U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL
SAFETY AND HEALTH

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ADVISORY BOARD ON RADIATION AND
WORKER HEALTH

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WORK GROUP ON FERNALD

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TUESDAY
APRIL 15, 2014

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The Work Group convened telephonically at 10:00 a.m., Eastern Daylight Time, Bradley P. Clawson, Chairman, presiding.

PRESENT:

BRADLEY P. CLAWSON, Chairman
PHILLIP SCHOFIELD, Member
PAUL L. ZIEMER, Member

ALSO PRESENT:

TED KATZ, Designated Federal Official
BOB BARTON, SC&A
HANS BEHLING, SC&A
HARRY CHMELYNSKI, SC&A
LOU DOLL
DEKEELY HARTSFIELD, HHS
DAN HENNEKES
STU HINNEFELD, DCAS
KAREN KENT, ORAU Team
JOYCE LIPSZTEIN, SC&A
JOHN MAURO, SC&A
MARK ROLFES, DCAS
MATT SMITH, ORAU Team
JOHN STIVER, SC&A

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

10:05 a.m.

MR. KATZ: This is the Advisory Board on Radiation and Worker Health, Fernald Work Group. Our meeting today is going to be relatively brief, a couple of hours or less probably.

The agenda for the meeting should be posted on the NIOSH website. I don't believe there's other materials posted there. There's a matrix on the status of the Site Profile issues, but it was only PA-, Privacy Act-cleared yesterday and it can't be posted in time, so that'll get posted for everyone who's interested and, the public who might be on the line, that'll be posted as soon as it can be, but not today. Probably tomorrow. So, I apologize about that.

So, let's get started with roll call, beginning with Board Members. We're speaking about a site so please speak to conflict of interest for all Board Members, and

Agency, and related staff when we run through roll call. And let's go with Board Members.

(Roll Call.)

MR. KATZ: Okay. Thank you. So, that's it for me. Brad, it's your call.

CHAIRMAN CLAWSON: Thank you. I appreciate that, Lou. I appreciate you taking the time to call in and talk with us.

I guess, first of all, one of the most important things that this call originally started out for was to be able to go over this, the letter that had been written on this. And I appreciate you sending this in. You've brought up some very interesting points, so what I'd like to do is start out, first of all, and discuss this letter.

John Stiver, I believe you have done some background work to be able to check into this. And I guess, John, I'd kind of just like a little sound bite, or whoever looked into it.

MR. STIVER: Okay. Can you all see the letter that's up on the Live Meeting screen?

MR. KATZ: Yes, John, we can all see it, although it's in handwriting.

MR. STIVER: Right. I'll just kind of paraphrase. Mr. Doll can certainly jump in at any time. But, basically, what the problem that was identified was that, as you recall, last summer at the Idaho Work Group, not Work Group but Board meeting, an SEC Class was added for the -- all subcontractors at Fernald from essentially the inception of operations in 1951 to 1983. And the basis for this was that the uranium bioassay worker model for Fernald did not include any subcontractor data prior to 1986. And NIOSH had gone out in the interim and found about 940 hard copy records.

Just let me kind of back up a little bit as sort of a basis of the SEC just to kind of refresh everybody's mind. And those records covered a period of time, several different years starting in 1969, there were some years in the >70s, and then most of the data were in early to mid-1980s. And we were tasked to take

a look at this data to see if, indeed, the coworker model would be bounding for these subcontractors based on -- this is really kind of a weight of the evidence argument. I mean, there really wasn't enough data for the early years to make this comparison, but we kind of looked at the data, and we picked out -- and something just jumped right off the page.

In 1969 there was a group of subcontractor workers from Deutsch & Sons, I believe. They came in for about a four-month job where they were pulling out some contaminated equipment, and there was some -- evidently, there was some exposure during this time. And we went through and calculated potential intakes for these workers based on different assumptions and periods of intake and so forth, and it was determined that even under the most favorable circumstances of the coworker model even in the 95^{th} percentile would indeed not be bounding for this subgroup of workers. And based on that, and the fact that there was

essentially no data for the early years, from 1951 up through 1968, the Board decided to grant an SEC for the subcontractors.

And then fast forward here until, I believe in February, Mr. Doll sent in this letter and he says well, wait a second now. National Lead of Ohio, which had this spotty record for health and safety concerns, you know, during their tenure had the contract up through 1985, so why is it that we're terminating the SEC in 1983 and not actually including those last two years that was contracted in >84 and >85.

And the reason for this, in my mind, correct me if I'm wrong, but NIOSH had put forth a White Paper about this time last year, maybe a little bit later. I think it was in June, and it was by Gene Potter. And I can pull this up really quick. Let me put it up for everybody to see. I can get back here. Here we go.

And this table, if you all see this, Table 1 has a series of years, >69. These are

the years that the hard copy data exists for subcontractors, Type 50 data which are essentially non-routine bioassay samples. And NIOSH posited that, you know, they agreed that there's a paucity of data in the early years, but they thought that possibly they might be able to build a separate subcontractor coworker model based on the hard copy records for 1984 and 1985. So, as kind of a weight of evidence argument, we never really were tasked to look into these data in detail, but you can see there based on the number of individuals and the results, you can see that starting in >84, or about >84, >85 and >86, remember 1986 is the year when the new contractor came in, new M&O contractor, which was Westinghouse, and they instituted sweeping improvements in processes and so forth for radiological health and safety.

So, you can see in 1986, the data are somewhat similar to >84 and >85 in terms of the number of individuals covered in the samples

per individual. So, based on that kind of weight of evidence argument, the Work Group and the Board decided that, you know, there's probably enough data here for NIOSH to go ahead and build a separate coworker model for those two years, and that was really the basis for the cutoff in 1983.

And as a result of Mr. Doll's letter, we were tasked, SC&A was tasked to go and take a closer look at the data set for >84 and >85, and look at the usual things that we evaluate in terms of adequacy and completeness of the data. And Bob Barton and Joyce Lipsztein looked respectively at the completeness and adequacy aspects of the data. And I guess our big concern, and Bob is going to take over and talk about the details here in a minute, of completeness, but our main concern was that I think there's about 12 or 13, I think 12 subcontractor groups were identified by NIOSH in this data set during this time period, and the vast majority, 83 percent come from Rust

Engineering and Legge. And then there's a smattering of samples for some of these others.

Bob started digging into the records and found that, you know, there's actually closer to about 50 different subcontracting companies that were active during the 1984-1985 time period. So, the question in our mind is well, you know, there's a couple of different explanations for this. You know, Rust could be subsuming these other subcontractors into their contractors, using their contract vehicle to bring in people as needed, and they may be counted as Rust employees where, in fact, they may be working for one of these other subcontractors.

Another possibility is that, you know, these people just weren't monitored, and they may have not been monitored for good reason. It could be that, you know, by this time when the awareness was becoming public about some of the problems at Fernald, and just in general with radiological safety, there was

more of an interest in being more comprehensive in monitoring than in the early years. And, you know, from the health physicist standpoint, certainly the people who they believed are going to have the higher exposures are going to be the ones that they're going to make sure get monitored. So, it may be that the unmonitored workers were unmonitored for a good reason.

And a third possibility is that maybe there are a significant proportion of workers in these unmonitored firms that are just not included, so then it becomes a situation where, do we have -- are these kind of random exclusions, or is there some systematic bias that certain subcontract firms are not represented in the data, in which case we have a completeness problem.

But, Bob, if you'd like to take over and maybe talk about a little bit more of the details in completeness, it would be a good time to do that now.

