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CENTERS FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL
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ADVISORY BOARD ON RADIATION AND
WORKER HEALTH

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TBD-6000 WORK GROUP

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MONDAY
SEPTEMBER 25, 2017

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The Work Group convened telephonically at 10:30 a.m., Eastern Time, Paul L. Ziemer, Chair, presiding.

PRESENT:

PAUL L. ZIEMER, Chair
JOSIE BEACH, Member
JOHN W. POSTON, SR., Member

ALSO PRESENT:

TED KATZ, Designated Federal Official
NANCY ADAMS, NIOSH Contractor
DAVE ALLEN, DCAS
BOB BARTON, SC&A
KATHY BEHLING, SC&A
NICOLE BRIGGS, SC&A
JENNY LIN, HHS
JOHN MAURO, SC&A
JIM NETON, DCAS
JOHN STIVER, SC&A

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

(10:32 a.m.)

Welcome and Roll Call

MR. KATZ: All right, so let me get started. This is the Advisory Board on Radiation and Worker Health. It's the TBD-6000 Work Group, and today we are dealing with two work sites.

So when we do roll call, please speak to conflict of interest related to these sites. I should say in advance the Board Members have no conflicts with these sites. So, they don't need to respond to that.

One is ALCOA-Pennsylvania and the other is Anaconda. So, I'm going to go first to the back for roll call and then we will come back around to the Board Members and make sure we have who we have.

(Roll call)

Okay, well it does sound like we don't have any public members. Although, I'll just quickly note the agenda for today and the related

materials which will be discussed today are posted on the NIOSH website on the board section, schedule of meeting today's date.

So anyone who happens to go on or gone on there, you can go to that website and follow along with the documents if you would like. And Paul, it's your meeting.

CHAIR ZIEMER: Okay. Thank you. Add my word of welcome to everyone. Just to amplify what Ted Katz said about the documents, just remind you there are two NIOSH documents. The PER-63 document and the PER-65 document.

Sixty three is ALCOA and 65 is Anaconda. And then there are two documents that were the review documents from SC&A. Again, one review of the Program Evaluation Report for ALCOA and the other a review of the Program Evaluation Report for Anaconda.

I think both of the NIOSH documents were rather brief, and I would assume the Work Group has read those. And then we have we have

the reviews which are a little more extensive in terms of pages.

But what I thought we would do, if it's agreeable, is just jump right into the SC&A reviews, and then NIOSH and give the responses if needed.

I noted on the, we'll start on the ALCOA one, we'll start with the first one on the agenda. I think Doug Farver was the person of record on that, but I gather someone else will be handling that for Doug since I don't think he's on the phone call. Is he?

MR. STIVER: No Doug, this is John Stiver, Doug is on vacation this week, so Kathy has agreed to cover.

CHAIR ZIEMER: Oh good. Okay, so Kathy, you will be out on the hot seat here then, in place of Doug, right?

Review of PER 65 (Anaconda)

MS. BEHLING: And actually, if I could ask if John Mauro, would you mind if John Mauro

would take the Anaconda the PER-65 first? I have to be honest with you, I was asked to do this and I thought that this meeting was, like, during the week and I do apologize for that.

CHAIR ZIEMER: Oh, okay. We need to do, you need to do some reviewing then, it sounds like.

MS. BEHLING: I do. I have to sincerely apologize. But John Mauro --

(Simultaneous speaking)

CHAIR ZIEMER: That's fine, I have no problem with that. We can jump on ahead to the Anaconda one, if there's no objection.

MS. BEHLING: And John Mauro is very familiar with all of the changes in this TBD-6000. And so he can give you a lot of background there. So I think John is prepared to do that.

DR. MAURO: Yes. That might work out well. I'm more than happy to do that first.

CHAIR ZIEMER: Okay. Let's proceed then with the SC&A document, the review of the

Anaconda PER.

DR. MAURO: Okay. This is John Mauro. Good morning, everyone. It's very nice to be on the phone with all of you. And today is TBD-6000 day.

And both these cases by way of an overarching view of it, have to do with the fact that TBD-6000 went through some revisions. And also, both of these cases were done before those revisions. And then, TBD-6000 was revised.

In addition, OTIB-70, dealing with residual period, showed up in the in-between time. And also a revision was made to the medical x-ray exposure, I think it's OTIB-0006.

So in effect, you've got three documents that came out, guidelines, that came out between the time of the original set of DRs both for Anaconda and for ALCOA, and then they came out. And then, of course, in light of those changes it was necessary to revisit the cases because of those changes.

So there is a common thread that runs through all of this. And I'm going to begin with Anaconda which is a little bit more interesting, in terms of there is a little more twists and turns. You will see when Kathy takes on ALCOA, that's a little bit more down, straight and narrow, so to speak, in how the changes were made.

So with regard to Anaconda, a facility located in Waterbury, Connecticut, they originally had a contract with MED on gaseous diffusion barriers. But there was no radioactivity, and I think that was in the '40s. There was no radioactivity there so there are no AWE issues there.

However, in 1956 they were called upon to begin doing some pilot studies relating to extrusion of uranium billets that were cladded, I believe, with copper clad. So that they were like one of the, doing the original pilot work on extruding billets for use as fuel.

And it was a very small operation.

You're going to see that in effect what it comes down to is that there was one eight hour shift in 1956 on a day, September 29, 1956, when they extruded, I think, one billet or some billets.

And then a period of time passed until 1957, March '57, where they did 50 billets over two 8 hour shifts. And then the third campaign, so to speak, was in October of 1959, where there was three 8 hour shifts where they extruded a number of billets.

So these were very short-term extrusion operations that occurred intimately over the course of several years during the 1950s. Okay. And DRs were performed, and the issue was, well there were changes as to TBD-6000 that had a bearing on how you would do the DRs.

And I'll give you the essence of the changes that occurred, that resulted, and the need to revise the Site Profile, Appendix G of TBD-6000.

It all has to do with changes to TBD-

6000, the parent document. One of the important items is the revised TBD-6000 added external data from deposited activity.

They also revised the way in which they do the external photon doses from the deposit activity, and they also developed new protocols for the build-up of surface contamination from deposition of airborne radioactivity onto surfaces.

In addition, in 2012, OTIB-70 was issued. And then again in 2011, OTIB-6 dealing with medical exposures were revised.

