

1 I mean we have a kind of an unlabeled
2 spreadsheet here with the bioassay data on it,
3 but the names are removed. You know, we can --
4 I guess we can provide this to -- to Ray, if
5 you would like, or we can go ahead -- or we can
6 prepare something following this meeting, which
7 might be more to our liking. But I think what
8 you'll find is that once you average those
9 bioassay data, you'll get something very
10 similar to the intake -- the (unintelligible)
11 intake.

12 **DR. H. BEHLING:** It's just a question of which
13 samples belong to which person (unintelligible)
14 --

15 **MR. HINNEFELD:** (Unintelligible) column one or
16 column A, I think there might be an A and a B
17 or --

18 **DR. H. BEHLING:** Yes.

19 **MR. HINNEFELD:** -- those are -- A and B are
20 (unintelligible) --

21 **DR. H. BEHLING:** Okay, okay.

22 **MS. K. BEHLING:** Okay.

23 **MR. HINNEFELD:** -- A on one person --

24 **DR. H. BEHLING:** Well, we can do this ourselves
25 and then get back to you.

1 **MR. HINNEFELD:** Okay.

2 **DR. H. BEHLING:** Give us a copy of that and
3 then we could resolve this issue.

4 **MS. K. BEHLING:** (Unintelligible) centered
5 around the critical population, does that
6 represent --

7 **THE COURT REPORTER:** Okay, I'm having a real
8 problem here -- is this Dr. Behling -- Kathy
9 Behling?

10 **MS. K. BEHLING:** Behling, I'm sorry, I'll slow
11 down and speak into the mike.

12 **THE COURT REPORTER:** That's good, thank you.

13 **MS. K. BEHLING:** The critical issue is
14 regarding the population group and whether that
15 critical -- that does represent the critical
16 population group. And if SC&A can convince
17 itself that that group is the critical
18 population group, we will -- we're in agreement
19 with NIOSH on this issue.

20 And Stu, I'll let you start with your next
21 issue.

22 **MR. HINNEFELD:** Okay. Issue number three on
23 the -- on case #1 has to do with the absorption
24 type that was chosen for fitting, and whether -
25 - you know, absorption type M was what was

1 selected to do the intake fitting and the
2 reviewer suggested that perhaps S should be
3 evaluated to see what -- whether that might be
4 appropriate. We feel there is a number of
5 literature sources that would indicate that
6 U308* in the (unintelligible) that it was
7 produced at Blockson and in that fashion is --
8 is better approximated by type M than type S.
9 We have in fact, though, fit it -- the data,
10 the intake data, did the intake estimates using
11 a type S absorption amount and -- help me out
12 on this, Tom -- as I recall, the difference in
13 doses to essentially all the organs is
14 relatively minor. Of course the respiratory
15 tract would be essentially different if you
16 were assuming a type S intake, and then the GI
17 tract would be somewhat -- somewhat higher if
18 you assumed type S intake. In the other cases,
19 even though the type S intake is higher -- if
20 you model the intake rate using type S, it will
21 be higher than it was if you modeled it with
22 type M, dose conversion factor for intake drops
23 for all the other organs. And so it comes out
24 somewhere around a factor of two in most of
25 those -- is that -- is that right?

1 **MR. TOMES:** This is Tom Tomes. Yes, the -- the
2 -- (unintelligible) respiratory tract result --
3 result is roughly -- slightly under a factor of
4 two higher if you -- if you go with type S.

5 **MR. HINNEFELD:** So it's a modest change with
6 type S. We feel like the literature supports
7 type -- type M.

8 **MS. K. BEHLING:** And I gue-- this is Kathy
9 Behling, and SC&A's approach to -- or feelings
10 about this situation is that NIOSH typically
11 does use a claimant favorable approach when
12 doing these calculations. And in this
13 particular case we also ran IMBA and checked
14 some numbers with the S and the M, and we came
15 to the same conclusion that you did. It might
16 be more claimant favorable if you used S, and
17 it's not a large factor, but a factor of two is
18 what our preliminary estimates come up to,
19 also. And just in the name of claimant
20 favorability we felt that using type S would be
21 more appropriate -- or at least -- I'm glad to
22 hear -- 'cause my recommendation was going to
23 be that NIOSH actually make some IMBA runs and
24 make some comparisons to see which is more
25 claimant favorable.