MR. BARTON: Sure, John. Let me see

if I can highjack this thing from you.

MR. STIVER: Okay.

MR. BARTON: Okay. See if this works. Okay, can everybody see this table in front of you?

MR. STIVER: I can see it fine, Bob.

MR. BARTON: Okay. So, what we have here on the far left column were the subcontractors that were actually in the captured data that NIOSH found in these urinalysis request cards. And as you can see, there are about 13 entries, though one of them is unknown, so we don't really know what those represent. But the striking thing we saw right off the bat was the very high proportion of the data that is associated with really only two subcontractors, that's Rust Engineering up here, and Legge.

In 1984 it's fairly evenly split between Rust Engineering and Legge, but when you get into 1985 there's nothing for Legge, and as you can see, nearly 97 percent of the data

in 1985 was labeled as Rust Engineering. And if you follow that and combine it for both years, you can see that between those two subcontracting firms, I mean, if you add these up you're getting close to 95 percent of the data available. That's just between two firms. So as John said, that kind of -- you know, it begs the question, okay, why are we seeing this? Is this a naming convention, or is this because these other subcontractors we see here didn't really have the exposure potential so weren't included in the program?

So, one of the things we did is we tried to get a handle on, well, how many subcontracting firms might there actually be operating at the site? And one of the references we found, and I'm going to scroll down here, and this is SRDB Ref 99119. And you can see, I mean, the list goes on. We have the contract numbers here, and these are the relevant start and end times related to this time period.

A lot of these subcontractors had

other periods where they're under NLO subcontracts but I didn't include those since it's not really relevant to the discussion of these years in question. And as I scroll down here, you can see there are a lot of them. And here's Legge, here's Rust but, I mean, you have all these other types of subcontractors. And in addition to this reference right here, the 99119, just in the NIOSH data set we have these additional ones that actually weren't included in that reference. You can see Johnson Controls and Martin-Marietta, William Kraemer & Sons. And then we cite another one that was just in the claimant files themselves, D&J Electric, though this may be more in the 1990s. I was not able to actually put dates of start and end terms of the contracts for these. And then the final reference here, this Ref ID 3031, has a few more that weren't included in that original, what's called the comprehensive list. And what Ref 3031 was, was actually a release of in vivo records for workers who were

involved with these subcontractors.

And, actually, that reference is rather interesting. Let me see if I can put that up there. Okay. And this actually has the names of the workers who were involved in the in vivo program, presumably. You can see this was the release of subcontractor in vivo files, and they were basically mailing those results out to people. And this is dated -- okay, that says June 1985. It's stamped August, I guess 20 something, 1985. But as you can see here, the number of individuals in these different subcontractors, sometimes it's only one, but some of them have quite a few. And I'm going to keep scrolling down here until you see Rust Engineering. And you see Rust Engineering has the longest list, but I wouldn't say that that list right there, I don't know how many people it is actually, is actually comparable to some of these other lists. For example, I guess Mobile Chemical, I mean, that's a pretty long list that's comparable to Rust. And that's the

end of that document.

But I guess what it boils down to here is we're kind of scratching our heads because the question of completeness is, do you have a representative sample; do you have enough information about the dirty jobs and what exposure potential was like for subcontractors to be able to use that data to bound the intake estimates for those groups of workers. And when we see that such a large proportion sort of related to just these two subcontractors, we were kind of like, huh, you know, is there a problem. Is there what we would call a systemic not exemption but are you reducing people out because they were employed by different subcontractors, or was it one of the other reasons that John Stiver said at the beginning that maybe it was a naming convention or some other explanation?

So, that was really our main concern from an SEC perspective related to completeness. And I guess I'd like to stop there

and kind of get DCAS and ORAU's impression, and if they have other information that might sort of alleviate that concern.

MR. HINNEFELD: Bob, this is Stu Hinnefeld. I'm curious if you pursued further and found the reference, you know, this last document you showed that contains in vivo results from what are called subcontractors. At the top of the letter there is a reference to an earlier letter from the DOE Site Manager to the NLO manager, president. Did you find that reference to find out why NLO compiled this list?

MR. BARTON: I did not find that. It could quite possibly be in the SRDB but I didn't find it. I don't know if maybe some of you -- do you know what the contents of that letter is?

MR. HINNEFELD: I don't. I'm curious about why NLO, they -- it would appear to me from the contents of the letter that the reference asked NLO to do something. And in response, NLO compiled this list. And the

reason I ask that, the long list that you showed besides Rust Engineering was Mobil Chemical. Mobile Chemical was a neighbor, and Mobile Chemical's well was contaminated. And this, I believe, was probably about the time the contaminated wells were identified, or close after, something like that. It's quite possible. And I don't -- I won't swear to times or I don't know when this happened, but there was a time when the Mobile counter was brought to Fernald to count because of concerns about the environmental revelations that were made. But that may not have been this period. That may have been a different period.

I am very puzzled by Mobile Chemical being referred to as a contractor because they were a neighbor, and I suspect because of the long number of people there, they were counted because the water, their well had been contaminated for a while before it was even identified as contaminated.

MR. BARTON: Okay. Well, I mean, that

certainly sounds reasonable for Mobile Chemical. I guess our concern still stands of just such a large proportion that are really related to – it's mostly Rust Engineering, I mean, 97 percent of the results in 1985 were Rust Engineering's --

MR. HINNEFELD: Did you find any results about the relative number of employees that these contractors provided to Fernald?

MR. BARTON: No, I did not, and I'm not sure if that information is readily available. We certainly did look for it. And that's one of the things we wanted to get more information from you about.

MR. HINNEFELD: Lou and Stan might know more about Rust Engineering's operations, but certainly Rust Engineering provided a great deal of the contract, subcontract work for many years at Fernald, so I think it would be reasonable to assume that they had a large number of workers there so, naturally, most of the samples would come from them.

I think they quite often got the work in the plant. I think there were subcontractors who performed work that was not in a radiological area and you wouldn't expect to monitor them, so I B- but to be honest, I can't go down this list of contractors and tell you what they did.

MR. BARTON: Sure, and I understand that. And that's one of the explanations that John Stiver posited, is that you've got subcontractors who simply weren't in the radiological areas. And I think that's a reasonable argument. I think it B- you know, obviously, it needs to be fleshed out a little bit more either via interviews, or if we can find official documents about how many workers were sent from these different subcontractors, and some indication of what they were doing would go a long way to alleviate our concerns. But I think it's a question that needs to be posed and answered, you know, a referenced answer that needs to be backed up.

MR. STIVER: This is John. I'd just kind of second what Bob is saying. I think at this point we're kind of in a situation where we're sort of left with a cold trail. You know, how many of these people B- first of all, how many of these companies actually employed X number of people, what fraction of the total might they be, what types of work were they involved in? I mean, the real problem we're grappling with is whether there might be some systematic exclusion of people who could have been potentially exposed, and that's kind of where we're stuck right now. So, at least in my mind I think this would be maybe a question for Stu and Mark to pursue and maybe come back with B- see what they could find.

MR. BARTON: You know, one thing we had thought of possibly doing would be to, you know, look at >86 and >87, maybe those years when Westinghouse took over and had a better set of records. And just take a look at that, see if we could identify for those years, you know,

assuming that they have that kind of -- those records are available and, you know, you could kind of back-extrapolate assuming that the mix really didn't change, you know, over that two to three year period, and see how many are still B- companies are still representative. And, if so, you might get a handle on the number of individuals. That's kind of where we're stuck right now.