So you have all of these series of revisions that had a bearing on the need to reconstruct these doses. So I'm going to go through now how those changes affected Anaconda.

Okay. The first has to do with medical doses. In effect, it's quite straight-forward. OTIB-6 was revised and the doses are related to occupational medical exposures had to be performed.

Now, here's the first place where I have a question to NIOSH. It's not a commentary or anything, but it's just something for my own edification.

In the past I've done a number of AWE cases where medical exposures during operations were not included unless there was affirmative evidence that there was reason to believe that the contract with the AWE included occupational medical exposures.

But now I notice, coming back into this again, that it's become now standard practice to assign medical exposures to AWE facilities, notwithstanding whether there is any affirmative evidence that there was such exposures.

I guess my question goes to Jim and the group there. Am I correct that there was sort of a change in policy or strategy that had occurred previously, and now related to medical exposures?

MR. ALLEN: John, this is Dave. I saw that in there and no, there really hasn't been. We've pretty much always assigned x-rays. We've assigned them in the covered period, we don't assign them into residual period.

DR. MAURO: Oh, yes, okay. Then I mis-remembered. I somehow --

MR. ALLEN: Okay.

DR. MAURO: My recollection, going back a number of years was that there was a difference between DOE and AWE facilities.

With DOE you would automatically, always, apply occupational medical exposures, but AWE would only be the case when there was evidence of such.

I may be, you know, it doesn't really have a bearing here, but it's really done because I was surprised to see that. But, that's fine. I don't think there's any need to further discuss that unless anyone else wants to, does anyone else recollect that, or am I just mis-

remembering.

I know Paul, you've been, like me, doing these AWEs for such a long time, does that ring a bell?

CHAIR ZIEMER: My recollection was that if there was a specific indication that they didn't do x-rays, that you might not include it. But otherwise, you did.

DR. MAURO: Okay.

CHAIR ZIEMER: Is that maybe how, ask Dave if that was --

MR. ALLEN: Yes, that's the way it's been, the default knowing nothing is that they are doing x-rays. But if you have some specific information like they were done off-site or more frequently or less frequently, then we'll use the more specific information.

MR. KATZ: John, this is Ted, I think that maybe you are remembering the different types of x-ray procedure that would be used at the DOE sites when they had that equipment at the

site. And that was only, that rarely occurred, if ever at AWE, the fluoroscopy or whatever it was called, the more extremely exposing type of --

(Simultaneous speaking)

DR. MAURO: Like the PFGs.

MR. KATZ: Yes, yes.

DR. MAURO: Okay. Thank you. I'm going to move on to internal dose. During the, think of it like this, there were these short periods of extrusion, then long periods of no activity, then extrusion. And there, in fact, was airborne sampling data collected during the extrusion operations.

There are 83 documents on the SRDB, Nicole Briggs who is on the line helped me out there. She went into those 83 documents to go look-up the records, the data, and confirm. Yes, 39 dpm per cubic meter is the highest observed general air sample that was reported.

And they use that as the concentration

that all workers were exposed during the extrusion operation. So, that's an extremely conservative assumption to assume that's the high-end, but certainly appropriate of the data.

One of the questions we do have though is -- and oh, by the way, the fact that one of the things we usually look for is breathing zone versus general air. I believe the 39 dpm was a general air sample, and not a breathing zone.

But since they used the highest of all the general air samples observed, I feel as if that sort of covers the fact the they didn't use, or didn't say they used, and BZ samples.

So, from the SC&A's perspective, going with the highest value sort of covers that, which we would call a minor issue then, you know, because as we all know, breathing zone samples are generally a little higher then general air samples. But picking the high-end value seems to have covered that.

Now, one of the things that, again,

sort of an observation that's probably worth looking into a little bit is when we went vertical into the 83 documents, though we did see several memos where the 39 dpm per cubic meter was referred to as the highest value, the documents also made reference to a couple of attachments where the actual data were tabulated.

We were not able to find that data, those attachments.

So one of the things we would like to request is that if those attachments are, in fact, available on the web, it would probably be a good idea to have them accessible. We did not find them.

But we do accept, based on the actual memos that make reference to those attachments where they do cite the 39, so we accept the 39 dpm as an upward bound general air sample, and appropriately used as the basis for deriving the internal dose from inhalations.

I guess I will leave that with the

Board and NIOSH, whether you have any information. That was in our report. I don't know if NIOSH had a chance to sort of track that down. Were you able to find those attachments?

MR. ALLEN: This is Dave again. We looked pretty, we have looked everywhere we could come up with when we were preparing the revisions of the TBD. We couldn't find it at that point either.

DR. MAURO: Okay.

MR. ALLEN: That was one of the reasons for using the high air sample.

DR. MAURO: Yes. And that would be good to have, but then again there's plenty of evidence that that 39 was a solid number and can be used for bounding purposes, which is what you did.

By the way, one of the things I thought about as I was working on this is that taking the highest value is extremely claimant-favorable. And you're going to see as I move

through, and I won't be that much longer, that in every step of the way, NIOSH employed what I would call bounding assumptions, and ones that they could have gone with lower values, there was data, et cetera, in bounding.

And I wanted to just point that out as I move through this because I have something to say about that at the end. And we will talk a little bit about that.

Let's move on to the internal dose between operations. In other words, we had these long stretches of time --

CHAIR ZIEMER: Quick question before you do that. So you did, there was an indication in your report that there was some breathing zone samples on some of the operations in '56.

What I'm looking at right now, it says breathing dose samples were taken of the sawing, drilling, and deburring operations as well as a few operations in the press area. It may have some value in there for that. Did I mis-read

that?

DR. MAURO: No. I'm embarrassed to say that I did not specifically do my homework on that for this call. And I'm going to burden Nicole a little bit, I might be putting her on the spot. By any chance, Nicole, did you have a chance to look at those data and whether or not they were higher than the 39 dpm?

CHAIR ZIEMER: No, they weren't higher.

DR. MAURO: Oh, they were not. Okay, okay. What I'm still --

CHAIR ZIEMER: No, they were all below the 39, but I just wanted to note that there were some breathing zone samples. I think there were, based on what I'm seeing.

This comes, you reviewed 83 documents and some other information. And it describes the type of surveys at Anaconda, I was just quoting that from the SC&A report.

DR. MAURO: I thank you for that. I

did not bring that up, and that was an oversight in my presentation. Good point.

