1 and so 60 versus 11 missed doses.
2 (Whereupon, a brief off-the-record discussion ensued
3 for the court reporter's clarity.)
4 The dose reconstructor just used the
5 procedure and he followed the procedure and
6 it allows him to assign 12 missed doses per
7 year, without necessary looking at the
8 records. And I concur that it's an
9 efficiency procedure because it exempts him
10 from actually pursuing the documents that
11 are submitted by the DOE and saying well was
12 he on the monthly cycle or quarterly? It's
13 a time-saving issue, but it doesn't reflect
14 the truth and so here we are again.
15 **MR. HINNEFELD:** Right, kind of a recurring
16 theme.
17 **DR. H. BEHLING:** Yeah.
18 **MS. MUNN:** This is Wanda, and to me this is
19 a pivotal case that points very clearly to
20 what I see is the issue when we're talking
21 about the difference between established
22 science and being claimant friendly. If we
23 -- In cases where we have clear well-
24 documented record that the client was in
25 fact monitored and we know what the

1 measurements from those monitored reports
2 are, then using some other technique to
3 provide an assumption of dose is, in my
4 view, the incorrect approach. Even though -
5 - it's interesting to me you say it's
6 simpler to do the monthly assumption because
7 to me it's just obvious that we had a
8 quarterly report and the quarterly report
9 should be used. But if this is one of the
10 confusions that exists in our primary
11 procedure then perhaps we, being the Board,
12 need to have at least some informal
13 conversation with NIOSH about that if others
14 agree with my perception about that.
15 **MR. GRIFFON:** This is Mark Griffon.
16 Everybody's kind of looking my way.
17 **MS. MUNN:** Sorry about that, Mark.
18 **MR. GRIFFON:** It's all right. I don't
19 disagree. I think there's a bigger issue
20 that we've -- Off-line I was talking a
21 little bit yesterday about this I guess this
22 concern that we all need to be concerned
23 about, is consistency, and I envisioned this
24 scenario where the Oak Ridge retirees' club,
25 and they do have one, gets together and

1 there's three workers there who say, you
2 know, you got 70 rem, how did they assign
3 you that much, and I only got this, and I
4 worked in a hotter area than you, and they
5 don't know anything about efficiency methods
6 and the fact that one had a prostate cancer
7 and one had a lung cancer or whatever.
8 They're just saying this doesn't add up, and
9 you know, boy, I'm worried about that coming
10 back to haunt us maybe. So I think that's
11 part of your point. If you have the data
12 and maybe do the best estimate with what
13 we've got. Where you don't have data,
14 clearly, we want to be claimant friendly,
15 but you know, I think we should have that
16 discussion, you know.
17 **MS. MUNN:** I do, too.
18 **DR. H. BEHLING:** And just -- This is Hans
19 Behling. When you look for instance many of
20 the site profile tables give you site
21 specific data and they will give you by year
22 which dosimeter was used and what the
23 exchange frequency was at each facility, and
24 so you have a lot of definitive information
25 that's provided in one document, and then

1 you have another procedure that is basically
2 a secondary procedure and this is again an
3 issue of hierarchy. Which document
4 prevails? Is the site profile always the
5 one that overrules everything else, and if
6 that's the case then the definitive data
7 should have always been used.
8 On the other hand, there are the complex-
9 wide, DOE complex-wide procedures that are
10 very select and say well we can take a
11 shortcut here for the sake of overestimating
12 the dose, maximizing dose, and those
13 procedures are in direct conflict with the
14 more definitive data that are contained in
15 the site profiles, and as I said for us as
16 reviewers it was always difficult to
17 necessary say which one should we really use
18 because oftentimes the dose reconstructor
19 will site multiple references without saying
20 which one he really used. And so we have a
21 problem here as both the auditors of these
22 reviews and also that problem would prevail
23 among the people who received their dose
24 reconstruction report as claimants or
25 survivors of claimants in trying to