DR. LIPSZTEIN: May I complete just one thing, just completing what Bob said? He made before the Rust workers, they were monitored all year round. All the other workers, including the Legge workers, they were monitored for just a short period of time. For example, Legge workers, they were only monitored in July and August. And all their monitoring, there were 23 workers that were monitored, and they were monitored many times so it looked like a follow-up of some work they were doing. And all of the samples are late >50s, so probably there was some work, special

work they were doing, and they were followed. And all the other workers say like from the other companies that is not Rust, they were monitored in a specific month. They were not monitored all year round. There were specific dates that people were monitored. And the in vivo data that Bob was talking about, there is one document which is historic bioassay monitoring, in vivo monitoring. They had some results for the Mobile workers and for other subcontractors. All those results were taken between December >84 and January >85. And all the in vivo results were available.

MR. HINNEFELD: Joyce, can you describe that document a little more? Do you have like a B- do we have an SRDB and is there a reference ID?

DR. LIPSZTEIN: Yes, there is. Let me look for it and I'll tell you in one second. Okay.

CHAIRMAN CLAWSON: This is Brad, Stu. While she's looking that up, it sounds like

all these other ones had their birthday samples like what we've seen through the rest of Fernald.

MR. HINNEFELD: Well, no, I don't think there were very many birthday samples except for people who were monitored once a year on it, because they only got monitored at their annual physical. They were essentially considered unexposed, and I don't know if they had it on their birthday, but they were monitored once a year at their annual physical. The people who were considered exposed were monitored either monthly or quarterly at Fernald.

CHAIRMAN CLAWSON: What year would have that started?

MR. HINNEFELD: Well, I don't know about construction workers, but for in-house C-- well, I think the construction worker sampling started, I mean, from the records we see it started in earnest in late >83. Now, the argument B- I'm not arguing with the point that

well, there were these other companies, so we still B- I understand we need to address that issue. But for the annual samples that were taken, were taken for people who were not considered to be exposed, and it was taken at the time of their annual physical. And I think maybe they continued the annual bioassay after they discontinued the physical, but I don't recall if that's true or not.

Now, to the point of a certain company being sampled within a couple of months, or within one month, that aligns exactly with what you would expect for a company that would come in for a construction job that took a couple of months, or they come in for some contract work that took a month. So, to me, there's no particular detriment to the fact that the company wasn't sampled all year long when we know that Rust was.

To me, the set of data that you presented is exactly consistent with Fernald's start of awakening in late >83 to the fact that

there are these construction workers that are working in our production area; we should be bioassaying and monitoring them, or the fact that actual construction work really got going in B- I don't think this is true. I think actually there was construction work going before late >83, but at some point -- you know, the data that we have is consistent with a view that Fernald sort of work up that gee, we ought to be monitoring these construction workers that are working in the contaminated area and started to sample the ones who did.

Now, we'll pursue what we can about what these other companies, why they weren't sampled. I think you'll probably find that we'll be hard-pressed to ever find a head count for one of these subcontractors, and have to see if we can make some judgments based on >86 and >87 data, or maybe some other lines of pursuit, maybe some interviews or something.

DR. LIPSZTEIN: The reference is 094407.

MR. HINNEFELD: 094407?

DR. LIPSZTEIN: Yes, it is in vivo radiation monitoring historic report.

MR. HINNEFELD: Okay, thank you.

DR. LIPSZTEIN: And you'll see that they have monitored in December and January. In December mostly were people, were workers and people that lived in the area, and in January also they were mixed, but mostly the subcontractors. But it's the same, it continues, looks like they were doing in vivo monitoring for all workers and people that live in the area at the end of December and in the first two weeks of January.

MR. HINNEFELD: Okay, thank you.

DR. LIPSZTEIN: Right.

MR. STIVER: Joyce, this time might be good for you to kind of talk a little bit more about the exposure potential you saw among the Rust versus, I think it was Legge and some of the other B-

DR. LIPSZTEIN: Okay.

MR. STIVER: -- contractors. If you look at Potter's paper, there towards the end, he has some plots that show that, I think it was 1985 the subcontractors weren't a lot different, not statistically different from the subcontractors, but they were in >84. And Joyce identified the reason for that, and maybe you could talk a little bit about that.

DR. LIPSZTEIN: Yes. In >84, as Bob has shown, there were a lot of samples from Legge workers, and those samples were all from some particular B- I don't know if it was an incident, if it was special sampling because of special work, so they were only monitored in July and August, and it started with a very high monitoring result on the 3rd of July for most of the B- many of the workers, and then there was a follow-up of those results.

And if you make a graph with the results, you'll see there is a big peak on August B- I'm sorry, on July 3rd. From those Legge workers, only three workers were only

monitored once and had a low excretion rate. Most of the others had high excretion rate, and nine of them had very high excretion rate, so there is, like, something different on this portion. And then there is the four workers that were involved in one accident that was registered. There is a description of the accident. We found a description in one document of an accident that occurred on the 26th of July, and that involved workers from Langdon & Johnson. So, they were monitored only once on the day of the accident, and the two Langdon workers had high excretion rates. All the others, most of them, if you take out Legge and those Langdon & Johnson, all of them had low excretion rates.

So, we'll see you'll have a distribution of low excretion rates with two peaks, one peak due to this, I don't know, special work or incident from Legge workers, and with those four workers that were involved in the 26th of July accident. So, it looks like

two different B- I don't know, it would be two different distributions. That would be what B- I don't know if the Legge workers that were only monitored in July, they can fit into the Rust workers distribution because they look like, you know, they were doing something else, and that's why you have this peak.

And if you look at the workers results, the regular workers results, they were all low like Rust. The distribution is similar to the Rust workers, so I don't know if the coworker model should be just for Rust workers or it would encompass everything. I don't know. I think it's more for statistics for Harry than for me. I just observed that. Maybe Harry can talk a little bit about it.

DR. CHMELYNSKI: I'm sorry, I haven't really looked at that data in any depth. It does B- it looks interesting, though. We would like to look at it.

MR. STIVER: This is John Stiver, if I could just jump in for a second. You know, I

think this illustrates the whole idea that, you know, here we have groups of subcontractors going in, some are, you know, like pavers and people like that who are not really B- wouldn't expect to have any radiation exposure. But you have these others, we have the Deutsch group, we've got Rust, we've got Legge, and some others that we don't have monitoring data for, and I just, in my mind, to feel comfortable that we have a -- can actually build a coworker model here for a situation where you have different groups of workers coming in doing different jobs, so it's not like you have a bunch of guys on a factory floor doing the same thing over and over again, and you have like a kind of a homogeneous cohort.

In this situation you have lots of different cohorts, so it seems like you're throwing an additional element of uncertainty in there that you really need to be careful that you're capturing all the potential, you know, exposures, or at least enough of them, enough

of the different types to where another guy comes along and he doesn't have any monitoring data, and you don't really know what he did that you could be reasonably confident that you could be able to bound his dose. Now, this is a situation we find all the time. It really gets to the whole heart of adequacy and completeness.

And if those few Legge workers had not had those data submitted, you know, they would appear to be identical for statistical purposes with the Rust workers, and with the NLO workers during that period of time. So, it's just very important that we be confident that we have a data set that encompasses B- is complete enough to encompass enough of the exposures that did occur that we could be confident in bracketing and bounding an exposure for the unmonitored workers.

MR. HINNEFELD: This is Stu Hinnefeld. I have a question about what's being shared on the screen right now. It appears to

be B- it appears, I guess, to be an Excel spreadsheet that has several tabs, and the tab we're seeing is B-

MR. BARTON: That's the claimant's name.

