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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94th MEETING

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THURSDAY
OCTOBER 17, 2013

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The meeting convened at 8:30 a.m., Mountain Daylight Time, in the DoubleTree by Hilton Hotel Denver - Westminster, 8773 Yates Drive, Westminster, Colorado, James M. Melius, Chairman, presiding.

PRESENT:

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

ADAMS, NANCY, NIOSH Contractor
BISTLINE, ROBERT
BURGOS, ZAIDA, NIOSH
EVASKOVICH, ANDREW
HINNEFELD, STU, NIOSH
KINMAN, JOSH, DCAS
MAURO, JOHN, SC&A
NETON, JIM, DCAS
RUTHERFORD, LaVON, NIOSH

*Participating via telephone

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

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

(8:32 a.m.)

CHAIRMAN MELIUS: We're going to start. Apparently we're starting this morning with LaVon giving his presentation again. LaVon, we tried to get him down under 30 minutes, he didn't quite do that. So another chance. Only kidding.

But I'm not quite sure why that's up there, but -- yes. But we have spoken to him about the 51 slides.

MEMBER MUNN: They were good slides, don't knock it.

CHAIRMAN MELIUS: That's 51 slides to approve. Think of how much --

MEMBER MUNN: They were 51 good slides.

CHAIRMAN MELIUS: Okay, so we'll start. The plan again is, first, we'll have an update for TBD-6000 GSI. It'll be relatively short. Then an update on DuPont

TBD's, the 6001 committee or Work Group, and then we'll do procedure reviews. Then we have a Board Work Session which should be relatively quick also, because we have a couple letters to approve.

So I think we can probably go through without a break, but let's see how many questions we have and how long the presentations take. So we'll start with Paul Ziemer and General Steel Industries.

MR. KATZ: Before Paul gets on, let me just check a couple of things. Well, first of all, welcome everybody for a second day. And for anyone on the phone, the materials for this day's sessions are on the web on the NIOSH website under the Board section under today's date for scheduled meetings.

Let me check on the line and see that we have our Board Members who are remote. Dr. Richardson, are you on the line?

MEMBER RICHARDSON: Yes, I'm here.

MR. KATZ: Great. Welcome. And Dr. Field?

MEMBER RICHARDSON: Did you tell me is the Live Meeting supposed to be showing the thorium strikes, or is it just my screen?

MR. KATZ: No, it is showing for everybody right now, but it won't last. Right. And Dr. Field, are you on the line?

MEMBER FIELD: Yes, I'm here Ted.

MR. KATZ: Okay, and welcome. And just note for the record that Dr. Poston is absent today. And yes, and there are no conflicts for any of the sessions today.

CHAIRMAN MELIUS: And now we'll go back to Paul.

MEMBER ZIEMER: Okay, good morning. I'm going to give a brief report on TBD-6000 Work Group. This is an oral report. I do not have any handouts nor am I using

any slides.

The TBD-6000 Work Group met by teleconference on October 11th, 2013. The primary focus of the meeting was two White Papers prepared by NIOSH. One concerning particle settling times, which was an unresolved issue pertaining to the TBD-6000 findings matrix, and the other providing a summary of bounding doses to be assigned to several categories of workers at GSI.

In addition to the NIOSH White Papers, the Work Group also considered SC&A reviews of the NIOSH recommendations as well as comments from the GSI co-petitioner, Dr. Dan McKeel.

Copies of the NIOSH documents and the SC&A reviews and related comments and concerns raised by the co-petitioner are provided on the NIOSH DCAS website under the October 11th Work Group meeting information and agenda. I believe all of those documents

were also distributed individually to all of the Board Members not just to the Work Group.

These NIOSH documents are relatively brief and I do not plan to go through them here at the Board meeting, but if you have not already done so, please review them and the comments of SC&A and the co-petitioner at your earliest convenience.

The Work Group agreed that several follow-up actions were needed before these issues could be closed. Let me enumerate those. Number 1, SC&A will double check the NIOSH calculations to verify the surface contamination levels that derive from the proposed particle settling times.

Number 2, SC&A will provide NIOSH with details of their analysis of the values for residual contamination levels so that any differences in calculational methods can be identified.

Number 3, NIOSH will contact

Landauer, the film badge suppliers, to clarify the issue of how control badge readings were reported to the client. And Number 4, NIOSH and SC&A will exchange information on how beta doses were calculated in order to identify whether differing inputs to the MCNP program were being used.

In addition to these specific tasks, NIOSH is also considering whether or not a document submitted by the co-petitioner, and the document is identified as AEC Report NYO4699 dated April 1957 that provides details of radiation surveys made by the AEC around a number of accelerators, can be used to provide any useful surrogate data for GSI.

The Work Group expects to schedule a follow-up meeting very soon to resolve these issues and then address the remaining open issues from the TBD-6000 Appendix BB findings matrix. TBD-6000

Appendix BB is the document that is specific to General Steel Industries. If there are specific questions today on these issues we'll be glad to address them. Also both NIOSH and SC&A have their participating technical personnel available today, either here or by phone, to answer questions or to clarify these documents if any Board Member wishes to raise issues or questions. And that completes my report, Mr. Chairman.

CHAIRMAN MELIUS: Thank you Paul. Any questions from Board Members or any of the Work Group that would like to add comments? Do you have a time table on some of these follow-up items?

MEMBER ZIEMER: Well, actually I have just received and haven't even read it yet, but I have just received from SC&A the first item that's on the list. So they have already completed that.

And I believe, I understand that

we have gotten feedback already from Landauer, and I guess we'll get in writing what the result of that was. So out of these four items, two of them are already completed and I think the other two will be following shortly.

So I anticipate that we may be able to meet in the fairly near future and try to resolve these issues. We don't have a date yet but I'll work with Ted on that and I think since the government's back in operation we don't have to worry about that anymore either.

CHAIRMAN MELIUS: Good. Yes, Jim Neton?

DR. NETON: I could just add that the third issue which is related to residual contamination is going to be very quickly resolved, I believe.

CHAIRMAN MELIUS: Start over.