1 **DR. H. BEHLING:** This is Hans Behling. Because
2 of the complexity of this particular
3 discussion, I just want to review a couple of
4 things so that people who are here in
5 attendance will understand what the issue is to
6 begin with.

7 Type S is a classification of solubility
8 meaning it's slow, and if it's inhaled into the
9 lung, a type S solubility means that the
10 material is not readily dissolved and removed
11 from the lung, meaning that the lung actually
12 gets a higher dose per unit intake if it's a
13 highly insoluble material as opposed to M,
14 which is medium.

15 Now there comes a situation where there's sort
16 of a paradox when you say well, if the person
17 had a lung cancer, clearly the favorable
18 assumption is that it is a slow removal or type
19 S. But when it's not the lung and you put in
20 M, you would also assume that well, M
21 classification would dissolve quicker in the
22 lung fluid, be transferred from the lung into
23 the bloodstream where it would be assimilated,
24 and that, too, is true, without question.
25 However, there is a kink here, and that is the

1 intake was actually calculated from urine data,
2 so we don't know what the respirable intake is,
3 and if you go and calculate the urine output
4 containing this radionuclide, you will come to
5 the realization that if you start out with the
6 assumption that the urine that you're analyzing
7 for this particular radioisotope is assumed to
8 be type S, slow, you will start out with a much
9 higher intake and therefore the -- the balance
10 that you achieve that I just mentioned for a
11 higher degree of rate of transfer from the lung
12 to the bloodstream is offset by higher intake.
13 And I think -- we scientists understand it, but
14 it's a complex problem for those who may not be
15 familiar with it. And so the issue, as -- as -
16 - as Stuart pointed out, is running the IMBA,
17 doing the calculation, starting out with the
18 assumption that the urine contains either type
19 S or type M, and back-calculating what the
20 intake for those two assumptions might be, and
21 then determine what the dose to a particular
22 organ is that is of interest in terms of the
23 cancer type. And I believe you've done that.
24 You also stated that the difference is
25 marginal, and as far as I'm concerned, that

1 issue can be resolved, given the fact that
2 you've done that calculation.

3 **MR. GRIFFON:** This is Mark Griffon. What's the
4 resolution there then? 'Cause I've -- I've
5 heard that you're saying the literature
6 supports type --

7 **MR. HINNEFELD:** Well, I guess our -- our
8 position was that -- we feel like the
9 literature support for U308 that is not high-
10 fired -- (unintelligible) high-fired, even for
11 what I would call uranium rock*, which is
12 usually described as U308. It's usually a
13 mixture of oxides. Even that type of a uranium
14 oxide exposure tends to clear faster than a
15 type S clearances, so we feel like -- and this
16 was a chemically-produced, precipitated and
17 filtered product that probably was -- maybe a
18 mixture of oxides, as well. We feel like the
19 literature supports the more rapid M clearance,
20 and so -- and since the dose difference is
21 relatively small -- I mean the intake -- the
22 dose values for essentially non-metabolic
23 organs is relatively small given the Blockson
24 model, we don't think it's particularly
25 important -- it doesn't make -- we feel like

1 we're on strong ground where we are. If we
2 were to go to type S it wouldn't be a
3 particularly -- you know, much of a change and
4 it wouldn't be -- and if -- and we feel like
5 there's sufficient evidence that there is not
6 much question about the solubility of this
7 particular kind of material.

8 Now behind all this -- the sub-context to all
9 this conversation is we have not done lung
10 cancer cases from Blockson. So where it would
11 really matter, which is in the respiratory
12 tract, we've not done any. As an additional
13 exposure pathway at Blockson, that is the radon
14 that would be present there. And the current -
15 - our current direction will be that may in
16 fact be part of the dose reconstruction, the
17 radon that would be at a Blockson plant may be
18 a part anyway. Given the risk factors for
19 radon, I think the uranium exposure for lung
20 cancer is going to be irrelevant.