MR. HINNEFELD: Yes.

MR. BARTON: Yes. Joyce had mentioned this July, late July incident. And as we can see, now the RSV workers were redacted, obviously, from the claimant file, but this is a job that was happening. We don't know when it started, but they were up on the Plant 5 roof which was over the remelt area and says, you know, black oxide contamination on surfaces measuring up to 5 mR per hour. And the evaluator who wrote this sort of mental off -- said it's very likely that these very high samples that we see, I mean, they're taken on the same day. You have a marked increase, could have been from contaminated samples, but at the same time, and this is a direct quote, it's also possible that these employees might not have worn their

respirators properly. And then this last paragraph, sort of concluding paragraph says, we need to increase our surveillance so that this doesn't occur in the future in order to avoid bad publicity or worse from the general public which is more and more apprehensive about radiation exposure in NLO employees. And it mentions that the wife of one of these employees had called to inquire about her husband's sample.

And this is one of those things, and I'd like to note this, as well, it shows that Langdon Hughes and Johnson Controls which were in their data set were subcontractors to Rust Engineering. Now, one of the possibilities we outlined was that we see all these Rust samples because perhaps a lot of these other subcontractors were, indeed, sub-subcontractors to Rust. But then this incident report sort of belies that because even though they were subcontractors to Rust Engineering, when they submitted their urine

bioassay cards it didn't say Rust Engineering on it. It said their actual subcontractors, which in this case were Langdon Hughes and Johnson Controls.

Since Joyce had mentioned that incident, I wanted to bring it up. Again, this is B- and there was no follow-up samples because, essentially, the work was done and they were gone, so they couldn't call them back, or didn't want to call them back for follow-ups.

I guess this is a case where it sort of gives me pause that, you know, you have the Langdon Hughes which only had six samples in 1984, four of them taken on this day. And I know the other Langdon Hughes worker here is redacted, but I can tell you his samples are actually even higher than the ones being shown. So, again, it B- we sort of have to flesh this out that we did capture the correct workers and that perhaps these short-term projects, which we really don't know how long this one went on, we only know when it ended, were actually being

captured by the bioassay program.

Now, in the case of Legge, it seems that they were certainly paying close attention to on that particular subcontractor, but I think we need to come to some sort of weight of evidence argument that these other ones who could have potentially been out there doing short-term demolition, you know, HVAC work, something that could have had a high exposure potential but over a short term are captured here so that we can use that data to be able to adequately bound the exposure potential to people who don't have data.

MR. HINNEFELD: Okay. Back to my original question, though, I mean, the -- what's being shared on the screen appears to be a product that was prepared for this Work Group meeting. Is that right?

MR. BARTON: Yes. Joyce had mentioned that incident when she was talking about Legge, and also this Langdon Hughes incident, so I thought I'd throw it up there so

people could see what we're actually referring to. This is sort of the post-incident report. In fact, it's a termination sample report that they had these very high samples which they sampled them twice on the same day because the first time they sampled them they got a very high result, they brought them back in and they were even higher at the end of their shift. I guess they took one at noon, and then again at 4:30.

So, I wanted to kind of illustrate further that, one, I don't think we can be sure that we don't see the other subcontractors listed in the data because they're subsumed under Rust Engineering, because in this case they weren't. Now, this may be the exception rather than the rule, but it is a piece of evidence. And, also, it shows that some of these other subcontracting firms that are really not that well represented in the data set could have had a high potential for short-term acute intakes, which may or may not have been

captured. And I think that's something we have to convince ourselves that we do have a representative sample, that we caught those high-risk jobs, and that we can, indeed, use all this data to adequately bound the exposure potential of the subs.

MR. STIVER: This is kind of an uncomfortable silence here. This is Stiver. I guess now we're kind of grappling with where to go from here. And Stu had mentioned kind of going back and maybe see if you guys could flesh out with a little bit more certainty some of these under-represented or non-monitored subcontracting firms who were actually doing B- we might be able to kind of chart a path forward from here.

DR. BEHLING: John, this is Hans. I want to ask a question, maybe everyone else knows the answer to this, but I was just looking at the data yesterday, so one of the questions I had, when you look at the sample type and you see 5-O, 5-9, 5-R, what do those sample codes

mean? Are they start of shift, end of shift, special, routine bioassays? It would be very helpful to have an understanding of what some of these codes mean because I looked at them and some of the highest codes have B- or the highest bioassay data values represent codes that are consistently 5-9. And I assume that might be end of shift, and they would be very different from the beginning of shift versus routine, also versus special where you may have a respiratory device failure and so forth. So, do we have a full understanding of what these sample codes represent?

MR. BARTON: Hans, I can answer that.

MR. HINNEFELD: I can respond on that, too, if you want.

MR. BARTON: Sure. Go ahead, Stu.

MR. HINNEFELD: It seems like most subcontractor samples received a first digit of a 5 because it looks like the convention was that the number B- a subcontractor sample was considered a special sample no matter -- even

though some of them seem to have been kind of taken on a routine basis.

The second digit of the sample codes reflects the time during the shift when it was taken, so a 9 is B- if the second digit of the code is a 9, that is, in fact, an end of shift sample; 0 is the start of shift sample, and then if there is a 5 or a 6 that's somewhere in the midday. Presumably, they had an 8-hour day so the beginning of the shift is 0, after the first hour is 1, and so on. But, normally, you'll see either a 0 or a 9 there, although you will see some middle of the day shifts for the second digit.

The first digit of the code, most subcontractors are going to be 5 because the convention was that even if you are sampling subcontractors regularly, that was still not a routine sample for your workers.

For the workers at the site, 30 C-- it would usually almost be a 30, a three zero, routine sample, a four zero would be an

incident sample was collected at the beginning of the shift, four nine would be an incident sample at the end of the shift. Twenty was, I believe, the annual, it was collected with their annual B- you had an annual physical, it was collected with your annual physical. And I believe a 10 may have been a pre-hire, I'm not sure.

MR. BARTON: Okay. And just to add on to that, Stu, that the 5R, any time you see an R after that first number, essentially -- it doesn't mean routine, it means essentially resample.

MR. HINNEFELD: That's a resample, right. And that second digit R would B- that would have pertained no matter what the first digit was. R was a resample.

MR. BARTON: Correct.

DR. BEHLING: I did see one, in fact, it is the highest value I saw, 1100 micrograms per liter, and there the code says 90. It turned out to be the highest number that I looked at.

MR. HINNEFELD: Well, I can only C-

MR. BARTON: Yes, Hans, that's actually the worker on this incident report. I don't know if you have it in front of you but it's a second worker who doesn't have any data on this incident report because it was redacted for the claims files, but that was his, essentially, the second sample that day.

DR. BEHLING: Yes. I should mention our computer, our CDC computer has been sent back for updates so I don't have access to what you're looking at right now.

MR. BARTON: Yes, that highest sample was essentially the second gentleman from Langdon Hughes who was up there on the Plant 5, I guess in the rafters maybe or something like that over the remelt area, and he B- I guess the investigator said that, well, you know, I think it's probably a contaminated sample but it could also be that they weren't properly using their respirators in a high-exposure area. I mean, they looked at the

5 mR per hour from the uranium oxide that was present.

DR. BEHLING: Also, what can we conclude when we look at the comparison between 5-0 and 5-9, meaning beginning of shift, end of shift? Does that suggest very strongly that the differences that we're talking about are very highly soluble material that is inhaled and excreted very quickly?

