Members have questions for Jim about what he's presented here, we'll ask them, then I'll ask the petitioner if they want to speak, and then we will come back and have any deliberations that we may want on how to handle this SEC.

So, Gen, you have a question?

MEMBER ROESSLER: Yes, Jim, when you talk about the uranium reduction and --

DR. NETON: Turn the microphone.

MEMBER ROESSLER: Is it on? Do I need to get closer? Oh, that sounds better. Whoops, no it doesn't. Okay. In the uranium reduction activities, your

calculating doses or proposing for two days, but I'm wondering, what happened after they separated out the metal from this stuff, whatever we call it, slag or something, what happened to that material?

Did it get disposed of somewhere or would there have been some residual period where there's contamination or anything left over there? Yes, what did they do with it? Thank you, Henry, where did it go?

DR. NETON: We don't know. That's a good question. I did fail to mention that we have surface contamination values that were taken, in addition to the air sample measurements, that were very small. I mean, 20 dpm per 100 square centimeters around the furnace.

There was one, I think -- the highest value that was measured was, I believe, 500 dpm per 100 square centimeters, which was on the wall of the furnace where the material was being heated.

So we know the contamination levels in the laboratory itself were small,

around the furnace was small, I don't know what happened to the uranium metal itself. It was these gram quantities of material. That's a good question.

MEMBER ROESSLER: Well, I have a similar question on Slide 16, again, this was when they were -- I think it was 16. Anyway, the other operation, again, I wondered, after their two days of work, was there any residual radioactivity?

DR. NETON: Well, we know that there was a decontamination effort undertaken and we estimated it based on the highest value that was on the material, which was 27,000 dpm per 100 square centimeters, and assumed the workers during that one-day period breathed -- if you use a resuspension factor of 1 times 10 to the minus 5th, it comes out to 27 dpm per cubic meter for that one day, and then the material is cleaned up.

MEMBER ROESSLER: Okay. That was the question, really.

DR. NETON: Yes.

MEMBER ROESSLER: You're assuming

that one day occurred fairly shortly after their two days of laboratory work.

DR. NETON: Well, and again, this was a HASL operation. I think, you know, HASL was taking these air samples, they were there, they measured the surface contamination levels, you know, this was -- I wouldn't say they borrowed their furnace, but they went there and conducted an experiment using their furnace.

So one could presume that HASL took all the contaminated material with them, but I don't have, you know, hard, factual evidence of that.

CHAIRMAN MELIUS: Other questions? Josie?

MEMBER BEACH: Just a quick one. You have 14 claims, I saw. How many workers were at that facility? Do you know?

DR. NETON: You know, I thought about that before I got up there and I don't know. That's a standard question that I should have been able to answer. I can't tell you. It was a fairly small site. It was a 30-acre site, but I don't know exactly

the number of workers. Sorry.

CHAIRMAN MELIUS: Yes. Henry?

MEMBER ANDERSON: I'm assuming that all of those were denied?

DR. NETON: I don't know. I didn't look to see.

MEMBER ANDERSON: Okay.

DR. NETON: These are going to have to be reworked anyways, or re-looked at, because, remember, the first time we did them there was a six-year covered exposure and now there's only a two-year covered exposure because the zirconium work is no longer included.

It was '50 to '56 early on and now the DOL has determined that it's only '55 and '56. I know that the ones that were done before we determined this were given a six-year exposure. I don't know the proportion of ones that were denied, though.

MEMBER LOCKEY: It is going to be less.

MEMBER ANDERSON: Yes. Interesting how they would have assigned when there were no measurements during those

six years, but, you know, that was --

DR. NETON: Well, we had the air sample data from 1956.

MEMBER ANDERSON: Oh, so they would have assumed --

DR. NETON: I think they probably, I don't know this for a fact, but I would assume they probably went back and assumed it lasted for the entire duration.

MEMBER ANDERSON: Okay.

CHAIRMAN MELIUS: Josie?

MEMBER BEACH: What kind of information do you have on the air sample data? Do you have locations and placement, things like that?

DR. NETON: Yes. The reduction operations were done in a hood and the air samples were taken outside of the hood itself. I mean, I think all of them were actually taken at the face of the hood. The ones that were taken in the reduction furnace area were just listed as in the area of the furnace. That was for the uranium reduction operation.

We don't know where the location

was of the air samples for the remelt operation that HASL did, but we do know that the highest value they measured was the 80 dpm in the actual gas stream above the crucible itself.

CHAIRMAN MELIUS: Brad.

MEMBER CLAWSON: I was just wondering. You said that they melted down 70 pounds of contaminated --

DR. NETON: Right. Well, in two separate batches. One day they did the aluminum, one day they did the stainless steel.

MEMBER CLAWSON: So you're saying that they were in small 3-inch square pieces, did they cut it? Do you know how the process was done there? Did they cut it up?

DR. NETON: I don't believe they cut it there. I'd have to go back and look, but I think Mallinckrodt was asked to cut it in 3-inch squares.

MEMBER CLAWSON: Okay.

DR. NETON: That's my recollection.

CHAIRMAN MELIUS: And further Board questions for Jim? Okay. If the petitioner is on the line and wishes to make any statements, you're welcome to. Not required to, but this is your opportunity. Okay. I'm assuming not. So what is your preference in terms of how we should handle this? Wanda?

MEMBER MUNN: Was Brad going to say something?

CHAIRMAN MELIUS: No, but your card is up, Brad.

MEMBER MUNN: Okay.

CHAIRMAN MELIUS: He's having extended thoughts.

MEMBER MUNN: I'm assuming you're open for a motion?