21 **DR. H. BEHLING:** Just a fin-- this is Hans
22 Behling again. Just a final point here, and I
23 think Stu pointed out, the decision to go with
24 type M is -- is one that has not yet been
25 challenged by a lung cancer. And it is always

1 NIOSH's tendency to be claimant favorable. And
2 if there had been a lung cancer, I believe
3 NIOSH would opt to -- to use type S, meaning
4 that would give a higher dose. And clearly for
5 the lung, that would be the case. But SC&A
6 contends that the same holds true, if you start
7 out with the urine sample as a way of defining
8 what was taken into the body, that the higher
9 dose would also be associated with an
10 assumption that starts out with type S. I mean
11 I think that's the -- the nuts and bolts. The
12 critical difference would be for the lung,
13 clearly, between type S and M. The big ticket
14 for the difference would be the lung as a
15 source -- or as the site for cancer. But SC&A
16 basically point out that even for non-metabolic
17 tissues and non-lung cancer lesions, the
18 classification assumes that S would yield a
19 higher dose.

20 **UNIDENTIFIED:** (Unintelligible) here is this is
21 a very case-specific situation where --

22 **THE COURT REPORTER:** I'm sorry, who is this?

23 **MR. FITZGERALD:** This is Joe Fitzgerald.

24 **THE COURT REPORTER:** Thank you.

25 **MR. FITZGERALD:** -- that is being driven by

1 both the empirical result, the actual
2 calculated results, and the fact that lung
3 cancer has -- and so there's a number of
4 qualifiers that permit a very case-specific
5 (unintelligible) to use M.

6 **DR. H. BEHLING:** But I -- Hans Behling again.
7 I believe that the assumption was that if you
8 go with type M you were claimant favorable. I
9 think that the assumption, because if you start
10 out with -- and let me -- let me give you an
11 explanation. If you start out and say -- I'll
12 -- I'll expose two guys, each to one
13 microcurie, but one is M and one is S. The guy
14 with -- with -- with the type S is going to
15 have -- have -- have a lower exposure to
16 tissues other than the lung than the one with
17 M. But if you start out with the calculation
18 of the urine sample, you can say you both have
19 one picocurie per -- per cc or something and
20 then you are -- we know have type M and you
21 have S, the guy with type S had a higher body
22 burden and lung burden than the other guy.
23 Okay? That's the difference. And it's a very
24 technical fine point that, after we looked at
25 it and we sort of say are you being claimant

1 favorable by assuming type M, which
2 superficially would lead you to believe it's
3 claimant favorable when it's not.

4 **MR. GRIFFON:** Yeah, Mark Griffon. I just -- I
5 mean I get the point. That's what I was asking
6 you, Stu, is that, you know, is there -- is
7 there a clear, scientific basis for using the
8 type M rather than just going with claimant
9 favorable? You know, and if -- if a clear
10 scientific basis has --

11 **MR. HINNEFELD:** Well, we felt that -- we feel
12 like that.

13 **MR. GRIFFON:** Right, and then that would
14 override, I think --

15 **MR. HINNEFELD:** (Unintelligible)

16 **MR. GRIFFON:** Right.

17 **MR. HINNEFELD:** At Blockson.

18 **MR. GRIFFON:** Right.

19 **MR. FITZGERALD:** (Unintelligible) site-specific
20 in the sense that this doesn't necessarily
21 establish a precedent -- other sites, other
22 situations are -- for this particular case you
23 have the empirical results, as well as no lung
24 cancers that you're actually --

25 **MR. HINNEFELD:** We have not used as models

1 (unintelligible).

2 **MR. FITZGERALD:** -- you haven't used as models
3 for lung cancer. For that narrow perspective
4 (unintelligible) do it.