MR. HINNEFELD: This is Stu. And I think regardless of the solubility of the intake there is going to be some rapid early clearance, so you'll see that pretty significant difference regardless of the solubility of the intake.

MS. KENT: This is Karen Kent. I just wanted to add that there is a very good reference ID that tells the specific sampling codes at Fernald, and that would be 4076. And it basically summarizes everything that Stu has just said.

MR. BARTON: Right. I think we see,

even in the years after Westinghouse took over, that subcontractors were still generally given that Type 50, or 5-9, or 5-6, whatever it may be, but along that 50 series designation, so we really can't tell often if these are termination samples, higher samples, routine, because they're all sort of subsumed under that special label. So, I'm not sure, well past, you know, the switch over from NLO to Westinghouse, whether that method continued or whether they actually switched them over to the other sample types more commonly seen with the NLO employees, or if that continued on. I really don't know. But I know in the period we're looking at they're almost all Type 50 or Type 40, which Type 40 is an incident sample.

MEMBER ZIEMER: This is Ziemer. I have a question for John Stiver.

MR. STIVER: Okay.

MEMBER ZIEMER: John, can you kind of summarize what SC&A believes they need to sort of crystalize a recommendation that your folks

would have for the Work Group?

MR. STIVER: Yes. I think I kind of hit on that early on, and it's really to get kind of a better sense for whether we have systematic exclusion of some of the subcontractor groups within the data set. Basically, it's a representativeness issue.

As it is now, we have B- like I said, there are about 12 different subcontractors. They're identified in the 940 samples we used to B- proposing to use. And Bob has identified that there's really about 50 different subcontractors that were active during that time period.

What we don't have is a head count, and we don't have any information on what those subcontractors were doing. So, it's kind of leaving us in a place where we really can't say that we have a complete representative data set that we could feel comfortable for using for, you know, to give a good sense that we're really bounding all potential exposures.

MEMBER ZIEMER: But I didn't B- I wasn't sure, Stu, when you talked about this a little bit earlier whether you felt that it was likely that NIOSH would be able to find any additional helpful information, or is it you're feeling that what we have is what we have, and we need to make a decision?

MR. HINNEFELD: Well, I believe it B- what I said was it will be B- I think will be unlikely that we will find a head count per contractor.

MEMBER ZIEMER: Right. So, from your point of view what would the path forward be?

MR. HINNEFELD: Well, the -- one path would be what John suggested, is that to look in the years after Westinghouse took over in terms of company affiliation for the subcontractor samples for say >86 and >87, and see if you still see this predominance of Rust, and maybe one other. You know, you might have a company doing a project or something that gets sampled. So, one would be to do that.

And then I don't know what we can find out about the nature of the contracts. We could take a shot at finding contracts. I don't know that we'll be able to find contracts, because I suspect they didn't have a very long retention time, and see what these companies were hired to do, at least some of them.

So, I mean, we can poke around in the records, or get LM, Legacy Management, to poke around in the records a bit and see what we can do. And we could either come back and say we can't find anything else, or here's what we found, I guess would be a way to go.

MEMBER ZIEMER: Well, I'm trying to get a feel and, Brad, maybe you can help me here, but I'm trying to get a feel for whether it would be productive to do what you just described or, you know, is it that needle in the haystack, or what are we talking about in terms of effort and resources to, quote, poke around?

MR. HINNEFELD: Well, the first action which is to try to identify the company

affiliation for subcontractors once Westinghouse has taken over will B- I think we'll know relatively quickly whether we could do that or not. It wouldn't take just a ton of poking around.

The other questions, until we approach Legacy Management, I guess I don't have a good feel. We already may have some finding aids from Legacy Management that we would have to look at and see if their finding aids give us any comfort. So, I don't B- I can't really render an estimate today about the ability to find information that might be relevant. Although, like I said, just based on what I suspect was kept about these companies I would be surprised to find a head count per contractor, but I could be mistaken.

CHAIRMAN CLAWSON: Yes. But, you know, I guess I'd have to B- this is Brad speaking. I guess I'd have to look at the whole thing at Fernald, where we're already at into this right now with the SECs and everything

that's already done to this point right there. I guess I really don't see it as very beneficial or anything else like that, and I think that we, you know B- I agree with you, Paul, that it could be searching for a needle in a haystack. You know, if we take the history of what Fernald already is, I think we stand a pretty good chance of not finding anything. I don't think that it's really worth us to be able to go that length.

But, you know, we're kind of in a situation here where we've already put into this what the SEC is and so the only way we're going to be able to change this, I believe, and Ted, tell me if I'm wrong, is basically this has to come from NIOSH, there's an 83.14 for that.

MR. KATZ: Well, no, Brad. I mean, that's not correct because it doesn't have to come to an 83.14. You still have an open petition. I do think that the folks need to do due diligence on this matter first before the Board can render a judgment. And if Stu comes

back and says well, you know, this is an enormous amount of work and we'll never know if it'll be productive or not, and we really don't want to go forward, at that point you know, you know, what you're going to know. I think you have to take the first step and see B- explore the issue first.

CHAIRMAN CLAWSON: Well, you know, that's fine. It's just I've seen in a lot of other meetings that we've been into that then the whole other picture kind of changes around, and what benefits are we going to get from this if we put all this effort out there to be able to get it? You know, it's a two-edged sword, so I guess it basically comes down to if NIOSH feels that they want to dive into this and be able to look at it, that's, you know B- we'll do due diligence, and we'll see what we can come up with.

But, you know, I think we also have to look at the history of this whole site, and what information we've already been able to get

out. And it hasn't been that rosy, but we can proceed on with that, allow NIOSH to have their opportunity. But we do owe a time frame, too. We need to get something to them, to Lou Doll and them to be able to address this, kind of let them know where we're headed at, what we're going to do. So, I guess that comes over to Stu and, you know, basically where he wants to go.

MR. HINNEFELD: Well, this is Stu, and I believe we are obliged to at least look B- to look at some extent, because as I look at the B-

CHAIRMAN CLAWSON: Well, Stu, there's no question.

MR. HINNEFELD: The information we have, you know, in front of us was largely the information we have when SC&A and the Work Group decided that, gee, there seems to be enough bioassay data here to make a coworker model for construction workers. If the reason why there wouldn't be enough information would be if there was some exclusion of highly exposed

contractors from the sampling program, so I B- to me, I'm hard pressed to understand exactly what's different now. The fact that most of the sample people came from a couple of contractors is consistent with the fact that most of the workers, or most of the radiological work came through those two contractors. And there's, you know, while there's no information that says that's true, there's no information that says that's false. Sampling of a particular company for a short period of time with a contractor company coming in doing a specific project that takes a couple of months. So, the data that we see, to me, is just as consistent with a program that had an adequate monitoring program for construction workers starting in late >83 or in >84, as it is consistent with B- it's just as consistent with that interpretation as it is with an interpretation that only a couple of companies were sampled.

So, I guess at the very least we

should try to determine, if we can, without an overwhelming amount of effort what the company affiliation was for contractors during the first couple of years of Westinghouse's tenure. And if there is B- and then maybe find out if there is some simple search that might give us more information about what these contracting companies did. But I would not propose a long and involved search, and long and involved research project, so I don't have any more stomach for stretching this out a lot longer than anybody else does.

MEMBER ZIEMER: Stu, this is Ziemer again. I think what you just described, which is not an extensive effort, would address the due diligence issue, at least in my mind it would.