CHAIRMAN MELIUS: Well, a motion or what you would suggest for a motion. I think the question is, do people feel they would need further information before taking any action on this? And I think that is the sort of outstanding issue.

I think we all know what the recommended motion would be, but would you

feel more comfortable doing it or would you rather not do that?

MEMBER MUNN: It's hard to imagine that one could obtain much more information on such a small source term and its potential effects, other than what we have already known or what we know about uranium and all of its progeny. And given the certainty of the amount of material involved, it's hard to see how we could get more information.

CHAIRMAN MELIUS: I tend to agree with you, Wanda. Dave?

MEMBER KOTELCHUCK: Since the petitioner wasn't here, I think the central issue is that you only have three days of exposure. The petitioner wasn't here to challenge that and I wondered, did you ever speak to either the petitioner or some other workers at the site?

MR. KINMAN: This is Josh Kinman, I did speak to the petitioner on several occasions and he had no interest in participating at all in this meeting today. He was also ill for a couple of months, but

the last time I spoke to him it was a very brief conversation where he expressed absolutely no interest in participating.

MEMBER KOTELCHUCK: Okay.

CHAIRMAN MELIUS: But the petitioner did have the opportunity. He submitted the petition, which qualified. So there was information. I think your question is: what interaction was there after that?

DR. NETON: I would say we did also try to contact or identify other people that could have been available to interview and we didn't have any luck. We couldn't find anyone to talk to.

MEMBER KOTELCHUCK: Yes, so there's nothing on the record challenging that and a lot of evidence supporting it.

DR. NETON: Right.

CHAIRMAN MELIUS: And how about from the claims?

DR. NETON: There's nothing in the claims that added any additional information to that effect.

CHAIRMAN MELIUS: Okay.

DR. NETON: I mean, there were some claims, I think, that talked about working with the uranium, but there's nothing substantive in there that we could use. I was going to mention also, there is no residual contamination period for this facility.

CHAIRMAN MELIUS: Right.

MR. KINMAN: I just wanted to add something. We did approach the petitioner on a couple of occasions and he knew of no one. I mean, he was an employee and he knew of no one who was still alive for us to even contact, as Jim said.

CHAIRMAN MELIUS: Yes, that's the other. Well, there may be claims, but they may be survivor claims. Yes.

MS. LIN: I also just want to provide some clarification in terms of what's a regulatory requirement for a petitioner to participate in this process, particularly during the Board's deliberative discussion. And I know we're two new Board Members here, so the petitioner, DCAS is required to provide the Evaluation Report to

the petitioner and then the Board is required to provide an opportunity for the petitioner to participate.

Their participation during the deliberative process is not mandatory and this would not be the only forum in which they could challenge any agency finding. 83, I think, 17, 18, the petitioner would have the opportunity to file an administrative review process request.

CHAIRMAN MELIUS: But normally what we do, Dave, is we actually try to, the way the schedule is set up, we try to accommodate times when the petitioners would be available and Josh makes, you know, lots of effort to contact them, and so forth, as we go through this process, and so forth. Loretta and then Paul.

MEMBER VALERIO: The petitioner requested the covered years 1950 through 1956 and the Class evaluated by NIOSH states that the covered period was 1955 through 1956, so there was a change somewhere in there. I'm wondering, when they're processing these claims, are the employees

claiming additional employment all the way back to 1950 and have those time frames been verified through DOE?

CHAIRMAN MELIUS: They may have been. Jim, you want to --

DR. NETON: I'm certain Department of Labor would have verified the employment during that original covered period, which was 1950 to 1956. Well, during our evaluation process, we identified that only 1955 and 1956 should be covered exposure because the earlier work was not radioactive -- it was an AEC contract, but it did not involve work with radioactive material. It was stable zirconium that they provided to AEC.

So the covered period has been changed from '50 to '56, to '55 and '56 only. So it's possible that there are some people that had covered exposure that are no longer covered on this program. Well, we have to go through and sort that no matter what happens to this petition because now there's a different covered period.

CHAIRMAN MELIUS: Yes. Paul.

MEMBER ZIEMER: It appears that the actual time of usage was extremely short, like, two days in one case and I don't recall --

MEMBER MUNN: A month and three days.

MEMBER ZIEMER: Yes, so is there any way a person could accumulate 250 days of exposure in any event? You'd have to postulate something else going on the rest of the time. I know you have the two-year span, but it's not clear to me that the material was actually there during all that period.

CHAIRMAN MELIUS: It doesn't matter, actually. It's the covered period that determines it and so unless they went back and changed the covered period to the three days and the two days or whatever, and I'm not even sure there's enough information to be that specific.

I mean, you may reduce it, but this has come up before, at that Texas City site or there's one or two sites where it's come up, where, even though the campaign, or

whatever was a shorter period, the covered period ended up being longer than the actual use of materials at that site, partly because of the uncertainty about when certain things occurred.

MEMBER ZIEMER: Yes, but we know the actual days in this case.

DR. NETON: Actually, maybe I wasn't clear. We know the actual days for 1956: July 10th and 11th. 1955, we know it happened in 1955 over a two-day period, but the Nucleonics publication by the Health and Safety Laboratory was not specific as to exactly what dates. We just know it was two days within 1955.

MR. KATZ: Paul, if I understand your implication, I think the issue is: you can add a Class for any short duration, because they can combine their employment from one site with employment from another site --

CHAIRMAN MELIUS: That's the other part, yes.

MEMBER ZIEMER: Oh, I understand that. Sure.

CHAIRMAN MELIUS: Okay. Wanda.