DR. NETON: I think the third

issue on residual contamination is going to be resolved very quickly. We're just waiting. We may have it already, a spreadsheet from Bob Anigstein. We want to verify his approach, and I think we're in agreement with that. So that one should be finished very quickly.

The longest issue's going to be comparing these MCNP input decks, but that won't take very long either. A week or two, I think, is probably sufficient. So these will all be done very quickly.

CHAIRMAN MELIUS: Good. We'll expect the similar time tables on all future efforts in other Work Groups. Paul, you must be really pushing them.

MEMBER ZIEMER: Well, I think we all would like to complete this in the reasonably near future. GSI's been on our table a long time and we all recognize that.

CHAIRMAN MELIUS: I appreciate

all the work you've done and that the Work Group is doing on this.

Okay, Henry. DuPont.

MEMBER ANDERSON: So what I'm going to give you is an update and a closeout of our status or our review of the Site Profile for the DuPont Deepwater Works in Deepwater, New Jersey.

The background, for those of you who don't recall when this first came out, DuPont Deepwater Works was under contract with Manhattan Engineering from '42 to '47, and they were contracted to develop industrial scale facilities for purification of uranium from various ores, recovery of scrap, manufacture of metal and various uranium compounds, and they worked with various forms of uranium converting it to more useful forms.

There were two sources of exposure. External exposure was to naturally

occurring uranium, which they were processing, and its short-lived progeny as you can see there that internal exposures from inhalation of airborne uranium and inadvertent ingestion of residual uranium deposited on surfaces.

So time sequence of this particular review. In January of 2008 when we had a TBD-6001, this was an Appendix to the Battelle TBD-6001 and which provided guidance on dose reconstruction of workers at this particular facility.

March 2011 we got a Technical Basis Document for standalone DuPont Deepwater Works, as you can see there the documentation. And I was motivated by the withdrawal of the TBD-6001 and that's how it got over to our AWE Work Group.

In August 2011, SC&A, after the, got assigned to us, they were assigned to develop and review the Site Profile for this

particular DuPont Chambers Works, and they issued that review in August.

September, we had a meeting to go over their set of issues that they identified and that had been mentioned earlier, but this is the first time we had a discussion and began to look at resolving issues in the particular document.

NIOSH, in March of this year, issued a response to the findings which then gave us an opportunity to review and try to resolve the issues between NIOSH and SC&A, and June 6th, SC&A issued a response document to their commentary and findings. And then September 27th, a couple of weeks ago, we met again to, it looked like most of the issues had been resolved.

So external dose, there was no external dosimetry data available so exposures are based on the process knowledge and results of calculations. And exposure

scenarios included submersion in a cloud, standing on contaminated surfaces, standing close to various sizes and types of uranium sources.

And these were the types of things that the other AWE sites and the 6001 protocol had begun to address. NIOSH employed the standard TBD-6000 methodologies which have been reviewed and accepted by the TBD-6000 Work Group.

Internal dose, again no bioassay data intake, and internal exposures were based on airborne dust loadings collected from '44 to 45, so there were 252 of those samples, and then fitting the data to lognormal distribution and assigned either the full distribution or the 95th percentile of the distribution to the workers based on potential for exposure.

This just shows the air sampling data distribution. You've seen some of these

types of normal score already in the previous presentations, but this just shows the analysis for this particular site and the distribution of the samples.

There were seven findings, most of which we resolved. Issue 1, you can read it there. And NIOSH correctly pointed out in the discussion that there was virtually no uranium handling and processing prior to 1944.

So we closed out that issue about the use of the air sampling data for '44 and '45 when the facility really began a little bit earlier, but it really had not received and begun to process uranium until '44, so that the air sampling data was relevant to the exposure period.

Issue Number 2, had a concern about ingestion pathway was not modeled in accordance with approved NIOSH procedures, and NIOSH agreed that this original document

had been done a little bit earlier and they're going to revise the calculations.

And so in essence, after the discussion, the issue has been resolved. But because the changing of the actual documents so that we'd have that in an updated format hadn't occurred yet and we don't have a good timeline for it, what we did is put the issue in abeyance simply to keep it on our radar so periodically we can remind NIOSH that this is a catch-up activity that has to occur before we can fully sign off on the document.

Issue 3, you can see there, about that the Putzier effect was not taken into consideration when modeling the external dose and there was some back and forth between NIOSH and SC&A, and came to agreement that that does not apply to the uranium processing activities that took place at this particular facility. And after further review, SC&A agreed with NIOSH and therefore we closed out

this issue as being resolved as well.

Issue 4 and 5 were quite similar, so for this slide we combined those two. The dose rate at specific distances was assigned in the document as a distribution rather than as a fixed and deterministic value.

But again agreed with NIOSH to repackage the material in a manner where uncertainty in the distance of the worker from the source material was assigned an uncertainty distribution, rather than assigning an uncertainty distribution to the dose rate used the distance as the uncertainty at a given distance from the source and we all agreed with that particular strategy.

Again until the document is, the writing is actually revised we put this issue in abeyance as well. There's agreement on it, and as I say it's now just a matter of having the documents catch up with the

decisions. And so that it doesn't get lost again, we'll just keep it on our list of issues to periodically look at.

But I think the documentation is all there so it's pretty clear as to what NIOSH can do, and it's simply a matter of when higher priority activities will get completed so that these kind of clean-up activities can occur.

Six and 7. Each of those issues are related to the assumption that the radiation dose rate measured using an open window survey meter at one meter from the surface contaminated with uranium dust is assigned 50 percent photon dose and 50 percent beta dose.

NIOSH agreed with the SC&A position of 1:1 photon-to-beta ratio is incorrect and will use a 1:10 ratio. And with that switchover SC&A agreed and we all reviewed that and agreed as well. And again

it's having the document catch up with the decision processes, so that again is in abeyance.

So this basically is, we've concluded our review of this Site Profile, and the Site Profile now just needs to be revised. So with that we'd suggest that we could have the Board sign off on this review, and once the documents are all updated they'll be posted again and this site should be ready to go.

Any questions?

CHAIRMAN MELIUS: Any questions or comments from -- Josie? And then Brad.