MEMBER SCHOFIELD: This is Phil. I've got one thing to say about that, too. I don't think we should spend a lot of time of that because you take something like Johnson Controls which they mentioned, this is a big

national corporation and they are exactly what they say. They B- pneumatic electrical controls of fans, motors, whatever, so they're likely to be in any building on site. And, you know, I mean it B- you couldn't really just say that, you know, well, they're probably the only one in this building because someone like that is a contractor that likely went over the entire site, whereas like you pointed out, some of these other contractors may just come in and done a construction job that only was confined to one building. So, I mean, to spend a lot of time I don't think is going to pay off. That's just my opinion.

MR. STIVER: This is John. I kind of agree with Paul's summary. I think what Stu is proposing is kind of a focused effort, not a long-term research project. I think we all have had our fill of these grail quests in the past that we've been down, but I think that would certainly address the due diligence. And I don't think B- at least in my mind it doesn't

seem like it would take that much time and effort to get a handle on whether they can identify the nature of some of these contracts, subcontractors. And, certainly, enough to look at the >86 and >87.

MR. BARTON: Yes. John, this is Bob Barton. If I could jump in here and give a little bit more on the whole notion going to >86 and >87, because we do have B- NIOSH did compile some 1986 data, and I want to correct one inaccuracy there, and it's the notion that the same number of samples were observed in 1986 as there were in 1984 and 1985.

Essentially, in 1986 all that was compiled was the first six months of 1986, so B- and that was over 350 samples for just the first half, so logic dictates it's probably that number at least, or maybe more if Westinghouse is still trying to, you know, break a shift in the latter half of that year.

Now, the other facet of that is this notion that we could ratio backwards. And I can

tell you that at least from the first half of 1986, we see the same trend. It's almost all Rust. Now there could have been construction projects in the second half that we haven't seen yet that might change that, but to give some perspective, what we see in that first half of 1986 is very similar to 1985 except for the actual physical number of samples that were taken, which is at least double in 1986 what it was in 1985.

MR. STIVER: So what I'm hearing is that for the first half of 1986, at least, the representation is proportional. You're not seeing any shift, any distortion in the contractors that are actually being sampled.

MR. BARTON: No, I didn't. And really it's B- one possibility is that B- I mean, I guess I'll pose this question. To what extent are we confident that these bioassay log books that we have are all there is? I mean, is it possible we have records that are located in a different document that hasn't been captured

yet, or are we reasonably certain that this is what we have, this is what we have to use?

MR. HINNEFELD: Well, this is Stu, and I'll offer to that is that we are confident that additional searches won't find more because we believe we've searched as much as we can. I won't give the same level of confidence that that was all the samples that were ever taken on subcontractors. You know, there may have B- they may not have all been retained, because all B- what we looked at, what these records are, are xerox copies of cards, sort of like a computer punch card, that size, though they're not computer punch cards, they're handwritten and they're legible. So, the xerox copies of cards, and each card contains one person's name, sample result, sample date, and it will include the employer for a subcontractor. So, we've captured, I believe, everything we're going to capture, but as to whether or not this was the entirety of samples that were collected during those years, I don't

know that we would B- I would state the same level of confidence on that.

MR. BARTON: Yes. I'm kind of wondering to myself if maybe there's a situation, I don't know how you could ever prove this, where Rust as sort of the main subcontractor, I guess you could call it, their records were included with the NLO files because they were on site for maybe a little longer, maybe full years instead of these short, you know, months, two months, whatever it is projects, and that, you know, maybe -- I'm not sure, but maybe there's data that's missing. But, you know, like you said, reasonably confident that further searches aren't going to turn it up, so we're kind of left with B- kind of left in the dark.

We don't know that there isn't data that's missing here for some of these other subcontractors who could have been short term, but we don't know, or we don't feel that we'll ever find it. Is that what I'm hearing?

MR. HINNEFELD: Well, what I intended to say is that I don't think we will find B- be successful in additional searches because we've done the searches that we've been able to do, and we found what we could find. So, what I'm saying is I don't think we'll find B- we'll be successful finding additional data with additional searches.

I have B- and I'm not in a position to say that I'm 100 percent confident that we captured records of all the samples that were taken. But, again, unless there was some sort of systematic exclusion of highly exposed subcontractors, the fact that we may not have all the samples doesn't really impugn the validity of a coworker approach. It would be only if highly exposed people were systematically excluded would there be an issue with the coworker approach.

MR. STIVER: This is John, and in my mind I don't see any other way to get a handle on it than to try to see if you can find some

more information that would shed light on the nature of the contracts for the unmonitored groups. And if that's not possible, I don't see that there is another way forward.

MR. BARTON: You know, we did have that contract document from 1969, and that's a long time ago, to have survived that long.

MR. STIVER: Yes, and I was thinking the same thing when we were talking about that. I mean, you know, there's one from >69. Now is it just fortuitous that that happened to be retained in the records? Maybe there's others for some of these other contractors, but it would be at least enough to kind of shed light on the nature of a good portion of them. I think at that point then NIOSH has done their due diligence. They've done what they can.

They have a limited data set, and as Stu said, it's what we have. It's not everything that was ever taken, it's what we have to work with. So, the question is, is it representative enough to build a coworker model. So, the only

thing that's really left dangling is whether we have proportional representation for the exposed workers. And the only way to really get a handle on that is to get a better understanding of what the contracts entailed.

MR. HINNEFELD: Well, again, my recollection is that Rust did the majority of the contracting, either directly or with -- and so it's perfectly reasonable that the majority of the samples would come from Rust employees. A lot of the contracts were left for items that were not in the radiological area. I mean, some of the things under contract -- Cincinnati Gas & Electric was on there, I think there was a paving company on there. So, to me, it seems like we're setting a pretty high standard for subcontractor, or for coworker models here when we are saying now not only do we have to have a pretty good set of bioassay samples for coworkers, but we also now want to say that we have to find out what companies worked there and make sure that we have samples from all those

workers, even not knowing, necessarily, what those companies did.

I really think that, you know, that's a pretty severe task to say that just because you have bioassay data, you have to go through a lot of additional B- show a lot of additional evidence of things like that when there's no particular evidence that the exposed people weren't monitored.

And, in fact, looking at some of these results, pretty clearly, I'm hoping the heavily exposed people were monitored because there are some really heavy results in here. So, to just look at the data, some of these results and say that somehow there were people even more highly exposed than these that were excluded from sampling or whose samples were lost for some reason, to me that's a lot more of a stretch than saying that all recognized they should be monitoring construction workers who were working in the contamination area, and they started sampling. To me, that's a far more

logical explanation than where we seem to be going. That's just my opinion.

CHAIRMAN CLAWSON: Well, this is Brad. I don't think that we're going to be able to solve this here. And you're right that NIOSH needs to be able to have their opportunity there, so I guess we'll just -- we'll leave that to you, Stu, and we'll just have to B- we'll get a report back of which way we're going to go and what we're going to do.

MR. HINNEFELD: Yes, I'll provide information to everybody after we can sort of and have some idea about what we're facing here.

CHAIRMAN CLAWSON: Okay. And I just, you know, kind of went over the issue. And, you know, what you brought up, Stu is totally right, you know. As you were going into all these contractors and stuff, and the highly exposed ones and everything else, too, but you've also got to look at something else, too, and this kind of triggered when you were talking to me about this, you've got all these other

contractors in there. You also need to look at how many contractors was in there, and how many of them don't have any samples at all, because you brought up the paving example, you know, paving right through the middle of Fernald. Now, I know the environmental map doesn't show the contamination too much inside of Fernald, but outside of it, it does. So, there's B- to tell you the truth, there were higher areas of exposure at Fernald, but I think the whole place was pretty dirty. So, you know, I understand B-

MR. HINNEFELD: Brad, maybe paving the process area, they likely were paving a contaminated area, but I can't believe they were as heavily exposed as the people who were taking out the equipment and rebuilding things in those buildings, in those production buildings.