MEMBER MUNN: I recommend that we accept the NIOSH recommendation that the proposed evaluated SEC Class covering all employees who worked in any area or building at Titanium Alloys Manufacturing from January 1, 1955 through December 31, 1956, not be accepted.

MEMBER POSTON: I second.

CHAIRMAN MELIUS: Okay. Any further discussion? Ted.

MR. KATZ: Anderson?

MEMBER ANDERSON: Yes.

MR. KATZ: Beach?

MEMBER BEACH: Yes.

MR. KATZ: Clawson?

MEMBER CLAWSON: Yes.

MR. KATZ: Field?

MEMBER FIELD: Ted, I just want to make sure I'm hearing it correctly, was the vote to deny the petition?

MEMBER MUNN: The vote is to deny the petition.

MEMBER FIELD: Okay. Yes.

MR. KATZ: Just checking. Gibson,

are you on the line? Absent. I'll collect that one later. Griffon is absent. Kotelchuck?

MEMBER KOTELCHUCK: Yes.

MR. KATZ: Lemen, are you on the line? Absent. Lockey?

MEMBER LOCKEY: Yes.

MR. KATZ: Melius?

CHAIRMAN MELIUS: Yes.

MR. KATZ: Munn?

MEMBER MUNN: Yes.

MR. KATZ: Poston?

MEMBER POSTON: Yes.

MR. KATZ: Richardson is absent. Roessler?

MEMBER ROESSLER: Yes.

MR. KATZ: Schofield?

MEMBER SCHOFIELD: Yes.

MR. KATZ: Valerio?

MEMBER VALERIO: Yes.

MR. KATZ: And Ziemer?

MEMBER ZIEMER: Yes.

MR. KATZ: And it's unanimous in favor. The motion passes and I'll collect the absentee votes after this meeting.

CHAIRMAN MELIUS: Okay. We are now going back to the SC&A proposal and if I could find it we'd -- here we go.

MR. KATZ: I think Lockey is conflicted for WR Grace, is that correct, Jenny?

MS. LIN: Yes.

MR. KATZ: Yes, so you can stay at the table because we're discussing four sites, just remain inactive on that one.

MR. STIVER: Ready to proceed?

CHAIRMAN MELIUS: Yes, we're ready to proceed, but I think the assignment was that anybody have questions or issues on the list of Program Evaluation Reports, Table 7. We weren't going to have John go through them individually, but if you had questions. I think, if not, we were intending to refer to these to the Procedures Subcommittee for assignment.

MEMBER MUNN: I'd like to ask a question of John.

CHAIRMAN MELIUS: You certainly may.

MEMBER MUNN: Thank you so much.

MR. STIVER: Ask away.

MEMBER MUNN: John, are you proposing that we assign all of these to SC&A for review? It seems to me that there's a lot of PERs here, and my preference is to make sure that we cover all of those issues that have either a high or medium science involvement, because it appears very obvious to me that those are the most potentially contentious items in the PERs.

I guess I'm a little concerned about the number of items that we have shown here and if you're proposing that we task all of these to review, than I'll have to ask the Subcommittee to think about that more and to get into it more deeply before the meeting.

MR. STIVER: Actually, that was a comprehensive list of all 35 PERs, 14 of those have been previously assigned. I believe there's only one outstanding, and that's, I believe, for TIB-29 or PER-29. 14 and 17 have been delivered and so it wasn't my intent to have all of those assigned. It

was just to provide the list of what is available.

MEMBER MUNN: Good.

MR. STIVER: The intent of being able to go through it and pick those that we felt were the most promising or the most urgent and hit those first.

MEMBER MUNN: I would request that you clarify, for us on the Subcommittee, which ones have definitely already been assigned. Not now, but before we leave we'll need to know which ones you have.

MR. STIVER: Okay. I actually drew this table from that comprehensive list.

MEMBER MUNN: Okay.

MR. STIVER: And I believe I provided it for the April Subcommittee meeting.

MEMBER MUNN: All right.

MR. STIVER: So you should already have it. I can resend it to you, though, if you need it.

MEMBER MUNN: It might be wise to

resend it.

MR. STIVER: Okay. I will.

MEMBER MUNN: Thank you.

MR. STIVER: There was one other thing Josie mentioned, she was interested in seeing the statistics on the extrusion plan, the RMI, and so I went ahead and sent her a previous version of the document that has that information in it, but I kind of dithered on whether to include it in the Table 2 that I sent out to all of you, mainly because there were only 22 claims.

But I felt it was kind of an important site and the Site Profile has been around since 2007. It has not been reviewed. It's the original rev 0. There's been no worker outreach, maybe because there were so few workers available. I don't know at this point.

But the site operated from '62, during the AEC era, the DOE period, ‘62 up through '91, and then is still operating today. The residual period covers all the way up to today. And it was kind of important because they took the uranium

product from Fernald and Weldon Spring, and then did extrusions and forgings and so forth, to create different type of fuel elements, which were then sent to the N reactor in Savannah River, for the most part.

But they also handled, literally, tens of thousands of metric tons of the recycled uranium that came out of Fernald and some of you, Dr. Ziemer in particular, realize that that was an intense topic of discussion in the Fernald SEC for several meetings.

And in looking at the TBD, a lot of the same problems that we identified with Fernald would be applicable to this with how they're treating the constituents in the recycled uranium that was sent there. So for those reasons, I thought it might be worth looking into.

So I guess it was kind of a judgment call based on the number of claims, but it's for your consideration if you'd like to, I guess, look at that, we certainly can.