CHAIR ZIEMER: That's on page 12, if that's correct.

DR. MAURO: Okay. No, that is correct. But that's good at adding value. It further reinforces the 39 number of being a good number.

CHAIR ZIEMER: Right, right.

DR. MAURO: Good. Okay, between operations. The approach taken for in-between operations is what I would call sort of the conventional approach where you have a certain airborne activity, in this case 39 dpm per cubic meter, you assume that there is a deposition velocity which is the settling velocity of .00075 meters per second.

And they assume that that continued for 96 hours which is quite a long time when you consider that the actual runs did not run these eight hour shifts.

So this was a conservative assumption in terms of the duration that you would have this deposition. So built in to the way in which they approached the deposit activity are two very conservative assumptions.

One is that the airborne activity was at the highest level, 39 dpm per cubic meter, at all locations throughout the extrusion periods. And it continued for 96 hours depositing the radioactivity. And then they assumed that during the entire time period between these extrusion operations, which in some cases was months, some cases years, the activity stayed constant.

And on top of that, they used the conservative re-suspension factor that the airborne dust loading of ten to the minus five per meter. As we all know, we often use ten to the minus six. And I'd like to say ten to the minus five is especially a good number here because there is no indication that there was clean-up after each one of these, what I would

call, short-term campaigns.

So using these three assumptions, the highest airborne dust loading, deposition continuing for 96 hours, and resuspension of ten to the minus five per meter are three very conservative assumptions that result in what I would call bounding, external exposures and internal exposures for deriving the in-between time period.

I'd like to point out thought, I do not believe, I could be corrected about this, in doing my homework getting ready for this I don't think there was any exposures assigned for the post period, that after the AWE operations ceased. And I believe the reason was the doses were all below one millirem per year. So that certainly seemed to be reasonable.

And so in looking at just the internal exposures, they followed TBD-6000 and OTIB-70, and the latest version of the medical exposures, and in a manner that would be considered quite

bounding.

Which brings me to something that I would like to draw the attention to everyone is that one of my concerns, sort of strange, is that this is so bounding, I mean, these assumptions that you could say well, would you actually compensate someone on this basis?

You know, you say is it appropriate to compensate someone using these bounding assumptions? And it turns out, and this is one of the things Nicole looked into, I asked her to check out all of the places that were done.

We are going to get to external in a minute, but this is where I think it really is interesting. And it turns out, none of the cases were compensated. So, what my -- except for one. And that's when they used, if you remember, OTIB-4. This goes back to 2005, I mean, we're talking over a decade ago, when there was a time when that was used as a way to do some dose reconstructions.

And there was one, it looks like from looking at the records there was one worker that was, in fact, compensated and it was way back when, when OTIB-4 was used. But since then, of course, that's no longer being used.

But my question to Jim and Dave is would you compensate someone using these what I consider to be quite bounding assumptions, because you didn't, at least we didn't find any cases where these sets of assumptions were used, and as a result you obtained PoCs above 50 percent.

If you did, would you consider it problematic to apply these types of assumptions, because they are quite conservative.

MR. ALLEN: John, it's Dave. I guess to answer your question is this is the exposure estimate we would use for everybody. If it ends up being greater than 50 percent then yeah, we would send that off.

DR. MAURO: Now along those lines, and

this is more of, like, a conceptual issue, there are AWE sites where you did take credit for, in other words, one of the OBIT-70 criteria is that when you are inactive, you actually, whatever is deposited on surfaces starts to decline.

And so there really are two assumptions here that I consider to be bounding to the point where I would raise a question whether it's appropriate to compensate because that approach was not used in other AWE sites.

For example, other AWE sites would have used, perhaps, the upper 95 percentile distribution of air samples as opposed to the highest value observed.

Other dose reconstructions, I would have assumed that any residual radioactivity quoted in OTIB-70 would gradually decline at .00069 per day, which is the way in which OTIB-70 applies it.

But you assumed it was constant. So imbedded in the way you implemented it here is a

way that is different than the way in which you've implemented TBD-6000 and OTIB-70 in other AWEs.

So, I raise and issue that I think is worth exploring with the Board whether, you know, that difference that is applying one approach at one AWE site at another and another.

See, I would have assumed that if there was a compensation here, you would have made the default to, what I say the more realistic and classic approach that you have used at other AWEs sites.

As you're going to see in a minute, by the way, when we get to ALCOA, we did go straight. Straight, what I call TBD-6000, OBIT-70 as opposed to these deviations which were a little bit more bounded as applied to Anaconda.

DR. NETON: John, this is Jim. I think this issue had come up before. I think you pointed out that these are pretty small exposures, it was a very short duration exposure.

And, you know, we have taken the

approach in the past that the degree to which we were refine the estimate is pretty much commensurate with the magnitude of the exposure.

And this is one of those situations where, you know, is it worth sharpening the pencil to a large degree.

DR. MAURO: And I completely agree with that, and it's consistent here because no one was compensated using these exposures.

I just would have liked, if it turned out someone, for some reason, did trip over the 50 percent, would you rethink it as applied to that particular case. Or like David just pointed out, no, this is the approach we would use, whether it was compensated or not. And I was a little surprised by that.

MR. ALLEN: John, this is Dave. There is a difference in different AWEs. We have gone with the maximum before. We've gone with the maximum, we've gone with the distribution at the 95th, and primarily the difference on that during

that operational period is the data we have for the site.

In this particular case, you can put three of the air sample reports in the back pointed out it's illegible, so we know there is some data there. We also know we can't really do a statistical analysis on it because it's illegible, we don't have all the numbers, we don't know for sure how many samples.

So the only thing we can do in this case really is to use the max. And the max wasn't a huge number in it's a short time period, so it's not like it's in an unrealistically high estimate in that case.

DR. MAURO: I understand what you're saying. So you are saying basically, it's really a combination of things.

MR. ALLEN: Yes. And a lot of times you're stuck with what information you have and that changes the way you analyze the information and what estimates you come up with.

DR. MAURO: Okay. And the fact that you don't go with a declining number, was it the, in other words, in effect the doses are so small that it really didn't make a difference.

But if they did have the potential to make a difference, let's say during the residual period, let's put the 39 number to the side because I could see why if you really have no other good data, that is the right way to go.