1 understand is there consistency by which
2 these doses are reconstructed, included
3 there is not a consistency.
4 **MR. HINNEFELD:** This is Stu Hinnefeld from
5 NIOSH. I think this kind of discussion
6 which the Board is -- it certainly seems
7 like it's probably warranted. Of course we
8 talk to the Board about whatever they want
9 us to talk to them about. But the call that
10 -- I think we'll all agree that if the dose
11 reconstruction intentionally overestimates
12 the dose the person received and the
13 probability of causation is less than 50
14 percent, then you have reached the outcome
15 that you would ultimately reach, regardless
16 of how you did the dose reconstruction and
17 so that essentially forms the philosophical
18 basis for a lot of these site-wide, or
19 complex-wide overestimating approaches in
20 terms of given that starting point is there
21 a way to move cases along more quickly than
22 rather than less quickly and with the
23 backlog of cases that was in place by the
24 time NIOSH really got started doing dose
25 reconstructions and the backlog that still

1 remains, efficient processing has been a
2 pretty high priority from our side. I'd
3 just make that comment.
4 **DR. H. BEHLING:** Okay, I guess we will move
5 on to Issue Number Two in behalf of Case 16.
6 Stu.
7 **MR. HINNEFELD:** Okay, Issue Number Two was
8 that the reviewer feels that the numerical -
9 - There was a numerical error made in the
10 assigned missed dose in this calculation,
11 and our look at it felt like the calculation
12 was done correctly on the dose
13 reconstruction that was entered
14 appropriately and there may have been some
15 confusion on which parameter of the
16 lognormal distribution represents what and
17 what's the maximum potential missed dose
18 versus the lognormal distribution for missed
19 dose and that may have been the origin of
20 the comment.
21 We looked at that. We thought this dose was
22 entered correctly when we looked at it.
23 **DR. H. BEHLING:** I have a very different
24 view of this one, and I'm going to make also
25 comment here that Case 16 and 19 share a

1 common (unintelligible), and it's my belief
2 that the two dose reconstructors were
3 probably sitting in the same room when they
4 were doing this because they committed the
5 same error and that they even use the same
6 language. In fact when I came to Case
7 Number 19 I said, "Oh my god, I think I've
8 been here before."
9 **MS. MUNN:** I've already done this one.
10 **DR. H. BEHLING:** Yes, and not only did they
11 commit three identical errors, but they used
12 the same language in describing what they
13 did, so unfortunately, Wanda, you are not
14 going to be in the position to benefit from
15 the next few slides that I have but --
16 **MS. MUNN:** Yes, I'm very fortunate. Judy
17 was able to get them to me, and I was able
18 to download them.
19 **DR. H. BEHLING:** Okay, in that case, Slide
20 Number 16.1 is the first one, which is
21 really the summary of what the dose
22 reconstruction percentage in behalf of
23 missed dose, and those are about two-thirds
24 of the way down on that list, starting with
25 with external, and you see what's

1 called lognormal distribution and you have a
2 dose of 360 millirem for each year and a
3 geometric standard deviation of 1.52. And
4 that's very key to understanding the series
5 of errors that were committed in behalf of
6 this one, and let me explain.
7 This particular person used the procedure
8 OTIB0008. And that is a maximizing
9 efficiency procedure that is to be used in
10 behalf of TLD's that were available post-
11 1972, I believe, was the time frame for the
12 use of that TLD. And again, it ties into
13 Issue Number One that involves the total of
14 60 missed doses for five years which
15 translates to 12 missed doses in any given
16 year. And I already said the guy only
17 really had 11 in truth, but we'll start out
18 with the premise that we'll ignore that as
19 an issue.
20 So he had 12 missed doses, okay, per year,
21 which on the basis of that particular
22 procedure -- and I'm going to refer to you
23 to Slide 16.2 which is the procedure in
24 question, the ORAU OTIB0008. And what
25 you'll see there, and I missed when I first

1 read this, I made the same mistake, it took
2 multiple reads for me to fully understand
3 what this particular procedure really
4 implies. And I'm going to have to go, to
5 step away for a second here in order to give
6 the members here an understanding of what
7 that procedure really calls for.
8 For TLD post-1972 the limit of detection was
9 assumed at 30 millirem. This is in Table
10 6.2, Wanda. You see missed dose per cycle,
11 .03 rem at 30 millirem. It also says make
12 an assumption regarding the frequency with
13 which it was exchanged. We know in this
14 case it was quarterly, but the standard
15 procedure says you may use 12 a year,
16 monthly, so that's correct. So you would in
17 essence multiply, for a maximum dose, the
18 monthly frequency, that's 12, times 30
19 millirem. Now 30 millirem is the LOD, and
20 when you use LOD without LOD over two, that
21 already identifies this as a 95th percentile
22 value. And that suggests, therefore, that
23 you would assign that yearly dose of 360
24 millirem, which is exactly what he put in
25 there, but this person came up with that