CHAIRMAN MELIUS: If I understood you right, John, wouldn't that be better to wait till Fernald has been completed, we're still working on that, and whether NIOSH might be changing, revising that report, Site Profile, based on discussions at Fernald?

MR. STIVER: Yes, that is true. I believe they are in the process of revising the guidance based on our --

CHAIRMAN MELIUS: Yes.

MR. STIVER: That would have been back in February when it was finally sorted out.

CHAIRMAN MELIUS: Yes, okay.

MR. STIVER: So, yes, that might be better to wait until that's all taken care of.

CHAIRMAN MELIUS: John Poston, I think you had a question also.

MEMBER POSTON: Yes. John, before I can decide what we're going to do here, I need to understand a little bit better. And I want to you a question, but I want to also give you my rationale. My

favorite subject, Chapman Valve, we laid that to rest some time ago, I thought, but you have it on the list.

And if I did my math correctly, the effort is a little bit south of 80 hours, which is basically two full weeks of effort for ten cases. And I was wondering, exactly what are you proposing to do with something like this? I mean, you've got it rated as low and the science is medium.

You know, I'm trying to understand what all this means and as far as I thought, we buried that one a long time ago.

MR. STIVER: Unfortunately, I can't really give you the details on that. I had Kathy Behling pull this list for me. I can't give you chapter and verse on each and every one of them, but I can certainly look into it and report back to you.

MEMBER POSTON: Well, the same thing, I mean, if you go up and down the list, some of them are rated low/low.

MR. STIVER: Yes.

MEMBER POSTON: And so the

question is, if they're low significance, why do we even want to bother with them? I'm not a penny-pincher, but, you know, we have a limited amount of money and it seems to me we have to focus on the most important things.

MR. STIVER: Yes, I agree. That's kind of the same question that Wanda brought up, which is why we look at these in the Procedures Meeting. This is just kind of a comprehensive list of what's out there, rated according to the selection criteria.

Then what we would typically do, we go through each one and look at it in detail and decide whether it was worth pursuing.

MEMBER MUNN: Well, and of course, the real purpose in these PERs is to assess whether NIOSH's evaluation was appropriate. And we've already passed on that in the Board, in many cases. But I think this is more a procedural activity than a scientific activity.

But I was taking the position that, if the science and technology issues

were of large enough importance, then it might be worthy of the Subcommittee's time to have another look at how well that proceeded. Not the end result, you know, we're not concerned with the result anymore, we have the result, but we're looking at the process and whether it was appropriate.

MEMBER POSTON: Well, again, I'm trying to understand, are you suggesting that your Working Group would look at these as opposed to us tasking SC&A to do this?

MEMBER MUNN: No. I'm suggesting that SC&A would look at what had been done and the PER would be evaluated for its appropriateness in the Subcommittee. SC&A would bring their evaluation of what had transpired to the Subcommittee for a rubber stamp or for disagreement, as the case may be.

CHAIRMAN MELIUS: But there's also a selection process at the Subcommittee in terms of making the assignments.

MEMBER MUNN: Yes.

MEMBER POSTON: I would buy that.

CHAIRMAN MELIUS: Yes. That, I

think -- yes. I have, sort of, some other questions that aren't related to these tables, but in terms of how they can affect our decision. One is, I think we've got updates from NIOSH on other documents coming out.

We've got also updates from NIOSH on at least expected things we have to cover at the September meeting, one of which includes at least one, I think, potentially large SEC 83.13 at Rock Flats that, depending on NIOSH's Evaluation Report, you know, could engender, I think, a considerable amount of further work that would build on what you've done already there.

I think, if my understanding is correct, that for all the SEC evaluations that are currently underway, you've got those covered in your budget already, including revisions, new reports, and --

MR. STIVER: Yes, the ongoing SECs are already factored in. That first table kind of had our estimates of, you know, what it would take to continue that

work or complete it.

CHAIRMAN MELIUS: Right.

MR. KATZ: Yes, I mean, it's a little bit -- I mean, for some of the sites, I mean, even though, sort of, what's already underway is covered in the budget, but there's a lot that continues on SRS and others where that budget will grow all on its own without there being any new tasking. I mean, it's worked this way every year.

MR. STIVER: Right, I probably should have clarified that in Table 1. That's work that has been authorized to date --

CHAIRMAN MELIUS: Right.

MR. STIVER: -- at this point.

CHAIRMAN MELIUS: So we've tasked some here today, or yesterday also, there's some new work at Hanford, some new work at Mound, I believe, and some work at GSI, so those will take -- and I don't think any of them were very large projects, but they would take up some amount of funding.

We also have, I think, a report on some additional reports that will be

coming out around September on SRS and LANL around that time, that could very well be some additional tasking from the Work Groups on those. I think we already implied those and so forth.

And then another category I just want to make sure we've covered, I don't think it's much of an issue for this year for SC&A, is the ten-year issues. So I could very well, for example, see, on the sufficient accuracy issue, some tasking to SC&A, but that wouldn't be for a while, I don't think. I don't think any others -- Worker Evaluation, is there anything?

MEMBER BEACH: Worker Outreach?

CHAIRMAN MELIUS: Worker Outreach, excuse me, yes. So I think we need to keep those in mind as we're, you know, assigning, because I think we're okay in terms of budget, but I think when we talk about sort of expanding additional Site Profiles and so forth, I think that we have a little bit of hesitation there.

At the same time, I think, if we know we're going to have to assign it, and

we have funding this year, let's do it, because you never know what's going to come up next year --

MR. STIVER: Right.