You have really no choice. You would like to use the distribution and maybe pick the 95th percentile as a realistic approach, but you really couldn't, so I understand that.

But now we are moving into let's say the in-between period where what you are saying is, you know, yes as we get ALCOA, you will see that in a minute. You went down, you had this decline in activity in the residual period. But here you just didn't do it because it was self-evident that the doses were extremely small.

I thought it was important to bring

this up because it goes to the heart of really, you know, when do you relax the assumptions become bounding and it's okay.

But I was a little concerned that, caution must be used when applying these bounding approaches, especially if you're going to compensate someone, because then there is an inconsistency between, let's say, one AWE facility and other AWE facility.

And, I just wanted to bring that up. I thought it was something that everyone, you know, everyone should be aware of because this consistency issue is important.

CHAIR ZIEMER: Well this also looks a little bit like the over-estimates that we do for people that we expect to have pretty low doses anyway.

DR. MAURO: Right. Well that's why I --

(Simultaneous speaking)

CHAIR ZIEMER: As opposed to the more

exact ones that are near 50 percent.

DR. MAURO: Right. And that was what my question is, would you have used this for compensation cases. And you know, I guess the answer is well, the 39, yes. I suspect that the residual, or the in between period, perhaps not if it was important. Would that be a fair statement?

MR. ALLEN: This is Dave. Yes, that's the way I going to put it is that this residual if it became an issue, yes we would probably reconsider. But I can't imagine that one becoming an issue.

DR. MAURO: And I agree with that. Not in this case, that's for sure.

MR. ALLEN: That 39, I think we're stuck with that 39.

DR. MAURO: Got you. Right, good. Well, listen, that's great. Let me move on.

The ingestion pathway you used the classic approach, the 0.2 approach in OTIB-9

where you times the 0.2 times the airborne concentration and that gives you your daily ingestion rate. And that's classic, I guess, TBD-6000, OTIB-70. I think it's TDB-6000. No, it's OTIB-9 that would reference to that. So we are okay on that.

Let's move on to external, okay? What was done here is, what I would say, during operations, you actually had some measurements of radiation photon field that you could have used for being up close and personal to these billets that were being worked on, which were quite low. Or you could have chosen TBD-6000 to fall, external photon mR per hour type readings.

And, you went with TBD-6000, which is very conservative from a point, and so that's fine. Especially since there was -- and I would say that the data seemed to be quite limited as was the case for the airborne material.

So using TBD-6000 is certainly classic approach for external exposure and the look up

tables. All of which, by the way, we all know were reviewed and, favorably reviewed. So, that was used.

But bear in mind again, that was quite a conservative assumption. And that was during operation and, of course, following operation, the activity on the surface was assumed to be constant, again, as opposed to declining at that .00069 per day. Again, quite conservative.

So, you know, the bottom line is, this is a very favorable review of this PER. And some of the questions I have, certainly, have been resolved regarding the degree of conservatism. We're good.

Finally was case selection. We did recommend, I recommend three cases only because it sort of in the very beginning, whenever there was a fairly simple, and this is a fairly simple problem, I would say that well three is a good number.

And I really didn't have any great

insight as to why I picked three. I just said, let's go with three. You do know that there are many times when we have many more than three when things get a little complicated. But I felt that three was sufficient.

And just this week, I did receive an email requesting a little more clarification, because I did provide some criteria in my report, you will see it there, of criteria for selecting the three.

And there were some questions, so I supplemented that with a memo that went out. Oh, let's see, I have it here in front of me. It went out on the 20th, were I gave a little bit more thought to the cases to be selected.

And I simply pointed out that it might be a good idea to get a case of skin cancer and an internal dose that either lung or bone being other criteria for looking at a case.

So I hope that it met your needs. I sent that email out, as I said, a few days ago.

And between the write-up that's in the report and the supplemental memo that I sent out recently, I hope that provides you with a little more criteria for selection.

By the way, in my memo I pointed out that, you know, there's one case, as I mentioned, one of the things we did on this is we looked at the cases. Turned out, there weren't that many cases that had to be reviewed. And there is a table in our report that shows you the DRs that were done.

And we found that they were all denied, except for one, and that was the one were OTIB-4 was used. But there was another one that I pointed out in my memo that I said, you know, this might be interesting. I pointed out the one that has a PoC of 46.94 percent.

And when I wrote the memo, I didn't look a little more deeply, perhaps I should have but I did this morning. I was talking to Nicole who is on the line and she said, dad, Nicole is

my daughter, she said dad, that also was an OTIB-4. So to me, I don't think there really is any need to review a case that used OTIB-4.

So that part of my memo that I sent out, I would like to withdraw that as being something that might be interesting. I thought you actually got someone at a 46.94 using the protocol that's in the PER. But since that's an OTIB-4, I don't really think that's something that needs to be looked at.

And let me see, do I have anything else here. I have some notes, that I wanted to mention. Hold on. Nope, that's it. I am done.

Action Items/path forward

CHAIR ZIEMER: Ok, thank you. Thank you, John. Let me ask the Work Group Members if anyone has any questions for John. If not, hearing none, then also, did Wanda come aboard yet?

Okay, apparently not. Just clarification, does, maybe Ted, you can help me

on this. Does the Work Group need to approve the number of cases or tasks on this?

MR. KATZ: Well, it, the work we've done needs to specify what criteria. It really isn't ever a number at the end of the day. It's really the criteria, and then what NIOSH does is they go and they find cases that meet as many of the criteria as can be met by cases in hand.

Sometimes it can be fewer than the number that's suggested by SC&A. It could be more, but it just depends on what those cases have, the attributes of the cases in house.

CHAIR ZIEMER: Well, right now based on John's comments, the SC&A is recommending two cases because you're dropping that third one John, right?

DR. MAURO: Well, no, no. I was recommending three as almost like a baseline. Well, you know, we should always have three.

MR. KATZ: We don't do that through. I mean --

(Simultaneous speaking)

CHAIR ZIEMER: But, one of these is the one, was the red bone marrow one that was done under OTIB-4.

DR. MAURO: Right, and we can, as far as I'm concerned, we can drop that. That was a bad recommendation. So we have three, with the idea being the sense is that when all is said and done and you look at this and sort of step back and say, well, we'd like to look at obviously the operations and the in-between period. We want to do that.

So, you may be able to catch that with just one, you know, just one case. Easy enough given the operations were only eight hours, sixteen hours long. So I think with one case you could easily hit both those.