1 number for the wrong reason. He committed
2 to two subsequent errors, as you will see.
3 The first he did was to say all right, and
4 you can see that, and I will point that out
5 in another slide. He multiplied 12 times 30
6 is 360, then multiplied it times two yet,
7 which is 720 millirem a year, and then as
8 you will see in the next slide, he decided
9 to divide it again on, as he describes, in
10 compliance with Implementation Guide, and
11 divide by two. So he canceled this error,
12 which is not appropriate, this two which is
13 a multiplier and is to be used only for
14 recorded dose, not missed dose. You have to
15 really read this carefully. This is a
16 multiplier that is only to be used for
17 recorded dose, and what we're talking about
18 here is missed dose. Only these two
19 parameters apply, 12 times 30.
20 So what he did was he misinterpreted this
21 table by multiplying 30 millirem times 12,
22 then multiplied times the standard
23 correction factor, conversion factor -- CC
24 stands for correction conversion factor --
25 to get 720, and then he went back and said

1 you know what, Implementation Guide Number
2 One tells me to divide by two, which is LOD
3 over two, and then assign yet an
4 uncertainty. And so we end up with 360
5 which is actually correct, but if you go
6 back to the previous slide -- Kathy can go
7 back -- you can see also put in a geometric
8 standard deviation which is an error. What
9 he should have done is say 12 times 30 is
10 360 and enter it as a single constant value.
11 So he committed three errors. He used the
12 CC, or the conversion correction factor of
13 two. He mixed into that procedure the
14 OTIB0008, the Implementation Guide -- These
15 two procedures are mutually exclusive -- So
16 he corrected the first error by dividing
17 that by two and then he committed the third
18 error by saying oh I need to introduce an
19 uncertainty.
20 So in truth what we have is the correct 360
21 entry value which involves two errors that
22 cancel each other out, but there's still one
23 remaining error that is the uncertainty
24 which doesn't belong here. So three errors
25 were committed here, and it goes back to a

1 -- He would have been followed the
2 Implementation Guide procedure that says LOD
3 over two plus uncertainty.
4 **MR. HINNEFELD:** But he did that. If he had
5 not applied the times two, he would have had
6 12 exchanges --
7 **DR. H. BEHLING:** Yes.
8 **MR. HINNEFELD:** Times 30 -- which is the LOD
9 --
10 **DR. H. BEHLING:** Which is the LOD --
11 **MR. HINNEFELD:** Okay, so --
12 **DR. H. BEHLING:** And no uncertainty.
13 **MR. HINNEFELD:** So the 360 is the maximum
14 potential and then by referring to
15 Implementation Guide Number One it says if
16 you have -- you can enter the maximum
17 potential missed dose as a constant or you
18 can enter the missed dose as a lognormal
19 distribution, choosing the mean of the
20 lognormal distribution to be half of the
21 maximum potential, or LOD over two. So had
22 he not multiplied by two, he would have
23 entered 180 as parameter one, with the 1.52
24 GSD. So I think he made one mistake which
25 was the application of the correct standard.

1 **DR. H. BEHLING:** And let me go to the next
2 one, which will clearly define what the guy
3 really did. And this is, Wanda, Slide 16.3,
4 under "Missed Dose," which is somewhat in
5 the center of the page, to fully understand
6 what he did.
7 **MS. MUNN:** Yes, I've read through it.
8 **DR. H. BEHLING:** And you see this, the
9 terminal statement that indicates to me
10 exactly what he did as I explained it as
11 what he did. He says (reading) "For the
12 purpose of calculating probability of
13 causation, this value was divided by two in
14 accordance with the External Dose
15 Reconstruction Implementation Guide." And
16 the only way you can come to 360 plus
17 uncertainty is to start out with 12 times 30
18 times 2 divided by 2 and applying the
19 uncertainty. He committed three errors in
20 sequence.
21 And as it turns out, error one and two were
22 canceled, and the only remaining error is
23 that the 360 is correct but he should not
24 have added uncertainty.
25 **MR. HINNEFELD:** I felt that the three errors