MEMBER BEACH: Okay. Issue 2, did you send that one, after your discussion on the 27th, over to Procedures or after your discussion you did something a little different? In the document that I read it showed that it was going to go over to the Procedures --

MEMBER ANDERSON: It was going to, I don't know if it did yet. I mean we have not --

MEMBER BEACH: So it's still, that's the pathway?

MEMBER ANDERSON: Yes, that would be the pathway for that one.

MEMBER BEACH: For that one. Okay.

MEMBER CLAWSON: I just needed clarification.

MEMBER ANDERSON: Yes.

MEMBER CLAWSON: On the years that we were looking at for this are just '44 through '45?

MEMBER ANDERSON: That's when the actual work was performed.

MEMBER CLAWSON: That is when the work -- but those are the years that we're looking at is all?

MEMBER ANDERSON: Yes.

MEMBER CLAWSON: Okay.

MEMBER ANDERSON: And this site is called '42 to --

MEMBER CLAWSON: What's that?

MEMBER ANDERSON: That's when the work was actually done.

MEMBER CLAWSON: And the ending time period for this one is '45, or do they have a residual?

MEMBER ANDERSON: I don't -- John?

DR. MAURO: This is a situation where there was an AWE facility to actually be the starting point to and continue, I think the end date was '45? It's up there. But the problem we had was that the data on air sampling was limited to 1944 and 1945.

And one of our class of concerns is they were going to assign that, use that data to reconstruct the doses for the earlier years, '42, '43, or whatever the dates are up

there. Yes, there it is. '42 to '47. And so we were concerned that, we've often noted that in the earlier years things were not under very good control.

But NIOSH pointed out that when you look into the history of this site there really wasn't anything going on in the earlier years. The actual uranium work didn't really begin until around '44. And then we checked that out, went into the SRDB, and we found that that's correct.

So in this particular case there really wasn't a lot of activity going on, and therefore by using the data from '44, '45 is claimant favorable to apply it to the workers. So they are going to apply it to the workers that were there in the earlier years, but there really wasn't very much going on in the earlier years, and then we felt that that was a claimant favorable way to deal with this problem.

MEMBER ANDERSON: I don't recall if there was a residual period. We'd have to go back. I know whatever the proposal was it wasn't an issue. How they were going to deal with it was a pretty standard --

DR. MAURO: I have to admit, I don't recall why there is no issues related to residual. I'd have to go back to my records. For some reason that did not come up as an issue and I don't recall the reason.

MEMBER CLAWSON: The dates just didn't, when reading this they didn't jibe with me. I understand what you're saying there but --

MEMBER ANDERSON: So the site is '42 to, you know, our major focus was on the fact that there's no biomonitoring and there's no badge measurements, and all there was was the air measurements and then with those, and they weren't at the start.

So we really discussed as to was

it appropriate to use that because of the start-up usually is the most hazardous period, but they weren't handling, the materials really didn't arrive then.

MEMBER CLAWSON: And I understand that. I just, usually when something comes in we usually follow it to the end, and I still don't have a clear understanding of when it stopped and what they did to take care of it, if it was in the same position.

DR. NETON: There is a residual period through '95 at DuPont Deepwater Works. All I can recall now is that there were no findings in the SC&A review that --

MEMBER ANDERSON: Yes. Whatever, we'd have to go back to look at the document.

DR. NETON: Yes, this closed out the findings that were in existence. There may have been other findings and we dealt with them earlier. I don't recall though.

MEMBER CLAWSON: Okay. The dates

were a little confusing to me how they were following in, but Josie just pointed something out to me. So thank you.

MEMBER ANDERSON: Okay.

CHAIRMAN MELIUS: It's why we have you sit next to Josie at these meetings.

MEMBER CLAWSON: Well, okay.

MEMBER ANDERSON: This is part of why I wanted, when it started kind of under one auspices got reviewed, you then really have got to go through all of the comments and the data from the meetings, and that's a very laborious -

MEMBER CLAWSON: I've done Fernald, I know very well.

MEMBER ANDERSON: So that's why we wanted to move it along quickly while most of this was still in our findings as opposed to having go back to all of the discussion and refine it out of the minutes.

CHAIRMAN MELIUS: Any other

questions or comments? If not, we have, I believe, a proposal from the Work Group, which would be a motion which would be to approve what their recommendations which Henry's outlined, with the understanding that once NIOSH has responded to those and addressed those, which would be some time from now in terms of an updated Site Profile and so forth, that they would, you know, be a follow-up on that and -- okay.

Any further discussion? If not, all in favor say aye.

(Chorus of ayes.)

CHAIRMAN MELIUS: And on the phone? David and Bill, okay with you?

MEMBER RICHARDSON: Yes.

MEMBER FIELD: Yes. This is Bill.

CHAIRMAN MELIUS: Yes, I heard you both. Okay, great. Okay, good. Next is Wanda.

MEMBER MUNN: All this fun material.

CHAIRMAN MELIUS: Procedure Reviews, yes.

MEMBER MUNN: Going along with our intent to keep you very informed about the scope of materials that we're dealing with in Procedures, we are going to talk about OTIB-10 and PER-0012 today. You have the slides in advance, and I hope if you have any questions you'll provide them for me when we're finished here.

We'll begin with OTIB-10, a standard complex-wide methodology for overestimating external doses measured with film badge dosimeters. We've taken quite a bit of time with this particular OTIB and its review because it has bearing on many of our major sites.

The objective of this particular document was, first of all, to evaluate the

degree of standardization that we were seeing in standard DOE film dosimeters. We also needed to assure that we had developed the standard methodology that the dose reconstructor could use assigning doses that would be a reasonable overestimate of the organ dose.

This essentially was the first of the official documents that we had that was our attempt to try to process as many of the early claims as possible with a minimum of effort, time consumed. It was intended to overestimate the dose so that we could quickly evaluate the potential compensability of a variety of claims that were before us which did not appear at first blush to be noncompensable.

It was started in 2004 when Rev 0 of the OTIB was first provided. The following year we had the SC&A review. Shortly thereafter, NIOSH responded to the

concerns that SC&A had presented to us. And then we had the Subcommittee's discussion which was extensive and lasted over a period of over a year.