CHAIRMAN MELIUS: -- with this process. So I think what we would do now is, I think we need to decide on the Site Profiles. I think Wanda's Procedures Work Group then would essentially handle the others going forward. I think we just keep an eye, you know, within budget and so forth.

And if there's some uncertainty or whatever, we can further task at our August call, our September meeting and there's still time for some work within this fiscal year for the contracts. Does anybody else have any other concerns or considerations before we --

MEMBER POSTON: Well, I don't have a concern, but I want to make it clear where I'm coming from. You know, there is such a think as deferred maintenance and we have these people coming before us every time we meet talking about how long it takes

us to do things.

And I just don't see the value of going back and cleaning up some bits and pieces of some of the Work Group things that have happened in the past as opposed to putting that effort into doing dose reconstructions and doing the kinds of things that the people, these petitioners, need to have done.

CHAIRMAN MELIUS: Yes.

MEMBER POSTON: So that's where I'm coming from.

CHAIRMAN MELIUS: Yes, and actually, you remind me of another point is that, we also have talked with our discussions yesterday with the dose reconstruction review issue, which I think should be a high priority.

That's one of the things we're tasked for in the legislation and we're talking about some further work there and some possible changes there that could engender additional work within this year for them.

Now, the individual dose

reconstruction reviews, you know, SC&A has budgeted for in this proposal before us, but agree, John, I think we, keeping the priorities in mind, and so forth, at the same time, to the extent we can catch up and are able to catch up with stuff that may not have been as high a priority, but still needs to be accomplished, we should do.

MEMBER POSTON: Of course.

CHAIRMAN MELIUS: Yes. So let's go back to the Site Profile list, which is Table 2. So I think we need a motion on that.

MEMBER BEACH: I'll make a motion that we task SC&A to review O-52 and O-43.

MR. KATZ: Let's do them one at a time.

MEMBER BEACH: Okay.

CHAIRMAN MELIUS: One at a time.

MEMBER BEACH: So we'll start with O-52, the Pacific Proving Ground.

CHAIRMAN MELIUS: Do I have a second to that?

MEMBER CLAWSON: Second it.

CHAIRMAN MELIUS: Okay. Second.

We'll give Brad this one. Any discussion? If not, all in favor say aye.

(Chorus of ayes.)

CHAIRMAN MELIUS: Opposed? Abstained?

(No response.)

CHAIRMAN MELIUS: Okay. Another motion.

MEMBER BEACH: I'll make a motion to task SC&A with O-43, WR Grace & Co.

CHAIRMAN MELIUS: Second? Paul.

MEMBER ZIEMER: Okay.

MR. KATZ: This is a voice vote, but Jim Lockey will be recused from this.

CHAIRMAN MELIUS: Okay. All in favor say aye.

(Chorus of ayes.)

CHAIRMAN MELIUS: And anybody opposed? Anybody abstaining?

(No response.)

CHAIRMAN MELIUS: And Jim is recused. Okay. Yes, Paul?

MEMBER ZIEMER: Could I ask one question, on the Pacific Proving Grounds review, although we have an SEC there,

right?

CHAIRMAN MELIUS: Correct.

MEMBER ZIEMER: For the internal.

MR. STIVER: Yes, there's an SEC for the entire period. We have above ground testing for internal dose only.

MEMBER ZIEMER: Yes. I'm trying to get a feel for -- the document you're reviewing, though, covers everything.

MR. STIVER: Basically, there's only one paragraph about -- it was written after the SEC.

MEMBER ZIEMER: Oh, it was written after, okay.

MR. STIVER: Yes. So there's just a short paragraph about not being able to reconstruct internal dose.

MEMBER ZIEMER: Yes.

MR. STIVER: The rest of it is all about --

CHAIRMAN MELIUS: That's why it's so short; 18 pages.

MR. STIVER: It's like an external dose subset pulled out.

MEMBER ZIEMER: Okay.

CHAIRMAN MELIUS: And Battelle we're deferring, right. Yes. Okay.

MR. STIVER: And I guess if you guys wanted to consider RMI, that would be --

CHAIRMAN MELIUS: I'm hesitant until we have -- I'd like some input from NIOSH on that.

MR. STIVER: Okay.

CHAIRMAN MELIUS: Certainly willing to consider that or the others at a later meeting, either the August meeting or the September meeting, but I'd like to --

MR. STIVER: Okay. That's fair enough. We can look at that later.

CHAIRMAN MELIUS: Okay. And we'll work between now and the September meeting, we've got the Procedures Subcommittee, and try to get this all -- you know, what needs to be done in that time frame to the extent that we can. Now, obviously --

MR. STIVER: Right. Obviously, things come up.

CHAIRMAN MELIUS: Yes, things

come up, but we've got a number of -- the DR Subcommittee, the Procedures Subcommittee, will be meeting by September. I think Rocky Flats will be clarified. So I think we'll have a better -- and then we'll have a bunch of reports coming out around September and SEC Evaluation, White Papers, that we'll be able to handle also.

MR. STIVER: Okay.

CHAIRMAN MELIUS: Good.

MR. STIVER: Thank you.

CHAIRMAN MELIUS: Keep us informed on budget-wise and so forth.

MEMBER ZIEMER: One more question if I might. John, the number of PERs that you've already done is what again? I think you told us, but --

MR. STIVER: We've completed 13 of the 14 assigned PERs.

MEMBER ZIEMER: Thirteen, and those are other than are listed here or are included?

MR. STIVER: Those are not. They're in a different list. It's in a separate table. I can provide that to you

if you'd like.