5 **MR. GRIFFON:** Mark Griffon again. I think this
6 comes up in a lot of cases that we're going to
7 see, which is this question of, you know, is
8 this claimant favorable versus do you have a
9 scientific basis, so you don't necessarily have
10 to go with claimant favorable. That's what I'm
11 trying to figure out is which -- which one
12 applied here for this case or -- I know --

13 **MR. HINNEFELD:** Well --

14 **MR. GRIFFON:** -- going to type S -- it sounds
15 like it will increase even the other organ
16 doses slightly.

17 **MR. HINNEFELD:** -- (unintelligible) modestly.

18 **MR. GRIFFON:** Right. But -- and it's claimant
19 favorable, but if you have a scientific basis
20 for the other --

21 **MR. HINNEFELD:** Well, that would -- that would
22 be our -- our view of this was --

23 **THE COURT REPORTER:** Is this Dr. Hinnefeld?

24 **MR. HINNEFELD:** This is Mr. Hinnefeld, sorry.

25 **THE COURT REPORTER:** Thank you.

1 **MR. HINNEFELD:** Our view of this was that there
2 is, we feel, supporting literature evidence
3 that this material would not behave as a type S
4 material. Now when we get to a lung cancer,
5 that could put us in a difficult position
6 because we're thinking well, are we so
7 confident of it -- because it could very well
8 make a difference in a lung cancer case. But
9 the difference is so small, I can't imagine
10 it's really going to matter in any of the other
11 cancers. But in a lung cancer case, it's going
12 to matter. We have not addressed the issue
13 yet, and chances are we won't ever have to
14 address the issue because the uranium exposure
15 won't ever be necessary for a lung cancer to
16 become compensable. The radon risk factors are
17 so -- so broad, you know, the uncertainty --
18 what happens in a radon exposure, the
19 uncertainty is so broad that it hardly takes
20 any radon exposure --

21 **MR. GRIFFON:** (Unintelligible) how radon is
22 handled. We still don't know that.

23 **MR. HINNEFELD:** We don't know for sure how
24 that's going to turn out, but if it hasn't
25 turned out one way yet, it -- my view is it's

1 probably going to turn out the other way.
2 **DR. H. BEHLING:** I think the final issue --
3 Hans Behling again. The final issue here is
4 really one of saying -- according to the
5 regulations, we're supposed to, in the absence
6 of definitive scientific data, give the benefit
7 of the doubt to the claimant. The question
8 here is do we have a reasonable scientific
9 basis to support saying it is type M as to
10 assuming it is type M, 'cause that's what it
11 comes down to.
12 **UNIDENTIFIED:** Sure. That's the nut of it. I
13 agree, that's the (unintelligible).
14 **DR. H. BEHLING:** The issue.
15 **MR. HINNEFELD:** (Unintelligible) a lot of
16 discussion (unintelligible) when you get to the
17 final dose, but (unintelligible) okay.
18 **MR. GRIFFON:** Can -- can -- Mark Griffon again.
19 One -- just -- just -- (unintelligible) back.
20 I was -- back to number one, I know you went
21 over that already, but there's something about
22 dust loading in there and it apparently doesn't
23 apply since there was no air sampling for this
24 site. Why was it brought up initially -- can
25 someone --

1 **MR. HINNEFELD:** Well, there -- to bring you up
2 to speed, there's discussion in the Blockson
3 site profile -- I'll start, and if I say
4 something not quite right, you guys -- there
5 was discussion in Blockson site profile that
6 essentially tried to estimate from source term
7 type information what might the airborne have
8 been.

9 **MR. GRIFFON:** Okay.

10 **MR. HINNEFELD:** And there were two approaches
11 of -- one of which had to do with a release
12 fraction or -- an assumed release fraction of
13 what percent of the production will become
14 airborne. Okay? And there was a second
15 technique that says well, we have data -- we
16 have airborne data from uranium mill operations
17 from kind of the same time period, and what
18 kind of airborne was measured there, and
19 actually some pretty good air sample -- air
20 measurements -- studies at those plants, and
21 they provided a certain number, and they were
22 producing at about ten times the rate that
23 Blockson was producing at, so about one-tenth
24 of those airborne concentrations may be
25 appropriate for Blockson. But neither of those

1 arguments are very convincing. Okay? Neither
2 of those arguments are very convincing and the
3 TBD -- TBD doesn't rely on them at all because
4 it relies on the bioassay data.