Also, we'd like to look at skin and one of the internal organs. I think bone marrow and lung would probably be the important ones.

So I guess when it's all said and done,

you know, while you're picking the one that covers both operations and residual, if it's possible to pick up a couple that, one that covers skin and one that covers an internal organ, maybe both if you get one for lung and one for, maybe that's it, one for lung and one for bone marrow, that would be perfect.

CHAIR ZIEMER: And there's only one lung, no, there's two lungs in this group. And the PoCs are so low --

DR. MAURO: Yes. They're all going to be low.

CHAIR ZIEMER: Well, yes. Well one of them is less than one percent --

DR. MAURO: Oh, okay.

CHAIR ZIEMER: -- so or it's just over one percent. But on the other hand, the rationale for that perhaps -- what was the other one that you were talking about? Skin?

DR. MAURO: Yes, I like the skin only because it's external dose to the skin which is

always a different kind of animal.

CHAIR ZIEMER: I'm looking for skin here.

MEMBER BEACH: What about the, what about the bile duct? It looks like that skin one was pulled. This is Josie.

DR. MAURO: Oh, okay. Well you're ahead of me on this. You're looking deeper. You know, it certainly, that would be, but, I'll leave that. Right now I guess I just point out lung and bone because --

(Simultaneous speaking)

CHAIR ZIEMER: Yes. I don't see any skin, the only skin ones I see were pulled.

MEMBER BEACH: Yes, that's all I see as well.

CHAIR ZIEMER: And, there is a, what was the it Josie, the bile duct?

MEMBER BEACH: The bile duct, yes that's got a --

CHAIR ZIEMER: That's a 40 percenter.

MEMBER BEACH: Yes.

DR. MAURO: It sounds good. Yes.

MEMBER BEACH: A couple of colons that are a little higher, but.

MR. KATZ: Can I just remind the group, I mean the point of doing these cases, reviewing these cases is simply to confirm that the methodology that is put forth in the PER is applied.

CHAIR ZIEMER: Is applied, right.

MR. KATZ: So unless a case uses a different methodology, and that's the reason for choosing another case is if there is another methodology that wouldn't be covered, not for the result in the PoC results. I mean, that's really irrelevant to make sure that the methodology that's applied is put forth and then it's fully understood.

CHAIR ZIEMER: Where it says no TBD-6000, what does that mean in the table? On the procedure used.

DR. MAURO: I can't answer that. And again, I'm going to put Nicole on the spot. Any, could you help --

(Simultaneous speaking)

MS. BRIGGS: The only thing I can think of is it might have been, I might have put that notation in to indicate that it was before the publication of TBD-6000, because it was very early.

CHAIR ZIEMER: Okay.

DR. MAURO: Yes, that could be it because some of these actually predated the original TBD-6000. It's possible.

CHAIR ZIEMER: Okay, but the revised TBD would have been used though, right?

DR. MAURO: In the revision, right. But maybe the original, I don't know. I'm sorry, I don't know, because I know that there was an original DR and then, of course, the revised.

Whether there was a TBD-6000 at play as a Rev 0 in the original DR, I really don't

know, I'd have to look. We'd have to do a little digging.

MS. BRIGGS: I think that's probably what I meant when I put that notation in there was that it was, because that one was 2004. It just may have been that whatever --

(Simultaneous speaking)

MS. BRIGGS: -- it might have just been that the procedure that was used was not, you know, that TBD-6000 wasn't even the, I think that's all I meant when I put that in there.

DR. MAURO: Yes. And as we also would like to point out that in some cases where we looked at the original and then the revised cases, you know, we noticed that some of them were so early that we really couldn't figure out what was originally done on the case, for a particular case. So that's probably the answer.

CHAIR ZIEMER: Yes. Well, in reality there were just ten cases. That seems a little excessive to do three out of ten.

DR. MAURO: Well, I'm not disagreeing that. What I'm saying is that, as Ted pointed out, there are certain -- to me the way I look at it is there are different aspects of the protocol that are quite different and need to be looked at, notwithstanding what dose you get.

One is during operation and one is between operation. I think that catches those two. And the other one is dosimetry method. Certainly, we are interested in an external dose and internal dose, of course.

But with regard to the external dose, I did want to look at skin cancer, so I pointed that out separately because that is a whole separate way to look at it.

CHAIR ZIEMER: Right.

DR. MAURO: And then internal dose. Then it becomes, okay, if we're going to do an internal dose, very particular organs that are of interest. And I only have to say that typically, when you are dealing with uranium, what is of

interest, of course, first and foremost, especially is lung dose and how that was done.

But also bone marrow. But now you pointed out that Josie said this bile duct one, I didn't even notice that. That came up with a high one, I'd have to say that that would be interesting to see what was done there would be different than internal organ.

But, of course, the internal dosimetry and how that's done, whether it's looking at that separate from let's say either a bone marrow or lung, that's a judgment call. I would not want to overburden so many cases because it just wasn't, the level of exposure was extremely small.

But you do want to hit places that where quite different methods are used so, you get the idea.

CHAIR ZIEMER: Well, apparently we don't have any skin cases left. Those were all pulled.

DR. MAURO: Okay.

CHAIR ZIEMER: So, let me, if I'm understanding this correctly, David, is that correct? We only have internal organs then right?

MR. ALLEN: Definitely the two skin listed on the table were pulled. There was no dose reconstruction done.

MEMBER BEACH: Well on that one, I don't know the year, but it may have covered, you know, it may cover both. It may, cover the bile duct may cover the, you know, the periods in time you're looking for.

MR. ALLEN: Yes, this is Dave. I actually looked that part up. And all of these cases with, I think, exception of one case covers the covered period and well into residual period.

MEMBER BEACH: We might be able to just get what we need from that one, and/or one other.

CHAIR ZIEMER: How about, what about doing the bile duct and the lung? Would that,

I'm trying to --

DR. MAURO: Yes, the bile duct and the lung, during operations and between, I mean, my first reaction is sure. If you are asking me the question, I'm actually jumping in on this.

CHAIR ZIEMER: On the top of my head, I like the bile duct one, partially because of the PoC being high, but also looking at something, I think a lung might be of interest.

John Poston, have you got any suggestions on this? I wonder if he is on mute. I don't hear you, John.