MEMBER ZIEMER: Okay, yes. I was trying to get a feel for whether or not the fact that so many of these have lows on them are because they're left over from when we picked out the high.

CHAIRMAN MELIUS: I don't think we've done that as a group for a while.

MEMBER ZIEMER: Okay. Well, just wondering.

MR. STIVER: Yes, I believe the last time that was done was back in 2010.

MEMBER ZIEMER: Well, the Subcommittee will be looking at that.

MEMBER MUNN: We'll organize it better.

CHAIRMAN MELIUS: Okay. Good. And I'm saying, if you could circulate that, I think you mentioned it was an April document that had been sent to the --

MR. STIVER: I'll go ahead and circulate it to the entire Board.

CHAIRMAN MELIUS: To the whole Board, so we all have it.

MR. STIVER: Okay. All right.

Well, thank you.

CHAIRMAN MELIUS: Just for informational purposes, it would be helpful. Good. Thank you very much, John.

MR. STIVER: You're welcome.

CHAIRMAN MELIUS: Okay. That's about it for now. Okay. We are scheduled for public comment at 6 o'clock, so if people could be back here maybe a little bit earlier, ten of, five of. There's at least one person I know that's going to call in by phone.

MR. KATZ: Two people, or there's a letter that may come that someone wants me to read.

CHAIRMAN MELIUS: Okay.

MR. KATZ: And one person signed outside.

CHAIRMAN MELIUS: Okay. Anybody in the room want to make a comment? Okay. 6:00, maybe a little bit before, we'll get organized and do that. Thank you. See you all then.

(Whereupon, the above-entitled matter went off the record at 4:54 p.m. and

resumed at 5:59 p.m.)

CHAIRMAN MELIUS: Okay. If you could get seated, we'll get started here. I have a few people signed up, but before we get started, Ted will give the instructions for the public comment.

MR. KATZ: Right. I'm not sure I need to give them, because everyone signed up is well-acquainted with the redaction policy, so I'll just say it very briefly, which is, everything that people say on the record will be recorded, transcribed, and made available to the public, everything they say about their private lives, that'll all be for public consumption in the transcript for this meeting.

And the only exception, though, is, anything they talk about about another person, that information will be redacted sufficiently to protect the third party's privacy. Thank you.

CHAIRMAN MELIUS: Okay. And the order I'm going to do it in. We have, as of now, two people signed up here. I have at least one person signed up on the phone and

then we have one person who submitted a letter, a statement to be read into the record, which we will do.

So I'm going to start with the two people here, do them, and then we will go to the phone, and then finish up with the letter into the record. And, Andrew, if you could introduce yourself.

MR. EVASKOVICH: My name is Andrew Evaskovich. I'm the LANL petitioner. I just wanted to say thank you to the Board for coming out here again. I'm really grateful. I've had the opportunity to talk to some of you and the conversations have been enlightening.

And they've well reaffirmed my faith in the process because I was getting a little frustrated there for a while, as far as what was happening with the petition and I kind of felt I'm at the end of my resources as far as arguing it anymore.

And I don't think they have to do that much more work on it, so I'm grateful for that. I'm grateful for the questions that were asked yesterday, because I think

it clarified the direction that we're going to go with it and I'm grateful for the opportunity to talk to Stu and other Members of NIOSH as well, and the work that they've done on the petition.

So basically, I'm just saying thank you very much.

MR. KATZ: Thank you.

CHAIRMAN MELIUS: Well, thank you. And again, as we said, just to thank everybody who came and provided information. I thought it was useful, particularly workers and so forth, and everybody involved, because I think it has helped also clarify a number of issues on that. Joni Arends. Thank you and welcome back.

MS. ARENDS: Hi. Good evening, Mr. Chair and Members of the Board. My name is Joni Arends and I'm the Executive Director of Concerned Citizens for Nuclear Safety. I provided comments to the Board last evening and what I wanted to do tonight is, I brought disks with the documents.

And so what I'd like to do is read my statement, if I may.

CHAIRMAN MELIUS: That's fine.

MS. ARENDS: So our concerns, among others, embrace the occupational and public health and safety issues related to nuclear weapons work done at Los Alamos National Laboratory. As noted in our public comments last night, CCNS fully supports the Special Exposure Cohort petition, Andrew's petition for the LANL workers.

We have monitored the progress of the SEC petition since it was first filed and are concerned about the lengthy delay in the Board making a decision. And maybe there's been some resolution, but I wasn't here earlier today.

CCNS knows that NIOSH does not have the necessary information and data to conduct a dose reconstruction. On this CD, CCNS has provided reports and documents from the U.S. District Court, from LANL, and from the New Mexico Environment Department to support our position that the Department of Energy, LANL, nor the New Mexico Environment Department have the data to provide to NIOSH.

And if there is data, there are a host of quality control and quality assurance problems as documented below. So in folder number 1 on this disk we focus on air. And in subfolder number 1 we have the U.S. District Court for the District of New Mexico, Judge Mechem's April 2nd, 1996 memorandum, opinion, and order in the Clean Air Act NESHAP case, which was CCNS v. Department of Energy.

In Paragraph 14 on Page 7 it says, quote, "By mid-1995, however, 31 of the 33 radionuclide-emitting stacks and vents were still out of compliance with 40 CFR 61 Subpart H." End of quote.

In subfolder 2 we have the beryllium air emissions issue. This folder includes recent correspondence between the New Mexico Environment Department Air Quality Bureau and CCNS regarding the lack of reporting of beryllium emissions by LANL to NMED under the Title V Air Quality permit for the Sigma facility, which is at TA3.