There were ten findings in all and we were successful in resolving all of those, but it wasn't always clear-cut for us. Quite a bit of evaluation and consideration was given to each of these findings.

In June of 2006, NIOSH issued Rev 1 and that Rev incorporated all of the findings that we had resolved. I'm sorry, I'm reading. I'm looking at my copy and not yours.

In June of 2006 -- I'm at the bottom of this slide now. My apologies for not keeping up with what I'm saying. We had Revision 1 and it did cover all of the resolutions that we had in earlier findings. It resulted in no change at all to the assigned dose, and as a result we weren't

going to have to have a PER, a Program Evaluation Report.

As I mentioned earlier there were ten findings in total, and for those of you who had any interest in those specific findings even though I'll go through them very shortly, the complete histories are on the Board Review System.

If you care to go there and look, there is your URL for finding it. And I again remind folks who are not a part of the Board that this is an internal review document and it's not accessible from outside the CDC system.

As I mentioned earlier, the resolutions took us quite a while but we did close them all. And here we take a quick look at the summary information from what those findings involved. The first one was concern that there was no guidance on how to treat missed dosimetry data where the number

of zero readings was seen for less than 12 cycles. Rev 1 provided the guidance on how to do that, and we closed the resolution.

Item Number 2 indicated that the guidance did not acknowledge when missed dose was based on the level of detection that was representative of the 95th percentile and required no uncertainty.

Rev 1 of the new Table 2-1 does give specific instructions to the dose reconstructor on how to record that missed dose and how to calculate it and enter it into IREP.

Finding 3 and Finding 4 were very similar. There was a concern about the placement of information and where it appeared in the document, how much there was of it, and it was essentially a format issue. We discussed those and closed them both in 2008.

Rev 1, all that background

information has been moved to a different place in the document and incorporated into Attachment A so that the dose reconstructor will know where to find it and not have to wade through it before the reconstruction event actually begins.

Item Number 5 was concerned about addressing how the standard correction factor was going to be used when dosimeter doses were greater than zero but less than the level of detection, which was identified at about 40 millirem. Rev 1 takes care of that. Specifies the use of 40 mR as reasonable default for the level of detection.

Item 7 was a concern about the difference of instruction from OTIB-10 to Section 5 of Procedure Number 6. The one indicated that the dose reconstructor should use a standard correction factor to the dosimeter dose but didn't use uncertainty, and the other one did just the reverse. It

applied an SCF but didn't use uncertainty.

So we closed that with the agreement that PROC-0006 was going to be completely revised, and was, so that it didn't contain the guidance that was inconsistent with the OTIB. Now the OTIB is the determining factor.

Item Number 8 was a concern that the OTIB was not identifying the hierarchical position of that particular document among the other competing procedures, and we worked that out in Committee. And PROC-0006 Attachment that was of concern is now eliminated and PROC-0006 Section 1.1 refers the dose reconstructor back to this procedure when appropriate.

Number 9 was the standard correction factor of 2, which covered a great many errors. It doesn't appear to be too conservative based on NRC 1989 report. And after discussion it was agreed that this SCF

of 2 for every recorded dose is sufficiently conservative for adequate use in providing a valid result. That's closed.

The final finding was the use of a default level of detection value of 40 mR, and that should be considered a highly typical value as opposed to a highly conservative one. And our deliberations agreed that the 40 mR for gamma radiation is reasonably claimant favorable and that when you use it with the assumed monthly zeros it ensures that the missed dose is appropriately barely overestimated.

That resolved the issues that we had with OTIB-10. If you have any questions we'll try to respond to them.

CHAIRMAN MELIUS: Brad, go ahead.

MEMBER CLAWSON: I need just a clarification. This OTIB-10 is one that we're using now?

MEMBER MUNN: Yes.

MEMBER CLAWSON: And we've gotten to the process and it's in effect now.

MEMBER MUNN: Yes.

MEMBER CLAWSON: Okay. For some reason I thought we weren't going to overestimate anymore, and that's why I was just kind of wondering. I know the troubles we have with overestimating stuff before, and that kind of surprised me.

MEMBER MUNN: This procedure's only used when there are very low exposures. And I don't believe you're going to find it in frequent use at all. I think it's seldom used, but so far as I know it is still valid. Is that correct, Stu?

MR. HINNEFELD: Yes, I don't think it's been cancelled but I think it is rarely used anymore. Your question about are we going to stop overestimating, and we, in fact, considered it and talked to our contractor about that and we reported back on

that.

The actual discontinuing of any overestimating approach has just turned out to be quite extensive because of the additional effort required to do these dose reconstructions, and so there are some things we have stopped doing.

I know we don't do this very much anymore. I'm not sure if we use it, really, at all anymore on OTIB-10. And there's some overestimating things that we have stopped that we can stop with a little effort, you know, the more precise estimate doesn't take that much more work.

But when you talk about just eliminating overestimates in general, it makes dose reconstruction so much more time consuming and therefore so much more expensive, we just didn't feel like we could stop it all.

MEMBER CLAWSON: But this one

isn't used. I guess I'm looking at it from our dose reconstruction of when they use this, this is going to be in their workbook to let us know that this was an overestimate.

MR. HINNEFELD: Well, the dose reconstruction should certainly say. You know, it should be clear that this was what was used, if it's used.

MEMBER CLAWSON: Okay, thank you.

CHAIRMAN MELIUS: And just to reiterate that we had talked to others. This is one of the ten-year review issues, and so we actually have talked about this when we were talking about the follow-up on the ten-year review.

Meanwhile, while Stu tries to fix the machine, Phil, go ahead.

MEMBER SCHOFIELD: Yes, using the value of 40 mR, how comfortable are you with that given the -- what was that, Number 9, I think it was here. We're using assumed LOD

of 40 mR for gamma. Given the history of the fact that we have film badges, we have TLDs, we have some brands of film badges that weren't as sensitive as others, how comfortable is NIOSH with that value?

MR. HINNEFELD: Well, we think 40 is a good value to use for this procedure. And remember you're using the procedure, if you use it you're using it in its entirety. So you're not just using 40 as LOD, you are maximizing the number of zero readings.