MEMBER POSTON: Oh, are you talking to me?

CHAIR ZIEMER: Yes. Did you have any suggestions on the selections?

MEMBER POSTON: No. No. I was having trouble hearing you, I'm sorry.

CHAIR ZIEMER: Yes, sorry. Have we been doing, Ted, remind me on other sites, how many have we been doing? One or two?

MR. KATZ: Again, like I said, It's always very based on whether a different methodology, whether all the methodologies are covered by the cases in hand. In one case, we had actually recommended more. But didn't find --

(Simultaneous speaking)

CHAIR ZIEMER: How much different would it be for bile duct and lung outside of the fact that it's a different organ? In both cases, it's an inhalation issue and then a distribution into the organ.

MR. ALLEN: Yes, the other thing that going to be different is dose to the internal organ. The intake is going to be the same. So it's a little different.

CHAIR ZIEMER: Yes. So, I'm not sure we get any more information out of the, doing an additional lung than we would from the original, just doing the bile duct one.

MR. KATZ: That sounds right.

CHAIR ZIEMER: I'm kind of leaning toward just doing the one at this point. I don't know that we'd get any more information out of doing both of those. What do you think, Josie?

MEMBER BEACH: Paul, I agree with that. I would be fine with that recommendation.

CHAIR ZIEMER: Are you okay with that, John?

DR. MAURO: If you are asking me, yes I am.

CHAIR ZIEMER: Okay. I meant John Poston.

DR. MAURO: Oh, okay. I'm sorry.

MEMBER POSTON: I'm okay with that, Paul.

CHAIR ZIEMER: Why don't we go ahead with that then. We'll recommend just doing the one, see if there's any issues that arise.

MR. KATZ: Okay, then NIOSH will pull that case, and then we'll send that to SC&A so that they can take a look at the case.

CHAIR ZIEMER: Okay. Are there anything else that we need to resolve on this particular one? Okay.

MEMBER BEACH: There was one question that John asked about getting those documents uploaded so he could look at them. Did that get resolved? The air sampling data?

MR. KATZ: It did, Josie, because the documents don't exist. Those were, the documents were referenced, but nobody could find.

MEMBER BEACH: Okay, I couldn't remember if that was resolved. Thank you.

CHAIR ZIEMER: I think that completes the Anaconda then. Okay. Thank you, John. And let me ask you, Kathy, are you back on the line and ready to go with --

MS. BEHLING: Yes, I am --

CHAIR ZIEMER: ALCOA?

Review of DCAS Program Evaluation Report (PER) 63 (Alcoa-Pennsylvania)

MS. BEHLING: This is Kathy. I'm going

to try to walk you through this, and any assistance that I can get from John Mauro and John Stiver as necessary will be appreciated. But let's go through, I don't have the Skype up, but I don't know --

CHAIR ZIEMER: I think we all have the document. Do we really need to Skype at all?

MS. BEHLING: Okay. No.

CHAIR ZIEMER: Does anybody need Skype today?

MR. KATZ: I don't think so.

CHAIR ZIEMER: I have it on, but I think I'm going to turn it off.

MS. BEHLING: Okay, because I'll just refer to, if everybody has the document, I'll just refer to that as we walk through.

CHAIR ZIEMER: Okay.

MS. BEHLING: Okay. And again, this is the ALCOA facility case of the Aluminum Company of America, and it's from the New Kensington, Pennsylvania site.

At that particular site, the ALCOA did uranium slug canning operations from May of 1943 to the end of 1945. And it was one of the unique facilities that produced nuclear fuel for the X-10 pilot plant in Oak Ridge, Tennessee and also for Hanford.

The canning operations, they actually did the canning of approximately 100,000 slugs through 1945. And the AWE period then, obviously, covers 1943 through 1945.

If we, as John Mauro indicated, under our Subtask 1 on Page 8 of the document, the reason that PER 63 was initiated is because of changes to OTIB-70 which impacted the Appendix R for TDB-6000. And so we went from TDB-6000 Rev 0 to Rev 1.

And the changes that were made to OTIB-70 included external dose values that changed from, for the contamination surfaces, conversion factors for photon and beta dose rates. And it also included the addition of

intakes from resuspension.

So if we move on to our Subtask 2 on Page 9 of the report, one of the things that also changed between Rev 1, Rev 0 and Rev 1 was the job titles of operator, general laborers, supervisor and clerk were reduced to just the operator. And it includes just the highest internal and external dose parameters that were part of Tables 6.4 and 7.8 of the revision TBD-6000.

If we go down to Table 4.1, we are showing here the operational phase, the differences between Rev 0 and Rev 1 for the operational phase for the inhalation and ingestion.

And the inhalation intakes during the operational phase were based on air concentrations of 264 disintegrations per minute per cubic meter, with mean air sample values for the stamping slug category shown in Table 7.6 of TBD-6000 Rev 1, assuming that the operator was

exposed to 75 percent of the time with an air concentration of 198 dpm per cubic meter.

Now, below Table 4.1, Doug actually did the calculation and was able to match NIOSH's number. And in that calculation, I'll just point out because there was a question along the way here, and perhaps I can just briefly stop here and get input from NIOSH.

Assuming the work here of 2,400 hours and breather rate, breather rate of 1.2 cubic meter or cubic meter per hour, that's how we calculated the inhalation. But that calculation also includes a denominator of 365 days per year as opposed what should really be 300 days per year.

Now we did that calculation and we were able to match NIOSH's number, but I guess there was some question, I believe Ted sorted out the question about why were we using the denominator of 365 days per year.

And I just want to confirm with NIOSH

that I believe CADW multiplies the radionuclide intake in the input tables by 365 to derive the becquerels per year for total intake to calculate the dose.

And is that why, just to explain that 365 day per year, is that why that is used as denominator in this calculation?

MR. ALLEN: Yes. This is Dave Allen. Intakes are usually specified in intake per calendar day making it a continuous intake over, you know, weeks, months, years, whatever. And that's the way CADW, that's the way IMBA takes it too. It's a continuous, no breaks where work begins type of thing.

MS. BEHLING: Okay. And that was going to be my next question just to ensure that the activity per day that values that that also applies to IMBA.

MR. ALLEN: Yes.

MS. BEHLING: Okay. All right. And if we move on, the ingestion intake rates are the

sum of food contamination and incidental hand to mouth ingestion rates.