In folder number 2 we have information about groundwater. And in

subfolder 1, we have the whole issue with the neptunium reporting in groundwater. This folder addresses the reported neptunium in drinking water in Santa Fe's Buckman Well Field.

The Buckman Well Field provides about 40 percent of Santa Fe's drinking water and the total population is about 80,000 people. This subfolder includes three folders, one contains the DOE draft and final site-wide environmental impact statements for LANL in 2007 and 2008.

The other contains a CCNS response to a letter from LANL's Andrew Phelps, who was in charge of the environmental management program, along with four attachments where we go into detail about the neptunium reporting.

Subfolder number 2 includes excerpts from the National Academy of Sciences in the 2007 plans and practices for groundwater protection at LANL about the neptunium reporting issue that we brought forward and they referenced in their final report.

And folder number 3 talks about the soils, and this addresses the issue of dioxins and furans in the soils at TA16, the open burn facilities at TA16, 388, and 399. This folder contains LANL's recent sampling plan submitted to NMED for approval.

And what it does is: it documents the concern about the emissions, the creation of dioxins and furans, and how the dioxins and furans have been found at levels above the standards in the area surrounding the burn facilities, but it also doesn't go far away from the burn sites.

It doesn't follow the downward or the northeastern pathway for the air emissions. Thank you in advance for your time to review these documents, and again, we support the petition for the LANL SEC. So I have two copies.

CHAIRMAN MELIUS: Okay. And thank you very much for providing these and for making the effort to get these to us and we will follow up. One of our Members lost his computer. It failed when he turned it on out here, so we're experienced with that,

unfortunately.

I'd now like to turn to the phone. Antoinette Bonsignore, I believe you're on the phone?

MS. BONSIGNORE: Yes. Can you hear me?

CHAIRMAN MELIUS: Yes, I can.

MS. BONSIGNORE: Okay. Thank you. Good evening, Dr. Melius, and Members of the Advisory Board. I want to thank you on behalf of the Linde workers and their families for this opportunity to address the Board this evening.

I'd also like to thank the Linde Work Group for their efforts during this post-SEC evaluation process. My statement this evening is in response to the recommendation that will be offered tomorrow to the Board by DCAS and the Linde Work Group regarding the Linde Site Profile, dealing directly with the Linde underground tunnel system and the impact that recommendation will have upon the ability of DCAS to re-evaluate and re-dose previously denied individual dose reconstruction claims

in a claimant-favorable manner.

Due to time constraints and my inability to address the Board tomorrow, I have outlined additional specifics and information regarding my response for the Board's further review in a written statement that I will provide to Mr. Katz.

Specifically, I wish to address whether DCAS and the Linde Work Group have provided a claimant-favorable conclusion with respect to the existence of a specific section of the Linde underground tunnel system that both DCAS and the Linde Work Group now allege was constructed in 1957.

DCAS has taken over two years to verify a theory regarding the existence of the underground tunnels and the amount of time workers may have spent in those tunnels. In the very outset, DCAS has expressed skepticism that Linde workers spent any significant amount of time in these tunnels that would result in exposure consequences.

In fact, not too long ago, DCAS's health physicist refused to even believe

that any workers ever used these tunnels, despite being provided evidence of that fact from worker interviews conducted by SC&A in January of 2006.

Notably, it was not until the most recent and fifth revision of the Linde Site Profile that the tunnels were ever referenced by DCAS. Unfortunately, the post-SEC Site Profile evaluation process has presented the same problems that workers have encountered since the filing of the initial Linde SEC petitions in March of 2008.

When ambiguity arises and DCAS is presented with circumstantial evidence, the predisposition among the health physicists that are making these final Site Profile decisions seems insulated from claimant-favorable policy.

DCAS is contending that the tunnels running near the uranium ore processing buildings did not exist during the operational time period at Linde, which officially ended on December 31st, 1953. There exists a great deal of ambiguity and

uncertainty about this issue.

Unless DCAS can provide definitive proof that these tunnels did not exist during the operational time period, such uncertainty should be resolved in favor of the sickened workers. Congress intended for EEOICPA to be administered in a claimant-favorable manner.

Moreover, EEOICPA was enacted precisely because the lack of definitive data and information about these facilities oftentimes makes it next to impossible to accurately understand working conditions and site-specific information that is more than 60 years old.

Sickened Linde workers and their families waited for many years for the final disposition of their two SEC petitions, but also for a complete and accurate Site Profile that will provide the basis for the fair evaluation of individual claims for those workers that do not meet the SEC requirements.

DCAS has been using an incomplete and inaccurate Site Profile to evaluate

individual claims for Linde since 2005. Moreover, even though DCAS was aware of the existence of the tunnel system since January of 2006, they've refused up until recently to even consider the radiation exposure consequences for workers.

DCAS never followed up on this issue and SC&A never questioned DCAS at any time after they issued their own July 2006 audit report of the 2006 Linde Site Profile that specifically called for further investigation of the tunnel occupancy issue.

As to the recommendation from the Linde Work Group, I would like to emphasize that the conclusion that had been reached by the Linde Work Groups do not represent the consensus among workers interviewed and/or that have provided affidavits regarding this issue about tunnel construction dates.

50 percent of the Work Group that's participated and have been consulted in this tunnel discussion disagree with the Linde Work Group's conclusions and do not believe in the integrity of the maps that have been supplied to DCAS by Praxair.

Two of these workers were present at a meeting held in Amherst, New York on April 30th, and a third worker has provided a sworn affidavit contradicting DCAS's theory regarding the 1957 tunnel construction.