So you essentially, you know, all but one exchange in a year is considered a zero. So you're overestimating the number of zeros, so the number of times you use the missed dose calculation, and you're also using the LOD instead of the LOD over 2, more precise estimate of the missed dose.

So there are sufficient conservatisms built into there that we believe it is appropriate. And as an

alternative, if you chose to use a higher LOD and go back and review these claims, you know, it won't affect these cases. The only thing that would happen would the PoC would move up high enough that you could no longer use overestimating techniques and you would have to rework the case using another method.

MEMBER SCHOFIELD: Oh, okay. Thanks.

CHAIRMAN MELIUS: Dave?

MEMBER KOTELCHUCK: On Finding 9, could you please tell us what the standard correction factor of two corrects for?

MR. HINNEFELD: Well, I could if I had read the OTIB recently. There are several factors that influence the uncertainty of the dosimeter, and there were estimates of how big could that uncertainty be. And when you sum them it comes to about two.

So I'll have to go back and look

at the OTIB. I don't recall, but I can send you some information about what they are. And I think they are explained in the OTIB.

MEMBER KOTELCHUCK: Well, I'll go into the OTIB by myself.

MR. HINNEFELD: Okay, if you have any questions let me know because I think I can talk about it.

MEMBER KOTELCHUCK: Fine.

MR. HINNEFELD: But I do recall there are a number of issues in film dosimetry that contribute to the uncertainty of the film dosimetry by a certain percent. And of the ones that were considered, when you add those up it came out to about two.

MEMBER KOTELCHUCK: Good. Thank you.

CHAIRMAN MELIUS: And the OTIB is on the stuff that was handed out this time.

MEMBER KOTELCHUCK: Yes.

CHAIRMAN MELIUS: Should be.

Yes, Mark?

MEMBER GRIFFON: I just have one, and this still might help out here too. But just Finding 1 on the missed dose you might go through, from my memory this was quite a discussion in the early years of the procedure when I was still working on that Subcommittee, but how you determine. It says you revise your approach, and it's included in the revision.

But how do you handle missed dose and as compared to, like, if you have records where you see zeros or less than detectable or if you have blank cycles? I mean, just if you can explain, I think it's worthwhile to explain. How do you fill in those blanks?

MR. HINNEFELD: For this procedure?

MEMBER GRIFFON: Yes, relative to this procedure.

MR. HINNEFELD: Well, relative to

this procedure, I think what's generally done is if you have a dose in a year, a recorded dose in a year, you assume that occurred in one cycle. And you take the how ever many other cycles there were that year and you consider those zero and do the missed dose for all other cycles. I think that's what we call maximum zero.

MEMBER GRIFFON: So that would be assigning 40 millirems per cycle basically, right, is what you're saying?

MR. HINNEFELD: Yes. Yes.

MEMBER GRIFFON: All right.

MR. HINNEFELD: And then that missed dose number goes into as a constant because it's considered the 95th percentile level of the missed dose, and it goes into the IREP spreadsheet as constant.

MEMBER GRIFFON: And what if you have a situation where you have, and this OTIB may not be applicable to this kind of

situation, but you have records for a person but there is gaps in them so you have maybe monthly dosimetry records but you're missing occasional months?

MR. HINNEFELD: Well, that's largely a site-specific question. And the way you can learn about what the site's practices were, whether they recorded faithfully a zero or whether they would have a zero and leave it a blank.

So you have to determine whether that blank means it's a zero or that blank means there's no result for that month. And if there's no result, then we have to worry about whether maybe it should be an unmonitored as opposed to a missed dose.

MEMBER GRIFFON: Yes. And I think you're right. I think you sort of defer to Site Profile approaches and stuff, but there was discussions of looking at nearby doses, the --

MR. HINNEFELD: Yes, there are a few techniques around.

MEMBER GRIFFON: -- or coworker doses or other things.

MR. HINNEFELD: I can't bring them all to mind right now.

MEMBER GRIFFON: It's not in this OTIB though, right. I mean this OTIB wouldn't deal with that end of it.

MR. HINNEFELD: No. No, this would not deal with that.

MEMBER GRIFFON: Okay. Just wanted to be clear.

MEMBER MUNN: You're trying to put more on my plate than I already have, aren't you?

CHAIRMAN MELIUS: That's right. Yes. David, do you still have another question or you're --

MEMBER KOTELCHUCK: Oh, pardon me.

CHAIRMAN MELIUS: Yes, okay, David Richardson or Bill Field, do you have questions?

MEMBER FIELD: This is Bill. No questions.

CHAIRMAN MELIUS: Okay.

MEMBER RICHARDSON: I don't either.

CHAIRMAN MELIUS: Okay, I just didn't want you to feel forgotten out there.

Okay, then Wanda?

MEMBER MUNN: The two things that were assigned to do today was OTIB-10 and PER-0012. But because we in our Subcommittee are just really getting started on PERs and will be expecting quite a number of them to come before you in the next few meetings, we thought perhaps it might be worth our while to take just five minutes or so to reiterate why we do PERs and how they're handled.

We have a very large quantity of

-- sorry, I'm trying to change the slide for you and I'm not being -- oh, okay. Thank you.

The volume of guidance documents and workbooks that we now have in hand to support our dose reconstruction activities is pretty daunting. And the details inside of those reconstruction documents may change fairly radically from time to time based on revisions and new information.

So in an attempt to respond to those revisions NIOSH wants to make sure that dose reconstructions that have already been completed are not in some way changed by those revisions that occur.

So in a case like that originally the plan was that a Program Evaluation Plan would be issued so that we would know that a Program Evaluation Report was in the works and that activity was formally made into a procedure, incorporated in the procedure that

we know as PR-008. That is an activity that does not occur in that way any longer.

Program Evaluation Plans seemed to be an unnecessary step in the project, and after issuing only a few they have no longer been done. And partially as a result of that PR-008 has been cancelled. But that's historically what the original plan was.

This is the slide to which Dr. McKeel referred yesterday when he said that this slide says that all PERs are going to be reviewed by SC&A. I have informed Dr. McKeel that what this says is what you see.

CHAIRMAN MELIUS: What it says, yes.