5 **MR. GRIFFON:** So -- so to go back to my earlier
6 question which was about air sampling
7 (unintelligible) urine data, now let me ask
8 about the source term compared to --

9 **MR. HINNEFELD:** Yeah.

10 **MR. GRIFFON:** I mean do you try to project
11 intakes from that data and were they in the
12 neighborhood of the projections --

13 **MR. HINNEFELD:** Well, the source term
14 calculations come -- line up pretty closely
15 with the bioassay. Okay? They happen to do
16 that. I don't know that they -- you know, I
17 think they don't really provide much convincing
18 support, but I think our position is we don't
19 really need any convincing support given the
20 bioassay model that was used to model the
21 intake.

22 **UNIDENTIFIED:** And I think the comment, as I
23 understood it, was --

24 **THE COURT REPORTER:** Who is this?

25 **MR. FITZGERALD:** I'm sorry, Joe Fitzgerald --

1 becomes somewhat superfluous in the sense that
2 it's not used, but it also raises questions as
3 to the technical validity and whether it
4 (unintelligible) it by including it and
5 referencing it if unused. It sounds like I
6 guess -- just going back to (unintelligible)
7 whether it would be better to delete it or not
8 give it (unintelligible).

9 **MS. K. BEHLING:** (Unintelligible) scientific
10 (unintelligible).

11 **MR. FITZGERALD:** Not very (unintelligible),
12 yes.

13 **MS. K. BEHLING:** Yes.

14 **MR. FITZGERALD:** Yes. Okay? Doesn't sound
15 like a disagreement, it just sounds like a
16 matter of --

17 **MS. K. BEHLING:** Exactly.

18 **MR. FITZGERALD:** -- how to deal with it
19 (unintelligible) standpoint.

20 **MR. GRIFFON:** But -- so really for the whole
21 site, what it comes down to is we're still
22 relying on that 20 people. And then I think it
23 was question four, did we have agreement on
24 both sides here on the ingestion? I mean I
25 tend to agree with Stu's presentation of that,

1 but I didn't hear a response from you guys --

2 **DR. H. BEHLING:** If -- Hans Behling again.

3 If -- if the entire dose reconstruction is
4 based on urinalysis, it makes very little
5 difference as to what the ingestion would be
6 because you're measuring all pathways.

7 **MR. GRIFFON:** Right. So that's resolved.

8 Right?

9 **MS. K. BEHLING:** I believe the only additional
10 point -- this is Kathy Behling -- that John
11 Mauro wanted to make on that particular issue
12 was -- and maybe it does not affect Blockson,
13 but hopefully -- NIOSH did agree that they
14 would look into this issue for other cases. In
15 the Blockson TBD the ingestion rate of .49
16 picocuries per day was estimated, and we went
17 back into the literature and went into the
18 EPA's exposure factor handbook and, based on
19 that, the ingestion per day is higher based on
20 whether you're in a garden or you're working in
21 a dusty attic. And we just wanted to point out
22 to NIOSH that that should be considered for
23 other types of cases and other TBDs, that we
24 just felt that that ingestion rate was lower
25 than...

1 **UNIDENTIFIED:** And our -- I think that what we
2 have -- our standing comment, we said that we
3 think that --

4 **THE COURT REPORTER:** I'm sorry, who is this?

5 **MR. HINNEFELD:** This is Stu Hinnefeld. Our
6 standing comment that we think that that's a
7 valuable reference that's been brought to our
8 attention and (unintelligible) starting point
9 for our evaluation of those types of
10 (unintelligible).

11 **MS. K. BEHLING:** Okay.