CHAIRMAN CLAWSON: I understand. So, we'll B- is there any issues, other Work Group members, NIOSH to be able to go off and look into this a little bit deeper?

MEMBER SCHOFIELD: I agree with you, Brad.

CHAIRMAN CLAWSON: Okay. Dr. Ziemer?

MEMBER ZIEMER: Yes, I think, again, we're back to what we described as the due diligence, and it's not B- it's almost, as Stu described, what they would do, it will address the due diligence issue. It won't be burdensome. It should not take an extensive period of time, and then we can make a final decision to move ahead on that basis.

CHAIRMAN CLAWSON: Okay. That being said, we can B- we'll wait to hear what NIOSH has to say, and we'll go from there. We'll see what we can do on that.

MR. DOLL: Hey, Brad?

CHAIRMAN CLAWSON: Yes?

MR. DOLL: Can I make one comment?

CHAIRMAN CLAWSON: Sure, go ahead. I'm sorry.

MR. DOLL: It was discussed earlier about companies like Johnson Controls probably

wouldn't be in the contaminated areas, and that's not true because they would hire a specialty firm like Johnson to come in and do pneumatic work in some of these contaminated buildings.

MEMBER ZIEMER: Well, I think we all said they would be in contaminated areas, as I understood it.

MR. DOLL: Yes, they would be. They would be all over that facility.

COURT REPORTER: Is that Mr. Doll?

MR. DOLL: Yes, it is. Sorry. Yes, in early >80s we were sent down there for a four-day job with Johnson Controls when I was working for them, and we put in a pneumatic line to a knife gate over the top of B- in Plant 5 over the top of where the B- I guess, the ingots and that came out, so I know, you know, there was black oxide all over the place because we had to run the stuff up in the steel. So, you know, I know they would bring in B- National Lead once in a while would bring in their own

subcontractors for some of this stuff, so just as a point of reference.

CHAIRMAN CLAWSON: Well, let me ask you a question. How many years did you say that you were out to Fernald?

MR. DOLL: I was out there earlier than 1983 for a while, for a little while with Johnson Controls, and then I was out there from about I think it was October of >83, and then was there most of the time all the way through 2004. I was -- often I was gone for a short period of time and then back again.

CHAIRMAN CLAWSON: Okay. I was just trying to remember that. Okay, I appreciate your input there, Lou. I appreciate that.

I guess, this being said, Stu, this one is in your court and we'll wait to hear back from you. So, John, I think that at this time I don't know how much time we planned or whatever else like that. I ended up taking the day off because I needed more bodies than what I could support there, so I think that B- do we

have time to be able to start pushing through this issues matrix?

MR. STIVER: Yes, this is John. Yes, there are a handful of issues I think we can close out pretty quickly because as you recall, Fernald has been in contention for a long, long time. We released our Site Profile Review in 2006, and also the SEC Evaluation Report in that same year. And so the SEC report kind of took precedence. And, yet, a lot of the issues are correlated with each other. And because of the SEC designation, principally, for the thorium based on air sampling results, a lot of these findings that we're talking about, we recommend just closing.

Some of the others are not going to be such easy nuts to crack because NIOSH has released new updated Technical Basis Documents basically for all except the internal, and I assume the internal is in the works. So, a lot of these other findings are B- we recommend either keeping open or in abeyance until such

time as we have a chance to look at the new TBDs and determine whether they adequately address our concerns. So, at this point what I would advocate doing today would be just to go through the ones that we recommend closing out.

CHAIRMAN CLAWSON: Okay. That sounds good with me, so why don't you go ahead and proceed, but just B- I just want to make sure that I follow why we're closing them, and why we agree to close the issue.

MR. STIVER: Okay, fair enough. Can everybody see the issues matrix up on the screen here?

MR. HINNEFELD: Yes, John, it's there.

MEMBER ZIEMER: Yes, it's Ziemer, yes.

MR. STIVER: We're now at Finding 1, this is a TBD finding. And this is related to thorium, and it's related to air sampling of thorium. And it states that the list of facilities in which thorium-232 was processed,

the time periods of thorium processing, the thorium production data showing TBD had significant gaps, entire periods of processing in plants at which the work was done had been missed. These gaps may affect the feasibility of dose reconstruction for workers for certain periods of time in certain plants.

Now, as you all recall, those of us who have been with us for the duration, there was a lot of discussion about the adequacy and the completeness of the air sampling, this DWE data for thorium. And that's what this finding is all about. And, you know, I'm not going to read everything in here, it's pretty long and involved, but it basically summarizes what I just stated.

In October of last year, we suggested closing these findings because as stated here, the NIOSH coworker model, which was in play at this point from 1979 to 1988 does not employ air concentration, it employs bioassay data. So, we recommend closing that.

And, as you can see, NIOSH agrees with that recommendation. So, what we would need now would just be Work Group approval to go ahead and close that out.

CHAIRMAN CLAWSON: This is Brad. I agree to go ahead and close that one.

MR. STIVER: Okay.

MEMBER ZIEMER: Ziemer, I agree.

MEMBER SCHOFIELD: This is Phil. I agree.

MR. STIVER: The second was related B- this was TBD Finding 2, air concentration data for thorium with TBD are sparse and incomplete. Considerably more data are available in the NIOSH Site Research Database. TBD contains no thorium-232 bioassay data. And, again, we suggest closing this finding because it's related to thorium air concentrations for the DWE model. We recommend closing that, and again NIOSH agrees with that recommendation.

CHAIRMAN CLAWSON: I agree with it, too. This is Brad.

MEMBER ZIEMER: Ziemer, I agree.

MR. STIVER: Okay. This applies to Number 3. This is due to thorium intake through the emissions and resuspension in production areas. This was a big topic of discussion for the DWE model: were there enough samples taken and in the right places? And that model was rejected, so it's no longer relevant for SEC non-participants either. Basically, there's no way to reconstruct the thorium doses during that period, so that wouldn't apply in any case.

CHAIRMAN CLAWSON: Okay. This is Brad. I agree to close that one.

MR. STIVER: For 3, close.

MEMBER ZIEMER: Ziemer, I agree.

MEMBER SCHOFIELD: This is Phil. I agree.

MR. STIVER: Number 4 is a little bit trickier. This related to re-drumming. This is one that I think we're going to have to look at a little bit more carefully. There's a new TBD out, Rev 1 of the Site Description, and you see

B- we've talked long and hard about the thorium coworker model for 1979 to 1988, and NIOSH's response opened up another time period. This was during the reclamation, decontamination period, basically 1990 to 1994. There was quite a bit of re-drumming of thorium containers going on, so we recommend keeping that one open until we have a chance to look into that TBD in a little more detail. Don't recommend any closure on that at this point.

CHAIRMAN CLAWSON: Sounds good.

MR. STIVER: Let's see here, number 5. Thorium fires, number 5 is going to be the same thing. This may have relevance in 1990 to >94 so we don't recommend closing that at this point.

And number 6, the bottom here of the page, the approach suggested for estimating thorium intakes does not reflect the history of production or the available thorium air concentration data. Again, this is related to the DWE model, and we recommend closing that.

CHAIRMAN CLAWSON: This is Brad. I agree.

MEMBER ZIEMER: Ziemer, I agree, also.