And Doug was able to, if we could move on to Page 10, to calculate those values and was able to match NIOSH's value.

The only thing that we do take notice, note of here, when it came to looking at Revision 0 of Appendix R, we were not able to match the inhalation and ingestion intake rates that were identified in Tables 7.8 and 7.9 in Rev 1. Although, this is no longer an issue because if there was a problem there, it was corrected with the Rev 1.

If we move onto Section 4.2.2, we calculated the external doses and with the exception of the whole body photon dose in Rev 0, the values remain the same, it's just that the units change.

Again, Table 4.2 shows the operational phase external doses, the differences between the two revisions. And if we go down and we actually

calculated the skin dose for the hands and forearm using the contact dose rate of 230 millirem per hour for 48 hours, 50 weeks per year and assuming that the person would be in contact with the metal for 50 percent of the workday. And using those parameters we were able to match NIOSH's number.

Again, for skin that's not in direct contact with the uranium metal, it's assumed that it was estimated to be ten times the photon dose rate of one foot.

And again, if we go onto Page 11, Doug shows you his calculations for a maximum dose rate of one foot from a rectangular uranium ingot of 2.08 millirem per hour. He was able to calculate the dose and match NIOSH's number.

Moving on to whole body dose. The whole body dose was derived using the photon dose rate at one foot, with the rectangular uranium ingot. And again, assuming 2.08 millirem per hour and 48 hours per week and 50 weeks a year divided by two, we were able to match the numbers.

Again, when we went back into Rev 0, we were not able to match the 0.349 millirem per day as shown in Table R3 of Appendix R Revision 1. However, again, it becomes no longer a concern because we were able to match the numbers in the Rev 1.

And if we move on now to the residual phase, the residual phase goes from a period of 1946 through '91, but there was a cleanup done in 1991, so there's no residual that's calculated after that period of time.

And the internal and external exposures beginning in the residual phase are determined from air sample data from facilities from the radium slugs that were produced in cans. And Table 7.6 of Rev 1 shows those air sample results for slug production.

And if we move onto Section 4.3.1, the internal doses were calculated using the data in Section 3.4 of TBD-6000 Revision 1 and as Doug has shown here. And he was able to match NIOSH's

number.

Same with the inhalation rates. He goes through the calculations for the -- using a resuspension of the ten minus six per cubic, per meter and a breathing rate of 1.2 cubic meters per hour. And he was able, again, to match NIOSH's number.

Section 4.3.2 shows the external doses, and Table 4.3 shows the difference, or shows the surface contamination dose rate factors for the photon and exposures and the dose rates.

Again, Doug calculated the doses and as shown below the Table and was able to match NIOSH's values.

For the source depletion on Page 13 under Section 4.3.1, the initial intake and dose rates are calculated based on the first year of residual period, and then using an average depletion rate of 6.70 minus 4 per day derives the values in Table 4.4 for the exposures for the remainder of the years of the residual period.

As I indicated, we were able to match all of NIOSH's numbers for Revision 1. We did have some question about the previous revision, but as I said, that's a moot point at this point in time.

So to go onto Subtask 3, which looks at the criteria that was used for examining the number of cases that were potentially affected by this change, NIOSH initially identified 44 claims and due to various reasons, they were able to eliminate that down to 35 claims that needed to be reevaluated.

And when we looked at their approach to evaluate and to identify the number of potential claims, we agreed with that and we don't have any issues with Subtask 3 and their identification of 35 claims, or the reevaluation of 35 claims.

And then if we go onto our Subtask 4, this is where we identify the number of cases that we may want to review under Subtask 4. And

that can simply be one case that involves an individual who worked both in the operational period and the residual period.

Or if that's not a possibility, then two cases where the individual worked in the operational period and another case where the individual worked in the residual period.

That sums it up. Does anyone have any questions?

CHAIR ZIEMER: Okay, thank you, Kathy. Work Group Members, any questions for Kathy?

MEMBER BEACH: Paul, this is Josie. I don't have any.

Action items/path forward

CHAIR ZIEMER: Well, it appears that our only task now at this point is selection of the case or cases. SC&A is recommending that if NIOSH can identify a case that covers both the operational and residual period, that should take care of it. Otherwise, one case from each.

Dave, you can do the first one. I

don't have a list of the cases right before me. But can we find, readily find a case that covers both?

MR. ALLEN: Yes. I did some exploring, we've got some 17 or 20. Some maybe that had --

CHAIR ZIEMER: Do they cover both?

MR. ALLEN: Cover both, yes.

CHAIR ZIEMER: Do we need to look at those cases or just allow NIOSH to select one?

MR. KATZ: That's what we've done in the past. We've just selected according to the criteria.

CHAIR ZIEMER: Yes. So if there's no objection, we'll ask NIOSH to select a case that meets both those criteria for the operational and residual period and it just requires one case. And SC&A can proceed with that.

MR. ALLEN: Okay, this is Dave. I was going to suggest one last criteria. I think there's a couple cases with some intermittent employment during that covered period. I was

going to throw those out and just do those that had employment during the entire covered period. It's not that long of a period. Does that work for everybody?

CHAIR ZIEMER: That makes sense to me.

(Simultaneous speaking)

CHAIR ZIEMER: -- you would specify that it's one that has continuous employment during that, those two periods.

MR. ALLEN: During the covered period, yes.

CHAIR ZIEMER: Yes. Just during the covered period.

MR. ALLEN: Yes. And then I didn't know if you wanted any organ criteria or not.

CHAIR ZIEMER: Well, we hadn't specified it at this point and I don't think the SC&A asked for that. Did you, Kathy?

MS. BEHLING: No, no, we did not ask for that.

CHAIR ZIEMER: Are there --

DR. MAURO: Can we pick up a skin? This is John.

MS. BEHLING: That's what I was going to say. The only thing that I would say is perhaps a skin, yes, a skin contamination.

MR. ALLEN: I never looked at the organs, so I can't say for sure, but there's a reasonable chance there is one.

MS. BEHLING: Okay.

CHAIR ZIEMER: So you would prefer a skin over an internal?

DR. MAURO: This is John, I would want one of --

CHAIR ZIEMER: It's going to be both, isn't it? I mean, you're going to be calculating both.

MR. ALLEN: Yes. It's, we still calculate the internal dose to the skin. It would just be small.