12 **MR. HINNEFELD:** Are we onto issue num-- we're
13 still on case #1, huh? Issue number five?
14 Some of them have fewer issues. We'll make
15 that (unintelligible) later.
16 Issue five relates to the manner in which
17 external exposure was established -- the
18 external exposure quantity for dose
19 reconstruction, and questions whether 400 hours
20 per year in the vicinity of the separated
21 uranium oxide is really the approp-- the
22 appropriate number to use, or if they were in
23 the vicinity more than 400 hours per year.
24 We feel like -- the distribution we built uses
25 400 hours at one foot from the drum of

1 material. A median -- or mean of a lognormal
2 distribution, with (unintelligible) percentile
3 of the lognormal distribution being 2,000 hours
4 one foot from the drum, we felt like -- that
5 seems to be -- to us to be pretty generous in
6 terms of the amount of time that close to the
7 drum (unintelligible) exposures.

8 **MS. K. BEHLING:** In rethinking that issue, SC&A
9 does agree with that, and I believe that also
10 takes care of issue number seven. For some
11 reason there were two issues that were about --
12 in which they discussed the 400 hours.

13 **MR. HINNEFELD:** Okay, that was clearly my
14 mistake. I wrote it twice.

15 **MS. K. BEHLING:** Oh.

16 **MR. HINNEFELD:** Not that I think about this a
17 lot.

18 Okay. Issue number six is -- again, SC&A has
19 pointed out a discrepancy in MCNP calculations.
20 We've not resolved the discrepancy, but we are
21 trying to resolve -- figure out what -- how
22 come we got one number and SC&A got the other,
23 and so we hope to have a resolution. I
24 understand it may be as -- I think it was --
25 said in November that the set-up that we had

1 prepared for our numbers didn't include all
2 that should have been included and I don't know
3 if that's the case or not. We're -- we're
4 chasing that down. (Unintelligible) doses out
5 of -- interesting question (unintelligible) on
6 the (unintelligible), though, is that the doses
7 -- number that we used, dose value we used was
8 a measured value from a surrogate uranium
9 product, it wasn't from UO4*. So even though
10 we ran an MCNP run and had a particular dose
11 rate value, we didn't (unintelligible). And
12 again, that value wasn't used to
13 (unintelligible) dose reconstruction. The
14 value that was used was a measured value off of
15 UO4. Now --

16 **THE COURT REPORTER:** Mr. Hinnefeld, I'm having
17 a hard time, can you --

18 **MR. HINNEFELD:** I'm sorry. The dose value that
19 forms the basis for the external dose
20 reconstruction was a measured value from a
21 container of a -- what I would call a surrogate
22 radioactive material. It was uranium, but it
23 was uranium tetrachloride, which I referred to
24 as UO4*. It was not a drum of yellowcake,
25 which is the description of material for the

1 product of Blockson Chemical.

2 So you know, given the information we have now,
3 our view is we feel more strongly about
4 measured values, even with some slight chemical
5 difference in the source, than we do about the
6 model.

7 Now backing some benchmark of the model to that
8 measured value, if we have a UF4* MCNP run and
9 it said something about our measured dose, I
10 think that would be important information we
11 would have to consider. I think also when
12 we're talking about MCNP we're interested in
13 the density of the material that was used, and
14 what effect it will have. The density is
15 described as a (unintelligible) -- in the SC&A
16 review it's described as density of two if it's
17 set up for the MCNP run. That seems unusually
18 low to us. We think that a (unintelligible)
19 compounds are in the six to eight density area,
20 but I don't know what that does to the outcome.
21 It's not intuitively obvious what that would do
22 to the outcome because your photon generation
23 rates will go up, as will your
24 (unintelligible), and so I don't really know
25 what that means and whether it would make any

1 difference. But the core issue, though, has to
2 do with whether a measured value is better than
3 a model value. That's the core issue.

4 **DR. H. BEHLING:** Hans Behling. Just a question
5 on that issue because I was not able to --
6 (unintelligible) and so I have to ask questions
7 --

8 **THE COURT REPORTER:** Okay, I'm just not getting
9 anything right now.