MEMBER MUNN: The PER is subject to formal review. It does not say that it will be reviewed. There are quite a large number of PERs and we will be choosing the ones, you as a Board are the final word as to which of those PERs we'll agree to undertake

for review.

Our contractor provides for us an expected list of what they will have available that they consider worthy of Board consideration and they bring those to my Subcommittee, our Procedure Subcommittee looks at those and makes the choice as to what to bring to you. You agree that we will indeed proceed with whichever PERs you find to be appropriate and those are the ones that are assigned to the contractor for review.

There are five subtasks that SC&A undertakes when we do a PER audit and they are fairly rigorous. The first subtask is to take a look at the agency's evaluation of the issues and what that might do to impact dose reconstructions.

The second task is looking at the specific methods of corrective action that NIOSH proposes to take. Subtask 3 is to evaluate what the PER's approach is going to

be and what criteria will be used for choosing the dose reconstructions that might have been affected by any reevaluation that took place.

Subtask 4 has two steps to it. The first is defining the number of dose reconstructions that might be affected by the PER and that would therefore need to be reassessed by NIOSH so that SC&A can review those. And at that point the Subcommittee will select those cases for review and SC&A will proceed with its activity to produce an audit of the cases that were selected.

Subtask 5 is the supplemental report that SC&A prepares for us that will show the results of their entire review including the results of each subtask and the review of the dose reconstructions that we had chosen to have them do.

So that essentially is the process that we go through with the PERs. If

you have any uncertainty or any question about that let me know, otherwise I'll go on to PER-0012, which is what we came here to do.

CHAIRMAN MELIUS: Go on.

MEMBER MUNN: All right, with a little help from my friends.

Thank you so much. This covers a topic we've talked about a great deal in this body, the evaluation of highly insoluble plutonium compounds.

One of the major variables that we have to consider in doing dose reconstruction for this program has been the solubility of any of the radionuclides with which we are dealing, originally considered to be fast, moderate or slow solubilities.

Under some circumstances, however, we have been dealing with plutonium that had been exposed to extremely high temperatures, highly fired, and therefore had

taken on a very insoluble form which we referred to originally as Super S, but now frequently seeing as Type SS, still referred to often as highly fired.

When this particular form of plutonium is inhaled it stays much longer in the lung than other forms, and because of that behavior it increases the dose to that tissue significantly.

The type of SS plutonium target tissue impacts was covered by OTIB-49 entitled, "Estimating Doses for Pu Strongly Retained in Lung." And the assessment of that OTIB and its contents is what prompted the issuance of this particular PER.

We've been dealing with this for a number of years. In January of 2004 was when we first had access to the Rocky Flats plant occupational internal dose TBD. Included in that was information about the existence of SS type plutonium.

In 2007, we saw OTIB-49 which as we pointed out is the crux of our concern for this PER. And just immediately following OTIB-49, NIOSH issued one of those evaluation plan documents that we mentioned earlier for the evaluation of these types of plutonium compounds, so that we knew that the PER was in the works and it did appear about five months later and that's what we're looking at now.

In 2010, our contractor submitted the draft review that they had of this PER to us in the Procedures Subcommittee and to the agency. And in January of 2011, they presented findings to the Subcommittee and we accepted all the findings for our overview.

In July of that year the agency provided a list of 50 cases from all of the potential categories that we had identified except for fecal sample monitoring for extrathoracic and GI tract.

The Subcommittee selected nine of those dose reconstructions and that was representing eight of ten categories for the contractor's review. Their Subtask 4, the one that we mentioned earlier is done in two steps, is the one which would be most key for our purposes.

In July of 2012, SC&A provided their draft review of the nine DRs that had been affected and that we had identified as being affected, and later that month they presented the findings to the Subcommittee and we accepted the findings.

First, Subtask 1, assess the circumstances that necessitated the need for the PER. While we were developing the Site Profile, NIOSH had indicated as I said earlier that highly insoluble Type S Pu was present at the site and would need to be taken into consideration.

And there was a problem with

that. The regulations in 42 CFR 82 required that the dose should be calculated by using current ICRP metabolic models, but current ICRP Publication 66 models did not address this particular form of Pu, the highly insoluble form, with which we were concerned.

In order to account for the longer retention period of the organ doses that were expected from slowly absorbed plutonium, the agency developed the new OTIB-49 in February of 2007.

The continuation, assessing the circumstances that prompted the PER, in the OTIB NIOSH developed the dose adjustment factors that generally a factor 4, the notation says.

They used cases from both Hanford and Rocky Flats workers that had been exposed to this particular type of plutonium for four target organs. Intakes were based on lung counts, air concentrations, urinalysis and

fecal analysis.

This was not going to be an easy task. It was going to involve review of a significant amount of literature and a significant number of cases. So recognizing this, SC&A indicated a three-year time period for developing it because it had been a long time coming but it was a very prodigious task.

As they reviewed the OTIB and the PEP and the consequential PER, the finding was that NIOSH had properly characterized the significance of the highly insoluble Pu, and that they had complied with Procedure 8 while they were developing the impacts of the programmatic changes that would affect previously completed dose reconstructions. As a result there were no findings under Subtask 1.

Subtask 2, then, is assessing specific methods for corrective action. When

a PER has a number of documents supporting the White Papers, the OTIBs, procedures that haven't been formally reviewed, then they need to assess the scientific basis of what's being used to make sure that the corrective action has the amount of credibility that's necessary for them to proceed.

PER-012, as we've said before, is a result of OTIB-49 being issued and had been reviewed earlier in the draft report. SC&A was in full agreement with the approach to dose modeling for the very super-slow plutonium types, and the Task 2 was therefore reduced to just a very brief summary and the key technical elements that were contained in OTIB-49. And as was the case in Subtask 1, there were no findings in Subtask 2 as well.

Subtask 3 was evaluating the approach for identifying the number of dose reconstructions that required reevaluation. And in taking a look at that total

population, there were three specific criteria that were outlined by the PER.

First, they wanted to make sure that the dose reconstruction had already been completed before February of 2007. We wanted to see that the facilities that were involved were appropriate for this type of exposure and we wanted to know that the Probability of Causation was less than 50 percent. Taking a look at that universe of claims, we only did 4,865 potentials.