CHAIR ZIEMER: The skin was, do you have a list before -- the skin in this case, we've

got fairly high doses, right? Let me go back here. In your revised model the skin doses jumped up quite a bit. From, well they didn't jump up quite a bit.

That's per year. Oh, they did because you had a, well, let's see. Sixty eight millirads per day. Yes, skin doses, annual skin doses went down it looks like.

MEMBER BEACH: That's what it looks like to me, Paul.

MS. BEHLING: Yes, they did.

CHAIR ZIEMER: Oh, wait a minute. I see because 365 times, what's the annual, real quick, Rev 0 for skin.

DR. MAURO: Rev 0 of TBD-6000 did not have an external skin look-up table. That's was one of those changes going from Rev 0 to Rev 1.

MR. ALLEN: John, you're talking about for the contamination. There were --

DR. MAURO: Yes, yes for contamination. Or not for direct contact, no.

Direct contact was different.

MR. ALLEN: Yes, and, Paul, if you're looking at that Table 4.2 --

(Simultaneous speaking)

CHAIR ZIEMER: Yes, that's what I'm looking at. 68.4 times 365, real quick, what does that give us?

MR. ALLEN: It gives us 25 Rem.

CHAIR ZIEMER: Well, it's the same then.

MEMBER BEACH: It's exactly the same.

CHAIR ZIEMER: Oh, the skin didn't change then from Rev 0 to Rev 1.

MEMBER BEACH: They're all pretty darn close or the same.

MR. ALLEN: Yes, I think all those were the same. We changed the time units because per year works a lot easier than per capita day.

CHAIR ZIEMER: Well, the reason I'm asking that is if it didn't change, then there's that's not the thing that's impacting your

changes to the people from Rev, Rev 0 to Rev 1.

MR. ALLEN: I think in the residual period it probably did change because of the factors in TBD-6000. It would be smaller part of the dose. But the original TBD-6000 didn't have a beta dose for contamination that was added with Rev 1.

CHAIR ZIEMER: Well, where did you see the biggest changes from Rev 0 to Rev 1 in terms of the doses? Was it organ doses or was it, it doesn't look like the skin doses are going to change very much.

MS. BEHLING: No, just as Dave said, it's mostly during the residual period, if you look at Table 4.4, 4-4 which wasn't included before. I don't know, perhaps you would want to select two cases? One that would be a skin and one --

CHAIR ZIEMER: One, how about full body?

MEMBER BEACH: Phase two, when you do

the calculation out.

MS. BEHLING: Yes the operational period, it did increase for the whole body.

CHAIR ZIEMER: Did you have some that were close to 50 percent, but under in the 40s Dave? In Rev 1?

MR. ALLEN: I did not look at the PoCs or anything for these cases, so I don't know.

CHAIR ZIEMER: Yes, actually that's not how we should decide it anyway. But, if the skin dose is barely changing, it doesn't seem like, to me, like there's much point in using that as a criteria for reviewing it.

What's the biggest change? Is it the whole body? Or is it internal?

MR. ALLEN: This is Dave. I wasn't ready for that question.

CHAIR ZIEMER: Well, it looks to me like whole body is going from about 100 millirem per year to about 2,500.

MS. BEHLING: Yes, 124 to 100 -- to

2,500.

CHAIR ZIEMER: Yes, yes.

MS. BEHLING: So there quite a big --

(Simultaneous speaking)

CHAIR ZIEMER: That a pretty big jump. What about internal? I mean it would seem to me that it would make more sense to look at some whole body things rather than the skin, per se.

MS. BEHLING: Yes. The biggest increases is the whole body. It is. If you look at the next comparison between tables in the operational periods, as we at Table 4.1 and 4-2 it's definitely the whole body. So yes, I agree with you.

CHAIR ZIEMER: Okay if we use that as the criteria, Dave?

MR. ALLEN: Not really. I mean, every --

CHAIR ZIEMER: I mean, it's really -- well, of course, the other thing that happens is if you do whole body, you're also assigning that

to the skin, don't you?

MR. ALLEN: Yes. Yes. So like I said, it's not really the criteria to choose. But if that's the thing you want to see, you'll see it no matter what you choose.

CHAIR ZIEMER: You'll see it on the skin in addition to the skin dose, right?

MR. ALLEN: Correct.

CHAIR ZIEMER: So the skin dose would jump up from the whole body part in addition to what you assigned to the beta part of it.

MR. ALLEN: Yes.

CHAIR ZIEMER: Yes. So maybe skin would work. It's not just skin alone from beta. It's the skin is going to get the beta dose plus whatever you're assigning to the whole body. I think that's correct.

MR. ALLEN: Yes, that's correct, Paul.

CHAIR ZIEMER: Yes. So maybe it is a good thing to go with the skin then. Why don't we do that. Is that okay? I need to hear from

both Josie and John Poston.

MEMBER BEACH: Yes, Paul. This is Josie. That's okay with me.

MEMBER POSTON: Okay. It's okay with me.

CHAIR ZIEMER: Okay. I think we've got a consensus here. And I think Wanda is still not with us. So let's go with that. Dave you'll be able to provide that, I assume, right?

MR. ALLEN: I've will make sure we do have one like that. I'm sure we do and if we don't I will pick the next best thing and let everybody know what I did and you can give me a different criteria, if you don't like that, I guess.

CHAIR ZIEMER: Well I can't imagine there wouldn't be since that's got to be the biggest change.

So if there's agreement on that, that's how we'll proceed. Any other questions on this one? If not, let me ask Ted this, does the

Work Group need to report this out to the Board in any way?

MR. KATZ: So, well the next step is for SC&A to review those individual cases and then, you know, and then they'll finish with the PER review.

CHAIR ZIEMER: And then we would do it.

MR. KATZ: And then it's an option to report this out --

CHAIR ZIEMER: Okay, the Board. Yes. We don't have to report this action at this point.

MR. KATZ: No, we don't.

CHAIR ZIEMER: Okay. I think, if that's the case, I think we have completed the business for today. Unless, unless, expected by our designated federal person. Is there any other business before us?

MR. KATZ: There is not. And thank you everybody for handling all this efficiently.

Adjourn

CHAIR ZIEMER: Okay, then we are done and I will declare that the meeting is adjourned. Thank you everybody.

(Whereupon, the above-entitled matter went off the record at 11:50 a.m.)