This worker noted specifically that he used the tunnel running between Buildings 30 and 31 in 1952 and 1953, thereby contradicting DCAS and the Linde Work Group's theory that this section of the tunnel was constructed in 1957.

The simplest interpretation of the 1957 map provided clearly shows an existing 57-inch tunnel running between Buildings 30 and 31. I strongly urge the Board Members to review all of the 1957 maps and assess whether the 57-inch tunnel section running between Buildings 30 and 31 already existed in 1957.

The existence of the 1936 tunnel section near Building 8 is not in dispute. And similarly, the Linde workers have never disputed that, in 1961, some tunnels were extended to meet the utility needs of newly-

constructed buildings on the Linde site.

The 1961 maps simply demonstrate the normal protocol at the Linde site to extend existing tunnels each time a new building was built. Accordingly, the only issue in dispute is the existence of the 57-inch tunnel in 1957.

Since Buildings 30 and 31 were built by the AEC in the 1940s, to have suddenly and inexplicably constructed tunnels to service those buildings for utilities in 1957 does not synchronize with the manner by which tunnels were normally extended at the Linde site.

The two-year-plus delay that DCAS has created in continuing to further muddy the waters on the issue of tunnel construction dates only serves to affect workers detrimentally by creating additional ways to reduce exposure potential for those workers not covered by the Linde SEC.

A worker-friendly posture should require DCAS to proceed based on an assumption that the tunnels in question existed prior to 1957. I believe that once

the Members of the Board review the 1957 maps provided to DCAS, you will conclude that there exists no definitive proof on these maps that the tunnel section in question did not already exist in 1957.

Specifically, the 1957 map I am referring to is identified as, and I quote, "Revised and reissued for bids on January 10th, 1957 and revised, redrawn, and released for construction on March 20th, 1957."

The 1957 map clearly shows an existing 57-inch tunnel section running near Buildings 57, 58, and 31, and then winding southward between Buildings 30 and 31.

In conclusion, DCAS and the Linde Work Group should meet a very high burden and certainly, a much higher burden of evidence than what is being presented to the Board to justify resolving this matter against these workers.

Resolving this matter against these workers would reduce worker exposure potentials and thereby directly defeat the interests of these sickened workers who have

been waiting for far too many years for the timely and fair evaluation of their individual claims.

I would like to express my sincere gratitude to Dr. Melius, the Advisory Board, Dr. Wade, and the Linde Work Group for their time and patience. I very much appreciate the opportunity to present these very important issues for the Board's final review.

I would also like to thank Senator Schumer, Senator Gillibrand, and Congressman Higgins for their tireless efforts and support during this post-SEC evaluation process. Most importantly, I want to thank all of the Linde workers and their families who have waited so patiently for so many years while pursuing these SEC petitions and Site Profile issues.

It has truly been an honor representing the Linde community. Thank you.

CHAIRMAN MELIUS: Thank you, Antoinette, and just for your information, the enlarged maps are displayed. They've

been put out on tables at the back of the room earlier this afternoon, so people would have a chance to look at them today and then also tomorrow morning.

MS. BONSIGNORE: Okay. Thank you, Dr. Melius, and I'll send a copy of my written statement for the Board's review.

CHAIRMAN MELIUS: Okay. Thank you.

MS. BONSIGNORE: Thank you very much.

CHAIRMAN MELIUS: Is there anybody else on the phone that would like to make public comments?

(No response.)

CHAIRMAN MELIUS: Is there anybody else here in the audience?

(No response.)

CHAIRMAN MELIUS: Okay. And then Ted has one written statement that the person asked to be read into the record.

MR. KATZ: So this is a statement from Karen Johnson, who addressed you yesterday as well. I just have to pull it up on my -- okay. So this is from Karen

Johnson dated June 20th, 2012.

"My name is Karen Johnson. I'm one of two Mallinckrodt petitioners for the Weldon Spring Site SEC. Yesterday's Advisory Board Meeting was just the latest in a seemingly endless series of disappointments and frustrations with this program."

"So much science, so many facts, figures, curies, charts, calculations, et cetera, the list goes on and on. So many 'I think', 'I feel', 'believe, 'determine', 'assign', 'I don't know', 'I'll have to get back to you on that', 'I don't have that with me today', 'I didn't know we would be discussing that', et cetera, and that list goes on and on."

"Just about every delay tactic that can be used has been implemented. We have pondered the reason Weldon Spring and some other sites are taking so long to come to closure while others seem to go through with a lot less science. Are there some other reasons we are not privy to?"

"Are we caught in the middle of

something we know nothing about? There must be some explanation. Does NIOSH have an agenda we know nothing about? Could it be which NIOSH representative you are assigned that explains the length of time and scrutiny?"

"Are some of us held to a different standard? What a different life a lot of workers and their families would have had if the workers had been given a fraction of this science before they innocently walked through that door and sacrificed their health and life."

"There is no justification, in my mind, for these claimants and their survivors to have to wait these unreasonable amounts of time for a decision on their SECs. We are asking for an additional meeting to be scheduled at the earliest date possible.

"It is unreasonable to expect us to patiently wait for two or three months more only to be told that more Work Group meetings will be necessary or something else has been discovered."

"I cannot express the depths of sorrow I feel for these workers and their families as well as my own. Sincerely, Karen L. Johnson, petitioner, Weldon Spring Site."

CHAIRMAN MELIUS: Okay. Thank you. And I think that completes the public comment period for the evening and we'll reconvene tomorrow morning, I think, 8:15, 8:30. Good. Thank you.

(Whereupon, the meeting in the above-entitled matter was concluded at 6:20 p.m.)