10 **DR. H. BEHLING:** I'm being blocked here by a
11 computer screen. This is Hans Behling, and the
12 question I have with regard to this issue about
13 an empirical value versus a theoretical value,
14 and Stu had mentioned they actually used the
15 empirical value, which coincided pretty close
16 to what they calculate as a theoretical value,
17 which however did (unintelligible) our
18 theoretical calculation. And he mentioned the
19 issue of UF₄ versus uranium oxide and the
20 density given to -- and perhaps packing
21 quantity, et cetera. But I also have, in
22 addition to those issues, a question that
23 involves the instruments that we use for the
24 empirical measurement. Do you have any
25 information as to what was used to make those

1 measurements, which instrument, because one of
2 the things that is a concern here is that these
3 are very low energy photons -- at least a
4 component of it is -- and depending on the type
5 of instrument that may be used, and it may have
6 a very real effect to things such as, for
7 instance, the high dose or (unintelligible)
8 dose, that an instrument that has a fairly
9 large amount of metal surrounding the sensitive
10 (unintelligible) or something, may
11 underestimate low energy photon contribution.
12 And that's my only point here for asking what
13 instruments were used to get me the empirical
14 measurements?

15 **MR. HINNEFELD:** Well, it was probably
16 (unintelligible). I'm sure we have it on the
17 survey form, I'm just not familiar with which
18 instrument it was. And of -- so -- I
19 understand the -- your point --

20 **THE COURT REPORTER:** Okay, there's something
21 going on. I'm just getting terrible
22 reverberation here. Is there something wrong
23 with y'all's mike?

24 **MR. HINNEFELD:** I don't know. Is this any
25 better, Ray?

1 **THE COURT REPORTER:** That's better, yeah.

2 **MR. HINNEFELD:** Okay. I think -- the last
3 comment I said was it's -- we have the type of
4 instrument that was used on the survey that we
5 got. I don't know what it is sitting here, but
6 I'm pretty confident it was a -- like an RO2 or
7 an RO-something. It was an ionization chamber
8 survey meter.

9 I think it's also -- I forgot to mention this
10 earlier, that the measure -- the measured value
11 that's the basis of the dose reconstruction
12 value is only about half of the value from the
13 MCNP run whereas the MCNP run that was done and
14 described was only one-fifth, so the measured
15 value was much closer to the SC&A MCNP run than
16 -- effectively closer to the SC&A MCNP run than
17 what I will call the NIOSH MCNP run. The dose
18 rate is roughly half of the MCNP run that SC&A
19 did, as opposed to one-fifth, so I guess I will
20 -- I would like to take this back to additional
21 consideration. And again, I don't know that
22 I'm ready to say today what it is. Again,
23 we're talking about a factor of two on an
24 external dose (unintelligible) uranium plant,
25 and so --

1 **MS. K. BEHLING:** This is Kathy Behling. I just
2 wanted to make additional comment on the
3 measured dose rate, that it's our understanding
4 that the drum that was measured was only
5 partially filled, and that the measurements
6 that were taken were surface measurements and
7 there was a measurement taken in the midpoint
8 of the drum and also at the bottom of the drum,
9 which was 50 percent lower and then those two
10 values were averaged. And there was also a
11 microshield calculation that was done to
12 calculate the surface measurement to -- and
13 determine what the dose would be one foot from
14 that --

15 **THE COURT REPORTER:** Okay, I can't hear you,
16 I'm sorry. It sounds like y'all are under the
17 ocean at this point.

18 **MS. K. BEHLING:** Okay. I'm just stating that
19 we had some questions about that measured value
20 because the drum that they measured is -- took
21 a sample from was a partially filled drum. The
22 measurements were taken I guess midpoint on the
23 drum, I believe from a Hanford -- or from a --

24 **MR. HINNEFELD:** Fernald.