1 -- but we can have that conversation later
2 on. It seems to me like it was a factor, he
3 used the two, as process (unintelligible) of
4 procedure which he probably knows better
5 than I do, is that he should not have used
6 the two as a missed dose; it should only
7 have been for the measured dose. That
8 language is boilerplate language that pops
9 up in the Dose Reconstruction Report over
10 and over. It's just been modified to give a
11 better explanation of what's done to going
12 from the maximum potential missed dose to
13 the lognormal representation of missed dose.
14 The language is different in the more recent
15 dose reconstruction.
16 **MR. GRIFFON:** But you guys can --
17 **MR. HINNEFELD:** Yeah, we can work that out.
18 It's not worth (unintelligible) because the
19 answer comes out the same.
20 **DR. H. BEHLING:** Yeah, the only thing, as I
21 said, get rid of the uncertainty, and then
22 don't give an explanation by mixing two, two
23 procedures that are mutually exclusive
24 procedures. And then as I said that's the
25 only issue -- But the issue I wanted to make

1 here is the additional uncertainty -- it's a
2 minor issue -- but what it does reflect is
3 the difficulty of interpreting procedures
4 which to me has always been the root cause
5 of many of these problems.
6 **MR. HINNEFELD:** Okay, Issue Number Three?
7 Are you ready for that?
8 **DR. H. BEHLING:** Yeah.
9 **MR. HINNEFELD:** The issue is that there is a
10 significant overestimate of the medical
11 exposure because organ dose correction
12 factor that was chosen was -- or the organ
13 dose that was chosen was much higher than
14 the actual target organ. I believe this is,
15 you know, fits right into the discussion
16 we've had on many cases. There was an
17 efficiency process where these data fields
18 were automatically populated from a
19 workbook, or an Excel workbook about when
20 the dose reconstructor may say single, you
21 know, single button selection. And by doing
22 that single button selection of just
23 something like maximum overestimate, that
24 workbook populates a whole lot of IREP lines
25 with the maximum non-skin medical dose. And

1 it's clearly an overestimate. There are --
2 There is a value for the target organ
3 available, this particular tool that
4 utilizes that, that use (unintelligible).
5 It's part of the last discussion, part
6 partial of the last discussion we had. If
7 you had evidence of one thing is it okay to
8 potentially overestimate by using this other
9 piece of information.
10 **DR. H. BEHLING:** Again, we're back to what
11 we talked about just a few minutes ago.
12 This person has a rectal cancer, and that
13 rectal cancer, if you look at the line,
14 "(unintelligible) procedure," can indeed be
15 identified as a particular target tissue
16 with a very nominal exposure dose for a P.A.
17 chest x-ray and in this case this efficiency
18 procedure ended up using a lateral, which is
19 the maximum dose, to the breast. And so she
20 used 63.8 millirem and then added to that
21 the 1.3 uncertainty and we ended up with a
22 large dose that is (unintelligible) to
23 greater than what she might have come up
24 with had he used the Ron Catherine procedure
25 that says here's the table that says here's

1 the rectum, use it.
2 And again I fully agree with the the the
3 issue of efficiency that sometimes defaults
4 to a maximum value when you talk about a
5 case that is not compensable and if it's an
6 issue of making a person feel good that he's
7 been given a generous assignment of dose
8 that he probably didn't deserve, I don't
9 know how to rectify that but it's certainly
10 not something that is scientifically
11 defensible. And that's the point we wanted
12 to make here.
13 **MR. HINNEFELD:** Well, I guess, we've talked
14 about it over and over for two days. I
15 think we all know our various positions on
16 it.
17 Issue Number Four is that the internal dose
18 used the colon as the surrogate for the
19 rectum rather than the lower large
20 intestine, and as a target organ, which is
21 an available target organ in the IMBA model.
22 And that is correct. It was -- The colon
23 was part usually of the call for the
24 selection and the overestimating technical
25 information bulletin two, hypothetical