MEMBER SCHOFIELD: This is Phil. I agree.

MR. STIVER: Okay. Let's go down the list. I think there's maybe one more that we recommend closing. Let's see. Number 12, TBD notes that uranium batches with enrichment greater than 2 percent were processed at Fernald. NIOSH's assumption that 2 percent enriched uranium is claimant-favorable most of the time but not for all periods and batches. And, let's see. This actually was closed out in, it looks like October 2008, enrichments can be identified. After a lengthy discussion, the Board accepts the 2 percent position and closed the finding. So, that one is closed. I don't think we need to vote on that one at this point.

CHAIRMAN CLAWSON: Okay.

MR. STIVER: 13, female employees

were not monitored for long periods at Fernald even though at least some of them were at some risk of internal intake of radionuclides.

There's a long history of discussion here. At November 13th, 2007, the Work Group decided this was an issue isolated to a few individuals and should be evaluated on a case by case basis in dose reconstruction. So, that was closed out. And NIOSH added some additional information here. They have some references, OTIB-73 incorporated into a Technical Basis. Once again, this is going to be the Environmental Management Project, so that document is now available. So, we haven't looked at it yet, but I would assume that these references have been incorporated and the changes that are listed here have been indeed taken out. So, I think that one because, as the previous discussions in the Work Group, we can assume it's closed, as well.

CHAIRMAN CLAWSON: John, I just had one question on that. Down there in the bottom

of NIOSH's response down there, where they're talking about the doses, the 500 mR upper bound dose methodology will be removed during the TBD revision, so weren't there B- I guess, Mark, this one is for you. So, what you're telling me is that this is being removed in the new TBD that just came out, or Stu?

MR. HINNEFELD: This is Stu. I don't know that I have a lot of insight into that. It sounds like the new Site Profile chapter changes the approach here so that -- to use a coworker model. Is that what that says?

CHAIRMAN CLAWSON: That's kind of what I was getting at on this, but we'll look into it. I just found it a little bit interesting, I just wanted to make sure I was following kind of where we're going with this stuff. And you say that this new TBD is out to be reviewed?

MR. HINNEFELD: Yes, the external B- it's on the website. We've published it.

CHAIRMAN CLAWSON: Okay.

MR. STIVER: Maybe it might be better just to keep this in abeyance, then, until we have a chance to look at the TBD. Writing our response or basically what took place in August of 2007, we B- at that point we had concerns regarding the shallow dose to the skin and the extremity dose. And these are B- this is going to kind of relate to some of the external concerns in the later findings regarding shallow dose. A lot has taken place in the Procedures Subcommittee on these issues, so I think we'd probably be okay closing this, but it might be better just for administrative purposes to keep it in abeyance until we actually look at the TBD.

CHAIRMAN CLAWSON: That's what I'd like to do, John.

DR. MAURO: Yes, this is John Mauro. A lot has occurred regarding shallow dose, and it's relatively recent because our thinking has matured, and there is agreement. And it would be a good idea to see if, in fact, the latest

version of the TBD captures this latest thinking, so I think it's important that we just check it out. Because I have had experience where some of the concepts that had been agreed upon have not really gone through the system on all of the Site Profiles, et cetera, et cetera. So, it would be a good idea just to B- and it won't take long to check if that new thinking is, in fact, reflected in the TBD.

CHAIRMAN CLAWSON: Sounds good. We'll leave that one in abeyance.

MR. STIVER: 14, this is the last one that we recommended closure on at this point. The TBD does not address the extremely high uranium dust concentrations that were present at Fernald under a variety of circumstances and reflect on dose reconstructions. Particle-size solubility assumptions, worker's experience prior should be examined.

And this finding, once again, is no longer relevant because this B- remember this finding took place before the uranium bioassay

model, the coworker model was actually implemented. So, this was a concern of using uranium air dust concentrations in a similar fashion that was proposed for the thorium model. So, this no longer has any relevance to the ongoing dose reconstruction processes that are in place today, so we recommend closing that one out.

CHAIRMAN CLAWSON: This is Brad. I agree.

MEMBER ZIEMER: Ziemer, I agree to close, as well.

MEMBER SCHOFIELD: This is Phil. I agree.

MR. STIVER: The rest of them to various extents are kind of contingent upon what's been implemented in the new TBDs, so until we have a chance to look at those TBDs B- in some cases, as John mentioned, like for the skin contamination and so forth, it'll be just a quick review with a one-line response, yes, it's covered. Others are going to be a

little trickier. For example, there's several related to recycled uranium, and NIOSH response in, I believe it's Report 52, which is dated sometime in April of 2011, doesn't reflect the latest Work Group agreements that took place after that document on the default levels of plutonium, technetium, neptunium, so I'm not sure at this point whether that thinking is reflected in the new TBD. So, some will be tricker than others, but at this point, I think that's probably all we can really close out today.

MR. HINNEFELD: John the internal TBD is not issued yet. In fact, I believe we owe the Work Group some discussion of thorium intakes after 1978.

MR. STIVER: Right. That's the only one that's actually not been released, so I -- until that point, we're just going to have to hold our findings in abeyance.

CHAIRMAN CLAWSON: Do we have a time frame for that roughly? I take it by the pause,

no.

MR. HINNEFELD: I was on mute. Sorry.

CHAIRMAN CLAWSON: I had to check mine, Stu, to make sure I wasn't on mute.

MR. HINNEFELD: I've been going on and off, and that time I missed. Up until then I've been doing okay. We hope to have our thorium approach and anything remaining from that to the Work Group before very long. We couldn't get it ready for this meeting, so we decided, you know, we post it on the letter for the meeting. But I wouldn't think it would be too much longer and we'll be able to get that to you. And then once B-

CHAIRMAN CLAWSON: Okay.

MR. HINNEFELD: Once we B- if we can come to agreement on that, then that will give us the list, and then there will be a number of things that have to be incorporated in the internal Site Profile, so then that will follow a while after still because there are a number of things to include that we've resolved in our

discussions.

CHAIRMAN CLAWSON: Okay. Well, that closes out the easy ones. My question is, are we able to continue on, or do people have other commitments? Is there any feelings on that?

MR. STIVER: Well, Brad, this is John. That's really all that we can resolve at this point today as far as the matrix findings.

CHAIRMAN CLAWSON: Okay.

MR. STIVER: At some point we would probably need a formal B- I don't know if we B- maybe a question for Ted, whether we need formal tasking to look at these new TBDs and evaluate them against our findings.

MR. KATZ: John, I think you should go ahead and look at the new TBDs against the findings. We're trying to close these findings.

MR. STIVER: Okay. All right. So, we'll take a green light on that.

CHAIRMAN CLAWSON: Well, that answers my question. I wanted to make sure that SC&A started to look at the new TBD. That's been

addressed, and I guess how it'll affect out some of these other findings in the matrix there.

Is there anything else that needs to come before the Work Group at this time?

MEMBER ZIEMER: Yes, I move for adjournment.

CHAIRMAN CLAWSON: Okay. Paul, I guess I have a Dose Reconstruction meeting to finish reviewing and get sent back, so I've got my work cut out for me the rest of the day. But anyway, I appreciate everybody calling, Mr. Doll, everybody that has called in. I appreciate you taking out of your day to be able to help us with this, and we'll look forward to seeing what NIOSH has come back. And at this time, I adjourn the meeting, if there's nothing else. Thank you.

MR. KATZ: Thank you, everybody.

(Whereupon, the above-entitled matter went off the record at 11:33 a.m. Eastern Daylight Time.)

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