Tucked away in the corners of OTIB-49 there were two additional screening criteria that needed to be met. One was that for Probability of Causation greater than 16.97 percent of cancers other than lung and thoracic lymph node, and plutonium doses that were assigned had to be intake based on monitoring. That's reducing the potential cases when you incorporate those two items to 1,757 cases.

So being cautious to assure that all of the requirements of both the PER and the OTIB were met reduced the number of cases to less than 2,000. This methodology was agreed to and there were therefore no additional findings under Subtask 3.

In Subtask 4, this is the two-part review that we have to take a look at, a recommended sample of the effective dose reconstructions that were going to be reevaluated.

PER-0012 indicates in those a need for dose reconstruction, a reevaluation for four different types of target tissues. The lungs and thoracic lymph nodes, the thoracic tissues and respiratory tract, tissues of the GI tract, and other systemic organs.

Reevaluating the dose for these four groups is effective by it has to be done by one of four monitoring methods, that those

were the monitoring methods that were in fact employed in the original dose reconstruction. Air sampling, urinalysis, in vivo lung counting, or fecal analysis.

The contractor recommended that we choose a minimum of one case from each of ten permutations. They're shown to you there. I'll just mention them.

In the case of lung and lymph nodes in the thoracic cavity, reevaluation is required regardless of the time interval between exposure and fecal sampling. And in the extrathoracic, GI tract and systemic organs, reevaluation is necessary only if the time intervals are greater than two months between the end of exposure and the fecal samples.

Reviewing the sample sets of the dose reconstructions that were affected, this of course is the main thrust for most of us of what this whole exercise is about, is

actually looking at the completed dose reconstructions to make certain that the revised procedures have not affected them to the detriment of a claim.

The audit of the selected nine dose reconstructions was limited to just looking at the evaluating methods and the corrective actions only to the issues that were addressed in PER-0012.

That focus was to determine whether internal doses that were associated with the exposures to the type of plutonium we were concerned with were actually being performed accurately and that OTIB-49 was being followed.

The results of the audit were an approval of NIOSH's assumptions in calculating the internal doses from highly fired plutonium for all nine of the cases that were reviewed. SC&A had found in their review that each of those dose

reconstructions had been reevaluated using the proper method and guidance that was outlined in the OTIB, and as a result Subtask 4 had no findings.

The comment was made and I think well taken by the Subcommittee that the development of the workbook for that OTIB had been of significant assistance in helping the dose reconstructors to get the appropriate data entered, getting the missed organ doses, making comparisons.

So we were very pleased that the implementation of the workbook had been so successful, and the Subcommittee was very pleased to accept the review of no findings.

If you have questions we'll try.

CHAIRMAN MELIUS: Questions? Okay.

MEMBER MUNN: All right.

CHAIRMAN MELIUS: Yes.

MEMBER MUNN: Thank you.

CHAIRMAN MELIUS: Thank you. Okay. We have actually a couple of quick items, and I've lost the Designated Federal Official. While we retrieve the DFO, we have a couple I just want to make in terms of government funding and so forth.

We, I think, had a good process for the sequester last year in terms of how Stu managed it in terms of the ORAU contract. That was him. Ted, with the SC&A contract. But it does involve a certain amount of prioritization of what work we do and, you know, what Work Groups assigned to SC&A and how NIOSH is there to respond.

It just makes no sense in some ways to have your work by NIOSH and have no SC&A response if that's appropriate, and vice versa, having an SC&A report and NIOSH not being in position to provide a timely response.

So given what may be continued

uncertainty for a while on the budget and so forth, I just ask all the Board Members, Work Group chairs to sort of keep that in mind as we're dealing with this. I think it worked out well this last time, and Stu and I and Ted and others had some good conversations on how to sort of handle some of the issues in sort of figuring out the timing and what could get done within the available resources.

But just if everybody else can sort of keep that in mind. I know we have a lot of, particularly site reviews to be resolved and pending. We have a couple Work Groups we haven't started up yet.

And I think we can manage all this, but just sort of keep in mind that there will be some uncertainties and we need to sort of make sure that we have the available review power, so to speak, on both ends to be able to address all these issues.

So I don't know, Stu, if you have anything more to add to that or just want to --

MR. HINNEFELD: Just to kind of repeat what I've said before is that we want to work in accordance with the Board's priorities on this, understanding that we can't get everything all at once. But we have no particular vested interest in doing A before B, so we want to work in accordance with the Board's priorities.

CHAIRMAN MELIUS: And I guess for Work Group chairs, you may get a question back on, well, is this really needed now, or which report is the priority when there's, you know, you've tasked SC&A with four or five different things. And I know that Stu and his staff is doing the same thing on the ORAU end in trying to figure out what to do, and it is not an easy task.

I think we've all learned on

SEC's, you know, when you start an SEC review predicting what will be the key issue is not very easy and our batting average is not very high on that for better or worse, because there's just so much information that you have to get at. So anyway I just wanted to mention that as we're getting ready to close here.

Now you will have to bear with me as I do a couple of letters here. I will have to put a caveat on this. Although Jenny Lin is back at work today for a very short period of time, she did a quick turnaround on these letters. I think we're okay on them but there may be some minor changes to them.

I'm a little worried she didn't add any comments which is what usually happens, but if there are anything significant I will let you know. But we're not quite following our usual process and usually we give our counsel's office and so

forth a little bit more time, and usually Department of Labor is here and so forth. So I think these both are okay, but I just wanted to say that ahead of time.

I'll start with Sandia. The Advisory Board on Radiation Worker Health, the Board, has evaluated Special Exposure Cohort Petition 00214 concerning workers at the Sandia National Laboratories-Livermore in Livermore, California, under the statutory requirements established by the Energy Employees Occupational Illness Compensation Program Act of 2000, incorporated into 42 CFR 83.13.

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 in any area at the Sandia National Laboratories-Livermore in Livermore, California, from October 1st 1957

through December 31st, 1994, for a number of workdays aggregating at least 250 workdays, occurring either solely under this employment or in combination with workdays within the parameters established for one or more other classes of employees included in the Special Exposure Cohort."