25 **MS. K. BEHLING:** -- a Fernald, a drum, yes, and

1 at the bottom. And the -- the lower portion
2 measurement was 50 percent that of the mid
3 portion, and those two values were averaged,
4 and those were surface measurements. And in
5 order to determine the one -- the measurement
6 at one foot, they -- there was a microshield
7 calculation done and we have not been able to
8 reproduce that microshield calculation. And I
9 guess based on the fact that we found this five
10 -- a factor of five error on the MCNP
11 calculation, we're also questioning that
12 measured dose. And (unintelligible) can
13 provide you with more details as to our MCNP
14 calculations and also (unintelligible)
15 measurements, so this is still an open issue as
16 far as SC&A is concerned.

17 **DR. H. BEHLING:** Hans Behling again. I do want
18 to at least acknowledge because among the first
19 20 cases we had several skin cancers, and I
20 guess -- again, going back to the instrument in
21 question, if you're measuring a dose that might
22 be equivalent to what's called a deep dose or a
23 1,000 milligram per centimeter squared dose,
24 that number may not apply if the person in
25 question who's seeking to be compensated has a

1 skin cancer. And again, the photons that are
2 being emitted from this type of source has very
3 low penetrating power, and so the ratio between
4 a deep dose and a shallow dose may be
5 substantial and may affect an estimate of skin
6 dose if the person who's seeking compensation
7 suffers from a skin cancer. So something
8 should at least be made to -- to account for
9 the differences between a shallow dose or a
10 deep dose, depending on the claim in question.

11 **MS. MUNN:** This is Wanda. I have a question --
12 a clarifying question. I'm not sure I
13 understood what I think I heard correctly.
14 There is a difference of -- did I understand
15 approximately five times between the two
16 calculations of dose at one foot?

17 **MR. HINNEFELD:** Yes, that's -- I believe --
18 it's described -- it's described in the SC&A
19 review as a difference of about five, and I --
20 to the best of my recollection it's about a
21 factor of five between the two MCNP runs.

22 **MS. MUNN:** With -- with which of the runs being
23 the higher?

24 **MR. HINNEFELD:** The SC&A run is higher.

25 **MS. MUNN:** All right. Thank you.

1 **MS. K. BEHLING:** One -- this is Kathy Behling,
2 and one last issue on the measurement. I
3 believe the -- as Stuart indicated, the
4 measurement that was done on the drum was UF4.
5 And if you look at the uranium content of UF4,
6 I believe that's 76 percent, according to
7 (unintelligible), and if you look at uranium
8 oxide, the uranium content would be 65 percent,
9 so that's another discrepancy that would make
10 your measurement lower -- the measurement would
11 be lower than what you might actually find if
12 you took measurements on a drum that was coming
13 from Blockson.

14 **MR. HINNEFELD:** Is it obvious to everybody that
15 it would be lower? It's not obvious to me
16 which way it would move.

17 **MR. GRIFFON:** Right.

18 **MS. K. BEHLING:** Oh, is that right? Bob says
19 differently.

20 **MR. GRIFFON:** I'm not -- this is Mark Griffon.
21 I'm not sure on that, either, because of the --
22 what Stu described, the shielding --

23 **MR. HINNEFELD:** -- (unintelligible) compete
24 with each other and I don't know which one --

25 **MR. GRIFFON:** But I think (unintelligible)

1 resolution here, I think NIOSH has kind of
2 agreed to go back and maybe -- maybe you can
3 model UF4, as well.

4 **MR. HINNEFELD:** Well, we're certainly taking
5 another look at the MCNP and figure out what
6 happened there. We will -- I think there's
7 some interesting questions here, both about the
8 surrogate material and this low energy photon.
9 Granted it's been filtered by a steel drum, but
10 it's still not a (unintelligible) spectrum
11 that's hitting that detector and that's
12 probably what it was calibrated to, and so what
13 do we know about that. There are some
14 interesting issues been raised here.

15 Again, we're talking about a factor of two in
16 the external dose, which is relatively low in a
17 uranium plant. Okay? We're pursuing a lot of
18 scientific theory here in a process that really
19 isn't designed for scientific theory, you know,
20 and I don't want to apologize for a lot of
21 stuff, but we are pursuing a lot of things that
22 we may be held to a third decimal point here of
23 the probability of causation. I don't know
24 that --

25 **MR. GRIFFON:** Right, but -- but --