Recommendation is based on the following factors. Worker at the facility during the time period in question were involved in operations related to nuclear weapons production.

National Institute for Occupational Safety and Health, NIOSH, review of available monitoring data as well as available process and source term for this facility found that NIOSH lacked sufficient information to allow it to estimate with sufficient accuracy the external and internal doses from exposures to radioactive materials to which employees of the Sandia National

Laboratories-Livermore may have been subjected. The Board concurs with this determination.

NIOSH also determined that health may have been in danger for the Sandia National Laboratories-Livermore employees during the time period in question. The Board also concurs with this determination.

Based on these considerations and discussion at the October 16th and 17th, 2013 Board meeting held in Westminster, Colorado, the Board recommends that this Class be added to the SEC, closes the documentation from the Board meeting where this SEC Class was discussed.

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

Any comments or -- okay. Moving

on quickly to Rocky Flats. The Advisory Board on Radiation and Worker Health, the Board, has evaluated Special Exposure Cohort Petition 00192 concerning the workers at the Rocky Flats plant in Golden, Colorado, under the statutory requirements required by the Energy Employees Occupational Illness Compensation Program Act of 2000 and incorporated into 42 CFR Section 83.13.

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 Rocky Flats plant, Golden, Colorado, from April 1st, 1952 through December 31st, 1983, for a number of workdays aggregating at least 250 workdays, occurring either solely under this employment or in combination with workdays within the parameters established for one or more of the classes of employees included in the Special

Exposure Cohort.

This recommendation is based on the following factors. Workers of this facility during the time period in question were involved in operations related to nuclear weapons production.

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 to allow it to estimate with sufficient accuracy the potential internal doses from exposures to thorium, uranium-233 and neptunium to which employees of the Rocky Flats plant may have been subjected for various periods during the years 1952 to 1983. The Board concurs with this determination.

NIOSH also determined that health may have been endangered for these Rocky

Flats plant's employees during the time period in question. The Board also concurs with this determination.

Based on these considerations and discussion at the October 16th and 17th, 2013 Board meeting held in Westminster, Colorado, the Board recommends that this Class be added to the SEC. Enclosed is the documentation from the Board meeting where this SEC Class was discussed.

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

Gen?

MEMBER ROESSLER: Under the second bullet under Recommendations, right in the middle there, shouldn't that be radionuclide specific? It talks about internal doses from exposures, thorium. I

think that should be thorium-228, and then neptunium should be neptunium-237? Am I right on that?

MR. HINNEFELD: Well, the thorium is -232 and -228. Yes, the neptunium would be neptunium-237, but the thorium, there are the two. It's not just the -228, it's also -232.

MEMBER ROESSLER: Okay.

MR. HINNEFELD: Or which would include -228.

MEMBER ROESSLER: But neptunium should be -237.

MR. HINNEFELD: It is, yes.

MEMBER ROESSLER: And then uranium shouldn't be capitalized.

MEMBER RICHARDSON: Or all three. I believe all three should be capitalized.

MR. HINNEFELD: Well, now I believe --

MEMBER ROESSLER: They should not

be capitalized.

MR. HINNEFELD: -- they should not be capitalized. Now you'll make me put the atomic mass on there?

MEMBER ZIEMER: Only if it's abbreviated.

MR. HINNEFELD: Oh, okay. Okay.

CHAIRMAN MELIUS: It's in the health physics bible. I am surprised, Stu, that you would --

MR. HINNEFELD: My health physics teacher corrected me.

CHAIRMAN MELIUS: Any other changes? Okay. Anything else we need to -- oh, yes. Thank you.

So we have one more item which I think we can do quickly if I can find Ted's email. That's yesterday's email. We still have the public comments from the last meeting to go over now that Ted has admitted to trying to confuse us.

So the first set of comments were from Terrie Barrie, and these were all directed, most were directed back to the Work Group and actually have been addressed, I think there's one more general comment there as part of that.

There was another set of comments from another party there, Joan Stewart. Again these were referred to the Work Group or to NIOSH, and actually NIOSH was already in the process of following up on one of the issues.

There's a comment addressed from someone related to INL. That's also been followed up on there. Another set of comments from someone, Stephanie Carroll from Rocky Flats. Again, these have all been addressed mainly through the Work Group or through NIOSH responses.

Chris Barker, again had a question about a particular dose

reconstruction, and again I think that was referred to DOL which was really issue there. There was comments from [identifying information redacted] read by Terrie Barrie at the meeting regarding the Class Definition and so forth. Somewhat similar to Deb Jerison's comments of earlier here today, or yesterday, excuse me.

Another comment from Terrie Barrie asking for more time, but it turns out she didn't need it so it worked out. Some comments from Sandra Baldridge regarding Fernald. Again, I think those were all essentially addressed by our actions at the last meeting, though there's still follow-up going on.

So anybody have any comments or questions or concerns based on those responses? Yes?

MEMBER BEACH: I'm just going to go to the one from Mound. At the bottom of

Deb's comments and the response it says that "Mr. Johnson will provide a separate response later." Do we have like a time frame on when those are given out or anybody know? Okay.

DR. NETON: We might not have the most recent response, but I believe we provided a response to Deb Jerison's comments.

MEMBER BEACH: Yes, there was a lengthy response, but then at the very end it said that --

DR. NETON: You know, I think that probably shouldn't be there because the response was complete in itself. I think it was a placeholder until we put it in there, so that must have carried over.

MEMBER BEACH: Yes, okay. I was wondering what was coming, so thank you.

DR. NETON: Yes. No, the response that's there should stand by itself.

CHAIRMAN MELIUS: Okay, have I

forgotten anything else? And I think that finishes our business for this meeting, and we will talk to everybody on the conference call in December and Kansas City end of January, unless we run into troubles, unless LaVon fails to come through as scheduled. Keep the pressure on, yes. Or yes, I guess, Congress too, yes. Who knows? Well, we'll stay optimistic. Everybody is today.

So anyway, thank you all. Hopefully we'll actually also have DOE and DOL back at our next meeting, and a lawyer. Okay, thanks everybody.

(Whereupon, the meeting in the above-entitled matter was concluded at 10:01 a.m.)